BID PROPOSAL INSTRUCTIONS

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

PREQUALIFICATION

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

WHO CAN BID ?

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

REQUESTS FOR AUTHORIZATION TO BID

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

WHAT CONSTITUTES WRITTEN AUTHORIZATION TO BID?

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

ABOUT AUTHORIZATION TO BID

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

ADDENDA AND REVISIONS

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

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

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

IDOT IS NOT RESPONSIBLE FOR ANY E-MAIL FAILURES.

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

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

STANDARD GUIDELINES FOR SUBMITTING BIDS

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

BID SUBMITTAL CHECKLIST

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

QUESTIONS: pre-letting up to execution of the contract

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

QUESTIONS: following contract execution

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

2X

Proposal
Name
Address
City

NOTICE TO PROSPECTIVE BIDDERS
This proposal is for REVIEW AND INSPECTION ONLY

Notice to Bidders, Specifications, and Proposal for Review and Inspection only.

Illinois Department of Transportation

Springfield, Illinois 62764

Contract No. 89417
KNOX County
Section 05-00500-19-GS / 50VB (Galesburg)
Route FAU 6800 (Us 150)
District 4 Construction Funds

Prepared by S
Checked by

(Printed by authority of the State of Illinois)

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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. 89417
   KNOX County
   Section 05-00500-19-GS / 50VB (Galesburg)
   Route FAU 6800 (Us 150)
   District 4 Construction Funds

Project consists of the construction of a grade separation structure to carry the BNSF Railroad over East Main Street, retaining walls, pavement reconstruction, curb and gutter, storm sewer, sanitary sewer, water main, highway lighting and traffic signals. Project is located in the City of Galesburg.

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

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

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

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

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

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

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

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

Attach Cashier's Check or Certified Check Here

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

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

Item _____

Section No. _____

County _____

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

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

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

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

Schedule of Combination Bids

Combination No.	Sections Included in Combination	Combination Bid Dollars	Cents

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

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

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

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

Check box Yes ☐
Check box No ☐

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

STATE JOB #- C-94-116-06
PPS NBR -

ILLINOIS DEPARTMENT OF TRANSPORTATION
SCHEDULE OF PRICES
CONTRACT NUMBER - 89417

RUN DATE - 10/07/15
RUN TIME - 183021

COUNTY NAME	CODE	DIST	SECTION NUMBER	PROJECT NUMBER	ROUTE
KNOX	095	04	05-00500-19-GS/50VB GALESBURG		FAU 6800

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS	TOTAL PRICE DOLLARS	TOTAL PRICE CTS
B2001116	T-CERCIS CAN TF 2	EACH	21.000 X		=		
B2004116	T-MALUS PF TF 2	EACH	20.000 X		=		
XX000300	CONCRETE STEPS	SQ FT	139.000 X		=		
XX001286	SPECIAL EXCAVATION	CU YD	71,386.000 X		=		
XX002090	STAIR SIDE RAILING	FOOT	29.000 X		=		
XX004242	ORNAMENTAL HANDRAIL	FOOT	160.000 X		=		
XX006653	FENCE (SPECIAL)	FOOT	446.000 X		=		
XX006898	STAMPED COLORED PCC	SQ FT	553.000 X		=		
XX007531	REL EX LTPOLE/NEW FDN	EACH	2.000 X		=		
XX007797	LUMINAIRE SPL	EACH	38.000 X		=		
XX008257	STAMP COL PCC SDWLK 5	SQ FT	5,067.000 X		=		
XX008892	MAN ADD DEPTH 4D	FOOT	9.250 X		=		
XX008954	P P CONC FASCIA BEAM	FOOT	446.000 X		=		
XX009058	TRACK MONITORING	L SUM	1.000 X		=		
X0323389	STORM SEW CONNECTION	EACH	2.000 X		=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
X0323760	SAN SEW SER 6 PVC CMP	EACH	1.000	X		=		
X0323898	CCTV DOME CAMERA	EACH	2.000	X		=		
X0323923	SUPPORT EQUIP & MAINT	L SUM	1.000	X		=		
X0324455	DRILL/SET SOLD P SOIL	CU FT	3,058.000	X		=		
X0324878	ADJ SAN SEW SERV LINE	EACH	6.000	X		=		
X0325751	DRIVE SOLDIER PILES	FOOT	175.000	X		=		
X0326654	ORNAM LIGHT UNIT COMP	EACH	21.000	X		=		
X0326671	CONC SURF COLOR TRMNT	SQ FT	60.000	X		=		
X0326812	CAT 5 ETHERNET CABLE	FOOT	500.000	X		=		
X0326864	BRICK SIDEWALK REM	SQ FT	1,457.000	X		=		
X0327131	DRAIN STRUCTURES N1	EACH	3.000	X		=		
X0327680	TRENCH DRAIN	FOOT	24.000	X		=		
X0783300	P.S. ELECTRICAL WORK	L SUM	1.000	X		=		
X0783500	P.S. MECHANICAL WORK	L SUM	1.000	X		=		
X2130010	EXPLOR TRENCH SPL	FOOT	50.000	X		=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS	TOTAL PRICE DOLLARS	TOTAL PRICE CTS
X4401198	HMA SURF REM VAR DP	SQ YD	1,942.000 X			=	
X5011100	FOUNDATION REM	EACH	1.000 X			=	
X5040050	PREC CONC SUBSTRUCT	L SUM	1.000 X			=	
X5860110	GRANULAR BACKFILL STR	CU YD	370.000 X			=	
X6022810	MAN SAN 4 DIA T1F CL	EACH	7.000 X			=	
X6026054	SAN MAN REMOVED	EACH	6.000 X			=	
X6026056	SAN MH ADJ NEW T1F CL	EACH	11.000 X			=	
X6060505	CONC CURB SPL	FOOT	189.000 X			=	
X6700410	ENGR FLD OFF A SPL	CAL MO	20.000 X			=	
X7010216	TRAF CONT & PROT SPL	L SUM	1.000 X			=	
X8210675	LUM METAL HAL HM 400W	EACH	4.000 X			=	
X8211000	UNDERPASS LUM (SP)	EACH	6.000 X			=	
X8710024	FOCC62.5/125 MM12SM24	FOOT	5,000.000 X			=	
X8710050	FO ETN DROP REPEAT SW	EACH	2.000 X			=	
X8710071	FIB OPT FUSION SPLICE	EACH	18.000 X			=	

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS	TOTAL PRICE DOLLARS	TOTAL PRICE CTS
Z0007118	UNTREATED TIMBER LAG	SQ FT	829.000 X			=	
Z0007601	BLDG REMOV NO 1	L SUM	1.000 X			=	
Z0013302	SEGMENT CONC BLK WALL	SQ FT	4,212.000 X			=	
Z0013798	CONSTRUCTION LAYOUT	L SUM	1.000 X			=	
Z0018800	DRAINAGE SYSTEM	L SUM	1.000 X			=	
Z0022800	FENCE REMOVAL	FOOT	99.000 X			=	
Z0026402	FUR SOLDIER PILES HP	FOOT	175.000 X			=	
Z0026404	FUR SOLDIER PILES WS	FOOT	505.000 X			=	
Z0046304	P UNDR FOR STRUCT 4	FOOT	1,107.000 X			=	
Z0047700	PUMPING STATION	L SUM	1.000 X			=	
Z0048665	RR PROT LIABILITY INS	L SUM	1.000 X			=	
Z0056648	SS 1 WAT MN 12	FOOT	127.500 X			=	
Z0056652	SS 1 WAT MN 18	FOOT	91.500 X			=	
Z0056668	SS 2 WAT MN 12	FOOT	60.500 X			=	
Z0056670	SS 2 WAT MN 18	FOOT	66.000 X			=	

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS	TOTAL PRICE DOLLARS	TOTAL PRICE CTS
Z0056900	SAN SEW 8	FOOT	403.000 X			=	
Z0057100	SAN SEW 12	FOOT	211.000 X			=	
Z0067900	STEEL CASINGS 24	FOOT	158.000 X			=	
Z0073002	TEMP SOIL RETEN SYSTM	SQ FT	2,170.000 X			=	
Z0076600	TRAINEES	HOUR	500.000 X	0.80		=	400.00
Z0076604	TRAINEES TPG	HOUR	500.000 X	15.00		=	7,500.00
20100110	TREE REMOV 6-15	UNIT	38.000 X			=	
20100210	TREE REMOV OVER 15	UNIT	52.000 X			=	
20201200	REM & DISP UNS MATL	CU YD	1,000.000 X			=	
20700220	POROUS GRAN EMBANK	CU YD	1,000.000 X			=	
20800150	TRENCH BACKFILL	CU YD	1,818.000 X			=	
21001000	GEOTECH FAB F/GR STAB	SQ YD	11,291.000 X			=	
21101625	TOPSOIL F & P 6	SQ YD	26,074.000 X			=	
25000100	SEEDING CL 1	ACRE	3.250 X			=	
25000400	NITROGEN FERT NUTR	POUND	418.000 X			=	

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS	TOTAL PRICE DOLLARS	TOTAL PRICE CTS
25000500	PHOSPHORUS FERT NUTR	POUND	418.000 X			=	
25000600	POTASSIUM FERT NUTR	POUND	418.000 X			=	
25100115	MULCH METHOD 2	ACRE	3.250 X			=	
25200100	SODDING	SQ YD	9,102.000 X			=	
25200110	SODDING SALT TOLERANT	SQ YD	1,637.000 X			=	
25200200	SUPPLE WATERING	UNIT	161.000 X			=	
28000250	TEMP EROS CONTR SEED	POUND	539.000 X			=	
28000305	TEMP DITCH CHECKS	FOOT	90.000 X			=	
28000400	PERIMETER EROS BAR	FOOT	1,339.000 X			=	
28000510	INLET FILTERS	EACH	45.000 X			=	
30300011	AGG SUBGRADE IMPROVE	TON	8,822.000 X			=	
35300200	PCC BSE CSE 7	SQ YD	77.000 X			=	
40200500	AGG SURF CSE A 6	SQ YD	392.000 X			=	
40201000	AGGREGATE-TEMP ACCESS	TON	500.000 X			=	
40600275	BIT MATLS PR CT	POUND	4,134.000 X			=	

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
40600285	P BIT MATLS PR CT	POUND	4,872.000	X		=		
40600982	HMA SURF REM BUTT JT	SQ YD	491.000	X		=		
40603100	HMA BC IL-19.0L N30	TON	333.000	X		=		
40603305	HMA SC "C" N30	TON	246.000	X		=		
40603540	P HMA SC "D" N70	TON	1,364.000	X		=		
42000201	PCC PVT 7 JOINTED	SQ YD	1,303.000	X		=		
42000401	PCC PVT 9 JOINTED	SQ YD	8,362.000	X		=		
42001300	PROTECTIVE COAT	SQ YD	6,742.000	X		=		
42300200	PCC DRIVEWAY PAVT 6	SQ YD	105.000	X		=		
42300400	PCC DRIVEWAY PAVT 8	SQ YD	738.000	X		=		
42400100	PC CONC SIDEWALK 4	SQ FT	24,240.000	X		=		
42400300	PC CONC SIDEWALK 6	SQ FT	380.000	X		=		
42400410	PC CONC SIDEWALK 8	SQ FT	5,520.000	X		=		
42400800	DETECTABLE WARNINGS	SQ FT	191.000	X		=		
44000100	PAVEMENT REM	SQ YD	10,398.000	X		=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
44000200	DRIVE PAVEMENT REM	SQ YD	1,989.000	X		=		
44000300	CURB REM	FOOT	402.000	X		=		
44000500	COMB CURB GUTTER REM	FOOT	3,345.000	X		=		
44000600	SIDEWALK REM	SQ FT	13,042.000	X		=		
44201329	CL C PATCH T2 8	SQ YD	37.700	X		=		
44201333	CL C PATCH T3 8	SQ YD	35.000	X		=		
44201335	CL C PATCH T4 8	SQ YD	178.000	X		=		
44201747	CL D PATCH T4 8	SQ YD	188.000	X		=		
50200100	STRUCTURE EXCAVATION	CU YD	5,768.000	X		=		
50300225	CONC STRUCT	CU YD	399.000	X		=		
50300285	FORM LINER TEX SURF	SQ FT	3,764.000	X		=		
50500105	F & E STRUCT STEEL	L SUM	1.000	X		=		
50500505	STUD SHEAR CONNECTORS	EACH	142.000	X		=		
50800205	REINF BARS, EPOXY CTD	POUND	22,550.000	X		=		
51100100	SLOPE WALL 4	SQ YD	580.000	X		=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
51202100	FUR STL PILE HP14X117	FOOT	12,543.000			X =		
51202305	DRIVING PILES	FOOT	12,718.000			X =		
51204100	TEST PILE ST HP14X117	EACH	4.000			X =		
51500100	NAME PLATES	EACH	2.000			X =		
550A0050	STORM SEW CL A 1 12	FOOT	1,319.500			X =		
550A0070	STORM SEW CL A 1 15	FOOT	233.000			X =		
550A0340	STORM SEW CL A 2 12	FOOT	163.500			X =		
550A0360	STORM SEW CL A 2 15	FOOT	77.500			X =		
550A0380	STORM SEW CL A 2 18	FOOT	61.000			X =		
550A0410	STORM SEW CL A 2 24	FOOT	16.500			X =		
56100600	WATER MAIN 6	FOOT	300.000			X =		
56100900	WATER MAIN 12	FOOT	1,110.000			X =		
56103300	D I WATER MAIN 12	FOOT	565.000			X =		
56103520	D I WATER MAIN 24	FOOT	988.000			X =		
56104900	WATER VALVES 6	EACH	6.000			X =		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS	TOTAL PRICE DOLLARS	TOTAL PRICE CTS
56105200	WATER VALVES 12	EACH	4.000 X			=	
56108800	TAP VALVE & SLEEVE 6	EACH	2.000 X			=	
56400600	FIRE HYDRANTS	EACH	5.000 X			=	
58000100	MEMBRANE WATERPROOF	SQ FT	10,480.000 X			=	
58700300	CONCRETE SEALER	SQ FT	9,590.000 X			=	
59100100	GEOCOMPOSITE WALL DR	SQ YD	250.000 X			=	
59300100	CONTR LOW-STRENG MATL	CU YD	120.000 X			=	
60100915	PIPE DRAINS 6	FOOT	4.000 X			=	
60107600	PIPE UNDERDRAINS 4	FOOT	2,555.000 X			=	
60218400	MAN TA 4 DIA T1F CL	EACH	6.000 X			=	
60218500	MAN TA 4 DIA T3F&G	EACH	9.000 X			=	
60219300	MAN TA 4 DIA T11F&G	EACH	4.000 X			=	
60221100	MAN TA 5 DIA T1F CL	EACH	2.000 X			=	
60221200	MAN TA 5 DIA T3F&G	EACH	2.000 X			=	
60235700	INLETS TA T3F&G	EACH	4.000 X			=	

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
60236200	INLETS TA T8G	EACH	4.000	X			=		
60236800	INLETS TA T11F&G	EACH	7.000	X			=		
60240210	INLETS TB T1F OL	EACH	1.000	X			=		
60240220	INLETS TB T3F&G	EACH	12.000	X			=		
60240310	INLETS TB T11F&G	EACH	2.000	X			=		
60255800	MAN ADJ NEW T1F CL	EACH	1.000	X			=		
60500040	REMOV MANHOLES	EACH	11.000	X			=		
60500060	REMOV INLETS	EACH	12.000	X			=		
60600605	CONC CURB TB	FOOT	168.000	X			=		
60602800	CONC GUTTER TB	FOOT	160.000	X			=		
60603800	COMB CC&G TB6.12	FOOT	1,519.000	X			=		
60605000	COMB CC&G TB6.24	FOOT	2,508.000	X			=		
60611811	COMB CC&G TM MOD	FOOT	198.000	X			=		
64100115	SIGHT SCRN (WF) TP 6	FOOT	132.000	X			=		
64300240	IMP ATTEN FRD NAR TL2	EACH	2.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
67100100	MOBILIZATION	L SUM	1.000	X		=		
70106800	CHANGEABLE MESSAGE SN	CAL MO	100.000	X		=		
70300210	TEMP PVT MK LTR & SYM	SQ FT	62.000	X		=		
70300220	TEMP PVT MK LINE 4	FOOT	4,208.000	X		=		
70300280	TEMP PVT MK LINE 24	FOOT	60.000	X		=		
70301000	WORK ZONE PAVT MK REM	SQ FT	1,571.000	X		=		
72000100	SIGN PANEL T1	SQ FT	46.250	X		=		
72000200	SIGN PANEL T2	SQ FT	80.000	X		=		
72900100	METAL POST TY A	FOOT	50.000	X		=		
72900200	METAL POST TY B	FOOT	126.500	X		=		
78009000	MOD URETH PM LTR-SYM	SQ FT	329.000	X		=		
78009004	MOD URETH PM LINE 4	FOOT	6,957.000	X		=		
78009006	MOD URETH PM LINE 6	FOOT	72.000	X		=		
78009008	MOD URETH PM LINE 8	FOOT	1,889.000	X		=		
78009012	MOD URETH PM LINE 12	FOOT	407.000	X		=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS	TOTAL PRICE DOLLARS	TOTAL PRICE CTS
78009024	MOD URETH PM LINE 24	FOOT	191.000 X			=	
78300100	PAVT MARKING REMOVAL	SQ FT	1,377.000 X			=	
80400100	ELECT SERV INSTALL	EACH	2.000 X			=	
81028320	UNDRGRD C PVC 1	FOOT	300.000 X			=	
81028350	UNDRGRD C PVC 2	FOOT	12,184.000 X			=	
81028370	UNDRGRD C PVC 3	FOOT	79.000 X			=	
81028390	UNDRGRD C PVC 4	FOOT	331.000 X			=	
81100300	CON AT ST 1 GALVS	FOOT	122.000 X			=	
81100800	CON AT ST 3 GALVS	FOOT	122.000 X			=	
81300220	JUN BX SS AS 6X6X4	EACH	4.000 X			=	
81300530	JUN BX SS AS 12X10X6	EACH	6.000 X			=	
81300555	JUN BX SS AS 12X12X8	EACH	4.000 X			=	
81400100	HANDHOLE	EACH	2.000 X			=	
81400700	HANDHOLE PCC	EACH	14.000 X			=	
81400720	DBL HANDHOLE PCC	EACH	1.000 X			=	

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS	TOTAL PRICE DOLLARS	TOTAL PRICE CTS
81702110	EC C XLP USE 1C 10	FOOT	4,200.000 X			=	
81702120	EC C XLP USE 1C 8	FOOT	6,175.000 X			=	
81702130	EC C XLP USE 1C 6	FOOT	8,668.000 X			=	
82500390	LT CONT BASM 240V100D	EACH	1.000 X			=	
83600200	LIGHT POLE FDN 24D	FOOT	195.000 X			=	
84200600	REM LT U NO SALV	EACH	7.000 X			=	
85700200	FAC T4 CAB	EACH	1.000 X			=	
86200200	UNINTER POWER SUP STD	EACH	1.000 X			=	
87301225	ELCBL C SIGNAL 14 3C	FOOT	1,277.500 X			=	
87301245	ELCBL C SIGNAL 14 5C	FOOT	2,855.500 X			=	
87301515	ELCBL C LEAD 18 3PR	FOOT	484.000 X			=	
87301900	ELCBL C EGRDC 6 1C	FOOT	657.500 X			=	
87502440	TS POST GALVS 10	EACH	6.000 X			=	
87702920	STL COMB MAA&P 38	EACH	1.000 X			=	
87702930	STL COMB MAA&P 40	EACH	1.000 X			=	

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
87702950	STL COMB MAA&P 44	EACH	2.000	X			=		
87800100	CONC FDN TY A	FOOT	18.000	X			=		
87800150	CONC FDN TY C	FOOT	3.000	X			=		
87800415	CONC FDN TY E 36D	FOOT	50.000	X			=		
88040070	SH P LED 1F 3S BM	EACH	4.000	X			=		
88040090	SH P LED 1F 3S MAM	EACH	6.000	X			=		
88102717	PED SH LED 1F BM CDT	EACH	8.000	X			=		
88200510	TS BACKPLATE RET-REFL	EACH	10.000	X			=		
88500100	INDUCTIVE LOOP DETECT	EACH	2.000	X			=		
88600100	DET LOOP T1	FOOT	596.500	X			=		
88800100	PED PUSH-BUTTON	EACH	8.000	X			=		
89502375	REMOV EX TS EQUIP	EACH	1.000	X			=		
89502385	REMOV EX CONC FDN	EACH	3.000	X			=		
							TOTAL $		

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

NOTE:

1. EACH PAY ITEM SHOULD HAVE A UNIT PRICE AND A TOTAL PRICE.

2. THE UNIT PRICE SHALL GOVERN IF NO TOTAL PRICE IS SHOWN OR IF THERE IS A DISCREPANCY BETWEEN THE PRODUCT OF THE UNIT PRICE MULTIPLIED BY THE QUANTITY.

3. IF A UNIT PRICE IS OMITTED, THE TOTAL PRICE WILL BE DIVIDED BY THE QUANTITY IN ORDER TO ESTABLISH A UNIT PRICE.

4. A BID MAY BE DECLARED UNACCEPTABLE IF NEITHER A UNIT PRICE NOR A TOTAL PRICE IS SHOWN.

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

I. GENERAL

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

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

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

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

II. ASSURANCES

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

A. Conflicts of Interest

Section 50-13. Conflicts of Interest.

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

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

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

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

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

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

B. Negotiations

Section 50-15. Negotiations.

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

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

C. Inducements

Section 50-25. Inducement.

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

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

D. Revolving Door Prohibition

Section 50-30. Revolving door prohibition.

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

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

E. Reporting Anticompetitive Practices

Section 50-40. Reporting anticompetitive practices.

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

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

F. Confidentiality

Section 50-45. Confidentiality.

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

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

G. Insider Information

Section 50-50. Insider information.

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

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

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

III. CERTIFICATIONS

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

A. Bribery

Section 50-5. Bribery.

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

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

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

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

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

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

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

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

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

B. Felons

Section 50-10. Felons.

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

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

C. Debt Delinquency

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

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

D. Prohibited Bidders, Contractors and Subcontractors

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

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

E. Section 42 of the Environmental Protection Act

Section 50-14 Environmental Protection Act violations.

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

F. Educational Loan

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

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

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

G. Bid-Rigging/Bid Rotating

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

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

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

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

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

H. International Anti-Boycott

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

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

I. Drug Free Workplace

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

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

J. Disclosure of Business Operations in Iran

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

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

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

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

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

Check the appropriate statement:

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

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

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

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

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

_____

_____

_____

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

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

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

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

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

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

M. Lobbyist Disclosure

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

(i) Disclose all costs, fees, compensation, reimbursements, and other remunerations paid or to be paid to the lobbyist related to the contract,

(ii) Not bill or otherwise cause the State of Illinois to pay for any of the lobbyist's costs, fees, compensation, reimbursements, or other remuneration, and

(iii) Sign a verification certifying that none of the lobbyist's costs, fees, compensation, reimbursements, or other remuneration were billed to the State.

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

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

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

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

Or

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

Name and address of person: _____

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

_____

_____

_____

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

IV. DISCLOSURES

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

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

B. Financial Interests and Conflicts of Interest

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

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

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

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

C. Disclosure Form Instructions

Form A Instructions for Financial Information & Potential Conflicts of Interest

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

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

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

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

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

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

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

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

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

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

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

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

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form A
Financial Information & Potential Conflicts of Interest Disclosure

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

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

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

DISCLOSURE OF FINANCIAL INFORMATION

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

FOR INDIVIDUAL (type or print information)

NAME: _____

ADDRESS _____

_____

Type of ownership/distributable income share:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

---

3. Communication Disclosure.

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

Name and address of person(s): _____

_____

_____

_____

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.

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)

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.

Illinois Department of Transportation

Contract No. 89417
KNOX County
Section 05-00500-19-GS / 50VB (Galesburg)
Route FAU 6800 (Us 150)
District 4 Construction Funds

PART I. IDENTIFICATION

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

Name of Bidder: _____

PART II. WORKFORCE PROJECTION

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

TABLE A

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

TABLE C

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

FOR DEPARTMENT USE ONLY

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

BC 1256 (Rev. 12/11/07)

Note: See instructions on page 2

PART II. WORKFORCE PROJECTION - continued

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

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

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

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

PART III. AFFIRMATIVE ACTION PLAN

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

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

Company _____ Telephone Number _____

_____

Address _____

NOTICE REGARDING SIGNATURE

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

Signature: ☐ _____ Title: _____ Date: _____

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

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

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

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

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

Contract No. 89417
KNOX County
Section 05-00500-19-GS / 50VB (Galesburg)
Route FAU 6800 (Us 150)
District 4 Construction Funds

PROPOSAL SIGNATURE SHEET

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

Firm Name _____

(IF AN INDIVIDUAL)

Signature of Owner _____

Business Address _____

_____

Firm Name _____

By _____

(IF A CO-PARTNERSHIP)

Business Address _____

_____

Name and Address of All Members of the Firm:

_____ _____

_____ _____

Corporate Name _____

By _____

Signature of Authorized Representative

_____

Typed or printed name and title of Authorized Representative

(IF A CORPORATION)

Attest _____

Signature

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

Business Address _____

_____

Corporate Name _____

By _____

Signature of Authorized Representative

_____

Typed or printed name and title of Authorized Representative

(IF A JOINT VENTURE)

Attest _____

Signature

Business Address _____

_____

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

Illinois Department of Transportation

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

Division of Highways
Proposal Bid Bond

Item No. _____

Letting Date _____

KNOW ALL PERSONS BY THESE PRESENTS, That We _____

as PRINCIPAL, and _____

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

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

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

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

In TESTIMONY WHEREOF, the said PRINCIPAL has caused this instrument to be signed by its officer

_____ day of _____ A.D., _____.

_____
(Company Name)

By _____
(Signature and Title)

Notary for PRINCIPAL

STATE OF _____
COUNTY OF _____

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

(Seal)

_____
(Signature of Notary Public)

_____
(Date Commission Expires)

In TESTIMONY WHEREOF, the said SURETY has caused this instrument to be signed by its officer

_____ day of _____ A.D., _____.

_____
(Company Name)

By _____
(Signature of Attorney-in-Fact)

Notary for SURETY

STATE OF _____
COUNTY OF _____

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

(Seal)

_____
(Signature of Notary Public)

_____
(Date Commission Expires)

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

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

Illinois Department of Transportation

DBE Utilization Plan

(1) Policy

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

(2) Obligation

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

(3) Project and Bid Identification

Complete the following information concerning the project and bid:

Route _____ Total Bid _____

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

Project _____

County _____

Letting Date _____

Contract No. _____

Letting Item No. _____

(4) Assurance

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

☐ Meets or exceeds contract award goals and has provided documented participation as follows:

Disadvantaged Business Participation _____ percent

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

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

Disadvantaged Business Participation _____ percent

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

_____
Company

By _____

Title _____

Date _____

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

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

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

Local Let Projects
Submit forms to the
Local Agency

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

Illinois Department of Transportation

DBE Participation Statement

Subcontractor Registration Number _____ Letting _____

Participation Statement Item No. _____

(1) Instructions Contract No. _____

This form must be completed for each disadvantaged business participating in the Utilization Plan. This form shall be submitted in accordance with the special provision and will be attached to the Utilization Plan form. If additional space is needed complete an additional form for the firm. Trucking participation items; description must list what is anticipated towards goal credit.

(2) Work:

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

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

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

(4) Commitment

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

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

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

Signature for Contractor __ 1st Tier __ 2nd Tier

Date _____

Contact Person _____

Title _____

Firm Name _____

Address _____

City/State/Zip _____

Phone _____

Email Address _____

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

Date _____

Contact Person _____

Title _____

Firm Name _____

Address _____

City/State/Zip _____

Phone _____

Email Address _____

E _____

WC _____

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

PROPOSAL ENVELOPE

Illinois Department of Transportation

PROPOSALS

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

Item No.	Item No.	Item No.

Submitted By:

Name:
Address:
Phone No.

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

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

NOTICE

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

CONTRACTOR OFFICE COPY OF CONTRACT SPECIFICATIONS

NOTICE

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

Contract No. 89417
KNOX County
Section 05-00500-19-GS / 50VB (Galesburg)
Route FAU 6800 (Us 150)
District 4 Construction Funds

Illinois Department of Transportation

SUBCONTRACTOR DOCUMENTATION

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

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

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

RETURN WITH SUBCONTRACT

STATE ETHICAL STANDARDS GOVERNING SUBCONTRACTORS

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

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

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

A. Bribery

Section 50-5. Bribery.

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

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

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

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

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

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

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

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

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

B. Felons

Section 50-10. Felons.

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

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

C. Debt Delinquency

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

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

D. Prohibited Bidders, Contractors and Subcontractors

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

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

E. Section 42 of the Environmental Protection Act

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

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

_____
Name of Subcontracting Company

_____ _____
Authorized Officer Date

RETURN WITH SUBCONTRACT

SUBCONTRACTOR DISCLOSURES

I. DISCLOSURES

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

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

B. Financial Interests and Conflicts of Interest

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

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

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

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

C. Disclosure Form Instructions

Form A Instructions for Financial Information & Potential Conflicts of Interest

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

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

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

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

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

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

RETURN WITH SUBCONTRACT

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

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

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

RETURN WITH SUBCONTRACT

ILLINOIS DEPARTMENT OF TRANSPORTATION

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

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

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

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

DISCLOSURE OF FINANCIAL INFORMATION

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

FOR INDIVIDUAL (type or print information)

NAME: _____

ADDRESS _____

_____

Type of ownership/distributable income share:

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

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

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

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

Yes ___ No __

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

1. Are you currently an officer or employee of either the Capitol Development Board or the Illinois State Toll Highway Authority? Yes ___ No __

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

_____

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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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 Representative Date

OWNERSHIP CERTIFICATION

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

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

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

Illinois Department of Transportation

NOTICE TO BIDDERS

1. **TIME AND PLACE OF OPENING BIDS.** Sealed proposals for the improvement described herein will be received by the Department of Transportation. Electronic bids are to be submitted to the electronic bidding system (iCX-Integrated Contractors Exchange). Paper-based bids are to be submitted to the Chief Procurement Officer for the Department of Transportation in care of the Chief Contracts Official at the Harry R. Hanley Building, 2300 South Dirksen Parkway, in Springfield, Illinois until 10:00 a.m.November 6, 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. 89417
   KNOX County
   Section 05-00500-19-GS / 50VB (Galesburg)
   Route FAU 6800 (Us 150)
   District 4 Construction Funds

Project consists of the construction of a grade separation structure to carry the BNSF Railroad over East Main Street, retaining walls, pavement reconstruction, curb and gutter, storm sewer, sanitary sewer, water main, highway lighting and traffic signals. Project is located in the City of Galesburg.

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

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

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

By Order of the
Illinois Department of Transportation

Randall S. Blankenhorn,
Secretary

CONTRACT 89417

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:

LOCAL ROADS AND STREETS RECURRING SPECIAL PROVISIONS

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

Table of Contents

INDEX OF SPECIAL PROVISIONS

GUIDE BRIDGE SPECIAL PROVISION INDEX/CHECK SHEET

Effective as of the: July 31, 2015 Letting

Pg #	√	File Name	Title	Effective	Revised
		GBSP 4	Polymer Modified Portland Cement Mortar	June 7, 1994	July 26, 2013
275	X	GBSP 12	Drainage System	June 10, 1994	Jun 24, 2015
		GBSP 13	High-Load Multi-Rotational Bearings	Oct 13, 1988	Oct 30, 2012
		GBSP 14	Jack and Remove Existing Bearings	April 20, 1994	Jan 1, 2007
		GBSP 15	Three Sided Precast Concrete Structure	July 12, 1994	Dec 29, 2014
		GBSP 16	Jacking Existing Superstructure	Jan 11, 1993	Jan 1, 2007
		GBSP 17	Bonded Preformed Joint Seal	July 12, 1994	Jan 1, 2007
		GBSP 18	Modular Expansion Joint	May 19, 1994	Dec 29, 2014
		GBSP 21	Cleaning and Painting Contact Surface Areas of Existing Steel Structures	June 30, 2003	May 18, 2011
		GBSP 25	Cleaning and Painting Existing Steel Structures	Oct 2, 2001	April 19, 2012
		GBSP 26	Containment and Disposal of Lead Paint Cleaning Residues	Oct 2, 2001	April 30, 2010
		GBSP 28	Deck Slab Repair	May 15, 1995	Oct 15, 2011
		GBSP 29	Bridge Deck Microsilica Concrete Overlay	May 15, 1995	Jun 24, 2015
		GBSP 30	Bridge Deck Latex Concrete Overlay	May 15, 1995	Jun 24, 2015
		GBSP 31	Bridge Deck High-Reactivity Metakaolin (HRM) Conc Overlay	Jan 21, 2000	Jun 24, 2015
		GBSP 32	Temporary Sheet Piling	Sept 2, 1994	Jan 31, 2012
		GBSP 33	Pedestrian Truss Superstructure	Jan 13, 1998	Dec 29, 2014
		GBSP 34	Concrete Wearing Surface	June 23, 1994	Feb 6, 2013
		GBSP 35	Silicone Bridge Joint Sealer	Aug 1, 1995	Oct 15, 2011
		GBSP 38	Mechanically Stabilized Earth Retaining Walls	Feb 3, 1999	Dec 29, 2014
277	X	GBSP 42	Drilled Soldier Pile Retaining Wall	Sept 20, 2001	Jan 3, 2014
283	X	GBSP 43	Driven Soldier Pile Retaining Wall	Nov 13, 2002	Jan 3, 2014
287	X	GBSP 44	Temporary Soil Retention System	Dec 30, 2002	May 11, 2009
		GBSP 45	Bridge Deck Thin Polymer Overlay	May 7, 1997	Feb 6, 2013
		GBSP 46	Geotextile Retaining Walls	Sept 19, 2003	July 26, 2013
289	X	GBSP 51	Pipe Underdrain for Structures	May 17, 2000	Jan 22, 2010
		GBSP 53	Structural Repair of Concrete	Mar 15, 2006	Aug 29, 2014
		GBSP 55	Erection of Curved Steel Structures	June 1, 2007	
		GBSP 56	Setting Piles in Rock	Nov 14, 1996	April 19, 2012
		GBSP 57	Temporary Mechanically Stabilized Earth Retaining Walls	Jan 6, 2003	Dec 29, 2014
		GBSP 59	Diamond Grinding and Surface Testing Bridge Sections	Dec 6, 2004	Jan 3, 2014
		GBSP 60	Containment and Disposal of Non-Lead Paint Cleaning Residues	Nov 25, 2004	Mar 6, 2009
		GBSP 61	Slipform Parapet	June 1, 2007	Dec 29, 2014
		GBSP 62	Concrete Deck Beams	June 13, 2008	Oct 9, 2009
290	X	GBSP 64	Segmental Concrete Block Wall	Jan 7, 1999	Oct 30, 2012
		GBSP 65	Precast Modular Retaining Walls	Mar 19, 2001	Dec 29, 2014
		GBSP 67	Structural Assessment Reports for Contractor's Means and Methods	Mar 6, 2009	
		GBSP 70	Braced Excavation	Aug 9, 1995	May 18, 2011
		GBSP 71	Aggregate Column Ground Improvement	Jan 15, 2009	Oct 15, 2011

		GBSP 72	Bridge Deck Fly Ash or GGBF Slag Concrete Overlay	Jan 18, 2011	Jun 24, 2015
		GBSP 73	Cofferdams	Oct 15, 2011	
		GBSP 74	Permanent Steel Sheet Piling (LRFD)	Jan 31, 2012	Aug 17, 2012
		GBSP 75	Bond Breaker for Prestressed Concrete Bulb-T Beams	April 19, 2012	
295	X	GBSP 76	Granular Backfill for Structures	April 19, 2012	Oct 30, 2012
297	X	GBSP 77	Weep Hole Drains for Abutments, Wingwalls, Retaining Walls And Culverts	April 19, 2012	Oct 22, 2013
		GBSP 78	Bridge Deck Construction	Oct 22, 2013	April 18, 2014
		GBSP 79	Bridge Deck Grooving (Longitudinal)	Dec 29, 2014	
		GBSP 80	Fabric Reinforced Elastomeric	Aug 29, 2014	

LIST ANY ADDITIONAL SPECIAL PROVISIONS BELOW

The following Guide Bridge Special Provisions have been incorporated into the 2012 Standard Specifications:

File Name	Title	Std Spec Location
GBSP22	Cleaning and Painting New Metal Structures	506
GBSP36	Surface Preparation and Painting Req. for Weathering Steel	506
GBSP50	Removal of Existing Non-composite Bridge Decks	501
GBSP58	Mechanical Splicers	508
GBSP63	Demolition Plans for Removal of Existing Structures	501
GBSP68	Piling	512
GBSP69	Freeze-Thaw Aggregates for Concrete Superstructures Poured on Grade	1004

The following Guide Bridge Special Provisions have been discontinued or have been superseded:

File Name	Title	Disposition:
GBSP37	Underwater Structure Excavation Protection	Replaced by GBSP73
GBSP11	Permanent Steel Sheet Piling	Replaced by GBSP74
GBSP47	High Performance Concrete Structures	Discontinued
GBSP52	Porous Granular Embankment (Special)	Replaced by GBSP76
GBSP66	Wave Equation Analysis of Piles	Discontinued

INDEX LOCAL ROADS AND STREETS SPECIAL PROVISIONS

LR #	Pg #		Special Provision Title	Effective	Revised
LR SD12		☐	Slab Movement Detection Device	Nov. 11, 1984	Jan. 1, 2007
LR SD13		☐	Required Cold Milled Surface Texture	Nov. 1, 1987	Jan. 1, 2007
LR 107-2		☐	Railroad Protective Liability Insurance for Local Lettings	Mar. 1, 2005	Jan. 1, 2006
LR 107-4	298	☒	Insurance	Feb. 1, 2007	Aug. 1, 2007
LR 108		☐	Combination Bids	Jan. 1, 1994	Mar. 1, 2005
LR 109		☐	Equipment Rental Rates	Jan. 1, 2012	
LR 212		☐	Shaping Roadway	Aug. 1, 1969	Jan. 1, 2002
LR 355-1		☐	Bituminous Stabilized Base Course, Road Mix or Traveling Plant Mix	Oct. 1, 1973	Jan. 1, 2007
LR 355-2		☐	Bituminous Stabilized Base Course, Plant Mix	Feb. 20, 1963	Jan. 1, 2007
LR 400-1		☐	Bituminous Treated Earth Surface	Jan. 1, 2007	Apr. 1, 2012
LR 400-2		☐	Bituminous Surface Plant Mix (Class B)	Jan. 1, 2008	
LR 400-3		☐	Hot In-Place Recycling (HIR) – Surface Recycling	Jan. 1, 2012	
LR 400-4		☐	Full-Depth Reclamation (FDR) with Emulsified Asphalt	Apr. 1, 2012	Jun. 1, 2012
LR 400-5		☐	Cold In-Place Recycling (CIR) With Emulsified Asphalt	Apr. 1, 2012	Jun. 1, 2012
LR 400-6		☐	Cold In Place Recycling (CIR) with Foamed Asphalt	June 1, 2012	
LR 400-7		☐	Full-Depth Reclamation (FDR) with Foamed Asphalt	June 1, 2012	
LR 402		☐	Salt Stabilized Surface Course	Feb. 20, 1963	Jan. 1, 2007
LR 403-1		☐	Surface Profile Milling of Existing, Recycled or Reclaimed Flexible Pavement	Apr. 1, 2012	Jun. 1, 2012
LR 403-2		☐	Bituminous Hot Mix Sand Seal Coat	Aug. 1, 1969	Jan. 1, 2007
LR 406		☐	Filling HMA Core Holes with Non-shrink Grout	Jan. 1, 2008	
LR 420		☐	PCC Pavement (Special)	May 12, 1964	Jan. 2, 2007
LR 442		☐	Bituminous Patching Mixtures for Maintenance Use	Jan. 1, 2004	Jun. 1, 2007
LR 451		☐	Crack Filling Bituminous Pavement with Fiber-Asphalt	Oct. 1, 1991	Jan. 1, 2007
LR 503-1		☐	Furnishing Class SI Concrete	Oct. 1, 1973	Jan. 1, 2002
LR 503-2		☐	Furnishing Class SI Concrete (Short Load)	Jan. 1, 1989	Jan. 1, 2002
LR 542		☐	Pipe Culverts, Type _____ (Furnished)	Sep. 1, 1964	Jan. 1, 2007
LR 663		☐	Calcium Chloride Applied	Jun. 1, 1958	Jan. 1, 2007
LR 702		☐	Construction and Maintenance Signs	Jan. 1, 2004	Jun. 1, 2007
LR 1000-1		☐	Cold In-Place Recycling (CIR) and Full Depth Reclamation (FDR) with Emulsified Asphalt Mix Design Procedures	Apr. 1, 2012	Jun. 1, 2012
LR 1000-2		☐	Cold In-Place Recycling (CIR) and Full Depth Reclamation (FDR) with Foamed Asphalt Mix Design Procedures	June 1, 2012	
LR 1004		☐	Coarse Aggregate for Bituminous Surface Treatment	Jan. 1, 2002	Jan. 1, 2007
LR 1030		☐	Growth Curve	Mar. 1, 2008	Jan. 1, 2010
LR 1032-1		☐	Emulsified Asphalts	Jan. 1, 2007	Feb. 7, 2008
LR 1102		☐	Road Mix or Traveling Plan Mix Equipment	Jan. 1, 2007	

BDE SPECIAL PROVISIONS

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

	File Name	Pg.		Special Provision Title	Effective	Revised
	80240			Above Grade Inlet Protection	July 1, 2009	Jan. 1, 2012
	80099			Accessible Pedestrian Signals (APS)	April 1, 2003	Jan. 1, 2014
	80274	299	X	Aggregate Subgrade Improvement	April 1, 2012	Jan. 1, 2013
	80192			Automated Flagger Assistance Device	Jan. 1, 2008	
	80173			Bituminous Materials Cost Adjustments	Nov. 2, 2006	July 1, 2015
	80241			Bridge Demolition Debris	July 1, 2009	
	5026I	302	X	Building Removal-Case I (Non-Friable and Friable Asbestos)	Sept. 1, 1990	April 1, 2010
	5048I			Building Removal-Case II (Non-Friable Asbestos)	Sept. 1, 1990	April 1, 2010
	5049I			Building Removal-Case III (Friable Asbestos)	Sept. 1, 1990	April 1, 2010
	5053I			Building Removal-Case IV (No Asbestos)	Sept. 1, 1990	April 1, 2010
	80360			Coarse Aggregate Quality	July 1, 2015	
	80310			Coated Galvanized Steel Conduit	Jan. 1, 2013	Jan. 1, 2015
	80341			Coilable Nonmetallic Conduit	Aug. 1, 2014	Jan. 1, 2015
	80198			Completion Date (via calendar days)	April 1, 2008	
	80199			Completion Date (via calendar days) Plus Working Days	April 1, 2008	
	80293			Concrete Box Culverts with Skews > 30 Degrees and Design Fills ≤ 5 Feet	April 1, 2012	April 1, 2015
	80294			Concrete Box Culverts with Skews ≤ 30 Degrees Regardless of Design Fill and Skews > 30 Degrees with Design Fills > 5 Feet	April 1, 2012	April 1, 2014
	80311			Concrete End Sections for Pipe Culverts	Jan. 1, 2013	
	80334	317	X	Concrete Gutter, Curb, Median, and Paved Ditch	April 1, 2014	Aug. 1, 2014
	80277			Concrete Mix Design – Department Provided	Jan. 1, 2012	Jan. 1, 2014
	80261			Construction Air Quality – Diesel Retrofit	June 1, 2010	Nov. 1, 2014
	80335	318	X	Contract Claims	April 1, 2014	
*	80029	319	X	Disadvantaged Business Enterprise Participation	Sept. 1, 2000	Nov. 2, 2015
	80358	330	X	Equal Employment Opportunity	April 1, 2015	
	80265	334	X	Friction Aggregate	Jan. 1, 2011	Nov. 1, 2014
	80229	338	X	Fuel Cost Adjustment	April 1, 2009	July 1, 2015
	80329			Glare Screen	Jan. 1, 2014	
	80304			Grooving for Recessed Pavement Markings	Nov. 1, 2012	Aug. 1, 2014
	80246	342	X	Hot-Mix Asphalt – Density Testing of Longitudinal Joints	Jan. 1, 2010	April 1, 2012
	80322	344	X	Hot-Mix Asphalt – Mixture Design Composition and Volumetric Requirements	Nov. 1, 2013	Nov. 1, 2014
	80323	354	X	Hot-Mix Asphalt – Mixture Design Verification and Production	Nov. 1, 2013	Nov. 1, 2014
	80347			Hot-Mix Asphalt – Pay for Performance Using Percent Within Limits – Jobsite Sampling	Nov. 1, 2014	July 1, 2015
	80348	358	X	Hot-Mix Asphalt – Prime Coat	Nov. 1, 2014	
	80315			Insertion Lining of Culverts	Jan. 1, 2013	Nov. 1, 2013
	80351			Light Tower	Jan. 1, 2015	
	80336			Longitudinal Joint and Crack Patching	April 1, 2014	
	80324			LRFD Pipe Culvert Burial Tables	Nov. 1, 2013	April 1, 2015
	80325	363	X	LRFD Storm Sewer Burial Tables	Nov. 1, 2013	April 1, 2015
	80045			Material Transfer Device	June 15, 1999	Aug. 1, 2014
	80342	373	X	Mechanical Side Tie Bar Inserter	Aug. 1, 2014	Jan. 1, 2015
	80165			Moisture Cured Urethane Paint System	Nov. 1, 2006	Jan. 1, 2010
*	80361			Overhead Sign Structures Certification of Metal Fabricator	Nov. 1, 2015	
	80337			Paved Shoulder Removal	April 1, 2014	
	80349			Pavement Marking Blackout Tape	Nov. 1, 2014	
	80298			Pavement Marking Tape Type IV	April 1, 2012	
	80254	375	X	Pavement Patching	Jan. 1, 2010	

File Name	Pg.		Special Provision Title	Effective	Revised
80352	376	X	Pavement Striping - Symbols	Jan. 1, 2015	
80359			Portland Cement Concrete Bridge Deck Curing	April 1, 2015	
80353			Portland Cement Concrete Inlay or Overlay	Jan. 1, 2015	April 1, 2015
80338			Portland Cement Concrete Partial Depth Hot-Mix Asphalt Patching	April 1, 2014	
80343	377	X	Precast Concrete Handhole	Aug. 1, 2014	
80300			Preformed Plastic Pavement Marking Type D - Inlaid	April 1, 2012	
80328	378	X	Progress Payments	Nov. 2, 2013	
3426I			Railroad Protective Liability Insurance	Dec. 1, 1986	Jan. 1, 2006
80157	379	X	Railroad Protective Liability Insurance (5 and 10)	Jan. 1, 2006	
80306	381	X	Reclaimed Asphalt Pavement (RAP) and Reclaimed Asphalt Shingles (RAS)	Nov. 1, 2012	Jan. 2, 2015
80350	391	X	Retroreflective Sheeting for Highway Signs	Nov. 1, 2014	
80327	393	X	Reinforcement Bars	Nov. 1, 2013	
80344			Rigid Metal Conduit	Aug. 1, 2014	
80354	395	X	Sidewalk, Corner, or Crosswalk Closure	Jan. 1, 2015	April 1, 2015
80340			Speed Display Trailer	April 2, 2014	
80127	396	X	Steel Cost Adjustment	April 2, 2004	July 1, 2015
80317			Surface Testing of Hot-Mix Asphalt Overlays	Jan. 1, 2013	
80355	400	X	Temporary Concrete Barrier	Jan. 1, 2015	July 1, 2015
80301			Tracking the Use of Pesticides	Aug. 1, 2012	
80356			Traffic Barrier Terminals Type 6 or 6B	Jan. 1, 2015	
20338	402	X	Training Special Provisions	Oct. 15, 1975	
80318			Traversable Pipe Grate	Jan. 1, 2013	April 1, 2014
80345	405	X	Underpass Luminaire	Aug. 1, 2014	April 1, 2015
80357			Urban Half Road Closure with Mountable Median	Jan. 1, 2015	July 1, 2015
80346			Waterway Obstruction Warning Luminaire	Aug. 1, 2014	April 1, 2015
80288			Warm Mix Asphalt	Jan. 1, 2012	Nov. 1, 2014
80302	406	X	Weekly DBE Trucking Reports	June 2, 2012	April 2, 2015
80289			Wet Reflective Thermoplastic Pavement Marking	Jan. 1, 2012	
80071	407	X	Working Days	Jan. 1, 2002	

The following special provisions are in the 2015 Supplemental Specifications and Recurring Special Provisions:

File Name	Special Provision Title	New Location	Effective	Revised
80292	Coarse Aggregate in Bridge Approach Slabs/Footings	Articles 1004.01(b) and 1004.02(f)	April 1, 2012	April 1, 2013
80303	Granular Materials	Articles 1003.04, 1003.04(c), and 1004.05(c)	Nov. 1, 2012	
80330	Pavement Marking for Bike Symbol	Article 780.14	Jan. 1, 2014	
80331	Payrolls and Payroll Records	Recurring CS #1 and #5	Jan. 1, 2014	
80332	Portland Cement Concrete – Curing of Abutments and Piers	Article 1020.13	Jan. 1, 2014	
80326	Portland Cement Concrete Equipment	Article 1103.03(a)(5)	Nov. 1, 2013	
80281	Quality Control/Quality Assurance of Concrete Mixtures	Recurring CS #31	Jan. 1, 2012	Jan. 1, 2014
80283	Removal and Disposal of Regulated Substances	Articles 669.01, 669.08, 669.09, 669.14, and 669.16	Jan. 1, 2012	Nov. 2, 2012
80319	Removal and Disposal of Surplus Materials	Article 202.03	Nov. 2, 2012	
80307	Seeding	Article 250.07	Nov. 1, 2012	
80339	Stabilized Subbase	Article 312.06	April 1, 2014	
80333	Traffic Control Setup and Removal Freeway/Expressway	Articles 701.18(l) and 701.19(a)	Jan. 1, 2014	

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

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

STATE OF ILLINOIS
KNOX COUNTY
CITY OF GALESBURG

SPECIAL PROVISIONS

The following Special Provisions supplement the "Standard Specifications for Road and Bridge Construction", adopted January 1, 2012 (Revised January 1, 2016), the latest edition of the "Illinois Manual on 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 Sheet included herein, which apply to and govern the construction of the East Main Street Underpass Improvements, Section 05-00500-19-GS, in Knox County, Illinois. In case of conflict with any part, or parts, of said Specifications, the said Special Provisions shall take precedence and shall govern.

DESCRIPTION OF WORK

This work consists of furnishing all labor, materials, and equipment necessary to construct the East Main Street Underpass. Improvements include construction of railroad bridge, retaining wall, pavement, curb and gutter, storm sewer systems, sanitary sewer construction, water main construction, street lighting systems, traffic signals, and all miscellaneous appurtenant items shown in the plans and as described in these Special Provisions.

REVIEW AND INSPECTION MEETING

A review and inspection meeting will be held on Tuesday, October 27, 2015 at 10:00 am in the City Hall Council Chambers at 55 W. Tompkins Street, Galesburg, IL 61401. While attending is not mandatory, it is recommended that all bidders attend. Subcontractors are welcome to attend. As the coordination between the contractor, IDOT and BNSF will be complicated, this meeting will serve to discuss and clarify the requirements and responsibilities of all parties involved. In addition, clarification of all construction requirements can be discussed.

EXISTING UNDERGROUND FACILITIES

The City of Galesburg assumes no responsibility for the presence, specific size or location of underground distribution systems of the several public utility corporations. No responsibility for the protection of said underground systems will be assumed by the City. If such protection is found to be necessary for water mains, gas mains, steam mains, underground electrical distribution systems, underground telephone circuit

systems or any other underground systems of non-municipal ownership, the cost of same, in whole or in part, is disclaimed of the City of Galesburg.

NOTIFICATION OF UTILITIES PRIOR TO CONSTRUCTION

All utility companies must be notified, in writing, by the Contractor at least one (1) week in advance prior to starting construction. All utility companies must be notified so that they may have personnel on the job site to assist in locating their utility lines and avoid damage to their utilities. A copy of the letter notifying the utility companies of the Contractor's intention to start work must be received by the City of Galesburg before construction will be permitted to start.

J.U.L.I.E. SYSTEM

The J.U.L.I.E. (Joint Utility Locating Information for Excavators) must be notified prior to starting construction so that the respective utilities may have adequate time to locate and mark their underground facilities. Phone: 1-800-892-0123. The following information may be requested by J.U.L.I.E.:

County Name: Knox
Township Name: Galesburg City Township
Section Numbers: Township 11 N, Range 1E, 4th P.M., Sections 11 and 14.

WORKING DAYS

All work required in the contract shall be substantially completed within 180 working days. A construction progress schedule indicating project milestones shall be prepared and submitted according to Article 108.02 of the Standard Specifications. The Contractor shall strictly adhere to the schedule unless a request to modify the schedule is submitted in writing and approved by the Engineer.

For the portion of the work that will require track closure and Form B windows from BNSF Railway, the contractor shall assume that the maximum window to be granted by BNSF will be six (6) hours. BNSF has agreed to provide three (3) windows at six (6) hours per week for the work items that will require the track closures and Form B windows. The contractor shall ensure that all tracks are returned to service at the completion of each window. Liquidated damages will be assessed to the contractor due to train delay resulting from an overstay of the window. The delay costs range from $500/train/hour to $1,000/train/hour, with the measurement being number of hours the train is delayed, not necessarily the same amount of time as the overstay. Delay costs will be higher if AMTRAK is delayed. Working days may not be charged to the Contractor under circumstances where the date for an agreed upon window is taken away by BNSF due to subdivision traffic if that item is the sole item of work on that day.

BRIDGE STRUCTURE CHANGE-OUT COORDINATION REQUIREMENTS

Extended track closure and Form B windows in excess of six hours will be allowed during the installation of proposed bridge superstructure and re-installation of the BNSF tracks. The general sequencing of the structure change-out is as follows:

- Track #1 Change-Out: Construction will require closure of Track #1 and a Form B on Track #2 for the removal of existing tracks, installation of proposed bridge, and re-installation of tracks. A 48-hour window for the closure and Form B will be required for this work.
- Track #2 and #3 Change-Out: Construction will require closure of Track #2 and #3 and Form B on Track #1 for the removal of existing tracks, installation of proposed bridge, and re-installation of tracks. A 64 hour window for the closures

and Form B will be allowed. The Contractor shall complete and open Track #2 to train traffic within 48 hours of the beginning of the window. A Form B will be required for both Track #1 and Track #2 while construction of the Track #3 structure is continuing. Track #3 will be required to be completed and open to traffic with 64 hours of the beginning of the window.

The Contractor shall submit a schedule, staging plan, details and other required back-up for each 48 hour and 64 hour window of BNSF track shutdown for verification and approval by the engineer and BNSF. Schedules for the 48 hour and 64 hour windows must be broken down to 15 minute increments. Staging plans must include equipment placement and staging. Schedules and staging must be approved prior to the start of work for each track outage. All schedules must be in Critical Path Method (CPM) format and include manpower loading, float time, all work items to be executed by subcontractors, and all work items that are to be performed by entities not under direct control of the Contractor but required for work to proceed.

Train delay costs for window overstays will be assessed to the contractor. The delay costs range from $500/train/hour to $1,000/train/hour, with the hour measurement being number of hours the train is delayed, not necessarily the same amount of time as the overstay. Delay costs will be higher if AMTRAK is delayed.

COOPERATION WITH UTILITY COMPANIES

It is understood and agreed that the Contractor has considered, in his bid, all the permanent and temporary utility appurtenances in their present or relocated positions and that no additional compensation will be allowed for any delays, inconvenience or damage sustained by him due to any interference from the said utility appurtenances or the operations of moving them.

All telephone, telegraph, cableway, gas, water, electrical and wire lines, within the limits of the proposed construction owned by various utility companies, are to be moved by the Owners of the particular utility involved at the Owner's expense.

STATUS OF UTILITIES TO BE ADJUSTED AND ABANDONED

All known existing utilities within the limits of the underpass roadway pavement will be relocated. The existing facilities will be removed and/or abandoned in place. The sanitary sewer (Galesburg Sanitary District) and the water main (City of Galesburg – Water Division) will be relocated as part of this project. Other utilities, including Ameren Electric, Ameren Gas, and Century Telephone, will be relocated by those companies and are not included in the project.

Utility Company	Contact	Phone Number
Ameren – IP	Julie Cone	309-345-5169
Comcast Communications		309-342-2161
City of Galesburg - Water	Richard Nelson	309-345-3649
Galesburg Sanitary District	Marshall Schrader	309-342-0131
Century Telephone	Darrell Schmidt	309-477-0255

RESPONSIBILITY FOR DAMAGE CLAIMS

The Contractor shall indemnify and hold harmless the CITY of GALESBURG, its officers and employees against all loss, damage or expense that it or they may sustain as a result of any suits, actions, or claims of any character brought on account of injury to or death of any person or persons, including all persons performing any work under this contract, which may arise in any way in connection with the work to be performed under this contract, including but not limited to, suits, actions or claims arising under "An Act Providing for the Protection and Safety of Persons In and About the Construction, Repairing, Alteration or Removal of Buildings, Bridges, Viaducts, and Other Structures, and to Provide For the Enforcement Thereof", approved June 3, 1907, (Ill. Rev. Stats., Ch. 48, Sec. 60, et seq.), as amended. The Contractor shall also indemnify and hold harmless the CITY of GALESBURG, its officers and employees from all suits, actions, or claims of any character brought because of any injuries or damages received or sustained by any person, persons or property, on account of, or in consequence of, any neglect by Contractor or a Subcontractor in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect or misconduct of said Contractor; or because of any claim or amounts recovered for any infringements of patent, trademark or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act", or any other law, ordinance, order or decree, and so much of the money due the said Contractor under and by virtue of his contract as shall be considered necessary by the Department for such purposes, may be retained for the use of the ENGINEERING DIVISION; or, in case no money is due, his surety shall be held until such suits, actions or claims have been settled and suitable evidence to that effect furnished to the Department.

TRACK MONITORING

This work shall consist of the development and implementation of a track monitoring program to detect both horizontal and vertical movement of the railroad track and roadbed. The monitoring program shall be developed by the Contractor and submitted, for railroad review and approval, a minimum of 30 days in advance of start of work. The requirements of this provision are intended to represent minimum necessary precautionary measures and in no way relieve the Contractor of any responsibility and/or liability for movement or damages stemming from construction activities on this project.

1. For the installation of temporary soil retention systems, including but not limited to soldier piles and lagging, and interlocked steel sheeting on or adjacent to railroad's right-of-way, the contractor shall submit a detailed track monitoring program for railroad's approval prior to performing any work near railroad's right-of-way.

2. The program shall specify the survey locations, the distance between the location points, and frequency of monitoring before, during, and after construction. The railroad reserves the right to modify the survey locations and monitoring frequency as necessary during the project.

3. The survey data shall be collected in accordance with the approved frequency and immediately furnished to the Railroad Engineer for analysis.

4. If any movement has occurred as determined by the Railroad Engineer, the Department and the Railroad will be immediately notified. Railroad, at its sole discretion, shall have the right to immediately require all Contractor operations to be ceased and determine what corrective action is required. Any corrective action required by the Railroad or performed by the Railroad including the monitoring of corrective action of the Contractor will be at project expense.

This work shall be paid for at the contract lump sum price for TRACK MONITORING. Price shall be payment in full for all labor, material, and equipment necessary for the development and implementation of the track monitoring program.

TRAFFIC CONTROL PLAN / CONSTRUCTION STAGING

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.

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 through the construction work zone. Motorists shall be guided in a clear and positive manner while approaching and traversing construction work areas. The Contractor shall arrange his/her operations to keep the closing of lanes to a minimum. The Contractor will notify the Engineer in writing ten calendar days prior to any activities that will disrupt normal traffic flow including road closures, lane closures, or work directly adjacent traffic lanes. To ensure acceptable levels of operation, routine inspection of traffic control elements shall be performed. The Contractor will be required to inspect and initiate any needed maintenance to the traffic control devices in this contract. Construction equipment, materials, and debris shall be stored in such a manner as not to be vulnerable to vehicle impact and as directed by the Engineer.

The Contractor's vehicles shall always move with and not against or across the flow of traffic. These vehicles shall enter or leave work areas in a manner which will not be hazardous to or interfere with normal traffic, and shall not park or stop except within designated work areas. Personal vehicles will not be permitted to park within the right-of-way, except in specified areas designated by the Engineer.

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 guide signs during all construction operations. Warning signs and existing guide signs with 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 that are inconsistent with lane assignment patterns.

No work shall commence on any stage of construction until all required traffic control is in place. At the completion of each stage of construction or whenever operations indicate that a relocation of a proposed or existing traffic control devise is advisable, as determined by the Engineer, the Contractor will be required to remove, relocate, reinstall, and maintain the device as herein specified. All traffic control devices must remain in place until specific authorization for relocation or removal is received from the Engineer.

The placement of barricades and warning signs for the required lane closures shall be as specified herein and the applicable highway standards shall proceed in the direction of the flow of traffic. The removal of all signs and barricades shall begin at the end of the construction areas and proceed toward on-coming traffic.

At road closure locations where barricades are installed in a manner that will not allow the Contractor access to the project without relocation of one or more of the barricades, the arrangement of the barricades at the beginning of each work day may be changed, when approved by the Engineer, in a manner shown on Highway Standard 701901 for Road Closed to Through Traffic. At the end of each work day the barricades shall be returned to their in-line positions. This work will be considered included in the contract, and no extra compensation will be allowed.

Special attention is called to Articles 107.09, 107.14, 107.15, 107.16, and 107.20 of the Standard Specifications for Road and Bridge Construction, the following Highway Standards and Recurring Special Provisions relating to traffic control:

Standard Specifications:

Section 701 – Work Zone Traffic Control and Protection
Section 703 – Work Zone Pavement Marking
Section 783 – Pavement Marking and Marker Removal
Section 1106 – Work Zone Traffic Control Devices

Supplemental Specifications:
Section 701 - Work Zone Traffic Control and Protection
Section 1106 - Work Zone Traffic Control Devices

Highway Standards: 701001, 701006, 701101, 701106, 701301, 701311, 701427, 701501, 701602, 701701, 701801, 701901, and BLR 22-7

BDE Special Provisions:
Traffic Control Deficiency Deduction

Traffic Control Standards shall be applied as directed by the Engineers.

The Contractor shall furnish the name of the individual in his direct employ who is responsible for the installation and maintenance of the traffic control for this project. This person shall be able to be contacted on a 24-hour per day basis to furnish and maintain traffic control in case of an emergency. The Contractor shall be responsible to communicate with impacted property owners when their driveway/entrance will be shut down for any period of time.

The staging of the improvements will allow for a full closure of Main Street during the project as defined in the plans and below.

Pearl Street and Sumner Street reconstruction shall be staged to maintain access to all residences and business at all times during construction. Main Street and Allens Avenue construction shall be done under a complete roadway closure.

The Main Street and Chambers Street intersection shall remain operational to two-way traffic at all times during construction with the exception of the East Main Street leg which will be reconstructed as shown in the plans. Access shall be maintained at all times to all residences and businesses adjacent to the intersection. This may require the use of flaggers, steel plates, construction staging, etc. to maintain two-way traffic and access during construction. Traffic control devices shall not be used for staging and lane closures until work is ready to be completed within or adjacent to the intersection. Once work has begun at the intersection, it shall be completed in a timely manner. No work shall remain prior to any winter shutdowns.

Specific traffic control provisions have been added to the contract as commitments to the property owners. The commitments are for the property owners as noted below.

- **Property in the northwest quadrant of the Main Street and Chambers Street intersection:** Chambers Street (north of Main Street) will not be allowed to be closed at any time. There shall be no "Local Traffic Only" closures on Chambers Street. Through traffic will need to be accommodated at all times even if it is only one lane in one direction. One of the two southern driveways shall remain open

and accessible at all times during construction. When the contractor removes a driveway, he/she shall have it back in service within 7 days. In addition, in order to facilitate traffic to this property, Main Street (west of Chambers Street) shall not be closed for more than three (3) days.

- **Property in the southwest quadrant of the Main Street and Chambers Street intersection:** Continuous access must be maintained to the US Post Office building. One lane minimum of ingress must be maintained at all times to the northerly entrance to this building off Chambers Street. The contractor will be fined $10,000 per day if this entrance is completely closed.
- **Property in the southeast quadrant of the Main Street and Chambers Street intersection:** Available parking (4 spaces minimum) must be maintained for Alfano's Pizza at all times during construction. During construction of the proposed entrance pavement at Station 103+71.40 right, ingress and egress must be maintained to the existing Alfano's parking lot. Upon completion of the proposed entrance pavement, portions of the completed entrance pavement and existing paved areas on Alfano's Pizza property should be made available for Alfano's business parking. In addition, the contractor shall set aside and delineate pavement areas necessary for Alfano's Pizza business traffic to access the parking spaces. Construction equipment will not be allowed in these areas. Safe paths shall be delineated through the temporary easement area as required to convey pedestrian traffic from the parking areas to the business entrance.

TRAFFIC CONTROL AND PROTECTION (SPECIAL)

This work shall consist of furnishing, erecting, maintaining, and removing all signs and traffic control devices shown on the Traffic Control Plan Detour Signage sheets. All signs shall be erected prior to any roadway closures. The Contractor will be required to cover any conflicting signs when not in use.

For the construction of the Main Street Underpass, traffic will use the detour as shown on the Traffic Control Plan Detour Signage sheets.

All traffic control indicated on the detour plan sheets will be included in the cost of this pay item except for items such as changeable message signs, pavement marking removal, temporary pavement marking, and work zone pavement marking removal, which shall be paid for separately.

All warning signs shall be 36" x 36" fluorescent orange or as stated in the plans. The road closure limits may be adjusted as determined by the Engineer for work activities near the project limits. Access to existing entrances shall be provided at all times.

All traffic control and protection, except for additional flaggers, as described will be paid for at the contract lump sum unit price for TRAFFIC CONTROL AND PROTECTION (SPECIAL). Furthermore, Traffic Control Surveillance shall not be a separate item and will be incidental to this item.

NOTIFICATION OF ROAD CLOSURE

The contractor shall notify the Resident Engineer a minimum of 14 days prior to the actual road closure. The Resident Engineer will in turn notify the District 4 Bureau of Operations – Traffic Unit of the impending closure. This will allow time for the Resident Engineer to contact emergency services (police, fire, ambulance, etc.). Pedestrian Traffic will be maintained throughout the duration of construction activities.

The Contractor will not be allowed to close the road without the 14 day notice and failure to provide proper notice will delay the road closure. This notice of road closure is considered to be part of the Contractor's approved work schedule. Delays caused by failure to provide the required notice shall not be considered justification for additional work days.

DETOUR ROUTING

East and Westbound vehicular traffic along East Main Street will be routed to Farnham Street on the east and Kellogg Street/Seminary Street on the west as shown in the Traffic Control Plan Detour Signage. East and Westbound large truck traffic will be routed around the city via Interstate 74, Highway 34 and Henderson Street as shown in the Traffic Control Plan Detour Signage.

CONSTRUCTION ACCESS

The Contractor shall present a plan of access that will be used during construction of said project by the Contractor or Subcontractor to the Engineer at the time of the Pre-Construction Meeting. The Engineer and Contractor shall both examine the plan noting any areas of concern before construction begins.

Upon completion of the project the Engineer shall examine the streets prior to approving final payment to the Contractor. Any areas that have been damaged, due to construction activity, shall be repaired by the Contractor to the satisfaction of the Engineer. When work is complete, the Contractor shall arrange, within a reasonable time period, to clean up and restore areas where equipment or material has been stored on the right-of-way or easement. This work shall be included in the cost of the contract.

The Engineer may restrict the movement of construction vehicles on the completed surface in order to prevent damage to these surfaces.

EMBANKMENT

Effective: July 1, 1990 Revised: November 1, 2007

Revise the third paragraph of Article 205.06 of the Standard Specifications to read:

All embankment shall be constructed with not more than 110% of optimum moisture content, determined according to AASHTO T 99 (Method C). The 110% of optimum moisture limit may be waived in free draining granular material when approved by the Engineer.

The Contractor may, at his option, add a drying agent to lower the moisture content as specified above. The drying agent must be approved by the Engineer prior to use. Extra compensation will not be allowed for the use of a drying agent but will be considered included in the cost of the various items of excavation.

PROOF ROLLING

Effective April 23, 2004 Revised January 1, 2007

This work shall consist of proof rolling the subgrade with a fully loaded tandem axle dump truck and driver at the direction of the Engineer. The truck shall travel the subgrade in all of the proposed lanes of traffic in the presence of the Engineer.

This work will not be paid for separately, but considered included in the various earthwork pay items.

SUBGRADE TREATMENT

Effective July 1, 1990 Revised April 25, 2008

Revise first sentence of first paragraph of Article 301.04 as follows:

"When compacted, the subgrade shall have a minimum dry density of 95 percent of the standard laboratory dry density and a minimum immediate bearing value (IBV) of 3.0."

Delete the second paragraph (including subparagraphs a, b, and c) of Article 301.04 of the Standard Specifications and replace it with the following:

"In cut sections the contractor responsible for the rough grading shall obtain not less than 95% of the standard laboratory density and not more than 110% of the optimum moisture for the top 1' (300mm) of the subgrade.

The Contractor may, at his/her option, add a drying agent to lower the moisture content as specified. The drying agent must be approved by the Engineer prior to use. Additional compensation will not be allowed for the use of a drying agent, but will be considered as included in the cost of the various earthwork items."

In the first sentence of the third paragraph delete "above steps have" and replace with "work has."

ENVIRONMENTAL REVIEWS

Prior to use of any proposed borrow areas, use areas (temporary access roads, detours, run-arounds, etc.) and/or waste areas, the Contractor shall file the required environmental resource request surveys according to Section 107.22 of the Standard Specifications. These surveys are required in order for the Department to conduct cultural and biological resource surveys for the proposed site.

Prior to any waste materials being removed from the construction site, the required environmental resource surveys will need to be obtained and filed by the Contractor. Excess waste products removed from the construction site shall be disposed of as required in Section 202.03 of the Standard Specifications.

Any protruding metal bars shall be removed prior to the disposal of broken concrete at approved disposal sites.

The required environmental recourse documentation shall include the following:

BDE Form 2289 (Environmental Survey Request)
A location map showing the size limits and location of the use area
Signed Property Owner Agreement Form –D4 PIO100
Color photographs depicting the use area
Borrow Area Entry Agreement form – D4 PIO101

Please note that a minimum of two weeks shall be allowed for the District to obtain the required environmental clearances.

BORROW AND FURNISHED EXCAVATION

Effective march 7, 2000 Revised April 27, 2007

Add the following to the requirements of Article 204:

"Soils which demonstrate the following properties shall be restricted to the interior of the embankment and shall be covered on both sides and top with a minimum of 3 feet of non-restricted soil not considered detrimental in terms of erosion potential or excess volume change. A restricted soil is defined as having any one of the following properties."

A grain size distribution with less than 35% passing the number 75um (#200) sieve.
A plasticity index of less than 12.

A liquid limit in excess of 50.

"All restricted and non-restricted embankment materials shall have the following minimum strengths for the indicated moistures."

Immediate Bearing Value	Shear Strength At 95% Density*	Moisture
3.0	1000 PSF (50 Kpa)	120%
4.0	1300 PSF (62 Kpa)	110%

*Granular Soils ø=35°

EMBANKMENT (RESTRICTIONS)

Effective January 21, 2005 Revised August 3, 2007

Add the following to the requirements of Article 205.04:

Gravel, crushed stone or soils having less than 35% passing the number 200 sieve and other materials as allowed by Article 202.03 of the Standard Specifications are further restricted. These further restricted materials are also limited to the interior of the embankment and shall have a minimum cover of 3' (1 m) of non-restricted soil (see "Borrow and Furnished Excavation" Special Provision). Alternating layers of further materials may only be incorporated in to the embankment by using one of the following procedures:

The further restricted materials shall be placed in 4" lifts and disked with underlying lift material until a uniform and homogeneous material is formed having more than 35% passing the number 200 sieve.

Sand, gravel or crushed stone embankment when placed on the existing ground surface will be drained using a 10' (3 m) French drain consisting of nonwoven geotechnical fabric at the toe of the foreslope spaced 150' (46 m) apart. At locations requiring a French drain the 3' (1m) cohesive cap shall not be installed within the 10' by 10' riprap area. If the Engineer determines that the existing ground is granular free draining soil, the French drain may be deleted.

Sand, gravel or crushed stone embankment when placed on top of a cohesive embankment will be drained with a permanent 4" (100 mm) underdrain system. The underdrain system shall consist of a longitudinal underdrain on both sides of the embankment and traverse underdrains spaced at 250' (75 m) centers. The underdrain shall consist of a 2' (0.6 m) deep by 1' (0.3 m) wide trench, backfilled with FA4 sand and a 4" (100 mm) diameter underdrain. In addition, both sides of the embankment will

have a 6" (150 mm) diameter pipe drain which will drain the underdrain system and outletted into a permanent drainage structure or outletted by a headwall at the toe of the embankment.

The above work will not be paid for separately but shall be included in the cost of Earth Excavation, Furnished excavation, or Borrow Excavation.

SPECIAL EXCAVATION

This work shall be in accordance with applicable portions of Section 202 of the Standard Specifications. This work shall consist of the excavation, transportation and disposal of excavated material.

The removal of earth and abandoned utility conduit/wires, including but not limited storm sewer, sanitary sewer, water main, gas, and cable are included in the cost of Special Excavation pay item. The removal of the existing manholes and inlets will be paid for separately and not included in the cost of Special Excavation.

This work will be paid for at the contract unit price per cubic yard for SPECIAL EXCAVATION.

AGGREGATE SUBGRADE IMPROVEMENT

This work shall be in accordance with the Bureau of Design and Environment (BDE) Special Provision for Aggregate Subgrade Improvement (80274) and as specified herein.

Aggregate Subgrade Improvement shall be placed in accordance with the limits shown on the plans. The Contractor will be allowed to place the aggregate up to six (6) inches outside of the limits of the PCC pavement in order to construct a solid pavement platform. Compensation will not be allowed for any additional aggregate that is placed outside of the six (6) inch limit.

STORM SEWER (WATER MAIN QUALITY PIPE)

The storm sewer shall be constructed to the lines and grades shown in the plans and according to applicable portions of Section 550 of the Standard Specifications and as specified herein.

Storm sewer pipes designated as "Water Main Quality Pipe" will require water main quality pipe due to the proximity to the existing water main. This pipe shall be Polyvinyl Chloride (PVC) conforming to AWWA C 900 or C 905. Pipe shall be rated at 160 pounds per square inch (psi). Elastomeric seals (gaskets) used for push-on joints shall

comply with ASTM F 477, and shall be pressure rated in accordance with ASTM D 3139.

Basis of Payment: This work shall be paid for at the contract unit price per foot for STORM SEWER, (WATER MAIN QUALITY PIPE) of the type and size specified.

NPDES PERMIT

The Engineer will apply for and obtain a National Pollutant Discharge Elimination System Construction General Permit (NPDES CGP) prior to beginning construction.

The CGP has four main elements:
Notice of Intent (NOI)
Storm Water Pollution Prevention Plan (SWPPP)
Incident of Non-Compliance (ION)
Notice of Termination (NOT)

The Notice of Intent (NOI) serves as the application for the CGP. It is the contractor's responsibility to submit the NOI form and be in compliance with all NPDES requirements. A Notice of Intent must be post-marked at least thirty days prior to the commencement of any construction activity on site. The Erosion Control Plan sheets will convey the information required for a Storm Water Pollution Prevention Plan (i.e. drainage patterns, area of soil disturbance, location of storm water discharges, etc.). The Contractor shall be responsible for having these plan sheets available for viewing during business hours at the project site. An Incident of Non-Compliance must be completed and submitted to the IEPA if, at any time, an erosion or sediment control device fails.

PCC AUTOMATIC BATCHING EQUIPMENT

Effective: April 23, 2010

Portland cement concrete provided shall be produced rom batch plants that conform to the requirements of Article 1103.03 (a) and (b) of the Standard Specifications for Road and Bridge Construction. Semi-automatic batching will not be allowed.

In addition, the batching plant shall be a computerized plant interfaced with a printer and shall print actual batch weights, added water, tempering water, mixing time, and amount of each additive per batch. At the discretion of the Engineer, archived electronic versions of batch proportions will be acceptable. Truck delivery tickets will still be required as per Article 1020.11 (a) (7).

PCC QC/QA ELECTRONIC REPORTS SUBMITTAL

Effective: April 26, 2013 Revised April 26, 2015

The Contractor's QC personnel shall be responsible for electronically submitting PRO and IND MI 654 Air, Slump, Quantity Reports, PRO MI 655 PCC Strength Reports, and MI 504 Field/Lab Gradations to the Department. The format for the electronic submittals will be the PCC QC/QA reporting program, which will be provided by the Department. Microsoft Office 2007 or newer is required for this program which must be provided by the Contractor.

HOT-MIX ASPHALT SURFACE REMOVAL, VARIABLE DEPTH

This work shall consist of the partial variable depth removal of the existing pavement in preparation for placement of final overlay as shown in the plans. The pavement shall be removed in accordance with Section 440 of the Standard Specifications.

At locations noted on the drawings, the existing HMA surface shall be removed in variable depths in order to conform to the grading of the proposed surface. The existing surface shall be removed such that the final minimum thickness of the proposed pavement is 2 ¼ inches.

This work shall be paid for at the contract unit price per square yard for HOT-MIX ASPHALT SURFACE REMOVAL, VARIABLE DEPTH.

HOT-MIX ASPHALT SURFACE COURSE SURFACE TESTS

Effective: November 1, 2003 Revised January 1, 2007

The Contractor shall provide a person to operate the straight edge in accordance with Article 406.11 of the Standard Specifications and communicate with City/IDOT personnel to minimize the surface course bumps. If surface course bumps cannot be removed at this time, IDOT personnel will record the locations and provide deductions as stated in Article 406.11.

BRICK SIDEWALK REMOVAL

The work shall be in accordance with the applicable portions of Section 440 of the Standard Specifications.

This work includes the careful removal of the existing brick sidewalk. This consists of removal of the existing brick wearing surface and the PCC base course (existing roadway only and if present). The brick wearing surface shall be removed separately

from the base course. The bricks shall then be hauled separately to an off-site location for cleaning and palletizing. The Contractor shall properly dispose of waste materials produced by the cleaning process.

Bricks to be re-laid on this project may be stored at the job site provided proper security and traffic protection measures are taken. All bricks shall be temporarily palletized and shrink-wrapped, using standard-sized durable pallets (to be furnished by the Contractor.) Pallets shall not be stacked over three pallets high nor should there be more than eight layers of bricks per pallet, nor shall the total weight of the bricks exceed the pallet manufacturer's weight limits. Bricks to be re-laid may also be stored off-site at a location provided by the Contractor. Regardless of the storage location, the Contractor shall be responsible for any brick broken due to carelessness or lost due to theft. These bricks shall be replaced by the Contractor at his/her expense. Upon return to the jobsite, the bricks will be inspected; all uncleaned or broken brick shall not be used. No full, partial, or broken bricks are to be disposed of unless approved by the Resident Engineer. Cleaned and palletized brick that are not re-laid as part of the improvements shall be transported to the City of Galesburg's brick storage areas at Gunther Construction A4 asphalt plant outside of Galesburg.

This work shall be paid for at the contract unit price per square foot for BRICK SIDEWALK REMOVAL.

RELOCATE EXISTING LIGHT POLE ONTO NEW FOUNDATION

This work shall be done in accordance with Section 844 of the Standard Specifications except as modified herein. Any damage done to the light posts/poles during the relocation process shall be repaired to the satisfaction of the Engineer at the Contractor's expense. The existing foundation shall be removed according to Section 842 of the Standard Specifications. A new foundation (30" diameter and 6'-6" in depth) shall be poured in place at the locations noted on the plans according to Section 836 of the Standard Specifications and the applicable IDOT Standard Drawing. The bolt pattern shall be modified as necessary to match the bolt pattern of the existing light pole to be relocated. Conduit and wiring shall be removed and replaced in kind as required to connect the light to the existing system. The location of the new foundation shall be coordinated with the City of Galesburg.

This work will be paid for at the contract unit price per each for RELOCATE EXISTING LIGHT POLE ONTO NEW FOUNDATION which shall include all labor, foundation removal and placement, conduit, wiring and other materials necessary to complete the work as specified herein.

FOUNDATION REMOVAL

This work shall consist of the removal of an existing concrete foundation at the location noted in the plans.

A concrete foundation that once supported a large billboard sign exists at one location noted in the plans. The general horizontal dimensions of the foundation to be removed are 8 foot by 8 foot. The depth of the concrete foundation is 9 foot. The foundation exists in an area that will be excavated for construction of the roadway. Therefore, backfilling of the concrete foundation will not be necessary. The contractor shall be responsible to remove all pieces of the concrete foundation from the project site.

This work will be paid for at the contract unit price per each for REMOVE EXISTING CONCRETE FOUNDATION.

REMOVE EXISTING CONCRETE FOUNDATION

This work shall consist of the removal of existing concrete foundations at locations noted in the plans.

Existing concrete foundations exist at two locations noted in the plans. The contractor shall be responsible to completely remove the foundation to an elevation of not less than one (1) foot below the proposed elevation of subgrade or ground surface. Trench backfill shall be used to fill the hole resulting from the removal of the foundation.

This work will be paid for at the contract unit price per each for REMOVE EXISTING CONCRETE FOUNDATION.

FENCE REMOVAL

This work shall consist of the removal of existing fence at locations noted in the plans.

All components of the existing fence shall be removed to at least one (1) foot below the existing ground line, or as required for the construction of adjacent proposed improvements. If any holes are created by the removal of the fence, they shall be backfilled with suitable material approved by the Engineer. All debris resulting from this operation shall be removed from the project site.

This work will be paid for at the contract unit price per foot for FENCE REMOVAL.

SANITARY MANHOLES TO BE ADJUSTED WITH NEW TYPE 1 FRAME, CLOSED LID

This work shall consist of adjusting sanitary manholes with a new frame and lids/grates to the elevations as noted on the plans.

Precast concrete adjusting rings or cast-in-place concrete shall be constructed to adjust structure to the required elevation. The existing frame and lid shall be removed and replaced with a new Type 1, Frame and Closed Lid. For placing of castings adjacent to rigid pavement, the castings shall be placed in full mortar beds. Castings shall be set to the finished pavement elevation so no subsequent adjustment will be necessary.

This work shall be paid for at the contract unit price per each for SANITARY MANHOLES TO BE ADJUSTED WITH NEW TYPE 1 FRAME, CLOSED LID.

SANITARY MANHOLES TO BE REMOVED

This work shall consist of removing existing sanitary manholes.

This work will be done in general accordance with Section 605 of the Standard Specifications. At the City's discretion, the contractor shall salvage the existing frames and grates and deliver them to the City of Galesburg.

This work shall be paid for at the contract unit price per each for SANITARY MANHOLES TO BE REMOVED.

WATER VALVES TO BE ADJUSTED

This work shall consist of adjusting existing potable water valves to the elevations as noted on the plans.

The top of the water valve shall be set to the finished pavement elevation so no subsequent adjustment will be necessary.

This work shall be paid for at the contract unit price per each for WATER VALVES TO BE ADJUSTED.

TRENCH DRAIN

This work shall consist of installing a trench drain at the locations specified in the plans. The trench drain shall be Neenah R-4996-A1, Type Q Grate, Bottom Outlet, or approved equal. This work will be paid for at the contract unit price per foot for TRENCH DRAIN.

ANALYSIS AND DISPOSAL OF REGULATED SUBSTANCES

This work shall be performed in accordance with Article 669 of the Standard Specifications and as supplemented with this special provision.

General: Implementation of this Special Provision will likely require the Contractor to subcontract for the execution of certain activities. It will be the Contractor's responsibility to assess the working conditions and adjust anticipated production rates accordingly.

A Preliminary Site Investigation (PSI) of the properties that may be disturbed during construction of the proposed Seminary/Kellogg Street overpass was performed. The PSI addresses the recognized environmental conditions (RECs) identified in a November 2009 Preliminary Environmental Site Assessment (PESA) performed by the Illinois State Geological Survey (ISGS) for the project area. Seven soil borings were completed to determine if the identified RECs may have impacted the project construction limits. The results of the soil sampling did not indicate soil contamination would be encountered during construction of the project that would require environmental remediation, construction worker protection, or special management of excavated materials. These conclusions are based on soil sample results collected at specific locations and may not be representative for all construction activities in connection with this project.

There are two properties within the project limits however that will require special attention by the contractor. Those properties are the Cedar Creek Channel at Peck Street and 57 North Kellogg Street. There were RECs at these locations due to water quality issues in the creek and the property at 57 North Kellogg Street being used as a dry cleaning business in the past. Borings during the design phase of the project could not be taken at these two locations.

During construction, for excavations from the two properties listed above, the contractor is required to observe and field-screen for potential presence of contaminants during construction. If field observations and/or screening results indicate the potential presence of contaminants, the contractor shall provide soil sampling and analyses of excavated soil. This work will be paid for at the contract unit price per each for SOIL DISPOSAL ANALYSIS.

If contaminated soils are found, the removal and disposal of this material will need to be done in accordance with the BDE Special Provision 80283. As the existence of contaminated material is not known, a nominal quantity of soil to be removed and disposed has been established as part of the improvements. This work will be paid for at the contract unit price per cubic yard for NON-SPECIAL WASTE DISPOSAL.

SIMULATED LARGE STONE ASHLAR FORM LINER

Description of Work
This work shall consist of designing, developing, furnishing and installing form liners and forming concrete using reusable, high-strength urethane form liners to achieve the concrete treatment as shown in the drawings and special provisions. Form lined surfaces shall include the front face of soldier pile retaining wall. Work shall be performed in accordance with applicable portions of Sections 504 of the Standard Specifications and as specified herein.

Form Liner Pattern
The pattern shall simulate 6" to 60" random ashlar stone with a maximum 1 ½" to 2" relief.

The following form liner patterns provide the intended appearance:
Custom Rock International #1501-R2, St. Paul, MN (800-637-2447)
Milestones Incorporated MS-1002 or MS-4001, Hudson, WI (715-381-9660)

Other similar form liners may be used with the approval of the engineer.

Shop Drawings and Mockups
The Contractor shall submit plans for the form liner pattern along with an installation procedure for approval by the Engineer.

The Contractor shall construct a cast-in-place concrete mockup containing the form liner surface. The mockup shall be a minimum of 2 ft x 4 ft x 6 in and shall be located on the site as directed by the Engineer. The mockup shall include examples of the various conditions required for construction of the wall, such as liner joints, construction joints, and expansion joints. Additional mockups shall be prepared when the initial mockup is found to be unsatisfactory as determined by the Engineer. After approval of the mockup, construction may proceed using the mockup as a quality standard.

Method of Measurement
Form liner textured surfaces will be measured for payment in place and the area computed in square feet. Mockups will not be measured for payment.

Basis of Payment
Form liner textured surfaces will be paid for at the contract unit price per square feet for FORM LINER TEXTURED SURFACE.

FENCE (SPECIAL) AND ORNAMENTAL HANDRAIL, SPECIAL

1. Description
   This work shall consist of furnishing and installing FENCE (SPECIAL) and ORNAMENTAL HANDRAIL, SPECIAL. The work includes but is not limited to

coordination, submittals, materials, fabrication, finishing, transportation, installation, and all other miscellaneous elements required for complete provision of the railings. Work shall comply with section 509 of the Standard Specifications.

2. General
    a. Performance Requirements
        i. Provide a comprehensive 10-year warranty on finish system for the fence and the handrail.
    b. Submittals
        i. Mockup: Submit mockups consisting of a minimum 2 feet of complete Bridge Fence Railing and of a minimum 2 feet of complete Parapet Railing with the proposed finish system including galvanizing and finish coats. Submit the mockups for approval by the Engineer. Resubmit until approval is obtained. Do no fabricate railings until the mockups have been approved.
        ii. Product Data: Submit product data for each type of product indicated:
            1. Steel components: structural steel tubing, plates, splices
            2. Fasteners
            3. Finish Systems – Including factory and field applied systems.
        iii. Material Certifications: Submit material certifications signed by manufacturers certifying that each of the following items complies with requirements:
            1. Steel
            2. Fasteners
            3. Finish Systems
        iv. Shop Drawings: Detail fabrication and installation of fence and handrail, indicated plans, elevations, dimensions, shapes, cross sections and limits of each finish.
            1. Show fence and handrail layouts and indicate post and panel types, sizes, orientations and locations. Indicate critical adjacent rustication and joints.
            2. Indicate welded connections by AWS standard symbols. Detail loose and cast-in hardware, inserts, connections, and joints, including accessories.
            3. Indicate locations and details of anchorage devices to be embedded in other construction.
        v. Test results, certified by an independent testing laboratory, from test required in section 3.a.v.
3. Materials
    a. Finish
        i. All posts, railings, anchor devices, plates, and structural steel tubing shall be hot-dip galvanized after shop fabrication according to AASHTO M111. All bolts, nuts, washers, and anchor rods shall be galvanized according to AASHTO M232. Stainless Steel

materials shall not be galvanized. Galvanizing shall be smooth and free of drops, spikes, inclusions, blobs, etc. and otherwise optimized to achieve a smooth finished surface.

ii. Prior to finish coat, mechanically clean galvanized surfaces to smooth the surface and remove large deposits from the galvanizing process. Do not damage or remove the galvanizing material as to compromise the corrosion resistance of the system. Alternately, provide other approved method(s) to ensure smooth final finished surface.

iii. Prior to finish coat, mechanically clean and roughen stainless steel elements with sandblast for optimal coating adhesion.

iv. Finish all exposed surfaces of the fence with 2 coats of an electrostatic polyester, TGIC powder coating, colored black (Munsell Number N1), with high UV stability, impact, corrosion, heat and humidity resistance. The combined total thickness of the two finish coats shall be a minimum of 6 mils.

v. Finish system shall meet or exceed the following:
   1. ASTM B117 Salt Spray (fog) test – 1,000 hrs. The coated steel shall exhibit no visible evidence of rust.
   2. ASTM D3363 Hardness, ASTM D2793 Direct Impact, ASTM D822 Weatherability.
   3. ASTM D3363 Mechanical Adhesion Test

vi. The exposed heads and nuts of all hot-dip galvanized anchor rods shall be spot painted with an approved paint system to match finish color. The surface to be painted shall first be cleaned with an approved solvent.

vii. Any damage to the coatings will be repaired promptly in accordance with the manufacturer's recommendations or replaced with undamaged components. Repairs shall be subject to approval by the Engineer. Finish all damaged, cut or other surfaces not powder coated, subject to approval by the Engineer, with zinc-rich primer (if not already galvanized) & high performance finish coat, compatible with factory coating system, to match finish color.

4. Tolerance

Openings between pickets and between the railings and adjacent surfaces shall not exceed 6".

5. Method of Measurement

Fence (Special) and Ornamental Handrail, Special will be measured for payment in place in feet. The length measured will be the overall length along the top longitudinal railing member through all posts and gaps.

6. Basis of Payment

This item shall be paid for at the contract unit price per foot for FENCE (SPECIAL) and ORNAMENTAL HANDRAIL, SPECIAL, which price shall include all material, hardware, installation, transportation, cleaning, and finishing.

CONCRETE SURFACE COLOR TREATMENT

Description: This work shall consist of furnishing all labor, materials, and equipment for the application of a concrete surface color treatment to the locations shown on the plans.

General: The concrete surface color treatment shall be a two-part, colored cementitious coating. This coating shall be opaque, high-strength, extremely UV-resistant and suitable to apply to vertical surfaces. BRICKFORM Cem-Coat is an approved product for the Concrete Surface Color Treatment. Alternate products will be allowed but must meet this specification and be approved by the Engineer.

Construction Requirements: The preparation of the concrete surfaces and application of the concrete coating shall be done in such a manner as to not damage the concrete and according to the manufacturer's written instructions.

The color of the concrete coating should be Blue, Munsell No. 10B 3/6. Submit samples to the Engineer, for approval, on actual substrate in the blue color to verify preliminary selections made under sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

Store the coating materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45°F to protect from freezing.

Prior to the application of the concrete coating, the surface shall be clean and free of laitance, dirt, films, paint, coatings, or other foreign matter. Surfaces are to be dry prior to application. The coating should only be applied after the concrete has fully cured, at least 28 days.

The contractor shall use the moisture vapor evaporation rate test per ASTM F1869 to ensure that the rate of moisture vapor emission from the concrete surface is not exceeding 5 pounds per 1000 square feet per 24 hours. The contractor shall also perform relative humidity tests per ASTM F2170 to ensure the humidity is below 75%.

The coating shall either be sponge, roll or brush applied to the concrete surfaces. If a second coat is required, the second coat shall be applied after two hours of the previous coat but within twenty four hours. Apply each coat according to the manufacturer's written instructions. Use equipment recommended in writing by the manufacturer for material and texture required, and apply the material at not less than manufacturer's recommended spreading rate.

Mix prepackaged ingredients together according to the manufacturer's written instructions. Mix together with mechanical mixer or by hand to required consistency. Mix proportions of the ingredients vary by manufacturer and application equipment type.

Apply coating only when temperature of surfaces to be coated and ambient air temperatures are between 55 and 80°F.

The concrete coating should be allowed to cure before the application of the concrete sealer. Clean spattered coating by washing, scraping, or other methods without damaging the concrete or coating.

Comply with the manufacturer's written instructions for recommendations on curing procedures.

Method of Measurement: This work will be measured for payment in units of square feet, at the locations specified.

Basis of Payment: This work will be paid for at the contract unit price per square foot for CONCRETE SURFACE COLOR TREATMENT. Price shall be payment in full for all labor, materials, and equipment necessary for the application of the coating and sealer.

PRECAST PRESTRESSED CONCRETE FASCIA BEAM

Description: This work shall consist of furnishing all labor, material, and equipment for the fabrication and erection of a precast prestressed concrete fascia beam including the curb on top of the fascia beam, and lettering on the east side center fascia beam.

General: Except as otherwise specified hereafter, the current Standard Specifications for Road and Bridge Construction, Section 504 – Precast Concrete Structures and Section 1042 – Precast Concrete Products, shall apply to all work under this section.

Construction Requirements: Fly Ash, Slicafume and/or slag cement and any other admixtures, approved by the Engineer, shall be in addition to the minimum cement content listed in the Standard Specifications for Road and Bridge Construction, Section 1020-Portland Cement Concrete, not in lieu of cement.

Lifting loops shall be provided by the fabricator. The type and locations shall be shown on the shop drawings for each member. The area around all lifting loops shall be recessed so that the loops can be removed to a depth of ¾ in. and grouted.

Method of Measurement: This work will be measured for payment by the foot. In determining the total length of beams to be paid for, the specified overall length of the individual beams will be used.

Basis of Payment: This work will be paid at the contract unit price per foot for PRECAST PRESTRESSED CONCRETE FASCIA BEAM. Price shall be payment in full for all labor, materials, and equipment for fabrication and erection of the precast prestressed concrete fascia beam.

PRECAST CONCRETE SUBSTRUCTURE

Description: This work shall consist of furnishing and installing the precast concrete substructure members shown on the plans (including abutment caps, pier caps, wingwalls and closure walls), including all bolts, miscellaneous steel noted and welding required for attachment.

General:

Except as otherwise specified hereafter, the current Standard Specifications for Road and Bridge Construction, Section 504 – Precast Concrete Structures and Section 1042 – Precast Concrete Products, shall apply to all work under this section.

Construction Requirements:

Fly Ash, Silcafume and/or slag cement and any other admixtures, approved by the Engineer, shall be in addition to the minimum cement content listed in the Standard Specifications for Road and Bridge Construction, Section 1020 – Portland Cement Concrete, not in lieu of cement.

Lifting loops or anchors shall be provided by the fabricator. The type and locations shall be shown on the shop drawings for each member. The area around all lifting loops shall be recessed so that the loops can be removed to a depth of ¾" and grouted. The recesses around lifting anchors shall be filled with cement grout to the top of surrounding concrete.

Basis of Payment: This work shall be paid for at the contract lump sum price for PRECAST CONCRETE SUBSTRUCTURE.

WATER MAIN REMOVAL

This work shall consist of the removal of existing water main at locations noted in the plans.

Excavation of trenches necessary to remove the existing water main shall be performed according to the applicable requirements of Article 550.04 of the Standard Specifications. Backfill of trenches shall be performed according to applicable requirements of Article 550.07. Sewer and water main shall be disposed of in accordance with Article 202.03.

This work will measured for payment in place in feet. This work will be paid for at the contract unit price per foot for WATER MAIN REMOVAL, of the diameter specified. Backfilling of the trench shall be included in the cost per foot for WATER MAIN REMOVAL.

PROTECTION OF FRAMES AND LIDS OF UTILITY STRUCTURES

Effective March 6, 1991 Revised January 1, 2007

This work shall consist of protecting frames and lids of utility structures in the pavement after the adjacent hot-mix asphalt surface has been removed to the required depth by cold milling or by hand methods.

After the area has been swept clean and before the lane is opened to traffic, a hot bituminous mixture shall be placed around the casting, flush with its surface and decreasing to a featheredge in a distance of 4 feet around the entire surface of the casting. Cold mix or milled material will not be permitted. This mixture shall remain in place until the day surfacing operations are undertaken within the immediate area of the structure. Prior to placing the surface course, the temporary hot-mix asphalt mixture shall be removed and disposed of by the Contractor as specified in Article 202.03 of the Standard Specifications.

The temporary tapers and their removal shall be considered included in the contract unit price per square yard for HOT-MIX ASPHALT SURFACE REMOVAL, VARIABLE DEPTH, and no additional compensation will be allowed.

REMOVING INLETS/MANHOLES

This work shall consist of removing existing manholes and inlets.

This work will be done in general conformance with Article 605 of the Standard Specifications. The Contractor shall salvage the existing frames and grates and deliver them to the City of Galesburg Street Department.

This work will be paid for at the contract unit price per each for REMOVING INLETS and REMOVING MANHOLES.

PORTLAND CEMENT CONCRETE SIDEWALK

This work shall consist of constructing portland cement concrete sidewalk and sidewalk accessibility ramps on a prepared subgrade.

All sidewalk will be constructed with a maximum cross slope of 2%. The subgrade shall be tamped and rolled until thoroughly compacted and to the correct grade. Additional earth or aggregate required to bring the subgrade up to the correct elevation shall be included in the pay item PORTLAND CEMENT CONCRETE SIDEWALK. For sidewalk adjacent to the back of curb, Contractor shall provide expansion material between the concrete. The joint between the back of curb and the sidewalk shall be filled with ¾ inch Preformed Expansion Joint Filler. At locations of curb ramps where vertical side walls are specified and indicated in the plan details, the construction of the side walls is included in the cost of the sidewalk pay item.

This work will be paid for at the contract unit price per square foot for PORTLAND CEMENT CONCRETE SIDEWALK.

PORTLAND CEMENT CONCRETE DRIVEWAY

This work shall consist of constructing portland cement concrete driveway on a prepared subgrade.

The subgrade shall be tamped and rolled until thoroughly compacted and to the correct grade. Four (4) inches of AGGREGATE SUBGRADE IMPROVEMENT shall be placed under the driveway and compacted. Additional earth or aggregate required to bring the subgrade up to the correct elevation shall be included in the pay item PORTLAND CEMENT CONCRETE DRIVEWAY. For driveway adjacent to the back of curb, Contractor shall provide expansion material between the concrete. The joint between the back of curb and the driveway shall be filled with ¾ inch Preformed Expansion Joint Filler. Any Earth Excavation required to bring the driveway to plan grades shall be included in the cost of the aggregate base (AGGREGATE SUBGRADE IMPROVEMENT).

This work will be paid for at the contract unit price per square foot for PORTLAND CEMENT CONCRETE DRIVEWAY PAVEMENT, of the thickness specified.

CONCRETE STEPS AND STAIR SIDE RAILING

This work shall consist of construction of concrete steps and railing at locations noted on the plans.

The existing sidewalk shall be saw cut at the limits of the concrete steps or sidewalk to be removed. All debris resulting from this operation shall be removed from the project

site. Preformed Expansion Joint Filler will be placed at the saw cut location between the existing sidewalk and the proposed concrete steps or sidewalk. The concrete steps shall be constructed in accordance with the details noted on the plans. All reinforcement shall be epoxy coated and shall be included in the cost of the Concrete Steps.

Also included in the construction of the concrete steps is the installation of handrail. The handrail shall be installed in accordance with the details noted in the plans.

This work will be paid for at the contract unit price per square foot for CONCRETE STEPS and at the contract unit price per foot for STAIR SIDE RAILING. The price will include all materials, equipment and labor necessary to complete the work. The cost of the Toe Kick, when indicated, shall be included in the contract unit price per Foot for STAIR SIDE RAILING.

CONCRETE CURB (SPECIAL)

This work shall be in accordance with the applicable portions of Section 606 of the Standard Specifications and as detailed in the plans.

Basis of Payment: This work shall be paid for at the contract unit price per foot for CONCRETE CURB (SPECIAL) which shall be payment in full for all materials, labor, tools and equipment necessary to complete the work.

COMBINATION CONCRETE CURB AND GUTTER, TYPE M (MODIFIED)

This work shall be in accordance with the applicable portions of Section 606 of the Standard Specifications and as detailed in the plans.

Basis of Payment: This work shall be paid for at the contract unit price per foot for COMBINATION CONCRETE CURB AND GUTTER, TYPE M (MODIFIED) which shall be payment in full for all materials, labor, tools and equipment necessary to complete the work.

STAMPED COLORED PORTLAND CEMENT CONCRETE

This work shall consist of furnishing and installing a integrally colored portland cement concrete pavement with a stamped and accent colored surface, constructed on a prepared subbase as detailed herein for a thickness and at locations shown on the plans. This work will be in accordance with Section 420 of the Standard Specifications for Road and Bridge Construction.

The coloring of the concrete shall generally be of red color to simulate the brick pavement and brick sidewalk color throughout the City. The proposed Integral Color and Accent-Colour Release agent to be used will be approved by the City.

Submittals
The Contractor shall submit a sample of the pattern for approval of the color and pattern prior to placing any materials.

Pattern
The pavement finish shall be as detailed in the plans. The proposed grooves in the pavement shall formed by using latex mat pressed into wet concrete.

Execution
The Contractor will be required to prepare a minimum one (1) square yard full-scale mock-up sample. Actual job specific materials, colors, methods, and workmanship shall be provided by the Contractor. The accepted mock-up will be the standards by which remaining work will be evaluated for technical and aesthetic merit. The mock-up may be in a location of proposed installation where it may remain if approved by the Engineer.

METHOD OF MEASUREMENT:
This work will be measured for payment in place and the area computed in square yard.

BASIS OF PAYMENT:
This work will be paid for at the contract unit price per square ~~foot~~ for STAMPED COLORED PORTLAND CEMENT CONCRETE.

STAMPED COLORED PORTLAND CEMENT CONCRETE SIDEWALK, 5"

This work shall consist of furnishing and installing a integrally colored portland cement concrete sidewalk with a stamped and accent colored surface, constructed on a prepared subbase as detailed herein for a thickness and at locations shown on the plans. This work will be in accordance with Section 420 of the Standard Specifications for Road and Bridge Construction.

The coloring of the concrete shall generally be of red color to simulate the brick pavement and brick sidewalk color throughout the City. The proposed Integral Color and Accent-Colour Release agent to be used will be approved by the City.

Submittals
The Contractor shall submit a sample of the pattern for approval of the color and pattern prior to placing any materials.

Pattern
The sidewalk finish shall be as detailed in the plans. The proposed grooves in the sidewalk shall formed by using latex mat pressed into wet concrete.

Execution
The Contractor will be required to prepare a minimum one (1) square yard full-scale mock-up sample. Actual job specific materials, colors, methods, and workmanship shall be provided by the Contractor. The accepted mock-up will be the standards by which remaining work will be evaluated for technical and aesthetic merit. The mock-up may be in a location of proposed installation where it may remain if approved by the Engineer.

METHOD OF MEASUREMENT:
This work will be measured for payment in place and the area computed in square feet.

BASIS OF PAYMENT:
This work will be paid for at the contract unit price per square foot for STAMPED COLORED PORTLAND CEMENT CONCRETE SIDEWALK, 5".

STORM SEWER

The storm sewer shall be constructed to the lines and grades shown in the plans and according to applicable portions of Section 550 of the Standard Specifications and as specified herein.

All storm sewer used on the project, with the exception of STORM SEWER (WATERMAIN REQUIREMENT) shall be a Reinforced Concrete Culvert Pipe (RCCP) in accordance with Article 1042 of the Standard Specifications.

Basis of Payment: This work shall be paid for at the contract unit price per foot for STORM SEWER, CLASS A, of the type and size specified.

PIPE UNDERDRAIN 4"

The pipe underdrain shall be constructed to the lines and grades shown in the plans and according to Section 601 of the Standard Specifications and as specified herein.

Segmental Concrete Block Wall will be constructed at locations shown on the plans. PIPE UNDERDRAIN FOR STRUTCURES 4" is required to be constructed at locations noted in the IDOT District 4 Highway Standard 660101-04 and will be paid for at the contract unit price per foot for PIPE UNDERDRAIN FOR STRUCTURES 4". The contractor will be responsible to construct a four inch pipe underdrain from the low point of the underdrain installed for the segmental block structure at locations noted on the

plans and convey this underdrain to the nearest storm sewer inlet or manhole. The contractor will be permitted to substitute a non-perforated pipe for this outlet pipe.

Basis of Payment: This work shall be paid for at the contract unit price per foot for PIPE UNDERDRAINS 4".

ENGINEER'S FIELD OFFICE, TYPE A (SPECIAL)

This item shall consist of furnishing and maintaining an Engineer's Field Office as specified in Article 670.01 of the Standard Specifications and herein.

The field office shall have a ceiling height of not less than seven (7) feet and a floor space of not less than 2000 square feet. The office shall be provided with sufficient heat, natural or artificial light and air conditioning. Doors and windows shall be equipped with locks approved by the Engineer.

Adequate all weather parking space shall be available to accommodate a minimum of twenty (20) vehicles. Sanitary facilities shall include hot and cold potable running water, lavatory and toilet as an integral part of the office. Solid waste disposal consisting of ten waste baskets and an outside trash container of sufficient size to accommodate a weekly provided pick-up service. Weekly garbage pickup service shall be provided.

The Contractor shall provide the following equipment and furniture meeting the approval of the Engineer.

- Eight desks with minimum working surface 6 foot by 4 foot each.
- Two desks with minimum working surface 3.5 foot by 2.5 foot with height adjustment of 23 inches to 30 inches for computer use.
- Ten non-folding office chairs on wheels with upholstered seats, arm rests and backs.
- Three 4-post drafting tables with minimum top size of 37.5 inches by 48 inches. The top shall be basswood or equivalent and capable of being tilted through an angle of 50 degrees. Three adjustable height drafting stools with upholstered seats and backs shall be provided.
- Three freestanding file cabinets with locks, legal size, four drawers, with an Underwriter's Laboratories insulated file device 350 degrees one hour rating.
- Fifteen folding chairs or stackable chairs.
- One equipment cabinet with lock of minimum dimension of 44 inches by 24 inches by 30 inches deep. The walls shall be of steel with a 2 mm minimum thickness with concealed hinges and enclosed lock construction in such a manner as to prevent entry by force. The cabinet assembly shall be permanently attached to a structural element of the office in a manner to prevent theft of the entire cabinet.

- One office-style refrigerator with a minimum size of 16 cubic feet with a freezer unit.
- Four electric desk type tape printing calculators and four pocket scientific notation calculators with a 1000 hour battery life.
- Five telephones, including at least two cordless phones, and three telephone answering machines (or voice mail feature on 3 phone lines). One telephone shall have speaker phone capability. Six telephone lines shall be provided including one for the fax machine and two modems. Additional features on the three voice lines shall include caller ID and 3-way calling.
- One photocopy machine (including maintenance and operating supplies) capable of copying field books. Supply paper and trays for 8.5 inch by 11 inch, 8.5 inch by 14 inch, and 11 inch by 17 inch sizes. The copier shall be completed with automatic feed and sorter.
- One telecommunication fax machine, including maintenance and operating supplies. The fax machine shall use plain paper. One table for the fax machine.
- One electric water cooler dispenser.
- One first-aid cabinet fully equipped.
- Two dry-erase marker boards minimum size 28 inch by 40 inch with markers and erasers.
- Four bulletin boards minimum size 28 inch by 40 inch.
- One microwave oven
- One conference table or group of tables which can be arranged together to create a table that will seat at least 15 people.
- One storage cabinet minimum size 18 inches wide by 12 inches by 60 inches with four adjustable shelves.
- Bookshelves – A minimum of 12 inches deep and a minimum total available length of 100 foot.
- DSL or internet connection.

The office space shall be maintained and kept in a clean condition, and free of insects and rodents, at all times. The Contractor shall provide a janitorial and/or cleaning service a minimum of once a week. Windows should be cleaned as directed by the Engineer. Maintenance shall include, but not be limited to, paper towels, soap, toilet paper, and other necessary supplies. No additional compensation will be allowed for providing this service, but it shall be included in the item ENGINEER'S FIELD OFFICE, TYPE A (SPECIAL).

An electronic security system that will respond to any breach of exterior doors and windows with an on-site alarm shall be provided. The Contractor shall be responsible for security of the field office building and is liable for damages incurred as a result of vandalism, theft, and other criminal activities. Broken windows shall be replaced at no additional cost.

The Contractor will be responsible for systems maintenance and repairs, which shall include the heating, cooling, sanitary, and water distribution systems and light bulb replacements. Fire extinguishers meeting the local municipalities' requirements shall be provided. Window shades or blinds shall be provided for all windows, as directed by the Engineer. The Contractor shall be responsible for snow removal from parking areas and sidewalks surrounding the building. The Contractor shall pay the cost of any building or equipment inspections by the local municipality. The Contractor shall also pay all costs to comply with the maintenance type inspection findings. The Contractor shall provide one subscription to high speed or broad band internet service. The Engineer will install this service on his (or his consultant's) desktop computer for use in the field office.

Basis of Payment. The building, fully equipped as specified herein and accepted by the Engineer, will be paid for on a monthly basis until the building is released by the Engineer. The Contractor will be paid the contract bid price each month, provided the building is maintained, equipped, and utilities furnished. The building, fully equipped and maintained as specified herein, will be paid for at the contract unit price per calendar month or fraction thereof for ENGINEER'S FIELD OFFICE, TYPE A (SPECIAL). This price shall include all utility costs and shall reflect the salvage value of the building, equipment and furniture which becomes the property of the Contractor after release by the Engineer, except that the Department will pay that portion of each monthly long distance telephone bill in excess of $50.

The Contractor shall be responsible for the repair and maintenance of the field office. No extra payment will be made for systems maintenance, repairs or for damages incurred as a result of vandalism, theft or other criminal activities.

CONCRETE PAVEMENT AGGREGATE OPTIMIZATION

For the construction of concrete pavement placed adjacent to concrete superstructure, the Class PV concrete shall contain two or more coarse aggregate sizes blended in accordance with the first paragraph of Article 1004.02(d), or as otherwise approved by the Engineer. The combined sizes shall consist of CA-7 or CA-11 blended with CA-13, CA-14, or CA-16. The blended coarse aggregate gradation shall have a minimum of 45 percent and a maximum of 60 percent passing the ½ inch sieve.

Concrete Pavement Aggregate Optimization will not be paid for separately, but shall be considered as included in the unit cost of PORTLAND CEMENT CONCRETE PAVEMENT.

BUILDING DEMOLITION

The demolition of one (1) building will be required as part of this construction contract. The specifications for the tasks associated with this work, including building demolition,

asbestos removal, and collection/disposal of waste materials, are noted in the stand alone Project Specifications for East Main Street Demolition. These specifications are located in Attachment A.

This work will be paid for at the contract unit cost per Lump Sum for BUILDING REMOVAL NO. 1, REMOVAL AND DISPOSAL OF FRIABLE ASBESTOS BUILDING NO. 1 and REMOVAL AND DISPOSAL OF NON-FRIABLE ASBESTOS BUILDING NO. 1.

RAILROAD FLAGGER

This work will consist of providing a certified flagger for construction activities that are adjacent to BNSF Railway property.

The Contractor must give the BNSF Roadmaster a minimum of thirty (30) days advance notice when flagging services will be required. A railway flagger will be required when the Contractor's work activities are located over, under and/or within twenty-five (25) feet measured horizontally from centerline of the nearest track and when cranes or similar equipment positioned beyond 25-feet from the track centerline could foul the track in the event of tip over or other catastrophic occurrence.

All certified flagger work required shall be paid for according to Section 109.04 of the Standard Specifications for Road and Bridge Construction.

REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL

This work will consist of over-excavating soil that is determined unsuitable for the proposal construction and providing porous granular embankment backfill for the over-excavated areas.

For areas where it is determined that the soil is unsuitable, the Contractor shall over-excavated the soil to a suitable depth in general accordance with Article 202 of the Standard Specifications. Upon excavating to suitable soil, the Contractor shall place a Geotechnical Fabric suitable for ground stabilization and backfill with porous granular embankment. The fabric shall be in conformance to Article 210 of the Standard Specifications. The porous granular embankment shall be in conformance with Article 207 of the Standard Specifications.

A quantity for each item noted above is included in the contract documents and will be used to establish a unit price. This work will be paid for at the contract unit price per cubic yard for REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL, per ton for POROUS GRANULAR EMBANKMENT, and per square yard for GEOTECHNICAL FABRIC FOR GROUND STABILIZATION.

SIDEWALK REMOVAL

This work shall consist of the complete removal of existing sidewalk at locations noted on the plan and in accordance to the applicable portions of Section 440 of the Standard Specifications and as specified herein.

A curb wall approximately 6" to 8" in height exists along the back of sidewalks that are proposed to be removed as part of the improvements.

- Along the south side of East Main Street generally between Sta 112+00.00 and Sta 115+00.
- Along the east and west side of Allens Avenue south of East Main Street.

The removal of the curb wall is included as part of the required sidewalk removal.

The removal of the curb wall shall not be paid for separately but shall be included at the contract unit price per square foot for SIDEWALK REMOVAL.

ELECTRICAL SPECIAL PROVISIONS

ORNAMENTAL LIGHT UNIT, COMPLETE

This work shall consist of furnishing and installing a decorative lighting pole complete with an arm and all hardware and accessories according to section 830 of the Standard Specifications, as applicable, as shown on the plans, and as stated herein.

The pole shall be an aluminum pole with a nominal 35 foot height designed to accommodate one luminaire, and achieve a 33 foot luminaire mounting height above pavement with mast arm for at grade foundations. The luminaire shall be mounted to the pole with an 8 foot one piece decorative aluminum mast arm. The pole shall be a one piece tapered round shaft of aluminum and welded to a flat aluminum anchor base. The pole shall have a minimum 0.250" wall thickness. A flush sided cast aluminum ball type pole top cap shall be provided. The pole shall include a 4" x 8" handhole with ground lug (1/2"-13) and gasketed cover plate secured with stainless steel tamper resistant screws. The pole base shall have an 18-inch dia. one piece cast aluminum slip over base cover, with a 6-inch base extension. Pole shall be Sternberg #HS-B/CAS8/3035ARTS-EXT/BCC4//10ARC45T3-MDL03/1-GFI-IUC/1-BDBA/VD/BK or of equal specifications with prior approval of the City Engineer.

The base plate shall be arranged to accept four (4) one-inch diameter anchor bolts on a 11 1/2" bolt circle.

The pole shall include an extruded arm plate integrally welded to the top and shall be sized to accept an 8 foot luminaire decorative mast arm.

The luminaire mast arm shall be an 8 foot upsweep decorative scroll, aluminum arm assembly and conform to the requirements of 6063-T4 alloy and aged to T6 temper. The arm shall fit securely onto the pole at 90 degrees and shall be secured by four (4) 3/8-inch minimum stainless steel bolts, nuts, and lock washers or lock nuts. Arm shall be Sternberg #CAS8 Series, powder coat Black or of equal specifications with prior approval of the City Engineer.

The pole and arm shall be able to withstand AASHTO 2009 requirements for 90 mile per hour wind load with a 30 percent gust factor.

Banner Arm shall be an 36" bolt on banner arm with end caps, model SBA as manufactured by Sternberg, powder coat Black or of equal specifications with prior approval of the City Engineer. Banner arm to be mounted to road side of pole.

Weatherproof Receptacle shall be a single duplex receptacle with small in-use wet location cover, 20A, 120V, NEMA 5-20R, weather resistant GFCI type, model GFI as

manufactured by Sternberg, powder coat Black or of equal specifications with prior approval of the City Engineer.

The festoon receptacle shall be fused separately at the base of the pole.

The light pole shall be finished with a UV resistant coating of paint. Surface preparation shall be a chemical treatment process. The finish shall be oven baked. The color shall be powder coat Black.

Warranty: All materials supplied shall be warranted by the manufacturer for one (1) year after delivery against faulty materials and workmanship. The paint finish on pole and accessories shall be warranted by the manufacturer for five (5) years after delivery against faulty materials and workmanship.

Basis of Payment. This work will be paid for at the contract unit price each for ORNAMENTAL LIGHT UNIT, COMPLETE.

LIGHTING CONTROLLER, BASE MOUNTED, 240 VOLT, 100 AMP (DUAL)

This work shall consist of furnishing and installing Lighting Cabinet and all hardware and accessories according to section 825 of the Standard Specifications, as applicable, as shown on the plans, and as stated herein.

Lighting controller shall include two (2) contactors, (2) main breakers and (2) Selector switches – one for lighting control and one for festoon receptacle control as shown on the plans.

Basis of Payment: This work will be paid for at the contract unit price each for LIGHTING CONTROLLER, BASE MOUNTED, 240 VOLT, 100 AMP (DUAL) of the enclosure and control type indicated.

UNDERPASS LUMINAIRE (SPECIAL)

This work shall consist of furnishing and installing Underpass Luminaire and all hardware and accessories according to section 821 of the Standard Specifications, as applicable, as shown on the plans, and as stated herein.

Luminaire light shall be a LED type and set for 240 VAC, 60 Hz. Luminaire shall be LED-106 watt with black powder coat finish. Luminaire shall have a cast aluminum housing with tool less access to driver and lamp compartment, tempered flat glass lens with louver, IP67 weatherproof rating, integral yoke, and stainless steel hardware. Luminaire shall be a Kenall Luxtran-DLD 1622-LED series or of equal specifications with prior approval of the City Engineer.

The luminaire shall be installed on a mounting arm with black powder coat finish attached to bridge pier.

The luminaire shall be assembled in the continental U.S.A. and shall be assembled by and manufactured by the same Manufacturer. Quick connect/disconnect plugs shall be supplied between the discrete electrical components within the luminaire such as the driver, surge protection device, and optical assembly for easy removal. The quick connect/disconnect plugs shall be operable without the use of tools and while wearing insulated gloves. The luminaire shall be in compliance with ANSI C136.37. LED light source(s) and driver(s) shall be Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU compliant.

The luminaire shall be listed for wet locations by a Nationally Recognized Testing Laboratory (NRTL) as defined by OSHA and shall be in compliance with UL 8750 and UL 1598. It shall be identified as such by the holographic UL tag/sticker on the inside of the luminaire. Hardware. All hardware shall be stainless steel. Captive screws are required on any component that requires maintenance after installation.

Basis of Payment. This work shall be paid for at the contract unit price each for UNDERPASS LUMINAIRE (SPECIAL) of the type indicated, which shall be payment in full for the luminaire complete. The luminaire complete includes branch circuit / extension wire as applicable, lamp, fuseholders, mounting hardware, fusing, and surge protectors.

LUMINAIRE (SPECIAL)

This work shall consist of furnishing and installing Sign Luminaire and all hardware and accessories according to section 821 of the Standard Specifications, as applicable, as shown on the plans, and as stated herein

Luminaire light shall be a LED type and set for 240 VAC, 60 Hz. Luminaire shall be 8.5 watt per LF with black powder coat finish. Luminaire shall have a cast aluminum housing with tool less access to driver and lamp compartment, tempered flat glass lens with louver, IP67 weatherproof rating, integral yoke, and stainless steel hardware. Luminaire shall be a Lumen Pulse LOG-RO-240-48-40K-30X60-WAM12-BK-NO-ETE WITH LEADER CABLE-LOGILC UL ETE-25-BK series or of equal specifications with prior approval of the City Engineer.

The luminaire shall be installed on a mounting arm with black powder coat finish attached to bridge beam.

The luminaire shall be fused separately at the junction box.

The fuse holders for the light fixtures shall be double pole, waterproof with insulating boots. The fuse holders shall be a Bussmann Tron type HEX Series, of equal

specifications with prior approval of the City Engineer, which has a connecting tab to prevent accidental switching of terminals upon connection.

The wiring of the luminaire shall be as follows, starting from the line side: any splices for other luminaires in the circuit; fuseholder; surge protector.

The surge protector shall conform to Article 1065.02 of the Standard Specifications.

Basis of Payment. This work shall be paid for at the contract unit price each for LUMINAIRE (SPECIAL) of the type indicated, which shall be payment in full for the luminaire complete. The luminaire complete includes branch circuit / extension wire as applicable, lamp, fuseholders, mounting hardware, fusing, and surge protectors.

CCTV CAMERA INSTALLATION SPECIAL PROVISIONS

CONTRACT GUARANTEE

The Contractor shall guarantee all electrical equipment, apparatus, materials, and workmanship provided under the contract for a period of six (6) months after the date of final inspection according to Article 801.14.

All instruction sheets required to be furnished by the manufacturer for materials and supplies and for operations shall be delivered to the Engineer prior to the acceptance of the project, with the following warranties and guarantees:

1. The manufacturer's standard written warranty for each piece of electrical equipment or apparatus furnished under the contract.

2. The Contractor's written guarantee that, for a period of six (6) months after the date of final inspection of the project, all necessary repairs to or replacement of said warranted equipment, or apparatus shall be made by the Contractor at no cost to the Department.

3. The Contractor's written guarantee for satisfactory operation of all electrical systems furnished and constructed under the contract for a period of 6 months after final inspection of the project.

SYSTEM IMPLEMENTATION, EQUIPMENT INTEGRATION AND SUPPORT

The Contractor shall install the CCTV cameras at the locations indicated on the plans.

All furnished components shall be subject to a 30 day burn-in period. The system along with all of its components shall be fully and functionally operational before any acceptance testing will be initiated. After the system has been accepted by the Engineer, the system shall begin a thirty-day "burn-in" period immediately after the successful completion of the acceptance test. During the "burn-in" period, all components shall perform continuously, without any interruption of operation, for a period of thirty days. In the event that there are operational problems during the burn-in period, the burn-in period shall reset back to day one.

After the successful completion of the burn-in period, the system will have completed final acceptance.

The Department will program the cameras and integrate them into the existing District 4 ITS video subsystem. The contractor shall be responsible for installing the proposed CCTV cameras on the proposed mast arm structures and proposed lighting pole structures in accordance with the plans, specifications, and manufacturers recommended practices.

This work will not be paid for separately, but shall be included in the contract bid price.

LOCATION OF UNDERGROUND STATE MAINTAINED FACILITIES

The Contractor shall be responsible for locating all existing IDOT electrical facilities prior to performing any work at his/her own expense if required. The Contractor shall also be liable for any damage to facilities resulting from inaccurate locating. The Contractor may obtain, on request, plans of existing electrical facilities from the Department and the City of Galesburg.

The Contractor shall also be responsible for locating and providing protection for facilities during all phases of construction. If at any time, the facilities are damaged, the Contractor shall immediately notify the Department and make all necessary arrangements for repair to the satisfaction of the Engineer. This work shall be included in the contract bid price and no additional compensation will be allowed.

CAT 5 ETHERNET CABLE

This work shall be in accordance with Sections 873, 1076, and 1088 of the Standard Specifications except as modified herein.

This work shall consist of furnishing and installing an outdoor rated, shielded CAT5E cable in existing and proposed conduits, handholes, and poles.

The cable shall be rated for outdoor use and conform to the following specifications:

- Outdoor CMX Rated Jacket (climate/oil resistant jacket)
- UV Resistant Outer Jacket Material (PVC-UV, UV Stabilized)
- Outer Jacket Ripcord
- Designed For Outdoor Above- Ground or Conduit Duct applications
- Cat5E rated to 350MHz (suitable for 10/100 or even 1000mbps Gigabit Ethernet)
- Meets TIA/EIA 568b.2 Standard
- UTP, shielded Twist Pair
- 4 Pairs, 8 Conductors
- 24AWG, Solid Core Copper
- UL 444 ANSI TIA/EIA-568.2 ISO/IEC 11801
- RoHS Compliant
- Gel filled
- Shielded

The Contractor shall terminate each end of the cable with an IP66 rated RJ-45 connector or utilizing connector kits furnished with the CCTV dome camera. The Contractor shall terminate the cable assembly in an environmentally controlled area and test the cable and connectors prior to installing the cable in the field.

The Contractor shall inspect and test each cable assembly prior to assembly.

The Contractor shall submit catalog cut sheets to the Department for review prior to commencing work.

Basis of Payment: This work will be paid for at the contract unit price per foot for CAT 5 ETHERNET CABLE, which shall be payment in full for all labor, equipment, and materials required to provide and install the cable described above, complete.

CLOSED-CIRCUIT TELEVISION DOME CAMERA

Description. This work shall consist of furnishing and installing an integrated Closed-Circuit Television (CCTV) Dome Camera Assembly, camera brackets, and all other items required for installation and operation. This assembly shall contain all components identified in the Materials Section and shall be configured as indicated on the plan sheets.

Materials.

The CCTV camera shall be an Axis Model Q6042-E Dome Camera Assembly for integration into the existing ITS system.

The Contractor shall provide all materials required to install the proposed camera on the proposed combination mast arm assembly and proposed lighting pole structure at the locations shown on the plan sheets.

The Contractor shall submit catalog cut sheets to the Department for all items (mounting brackets, hardware, etc.) that will be utilized for review prior to commencing work.

The camera shall meet or exceed the following specifications:

Camera

Video:	60 Hz (NTSC), 50 Hz (PAL)
Image Sensor	¼" ExView HAD Progressive Scan CCD
Lens:	3.3 – 119 mm, F1.4 – 4.2, autofocus, automatic day/night, horizontal angle of view: 1.7° - 57.2°
Minimum Illumination:	Color: 0.5 lux at 30 IRE, B/W: 0.008 lux at 30 IRE

Shutter Time (NTSC):	1/30 000 s – 0.5 s, PAL: 1/30 000 s – 1.5 s
Pan/Tilt/Zoom:	E-flip, 256 preset positions Pan: 360° endless, 0.05 – 450°/s Tilt: 220°, 0.05 – 450°/s Zoom: 36x optical zoom and 12x digital zoom, total 432x zoom Guard tour Control queue On-screen directional indicator

Video

Video:	H.264 (MPEG-4 Part 10/AVC), Motion JPEG
Resolutions:	NTSC: 752x480 to 176x120, PAL: 736x576 to 176x144
Frame rate (H.264):	Up to 30/25 (NTSC/PAL) fps in all resolutions
Frame rate (M-JPEG):	Up to 30/25 (NTSC/PAL) fps in all resolutions
Video streaming:	Multi-stream H.264 and Motion JPEG: 3 simultaneous, individually configured streams in max. resolution at 30/25 (NTSC/PAL) fps; more streams if identical or limited in frame rate/resolution; Controllable frame rate and bandwidth; VBR/CBR H.264
Image setting:	Wide Dynamic Range (WDR), Electronic Image Stabilization (EIS), manual shutter time, compression, color, brightness, white balance, sharpness, exposure control, exposure zones, backlight compensation, fine tuning of behavior at low light, rotation, aspect ratio correction, Text and image overlay, 32 individual 3D privacy mask, image freeze on PTZ

Network

Security: encryption,	Password protection, IP address filtering, HTTPS* IEEE 802.1X* network access control, digest authentication, user access log, centralized certificate management
Protocols: NTP,	IPv4/v6, HTTP, HTTPS*, QoS Layer 3 DiffServ, FTP, SMTP, Bonjour, UPnP, SNMPv1/v2c/v3 (MIB-II), DNS, DynDNS, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP,

SOCKS, SSH, NTCIP

System Integration

Application Programming: Axis	Open API for software integration, including VAPIX® from
Interface:	Communications available at www.axis.com
Intelligent video:	Video motion detection, auto-tracking, active gatekeeper, AXIS camera application platform enabling installation of additional applications.
Alarm triggers:	Video motion detection, Shock detection, Fan, Heater, Temperature, Manual trigger, Autotracking, Moving, PTZ preset, Edge storage events, AXIS Camera Application Platform
Alarm events:	File upload: FTP, HTTP, network share and email Notification: email, HTTP and TCP PTZ preset, Guard tour, Autotracking, Day/night mode, Video recording to edge storage, Preand post-alarm video buffering
Video buffer:	56 MB pre- and post-alarm

General

Casing:	IP66-, NEMA 4Xand IK10-rated metal casing (aluminum),polycarbonate (PC) clear dome, sunshield (PC/ASA)
Processors and Memory:	512 MB RAM, 128 MB Flash
Power Camera: AXIS	High Power over Ethernet, max. 60 W, Midspan (included):
AC,	T8124 High Power over Ethernet, Midspan 1-port 100-240 V max. 74 W
Connectors:	RJ45 for 10BASE-T/100BASE-TX PoE RJ45 Push-pull Connector (IP66) included
Local storage:	SD/SDHC/SDXC slot supporting memory card up to 64 GB (card not included); support for recording to network share (network-attached storage or file server)

Operating Conditions:	With 30 W: -20 °C to 50 °C (-4 °F to 122 °F) With 60 W*: -50 °C to 50 °C (-58 °F to 122 °F) Humidity 10-100% RH (condensing) * Arctic Temperature Control enables camera start-up at Temperatures as low as -50°C(-58°F)
Approvals:	EN 55022 Class A, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, EN 55024, EN 50121-4, IEC 62236-4, FCC Part 15 Subpart B Class A, ICES-003 Class A, VCCI Class A, C-tick AS/NZS CISPR 22 Class A, KCC KN22 Class A, KN24, IEC/EN/UL 60950-1, IEC/EN/UL 60950-22, IEC/EN 60529 IP66, NEMA 250 Type 4X, NEMA TS-2-2003 v 02.06, subsection 2.2.7, 2.2.8, 2.2.9; IEC 62262 IK10, IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-78, IEC 60068-2-14, IEC 60068-2-30, IEC 60068-2-6, IEC 60068-2-27, IEC 60068-2-60, ISO 4892-2 Midspan: EN 60950-1, GS, UL, cUL, CE, FCC, VCCI, CB, KCC, UL-AR
Weight:	3.7 kg (8.2 lb.)
Included Accessories:	AXIS T8124 High PoE Midspan 1-port, IP66-rated RJ-45 connector kit, clear and smoked dome cover, sunshield, Installation Guide, CD with User's Manual, recording software, installation and management tools, Windows decoder 1-user license
Video management Software:	AXIS Camera Companion (included), AXIS Camera Station and video management software from Axis' Application Development Partners (not included). For more information, see www.axis.com/products/video/software

Environmental Enclosure/Housing

The environmental enclosure shall be designed to physically protect the integrated camera from the outdoor environment and moisture via a sealed enclosure. If the option exists in the standard product line of the manufacturer, the assembly shall be supplied with an integral sun shield. The enclosure shall be fully water and weather resistant with a NEMA 4 rating or better.

The camera dome shall be constructed of distortion free acrylic or equivalent material that must not degrade from environmental conditions. The environmental housing shall include a camera-mounting bracket. In addition, the environmental housing shall include a heater, blower, and power surge protector. An integral fitting compatible with

a standard 1-1/2 in (38.1 mm) NPT pipe, suitable for outdoor pendant mounting shall also be provided.

The enclosure shall be equipped with a heater controlled by a thermostat. The heater shall turn on when the temperature within the enclosure falls below 40° F (4.4°C). The heater shall turn off when the temperature exceeds 60°F (15.6°C). The heater will minimize internal fogging of the dome faceplate when the assembly is operated in cold weather.

In addition, a fan shall be provided as part of the enclosure. The fan will provide airflow to ensure effective heating and to minimize condensation.

The enclosure shall be equipped with a hermetically sealed, weatherproof connector, located near the top for external interface with power, video, and control feeds.

CCTV Dome Camera Mounting Supports

The Contractor shall furnish and install an Axis Pole Mount Bracket T91A67 (Part Number 5017-671) for camera installation on traffic signal mast arms and roadway lighting pole structures.

Mounting supports shall be configured as shown on the camera support detail plans and as approved by the Engineer. Mount shall be of aluminum construction with enamel or polyester powder coat finish. Braces, supports, and hardware shall be stainless steel. Wind load rating shall be designed for sustained gusts up to 90 mph (145 km/hr), with a 30% gust factor. Load rating shall be designed to support up to 75 lb (334 N). For roof or structural post/light pole mounting, mount shall have the ability to swivel inward for servicing. The mounting flange shall use standard 1-1/2 inch (38.1 mm) NPT pipe thread.

Connecting Cables and Power Supply

The Contractor shall provide outdoor rated, shielded CAT 5E cable. One cable shall be installed from the proposed traffic signal cabinet or proposed lighting controller cabinet to the proposed camera mounting location as shown on the plan sheets. Both cables shall be terminated with IP66-rated RJ-45 connectors. This cable will be paid for separately under the pay item for CAT 5 ETHERNET CABLE.

The High POE midspan camera power supply (included with camera) shall be installed in the proposed traffic signal cabinet or proposed lighting controller cabinet. The Contractor shall furnish and install one 15A power strip with integral surge protection in the proposed traffic signal cabinet and proposed lighting controller cabinet for camera power.

Power Strip

The cabinet power strip shall have a minimum of six outlets and integral surge suppression that meets or exceeds the following minimum specifications:

- Let Through Voltage: <85 Volts
- Operating Voltage: 120VAC, 50/60H
- UL Suppressed Voltage Rating: 330V
- Energy Rating: 320J
- Peak Current NM/CM: 13k Amps NM, 13k Amps CM
- EMI/RFI Noise Filtration: >25-60dB

The power strip shall be wired directly to the protected power terminals on the cabinet surge arrestor. The Contractor shall provide all materials required for installation.

This work shall be included in the contract bid price for the CCTV camera pay item.

Construction Requirements.

General

The Contractor shall prepare a shop drawing detailing the complete CCTV Dome Camera Assembly and installation 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 install the CCTV dome camera assembly at the locations indicated in the Plans.

Programming and Testing

The Department will program and test each camera prior to installation. The Department will connect the proposed CCTV camera to the existing ITS network Ethernet switch and integrate the camera into the existing ITS video subsystem.

Method of Measurement. The closed circuit television dome camera bid item will be measured for payment by the actual number of CCTV dome camera assemblies furnished, installed, tested, and accepted.

Basis of Payment. Payment will be made at the contract unit price for each CLOSED CIRCUIT TELEVISION DOME CAMERA including all equipment, material, testing, documentation, and labor detailed in the contract documents for this bid item.

SUPPORT EQUIPMENT AND MAINTENANCE

The Contractor shall furnish the following equipment (MATERIAL ONLY) and deliver it to the Department:

There are no support requirements for this pay item.

- Genetec Camera Software License - Qty. 2

  License Quantity: 2 additional cameras/channels (GNTC OM-E-1C 1 Camera Connection Omnicast Enterprise) for use with System ID: OMN-110407-503618

Basis of Payment: This work will be paid for at the contract unit price per lump sum for SUPPORT EQUIPMENT AND MAINTENANCE which price shall be payment in full for all labor, materials, and equipment required to provide the equipment specified above and deliver it to the Department.

FIBER OPTIC ETHERNET DROP AND REPEAT SWITCH

The Contractor shall furnish a fiber optic drop and repeat switch and install it (DIN rail mounted) inside the proposed traffic signal cabinet or proposed lighting controller cabinet. The Department will program the switch and connect the ITS components to the switch.

The Contractor shall install DIN rail inside the proposed traffic signal cabinet and proposed lighting controller cabinet to be used for equipment mounting.

The fiber optic drop and repeat switch shall meet or exceed the following minimum specifications:

Approved Models: Aaxeon Technologies Model LNX-1802G-SFP-T (18-Port (16-port 10/100T + 2 10/100/1000T SFP ports Industrial Ethernet Switch, Wide Operating Temperature) or approved equal.

Features:

- 16-Port 10/100TX + 2-Port 10/100/1000T/Mini-GBIC Combo
- Store-and-Forward Switching Architecture
- 7.2Gbps Back-Plane (Switching Fabric)
- 1 Mbits Memory Buffer
- 8K MAC Address Table
- Wide-Range Redundant Power Design
- Power Polarity Reserve Protect
- Provides EFT Protection 3000 VDC for Power Line
- Supports 6000 VDC Ethernet ESD Protection
- IP30 Rugged Aluminum Case Design
- 5-Year Warranty

Standard:	• IEEE 802.3 10BaseT Ethernet • IEEE 802.3u 100BaseTX Fast Ethernet • IEEE 802.ab 1000BaseT • IEEE 802.z Gigabit Fiber • IEEE 802.3x Flow Control and Back-Pressure
Protocol:	• CSMA/CD
Switch Architecture:	• Back-Plane (Switching Fabric): 7.2Gbps • Packet Throughput Ability (Full-Duplex): 10.7Mpps @ 64bytes
Transfer Rate:	• 14,880pps for Ethernet Port • 148,800pps for Fast Ethernet Port • 1,488,000pps for Gigabit Fiber Ethernet Port
MAC Address:	• 8K MAC Address Table
Jumbo Frame:	• 9 Kbytes
Memory Buffer:	• 136 Kbits
LED:	• Unit: Power 1, Power 2, Fault • 10/100 TX: Link/Activity, Full Duplex/Collision • Gigabit Copper: Link/Activity, Speed • SFP: Link/Activity
Connector:	• 10/100T: 16 x RJ-45 • 10/100/1000T Mini-GBIC Combo: 2 x RJ-45 + 2 x 100/1000 SFP Sockets
Network Cable:	• 10BaseT: 2-pair UTP/STP Cat. 3, 4, 5 cable EIA/TIA-568 100-ohm (100m) • 100BaseTX: 2-pair UTP/STP Cat. 5 cable EIA/TIA-568 100-ohm (100m)
Power Supply:	• DC 12 ~ 48V, Redundant Power with Polarity Reverse Protect Function and Removable Terminal Block
Power Consumption:	• 9 Watts
Reverse Polarity Protection:	• Present

Overload Current Protection:	• Present
Mechanical:	• Casing: IP30 Metal Case • Dimension (W x H x D): 72 x 152 x 105 mm (2.83 x 4.13 x 5.98 in.) • Installation: DIN-Rail/Wall Mountable
Weight:	• Unit Weight: 2.2 lbs. • Shipping Weight: 3.3 lbs.
Operation Temperature:	• Wide Operating Temperature: -40° C to 80° C (-40° F to 176° F)
Operation Humidity:	• 5% to 95% (Non-condensing)
Storage Temperature:	• -40° C to 85° C
EMI:	• FCC Class A • CE EN6100-4-2/EN6100-4-3/EN6100-4-4/EN6100-4-5/EN6100-4-6 • /EN6100-4-8/EN6100-4-11/EN6100-4-12/EN6100-6-2/EN6100-6-4
Safety:	• UL, cUL, CE EN60950-1
Stability Testing:	• Shock: IEC60068-2-27 • Free Fall: IEC60068-2-32 • Vibration: IEC60068-2-6
Warranty:	• 5-Year Warranty

<u>The following items shall also be included with each switch:</u>

- Power Supply – Qty. 1 (Aaxeon Model DR-45, 45 Watt, 12 Volt DC, Industrial Din-Rail Power Supply or Approved Equal)
- SFP Fiber Optic Module – Qty. 2 (Aaxeon SFP-S10-T, 1.25Gbps Ethernet SFP Transceiver, Single Mode 10KM / LC / 1310nm, -40°C~85°C)
- Fiber Optic Patch Cables – Qty. 1 (single mode fiber, 1 meter length, duplex, LC/ST connectors)

Basis of Payment: This work will be paid for at the contract unit price per each for FIBER OPTIC ETHERNET DROP AND REPEAT SWITCH which price shall be payment in full for all labor, materials, and equipment required to provide the fiber optic Ethernet drop and repeat switch and associated equipment described above.

GROUNDING OF ITS STRUCTURES

This work shall be in accordance with the applicable articles of Sections 807, 817 and 1066 of the Standard Specifications with the following modifications:

This work shall consist of furnishing and installing a grounding wire to connect all proposed traffic signal control cabinets, lighting controller cabinets, and camera poles in accordance with NEC requirements.

The proposed ground wire shall be an insulated #6 XLP green copper conductor. This wire shall be bonded to all items and their associated ground rods utilizing mechanical lugs and bolts. This wire may be made continuous by splicing in the adjacent handholes with compression lugs. Split bolts will not be allowed.

The grounding wire shall be bonded to the grounded conductor at the service disconnect per the NEC.

All clamps, hardware, and other materials required shall be included.

Basis of Payment: This work will not be paid for separately, but shall be included in the unit bid prices for their associated items.

FIBER OPTIC CABLE IN CONDUIT, NO. 62.5/125 MM12F SM24F

This work shall be in accordance with Sections 801, 864, 871, and 1076 of the Standard Specifications except as modified herein.

The fiber optic cable shall be a loose tube outdoor rated and be a Hybrid type cable with 12 strands of 62.5/125 micrometer Multimode and 24 strands of 8/125 micrometer single mode fibers.

The Contractor shall terminate twelve multimode and twelve single mode fibers in each traffic signal cabinet or lighting controller cabinet with ST connectors. The Contractor shall intercept all fibers at the existing handhole at the southwest corner of the Cedar Street and Simmons Street Intersection. The remaining twelve single mode fibers shall be spliced continuous in all cabinets.

The Contractor shall fusion splice the new fiber to the existing fiber at the handhole near the Simmons Street and Cedar Street Intersection. The contractor shall furnish all labor,

equipment, and materials needed to complete the work described above. The cost of this work shall be included in the bid price for this pay item.

Each cable shall be clearly labeled in each cabinet utilizing a durable computer generated label. The label shall contain information in regards to the location where the cable is going to or coming from.

Fibers shall be terminated as shown on the plan sheets. All terminated fibers shall be clearly labeled. All required equipment, including but not limited to fiber optic cables, connectors, splicing boots, cable trays, distribution enclosures, and hardware shall be included in this pay item.

Fibers not being used shall be labeled "spare", and fibers not attached to a distribution enclosure shall be capped and sealed.

All ancillary components, required to complete the fiber optic cable plant, including but not limited to, moisture and water sealants, cable caps, fan-out kits, weather-proof splice kits, boots, etc., shall be supplied under this pay item and will not be paid for separately.

The fiber optic cable shall be clearly marked in each handhole and cabinet with a brightly colored (orange or yellow) weather resistant label securely attached to the cable.

The Contractor shall provide and install a 12 Ga., stranded (THHN), insulated orange tracer cable in all conduits that contain fiber optic cable. This work shall be done at the same time the fiber optic cable is pulled. There will be no additional compensation for this work.

Materials. The single-mode, fiber optic cable shall incorporate a loose, buffer-tube design. The cable shall conform to the requirements of RUS 7 CFR1755.900 (PE-90) for a single sheathed, non-armored cable, and shall be new, unused and of current design and manufacture. The number of fibers in each cable shall be as specified on the plans. The cable shall be outdoor rated. The cable shall utilize water blocking gel or a dry block tape. Fiber cable installed indoors shall be appropriately rated in accordance with NEC and NFPA requirements.

Minimum Bending Radius.

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.

Environmental Requirements:

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

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: splicing, terminating and testing multi mode and 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 and equipment 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 for approval by the Engineer.

Installation in Conduit.

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 upon request.

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.

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.

Operation and Maintenance Documentation:

After the fiber optic cable plant has been installed, two (2) 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.
- Complete performance data of the cable plant showing the losses at each terminal connector.
- Complete parts list including names of vendors.

Testing Requirements:

The Contractor shall submit detailed test procedures for approval by the Engineer. All fibers shall be tested bi-directionally at both 1310 nm and 1550 nm with both an Optical Time Domain Reflectometer (OTDR) and a power meter and optical source. For testing, intermediate breakout fibers may be concatenated and tested end-to-end. Any discrepancies between the measured results and these specifications will be resolved to the satisfaction of the Engineer.

The Contractor shall provide the date, time and location of any tests required by this specification to the Engineer at least 5 days before performing the test. Upon

completion of the cable installation, splicing, and termination, the Contractor shall test all fibers for continuity, events above 0.1 dB, and total attenuation of the cable. The test procedure shall be as follows:

A Certified Technician utilizing an Optical Time Domain Reflectometer (OTDR) and Optical Source/Power Meter shall conduct the installation test. The Technician is directed to conduct the test using the standard operating procedures defined by the manufacturer of the test equipment. All fibers installed shall be tested in both directions.

The method of connectivity between the OTDR and the cable shall be a factory patch cord of a length equal to the "dead zone" of the OTDR. Optionally, the Technician can use a factory "fiber box" of 328 ft (100 m) minimum with no splices within the box. The tests shall be conducted at 1310 and 1550 nm for all fibers.

At the completion of the test, the Contractor shall provide two copies of documentation of the test results to the Project Engineer. The test documentation shall be bound and shall include the following:

Cable & Fiber Identification:

Cable ID
Cable Location - beginning and end point
Fiber ID, including tube and fiber color
Operator Name
Date & Time
Setup Parameters
Wavelength
Pulse width (OTDR)
Refractory index (OTDR)
Range (OTDR)
Scale (OTDR)
Setup Option chosen to pass OTDR “dead zone”

Test Results:

A. OTDR Test
Total Fiber Trace
Splice Loss/Gain
Events > 0.10 dB
Measured Length (Cable Marking)
Total Length (OTDR)

Test results and traces shall also be provided electronically.

B. Optical Source/Power Meter

Total Attenuation
Attenuation (dB/km)

These results shall be provided in tabular form. The following shall be the criteria for the acceptance of the cable:

The test results shall show that the dB/km loss does not exceed +3% of the factory test or 1% of the cable's published production loss. However, no event shall exceed 0.10 dB. If any event is detected above 0.10 dB, the Contractor shall replace or repair the fiber including that event point.

The total dB loss of the cable, less events, shall not exceed the manufacturer's production specifications as follows: 0.5 dB/km at both 1310 and 1550 nm.

If the total loss exceeds these specifications, the Contractor shall replace or repair that cable run at the Contractor's expense, both labor and materials. Elevated attenuation due to exceeding the pulling tension during installation shall require the replacement of the cable run at the Contractor's expense, including labor and materials.

The Contractor shall label the destination of each trunk cable onto the cable in each handhole, vault or cable termination panel.

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.

All optical fibers shall be spliced as indicated on the Plans. If no information is provided, mainline splices will concatenate the fibers from the two cable segments, that is, the colors of the buffer tubes and fibers shall be the same across the splice. For splices that breakout the individual fibers, the fibers shall be spliced in accordance with the Plans.

Slack Storage of Fiber Optic Cables.

A part of this pay 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 and in the traffic controller cabinets.

The amount of slack cable listed in Article 873.03 shall be revised as follows:

Location	Length of Slack Cable (Ft.)
Handhole	10.0

Double Handhole	30.0
Communication Vault	30.0
Junction Box	8.0
Controller Cabinet	10.0
Equipment Cabinet	3.0

Basis of Payment: This work will be paid for at the contract unit price per foot for FIBER OPTIC CABLE IN CONDUIT, NO. 62.5/125 MM12F SM24F and shall be payment in full for all labor, equipment, and materials required to provide, install, and test the fiber optic cable described above, complete.

FIBER OPTIC FUSION SPLICE

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 types of splices are identified. A mainline splice includes selected fibers from each cable run as shown in the plan sheets. 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 1.5 in (38 mm).

Factory Testing of Splice Closures:

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 a temperature of 0°F and 100°F (-18°C and 38°C). 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 0°F and 100°F (-18°C and 38°C). 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 20 lb (9 kg) cylindrical steel impacting head with a 2 in (5 cm) spherical radius at the point where it contacts the closure. It shall be dropped from a height of 12 in (30 cm). 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 I. 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 10 ft (3 m) 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 to 10 ft (3 m) 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 all splices, the cables shall be fusion spliced.

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 optic link, from connector to connector, using an optical power meter and source. This loss shall be measured 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 handhole or traffic signal cabinet. 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.

Basis of Payment. This work will be paid for at the contract unit price per each for FIBER OPTIC FUSION SPLICE and shall be payment in full for all labor, equipment, and materials required to complete the work.

TERMINATION OF FIBER OPTIC CABLES WITH FUSION SPLICED ST CONNECTORS

Description. The Contractor will terminate a multimode or single mode fiber by fusion splicing a factory-formed ST connector onto a field fiber at the locations shown on the Plans.

Materials. The Contractor shall be responsible for ensuring that the pre-formed ST connector fiber is compatible with the field fiber that it will be fusion splice to.

The splice shall be protected with a protection sleeve/enclosure that will secure both cables and prevent cable movement.

The fiber optic patch cords shall meet or exceed the following specifications:

- High-quality 125um fiber optics
- 900um tight buffer construction
- Aramid yarn individually protected
- Duplex construction
- Stress relief boots color coded (Tx/Rx)
- ST connectors with high-grade zirconia ferrule
- Insertion Loss < 0.2 dB @ 1310 / 1550 nm
- Return Loss < -58 dB @ 1310 / 1550 nm
- Compliant with ANSI/TIA/EIA 568-B.3
- TIA/EIA-604, FOCIS-2

The Contractor shall submit a shop drawing of all proposed components to the Engineer for approval prior to commencing construction.

Construction Requirements.

The Contractor shall prepare the cables and fibers in accordance with the 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 connector using an Optical Time Domain Reflectometer. This loss shall not exceed the loss of the fusion splice (0.1 dB) plus the loss of the connector (typically 0.75 dB).

As directed by the Engineer, the Contractor at no additional cost to the Department shall replace any cable splice and/or connector not satisfying the required objectives.

Basis of Payment. This work will not be paid for separately, but shall be included in the bid price for the fiber optic cable pay items.

TRAFFIC SIGNAL SPECIAL PROVISIONS

LOCATION OF UNDERGROUND STATE/CITY MAINTAINED ELECTRICAL FACILITIES

The Contractor shall be responsible for locating existing IDOT and City of Galesburg electrical facilities prior to performing any work at his/her own expense if required. The Contractor shall also be liable for any damage to IDOT facilities resulting from inaccurate locating.

The Contractor may obtain, on request, plans for the existing electrical facilities from the Department and city of Galesburg.

The Contractor shall also be responsible for locating and providing protection for IDOT facilities during all phases of construction. If at any time, the facilities are damaged, the Contractor shall immediately notify the Department and make all necessary arrangements for repair to the satisfaction of the Engineer. This work shall be included in the contract bid price.

CONTRACT GUARANTEE

The Contractor shall guarantee all electrical equipment, apparatus, materials, and workmanship provided under the contract for a period of six (6) months after the date of final inspection according to Article 801.14.

All instruction sheets required to be furnished by the manufacturer for materials and supplies and for operations shall be delivered to the Engineer prior to the acceptance of the project, with the following warranties and guarantees:

1. The manufacturer's standard written warranty for each piece of electrical equipment or apparatus furnished under the contract.

2. The Contractor's written guarantee that, for a period of six (6) months after the date of final inspection of the project, all necessary repairs to or replacement of said warranted equipment, or apparatus shall be made by the Contractor at no cost to the Department.

3. The Contractor's written guarantee for satisfactory operation of all electrical systems furnished and constructed under the contract for a period of 6 months after final inspection of the project.

OPERATION OF EXISTING TRAFFIC SIGNALS

The existing traffic signals shall be completely removed, and the proposed signals shall be reconstructed as a part of the construction of the construction of East Main Street and the intersection of Chambers Street and East Main Street. The existing traffic signals shall remain in operation until such time that new signal is ready for operation. The Contractor shall furnish all labor, materials, and equipment required to keep the existing traffic signals operational for as long as is required; including, but not limited to, temporary traffic signal posts, temporary signal heads, and temporary wiring. The Contractor shall notify the City of Galesburg prior to changing the construction staging adjacent to and at the intersection. Any work changes affecting the traffic signal construction staging will not be paid for separately, but shall be included in the bid price for the project.

FULL-ACTUATED CONTROLLER AND TYPE IV CABINET

This work shall be in accordance with the applicable Articles of Sections 895, 1073, and 1074 of the Standard Specifications with the following modifications:

This item shall consist of providing equipment as required to accommodate the protected/permissive turn phases to FYA (flashing yellow arrow) operation and integrate four channels of vehicle detection.

- The Contractor shall furnish and install the following items:
    - TS-2 Type 2 controller with data key and FSK telemetry module – Qty. 1
    - Reno A & E malfunction management unit model MMU-1600G or EDI MMU-16LEip with graphical display and Ethernet port (pre-programmed by the manufacturer for FYA operation at the intersection) – Qty. 1
    - Two channel shelf mount detector amplifier with LCD display and built in diagnostic capabilities (furnished under separate pay item for INDUCTIVE LOOP DETECTOR)
    - Load switches, flash transfer relays, wiring harnesses, terminal strips, and all other equipment required to modify the cabinet to support FYA operation and integrate the proposed detector loops into the cabinet.
- The Contractor shall deliver all items that are removed from the controller cabinets to the City of Galesburg. The Contractor shall notify Justin McNaught at (309) 299-0534 a minimum of forty eight hours prior to delivery.

- The Contractor will be allowed to place the intersection into all-way red flash mode and all-way stop control between the hours of 8:30AM to 3:30PM to facilitate the controller cabinet modification. The Contractor shall furnish and install a minimum of two stop signs per approach when the intersection is operating in all-red flash mode or all-way stop control. Stop signs shall be displayed in accordance with MUTCD requirements.

- The Contractor shall arrange for technical support from the controller cabinet manufacturer as needed for the modification. The controller cabinet vendor shall be on-site to assist with the first five intersection conversions.

- The cabinet sequencing shall conform to MUTCD requirements.

- At the conclusion of the cabinet modification prior to resuming normal signal operation, the Contractor shall test the modified cabinet by connecting a jumper to the cabinet field terminals to ensure that all conflicting signals will place the cabinet into conflict flash and to verify that the cabinet, controller, and malfunction management unit are operating correctly. The Contractor shall make arrangements with the local police agency to provide traffic control during the conflict test.

Basis of Payment: This work will be paid for at the contract unit price per each for FULL-ACTUATED CONTLLER AND TYPE IV CABINET which price shall be payment in full for all labor, materials, and equipment required to install and test the cabinet as described above.

INDUCTIVE LOOP DETECTOR

This work shall be in accordance with Sections 885 and 1079 of the Standard Specifications except as modified herein.

The detector amplifier shall be equipped with an LCD display that is capable of displaying the loop frequency and inductance and shall conform to the following specifications:

- Shelf mounted
- Custom LCD displays complete status and function settings of the detector.
- All functions are programmable from the front panel LCD "Menu" - no removing of detector to change function settings.
- LCD displays loop frequency, loop inductance, & -L/L% values.
- LCD displays the accumulated number of loop failure incidents since the detector was last reset - helps diagnose intermittent systems.
- LCD bar graph displays loop inductance change to verify ideal sensitivity level setting.

- Selectable "Continuous-CALL" and "Channel-Off" to aid system troubleshooting.
- 8 loop frequencies and 9 levels of sensitivity.
- 2 Selectable modes of operation: Presence or Pulse.
- 255 second CALL Delay and 25.5 second Extension timers.
- 999 second Max. Presence Timer. NEMA TS 2 Status Output.
- EOG (end of green) reset synchronization for Max. Presence timer.
- Super bright LEDS indicate vehicle detection or loop failure.
- Environmentally sealed push button switches to insure trouble-free service.
- Phase Green (Delay Override) input.

The detector amplifier shall be equipped with relay or solid state outputs to ensure that the detectors fail in a constant call mode.

The RENO A&E Model C-1200 Series and EDI Oracle Series are currently approved for use within the District.

Basis of Payment: This work shall be paid for at the contract unit price each for INDUCTIVE LOOP DETECTOR which price shall be payment in full for all labor, equipment, and materials required to supply and install the inductive loop detector described above, complete.

TRAFFIC SIGNAL LED MODULE SPECIFICATIONS

The material requirement shall be in accordance with Sections 880 and 1078 of the Standard Specifications except as modified herein.

The LED assemblies for the red, yellow, and green solid and arrow indications shall meet or exceed the following minimum specifications:

Solid Indication LED Module Specifications

Compliance:	Fully compliant with ITE VTCSH LED Circular Signal Supplement specifications dated and adopted June 27, 2005
Compliance Verification:	Intertek ETL verified compliance – Product must be listed on the "Directory of LED Modules Certified Products" list located on the ETL website at http://www.intertek.com/lighting/performance-testing/traffic-signals/
Diameter:	12" (300mm)
Lens:	UV stabilized scratch resistant polycarbonate, tinted

	red or yellow, clear for green, uniform non-pixelated illumination, Incandescent Appearance
LEDS:	Hi-Flux
Operating Temperature Range:	-40 to +74C (-40 to +165F)
Operating Voltage Range:	80 to 135 V (60Hz AC)
Power Factor (PF):	> 90%
Total Harmonic Distortion (THD):	< 20%
Minimum Voltage Turn-Off:	35V
Turn-On/Turn-Off Time:	<75 ms
Nominal Power:	10.0 W (Red), 18.0W (Yellow), 12.5 W (Green)
Nominal Wavelength:	625-626 nm (Red), 589-590 nm (Yellow), 500-502 nm (Green)
Minimum Maintained Intensity:	365 Cd (Red), 910 Cd (Yellow), 475 Cd (Green)
Standard Conformance:	FCC compliant for electrical noise, MIL-STD-810F for moisture resistance, MIL-STD-883 for mechanical vibration, NEMA TS2 Transient Voltage Protection
Warranty:	5 year replacement (materials, workmanship, and intensity)

Arrow Indication LED Module Specifications (Red, Yellow, Green)

Compliance:	Fully compliant with ITE VTCSH LED Vehicle Arrow Supplement specifications adopted July 1, 2007
Compliance Verification:	Intertek ETL verified compliance – Product must be listed on the "Directory of LED Modules Certified Products" list located on the ETL website at http://www.intertek.com/lighting/performance-testing/traffic-signals/
Diameter:	12" (300mm)

Lens:	Clear Frosted, UV stabilized scratch resistant polycarbonate, tinted red or yellow, clear for green, uniform non-pixelated illumination, incandescent appearance, omni-directional
LEDS:	Hi-flux LEDs
Operating Temperature Range:	-40 to +74C (-40 to +165F)
Operating Voltage Range:	80 to 135 V (60Hz AC)
Power Factor (PF):	> 90%
Total Harmonic Distortion (THD):	< 20%
Minimum Voltage Turn-Off:	35V
Turn-On/Turn-Off Time:	<75 ms
Nominal Power:	5.0-7.0 W (Red), 6.0-12.5W (Yellow), 5.0-7.0 W (Green)
Nominal Wavelength:	625-628 nm (Red), 590 nm (Yellow), 500nm (Green)
Minimum Maintained Intensity:	56.8-58.4 Cd (Red), 141.6-146.0 Cd (Yellow), 73.9-76.0 Cd (Green)
Standard Conformance:	FCC compliant for electrical noise, MIL-STD-810F for moisture resistance, MIL-STD-883 for mechanical vibration, NEMA TS2 Transient Voltage Protection
Warranty:	5 year replacement (materials, workmanship, and intensity)

Arrow Indication LED Module Specifications (Yellow/Green Dual Mode)

Diameter:	12" (300mm)
LEDS:	Interconnected to minimize the effect of single LED failures

Lens:	Clear UV stabilized scratch resistant polycarbonate, uniform non-pixelated illumination, incandescent appearance
Operating Temperature Range:	-40 to +74C (-40 to +165F)
Operating Voltage Range:	80 to 135 V (60Hz AC)
Power Factor (PF):	> 90%
Total Harmonic Distortion (THD):	< 20%
Minimum Voltage Turn-Off:	35V
Turn-On/Turn-Off Time:	<75 ms
Nominal Power:	8.0-10.0 W (Yellow), 8.0-10.0 W (Green)
Nominal Wavelength:	590-592 nm (Yellow), 505-508 nm (Green)
Minimum Maintained Intensity:	141.6-146.0 Cd (Yellow), 73.9-76.0 Cd (Green)
Standard Conformance:	FCC compliant for electrical noise, MIL-STD-810F for moisture resistance, MIL-STD-883 for mechanical vibration, NEMA TS2 Transient Voltage Protection
Warranty:	5 year replacement (materials, workmanship, and intensity)

12" Pedestrian LED Module Specifications (Man/Hand, Countdown Timer)

Compliance:	Fully compliant with ITE PTCSI Part-2 LED Pedestrian Traffic Signal Modules specification adopted August 4, 2010
Compliance Verification:	Intertek ETL verified compliance – Product must be listed on the "Directory of LED Modules Certified Products" list located on the ETL website at http://www.intertek.com/lighting/performance-testing/traffic-signals/
Size:	12" x 12"

Configuration:	Full Man/Full Hand Overlay Module, Countdown Timer Module
Lens:	Clear Frosted, UV stabilized scratch resistant polycarbonate, uniform non-pixelated illumination, incandescent appearance
Operating Temperature Range:	-40 to +74C (-40 to +165F)
Operating Voltage Range:	80 to 135 V (60Hz AC)
Power Factor (PF):	> 90%
Total Harmonic Distortion (THD):	< 20%
Minimum Voltage Turn-Off:	35V
Turn-On/Turn-Off Time:	<75 ms
Nominal Power:	5.0-9.0 W (Man), 5.0-11.0W (Hand), 5.0-8.0 W (Timer)
Minimum Maintained Intensity:	1,400 Cd (Hand), 1,400 Cd (Timer), 2,200 Cd (Man)
Standard Conformance:	FCC compliant for electrical noise, MIL-STD-810F for moisture resistance, MIL-STD-883 for mechanical vibration, NEMA TS2 Transient Voltage Protection
Warranty:	5 year replacement (materials, workmanship, and intensity)

16" Pedestrian LED Module Specifications (Man/Hand with Countdown Timer)

Compliance:	Fully compliant with ITE PTCSI Part-2 LED Pedestrian Traffic Signal Modules specification adopted August 4, 2010
Compliance Verification:	Intertek ETL verified compliance – Product must be listed on the "Directory of LED Modules Certified Products" list located on the ETL website at http://www.intertek.com/lighting/performance-testing/traffic-signals/
Size:	16" x 18"

Configuration:	Man/Hand Overlay with Countdown Timer
Lens:	UV stabilized scratch resistant polycarbonate, uniform non-pixelated illumination, incandescent appearance
Operating Temperature Range:	-40 to +74C (-40 to +165F)
Operating Voltage Range:	80 to 135 V (60Hz AC)
Power Factor (PF):	> 90%
Total Harmonic Distortion (THD):	< 20%
Minimum Voltage Turn-Off:	35V
Turn-On/Turn-Off Time:	<75 ms
Nominal Power:	6.0-9.0 W (Man), 7.0-9.0W (Hand), 5.0-8.0 W (Timer)
Minimum Maintained Intensity:	1,400 Cd (Hand), 1,400 Cd (Timer), 2,200 Cd (Man)
Standard Conformance:	FCC compliant for electrical noise, MIL-STD-810F for moisture resistance, MIL-STD-883 for mechanical vibration, NEMA TS2 Transient Voltage Protection
Warranty:	5 year replacement (materials, workmanship, and intensity)

SIGNAL HEAD, LED

This work shall be in accordance with Sections 880 and 1078 of the Standard Specifications except as modified herein.

The traffic signal heads shall consist of 12" polycarbonate sections and shall be equipped with LED assemblies for all red bulb, yellow bulb, green bulb, red arrow, yellow arrow, and green arrow indications.

The traffic signal heads shall have a yellow finish with black doors and tunnel visors.

The LED signal faces shall be equipped with spade connectors and connected to the traffic signal head terminal block.

The LED modules shall conform to the specifications listed under the section TRAFFIC SIGNAL LED MODULE SPECIFICATIONS.

Basis of Payment: This work will be paid for at the contract unit prices each for SIGNAL HEAD, LED of the type specified and shall be payment in full for all labor, materials, and equipment required to provide and install the traffic signal heads described above, complete.

HANDHOLE, PORTLAND CEMENT CONCRETE

This work shall consist of furnishing the materials and constructing a handhole in accordance with the applicable Articles of Section 814 and 1088 of the Standard Specifications with the following modifications:

The lift ring for the cover shall consist of a solid closed ring of stainless steel at least 3/8 inch in diameter. The lift ring shall be attached to the cover by a loop of stainless steel at least 3/8 inch in diameter. The lift ring and loop shall be recessed in the cover.

The Contractor shall install heavy-duty, fully-galvanized hooks, with a minimum diameter of ½" in the proposed handhole. The Contractor shall submit this material to the Engineer prior to construction of the handholes.

The lid shall be marked with the legend "Traffic Signals".

Pre-cast handholes are not allowed.

All unsuitable materials shall be disposed of by the Contractor outside the job limits.

Basis of Payment: This work will be paid for at the contract unit price each for HANDHOLE, PORTLAND CEMENT CONCRETE which price shall be payment in full for all labor, materials, and equipment required to provide the handhole described above as well as any necessary excavating, backfilling, disposal of unsuitable materials, and furnishing all materials within the limits of the handhole.

ELECTRIC CABLE IN CONDUIT, EQUIP. GROUNDING CONDUCTOR, NO. 6 1/C

This work shall be in accordance with the applicable Articles of Sections 801, 806, 873, 1076, and 1088 of the Standard Specifications with the following modifications:

This work shall consist of furnishing and installing a grounding wire to bond all traffic signal handholes (lids and rings), mast arm assemblies, posts, light poles, cabinets and exposed metallic conduits.

The proposed ground wire shall be an insulated #6 XLP copper conductor with green insulation.

Basis of Payment: This work will be paid for at the contract unit price per foot for ELECTRIC CABLE IN CONDUIT, EQUIPMENT GROUNDING CONDUCTOR, NO. 6 1/C which price shall be payment in full for all labor, materials, and equipment required to provide the grounding system described above.

TRAFFIC SIGNAL POST, GALVANIZED STEEL

This work shall be in accordance with Sections 878 and 1077 of the Standard Specifications except as modified herein.

The traffic signal post shall be attached to the foundation with four 3/4" x 18" galvanized anchor bolts. The post base shall be secured to the foundation using galvanized nuts and galvanized steel flat washers that have a minimum thickness of 1/4" and are trapezoidal in shape. The washers shall be sized so as to completely capture the mounting flanges of the traffic signal base. Round washers will not be acceptable.

Basis of Payment: This work will be paid for at the contract unit price each for TRAFFIC SIGNAL POST, GALVANIZED STEEL of the length specified which price shall be payment in full for all labor, material, and equipment required to furnish and install the traffic signal post and base described above.

PEDESTRIAN PUSH BUTTON

This work shall be in accordance with Sections 888 and 1074 of the Standard Specifications except as modified herein.

The Contractor shall install the proposed pedestrian pushbuttons and signs on the traffic signal mast arms and posts. The proposed pedestrian pushbuttons and signs shall be installed so that the arrow on the sign corresponds to the associated street crossing and crosswalk.

All pedestrian pushbuttons shall have a round case and be equipped with a 2" diameter mushroom head for easy access.

The following models are approved for use within District 4:

- Polara, BullDog with momentary LED Indicator with audible buzzer, Round, Yellow Housing, Model (BDLL2-B)
- Campbell 4EVR, with momentary LED Indicator with audible buzzer, Round, Yellow Housing

The pedestrian pushbutton installation shall include all crossing signs and hardware required to mount the pedestrian pushbutton. All hardware shall be of stainless steel construction. All bolts shall be 1/4" Hex Head and no self tapping/drilling screws will be allowed.

The following pedestrian pushbutton signs currently meet Department Specifications: Pelco, Models SF-1013-08, SF-1014-08 or approved equivalent.

Basis of Payment: This work shall be paid for at the contract unit price each for PEDESTRIAN PUSH BUTTON and shall be payment in full for all labor, equipment, and materials required to supply and install the pedestrian push buttons described above, complete.

PED. SIGNAL HEAD, LED, 1-FACE, BRACKET MOUNTED WITH COUNTDOWN TIMER

This work shall be in accordance with Section 881 and 1078 of the Standard Specifications except as modified herein.

The pedestrian signal head shall consist of a single 16" polycarbonate section and shall be equipped with an overlaid LED indication with countdown timer (Walking Person/Upraised Hand).

The traffic signal head shall have a yellow finish with black doors and tunnel visors.

The LED signal faces shall be equipped with spade connectors and connected to the traffic signal head terminal block.

The LED signal face shall have international symbols (Upraised Hand - Color: Portland Orange, Walking Person - Color: Lunar White). Only filled indications will be allowed.

The LED assembly shall meet or exceed the following minimum specifications:

Currently, only the following models are approved by the Department for use provided that they meet the minimum specifications list below:

GELcore	Model PS7-CFF1-26A (Filled Walking Person/Upraised Hand Overlay, with Countdown Timer)
Dialight	Model 430-6479-001X (Filled Walking Person/Upraised Hand Overlay, with Countdown Timer)

The LED assembly must conform to the following minimum specifications:

Lens : 16" x 18", Hard Coated for Abrasion Resistance, UV Stabilized Dome

LEDS: Interconnected to minimize the effect of single LED failures, Nominal Wattage White: 8W or less, Nominal Wattage Orange: 11W or less, Nominal Wattage Countdown: 6W

Luminous Intensity (min): Countdown = 1,400 cd/m², Hand = 1,400 cd/m², Person = 2,200 cd/m²

Product Warranty: 5 Year Replacement

Combination hand/person pedestrian signal modules shall incorporate separate power supplies for the hand and the person displays.

The assembly shall be capable of operating from 80 to 135 VAC with less than 10% variation in intensity, shall have an operating temperature range of -40° to 74°C, and shall be sealed and highly resistant to water intrusion.

All LED Pedestrian Signal Modules shall be fully compliant to the ITE PTCSI Part-2: LED Pedestrian Traffic Signal Modules specifications adopted March19, 2004 or the latest adopted version as listed on the ITE website at time of bid

The assembly shall be compatible with signal control equipment per NEMA TS-2, NEMA TS-1 standards, and include transient voltage protection and fusing to withstand high-repetition noise transients and low repetition high energy transients per NEMA standard 1992 per ITE VTCSH - STD Part 2.

Basis of Payment: This work will be paid for at the contract unit prices each for PEDESTRIAN SIGNAL HEAD, LED, 1-FACE, BRACKET MOUNTED WITH COUNTDOWN TIMER and will be payment in full for all labor, equipment, and materials required to provide and install the pedestrian traffic signal heads equipped with LED indications described above, complete.

REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT

This work shall be in accordance with Section 895 of the Standard Specifications except as modified herein.

The list of removal items shown below should represent an accurate listing of removal items along with other associated work; however, it is the Contractor's responsibility to verify all quantities prior to bidding. All traffic signal equipment at each intersection will be removed in full and no additional compensation will be granted.

The Contractor shall remove all wires pertaining to existing traffic signals and grounding, existing traffic signal heads, existing pedestrian signal heads, existing

pedestrian push buttons, existing luminaries if present, existing mast arms and posts, existing concrete foundations for mast arms and posts, and existing controller foundations at the intersection of Chambers Street and East Main Street. In areas where existing foundations and hand holes are removed and existing sidewalk is not proposed for construction this pay item shall cover all work related to any sidewalk removal or replacement. This work shall be included in the bid price for this pay item. Additionally, It is the intent of the project to remove all existing handholes located within the limits of the proposed pavement and relocate, as necessary, those handholes to a location adjacent to the back of curb.

The Contractor shall deliver all removal items to the City of Galesburg to their desired location. The point of contact is Wayne Carl at (309) 345-3625.

The Contractor shall dispose of all other items off of the right-of-way and reflect the salvage value of this equipment in the unit bid price for this pay item.

Method of Measurement: All traffic signal equipment at each intersection listed (as shown above for each intersection) will be paid for as each (per intersection).

Basis of Payment: The above work will be paid for at the contract unit price each (per intersection) for REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT and shall be payment in full for removing, disposing of, and transporting the equipment described above, complete. No additional compensation will be allowed.

CONCRETE FOUNDATION, TYPE A

This work shall consist installing a Concrete Foundation, Type A in accordance with Section 878 of the Standard Specifications for Road and Bridge Construction and State Standard 878001-09 with no exceptions.

The proposed location of the Concrete Foundation, Type A may be moved in the field to avoid conflicts at the approval of the Engineer. If foundation is located in an area not within the removal limits shown on the plans, removal of the existing sidewalk or earth disturbance shall be completed in accordance with Section 895 of the Standard Specifications for Road and Bridge Construction and any applicable notes or Special Provisions provided in these construction documents.

Basis of Payment: This work will be paid for at the contract unit price per foot for CONCRETE FOUNDATION, TYPE A, which price shall be payment in full for all labor, material, and equipment necessary to perform the work described above.

CONCRETE FOUNDATION, TYPE E, 36" DIAMETER

This work shall consist installing a Concrete Foundation, Type E, 36" Diameter in accordance with Section 878 of the Standard Specifications for Road and Bridge Construction and State Standard 878001-09 with no exceptions.

The proposed location of the Concrete Foundation, Type E may be moved in the field to avoid conflicts at the approval of the Engineer. If foundation is located in an area not within the removal limits shown on the plans, removal of the existing sidewalk or earth disturbance shall be completed in accordance with Section 895 of the Standard Specifications for Road and Bridge Construction and any applicable notes or Special Provisions provided in these construction documents.

Basis of Payment: This work will be paid for at the contract unit price per foot for CONCRETE FOUNDATION, TYPE E, 36" DIAMETER or CONCRETE FOUNDATION, TYPE E, 30" DIAMETER, which price shall be payment in full for all labor, material, and equipment necessary to perform the work described above.

LUMINAIRE, METAL HALIDE HORIZONTAL MOUNT 400 WATT

This work shall be in accordance with Section 821 of the Standard Specifications except as modified herein.

Luminaire shall be 400 Watt M-400 Luminaire with Cutoff Optics, by GE Lighting Systems, Inc. or approved equivalent.

Basis of Payment: This work shall be paid for at the contract unit price each for LUMINAIRE, METAL HALIDE HORIZONTAL MOUNT 400 WATT and shall be payment in full for all labor, equipment, and materials required to supply and install the luminaire described above, complete.

UTILITY RELOCATION SPECIFICATIONS

CONTROL OF THE WORK

The Standard Specifications for Water and Sewer Main Construction in Illinois shall govern the construction. Any subsequent reference to "Standard Specifications" in the "Utility Relocations Specifications" shall be meant to mean the Standard Specifications for Water and Sewer Main Construction in Illinois.

Contractor shall coordinate any potential disruptions in water and sewer service with the City of Galesburg and the Galesburg Sanitary District. The City or District shall be contacted at least 48 hours prior to connections being made.

Water services shall be installed after all mains have been placed into service.

Sanitary sewers shall be installed upgradient. Connections to the existing system shall be made under the supervision of the Galesburg Sanitary District. If sanitary services are disrupted during construction it is the contractors responsibility to maintain service until a permanent connection can be made or the service repaired.

WATER MAIN

This item of work shall comply with Sections 40 and 41 of the Standard Specifications.

This item of work shall consist of the furnishing and placement of the new 12-in. and 8-in. and 6-in water mains, as specified in the Plans.

Pipe Materials

≤12-in diameter shall conform to AWWA C-900, DR18 with a pressure rating of 150 PSI and push on joints.

Where noted on the plans, restrained joint pipe shall conform to AWWA C-905RJ, DR-18 with a pressure rating of 150 PSI.

All water main installed in steel or PVC casings shall be restrained joint pipe.

Water main bedding, haunching and initial backfill shall be FA-6. If trench conditions are wet and unstable, CA-7 shall be utilized for the bedding. If final backfill is CLSM , CA-7 shall be utilized for bedding and initial backfill. The bedding, haunching and initial backfill shall be included in the cost of the installation of the water main.

Water Main of the size, depth, location, and type specified shall be paid for at the contract unit price per lin. foot.

Testing

Pressure testing of water mains shall conform to Section 41-2.14B of the Standard Specifications. A minimum hydrostatic pressure of 100 psi shall be used if the hydrostatic pressure equal to 50 percent more than the operating pressure at the lowest elevation of the pipe section is less than 100 psi.

The pressure test period shall be 1 hour.

The leakage test period shall be 1 hour, and shall directly follow the pressure test. The allowable leakage rate shall be computed per Section 41-2.14C of the Standard Specifications.

Pressure testing and leakage testing of the water mains shall be included in the cost of the installation of the water main.

Disinfection

Disinfection shall be in conformance with Section 41-2.15 of the Standard Specifications. Satisfactory disinfection is demonstrated when two (2) consecutive samples, collected at least 24 hours apart, indicate no bacteriological contamination.

Disinfection of the water mains shall be included in the cost of the installation of the water main.

Tracer Wire

The Contractor shall furnish and install, along the entire route of the water transmission main, #12 AWG, THW single-conductor, copper locator wire with a 45 mil jacket. The wire shall be installed just above the crown of the pipe, shall be brought to the top outside of each valve box, and brought into the top of the valve box through a 3/8-in. drilled hole in the valve box. Any necessary splicing shall be made using a direct bury splice kit such as 3M Part No. 054007-09053, or equivalent. The tracer wire shall be tested for continuity prior to final acceptance by the Owner.

The cost of the locator wire, including installation and testing, shall be included in the cost of the installation of the water main.

STEEL CASING 24"

This item of work shall consist of the furnishing and installation of a steel casing at the location specified in the Plans in accordance with Section 23-3.02B of the Standard Specifications.

24-in steel casing shall have a minimum non-coated wall thickness of 0.375 inches.

The carrier pipe shall be center restrained by the use of casing spacers. The casing spacers shall be constructed of non-reactive material designed specifically for that purpose. The spacers shall be positioned within 6 in. from the end of the casing, on each side of joint in the carrier pipe, and at the midpoint of each pipe length. Spacers constructed of wood and steel banding are not acceptable.

The casing ends shall be sealed to the carrier pipe by the use of an APS Standard Model AC pull on casing end seal, or equivalent.

The casing spacers and casing end seals shall be considered included in the cost of the installation of the Steel Casing.

To install this casing, the Contractor will be required to bore under the railroad tracks shown on the Plans. The cost to bore under the railroad tracks for installation of this casing, including excavation of bore pit and receiving pit shall be considered included in the cost of the Steel Casing 24".

Steel signs shall be placed on both sides of the railroad right of way, along the casing alignment, stating "City of Galesburg Water Main."

Steel Casing, 24" shall be paid for at the contract unit price per foot of the size specified.

WATER VALVES

All valves and boxes must be approved by the City of Galesburg, Department of Public Works before installation. Valves shall be Resilient Wedge Gate Valves meeting ANSI/AWWA C509, such as American Flow Control or U.S. Pipe and Foundary. Bonnet bolts, studs, and nuts shall be Series 304 stainless steel. Valve bodies, bonnets, and gates shall be ductile iron per ASTM A536. Valves shall close in the clockwise direction. Stem seals shall be O-ring. Valve shall have a non-rising bronze stem per ANSI B 16.1.

All valves shall be restrained with retainer glands or a manufactured pipe restraint system approved by the Engineer.

All Valve Boxes shall have not less than a 5¼-in. shaft. Valve Boxes shall be Tyler Pipe two piece, screw type, #6850 series with the word "water" cast on lid, or an approved equal. The valve box and extensions necessary to reach the ground elevation shall be included in the unit price per each for the water valve of the size specified.

Water Valves shall be paid for at the contract unit price per each of the size specified.

TAPPING VALVES AND SLEEVES

Pressure connections to existing water mains shall conform to Section 46 of the Standard Specifications for Water and Sewer Main Construction in Illinois.

Tapping sleeve shall be 304L stainless steel and shall provide 360 degree coverage of the pipe being tapped. The sleeve shall have an integral flange meeting all applicable requirements of ANSI B16.1, class 125 and in accordance with MSS-SP60. A waffle 360 degree gasket with integral gap bridge shall provide the seal for the sleeve. Contractor shall uncover and determine the OD of the pipe being tapped prior to ordering the sleeve.

All tapping valves and boxes must be approved by the City of Galesburg, Department of Public Works before installation. Valves shall be Resilient Wedge Gate Valves with one mechanical joint end and one flanged end meeting ANSI/AWWA C509, such as American Flow Control, U.S. Pipe and Foundary, or Clow Valve Company. Bonnet bolts, studs, and nuts shall be Series 304 stainless steel. Valve bodies, bonnets, and gates shall be ductile iron per ASTM A536. Valves shall close in the clockwise direction. Stem seals shall be O-ring. Valve shall have a non-rising bronze stem per ANSI B 16.1.

All valves shall be restrained with retainer glands or a manufactured pipe restraint system approved by the Engineer.

All Valve Boxes shall have not less than a 5¼-in. shaft. Valve Boxes shall be Tyler Pipe two piece, screw type, #6850 series with the word "water" cast on lid, or an approved equal. The valve box and extensions necessary to reach the ground elevation shall be included in the unit price per each for the Valve and Box.

Tapping valve and sleeve size indicated shall refer to the size of tap being made, not the carrier pipe being tapped.

Tapping Valve and Sleeves shall be paid for at the contract unit price per each of the size specified.

DUCTILE IRON FITTINGS

All pressure main fittings shall be flanged ductile iron for above ground service and mechanical joint (M.J.) ductile iron for buried service, unless otherwise indicated on the Plans.

All fittings shall conform to ANSI A21.10 (AWWA C110), or ANSI A21.53 (AWWA C153), where possible. Minimum pressure rating shall be 350 psi. If shown or specified fittings are unavailable in the above standards, the manufacturer's standard may be

used upon approval of the ENGINEER. All rubber gaskets shall conform to ANSI A21.11 (AWWA C111). All fittings shall have cement mortar lining and seal coat per ANSI A21.40 (AWWA C104).

All fittings shall be equipped with retainer glands in lieu of standard glands.

Fittings shall be restrained in conformance with Section 41-2.10.

The cost of the Ductile Iron Fittings, including installation and testing, shall be included in the cost of the installation of the water main.

CONNECTIONS TO EXISTING WATER MAINS

It will be the responsibility of the Contractor to determine the exact location of the existing water main in the field.

All tees required to connect mains, all reducers required to connect different-sized mains, and all fittings required to change direction either horizontally or vertically in order to achieve the proposed alignment shall be included in the cost of the water main being constructed.

Removal of existing water main that is necessary to connect the proposed water main and plugging the end of the existing water main, as shown on the Plans or as directed by the Engineer, shall be included in the cost of the water main being constructed.

Before making any connection to existing water mains, the Contractor shall have all necessary tools, materials, pipe, and fittings on hand and sufficient experienced workmen available to preclude an unnecessary delay in making the connection due to adverse conditions or mishap. The actual work of cutting into a main or removal of a fitting shall not be done until all measurements, necessary pipe assembly, and other specified provisions have been completed.

Temporary blocking capable of withstanding the service pressure shall be provided for all existing valves, fittings, and pipe that could be affected by the proposed connection.

This work will not be paid for separately, but shall be considered included in the cost of the construction of the water main.

FIRE HYDRANT

This item of work shall comply with Section 45 of the Standard Specifications for Water and Sewer Main Construction in Illinois.

Hydrants shall conform to AWWA C-502, dry barrel. They shall be designed for a 500 psi hydrostatic test pressure and a 250 psi working pressure.

They shall include two (2) 2 ½" hose nozzles and one 4 ½" pumper nozzle. The threads shall conform to National Standard design.

Hydrants shall be provided with 2-piece breakaway barrels with fully revolving bonnets, removable and renewable valve sets. Hydrants shall be furnished with 304 stainless steel bolts and nuts between the barrel and the shoe. The hydrants shall be provided with six (6) inch pipe connections and 5 ¼ inch inside diameter valve openings.

Hydrant color shall match the currently installed existing hydrants in the owners system (yellow). The precise location and orientation of the hydrant shall be coordinated with the City of Galesburg Water Division. Generally, the pumper nozzle shall be placed facing the street and shall be located within 18" to 24" from the face of curb or back of sidewalk as applicable.

Set breakaway barrel 2 inches above finished grade. Set each hydrant on a large flat stone or concrete block and not less the ½ cubic Yard of coarse aggregate shall be provided at the base for drainage. Back or brace hydrants with concrete thrust block extending from the hydrant to the wall of excavation, and placed to permit the removal of the hydrant. All joints shall be restrained.

Lower barrel sections, flanges below grade shall be ductile iron only.

Allowable hydrant models are as follows:

- American Flow Control: Pacer Fire Hydrant (Model WB-67-250)
- Mueller Corp: Super Centurion (Model A423)
- Approved Equal

Hydrants shall be paid for at the contract price per each.

REMOVAL OF FIRE HYDRANTS

This item of work shall include the removal of existing fire hydrants. All removals shall be coordinated with the City of Galesburg to ensure isolation of the water mains. All hydrants shall be delivered to the City of Galesburg Water Department.

Removal of Fire Hydrants, as specified, shall be considered included in the cost of the construction of the water main.

REMOVAL OF WATER VALVE AND BOX

This item of work shall include the removal of existing valves and boxes. All removals shall be coordinated with the City of Galesburg to ensure isolation of the mains. All water valves and valve boxes shall be delivered to the City of Galesburg Water Department.

Removal of Water Valve and Box, as specified, shall be considered included in the cost of the construction of the water main.

SANITARY SEWER

This item of work shall comply with Sections 30 and 31 of the Standard Specifications for Water and Sewer Main Construction in Illinois and Section 550 of the Illinois Department of Transportation, "Standard Specifications for Road and Bridge Construction".

This item of work shall consist of the furnishing and placement of the new gravity sewer, as specified in the Plans.

All connections made between existing sewer and new sewer shall be made by use of a rubberized connection creating a water-tight seal. These connections shall be considered as included in the cost of the construction of the combined sewer. All pipe and fittings shall be gasketed.

Pipe Materials

Gravity sewers 15-in and smaller shall be PVC SDR 35 meeting ASTM D-3034.

Gravity sewers 18-in and larger shall be PVC SDR 26 meeting ASTM F-679.

Sanitary Sewer of the size and type specified shall be paid for at the contract unit price per foot.

Testing

The sanitary sewer shall be leakage tested and deflection tested in accordance with Section 31-1.12 and Section 31-1.13 of the "Standard Specifications for Water and Sewer Construction in Illinois, Current Edition. The cost of the required sanitary sewer testing will not be paid for separately but shall be considered incidental to the cost of the sanitary sewer.

BEDDING AND HAUNCHING MATERIALS

Foundation, Bedding, and Haunching Material shall meet the requirements of the Illinois Department of Transportation, "Standard Specifications for Road and Bridge Construction" for coarse aggregate or fine aggregate. The gradation shall be CA-6.

Bedding and Haunching Materials shall be considered included in the cost of the installation of the sewers.

EXPLORATION TRENCH, SPECIAL

This item of work shall consist of excavating for the purpose of locating existing underground sanitary sewer services, private mains and other appurtenant existing items.

The excavations shall be made at the locations shown on the plans, or as directed by the Engineer. The depth of exploration shall be a maximum of six feet.

Exploration trenches shall be constructed to find exact locations, depths, and diameters of existing sewer services for the following properties. The exploration trench location shall be coordinated with the Galesburg Sanitary District and shall occur generally within the existing ROW and/or at locations noted on the plans.

- 46 N. Pearl Street
- 58 N. Pearl Street
- 91 N. Pearl Street
- 723 E. Main Street
- 759 E. Main Street

Explorations shall be protected in accordance with applicable Federal, State, and local regulations, laws, and rules; but shall not be less than the standards and regulations established by OSHA in 29 CFR Part 1926. Backfill shall be placed within twenty-four (24) hours of the excavation. The excavation shall be backfilled with the same or similar materials as excavated.

Exploration Trench, Special shall be paid for at the contract unit price per foot.

ADJUSTING SANITARY SEWER SERVICE LINE

This item of work shall comply with Section 33 of the Standard Specifications for Water and Sewer Main Construction.

This work consists of the excavation and reconnection of active services. The Contractor shall notify the Engineer of all services encountered to determine which services are active. Service sewer connection sizes are not known at this time. The

contractor will determine the sewer services sizes through exploration trenching. They shall be verified in the field by the Engineer, and reconnection of the service to the sewer shall be the same diameter as the service sewer.

Sewer shall be constructed of Poly Vinyl Chloride (PVC) plastic pipe and fittings, six (6) inch SDR-35 meeting the requirements of ASTM D-3034 or four (4) inch SDR-26 meeting the requirements of ASTM D-3034. Joints shall meet the requirements of ASTM D-3212, except that no solvent-weld fittings shall be used in conjunction with 6" sewer service lines. Six (6) inch sewer pipe and fittings shall utilize only gasketed fittings meeting the manufacturer's recommendation. The service connection shall include installation of a service wye fitting, installation of service sewer, necessary service sewer backfill, and all necessary pipe fittings and connections to the service sewer to provide a water-tight reconnection.

Those services determined in the field by the Engineer as inactive shall be capped with concrete. This item of work shall be considered as included in the cost of the construction of the sewer.

Adjusting Sanitary Sewer Service Line will be paid at the contract unit price for each. The cost shall include labor, equipment and materials necessary to complete the work, including all necessary pipe, couplings, fittings, excavation and backfill.

SANITARY SEWER SERVICE, 6" PVC, COMPLETE

This work shall consist of relocating the six (6) inch schedule 40 PVC sewer service for 571 E. Main Street to connect to the existing sanitary sewer along Sumner Street as noted in the plans and in accordance with applicable portions of Section 30 of the Standard Specifications for Water and Sewer Main Construction in Illinois.

The general location of the existing service is noted in the plans and is based off detailed Galesburg Sanitary District field drawings. The existing service exits the building in an easterly orientation before turning south towards Main Street. The contractor shall field locate the point where the service begins to turn south which will be the location where the proposed service relocation will begin. A cleanout shall be installed at this location and the service will continue to extend to the east towards Sumner Street. A second cleanout shall be installed, approximately 100 feet from the initial cleanout. Connect to the existing factory wye connections in the 15" sanitary sewer by use of either appropriate water-tight fittings or by utilizing a rubber saddle and stainless steel bands at the location of the existing wye. Location of the existing factory wye connection will be provided by the Galesburg Sanitary District in the field. Trench backfill shall be at locations where the sewer service trench is within two (2) feet of the proposed edge of pavement, curb and gutter, or sidewalk.

This work shall be paid for at the contract unit price per each for SANITARY SEWER SERVICE, 6" PVC, COMPLETE which shall be payment in full for all materials, labor,

tools and equipment necessary to complete this work, including all pipe, fittings, and trench backfill.

MANHOLES, SANITARY, ALL DIAMETERS

This item of work shall comply with Section 32 of the Standard Specifications for Water and Sewer Main Construction in Illinois and Section 602 of the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction.

This work shall consist of the construction of a precast manhole, steps, casting, and connection of proposed and existing sewers to provide a water-tight manhole. The Neenah Foundary produces a sealed sanitary lid with the Galesburg Sanitary District name and logo. This frame and lid *(R-1713 Frame with Type B Self-Sealing Lid with Concealed Pickhole, Cast with Galesburg Sanitary District Name and Logo)* shall be used for all manholes. Material required for the connection of existing sewers shall be considered as included in the cost of the manhole. All pipe openings shall be required to be "A-Lok".

Testing

The proposed manholes shall be tested in accordance with Section 32-12 of the "Standard Specifications for Water and Sewer Construction in Illinois, Current Edition. The cost of the required manhole testing will not be paid for separately but shall be considered incidental to the cost of the sanitary manholes.

Manholes, Sanitary, 4'-Diameter, Type 1 Frame, Closed Lid, shall be paid for at the contract unit price per each.

Drop Manhole Connection shall be paid for at the contract unit price per each.

Manhole, Additional Depth, 4 Foot Diameter shall be paid for at the contract unit price per foot.

PUMP STATION SPECIFICATIONS

DRAINAGE STRUCTURES (PUMP STATIONS)

Description: Drainage Structures shall be furnished and installed in accordance with Section 602 of the Standard Specifications with exceptions shown on the Plans and as specified herein.

There are three (3) Drainage Structures, No. 1. Each is identical with the exception of inverts, hatches and pipes entering and exiting them. They will be bid per each.

Drainage Structures, No. 1 shall be excavated using conventional excavation.

The Contractor shall submit a detailed excavation and installation plan to the Engineer for approval prior to commencing work. The plans shall be sealed by a professional engineer. The plans shall include proposed shoring, either permanent or temporary, and staging. This approval will not relieve the Contractor for responsibility for the safety of the excavation. The shoring shall be designed for earth loads and HS-20 live load for vehicle traffic.

Material removed from the excavation shall be disposed of in accordance with Section 202.03 of the Standard Specifications.

A 12-in. bedding of CA-7 aggregate shall be placed in the bottom of the excavation and leveled to form a flat base to set the Drainage Structures.

Drainage Structures shall be precast reinforced concrete manholes conforming to ASTM C-478. The structures shall be water-tight. The precast manhole shall have a minimum compressive strength of 4,000 psi at 28 days.

All penetrations through the walls of the drainage structure shall be sealed using an A-lok, Press Seal Gasket or other cast in place water tight gasket.

The drainage structure sections shall be a minimum of 4-ft tall with the exception of the final section. Each section shall be sealed with two (2) strips of butyl rubber sealant. Joints in the butyl rubber sealant shall be overlapped to prevent gaps.

The drainage structure shall be checked after the installation of each section to ensure a true vertical installation. If the alignment is off, the Contractor shall take corrective action to shim the structure back to level.

The exterior and the bottom of the base of the structures shall receive two coats of asphalt emulsion waterproofing in accordance with Section 503.18 of the Standard Specifications.

The drainage structures shall be backfilled with compacted FA-6.

After installation is complete, if there are water leaks at joints, the Contractor shall waterproof the leaks using drilled ports around the leak and a hydrophilic grout.

The top barrels of the Drainage Structures shall be flat. The precast lids shall be sealed to the top ring section with a double row of butyl mastic. The precast lids shall have a cast in place access frames and hatches per the plans. The frame and hatch design live load is AASHTO HS-20 truck load and alternate tandem loads.

Chamfered inverts shall be installed in the structures as shown on the plans. The invert shall be constructed of Class SI concrete conforming to Section 1020.04 of the Standard Specifications. The chamfer and sloped sidewalls in Drainage Structures, No. 1 Outlet Manhole and Pump Manhole shall be per the pump manufacturer's recommendations to provide sufficient space between the volute and the invert of the station. The sidewalls shall be sloped to direct debris to the pumps and promote self-cleaning of the structure invert.

General: This work includes all mobilization, excavation, temporary or permanent shoring/casing, labor, materials and equipment required to manufacture, furnish, and install the manhole, precast concrete, lid, access frame and hatch, FA-6, butyl rubber sealant, asphalt emulsion waterproofing, CA-7, concrete, removal and disposal of excess material and other incidental items as shown on the plans.

Basis of Payment: This work will be paid for at the contract unit price per each for DRAINAGE STRUCTURES of the numbers shown on the plans.

PUMP STATION ELECTRICAL WORK

General: The work to be included under this item shall be the furnishing, installing, and testing of all materials and electrical equipment necessary in order to provide a complete and operational electrical system at the Pump Station.

The Contractor shall furnish and install all materials necessary for a complete and operational installation of the electrical equipment. The complete installation and wiring shall be done in a neat, workmanlike manner. All electrical work shall comply with the requirements of NFPA 70 – National Electrical Code (NEC), most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, FM Approval, ETL/Intertek Testing Services listing/verification (or other third party listing), and/or the manufacturer's warranty of a device will NOT be permitted.

The electrical work and equipment specified is based on equipment of the type and size as noted on the Plans and specified herein. Should the proposed pump motors (or

any other proposed loads) exceed the ratings of the electrical equipment specified, the General Contractor shall be solely responsible for furnishing any and all modifications necessary in order to provide a fully functional system to the satisfaction of the Engineer at no change to the contract cost. The Contractor shall also be required to submit for review, sufficient information determined by the Engineer to be necessary to review such alternates or modifications.

Per Illinois Environmental Protection Agency Title 35: Environmental Protection, Subtitle C: Water Pollution, Chapter II: Environmental Protection Agency Part 370: Illinois Recommended Standards for Sewage Works all electrical equipment installed in a sewage pump station wet well shall be suitable for Class I, Division 1, Group D hazardous location. In addition equipment located in a sewage wet well shall be suitable for use under corrosive conditions.

Per NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities, a storm water pumping station wet well (with no ventilation or ventilated at less than twelve (12) air changes per hour) is classified as a Class I, Division 2, Group D hazardous location.

Per the Illinois Department of Transportation Drainage Manual dated July 2011, Chapter 13 – Pump Stations, Section 13-204 Safety it notes *"All electrical equipment including motors should be explosion proof and should be located above the allowable high water elevation. Even submersible pump motors should be explosion proof because they may not always be submerged."*

Based on the above requirements all electrical installations associated with the pumping station wet well shall be suitable for Class I, Division 1, Group D hazardous location and conform to the applicable sections of NFPA 70 National Electrical Code (NEC) Articles 500, 501, and 504 in addition to the other applicable sections of NEC. Where electrical equipment is installed in a classified hazardous location it shall be UL-listed, Factory Mutual-approved, or ETL/Intertek Testing Services listed/verified suitable for use in the respective classified hazardous location; (Class I, Division 1, Group D location for the pump station wet well).

All work, power outages, and/or shut down of existing systems shall be coordinated with the respective facility owner's representative. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety & Health Standards for electrical safety and lockout/tagout procedures, including, but not limited to, 29 CFR Section 1910.147 the control of hazardous energy (lockout/tagout).

Contractor shall keep a copy of the latest National Electrical Code in force on site at all times during construction for use as a reference.

Contractor and respective electrical contractor shall keep a set of construction plans and specifications with all addenda and copies of any applicable change orders on site at all times.

Electrical Equipment and Materials and the associated installation are specified in the following sections:

Section 16010 – Basic Electrical Requirements.

Section 16111 – Conduit and Raceway.

Section 16120 – Wire and Cable.

Section 16130 – Boxes

Section 16190 – Supporting Devices

Section 16195 – Electrical Identification

Section 16410 – Enclosed Circuit Breakers

Section 16421 – Utility Service Entrance

Section 16422 Temporary Power

Section 16450 – Grounding

Section 16460 – Dry Type Transformers

Section 16470 – Panelboards.

Section 16495 Automatic Transfer Switches

Section 16615 Surge Protective Devices

Section 16620 Standby Power Generation Systems

Submittals: Contractor shall provide shop drawings for all electrical equipment. Shop drawings shall clearly indicate proposed items, capacities, characteristics and details in conformance with the Plans and Specifications. The respective manufacturer shall certify capacities, dimensions, special features, etc. Shop Drawings for all items shall be prepared immediately upon award of Contract. The Contractor shall submit a minimum of four (4) copies to be retained by the Engineer plus the number of copies, for which the Contractor requires distribution. No materials shown thereon shall be ordered until Shop Drawings are reviewed and approved by the Engineer. When a submittal is marked "Revise and Resubmit," "Rejected," and/or "Submit Specified Item" do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication,

delivery, or other activity. Revise or prepare a new submittal in accordance with the notations, resubmit, and repeat if necessary to obtain a different action mark such as "No Exceptions Taken" or "Furnish as Corrected". Contractor is responsible for compliance with the specified characteristics. Contractor's responsibility for error and omissions in submittals is not relieved by the Engineer's review of submittals. Accompany each submittal with a transmittal letter that includes the date, project title and number, Contractor's name and address, the number of shop drawings, product data, and/or samples submitted, notification of any deviations from the Contract, and any other pertinent data. Shop drawing submittals shall include the following:

Date and revision dates.

Project title and number(s).

Identification of product or material.

Certified outline and installation drawings.

Performance data and operating characteristics.

Arrangement drawings showing piping, controls and accessory equipment.

Wiring diagrams which identify factory wiring and field wiring.

Drawings on non-standard components and accessories.

Catalog data marked to indicate materials being furnished.

Operation and Maintenance/Instruction Manuals.

Specified standards, such as ASTM numbers, ANSI numbers, UL listing/standard, NEMA ratings, etc.

Identification of previously approved deviation(s) from Contract documents.

Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements and compliance with Contract documents.

Space for Prime Contractor's approval stamp.

INSTALLATION AND TESTING OF PUMP CONTROL PANEL

Installation

Control panel shall be installed per manufacturer's recommendations as detailed on the Plans and as specified herein.

All conduit entries into the panel enclosure shall have water-tight threaded hubs, UL-listed for the use with the respective NEMA 4, 4X enclosure to maintain the NEMA 4, 4X rating of the panel enclosure.

Seal conduit openings in the panel enclosure with duct seal.

Conduits with intrinsically safe wiring, including level switch cables, shall terminate in the control panel at the intrinsically safe wiring section. Non- intrinsically safe wiring including, but not limited to, power feeder conductors, branch circuit conductors, and pump motor cables shall not enter the control panel at the intrinsically safe wiring section and shall maintain a minimum separation distance inside the control panel from the intrinsically safe conductors as required by NEC 504 and ANSI/ISA RP12.6.

Install explosion-proof conduit seal-off sittings as detailed on the Plans and in conformance with manufacturer's instructions. Contact the respective conduit seal-off manufacturer if assistance is required for direction of installing the packing fiber to form a dam and pouring the sealing compound.

Install level switches as detailed on the Plans and per manufacturer's directions and recommendations. Verify level elevations with Engineer and Pump Manufacturer's Service Representative and adjust as required. Secure slack level switch cable to cable hangers with corrosion resistant nylon cable ties. Connect equipment ground wires from individual level switches to the respective equipment ground bar in the pump control panel.

Terminate all equipment ground wires on the pump control panel equipment ground bar. Where pump motor cables include an equipment ground wire and an additional "ground check" wire both ground wires shall be terminated on the equipment ground wire. Where level switch cables include an equipment ground wire terminate the respective ground wire on the control panel equipment ground bar.

Testing

Contractor shall provide services of the pump control panel manufacturer's representative for the purpose of inspection, check-out, testing, start-up, instruction of user personnel, and any other required services to provide a complete and operational system. The Contractor shall be responsible for arranging and coordination tests with his suppliers, subcontractors, and/or equipment representatives. All tests shall be conducted in the presence of the Engineer. Contractor shall provide water as/if required to test pumps under load. Contractor shall furnish three (3) copies of test results to Engineer. Contractor shall also furnish three (3) copies of Operation and Maintenance Manuals, for operator personnel use, to the Engineer.

Start-up procedure and tests shall include, but not be limited to, the following, as well as other tests and requirements specified herein:

Conduct megger test on each motor, (see Motor Start Up Certification and Testing Report).

Inspect control panel for correct terminal connections and tightness, correct and tighten as required.

Check level switches and corresponding circuitry for proper operation.

Check oil in motors (where applicable).

Check for correct rotation of pump motors, correct as required.

Check for proper pump installation and operation.

Measure voltage at no load (pumps off) and at pumps running under load for each pump motor.

Measure current in each phase with motor running under load for each pump motor.

Verify proper operation of pump motor thermal sensors (where applicable).

Run the pumps in automatic and manual modes of operation. Verify proper operation of alternator.

Simulate alarm conditions and verify proper annunciation of each alarm on the automatic phone dialer system.

Verify a label is provided on the pump control panel with the name, address, phone number, and emergency phone number of the service representative.

Verify proper operation of all pilot lights and alarm lights.

Test receptacles for proper output power and proper operation.

Test pump station on utility power and confirm proper operation.

Simulate utility power outage and test pump station on engine generator power and confirm proper operation.

Instruct user personnel about the operation of the control panel and components; indicating items for routine maintenance check, operation modes, failure modes, alarm conditions, etc.

Conduct any additional tests as recommended or required by the manufacturer.

Correct any defects or deficiencies and retest after corrective and/or repair work has been performed to confirm proper operation of the system.

Measurement and Payment: This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding, coordination, and testing required to complete the installation of the pump station and to place it into proper working order. The pump control panel shall be furnished by the respective pump manufacturer's representative and installed by the Electrical Contractor. The furnishing of the pump control panel and pump manufacturer representative's services shall not be included with this item and shall be included in the contract price for PUMPING STATION. The installation of the Pump Control Panel and all associated electrical work and coordination shall be included with this item.

MOTOR START UP CERTIFICATION AND TESTING REPORT

(One (1) form is to be provided for each motor, copy as required)

Page 1 of 2 pages

Hanson Professional
Services, Inc. 1525 South
Sixth Street Springfield,
Illinois 62703
Phone (217) 788-2450

Project Location:_____ Project Name:_____
Client (End User)_____ Project Number:_____
Client Site Location:_____

Temperature (□F):_____
Humidity:_____
Time of Day:_____
Weather (if outdoors):_____
Motor Function/Designation/Location:
_____

Motor Nameplate Data

1. Manufacturer's Name:_____
2. Motor Serial Number:_____
3. Manufacturer's type and frame designation_____
4. Horsepower _____
5. Time Rating (5, 15, 30, 60 minutes, or Continuous)_____
6. Maximum ambient temperature for which motor is designed_____
7. NEMA Insulation Class Designation_____
8. NEMA Torque Design Class _____
9. RPM at rated load_____
10. Frequency_____
11. Number of Phases_____
12. Rated Full-Load Amperes_____
13. Voltage_____
14. Code letter for Locked-Rotor KVA_____
15. Service Factor_____
16. Efficiency (NEMA Nominal)_____
17. Internal motor thermal protected (if required)? (Yes/No)_____

Page 2 of 2 pages

Motor Start-Up Certification and Testing Report

(Continued)

Motor Start-Up & Commissioning Data

Insulation Resistance Test

Megohms measured to ground @ 500 VDC (60 Second continuous test)

Motor Lead T1 measured to Ground_____Megohms
Motor Lead T2 measured to Ground_____Megohms
Motor Lead T3 measured to Ground_____Megohms T1-
T2-T3 (Tied) measured to Ground_____Megohms

Voltage (at motor)

	Phase A-B	Phase B-C	Phase C-
No-Load	_____	_____	_____
Full	_____	_____	_____

Motor Current (field measured data)

No Load
Phase A_____Amps
Phase B_____Amps
Phase C_____Amps

Full Load
Phase A_____Amps
Phase B_____Amps
Phase C_____Amps

DATA CERTIFIED BY:

Firm:_____

Name_____

Date:_____

PUMP STATION MECHANICAL WORK

Description: This work shall consist of the 24-in, 14-in, 12-in, and 8-in. ductile iron piping, fittings, valves, steel pipe supports, and the 2 in. Schedule 40 drain with check valve in the valve vaults and Drainage Structures, No. 1 Pump Manhole and Outflow Manhole.

Ductile Iron Piping

The ductile iron piping with flanged joints shall conform to ANSI/AWWA C115/A21.15. The pipe shall have a cement mortar lining with asphaltic coating inside and out conforming to ANSI/AWWA C104/A21.4 Gaskets shall be constructed of molded SBR rubber meeting ANSI/AWWA C111/A21.11. Fastening hardware shall be low carbon steel conforming to ASTM A307. Pipe pressure rating shall be 250 psi.

All pressure main fittings shall be flanged joint (FL.) ductile iron, unless otherwise indicated on the Plans. All fittings shall conform to ANSI A21.10 (AWWA C110), or ANSI A21.53 (AWWA C153), where possible. Fitting pressure rating shall be 250 psi. If shown or specified fittings are unavailable in the above standards, the manufacturer's standard may be used upon approval of the ENGINEER. All rubber gaskets shall conform to ANSI A21.11 (AWWA C111). All fittings shall have cement mortar lining and seal coat per ANSI A21.40 (AWWA C104).

Swing Check Valve

Swing check valves shall be flanged with a weighted lever arm and shall be the end product of one manufacturer. The swing check valves shall be installed per the valve manufacturer's instructions.

Swing check valves shall conform to ANSI/AWWA C508, Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) MMS-SP-71 and MMS-SP-80, and ASTM D- 1784.

The swing check valve shall utilize a thru-valve disc hinge shaft, with outside lever and weight. The valve shall be designed for either horizontal or vertical installation, as shown on the drawings. The valve shall provide a resilient material to metal seat, and a full waterway design, as defined in AWWA C508.

Swing check valve body shall be ASTM A126 Class B cast iron. The valve body shall be flanged and of one-piece construction and constructed in a globe pattern. The valve

outlet flange shall be integrally cast with the valve body and shall be one nominal pipe size larger than the valve inlet flange. Valve body shall be full waterway type, designed to provide a net flow area not less than the nominal inlet pipe size area when swung open no more than 25 degrees. Valve shall have a replaceable bronze body seat. Body seat materials shall be cast bronze meeting AWWA C508.

Swing check valve shall provide full pipeline flow area with disc at 25 degrees open, and shall allow for 45 degrees total disc rotation. The disc shall be stopped in its full open position by a built-in stop in the valve body. The disc shall be constructed of cast or ductile iron with a minimum strength of 30,000 psi. The disc seat ring (resilient seal) shall be a rubber like material, and shall be selected by the manufacturer in accordance with potable water requirements, as given in AWWA C508. The disc attachment arm shall be constructed of ductile iron or steel with a minimum strength of 65,000 psi. The disc attachment arm shall be prevented from rotation on the disc hinge shaft by a machined keyway and stainless steel key.

The counterweight arm(s) shall be constructed of steel, and shall be secured to the disc hinge shaft by a stainless steel key. The counterweight shall be constructed of cast iron, and shall be secured in position on the counterweight lever by a stainless steel lock screw.

The swing check valve body assembly shall incorporate a circular flanged cover of the same construction as the valve body. The cover shall be of adequate size to permit field inspection, maintenance and replacement of all internal valve components. The valve seat, disc seal ring, and mating surface shall be field removable and replaceable without removing the valve from the pipeline.

The Contractor, in conjunction with the swing check valve manufacturer, shall make adjustments in the position of the lever weight to achieve optimum no-slam operation.

Plug Valves

Plug valves shall be flanged with gear operators and hand wheel, and shall be the end product of one manufacturer. The plug valves shall be installed per the valve manufacturer's instructions. Plug valves shall be of the non-lubricating, eccentric type and shall be designed for a working pressure of 150 psi. Valves shall provide tight shut-off at rated pressure.

The valve shall have a 100 percent port design. The valve body shall be cast iron ASTM A126 Class B with welded in overlay of 99 percent nickel allow content on all surfaces contacting the face of the plug. The valve plug shall be ductile iron ASTM A-536, Grade 65-45-12 with Buna N resilient seating surface to mate with the body seat.

The plug valves shall be furnished with permanently lubricated sleeve type bearings conforming to AWWA C517. Bearings shall be of sintered oil impregnated type 316 stainless steel ASTM A-743 Grade CF-8M or bronze ASTM B-127.

Valve shaft seals shall be of the "U" cup type, in accordance with AWWA C517. Seals shall be self-adjusting and re-packable without moving the bonnet from the valve.

Steel Pipe Supports
Steel pipe supports shall be utilized within the valve vault for the ductile iron fittings and valves. Pipe supports shall be bolted to the floor of the vault and shall be designed to cradle the diameter of pipe they are supporting.

Valve Vault Drain
2-in. Polyvinyl Chloride (PVC) pipe shall be ASTM D2665 drain, waste, vent pipe. The drain shall be furnished and installed in accordance with Section 20 of the Standard Specifications for Water & Sewer Main Construction in Illinois, as shown on the Plans and as specified herein.

The backfill for the piping shall be controlled low strength material, mix 2 when in the vicinity of the Drainage Structures No. 1 Pump Manhole and Outflow Manhole and the valve vaults. The Contractor is responsible for any additional fittings required to plumb the drain from the valve vaults to the Drainage Structures.

The annular space around the pipe shall be sealed with non-shrink grout where it penetrates the walls of the valve vault and drainage structure.

The 2-in. check valve shall be a 2-in. ball check with integral unions to connect to the 2 in. drain pipe. The check valve shall be able to be installed in a vertical or horizontal position and still function.

General: This work includes all excavation, labor, materials and equipment required to furnish, and install ductile iron pipe both flanged and push on, fittings, valves, steel pipe supports, 2-in. Schedule 40 drain pipe, 2-in. check valves, pipe and rail supports, backfilling, accessories, testing, and other incidental items as shown on the plans.

Basis of Payment: This work will be paid for at the contract lump sum price for PUMP STATION MECHANICAL WORK.

PUMPING STATION

Pumping station consists of the pumping equipment and accessories and testing as well as the valve vaults.

The valve vaults shall be precast reinforced concrete conforming to ASTM C913. A sump pit shall be cast in the base of the valve vaults as shown on the plans. The Contractor shall submit plans and calculations for the valve vault that are signed and sealed by a licensed structural engineer in the State of Illinois prior to ordering or manufacturing the valve vault. The structure shall be designed for earth loads and HS-20 live load for vehicle traffic.

Once the vault is installed and piping in place, the space between the valve vault and the limits of excavation shall be backfilled with FA-6.

The lids of the valve vault shall be flat and shall be sealed to the top of the valve vault with a double row of butyl mastic. The lids shall have a rough opening cast into them to match the aluminum hatch to be installed when the sidewalk is poured. The aluminum hatches shall be hinged with a flush locking mechanism and a 36-in. by 36-in. minimum clear opening. The top of the hatch shall be a minimum 1/4-in. aluminum diamond tread plate. The access frame and hatch shall be HS-20 load rated. Contractor shall coordinate hatch fabrication with the pump manufacturer.

Openings in the structure for pipes shall be sealed water-tight with a flexible resilient type gasket such as A-Lok, Inc., Press Seal, Kor-N-Seal or equal.

After installation is complete, if there are water leaks at joints, the Contractor shall waterproof the leaks using drilled ports around the leak and a hydrophilic grout.

Submersible Pumps and Accessories

Three (3) submersible wastewater pumps each with multiple vane non-clogging impellers. Each pump shall be equipped with a submersible electric motor connected for operation on respective electrical service with submersible cable (SUBCAB) suitable for submersible pump applications. The contractor shall provide sufficient cable for a continuous run from the pumps to the junction box with 8 ft of extra cable. The power cable shall meet NEC and ICEA standards for submersible pumps and have P-MSHA Approval. The pump shall be supplied with a discharge. Each pump shall be fitted with minimum 50-feet of stainless steel chain. The working load of the lifting system shall be 50% greater than the pump unit weight.

Submersible pumps and motors shall be designed specifically for raw wastewater use, including totally submerged operation during a portion of each pumping cycle and shall meet the requirements of National Electrical Code (NEC) for such units. Pump motor cords shall be designed for flexibility and serviceability under conditions of extra hard usage and shall meet the requirements of the NEC for flexible cords in sewage pumping stations. Ground fault interruption protection shall be used to de-energize the circuit in the event of any failure in the electrical integrity of the cable.

The Contractor shall furnish and install totally submersible electric operated stormwater pumps of the sizes, number, and capacities shown below. The motors shall be non-overloading at any point on the pump curve, from shut-off to zero head conditions, and shall be of the specified horsepower, operating at 480 volt, 3 phase. The pumps, discharge elbows, and associated mounting hardware shall be as manufactured by the pump manufacturer. Information associated with the equipment from Fairbanks Nijhuis was used as the basis for the design as specified herein and shown on the drawings. Equivalent pumps from other manufacturers meeting the performance specifications of this special provision shall be deemed "as-equal".

The services of a manufacturer's representative are required at the time of start-up.

Pump Design
The pumps shall be furnished as one complete pump system, all of the system components supplied by one manufacturer. The pumps shall be vertical, submersible, solids handling type pump, each model of pump shall be designed to handle gritty sludge and raw stormwater, and shall be capable of passing spherical solids as follows:

Pump Size	Minimum Allowable Solids Handling Capacity	Minimum Pump Base Discharge Size
8"	4"	8"
14"	5.25"	14"

The design shall be such that the pump unit will be automatically connected to the discharge piping when lowered into place on its mating discharge connection, permanently installed in the manhole. The pump shall be easily removable for inspection or services, requiring no bolts, nuts, or other fastenings to be disconnected. For this purpose, there shall be no need for personnel to enter the manhole. It shall be fitted with a lifting hoop of adequate strength to permit raising and lowering the pump for inspection or removal. A stainless steel chain or cable shall be attached to this lifting hoop and extended to the top of the manhole. A stainless steel hook rack shall be installed just below the frame and access hatch in Drainage Structures, No. 1, Outflow Manhole and Pump Manhole and shall have at least three hooks per pump (min. 3 hooks in outflow manhole and 6 hooks in the pump manhole). The pump, with its appurtenances and cable, shall be capable of continuous submergence underwater without loss of water-tight integrity to a depth of 100-feet.

Pump Construction
All major parts, such as the stator casing, oil casing, sliding bracket, volute and impeller shall be gray iron. All exposed bolts and nuts shall be of stainless steel.

A wear ring system shall be installed to provide efficient sealing between the volute and impeller. The impeller shall be gray cast iron of non-clogging design coated with acrylic dispersion zinc phosphate primer, capable of handling solids, fibrous material, and other matter found in normal stormwater applications. The impeller shall be dynamically balanced. Static and dynamic balancing operations shall not deform or weaken it. The impeller shall be retained with a non-corroding bolt.

The pump shall be provided with a mechanical rotating shaft seal system running in an oil reservoir having separate lubricated seal faces. No seal damage shall result from operating the pumping unit out of its liquid environment. The seal system shall not rely upon the pumped media for lubrication. Provision for determining the condition of the lower seal unit without disassembly of the pump shall be provided.

Pump shall be a standard production pump with attached rail guides and discharge elbow. Rail guides shall be fastened to pump so that all lifting loads will come on the guide supports and not on the pump or motor housing. Guide mechanism on the pump shall be constructed of bronze, shall be non-sparking, and UL listed or Factory Mutual approved.

Installation of the pump unit to the discharge connection shall be the result of a simple linear downward motion of the pump unit guided by no less than two guide bars. No other motion of the pump unit, such as tilting or rotating, shall be required.

The discharge flange of each pump shall be designed to automatically seal with the discharge elbow when the pump is lowered into place and the pump is in operation. The seal shall be capable of remaining reliable for water-tightness in the environment into which it will be located. Discharge elbow shall have 125 lb. standard flanges.

If a pump mounting base is furnished, these plates shall include adjustable guide rail supports and discharge elbow with flange to align the pumps with the flange. Plates and fitting shall be coated with tar base epoxy paint.

The motor cable entry water seal design shall be such that it precludes specified torque requirements to insure a water-tight and submersible seal. Pump motor cable shall be suitable for submersible pump applications and this shall be indicated by a code or legend permanently embossed on the cable. Cable sizing shall conform to NEC requirements for pump motors and shall be of adequate size for the respective pump motor. The cable shall be at least 75-feet in length.

All mating surfaces of major parts shall be machined and fitted with nitrile O-rings where water- tight sealing is required. No other sealing compounds shall be required nor used.

The 8-in pump shall have a low flow capacity of 1,325 GPM at a total head of 44-feet when operating at 1,200 RPM with a pump efficiency of 68% or greater and have a high flow capacity of 1,875 GPM at a total head of 36-feet when operating at 1,200 RPM with a pump efficiency of 72% or greater. Pump motor shall be a minimum of 25 horsepower. Pump and motor assembly shall be UL listed or Factory Mutual approved, explosion proof suitable for use in Class I, Division 1, Group D hazardous location. The 14-in pump shall have a low flow capacity of 5,500 GPM at a total head of 40-feet when operating at 1200 RPM with a pump efficiency of 71% or greater and have a high flow capacity of 6700 GPM at a total head of 31.5-feet when operating at 1,200 RPM with a pump efficiency of 72% or greater. Pump motor shall be a minimum of 100 horsepower. Pump and motor assembly shall be UL listed or Factory Mutual approved, explosion proof suitable for use in Class I, Division 1, Group D hazardous location. The project special provision has been written around the Fairbanks, 8" 5434SMV & 14" 5731MV.

Pump Assembly Configuration

Cooling System - Motors are cooled by the surrounding environment or pumped media. Pumps requiring jackets for recirculation of either pumped media or internally reticulated cooling fluid of any type are not acceptable

Cable Entry Seal - The cable leads are to allow the connection of a cable to the motor, to be accomplished in the field without soldering cable. All leads are to be sealed with a grommet and an epoxy compound system with strain relief to prevent cable-wicking to conduit box location in the top of the motor. Leads are connected to a water-tight fully O-ringed terminal board with brass lugs.

Total grommets or other similar sealing systems are not acceptable. Motor shall be supplied with sufficient cable to run between the pump and the junction box plus an additional 8 ft of slack of multi-conductor type RHW or Re Neoprene power cable and control cable. Cable sizing shall conform to NEC specifications.

Separate terminal board, which is fully o-ringed and each terminal individually o-ringed, to form a water tight barrier.

Electric Motor

Motors shall be rated for Class I, Division I, Group D.
The pump motor shall be a NEMA B design, induction type with a squirrel cage rotor, shell type design, housed in an air filled, watertight chamber. The stator windings shall be insulated with moisture resistant Class F insulation. The stator-winding and lead shall be insulated with moisture-resistant Class F insulation for continuous duty in 40 C rise liquids. The motor shall be designed for continuous duty capable to minimum of ten (10) starts per hour. Motor shaft shall be 416 stainless steel: the rotor and shaft together is to be dynamically balance to meet NEMA vibration limits: all hardware to be stainless steel.

Thermal switches set to open at 311F shall be embedded in the stator end coils to monitor the temperature of each phase winding. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the control panel. The motor and the pump shall be produced by the same manufacturer.

The combined service factor shall be a minimum of 1.15. The motor shall have a voltage tolerance of plus or minus 10%. The motor shall be designed for operation up to 40°C (104°F) ambient and with a temperature rise not to exceed 80°C. A performance chart shall be provided showing curves for torque, current, power factor, input/output kW and efficiency. This chart shall also include data on starting and no-load characteristics.

The power cable shall be sized according to the NEC and ICEA standards and shall be of sufficient length to reach the junction box without the need of any splices. The outer jacket of the cable shall be oil resistant chlorinated polyethylene rubber. The motor and cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet or greater.

The motor horsepower shall be adequate so that the pump is non-overloading throughout the entire pump performance curve from shut-off through run-out. Pumps shall be sized based on the total hydraulic capacity based on test data, reduction in the head range or chopped pump curves are not acceptable.

Bearings - The pump shaft shall rotate on two sets of bearings. Motor bearings shall be permanently grease lubricated. The lower bearing shall compensate for axial thrust and radial forces. The lower shaft bearing shall be locked on place to prevent shaft movement and to take thrust loads. Bearing shall be prelubricated at the factory.

Mechanical Seal - Each pump shall be provided with a tandem mechanical shaft seal system. The seals shall require neither maintenance nor adjustment nor depend on direction of rotation for sealing. The mechanical seals must be commercially available and manufactured by a major seal manufacturer. Seal shall be constructed of a polymeric body with SC/TC faces for the lower and carbon/ni-resist for the upper. Seal body shall be designed such it will not snap debris when in operation.
The motor shall be able to operate unsubmerged up to 15 minutes without damage while pumping under load.

Seal lubricant shall be FDA Approved, nontoxic.

Pump Shaft - Pump and motor shaft shall be the same unit. The shaft shall be 416 stainless steel. The use of stainless steel sleeves will not be considered equal to stainless steel shafts.

Impeller - The impeller shall be one piece, single suction, enclosed two (2) -vane, radial flow design for the 8" pump and an enclosed three (3)-vane, radial flow design for the 14" pump, each with well-rounded leading vane edges and thick hydrofoil shape which prevents the accumulation of solids and stringy material through the impeller. It is to be dynamically balanced and secured to the shaft by means of a key and fastener. Wiper vanes are not allowed. The impeller waterways and clearance between the impeller periphery and volute cutwater shall be capable of passing a 5.25" spherical solid for the 14" pump and a 4" spherical solid for the 8" pump. There shall be provisions for adjustable shims behind the impeller to maintain clearance between the impeller and suction head wear rings. Semi open impellers or impellers without hard metal wear rings are not acceptable. Coated wear rings are not acceptable. Impeller shall be designed to be fully trimmable. Semi open type impellers or impellers that will not accept wear rings are not allowed.

The impeller shall be capable of handling solids, fibrous materials, heavy sludge and other matter normally found in storm water up to 3%.

Axial wear rings constructed of 416 stainless steel shall be provided for both impeller and volute. Wear rings shall be the axial design and fully adjustable. Radial type rings are not allowed.

Volute-Suction Cover - The pump volute shall be a single piece with smooth passages of sufficient size to pass any solids that may enter the impeller. Inlet and discharge size shall be as specified. Spiral grooved suction volute insert plates that act as the impeller enclosing shroud and wear surface and that do not pass the listed solids clearances are specifically not acceptable.

The volute shall be provided with a replaceable hard metal Grit Shield, which shall be fully interchangeable with a standard wear ring. The Grit Shield shall be heat treated to provide a minimum Brinell hardness of 550-600. The Grit Shield shall be 25% chrome iron with casting components specifically designed to interrupt rotational patterns of pumped fluid and expel debris back to the flow stream. The Grit Shield shall ensure effective sealing between the impeller and volute housing. Non- hardened or elastomer or rubber coated metal or stainless steel wear rings are not acceptable.

The pump discharge shall be provided with an integrally cast flange. The seal between the pump discharge and discharge piping shall be watertight.

Guide/Bracket - Guide rails shall be provided by the general contractor on which the pump rides when being raised or lowered in the sump and mount on the discharge base/elbow. The rails shall align the pump with the discharge elbow as it is lowered into place. An upper rail guide shall be furnished to support and align the rails at the top of the sump. Intermediate guide bracket support shall be provided every 5-feet vertically and shall be coordinated through the pump manufacturer. The guide brackets shall also support the discharge pipe with both the pipe and guide rail supports affixed to the pump station walls.

Guide rails shall be provided on which the pump rides when being raised or lowered in the sump and mounted on the discharge base/elbow. The rails shall align the pump with the discharge elbow as it is lowered into place.

Guide bars shall be stainless steel and the diameter shall be as recommended by the pump manufacturer.

An upper rail guide shall be furnished to support and align the rails at the top of the sump.

The guide rail system shall be non-sparking and approved for use in Class 1, Division 1, Group D hazardous locations.

Discharge Base - A rigid discharge straight thru discharge/base to support the total weight of the pumping unit shall be provided. The base is to be bolted directly to the floor with the 90 degree 125lb. ANSI flange discharging horizontally.

Protection - All stators shall incorporate thermal switches in series to monitor the temperature of each phase winding. The thermal switches shall open at 311F, stop the motor and activate an alarm.

A leakage sensor shall be available to detect water below the upper seal and in the stator housing. Spare Parts (for each pump unit provided) - 2 sets of all gaskets.

Mechanical seal set. Complete replacement bearing set. Any special tools required for pump disassembly.

Materials of Construction

Impeller	Cast Iron A48-CL30
Impeller Bolt	Steel SAE Bolt Steel GR-8
Impeller Nut	SAE Bolt Steel
Impeller Washer	A108 GR12L14
Volute	Cast Iron A48-CL30
Fronthead	Cast Iron A48-CL30
Impeller wearing ring	416 stainless steel (300-350BHN)
Volute wearing ring	416 stainless steel (300-350BHN)
Discharge Base Elbow	Cast Iron A48 CL-30
Impeller Key	Steel A108 GR1018
Guide Bracket	Brass B584 AL836
Volute Gasket	Tagboard F104
Bearing Shims	Steel A108 Commercial
Volute Handhole Cover	Cast Iron A48-CL30
Volute Handhole Cover Gasket	Tagboard F104
Upper Guide Bracket	Steel
Upper Guide Bracket Bushing	Rubber
Guide Mechanisum	Bronze / non-sparking
Discharge Coupling	Non-Sparking
Lower Mechanical Seal	Silicon Carbide vs. Tungsten Carbide Upper
Mechanical Seal	Carbon vs. Ni-Resist

Installation

The Contractor shall install the pump assemblies in the permanent locations as shown on the drawings and in accordance with the manufacturer's instructions.

Contractor shall install interconnecting electrical wiring, conduit, etc. between submersible pumps and control equipment so that when power and control wiring is brought to the control equipment, the submersible pump system will be a complete operational system.

Testing

The pump manufacturer shall perform the following inspections and tests on the pump before shipment from factory.

1. Impeller motor rating and electrical connections shall first be checked for compliance to the customer's purchase order.
2. A motor and cable insulation test for moisture content or insulation defects.
3. Prior to submergence, the pump shall be run dry to establish correct rotation and mechanical integrity.
4. The pump shall be run for 30 minutes submerged, a minimum of 6 ft under water.
5. After operational test No. 4, the insulation test (No. 2) is to be performed again.
6. Each pump shall be tested for flow versus head at the design conditions in accordance with the latest edition of the Hydraulic Institute Standards.

The owner shall be notified of the testing and given the opportunity to witness the testing.

A written report with certified flow versus head curves stating the foregoing items have been done shall be supplied with the pump at the time of shipment. The curves indicated shall include head, capacity, horsepower, efficiency and input KW.

Manufacturer shall be certified ISO 9001

Prior to system operation, all equipment shall be inspected for proper alignment, quiet operation, proper connection and satisfactory performance by means of a functional test.

Before final acceptance of the pumps specified herein, the Contractor shall submit five (5) copies of certified and properly identified performance curves which shall reflect the operating characteristics of each pump model and impeller combination being supplied. The curves shall indicate head, capacity, horsepower, efficiency and input KW.

Finishes

Shop - All pump assemblies supplied under this section shall receive finishes that are in accordance with the pump manufacturer's standard finish.

Field - All pump assemblies shall be touch-up painted with matching paint supplied by the pump manufacturer.

Manufacturer's Services

The Contractor shall include with his bid the services of the equipment manufacturer's field service technician for a period of one (1) trip for a period of two (2) 8-hour days at the site. This service shall be for the purpose of check-out, initial start-up, certification, and instruction of plant personnel. A written report covering the

technician's findings and installation certification shall be submitted to the Engineer covering all inspections and outlining in detail any deficiencies noted.

General: This work includes all excavation, backfill, temporary shoring, labor, materials and equipment required to manufacture, furnish, and install the valve vault, lid, access frame and hatch, butyl rubber sealant, pumps, pump bases, rails, lift chain, cable and chain brackets, pump rail brackets, testing, and other incidental items as shown on the plans.

Basis of Payment: This work will be paid for at the contract lump sum price for PUMPING STATION.

Triplex Pump Control Panel

The pump control manufacturer shall coordinate with the pump supplier to ensure compatibility between the two.

1. General
   a. The triplex pump control panel enclosure shall be strut support-mounted UL-listed, NEMA 4X stainless steel (316 stainless steel) rated for outdoor use, and pad lockable. Enclosure shall have 3-point latching mechanism and handle for easy release. Enclosure shall not have clasps around the door to maintain a NEMA 4 rating. Enclosure shall be manufactured by Hammond, Hoffman, Rittal, or approved equal and shall be sized to accommodate equipment furnished. The enclosure shall also provide for "dead-front" construction using hinged inner doors (swing out panel) to mount all operator devices. Bond all panels and panel doors to ground system. Hinges shall not be considered as an adequate grounding path. All hardware shall be corrosion resistant.

   b. The panel manufacturer shall be a current Underwriters Laboratories listed UL 508 industrial control panel builder and shall show its follow-up service procedure file number on submittals. The control panel manufacturers shall be regularly engaged in the manufacture of controls for the water/wastewater industry. All devices within the panel shall be UL-listed and/or recognized where applicable and shall be mounted and wired in accordance with the most current edition of UL 508 and the NEC. All conduit runs entering or leaving the pump station wet well shall have explosion-proof conduit seals suitable for Class 1, Division 1, Group D environment. All conduits for intrinsically safe wiring shall enter the pump control panel enclosure at the intrinsically safe section of the panel. Non-intrinsically safe wiring including, but not limited to, power feeder conductors, branch circuit

conductors, alarm circuits, and pump motor cables shall not enter the control panel at the intrinsically safe wiring section and shall maintain a minimum separation distance inside the control panel from the intrinsically safe conductors as required by NEC 504 and ANSI/ISA RP12.6.

c. All conduit entries into the Pump Control Panel shall have water-tight threaded hubs, UL-listed for the respective NEMA 4X enclosure.

d. Include a label placed on the inside of the panel door with the name, address, phone number and emergency phone number of the service representative for the pumps and control panel.

e. Contractor shall furnish all equipment, labor, services, submittals, tools and work required to provide a complete and operational Triplex Pump Control Panel as shown on the Plans and specified herein.

f. The pump control panel enclosure shall be located as detailed on the Plans. Furnish and install stainless steel strut support Unistrut P1000SS or approved equal, and all mounting hardware. Include warning label on inner and outer door labeled "WARNING POTENTIAL ELECTRIC ARC FLASH HAZARD, DISCONNECT POWER SOURCES BEFORE SERVICING", or similar note conforming to the requirements of NEC 110.16 "Arc Flash Hazard Warning." Warning label shall also conform to ANSI Z535.4-2002 "Product Safety Signs and Labels."

g. The pump control panel will have multiple 480 VAC, 3 phase, 3-wire, 60 HZ, feeders (one for each pump motor) and 120 VAC, 1 phase, 2 wire, 60 HZ circuit for control power.

2. Control Description

a. A microprocessor based pump controller shall be provided to monitor wet well level via remote sensor as specified hereinafter and provide Triplex pump down mode pump control. The pumps shall start and stop as required to maintain an acceptable level.

b. If the capacity of the jockey pump is less than the influent flow, the lead pump shall be called to start.

c. If the capacity of the lead pump and the jockey pump is greater than the influent flow, the lead pump shall stop when the wet well level falls to the lead 1 pump stop setpoint.

d. If the capacity of the jockey pump is greater than the influent flow, it shall stop when the level falls to the jockey pump stop setpoint. The

lead and lag pumps shall alternate after each complete operating cycle if alternation is enabled.

e. The pump control panel shall include the following described equipment in Paragraph 3 of this document (installed complete and operational), as well as that shown on the Plans and specified herein.

f. The controller shall be a Healy-Ruff Micro V-Pac II-T or approved equal.

3. Components

a. Power Distribution Blocks: Each power distribution terminal block shall be provided with a clear plexiglass cover. Terminal block shall be Square D Class 9080, or approved equal sized as required for the respective conductors. All terminal blocks shall be rated 600 volt with amperage ratings in conformance with NEC Table 310-16 using 75°C wire for the respective lug wire range.

b. Secondary Surge Protector: AC surge protector shall be UL listed per UL 1449, third edition, suitable for 480 VAC, 3 phase, 3-wire plus ground system, with surge current rating of 40 kA per mode 8/20 µs (20kV) wave, and status indication lights, Joslyn 1451-49 or approved equal.

c. Circuit breakers: Circuit breakers for control circuits, and other 120/240 VAC branch circuits shall be thermal magnetic, molded case, 100-Amp frame minimum, 10,000 Amps symmetrical minimum, interrupting current rating at 120/240 VAC for one-pole and two-pole breakers. Circuit breakers for 480 VAC pump motor circuits shall be sized for the respective pump motors and have 35,000 Amps symmetrical, interrupting current rating (minimum) at 480 VAC for three-pole breakers. Breakers shall have "on", "off" and "tripped" positions and shall be UL-listed. Breakers shall be sized as required for the respective equipment in accordance with NEC and the respective equipment manufacturer's recommendation. Include breakers for the following equipment as a minimum.

i. Pump motor #1 branch breaker.
ii. Pump motor #2 branch breaker.
iii. Pump motor #3 branch breaker.
iv. Pump control panel control circuit.
v. Accessories (GFCI receptacle, and heater)
vi. Alarm System

d. Reduced Voltage Solid State Starter (RVSSS):

i. This specification describes the required performance, functional characteristics, fabrication details and installation of a microprocessor controlled low voltage Softstarter, used for stepless start and stop as well as protecting of standard AC squirrel cage induction motors.

ii. The softstarter shall be ABB Type PSE Series, Eaton Cutler-Hammer S 811 or pre-approved equal. The softstarter shall contain at least the features, functions and adjustments described below, in order to provide the motor and application with sufficient protection, and start and stop the motor in a precise and controlled manner.

iii. Operator Interface (Human Machine Interface –HMI). The starter shall be operated with a LCD display presenting all data and information using a language neutral icons and figures. All numbers shall be presented using four positions, seven segments. The use of binary, hexadecimal code, or any other code is not acceptable and currents and measurements shall be presented as either exact values or as a percentage of the maximum value. Adjustments shall be made by a digital four push button keypad. No binary coded dipswitches shall be used for programming or function selection. The HMI shall be possible to lock to prevent unauthorized changes to the programming. Data should always be presented with the actual value, and the unit of the data (i.e. V, A or %, etc.). Data entered and selections made to the Softstarter using the display and keypad should be stored in case of a power loss. LED Indicators using long life LEDs shall provide additional quick annunciation.

e. Mode Select: Method of operation shall be by a three position maintained "Hand-Off-Auto" selector switch provided for each pump. Selector switch shall be water-tight/oil tight (NEMA 4/13) Allen Bradley 800T Series, Square D Class 9001, Type K, or Eaton Cutler-Hammer E22 or Cat. No. 10250 Series. Position commands are as follows:

i. Hand – In this position, the applicable pump shall run without regard for the level sensing commands and will relay on operator discipline to run and stop.

ii. Off – In this position, the applicable pump will not run under any circumstances.

iii. Auto – In this position, the pressure transducer, float switches and respective control relays shall control the applicable pump.

The pressure transducer will sense the appropriate levels in the wet well and initiate start and stop commands to the pump through the associated control relays. Floats will act as a backup to the pressure transducer in the event the transducer fails.

f. Legend Plates: Legend plates shall be required for all starters, circuit breakers, pilot lights, control panels, and disconnects. Legend plates shall be provided to identify the equipment controlled and the function of each pushbutton, indicating light, pilot light, selector switch and device. Legend plates shall be weatherproof and abrasion resistant phenolic materials. Lettering shall be black on white background, unless otherwise noted.

g. Condensation Heater: Provide a condensation strip type heater sized as required for the pump control panel enclosure to minimize moisture that may accumulate inside the enclosure. Heater shall be sized to maintain a minimum internal enclosure temperature of approximately 50°F for an outside design temperature of -15°F. Include integral thermostat and circulating fan for condensation heater. Circulating fan shall be 4 in. to 6 in. nominal diameter axial type fan with wire guards, 115 VAC, 60 Hz. Thermostat shall be line voltage thermostat, 120 VAC, 5-Amp minimum current rating, SPST, with adjustable control knob as manufactured by Honeywell, White-Rogers, Hammond, Hoffman, Rittal, or Chromalox.

h. Convenience Duplex Receptacle: Provide a duplex receptacle with ground fault circuit interrupter. Receptacle shall be rated 120 VAC, 60 Hz, and 15 Amps with a trip threshold of 5 $\pm$ 1 milliamp. Receptacle shall be a UL Class A GFCI unit complying with and tested in accordance with UL Standard No. 943. GFCI shall be as manufactured by Leviton, Hubbell, Eagle, Arrow-Hart, Bryant, or Pass & Seymour.

i. Pump Motor Thermal Trip: A thermal trip on the motor will cause immediate shutdown and activate the respective thermal trip condition alarm. Pump motor thermal trip shall be wired to provide manual reset and restarting of the pump motor in conformance with the recommendations of the respective submersible pump manufacturer's representative. Provide interposing relays as required. Verify thermal trip requirements with the respective submersible pump manufacturer.

j. Pump Motor Seal Leak Detection: The seal leak detection on the motor shall shut down the pump and activate the respective seal leak alarm as required/recommended by the respective submersible pump manufacturer's representative.

i. Provide interposing relays as required. Verify seal leak requirements with the respective submersible pump manufacturer.

k. Motor Monitor Relays: Motor monitor relay shall be provided by the pump vendor or be a model approved by the pump vendor to ensure the pump warranty is maintained.

l. Enclosure Light: Provide a 60-watt incandescent light fixture for the pump control panel enclosure with door activated switch. Light fixture shall be Hoffman Catalog Number A-LTDB1, or approved equal. Include lamps for respective fixture.

m. Construction Standards

i. Wire Numbers – Each wire in the control panel shall be marked with a wire number that corresponds to the page and ladder rung of the schematic diagrams. A unique wire number shall be provided between component contacts and coils. Wire markers shall be Brady Thermal Transfer Self-Laminating Vinyl or equal by Grafoplast or Thomas & Betts.

ii. Color Coding – Wires shall also be color-coded as follows: 120 VAC Line = black; Neutral = white; Ground = green; Switched 120 VAC = red; DC current carrying conductor = blue, DC non-current carrying conductor = white with blue stripe, Foreign voltage = yellow, Intrinsically safe = light blue.

iii. Component Identification – Each component in the system shall be identified by a unique number that corresponds to its coil's page and ladder rung location on the schematic drawings.

iv. Wire – AC control conductors shall be 600 volt and a minimum of 18 gauge. DC control conductors shall be a 300-volt and a minimum of 18 gauge. Control conductors shall be UL Type MTW rated for 105° C. Analog conductors shall be 22 gauge shielded twisted three conductor rated for 300 volts. Wire shall be Beldon 8771 or equal. Shields shall be grounded at the PLC or panel location. Power conductors shall be sized per UL and NEC standards and rated for 600 volts. Conductors shall be UL Type MTW, THHN or THWN rated for 90° C.

v. Control Terminals – All field control conductors shall be connected to terminal blocks. Terminals shall have machine marked wire numbers. Connection of field control conductors

directly to control panel components will not be allowed. Terminal blocks shall be rated for 30 amps at 600 volts. They shall be screw terminal type capable of terminating No. 10 to 26 gauge wire. Terminal bridge bars shall be provided when it is necessary to bridge multiple like terminals together. Terminals and accessories shall be Phoenix Contact "Clipline" or equal by Allen Bradley or Weidemueller 21.

vi. Provide one (1) box (5 minimum quantity) of each type and size of fuse, upon completion of the job, for use as spares.

vii. A schematic diagram (showing wire color) shall be permanently fastened to the inside of the enclosure. An Installation and Service Manual shall also be included with each control panel. The control panel shall be U.L. listed as an assembly.

viii. Ground Bar. Provide ground bar mounted and bonded inside the panel enclosure.

ix. Wiring Duct. Provide wiring duct to route conduits as necessary for a neat and workable installation.

n. Level Controller

i. General

1. The Lift Station Controller shall be an off-the-shelf, preprogrammed, dedicated to the application, microprocessor based controller capable of monitoring process variable inputs and automatically control up to three constant speed pumps. Systems using a one of a kind, non-standardized, custom programming generic controller represent additional complexity and unproven operation and thus are not in conformance to the intent of the these specifications and will not be acceptable.

2. Controller shall be configured for the number of pumps to be controlled at this lift station as per these specifications.

3. The operator interface shall display the current level in feet and represent the level in bar graph form, which dynamically updates based on the level in the wet well.

4. An active/dynamic graphical representation of each pump and its status shall be displayed on the same screen along with flow in gallons per minute. Pump graphic shall change state to indicate – "Off", "Called", "Running", and "Failed/Out

of Service".

5. Touching an active pump on the home screen takes you to the respective pump status screen.

6. A trend screen showing, a minimum of, the last two (2) hours of wet well level fluctuations shall also be available.

7. The operator interface shall have a display area not less than 3.5 in. with 160 x 128 pixel resolution, Transflex touch screen graphic display viewable in direct sunlight.

8. The operator interface shall be suitable for Type 12, 4 & 4X environment. Additionally, the display shall be manufactured from a UV resistant polyester substrate.

9. To prevent the loss of data during an extended power outage, longer than 4 hours, the controller shall have a built in replaceable battery system to keep volatile memory active for approximately ten (10) years.

ii. Inputs & Outputs: The controller shall come standard with herein specified inputs and outputs. The controller shall also have the ability to accommodate additional expansion I/O without the need to replace hardware or upgrade the controller.

iii. The controller shall be configured to monitor the following discrete input status signals:

1. Pump 1, 2, 3 Running
2. Pump 1, 2, 3 HOA In Auto
3. Pump 1, 2, 3 Seal Failure
4. Pump 1, 2, 3 Overtemp
5. Pump 1, 2, 3 Overload
6. Backup Active
7. High Level Float
8. Low Level Float
9. Control Power Failure
10. Phase Failure
11. Station Intrusion
12. Flow Pulse
13. Temp Alarm High/Low
14. Generator Running
15. Generator Not in Auto
16. Generator Common Alarm
17. Transfer Switch Not in Utility Position

iv. The controller shall provide the following discrete output signals:
1. Pump 1, 2, 3 Call
2. Pump 1, 2, 3 Failure
3. Common Alarm
4. Alarm Horn
5. Alarm Horn Silence
6. Backup Reset

v. The controller shall monitor the following (4-20 mA) process signals:
1. Wet Well Level

vi. A two level security system shall be provided for operators (OPER) and supervisors (SUPER). Without being logged in, screens are view only.

vii. OPER – Operator Access
1. Rights to edit set points and acknowledge alarms

viii. SUPER – Supervisor Access
1. All privileges as the OPER
2. Right to change the passwords of both SUPER and OPER users
3. Right to set lifetime pump runtime and start totals
4. Right to toggle communication ports between telemetry communications or local programming modes
5. Right to set the controller time and date
6. Right to access removable media system screen
7. Shall be provided with factory default passwords
8. To prevent unauthorized controller adjustments, an adjustable 0-999 second delay shall be provided to automatically logoff the current user after the adjustable time period, and no operator screen navigation has been detected.
9. The controller shall be capable of operating pumps in an automatic or fixed mode. In automatic mode, a built in alternator shall be available to equalize motor starts, stops and run time. The alternator shall have the capability of being put into fixed sequence mode at any time. Alternation shall also have the capability to alternate cyclically or following an adjustable period of time.

o. Alternation

i. Alternator shall have pump fail replace logic allowing a failed pump to be detected and the lag pump to be called into service without level increasing to lag start setpoint.

ii. Auto Alternation Mode

1. If the running signal input is not received within 60 seconds (adjustable) of the respective pump being called to start, a pump failure alarm shall be displayed in the alarm banner and the next pump in sequence shall be called to start.

iii. Fixed Alternation Mode

1. If the running signal input is not received within 60 seconds (adjustable) of the respective pump being called the respective pump shall continue to be called until the level in the wet well reaches the next level setpoint at which point the next pump in the sequence shall be called to start.

p. Setpoints

i. The following system setpoints shall be provided: (* indicates an associated, user adjustable (0-999) seconds time delay shall also be provided to prevent momentary process fluctuations from impacting alarm or control.)

1. Wet Well Level High and Low Level Alarm *	19.25 ft High, 3.25 ft Low
2. Start Jockey	5.25 ft
3. Start Lead*,	7.25 ft
4. Stop Lead*,	3.25 ft
5. Stop Jockey	3.25 ft
6. Pump 1, 2, 3 Failure To Start Delay	20 sec
7. Pump 1, 2, 3 Seal Failure Delay	20 sec
8. Pump 1, 2, 3 Over Temp Delay	20 sec

q. Alarms

i. The controller shall monitor, display and log the following alarms:

1. High or Low Wet Well Level Alarm (Transducer)
2. Pump 1, 2, 3 Seal Failure
3. Pump 1, 2, 3 Over Temp
4. Pump 1, 2, 3 Overload
5. Pump 1, 2, 3 Failure (internal to controller, Call No Run)
6. Float Backup Active
7. Low Level Cutout (from floats)
8. High Level Alarm (from floats)
9. Control Power Failure
10. Phase Failure

r. Pump Status

i. The controller shall have Pump Status screens that provide the following information and control options:

1. Pump 1, 2, 3 Status (Off, Called, Running, & Failed)
2. Pump 1, 2, 3 Hard and Soft H-O-A Status
3. Pump 1, 2,3 Seal Failure Status
4. Pump 1, 2, 3 Over Temp Status
5. Pump 1, 2, 3 Overload Status
6. Today: Pump 1, 2, 3 Runtime xx.x Hours
7. Today: Pump 1, 2, 3 Starts xxx
8. Yesterday: Pump 1, 2, 3 Runtime xx.x Hours
9. Yesterday: Pump 1, 2,3 Starts xxx
10. Current (CRNT) Month (MNTH): Pump 1, 2, 3 Runtime xxx.x Hours
11. Current (CRNT) Month (MNTH): Pump 1, 2, 3 Starts xxx
12. Last Month (MNTH): Pump 1, 2, 3 Runtime xxx.x Hours
13. Last Month (MNTH): Pump 1, 2, 3 Starts xxx
14. Total: Pump 1, 2, 3 Runtime 999999.9 Hours
15. Total: Pump 1, 2, 3 Starts 999999

s. Navigation

i. A menu system shall be provided for the user with proper access to change setpoints, setup pump starts, stops, alarms, alarm delays and setup pump alternation. The following parameters shall be provided:

ii. Level and Level Delay Setpoints

iii. Alternation – Auto or Fixed mode; Timed or Cyclical

iv. The operator shall have a choice of selecting automatic or a fixed sequence.

1. Pump Failure – call, no run
2. The user shall be able to enter pump failure time for each pump that is enabled. A failed pump will be replaced with the next available pump.

v. Seal Failure and Over Temp

1. The user shall be able to enter seal failure and over temp time delays for each respective pump that is enabled.

vi. Miscellaneous Alarms

1. The user shall be able to enter delays for communications failure, intrusion and high or low temperature.
2. Transducer Range (wet well level)

vii. A field shall be provided to scale the transducer in feet to setup the vertical scale on the Home screen and an adjustable offset in feet, shall be provided to compensate for the transducer to be raised off the bottom.

t. Volumetric Flow Calculation

i. The controller shall provide station flow information based on high accuracy volumetric process calculations using wet well level excursions as sensed by wet well level transmitter in conjunction with verified pump operations. Systems that do not monitor/use actual pump run feedback in the calculation are deemed unreliable and will not be acceptable.

ii. The controller shall provide the following flow related information as a minimum:

1. Station incoming flow rate (Average).
2. Station Effluent Todays flow total.
3. Station Effluent Yesterdays flow total
4. Station Effluent Previous Month Flow Total
5. Station Effluent Current Month Flow Total

u. Historical Data Storage

i. Controller shall log the pump run time data, alarms and analog data to the removable memory card.

v. Submersible Level Sensor

i. General

1. A loop powered submersible level transmitter shall be provided to sense the wet well level. The wet well level transducer shall sense wet well level by measuring the hydrostatic head pressure associated with water levels above the base of the diaphragm. A linear and proportional, to hydrostatic head pressure, 4-20 mA signal shall be produced and input to the pump controller. The transducer shall be installed in accordance with manufacturer's instructions.

2. The pressure transducer shall be certified by FM, UL, and CSA for installation in a Class I, Division 1, Groups A, B, C, and D, Class II, Division 1, Groups E, F, and G, Class III, Division 1 hazardous location when connected to associated apparatus manufactured by PR Electronics, R.G. Stahl and others. The transducer shall be installed in accordance with manufacturer's instructions.

3. The pressure transducer wetted materials shall be 316 SS, Viton®, Polyurethane or Tefzel®.

4. Sensing diaphragm shall be 2.75 in. in diameter and include diaphragm protector allowing the unit to be placed on or near the bottom of the wet well without affecting pressure readings.

5. The transducer shall include circuitry that provides protection from overvoltage, reverse polarity and shorted output.

6. Transducer overall accuracy shall be 0.25 percent full scale or better with a resolution of .0001 percent over the entire range of the wet well.

7. The sensing element shall exhibit non measurable hysteresis, withstand overpressures to 200 percent of rated range without damage.

ii. Warranty

1. Transducer unit shall have a manufacturer's life time warranty that includes damage from electrical surges.

iii. Construction

1. The pressure transducer shall be mounted in the wet well and furnished with a minimum of 75 ft of cable.

2. The cable shall be 0.3 in. outside diameter Polyurethane or Tefzel® material.

3. Cable shall have non stretch Kevlar reinforcement strands bundled within the wiring cable to provide additional cable strength. Cable strength shall allow up to 200 lbs of pulling strength.

4. A sealed breather tube system shall extend from the top of the cable to the transducer assembly to provide barometric compensation to the transducer.

5. Breather system will be sealed and maintenance free. Systems that use gaps in wire cable and or desiccant filters that require periodic replacement will not be considered.

iv. Installation & Mounting

1. The transducer shall be suspension mounted in the wet well in an area of the wet well allowing full measurement of the wet well

and in such a manner as to not be adversely affected by motor operation or incoming flow streams.

v. The transducer shall be mounted so that it is approximately 6 in. above the floor of the wet well.

vi. The transducer shall be furnished with a suspension mounting kit made out of stainless steel. It shall include a stabilization weight to maintain its position it the wet well.

w. Cellular Based Communication System: Mission M800 RTU

i. Furnish and install a factory wireless data cellular based communication system for the purpose of monitoring and controlling various equipment operations. The supplier of the communication system shall be responsible for coordination required to insure equipment compatibility. The communication system shall be provided complete, in place, as specified herein and needed for a complete, proper installation.

ii. The Contractor shall be responsible for coordinating the instrumentation equipment, communication equipment and other related equipment so that all elements are compatible and form a complete working system. Shop drawing submittals shall include sufficient information regarding component compatibility to demonstrate compliance with this requirement.

iii. Qualifications of Manufacturers Products used in the work of this Section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of satisfactory production acceptable to the Engineer.

iv. The submitting Company shall provide evidence of, and warrant compliance with, substantially all below listed requirements.

1. The submitting Company shall have been in business providing remote facility monitoring and control services through the data side of the cellular system to the water distribution / wastewater collection industry or a substantially similar industry for at least six (6) years.

2. The submitting Company shall be the actual manufacturer and operator, or a duly authorized and trained agent of the manufacturing company or a combination of both, who will actually provide, maintain, and warranty the proposed system.

3. The Manufacturing Company of the field equipment shall also be

the provider of all monitoring related services associated with the field equipment and all ongoing service agreements will be with the actual company providing the monitoring service, not a subcontractor or agent.

4. The submitting company shall have a primary central monitoring and control center and a fully redundant, physically separate, backup-computer monitoring center. Either center shall have the capability of operating all the remote monitoring and control field RTU's.

5. The submitting Company shall offer and provide 24 x 7, 365 technical support.

v. System Components

1. Microprocessor Based Field RTU
    a. Data Cellular Radio
        i. The Remote Terminal Unit (RTU) shall incorporate a radio that utilizes the data side of any cellular system to transmit the data and alarms monitored, as well as receive manual or automated control commands.
        ii. Cellular radios from all cellular carriers shall be able to mount in the same mounting port on the motherboard and consequently be interchangeable in no more than 10 minutes.
    b. The RTU shall be self-contained for mounting in the control panel.
    c. Microprocessor Feature Updates
        i. Microprocessor features like data transmission rates shall be able to be adjusted through the cellular system without any site visits necessary.
    d. RTU Inputs and Outputs
        i. RTU shall have eight (8) digital inputs. These eight (8) inputs shall have end of line resistor supervision, or similar supervision, that can detect normal alarm trip inputs and detect input wiring disconnection/shorting as a distinctly different signal and report.
        ii. RTU shall have an optional expansion board of an additional eight (8) digital inputs
        iii. The digital inputs shall be user selectable as normally open (NO) or normally closed (NC).
        iv. In M800 Models eight of the RTU digital inputs on main board shall be capable of being programmed

to record and report pump run times in one minute increments or less as indicated by a relay opening and closing. If only two pumps are monitored then the unit shall also be capable of recording and reporting simultaneous pump run times.

v. RTU shall have built-in alarms for input wiring fault, AC failure, communication failure and low battery detection.
vi. RTU shall have two (2) analog inputs measuring four (4)-20mA or 1-5 VDC at 10 bit resolution with four (4) alarm thresholds per input.
vii. RTU shall have an optional expansion board of an additional four (4) analog inputs
viii. RTU shall have an optional expansion board of an additional eight (8) digital inputs
ix. RTU shall have an optional expansion board of an additional two (2) analog outputs.
x. RTU shall have an optional expansion board of two (2) pulse counter inputs
xi. RTU shall have an electronic key reader input to monitor on-site personnel. The RTU shall utilize an audible tone to verify key reading. Each key in the system shall provide unique identification of the key holder when they are on site vs. "someone" is on site.
xii. RTU shall have three (3) digital normally open or closed output relays rated 1/2 ampere@ 120VAC

e. Status LED's on Motherboard
   i. LED's above each digital input shall visually display the status of the digital input
   ii. Radio signal strength shall be displayed by at least eight (8) LED's in 5db increments between -75db and -110db to facilitate accurate antenna placement
   iii. Operational and diagnostic status of at least eight (8) criteria shall be displayed by individual LED's.

f. Power Requirements
   i. The RTU shall be powered by 12 volts AC and have a built in battery backup capable of keeping the RTU powered for 30 hours in case of primary AC failure.
   ii. Terminations inside the RTU enclosure shall be low voltage AC or DC (28 volts or less).

2. Communication Links
   a. Communication System

i. Wireless communication links shall be through the data side of the cellular system. The voice side of the cellular system and satellite based links are not acceptable.

b. Cellular Carriers
   i. The submitting company shall have direct relationships with the cellular companies and shall not use third parties to affect data transport through the cellular companies.
   ii. The RTU shall have an interchangeable data cellular radio that will communicate through third generation GPRS (ATT), CDMA (Verizon) or iDEN (Nextel) to maximize the likelihood of reliable communication.
   iii. If a GPRS (ATT) radio is used, the submitting company shall have PTCRB approval from ATT to use the radio, contract and product acceptance with ATT. If an iDEN radio is used the submitting company shall be have certified partner status, contract and product acceptance with Sprint/Nextel.
   iv. The Owner shall not have or have to purchase cellular data contracts direct with the carrier(s).

c. Security Protocols
   i. All the cellular radios shall all make continuous, secure socket connections (SSL) from the radio, through the cellular system, to the submitting company's servers and web pages.
   ii. The RTU shall utilize a transmission scheme that encrypts the transmitted data utilizing a 128 bit encryption method that meets or exceeds the advanced encryption standard (AES). The 128 bit AES encryption shall be at all stages of data transfer and storage
   iii. The cellular radios shall all have private IP addresses
   iv. The submitting company shall have established multiple, private gateways through the cellular system, completely behind firewalls, with at least one of the cellular providers.

d. Data Transmission Rates
   i. All alarms regardless of unit type shall be transmitted immediately upon occurrence; delays can be added by the Owner at the RTU or the supplier's website.
   ii. The RTU shall continuously transmit all digital

state changes on an as occurs basis; analog and pulse inputs will be transmitted at least once every two minutes on M800 models.

iii. The RTU shall have an effective, continuous, transfer rate of at least 19,200 baud.

e. Communication Link Structure and Performance Criteria

i. The communication link structure shall be a secure socket connection from the RTU through the cellular system to the supplier's servers, and it shall be a continuous connection, 24 x 7, 365.

ii. Receipt of all data sent from the RTU to the server center shall be acknowledged by the server center back to the RTU in real time for every data packet sent. Such structure is called end-to-end data acknowledgement.

iii. The secure socket connection shall be from the RTU through the cellular system direct to the system supplier; no third parties shall receive the data from the cellular carrier and then pass it to the system supplier.

iv. The above mentioned secure socket connection shall be monitored for end-to-end uptime with interruptions as small as 15 seconds being captured.

v. Both end-to-end uptime and the number of times the link was disconnected/reconnected shall be reported for each RTU continuously with daily summary statistics posted on the Owner's website. All the end-to-end uptime history of each RTU shall be available on the Owner's web site from when it first powered up to the present. Weekly management summaries of each RTUs end-to-end uptime shall be automatically emailed to the Owner.

3. Centralized Server Centers: Hardware and Software Requirements

a. Server Center Physical Structure

i. The server center housing shall have at least six (6) separate and redundant, on-site power generating facilities to backup the local utility power such that there can be stand-alone operation of the center for at least twenty-four (24) hours.

b. Server Center Redundancy Structure

i. The server center shall house the manufacturers

completely redundant and hot linked:

- Servers
- Interconnects
- Databases
- Power supplies
- Inbound cellular connections
- Outbound internet hubs and providers

c. Database Structure
   i. All data from the RTU's shall be held for access forever.
   ii. All databases shall be backed up and archived daily
   iii. The databases shall be capable of interfacing and transferring, on a continuous basis, all RTU data to an OPC compliant database for access by other OPC compliant HMI software packages.
      - Client side OPC software shall run as an executable or NT service.
      - Client side OPC software shall, on a user definable interval, establish a socket connection to static IP address(s) at providers' server center.
      - OPC software shall retrieve all changed OPC tag values and close the socket. OPC software shall be set up so as customers OPC computers firewalls may be programmed to only allow Internet traffic to/from the designated service providers IP addresses and port numbers.
      - OPC software shall allow for multiple customer OPC software packages to establish, concurrently, OPC connections so as to provide for redundant HMI database operation at customers locations.
      - Owner's firewalls will not be programmed to accept socket connections.

d. System Security
   i. All data links shall be behind firewalls, 128 bit encrypted and never accessible, addressable or viewable via the general public Internet. Private IP's are required, pooled public IP's will not be accepted.

e. System Software
   i. The system software shall collect and display:
      - Alarms including individuals accepting

alarms.

- RTU electronic key reads with user names, time of read, and site name.
- Pump running status.
- Pump run times with historical graphs.
- Individual pump flow estimates.
- Automatic daily analysis of pump runtimes for abnormalities with automatic customer notification of such abnormalities.
- Pump starts with hourly analysis of excess pump starts with automatic notifications of excess pump starts.
- Minute-by-minute radio health checks with automatic notification of non-reporting or poorly reporting RTU's.
- Scaled and labeled pulse totalizations and if rainfall gauges are used, inter-day rainfall graphs and run time verses rain fall based on either rain gauges installed as part of the system or as run time verses a reporting airport rain gauge.
- Performing and displaying volumetric inflow/outflow calculations from RTU supplied data for each pump cycle as they occur. Such volumetric calculations will utilize real-time pump start/stop data with simultaneously gathered level transducer data to perform the inflow/outflow and pump GPM calculations.
- Utilizing real-time data collection have the ability to based on digital input closure, open or close digital output relay on the same or another real-time unit (Intertie).

4. Alarm System Structure and Software
    a. Alarm Delivery Formats
        i. Alarms shall be delivered in the following formats:
        ii. Phone (voice call), fax, pager (numeric or alphanumeric (short alpha or long alpha format), text message, email, or any combination of the above simultaneously.
        iii. Alarms shall be able to be acknowledged by phone, text message, two (2)-way pager, email or on the Owner web site.
        iv. Voice alarm acknowledgement shall be adjustable

to be able to mimic the format of dialers.

v. Alarms shall be called out on alarm and upon return to normal conditions.

vi. Return to normal alarms can be adjusted to call the alarm callout group or a different callout group.

b. Alarm Callout Formats

i. Alarm callout groups shall be able to be setup to automatically switch between callout groups at different hours of the day and/or different days of the week.

ii. Alarm callout groups shall be able to have multiple teams within each group to easily facilitate rotation of teams of on-call personnel.

c. Alarm Message Formats

i. All alarms shall have the alarm condition, time, alarm location and pump status at the time of the alarm in each message.

ii. Alarm message format shall be adjustable to include just the above information when calling a phone where it is known who will answer the phone, or be adjustable to add an introductory message asking for a specific person when calling a phone where it is not known who will answer the phone (like a home phone).

iii. Alarms shall be able to be delivered individually or be able to be grouped into one message so that multiple, simultaneous alarms (like AC Fail at multiple sites) can be delivered and acknowledged in one phone call.

d. Alarm Dispatch Logs

i. Each alarm shall have a full log of each notification attempt of that alarm documenting the following:

ii. Date, time, and alarm condition

iii. If each notification attempt was a success or failure and the reason for each failure if an attempt was a failure (like line busy, call dropped, etc.)

iv. A recording of each voice notification attempt so the specific reason for a notification failure can be known.

v. Date, time, and name of person who acknowledged the alarm.

e. Voice Alarm Delivery Capacity

i. Manufacturer shall provide at least twenty (20) outbound lines to deliver voice alarms so as not delay delivery of current alarms.

5. Remote Data Access
    a. Remote Data Access Format
        i. Data collected by the system shall be able to be remotely accessed by simple web browser. The system shall provide individual web pages for the User to access via any web browser.
        ii. To access the web pages, the User shall have to enter a User Name and Password.
        iii. The User can set up any of three levels of access to the web pages:
            - Read only...can see but cannot make any changes
            - Read/Write...can see and can make changes
            - Read/Write/Control...can see, make changes and effect control functions, also add or remove logins/ passwords.
        iv. The vendor shall provide at least two separate web sites for the Owner. One shall be designed to be viewed on a traditional laptop or desktop computer. The other shall be designed to be viewed on a web enabled cell phone or PDA. This web site shall still have graphs showing trending of data, and shall be designed to minimize the data sent so as to minimize the page loading times and size of the data plans necessary to view the site on a web enabled cell phone or PDA.
        v. The system supplier shall provide secure access through a specified phone without the need for web access (Voice SCADA). This shall require login to system via numeric 5 digit code and must be set up in the system to an associated login for that site to a specific phone number to maintain site security.
        vi. In addition to the above web sites, the User will be provided at no additional charge with a customizable software interface that shall display real-time status and graphic trending of data collected by the M800 RTU.
        vii. The software shall be downloadable from the Mission customer website.
        viii. The software shall automatically update itself every time the User accesses the software.
        ix. The software shall require NO programming to customize.
        x. The software shall be the Mission Real Time

Viewer.

a. Remote Access Security
    i. In addition to the Username and Password structure described above, all access of the User web site shall be logged. Such logging data to include date, time and duration of access, User Name and Password of user to access the site and IP address of the accessing computer. The log shall be accessible through the User web site
b. Automated Administrative Reports and Alerts
    i. The User web site shall produce and automatically deliver weekly reports which summarize alarms and responses, pump runtimes and flow estimates, weekly end-to-end uptime percentages of each RTU, and all electronic key uses at the RTU sites.
    ii. The web site shall be capable of sending two (2) different categories of notifications, Alarms and Alerts. Alarms are for conditions that the User decides they want to be notified immediately about. Alerts are conditions that need attention, but are not so time sensitive that they cannot wait till the next morning.
        - The Alarms callout list and the Alert callout list shall be able to be separate and distinctly different.
    iii. The User web site shall analyze daily pump run times at compared to a moving 30 day average of the pumps most recent runtimes and automatically Alert the User that the pump runs are outside the normal runtime variation pattern.
    iv. The User web site shall analyze hourly pump runtimes and automatically compare it to two (2) User set thresholds. If the Alert threshold is exceeded, an Alert shall be sent the following morning. If the Alarm threshold is exceeded, an alarm shall be sent immediately.
    v. The User web site shall send an Alert the first morning that the units are in Communications fail even though Alarms have been sent at the time the RTUs went off-line. Such Alerts are a reminder to Management that they still have units that are off line.

6. RTU Locations

a. The RTU shall be located at the Carpenter Street Pump Station and shall be furnished with an omnidirectional antenna at grade plus 8 ft. Provide a support pole and foundation for the antenna. The antenna shall be grounded to a driven ground rod.

7. Monitoring Points per RTU
   a. The inputs to be monitored are as follows:
      i. Digital inputs

DI-1	Pump 1 Run
DI-2	Pump 2 Run
DI-3	Pump 3 Run
DI-4	Pump 1 Alarm
DI-5	Pump 2 Alarm
DI-6	Pump 3 Alarm
DI-7	Pump 1 Runtime
DI-8	Pump 2 Runtime
DI-9	Pump 3 Runtime
DI-7	Power Failure (utility and generator)
DI-8	Wet Well High Level Alarm Backup

      ii. Analog inputs with four (4) hi/low threshold alarms

AI-1	Pressure Transducer
AI-2	Spare

      iii. Relay Outputs

R-1	Spare
R-2	Spare
R-3	Spare

8. Other Materials
   a. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

9. Coordination
   a. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.
   b. Additional coordination with the supplier's information here.

10. Installation
    a. Install the work of this Section in strict accordance with the manufacturer's recommendations and shop drawings as approved by the Engineer.
    b. Upon completion of the installation, carefully inspect each component and verify that all items have been installed in their proper location, adequately anchored, and adjusted to achieve optimum operation. If required, the Contractor shall adjust the antenna placement or elevation to obtain consistent, stable operation of the system.
    c. Delineate timing of RTU installation and commissioning.

11. Service
    a. Demonstrate to the Owner's operation and maintenance personnel the proper methods for operating and maintaining the equipment, and the contents of the operation and maintenance manual required to be submitted under Article 1.03 in this Section.
    b. The Contractor shall furnish to the Owner, through the Engineer, a written report prepared by the instrumentation equipment manufacturer's field service technician certifying that:
        i. The equipment has been properly installed in accordance with manufacturer's recommendations.
        ii. The equipment check out and initial start-up activities have been completed in accordance with manufacturer's recommendations and under the technician's supervision.
        iii. Antenna placement has been optimized.
        iv. The equipment is free from any undue stress imposed by connecting conduit or anchor bolts.
        v. The equipment operates satisfactorily and in compliance with the requirements of this Section.

General: This work includes all excavation, backfill, temporary shoring, labor, materials and equipment required to manufacture, furnish, and install the valve vault, lid, access frame and hatch, butyl rubber sealant, pumps, pump bases, rails, lift chain, cable and chain brackets, pump rail brackets, testing, and other incidental items as shown on the plans.

The pump station control panel and accessories, and wireless monitoring and control system shall be included in the cost of the Pumping Station. Connections to conduits and wiring external to the control panel shall be included in the cost of Pump Station Electrical Work.

Basis of Payment: This work will be paid for at the contract lump sum price for PUMPING STATION.

SITE SCREEN (WOODEN FENCE) TYPE P 6'

General: The work to be included under this item shall be the furnishing, installing, and testing of all materials necessary in order to provide a complete fence and gate around the generator and pump control site.

The fence shall conform to Section 641 of the Standard Specifications for Road and Bridge Construction with the following exceptions:

- The picket shall be 5 ½" wide.
- The proposed fence shall be a shadow box style fence.
- The vertical pickets shall overlap on each side. The pickets shall have a 3 ½" spacing on each side with the opposing side centered on the open space on the opposite side.
- Vertical posts shall be constructed of 2 3/8" galvanized steel posts. The post shall be 9 ft in length.
- The posts shall be embedded in concrete, 1 ft in diameter by 3 ft deep.
- The contractor shall use Class SI concrete for embedding the concrete posts.
- The galvanized steel posts shall be located on the inside of the fence.
- The fence shall be attached to the metal posts using a galvanized steel wood fence brackets

The fenced area shall also have a double gate with a total width of 10 ft, (5 on each side). The contractor shall construct the support frame for the gate out of galvanized steel tubing with the planks added for privacy. The gate shall have padlockable hardware and a gate stop to hold the gate in the open position. The cost of the gates shall be included in and measured as per foot of Site Screen (Wooden Fence) Type P 6'.

Basis of Payment: This work will be paid for at the contract unit price per foot for SITE SCREEN (WOODEN FENCE) TYPE P 6'.

Illinois Department of Transportation

Storm Water Pollution Prevention Plan

Route	FAU 6800	Marked Rte.	Main Street (US 150)
Section	05-00500-19-GS	Project No.	C-94-116-06
County	Knox	Contract No.	89417

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.

Wayne Carl	
Print Name	Signature
City Engineer	
Title	Date
City of Galesburg	
Agency	

I. Site Description:

A. Provide a description of the project location (include latitude and longitude):

East Main Street from Chambers Street to Allens Avenue (40 deg - 57' N, 90 deg - 22' W)

B. Provide a description of the construction activity which is the subject of this plan:

Improvements will include the construction of a new railroad bridge across Main Street. The construction will also include the reconstruction of East Main Street as an underpass beneath the proposed bridge. Appurtenent construction items include storm sewer, sanitary sewer relocation, water main relocation, lighting, and traffic signals.

C. Provide the estimated duration of this project:

20 Months

D. The total area of the construction site is estimated to be 10.5 acres.

The total area of the site estimated to be disturbed by excavation, grading or other activities is 9.5 acres.

E. The following is a weighted average of the runoff coefficient for this project after construction activities are completed:

0.70

F. List all soils found within project boundaries. Include map unit name, slope information, and erosivity:

The type of surficial soil is Hulick Till. These deposits are silty glacial till intercalated with sand and gravel.

G. Provide an aerial extent of wetland acreage at the site:

N/A

H. Provide a description of potentially erosive areas associated with this project:

The proposed roadway will run under the proposed bridge. The proposed roadway will be depressed below the existing grade of the roadway by up to 22 feet. From the back edge of the roadway sidewalk, the slopes will be

laid back at 1:3.5 and 1:4 slopes in order to tie into existing ground. These slopes will be highly erosive until the grass can be stabilized. In addition, after pavement removal along Main Street, the roadway will be graded at a 5% maximum slope. This area will be subject to erosion during the construction process.

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):

Building Demolition: Located at various locations throughout the project. The land is fairly flat and the parcel property is small.

Pavement Removal: Located throughout the project. The pavement will be removed to allow for installation of new utilities and proposed roadway, retaining wall, and bridge. Approximately 1.8 acres of pavement will be removed, but not all at the same time.

Utility Relocation: Located at various locations throughout the project. This task will include removal of existing utility as required, and installation of proposed utility. This will occur after pavement removal, so the utility relocation task is not expected to disturb additional soil.

Retaining Wall and Bridge construction: The construction of these items will take palce at various locations thorughout the project.

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:

The storm sewer system is owned by the City of Galesburg.

L. The following is a list of General NPDES ILR40 permittees within whose reporting jurisdiction this project is located.

City of Galesburg

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:

The direct outlet of the storm water will be to existing storm sewer located to the east of the project site. The ultimate receiving water is the Cedar Creek Channel, which is approximately 1,700 feet to the north of East Main Street (US 150).

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.

There are no areas denoted as protected sites. It can be assumed that all areas within Temporary Easement and Proposed ROW will be disturbed.

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):

N/A

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)
☐	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:

Upon completion of work in the area, if that areas is to be left for a period of time in accordance with the IDOT Standard Specifications, the Temporary Seeding will be applied. After completion of final grading, the permanent seeding and mulch will be applied.

Describe how the stabilization practices listed above will be utilized after construction activities have been completed:

After completion of activities, the site will be inspected to verify the permanent erosion control (seeding) has taken.

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)
☐	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:

The above noted structural practices will be applied to prevent the runoff of sediment from the site. Perimeter Erosion Barrier will prevent sheet flow sedimentation from leaving the site. The Temporary Ditch Check and Storm Drain Inlet Protection will prevent more concentrated flows and sedimentation from leaving the site.

Describe how the structural practices listed above will be utilized after construction activities have been completed:

The above noted items will be left in place until the permanent erosion protection has taken.

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.

N/A

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:

   All areas disturbed during the construction activities will be seeded and mulched in accordance with IDOT's Standard Specifications.

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:

There are no additional procedures or requirements approved by the local officials.

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.

Temporary Ditch Checks will be mainteined when the sediment has reached one-third the height of the ditch check. Perimeter Erosion Barrier will be maintained when the sediment has reached one-third the height of the barrier. Temporary Seeding will be applied to appropriate areas every seven (7) days until those areas are stabilized.

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:

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	FAU 6800	Marked Rte.	Main Street (US 150)
Section	05-00500-19-GS	Project No.	C-94-116-06
County	Knox	Contract No.	89417

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:

ATTACHMENT A

PUMP STATION ELECTRICAL SPECIAL PROVISIONS

DIVISION 16 – ELECTRICAL
SECTION 16010- BASIC ELECTRICAL REQUIREMENTS

1. GENERAL

1.01 WORK INCLUDES

A. Work included in this section is general in nature and applicable to electrical system work. Contractor is also directed to other sections of Division 16 – Electrical for additional related Specifications for items described in this section.

B. Work included in this section shall apply to installation and testing of all materials and equipment necessary to completely install electrical system, as shown on Plans and described herein in these Specifications, or as may be necessary for a complete and operational electrical system.

C. Plans pertaining to this installation indicate general location of circuit breaker panels, load centers, conduits, wiring, lighting, outlets, and other details necessary for installation of system. Contractor shall field verify existing site conditions.

D. Electrical installation, as shown on Plans and as specified herein, is based upon available information, with regard to characteristics of building layout and associated equipment specified. In the event changes are necessary in order to accommodate mechanical equipment furnished, necessary revisions will be made with approval of Owner's Representative.

E. Any minor changes in location of equipment, to include conduits, outlets, etc. from those shown on Plans, shall be made without extra charge if so directed by Owner's Representative. These changes shall be any changes in location that had new location been the bid-upon location would not have resulted in an increase in contract construction cost over that actually bid.

F. The Contractor shall furnish and install all materials necessary for a complete and operational installation of the electrical equipment, as specified herein and as shown on the Plans. The complete installation and wiring shall be done in a neat, workmanlike manner. All electrical work shall comply with the requirements of NFPA 70 - National Electrical Code (NEC), most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment and materials shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, ETL/Intertek Testing Services verification/listing, FM approval, or other third party listing, and/or the manufacturer's warranty of a device will not be permitted.

G. The electrical work and equipment specified is based on equipment of the type and size as noted on the Plans and specified herein. Should the proposed pump motors (or any other proposed loads) exceed the ratings of the electrical equipment specified, the General Contractor shall be solely responsible for furnishing any and all modifications necessary in order to provide a fully functional system to the satisfaction of the Engineer at no change to the contract cost. The Contractor shall also be required to submit for review, sufficient information determined by the Engineer to be necessary to review such alternates or modifications.

1.02 CODE REQUIREMENTS, LAWS, AND ORDINANCES

A. In installation of this work, Contractor shall comply in every respect with requirements of NFPA 70- National Electrical Code, most current issue in force, and any state and local requirements, laws, and ordinances as may be applicable.

B. If, in opinion of the Contractor, there is anything in Plans or Specifications that will not strictly comply with above laws, ordinances, and rules, the matter shall be referred to the attention of the Owner's Representative for a decision before proceeding with that part of the work. No changes on Plans or in Specifications shall be made without the full consent of Owner's Representative.

C. Contractor shall obtain and pay for all licenses, permits, and inspections required by above laws, ordinances, and rules for entire electric wiring job called for in these Specifications and accompanying Plans.

2. PRODUCTS

2.01 Products shall be as specified in other sections and as detailed on the Plans.

3. EXECUTION

3.01 EQUIPMENT STORAGE

A. All electrical equipment considered to be a part of this Contract, to include, but not be limited to, starters, transformers, lighting fixtures, etc., shall be stored before installation in a warm, dry, indoor area so as to protect the equipment from physical damage, freezing, dirt, and any other harmful effects. Equipment stored under tarpaulins or plastic covers will not be considered as meeting this requirement.

B. The installation of electrical equipment shall not begin until the structure, if required, within which the equipment is to be permanently housed, is complete enough to provide protection from weather and vandalism (i.e., roof and doors installed).

C. The Contractor will be responsible for ensuring conformance with these procedures.

3.02 DRAWINGS

A. Drawings for electrical work are a part of electrical Plans to which will be added, during the period of construction, any other Detail Drawings as may be necessary in opinion of Owner's Representative, to show proper installation of various appliances or equipment with relation to project.

B. The Drawings and Specifications are intended to be descriptive only, and any error or omissions of detail in either shall not relieve the Contractor from the obligations thereunder to install in correct detail any and all materials necessary for complete and operating electrical systems to the extent shown on the Drawings and described in this Specification.

C. The Contractor shall, during the progress of the job, record any and all changes or deviations from the original Drawings and, at the completion of the project, shall deliver to the Engineer a marked-up set of "as-built" Drawings.

3.03 SHOP AND ERECTION DRAWINGS

A. The Contractor shall prepare Shop Drawings for all parts of the electrical work. Before commencing any work or providing any material, the Contractor shall submit for approval of the Engineer all Drawings relating to the construction, arrangement or disposition of the equipment entering into the Contract, and show the complete equipment with manufacturer's Specifications of same.

B. Shop Drawings of all distribution panels, power and lighting systems, fixtures, wire, cables, devices, etc. shall be submitted for approval, as well as complete details of all systems not shown in detail on the Drawings.

C. Shop Drawings shall be fully descriptive of all the materials and equipment to be incorporated into this project. The Contractor shall carefully check all submitted Shop Drawings, making sure they are complete in all details and cover the specific items as hereinafter specified.

D. In the event that the Contractor provides hard copies of shop drawings he shall submit sufficient quantities of shop drawings for his needs plus four copies to be retained by the Engineer, (5 copies minimum).

E. No material or equipment shall be allowed at the site until Shop Drawings approved by the Engineer and/or Owner's Representative are received by the Owner's Representative at the site.

F. The following information shall be clearly marked on each Shop Drawing, catalog cut, pamphlet, specification sheet, etc. submitted:

PROJECT TITLE:

BRANCH OF WORK: ELECTRICAL
NAME OF BUILDING OR LOCATION:
PAGE OF PLANS OR SPECS WITH WHICH EQUIPMENT COMPLIES:
DATE:
SUBMITTED BY:

G. The following electrical equipment and materials will require shop drawing submittals for this project.

1. Conduits and Ducts (all types used on the project)
2. Wire and Cables (all types used on the project)
3. Junction Boxes and Enclosures
4. Enclosed Circuit Breakers
5. Ground Rods
6. Exothermic Weld Connections
7. Ground Wire
8. Transformers
9. Panelboards and Circuit Breakers
10. Automatic Transfer Switch
11. Surge Protective Devices
12. Engine Generator Set

3.04 CONTINUITY OF SERVICE

A. Should it be required that the Contractor perform work in the facility which is in operation at the time the Contractor's work is to be performed, then the Contractor shall clear with the operating personnel of the facility and/or the Owner's Representative any power outages or equipment downtime that may occur as a result of the performance of his work.

3.05 EQUIPMENT MOUNTING

A. Electrical Contractor shall be responsible for furnishing and setting all anchor bolts required to install Contractor's equipment.

B. Where concrete mounting pads are required for equipment mounting. Electrical Contractor shall furnish all concrete and form work necessary to complete the installation.

C. Where electrical equipment is located on damp or wet walls or locations as directed, it shall be "stand-off" mounted ½-in. from wall in a manner so that rear of equipment is freely exposed to surrounding air. Method of mounting shall be approved by Owner's Representative before equipment is mounted.

3.06 GENERAL ELECTRICAL

A. The Contractor shall furnish and install all materials necessary for complete and operational installation of the vault equipment, as specified herein and as shown on

the Plans. The complete installation and wiring shall be done in a neat, workmanlike manner. All electrical work shall comply with the requirements of the NFPA 70 – National Electrical Code (NEC) most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment and materials shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, FM approval, ETL/Intertek Testing Services listing/verification (or other third party listing), and/or the manufacturer's warranty of a device will not be permitted.

B. Per Illinois Environmental Protection Agency Title 35: Environmental Protection, Subtitle C: Water Pollution, Chapter II: Environmental Protection Agency Part 370: Illinois Recommended Standards for Sewage Works all electrical equipment installed in a sewage pump station wet well shall be suitable for Class I, Division 1, Group D hazardous location. In addition equipment located in a sewage wet well shall be suitable for use under corrosive conditions.

C. Per NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities, a storm water pumping station wet well (with no ventilation or ventilated at less than twelve (12) air changes per hour) is classified as a Class I, Division 2, Group D hazardous location.

D. Per the Illinois Department of Transportation Drainage Manual dated July 2011, Chapter 13 – Pump Stations, Section 13-204 Safety it notes *"All electrical equipment including motors should be explosion proof and should be located above the allowable high water elevation. Even submersible pump motors should be explosion proof because they may not always be submerged."*

E. Based on the above requirements all electrical installations associated with the pumping station wet well shall be suitable for Class I, Division 1, Group D hazardous location and conform to the applicable sections of NFPA 70 National Electrical Code (NEC) Articles 500, 501, and 504 in addition to the other applicable sections of NEC. Where electrical equipment is installed in a classified hazardous location it shall be UL-listed, Factory Mutual-approved, or ETL/Intertek Testing Services listed/verified suitable for use in the respective classified hazardous location; (Class I, Division 1, Group D location for the pump station wet well).

F. Contractor shall comply with the applicable Galesburg, Illinois Code of Ordinances.

G. Contractor shall keep a copy of the latest NEC in force on site at all times during construction for use as a reference.

H. Contractor shall keep a copy of the Plans, Special Provision Specifications including any addenda, and copies of any change orders on site at all times during construction.

I. Contractor shall coordinate work and any power outages with the Owner's Representative. Any shutdown of existing systems shall be scheduled with and approved by the Owner's Representative prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety &

Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures including, but not limited to, 29 CFR section 1910.147 The Control of Hazardous Energy (lockout/tagout).

J. Contractor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

K. All electrical equipment installed by the Contractor shall be properly labeled, and all cables must be tagged.

L. All power and control cables shall be installed in conduit, wireways, pull boxes, junction boxes, or raceways. No exposed power or control wiring will be permitted.

M. All electrical equipment installed by the Contractor shall be properly labeled.

N. All changes to the electrical system shall be documented by the Contractor and provided to the Owner's Representative.

O. Locate Existing Underground Utilities and Cables. The location, size, and type of material of existing underground and/or aboveground utilities indicated on the Plans are not represented as being accurate, sufficient, or complete. Neither the Owner nor the Engineer assumes any responsibility whatever in respect to the accuracy, completeness, or sufficiency of the information. There is no guarantee, either expressed or implied, that the locations, size, and type of material of existing underground utilities indicated are representative of those to be encountered in the construction. It shall be the Contractor's responsibility to determine the actual location of all such facilities, including service connections to underground utilities. Prior to construction, the Contractor shall notify the utility companies of his operational plans, and shall obtain, from the respective utility companies, detailed information and assistance relative to the location of their facilities and the working schedule of the companies for removal or adjustment, where required. In the event an unexpected utility interference is encountered during construction, the Contractor shall immediately notify the utility company of jurisdiction. The Owner's Representative shall also be immediately notified. Any damage to such mains and services shall be restored to service at once and paid for by the Contractor at no additional cost to the Contract. All utility cables and lines shall be located by the respective utility. **Contact JULIE (Joint Utility Location Information for Excavators) for utility information, phone: 1-800-892-0123.**

END OF SECTION 16010

DIVISION 16 – ELECTRICAL
SECTION 16111 – CONDUIT AND RACEWAY

1. GENERAL

1.01 DESCRIPTION OF WORK

A. The work included in this section is the conduits, raceways and fittings required for a complete and operational electrical system. The work included in this section shall also include the construction of electrical handholes with lids complete, in accordance with this Specification and as detailed on the Construction Plans.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16120 – Wire and Cable.

C. Section 16130 – Boxes

D. Section 16450 – Grounding.

E. DIVISION 800 ELECTRICAL, of the Standard Specifications for Road and Bridge Construction, Illinois Department of Transportation.

1.03 REFERENCE TO STANDARDS

A. ANSI C80.1 – Rigid Steel Conduit, Zinc Coated.

B. ANSI C80.3 – Electrical Metallic Tubing, Zinc Coated.

C. ANSI C80.4 – Fittings Rigid Metal Conduit and EMT.

D. ANSI C80.5 – Rigid Aluminum Conduit.

E. ASTM D3350 Standard Specification for Polyethylene Plastics Pipe and Fittings Materials

F. ASTM F2160 Standard Specification for Solid Wall High Density Polyethylene (HDPE) Conduit Based on Controlled Outside Diameter (OD)

G. NEMA TC-2 – Electrical Plastic Tubing and Conduit.

H. NEMA TC-3 – Fittings Rigid PVC Conduit and Tubing.

I. NEMA TC-7 – Smooth-Wall Coilable Polyethylene Electrical Plastic Conduit.

J. NFPA 70, National Electrical Code (NEC) (most current issue in force).

K. UL Standard 1 – Flexible Metal Conduit.

L. UL Standard 6 – Rigid Metal Conduit.

M. UL Standard 360 – Liquid-Tight Flexible Steel Conduit.

N. UL Standard 514B – Conduit, Tubing and Cable Fittings.

O. UL Standard 651 – Schedule 40 and 80 Rigid PVC Conduit.

P. UL Standard 651B – Standard for Continuous Length High-Density Polyethylene (HDPE) Conduit.

1.04 DELIVERY, STORAGE AND HANDLING

A. Threads of metal conduits shall be protected by plastic caps. Fittings shall be stored in boxes. All equipment shall be stored on pallets to prevent contact with earth and shall be covered with plastic sheeting to protect them from dirt and weather.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for each type of conduit or duct to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** In the event that the Contractor provides hard copies of shop drawings he shall submit sufficient quantities to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus four (4) copies to be retained by the Project Engineer. Shop drawings shall include the following information:

1. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Project Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

2. Shop drawings shall include conduit and/or duct cut sheets with type, size, specifications, UL listing, manufacturer, and catalog or part number.

3. Provide certification that steel conduits are manufactured in the United States of America and made with 100 percent domestic steel to comply with the Illinois **"Steel Products Procurement Act".**

4. For plastic duct to be installed by boring method, provide manufacturer's literature confirming the respective duct is suitable for directional boring with the respective Shop Drawing submittal.

5. Concrete mix design for concrete encased duct.

6. Precast concrete handholes and manholes must be on IDOT (Illinois Department of Transportation) List of Certified Precast Concrete Producers. Provide information on respective precast concrete producer for precast handholes and drawings for respective handholes.

7. Provide cut sheets with part number and specification for manhole frame and lid.

1.06 QUALIFICATIONS

A. All material shall be purchased new from suppliers/manufacturers regularly engaged in the business of electrical conduit, ducts and fittings supply.

2. PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. Galvanized Rigid Steel Conduit: Rigid Steel Conduit and fittings shall be hot-dipped, galvanized, UL-listed, and produced in accordance with UL Standard 6 – Rigid Metal Conduit and ANSI C80.1 – Rigid Steel Conduit, Zinc Coated. Couplings, connectors, and fittings for rigid steel conduit shall be threaded, galvanized steel or galvanized, malleable iron, specifically designed and manufactured for the purpose. Fittings shall conform to ANSI C80.4 – Fittings Rigid Metal Conduit and EMT and UL 514B – Conduit, Tubing, and Cable Fittings. Set screw type fittings are not acceptable. Steel used to manufacture conduits shall be 100 percent domestic steel. Contractor shall provide certification that the respective steel conduits used on this project are manufactured from 100 percent domestic steel.

B. PVC-Coated, Galvanized, Rigid Steel Conduit: PVC-coated, galvanized, rigid steel conduit shall be manufactured by Robroy Industries, Inc., (Conduit Division, 1100 US Highway 271 South, Gilmer, Texas 75644, Phone 903-843-5591, Sales Department Fax: 903-843-2516) Plasti-Bond or approved equivalent. PVC coating shall be a minimum of 40 Mils permanently fused to hot dipped, galvanized, rigid steel conduit. An interior red polyurethane coating of 2 mils (.002 in.), shall be applied to the conduit and conduit couplings. Steel used to manufacture conduits shall be 100 percent domestic steel. Contractor shall provide certification that the respective steel conduits used on this project are manufactured from 100 percent domestic steel.

C. PVC Coated Rigid Aluminum Conduit: PVC coated rigid aluminum conduit and fittings shall be as manufactured by Robroy Industries, Inc., Conduit Division, 1100 US Highway 271 South, Gilmer, Texas 75644, Phone 903-843-5591, Sales Department Fax: 903-843-2516 or approved equivalent. The conduit, prior to coating, shall be new, unused material and shall conform to UL 6, Standard for Safety for Rigid Metal Conduit. An exterior gray PVC coating of a nominal 40

mils, (.040 in.), shall be applied to the conduit and conduit couplings. The PVC coating shall conform to all applicable requirements of NEMA RN-1, Standard for PVC Coated Conduit. An interior red polyurethane coating of 2 mils (.002 in.), shall be applied to the conduit and conduit couplings. The polyurethane coating shall conform to all applicable requirements of NEMA RN- 1, Standard for PVC Coated Conduit. Conduit having areas of thin or no coating shall be unacceptable. The PVC and polyurethane coatings applied to conduit shall have sufficient flexibility to permit field bending without cracking or flaking at temperatures above 30°F (-1°C). All male threads on conduit and all female threads on conduit couplings shall be protected by a coat of red polyurethane.

D. Schedule 40 PVC and Schedule 80 PVC Conduit: Conduit shall be Schedule 40 PVC, 90°C, UL rated or approved equal. Material shall comply with NEMA Specification TC-2 (Conduit), TC-3 (Fittings-UL-514), and UL-651 (Standard for rigid nonmetallic conduit). The conduit and fittings shall carry a UL label (on each 10 foot length of conduit and stamped or molded on every fitting). Conduit and fittings shall be identified for type and manufacturer and shall be traceable to location of plant and date manufactured. The markings shall be legible and permanent. The conduit shall be made from polyvinyl chloride C-300 compound which includes inert modifiers to improve weatherability, heat distortion. Clean rework material, generated by the manufacturer's own conduit production, may be used by the same manufacturer, provided the end products meet the requirements of this Specification. The conduit and fittings shall be homogeneous plastic material free from visible cracks, holes, or foreign inclusions. The conduit bore shall be smooth and free of blisters, nicks or other imperfections which could mar conductors or cables. Conduit, fittings and cement shall be produced by the same manufacturer to assure system integrity and shall be Carlon Plus 40, Plus 80 conduit, or approved equal.

E. Plastic Conduit for Directional Boring Installation: Conduits for directional boring shall be Schedule 40 PVC or Schedule 80 PVC conduit, UL-listed, rated for 90°C cable-conforming to NEMA Standard TC-2 and UL 651 and suitable for directional boring installation, Schedule 80 HDPE conduit, UL-listed, conforming to NEMA Standard TC-7 and UL 651B and suitable for directional boring installation, or Wall Type SDR 9 or SDR 11 HDPE conduit manufactured in accordance with ASTM D-3350 (Specification of Polyethylene Plastics Pipe and Fittings Materials) and ASTM F2160 (Standard Specification for Solid Wall, High-Density Polyethylene Conduit Based on Controlled Outside Diameter), and suitable for directional boring installation. Per NEC 300.5 (K), raceways installed using directional boring equipment shall be approved for the purpose. Provide manufacturer's literature confirming the respective duct is suitable for directional boring with the respective Shop Drawing submittal. Conduits shall be suitable for underground applications encased in concrete or direct burial, and suitable for exposed applications aboveground.

F. Liquid-Tight, Flexible Metal Conduit (Non-Explosion Proof): Liquid-tight, flexible metal conduit shall consist of polyvinyl jacket over flexible, hot-dip, galvanized steel tubing. The flexible conduit shall be completely sealed from liquids, dust, dirt, and fumes and be resistant to oil, gasoline, grease, and abrasion. Jacket shall also be sunlight-resistant. Liquid-tight, flexible metal conduit shall be UL-listed, suitable for use as a grounding conductor, and comply with Article 350 of

the NEC. **Liquid-tight, flexible metal conduit and associated fittings shall be UL-listed to meet the requirements of NEC 350.6.** Where liquid-tight, flexible metal conduit is installed in a Class I, Division 2 classified hazardous location it shall also be listed suitable for use in Class I, Division 2 classified hazardous locations. Liquid tight flexible metal conduit shall not be installed in a Class I, Division 1 classified hazardous location except for use with intrinsically safe wiring. Liquid-tight, flexible metal conduit shall be Anaconda Sealtite Type UA, as manufactured by Anamet Electrical Inc., 1000 Broadway Avenue East, Mattoon, Illinois 61938-0039, (Phone: 217-234-8844), Liquatite Type LA as manufactured by Electri-Flex Company, 222 W. Central Ave., Roselle, Illinois 60172, (Phone: 630-529-2920 or 1-800-323-6174), or approved equal. **Do not install liquid-tight, flexible metal conduit that is not UL listed. Contractor shall confirm liquid-tight, flexible metal conduit bears the UL label prior to installation.**

G. Square Duct/Wireway (Exterior Locations): Square duct shall be sized for the respective application and/or as detailed on the Plans. Wireways for exterior locations shall be NEMA 4X stainless steel with hinged cover as manufactured by Hoffman Enclosures Inc., or approved equal. All wireway lengths and accessories shall be Underwriter's Laboratories listed and labeled in conformance with UL 870 Standards for Wireways, Auxiliary Gutters, and Associated Fittings and conform to NEMA 4, 4X enclosure rating.

H. Explosion-Proof Flexible Conduit: Explosion-proof flexible conduit shall be suitable for use in Class I, Division 1, Group D hazardous locations, and liquid-tight for wet locations. Conduit shall have an interior insulating liner to protect conductors from abrasion under vibrating conditions. Conduit shall provide a continuous electrical path. Explosion proof flexible conduit shall be Crouse-Hinds, O-Z/Gedney ECGJH, ECLK Series, Appleton EXGJH or EXLK Series Flexible Coupling, or equal.

I. Explosion Proof Conduit Seals: Explosion-proof conduit seals shall be suitable for use in Class I, Division 1, Group D hazardous location. Explosion proof conduit seals shall be Crouse-Hinds EYS or EZS Series, Appleton EYS, ESU, or EY Series, O-Z/Gedney EYA, EY, EZS Series explosion-proof sealing fitting, or equal.

J. Miscellaneous Fittings: Fittings shall be suitable for use with conduits and ducts supplied. All conduit bodies, fittings, and boxes installed in classified hazardous locations (Class I, Division 1 or 2, Group D) shall be UL-listed, FM listed, or ETL listed suitable for use in the respective classified hazardous location. Fittings shall be as manufactured by Appleton, Crouse-Hinds, Hubbell-Killark, O-Z/Gedney, or equal.

K. Electrical Manholes: Electrical handholes shall be constructed in accordance with the details as shown on the Construction Plans.

L. Fire Stopping Material

1. Fire stopping materials shall consist of commercially manufactured products capable of passing ASTM E-814 (UL 1479) Standard Method of Fire Test for Through Penetration Fire Stops.

2. Fire stopping materials shall maintain the rating of the wall, partition or floor opening that penetration is made. Comply with NEC 300.21.

3. Fire stopping materials shall be U.L. classified.

4. Acceptable Products:

   a. 3M - Fire Barrier.
   b. Thomas & Betts - Flame Safe.
   c. Nelson Electric – Flameseal.

3. EXECUTION

3.01 INSPECTION

A. All conduits shall be inspected for proper fit and finish, for out-of-round and for proper thickness. All burrs and flashing shall be removed. Conduit and fittings shall be clean and free of obstructions.

3.02 LOCATE EXISTING UTILITIES

A. The location, size, and type of material of existing underground and/or aboveground utilities indicated on the Plans are not represented as being accurate, sufficient, or complete. Neither the Owner nor the Engineer assumes any responsibility whatever in respect to the accuracy, completeness, or sufficiency of the information. There is no guarantee, either expressed or implied, that the locations, size, and type of material of existing underground utilities indicated are representative of those to be encountered in the construction. It shall be the Contractor's responsibility to determine the actual location of all such facilities, including service connections to underground utilities. Prior to construction, the Contractor shall notify the utility companies of his operational plans, and shall obtain from the respective utility companies detailed information and assistance relative to the location of their facilities and the working schedule of the companies for removal or adjustment, where required. In the event an unexpected utility interference is encountered during construction, the Contractor shall immediately notify the utility company of jurisdiction. The Owner's Representative shall also be immediately notified. Any damage to such mains and services shall be restored to service at once and paid for by the Contractor at no additional cost to the Contract.

B. All utility cables and lines shall be located by the respective utility. **Contact JULIE (Joint Utility Location Information for Excavators) for utility information, phone: 1-800-892-0123.** Also coordinate work with all aboveground utilities.

C. Contractor shall locate and mark all existing cables within ten (10) feet of proposed excavating/trenching area. Any cables found interfering with proposed excavation or cable/trenching shall be hand dug and exposed. Any damaged

cables shall be immediately repaired to the satisfaction of the respective utility and/or Owner's Representative at the Contractor's expense. The respective utility and Owner's Representative shall be notified immediately if any cables are damaged.

D. Payment for locating and marking underground utilities and cables will not be paid for separately, but shall be considered incidental to the respective duct installation or respective item of work.

3.03 INSTALLATION

A. Comply with IDOT Standard Specifications and the following.

B. All exterior above grade exposed conduit located at the pump station shall be PVC coated rigid steel conduit or PVC coated rigid aluminum conduit. All conduits entering or leaving the pump station wet well shall be PVC coated rigid steel conduit or PVC coated rigid aluminum conduit.

C. Exterior above grade exposed conduit located at the site for the electric service and standby engine generator shall be galvanized rigid steel conduit.

D. Exposed above grade conduits for grounding electrode conductors shall be Schedule 40 (minimum) PVC conduit.

E. All below grade conduit shall be as detailed on the Plans and specified herein.

F. All work shall be laid out with sleeves for openings through slabs, pump station or valve vault walls, etc. as required. If sleeves and inserts are not properly installed, the Contractor will be required to do all necessary cutting and patching to accommodate conduits.

G. Conduit size and fill requirements shall comply with Chapter 9 and Annex C of the NEC. It should be noted these are minimum requirements and larger conduit sizes or smaller fill requirements shall be used whenever specified or detailed on the Drawings.

H. Use liquid-tight, flexible metal conduit or flexible metal conduit for final connection to engine generator set, transformers, motors, and for equipment subject to movement, vibration, and/or noise transmission. For each conduit size up to 1-in. trade size, flexible conduit shall be minimum length of 12 in. and a maximum length of 36 in. and for conduit sizes above 1-in. trade size, flexible conduit shall be minimum length of 20 in. and maximum length of 48 in. Liquid-tight, flexible metal conduit and/or flexible metal conduit that is used for flexibility (including connections to engine generator set, motors, and transformers) shall require and external bonding jumper or internal equipment grounding conductor per NEC 350.60. **Do not install liquid-tight, flexible metal conduit that is not UL-listed. Confirm liquid-tight, flexible metal conduit bears the UL label prior to installation.** Do not install liquid-tight flexible metal conduit in a classified hazardous location unless it is approved and listed suitable for use in the respective classified hazardous location.

I. Explosion-proof flexible conduit shall be provided as a connection between each motor junction box (or any other piece of equipment subject to movement or vibration) and the rigid conduit system where installed in a classified hazardous location.

J. Ream conduits only after threads are cut. Cut joints square to butt solidly into couplings. Where necessary to join two pieces of conduit and it is impossible to use standard coupling, use three piece malleable iron conduit coupling. The use of running thread is prohibited. This applies to all rigid conduit installations, underground or otherwise.

K. Make all joints in steel underground conduit watertight with approved joint compound. Temporarily plug conduit openings to exclude water, concrete or any foreign materials during construction. Clean conduit runs before pulling in conductors.

L. Hickey bends will not be acceptable for conduits 1-in. and larger. Use manufactured elbows or bends fabricated with bending machine. Field bending of all PVC conduit shall be accomplished with the use of equipment approved by the conduit manufacturer. Open flame bending equipment will not be acceptable.

M. A run of conduit between outlet and outlet, between fitting and fitting or between outlet and fitting shall not contain more than the equivalent of four 90 Degree bends, including bends immediately at an outlet or fitting.

N. Where conduit enters a box or fitting provide a steel locknut and an insulated metallic bushing. Use this method to terminate conduit in panels, pull boxes, safety switches, etc. Conduit terminations in panel boards (circuit breaker panels or load centers) shall have grounding bushings with ground wire connections between the bushing and the ground bus.

O. Do not run conduit below or adjacent to water piping, unless specifically detailed otherwise on the Plans.

P. Run exposed conduits parallel with the respective walls or supporting structure and at right angles to respective building, not diagonally. Make bends and turns with corrosion resistant pull boxes or cast aluminum or hot-dipped galvanized malleable iron fittings and covers.

Q. Conduit terminations shall include bushings to protect conductors from damage from conduit.

R. Set screw type fittings are prohibited.

S. Use only screws, bolts, washers, etc. fabricated from rust resisting metals for the supporting of boxes.

T. The electrical handholes and manholes shall be constructed in accordance with the details as shown on the Construction Plans.

3.04 EXCAVATION FOR DUCT BANK

A. The ground shall be excavated in open trenches to width, depth, and in direction necessary for proper installation of underground duct work and any manholes, handholes, etc. and connections as may be shown on the Plans. Trench widths shall be held to a minimum.

B. Any necessary sheathing to prevent cave-ins, etc. shall be provided by and the responsibility of the respective Contractor installing the duct bank.

C. Where muck of unstable ground is encountered in bottom of trench, it shall be excavated to a depth of at least 12 in. below the line of the duct or slab. Where bottom of trench is excavated below necessary elevation, it shall be brought to proper grade by use of sand or 3/8 in. gravel, well compacted.

D. Where excavation for a respective portion of trench is in water or wet sand, Contractor shall install a pumping system to dewater the trench.

E. Excavations shall be deeper than minimum wherever required in order that ducts or conduits may be installed so as to avoid new or existing piping, etc., as dictated by site conditions or directed by Owner's Representative.

F. Should conduits or ducts pass under sidewalks, roads, curbs, parking lots, or other paved areas Contractor shall take up same in order to install conduits or ducts. All sidewalks, roads, curbs, parking lots, or other paved areas shall be replaced with material equal to that removed and shall be as approved by the Owner's Representative.

G. The Contractor shall proceed with caution in the excavation and preparation of the trench so that the exact location of underground structures, utilities, and piping, both known and unknown, may be determined, and the Contractor shall be held responsible for the repair of such structures, utilities, and piping when broken or otherwise damaged by the Contractor.

3.05 UNDERGROUND CONDUIT INSTALLATION

A. The proposed conduits and ducts shall be constructed at the locations and in accordance with the details shown on the Construction Plans. Ducts shall be installed 24 in. minimum below grade to the top of conduit. Ducts located in areas subject to farming shall be **42** in minimum below grade. Ducts located below roadways shall be **42** in minimum below grade. Where detailed on the Plans or where required to avoid obstructions, ducts shall be buried deeper. Where concrete-encased duct interfaces to directional-bored duct at a pavement crossing, the concrete encasement shall be installed up to the respective pavement edge. Where concrete-encased duct interfaces to an electrical handhole or manhole, the concrete encasement shall be installed up to the respective handhole or manhole. Provide bushings or bells at conduit terminations in electrical handholes or manholes.

B. Perform excavation, trenching, backfilling and compaction in accordance with the applicable sections of DIVISION 800 ELECTRICAL, of the Standard Specifications for Road and Bridge Construction, Illinois Department of Transportation.

C. Underground ducts installed by directional-boring method shall be installed in a manner that will not damage any existing underground utilities, and shall not disturb or damage the respective pavement or roadway surface. Ducts shall be directional-bored at the locations shown on the Construction Plans. The ducts will be bored at a minimum depth of 24 in. below the bottom of the pavement it is being bored under. Ducts installed under paved areas and roadways shall extend a minimum of 10 ft beyond the respective pavement or roadway surface. A pull wire will be left in the conduit if it is to be left vacant. The ends of the conduit will be sealed with approved plugs.

D. Conduit lines shall be laid with a minimum slope of 4 in. per 100-ft. Ells and offsets shall be made with factory ells or with field bends made in accordance with conduit manufacturer's recommendations. The minimum bend radius shall be 36 in. Otherwise, long sweep bends having a minimum radius of 25 ft shall be used for a change of direction of more than 5 degrees, either horizontally or vertically. Both curved and straight sections may be used to form long sweep bends as required.

E. Conduits shall be kept clean of concrete, dirt, or foreign substances during storage and construction. After conduit installation, a standard flexible mandrel shall be used for cleaning followed by a brush with stiff bristles. Mandrel shall be at least 12 in. long and have a diameter ¼-in. less than the inside diameter of the conduit being cleaned. All obstructions in conduits shall be removed prior to pulling wires or final acceptance. Conduits unable to pass mandrel shall be replaced. All unused conduits shall be capped.

F. Trench widths shall be held to a minimum.

G. Examine all available site utility information in regard to existing utility lines and locate and protect existing lines. Repair all existing utility lines that are damaged by this construction.

H. All excavations shall be barricaded, lighted and protected during construction.

I. Contractor shall obtain approval from Owner for proposed schedules of any description of vehicular or pedestrian traffic for the installation of this work.

J. The Contractor will determine if there is a conflict between the installation of the proposed electrical ducts and any existing utilities. He will make all necessary adjustments in depth of installation to avoid any and all proposed underground improvements."

K. Contractor shall backfill all excavations, grade, mulch, and seed to restore. Any and all trenches and disturbed areas will be backfilled and restored to a smooth grade and seeded to the satisfaction of the Engineer. All trench settlement shall be corrected for a period of one year. Restoration, grading, and seeding of areas

disturbed during the installation of the proposed ducts will be incidental to the respective pay item for which the duct is installed.

3.06 CONCRETE PAD PENETRATIONS AND SLEEVE INSTALLATION

A. Provide sleeves for all electrical raceways, and wiring passing through concrete pads or other structures. Sleeves shall be of sufficient length to extend through the respective pad or structure. Interior diameter of sleeves shall provide 1/2 inch clearance all around conduit.

3.07 SPECIAL INSTALLATION

A. Hazardous Locations

1. Per Illinois Environmental Protection Agency Title 35: Environmental Protection, Subtitle C: Water Pollution, Chapter II: Environmental Protection Agency Part 370: Illinois Recommended Standards for Sewage Works all electrical equipment installed in a sewage pump station wet well shall be suitable for Class I, Division 1, Group D hazardous location. In addition equipment located in a sewage wet well shall be suitable for use under corrosive conditions. All electrical installations associated with a sewage pump station shall conform to the applicable sections of NEC 500, 501, and 504 in addition to the other applicable sections of NEC. Where electrical equipment is installed in a classified hazardous location it shall be UL-listed, Factory Mutual approved listed, or ETL/Intertek Testing Services listed/verified suitable for use in the respective classified hazardous location.

2. Per NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities, a wastewater pumping station wet well (with no ventilation or ventilated at less than twelve (12) air changes per hour) is classified as a Class I, Division 1, Group D hazardous location. Per NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities, a storm water pumping station wet well (with no ventilation or ventilated at less than twelve (12) air changes per hour) is classified as a Class I, Division 2, Group D hazardous location. All electrical installations associated with the respective pumping station wet well shall conform to the applicable sections of NEC 500, 501, and 504 in addition to the other applicable sections of NEC. Where electrical equipment is installed in a classified hazardous location it shall be UL-listed, Factory Mutual-approved, or ETL/Intertek Testing Services listed/verified suitable for use in the respective classified hazardous location.

3. Perform all work in classified hazardous locations as defined by the NEC in strict accordance with the NEC for the particular "Class", "Division", and "Group" of hazardous locations involved or indicated on the Drawings. Provide conduit and cable seals in accordance with the NEC.

4. All conduits installed in classified hazardous locations (including Class I, Division 1 or 2, Group D) shall be suitable for the respective location. All boxes and fittings installed in Class I, Division 1 locations shall be approved (FM Approved or UL-listed) suitable for Class I, Division 1 locations. All boxes and fittings installed in Class I, Division 2 locations shall conform to the requirements of NEC 501.10 (B)(4).

5. Per Article 501.15 (C) (6) of the 2014 NEC and UL Standard 886, the cross sectional area for conductors installed in a conduit seal off fitting shall not exceed 25 percent, unless the conduit seal off fitting has been specifically approved for a higher percentage of fill.

6. Install explosion-proof conduit sealing fittings in conformance with the respective manufacturer's instructions. Contact the respective seal off manufacturer if assistance is required for direction of installing packing fiber to form a dam and pouring the sealing compound.

7. Conduits to or from a sewage pump station wet well shall be PVC Coated Rigid Steel or PVC Coated Rigid Aluminum.

8. EMT is not suitable for use in classified hazardous locations and, therefore, shall not be installed in classified hazardous locations.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding, coordination, and testing required to complete the installation of the pump station and to place it into proper working order.

B. All conduits, ducts, elbows, fittings, raceways, handholes, and manholes will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed. All preparation, assembly, and installation of these materials; for all sawing and pavement removal; for all duct interface work to handholes/manholes including coring of handholes/manholes; for all excavation and backfilling with aggregate backfill, earth backfill, and concrete; for all interfaces, entries, and exits to buildings; and for all labor, coordination, equipment, tools, and incidentals necessary to complete this work shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

C. Payment for locating and marking underground utilities and cables will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

D. Payment for trenching, excavation, and backfill will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16111

DIVISION 16 – ELECTRICAL
SECTION 16120 – WIRE AND CABLE

1. GENERAL

1.01 DESCRIPTION OF WORK

A. The work included in this section is the supply of wire and cable to provide a complete and operational electrical system.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16450 – Grounding.

1.03 REFERENCE TO STANDARDS

A. ASTM Specification B3 – Standard Specification for Soft or Annealed Copper Wire.

B. ASTM Specification B8 – Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.

C. Federal Specification A-A-59544 Cable and Wire, Electrical (Power, Fixed Installation).

D. IEEE 576 – IEEE Recommended Practice for Installation, Termination, and Testing of Insulated Power Cable as Used in Industrial and Commercial Applications.

E. NFPA 70 – National Electrical Code (most current issue in force).

F. NFPA 70E – Standard for Electrical Safety in the Workplace.

G. OSHA 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures.

H. UL Standard 44 – Thermoset-Insulated Wires and Cables.

I. UL Standard 83 – Thermoplastic-Insulated Wires and Cables.

J. UL Standard 854 – Service Entrance Cables.

1.04 DELIVERY, STORAGE AND HANDLING

A. Wire and cable shall be delivered on reels or coiled in boxes. Wire and cables shall be stored and handled to prevent damage to conductor and insulation.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for all cable types and sizes to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** In the event that the Contractor provides hard copies of shop drawings he shall submit sufficient quantities to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus four (4) copies to be retained by the Project Engineer. Shop drawings shall include the following information:

1. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Project Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

2. Shop drawings shall include cable and/or conductor cut sheets with type, size, specifications, product data, UL listing, manufacturer, and catalog or part number.

3. Where cable is required to have colored coded insulation, provide information on the color coding the respective conductors.

1.06 QUALIFICATIONS

A. The wire and cable shall be manufactured and supplied by a company regularly engaged in the business of furnishing wire and cable. If required by the Engineer, the manufacturer shall submit a certification to a minimum experience of five years in the manufacture of wire and cable.

1.07 MAINTENANCE SERVICE (WARRANTY)

A. Wire and cable shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion by the Owner.

2. PRODUCTS AND MATERIALS

2.01 GENERAL

A. All cable shall be UL-listed as suitable for installed application.

2.02 BUILDING WIRE SPECIFICATION

A. XHHW Wire. Cable shall comply with UL Standard 44, ICEA S-95-658/NEMA WC70 and Federal Specification A-A-59544. Conductors shall be Class B, stranded-annealed, uncoated copper per UL Standard 44. Insulation shall be rated for 600-Volts. Insulation shall be cross-linked polyethylene complying with the physical and electrical requirements of UL Standard 44 for Type XHHW-2. Cable shall be UL-listed and marked XHHW-2. .

B. THWN Wire. Cable shall comply with Underwriters' Laboratories Standard UL-83 and Federal Specification A-A-59544. Conductor shall be soft annealed uncoated copper and shall comply with ASTM B3 and B8. Insulation shall be rated for 600V. Insulation shall be polyvinyl-chloride conforming to Underwriters' Laboratories requirements for Type THW. The outer covering shall be nylon conforming to Underwriters' Laboratories for type THHN or THWN. Cable shall be UL-listed and marked THWN-2. **Note where THWN wiring is referenced on the Plans it shall be THWN-2.**

C. XLP-USE Wire. Cable shall comply with UL Standard 44, UL Standard 854, and Federal Specification A-A-59544. Conductor shall be concentric-strand, soft copper, conforming to ASTM B8 and Underwriters' Laboratories Standard UL44 for Rubber Insulated Wires. Insulation shall be rated for 600-Volt. Insulation shall be cross-linked polyethylene conforming to Underwriter's Laboratories Requirements for Type USE-2 insulation. Cable shall be UL-listed and marked USE-2.

D. Pressure Transducer Cables. Due to the distance from the pump station wet well to the pump control panel the pump station pressure transducer will require longer factory supplied cables and/or splices with cable extensions. Cables for the pump station pressure transducer shall be in accordance with the respective pressure transducer manufacturer's requirements and recommendations for the respective application.

E. Joints and Splices

1. Make terminations, taps and splices with an indent type pressure connector with insulating cover for 8 AWG and smaller.

    a. Acceptable Manufacturers:

        (1) Buchanan,
        (2) Burndy,
        (3) Ideal, and
        (4) Thomas & Betts.

2. Instead of indent type connectors insulated spring compression connectors may be used for 10 AWG and smaller.

    a. Acceptable Products:

        (1) Buchanan,

(2) Ideal, Wing Nut,
(3) ITT Holub, Free Spring,
(4) T&B, Piggy, and
(5) 3M, Scotchlok.

3. Use mechanical compression or bolted type connector for 6 AWG or larger. Cover connector with insulating type of heat shrinkable insulation equivalent to 150% conductor insulation.

a. Acceptable Manufacturers:

(1) AMP, Inc.,
(2) Anderson,
(3) Blackburn,
(4) Burndy Corp.,
(5) General Electric Co.,
(6) Ideal Industries,
(7) ITT Weaver,
(8) O.Z./Gedney Co.,
(9) T&B, and
(10) 3M Co.

F. COLOR CODING: Color-code phase and neutral conductor insulation for No. 6 AWG or smaller. Provide colored marking tape for phase and neutral conductors for No. 4 AWG and larger. **Insulated ground conductors shall have green-colored insulation for all conductor sizes (AWG and/or KCMIL) to comply with NEC 250.119. Contractor shall arrange with his supplier to provide conductors with green colored insulation for all insulated ground wires regardless of conductor size (AWG and/or KCMIL). Neutral conductors shall have white-colored insulation for No. 6 AWG and smaller to meet the requirements of NEC 200.6.** Standard colors for power wiring and branch circuits shall be as follows:

	120/240 VAC, 1-Phase, 3-wire	**208/120 VAC, 3-Phase, 4-wire**	**480/277 VAC, 3-Phase, 4-wire**
Phase A	Black	Black	Brown
Phase B	Red	Red	Orange
Phase C	(Not applicable)	Blue	Yellow
Neutral	White	White	Gray
Ground	Green	Green	Green

G. Intrinsically Safe Wiring: Intrinsically safe wiring shall be identified in accordance with NEC (National Electrical Code) 504.80 "Identification". Color-code intrinsically safe wiring with light blue colored insulation in accordance with NEC 504.80 (C) "Color Coding.

H. Wire Pulling Lubricant

1. Pulling lubricant shall be a UL-listed, water-based, polymer solution. Lubricants containing waxes or soaps are not acceptable.

2. The lubricant shall be compatible with the cable insulation and shall not cause any premature deterioration of the insulating material.

3. Dried residue from lubricant shall not become tacky or gum-up. Cables shall remain pullable after lubricant has dried.

4. The lubricant shall be approved by the cable manufacturer for use with their cables.

5. Acceptable Manufacturers/Products:

   a. American Colloid/Poly-X,
   b. American Polywater/Polywater J,
   c. ARNCO/Hydra-Lube,
   d. Buchanan/Quick Slip,
   e. Condux/Super-Lube, and
   f. Ideal/Aqua-Gel.

3. EXECUTION

3.01 INSTALLATION OF BUILDING WIRE AND CABLE

A. The Contractor shall install the specified cable at the approximate locations indicated on the Plans. Unless otherwise shown on the Plans, all cable required to cross under pavements shall be installed in concrete encased duct banks. Wherever possible, cable shall be run without splices, from connection to connection.

B. The Contractor shall furnish and install all materials necessary for complete and operational installation, as specified herein, and as shown on the Plans. The complete installation and wiring shall be done in a neat, workmanlike manner. All electrical work shall comply with the requirements of the NFPA 70 – National Electrical Code (NEC), most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, ETL/Intertek Testing Services listing/verification (or other third party listing), and/or the manufacturer's warranty of a device will not be permitted.

C. Contractor shall coordinate work and any power outages with the Owner's Representative. Any shutdown of existing systems shall be scheduled with and approved by the Owner's Representative prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout

procedures including, but not limited to, 29 CFR section 1910.147 The Control of Hazardous Energy (lockout/tagout).

D. Contractor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

E. All temporary installations shall comply with National Electrical Code Article 590 – "Temporary Installations".

F. Wire and cable shall be warranted to be free from defects in material and workmanship. Wire and cable shall be installed using accepted industry methods to prevent damage to conductors and insulation.

G. Installation shall comply with all applicable sections of the NEC regarding conduit fill. Do not exceed conduit fill established by the NEC for number of conductors installed in a raceway.

H. Splices will not be permitted in conduit bodies. All splices shall be made in outlet boxes or junction boxes provided for that purpose as detailed or required by need. Make all feeder cables continuous for origin to panel or equipment terminations without running splices in intermediate pull or boxes, unless specifically indicated on the Plans or approved in writing by the Owner's Representative.

I. All conduits shall be swabbed until all moisture and grit is removed before any wires are pulled. Do not pull any cable or wire in a raceway until conduit system is complete and internal raceway has been cleaned.

J. Strain on cables shall not exceed manufacturer's recommendations during pulling. Use pulling lubricant, compatible with insulation and covering that will not cause deterioration of insulation or jacket covers of cables or conductors. Use pulling lubricant shall be as recommended by wire manufacturer.

K. Neatly train and lace wiring inside boxes, equipment and panelboards or load centers.

L. Provide each cable or conductor in panels, junction or pull boxes with a permanent pressure-sensitive label with suitable numbers or letters for easy identification. Identify wires at each end and in junction boxes with circuit numbers.

M. Provide wires and cables entering equipment or panels with enough slack to eliminate stretched, angular connection. Neatly arrange wiring, bundle and fan out to termination panels. Make minimum bending radius for conductors in accord with NEC.

N. Support all conductors in vertical raceways in accordance with National Electrical Code.

O. All cables installed by the Contractor shall be properly labeled and tagged at all points of access (junction structures, handholes, manholes, wireways, and junction boxes).

P. Intrinsically safe wiring shall maintain separation from power and non-intrinsically safe wiring in accordance with NEC 504.30 "Separation of Intrinsically Safe Conductors".

3.02 INSTALLATION IN DUCT BANKS OR CONDUITS

A. The maximum number and voltage ratings of cables installed in each single duct or conduit, and the current-carrying capacity of each cable shall be per the latest version of the National Electric Code, or the code of the local agency or authority having jurisdiction.

B. The Contractor shall make no connections or splices of any kind in cables installed in conduits or duct banks.

C. Unless otherwise designated in the plans, where ducts are in tiers, use the lowest ducts to receive the cable first, with spare ducts left in the upper levels. Check duct routes prior to construction to obtain assurance that the shortest routes are selected and that any potential interference is avoided.

D. The Contractor shall run a mandrel through duct banks or conduit prior to installation of cable to ensure that the duct bank or conduit is open, continuous and clear of debris. The mandrel size shall be compatible with the conduit size. The Contractor shall swab out all conduits/ducts and clean light bases, manholes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed, the light bases and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, light bases, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be re-cleaned at the Contractor's expense. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the Engineer of any blockage in the existing ducts.

E. The cable shall be installed in a manner that prevents harmful stretching of the conductor, damage to the insulation, or damage to the outer protective covering. The ends of all cables shall be sealed with moisture-seal tape providing moisture-tight mechanical protection with minimum bulk, or alternately, heat shrinkable tubing before pulling into the conduit and it shall be left sealed until connections are made. Where more than one cable is to be installed in a conduit, all cable shall be pulled in the conduit at the same time. The pulling of a cable through duct banks or conduits may be accomplished by hand winch or power winch with the use of cable grips or pulling eyes. Maximum pulling tensions shall not exceed the cable manufacturer's recommendations. A non-hardening cable-pulling lubricant recommended for the type of cable being installed shall be used where required.

F. The Contractor shall submit the recommended pulling tension values to the Engineer prior to any cable installation. If required by the Engineer, pulling tension values for cable pulls shall be monitored by a dynamometer in the presence of the Engineer. Cable pull tensions shall be recorded by the Contractor and reviewed by the Engineer. Cables exceeding the maximum allowable pulling tension values shall be removed and replaced by the Contractor at the Contractor's expense.

G. The manufacturer's minimum bend radius or NEC requirements (whichever is more restrictive) shall apply. Cable installation, handling and storage shall be per manufacturer's recommendations. During cold weather, particular attention shall be paid to the manufacturer's minimum installation temperature. Cable shall not be installed when the temperature is at or below the manufacturer's minimum installation temperature. At the Contractor's option, the Contractor may submit a plan, for review by the Engineer, for heated storage of the cable and maintenance of an acceptable cable temperature during installation when temperatures are below the manufacturer's minimum cable installation temperature.

H. Cable shall not be dragged across base can or manhole edges, pavement or earth. When cable must be coiled, lay cable out on a canvas tarp or use other appropriate means to prevent abrasion to the cable jacket.

I. Provide cable identification tags at points of access such as junction boxes, handholes, manholes, or other junction structures. Identification tags shall be waterproof and corrosion resistant.

3.03 LOCATING OF EXISTING UNDERGROUND UTILITIES AND CABLES.

A. The location, size, and type of material of existing underground and/or aboveground utilities indicated on the Plans are not represented as being accurate, sufficient or complete. Neither the Owner nor the Engineer assumes any responsibility whatever in respect to the accuracy, completeness, or sufficiency of the information. There is no guarantee, either expressed or implied, that the locations, size and type of material of existing underground utilities indicated are representative of those to be encountered in the construction. It shall be the Contractor's responsibility to determine the actual location of all such facilities, including service connections to underground utilities. Prior to construction, the Contractor shall notify the utility companies of his operational plans and shall obtain from the respective utility companies detailed information and assistance relative to the location of their facilities and the working schedule of the companies for removal or adjustment where required. In the event an unexpected utility interference is encountered during construction, the Contractor shall immediately notify the utility company of jurisdiction. The Engineer shall also be immediately notified. Any such mains and services shall be restored to service at once and paid for by the Contractor at no additional cost to the Contract.

B. Contact JULIE (Joint Utility Location Information for Excavation) for utility information, phone: 1-800-892-0123. Also coordinate work with all aboveground utilities.

C. In areas where there is a congestion of buried cable or where the proposed cable crosses an existing cable, the Contractor shall be required to trench the proposed cable into place. When crossing existing circuits, the Contractor will be required to hand dig the trenches for the proposed cable. The hand digging of this cable will be considered incidental to the contract unit price of the proposed cable and no additional compensation will be allowed. In all other areas, the Contractor has the option to either trench or plow the proposed cable in unit duct into place. The trenching or plowing of this cable will be considered incidental to the contract unit price of the proposed cable and no additional compensation will be allowed.

D. The Contractor shall identify all existing underground utilities located within the area where the proposed cables are being installed, and will take all precautions to protect these utilities from damage. Care shall be taken so as not to damage any existing circuits. Any existing circuits damaged shall be immediately repaired to the satisfaction of the Engineer and/or the respective utility or owner where applicable. Any underground utility damaged will be repaired or replaced at the Contractor's own expense. Any repairs of existing cables will be considered incidental to the contract, and no additional compensation will be allowed.

3.04 TESTING

A. Inspect wiring for physical damage and proper connection.

B. Upon completion of cable and wire installation, but before termination to equipment, test each wire for grounds and short circuits. Replace or correct defective wiring.

C. Verify proper phasing and correct or adjust connections, where applicable.

D. Torque test conductor terminations to manufacturer's values.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding, coordination, and testing required to complete the installation of the pump station and to place it into proper working order.

B. All wiring and cable will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16120

DIVISION 16 – ELECTRICAL
SECTION 16130 – BOXES

1. GENERAL

1.01 DESCRIPTION OF THE WORK

A. The work included in this section is the supply and installation of all junction and pull boxes to provide a complete and operational electrical system.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16120 – Wire and Cable.

D. Section 16450 – Grounding.

1.03 REFERENCE TO STANDARDS

A. NEMA 4.

B. NEMA 4X.

C. NEMA 7.

D. NFPA 70 – National Electrical Code (NEC) (most current issue in force).

1.04 DELIVERY, STORAGE AND HANDLING

A. Boxes shall be stored away from contact with the earth and protected from the weather.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for junction and pull boxes to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** In the event that the Contractor provides hard copies of shop drawings he shall submit sufficient quantities to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus four (4) copies to be retained by the Project Engineer. Shop drawings shall include the following information:

1. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Project Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished

promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

2. Shop drawings shall include junction and pull boxes cut sheets with type, size, specifications, UL listing, manufacturer, and catalog or part number.

1.06 QUALIFICATIONS

A. The junction and pull boxes shall be manufactured and supplied by a company regularly engaged in the business of furnishing junction and pull boxes. If required by the Engineer, the manufacturer shall submit a certification to a minimum experience of five years in the manufacture of junction and pull boxes.

1.07 MAINTENANCE SERVICE (WARRANTY)

A. Junction and pull boxes shall be warranted to be free from defects in materials and workmanship for a period of one year from date of substantial completion by the Owner.

2. PRODUCTS AND MATERIALS

2.01 EQUIPMENT SPECIFICATION

A. In interior conduit runs, located in dry, clean areas, boxes shall be constructed of 14 gauge sheet steel with either galvanized finish or two coats of approved enamel paint. Boxes shall have screw held access covers, or hinged covers. Boxes shall be of sizes noted on the Plans or shall be sized per the NEC Article 314 for the size and number of conduits, wires, and/or splices entering them. Boxes shall be UL listed.

B. Exterior junction and pull boxes located in non-hazardous, non-classified areas shall be NEMA 4X 316 stainless steel sized for conductors and splices per NEC Article 314. Boxes shall be U.L. listed. Boxes shall have hinged covers.

C. Junction boxes located in classified hazardous locations (Class I, Division 1, or 2, Group D), shall be NEMA 7 (explosion proof) cast aluminum with threaded screw on covers and shall comply with applicable provisions of the NEC including but not limited to Articles 500 and 501. NEMA 7 junction boxes shall be UL listed or FM approved suitable for use in Class I, Division 1, Group D locations.

D. Acceptable manufacturers:

1. Appleton Electric Co.,
2. Crouse-Hinds Co.,
3. E-Box Inc.
4. Hoffman Co.,
5. Hubbell-Killark Electric Mfg. Co.,
6. O.Z./Gedney Co.
7. Saginaw Control & Engineering

8. Wiegmann
9. Or approved equal

3. EXECUTION

3.01 INSTALLATION

A. All pull or junction boxes surface mounted in any interior damp location shall be "standoff" mounted ½-in. from the wall in a manner to promote air circulation completely around the box.

B. Boxes required by code or need which are not detailed on the Plans shall be considered incidental to the proposal price and will not be paid for separately.

C. The Contractor shall coordinate the installation of junction boxes with the general and mechanical work as required at the facility.

D. Any damage to pull or junction boxes shall be immediately repaired or replaced to the satisfaction of the Owner's Representative.

E. Protect all boxes from entry of foreign materials. Clean out metal shavings, scrap wire, dirt, and debris from each junction or pull box.

F. Provide NEMA 4 hubs for all conduit entries into boxes or enclosures rated NEMA 4 or NEMA 4X to maintain the NEMA 4, 4X rating of the respective enclosure.

G. Independently support all boxes. No parts of the weight or stress thereof shall be borne by the conduits termination therein.

H. Avoid installations in classified hazardous locations. Where boxes are installed in a classified hazardous location they shall be UL listed or FM listed suitable for the respective classified hazardous location, and installed in conformance with the respective requirements of NEC for the respective location.

I. All boxes shall be bonded to ground with a ground lug or screw and a ground wire.

J. Plug all unused openings. Use threaded plugs for cast boxes.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding,

coordination, and testing required to complete the installation of the pump station and to place it into proper working order.

B. All junction and pull boxes will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16130

DIVISION 16 – ELECTRICAL
SECTION 16190 – SUPPORTING DEVICES

1. GENERAL

1.01 DESCRIPTION OF WORK

A. Conduit and equipment supports as required and specified herein.

B. Anchors and Fasteners.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16130 – Boxes.

D. Section 16470 – Panelboards.

1.03 REFERENCE TO STANDARDS

A. NFPA 70 – National Electrical Code (NEC) (most current issue in force).

B. NECA – National Electrical Contractors Association.

1.04 DELIVERY, STORAGE AND HANDLING

A. Stored conduit and equipment supports shall not be in contact with the earth, but shall be on pallets or other above-grade supports. Conduit and equipment supports shall be covered to minimize exposure to the weather.

B. Anchors and fasteners shall be stored in their original containers in a clean, dry place. They shall not be exposed to weather

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** In the event that the Contractor provides hard copies of shop drawings he shall submit sufficient quantities to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus four (4) copies to be retained by the Project Engineer. Shop drawings shall include the following information:

1. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Project Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished

promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

2. Product Data: Provide manufacturer's catalog data for fastening systems and supports.

3. Manufacturer's Instructions: Include application conditions and limitations for use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage handling, protection, examination and installation of Product.

1.06 REGULATORY REQUIREMENTS

A. Conform to requirements of NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and shown.

2. PRODUCTS

2.01 MANUFACTURERS

A. Unistrut.

B. B-Line.

C. Approved Equivalent.

2.02 EQUIPMENT SPECIFICATION

A. Strut-type stainless steel supports shall be provided to support all free standing equipment enclosures and other equipment enclosures as indicated on Plans.

B. Strut supports for outdoor locations or areas that are damp, wet, or subject to corrosion shall be stainless steel as manufactured by Unistrut, B-Line, or approved equal. All hardware shall be corrosion resistant stainless steel.

C. Strut support for equipment located in the wet well, valve vault, or other corrosive areas shall be stainless steel or reinforced fiberglass material as manufactured by Unistrut, B-Line, or approved equal.

D. Strut supports for indoor locations in dry non-corrosive areas shall be steel with hot dipped galvanized finish, roll formed from 12 gauge (.105 U.S.S. Gage) cold rolled steel, galvanized material ASTM Des. A-446 Grade A. Material (cold rolled steel) shall be hot dipped galvanized coating conforming to ASTM Specification A-525, Des. G-90. Zinc coating shall form an excellent bond with steel surface so as not to be affected by subsequent forming operations. Supports shall be hot dipped galvanized steel strut, P-1000HG as produced by Unistrut Corporation,

35660 Clinton Street, Wayne, Michigan 48184, phone: 1-800-521-7730, or approved equal. All hardware shall be corrosion resistant stainless steel.

E. Provide necessary hardware, such as floor flanges, etc., as required to install equipment.

F. Provide materials, sizes and types of anchors, fasteners, and supports necessary to carry the loads of equipment and conduits. Consider weights of conduit when selecting products.

G. Fasteners and anchors shall be corrosion resistant, stainless steel or cadmium plated. Where suitable, non metallic clamps and fasteners may be used.

H. Cable hangers located in the pump station wet well and/or in electrical manholes shall be heavy duty nylon saddle rack with 3 in. throat opening Underground devices, Northbrook, IL, Cat. No. 3SR1 or 3SR2, or approved equal. Cable hangers shall be adequately sized to accommodate the respective cables. Secure cables to cable hangers with corrosion resistant cable ties.

3. EXECUTION

3.01 EXAMINATION

A. Examine all supports and fasteners for straightness, rust and corrosion. Do not use any equipment that is not straight or is rusted or corroded.

3.02 PREPARATION

A. All equipment shall be clean at time of installation. Remove all burs.

3.03 INSTALLATION

A. Install products in conformance with manufacturer's instruction and as detailed on the Plans.

B. Provide anchors, fasteners and supports in accordance with NECA Standard of Installation.

C. Do not fasten supports to pipes, ducts, mechanical equipment or conduit.

D. Do not use spring steel clips or clamps.

E. Install surface mounted cabinets, enclosures and panelboards with a minimum of four anchors.

F. Use spring-lock washers under all nuts.

G. Provide zinc rich paint applied to field cuts of galvanized steel strut support to minimize the potential for corrosion per the respective strut support manufacturer's recommendation.

H. Concrete work associated with support structures shall conform to Section 1020 PORTLAND CEMENT CONCRETE of the Standard Specifications for Road and Bridge Construction and as detailed on the Plans.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding, coordination, and testing required to complete the installation of the pump station and to place it into proper working order.

B. All conduit and equipment supports, anchors, fasteners, and associated hardware will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16190

DIVISION 16 – ELECTRICAL
SECTION 16195 – ELECTRICAL IDENTIFICATION

1. GENERAL

1.01 DESCRIPTION OF WORK

A. This section includes field-installed nameplates, labeling and identification methods for electrical equipment, components and wiring.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16120 – Wire and Cable.

C. Section 16130 – Boxes

D. Section 16410 – Enclosed Circuit Breakers

E. Section 16470 – Panelboards

F. Section 16495 – Automatic Transfer Switches

G. Section 16620 Standby Power Generator Systems

1.03 REFERENCE TO STANDARD

A. NFPA 70 – National Electrical Code (NEC) (most current issue in force).

1.04 REGULATORY REQUIREMENTS

A. Conform to requirements of NFPA 70 – National Electrical Code (NEC), most current issue in force.

2. PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. Legend plates shall be provided for all equipment. Legend plates shall be provided to identify the equipment controlled, the power source, and the function of each device. Each individual circuit breaker, transfer switch, control panel, motor starter, safety switch, panelboard, load center shall be furnished with a phenolic engraved legend plate that identifies the respective device, the power source, and the respective voltage, phase, and wire. Furnish additional phenolic engraved legend plates as detailed on the Plans and/or where required by code. Legend plates shall be weatherproof and abrasion resistant phenolic/plastic engraved material and fastened with contact type permanent adhesive, screws, or rivets. Installation shall not break, crack, or deform the legend plate. Lettering

shall be 1/4-inch high. Equipment that is powered from a utility power source only (for example the main service disconnect) shall have black lettering on a white background. Equipment that is powered from an emergency/standby power source only (for example the generator breaker) shall have black lettering on a yellow background. Equipment that is normally powered from the utility and backed up by the generator (for example the auto transfer switch) shall have white lettering on a red background.

B. Furnish and install weatherproof warning label for each meter socket, enclosed circuit breaker, disconnect switch, switchboard, panelboard, load center, motor control center, and control panel to warn persons of potential electric arc flash hazards, per the requirements of NEC 110.16 "Flash Protection". Labels shall also conform to ANSI Z535.4-2002 "American National Standard for Product Safety Signs and Labels". NEC 110.16 requires that switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centers that are likely to require examination, adjustment, servicing or maintenance while energized, shall be field marked to warn qualified persons of potential arc flash hazards. The markings shall be located so as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment. This new requirement is intended to help reduce the occurrence of serious injury or death due to arcing faults to those working on or near energized electrical equipment. The warning labels are to indicate to a qualified worker who intends to open the equipment for analysis of work that a serious hazard exists and that the worker should follow appropriate work practices and wear appropriate personal protective equipment (PPE) for the specific hazard. Labels shall be as detailed on the Plans or shall include at least the following information: "Warning - Potential Arc-Flash Hazards exist while working on this energized equipment. Appropriate PPE Required."

C. Provide legend plates for service equipment with the information on the maximum available fault current and the date the fault current calculation was performed to meet the requirements of NEC 110.24 "Available Fault Current".

D. All power and control cables in handholes, manholes, and junction boxes shall be tagged to identify the respective cable. A minimum of two cable tags shall be provided on each cable in a manhole: one at the cable entrance and one at the cable exit. Cable tags shall be stamped brass tags or other weatherproof/waterproof corrosion resistant material.

3. EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive nameplates and markers.

3.02 INSTALLATION

A. Secure nameplates to equipment using screws or adhesive.

B. Nameplates shall be provided for all panelboards, load centers, disconnects, enclosed starters, control panels, emergency stop stations, etc.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding, coordination, and testing required to complete the installation of the pump station and to place it into proper working order.

B. All nameplates, placards, labeling, and identification will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16195

DIVISION 16 – ELECTRICAL
SECTION 16410 ENCLOSED CIRCUIT BREAKERS

1. GENERAL

1.01 WORK INCLUDES

A. Enclosed circuit breakers as detailed on the Plans and specified herein.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16120 – Wire and Cable.

D. Section 16190 – Supporting Devices.

E. Section 16195 – Electrical Identification.

F. Section 16421 – Utility Service Entrance and Metering

G. Section 16450 – Grounding and Bonding.

1.03 REFERENCE TO STANDARDS

A. NFPA 70 – National Electrical Code (NEC) (most current issue in force).

B. NFPA 70E – Standard for Electrical Safety in the Workplace.

C. NEMA AB 1 – Molded Case Circuit Breakers, Molded Case Switches, and Circuit Breaker Enclosures.

D. NEMA AB 3 – Molded-Case Circuit Breakers and Their Application

E. NEMA AB 4 - Guidelines for Inspection and Preventative Maintenance of Molded-Case Circuit Breakers Used in Commercial and Industrial Applications.

F. NEMA KS1 Enclosed and Miscellaneous Distribution Equipment Switches (600V Maximum)

G. NEMA 4, 4X.

H. NEMA 250 Enclosures for Electrical Equipment (1000 Volts Maximum)

I. OSHA 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures.

J. UL 50 – Cabinets and Boxes.

K. UL Standard 489 – Molded Case Circuit Breakers.

1.04 DELIVERY, STORAGE AND HANDLING

A. Circuit breakers shall be stored in containers as delivered to job site, in a clean and dry location, protected from construction.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for safety switches and disconnects to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** In the event that the Contractor provides hard copies of shop drawings he shall submit sufficient quantities to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus four (4) copies to be retained by the Project Engineer. Shop drawings shall include the following information:

1. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Project Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

2. Enclosure types and details.

3. Current and voltage ratings.

4. Short-circuit current ratings (interrupting and withstand, as appropriate).

5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.

6. Provide catalog sheets and showing manufacturer, model number, voltage, circuit breaker size, Amperage ratings, number of poles, withstand and closing ratings, dimensions, and enclosure details.

7. Coordinate with auto transfer switch withstand and closing ratings with the service entrance breaker/disconnect and the generator breaker/disconnect to maintain the "withstand and closing ratings" of the switch. Include this information with the submittal.

1.06 QUALIFICATIONS

A. Circuit breakers shall be furnished by a manufacturer regularly engaged in the construction of circuit breakers, with at least ten years of experience in furnishing circuit breakers.

1.07 REGULATORY REQUIREMENTS

A. Conform to requirements of NFPA 70 – National Electrical Code.

B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

1.08 MAINTENANCE SERVICE (WARRANTY)

A. Circuit breakers shall be warranted to be free from defects in material and workmanship for period of one year from date of substantial completion established by the Owner.

2. PRODUCTS

2.01 MANUFACTURERS

A. Eaton Electrical Inc.; Cutler-Hammer Business Unit.

B. General Electric Company; GE Consumer & Industrial - Electrical Distribution.

C. Square D; a brand of Schneider Electric.

D. Or approved equivalent manufacturer's circuit breaker that is compatible and rated suitable for the respective application.

2.02 ENCLOSED CIRCUIT BREAKERS

A. General Requirements: Circuit breaker to be used with service applications shall be rated suitable for use as service entrance equipment, comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents. Circuit breaker Amp Interrupting Current (AIC) rating shall be greater than the available fault current.

B. Coordinate selection of service breaker and generator breaker with the automatic transfer switch (ATS) to maintain the "withstand and closing ratings" of the ATS.

C. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

D. Circuit breakers shall use standard frame sizes, trip ratings, and number of poles as detailed on the Plans and/or in accordance with the respective applications.

Circuit breaker lugs shall be mechanical type, suitable for number, size, trip ratings, and conductor material.

E. Circuit breaker enclosures shall meet the applicable sections of NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location. Circuit breaker enclosures located outdoors shall be rated NEMA 4X stainless steel, UL listed suitable for service entrance.

F. Circuit breaker enclosures shall be pad lockable in the off position.

G. Include equipment ground bar kit with each circuit breaker.

H. Include neutral bar kit where applicable with respective circuit breakers.

3. EXECUTION

3.01 INSTALLATION/APPLICATION

A. All electrical work shall comply with the requirements of NFPA 70 - National Electrical Code (NEC), most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment and materials shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, ETL/Intertek Testing Services verification/listing, FM approval, or other third party listing, and/or the manufacturer's warranty of a device will not be permitted.

B. Install circuit breaker enclosures plumb. Secure circuit breaker to building, structure, or equipment surface as shown. Where the surface is not adaptable for mounting, provide stainless steel strut support (Unistrut P-1000-SS, or approved equal) with corrosion resistant hardware to secure circuit breakers. All circuit breakers shall be supplied with appropriate mounting hardware and strut support in accordance with Section 16190 – Supporting Devices. Mounting hardware shall be corrosion resistant.

C. Mount circuit breakers securely in accordance with the manufacturer's recommendations/instructions for the respective application. Installation of circuit breakers shall be in conformance with the manufacturer's requirements and as detailed on the Plans. Installations that void the third party certification, or void the manufactures warranty, will **NOT** be permitted.

D. Secure circuit breaker to structure as shown on Plans. Provide stainless steel strut to secure electrical equipment. Mounting hardware shall be corrosion resistant stainless steel. Install equipment enclosures plumb.

E. Inspect all circuit breakers for proper operation, tight and secure connections, and correctness. Adjust as necessary to assure proper operation.

F. Nuts, bolts, and screws shall be tightened to manufacturer's specifications/requirements.

G. Provide weatherproof, abrasion resistant, legend plates, for all circuit breakers, indicating the device being fed, the voltage and phase, and the origin of the respective feeder.

H. All circuit breaker enclosures shall be bonded to ground with a ground lug or screw and a ground conductor.

I. Do not use circuit breaker enclosures for a splice box or for a pull box. Do not route control wires or other circuit wiring through a circuit breaker enclosure. Where splices are required or other control circuit wires are installed in the respective conduit to a circuit breaker, provide a separate junction box to accommodate the splices and/or other circuit conductors.

J. Field cut holes in circuit breaker enclosures to accommodate conduit entrances. Where circuit breaker enclosures are provided with concentric knockouts, and the respective conduit does not use the largest knockout, install a grounding bushing with ground wire connections between the bushing and the ground bus. Standard locknuts or bushings shall not be the sole means for bonding where a conduit enters an enclosure through a concentric or eccentric knockout.

K. Provide grounding bushing with ground wire connections between the bushing and the ground bus for all conduits terminating in a service disconnect breaker enclosure.

L. Provide NEMA 4 hubs for all conduit entries into circuit breaker enclosures that are rated NEMA 4, 4X to maintain NEMA 4, 4X rating.

M. Install circuit breakers in accordance with NEC 404.8 (A) Location which states *"All switches and circuit breakers used as switches shall be located so that they may be operated from a readily accessible place. They shall be installed such that the center of the grip of the operating handle of the switch or circuit breaker, when in its highest position, is not more than 2.0 m (6 ft. 7 in.) above the floor or working platform."*

3.02 TESTING

A. Perform visual and mechanical inspection.

B. Test all circuit breakers for proper operation and continuity on all poles when in the closed (on) position.

C. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

D. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

E. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding, coordination, and testing required to complete the installation of the pump station and to place it into proper working order.

B. All circuit breakers will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16410

DIVISION 16 - ELECTRICAL
SECTION 16421 – UTILITY SERVICE ENTRANCE AND METERING

1. GENERAL

1.01 DESCRIPTION OF WORK

A. The work included in this section is the supply and installation of electric service entrance from the utility transformer bank to the service entrance meter and disconnect. Included in this work shall be the utility transformation equipment to provide the service voltage and capacity for the facility. This section shall include all labor, coordination, equipment and materials necessary to provide a complete and operational electric service entrance.

1.02 REFERENCE TO STANDARDS

A. NFPA 70 – National Electrical Code (most current issue in force).

B. NFPA 70E – Standard for Electrical Safety in the Workplace.

C. OSHA 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures.

D. Contractor shall confirm the requirements and standards as specified by the respective serving electric utility company.

1.03 RELATED WORK

A. 16010 – Basic Electrical Requirements.

B. 16110 – Raceways.

C. 16120 – Building Wire and Cable.

D. 16410 – Enclosed Circuit Breakers.

E. 16450 – Grounding.

2. PRODUCTS

2.01 GENERAL

A. Products for the new electric service entrance shall be as detailed on the Plans and specified herein.

3. EXECUTION

3.01 GENERAL

A. The Contractor shall coordinate the work with the serving electric utility company; Ameren, Attn. Ms. Julie Cone, Engineering Representative, 1824 Knox Highway 9, Galesburg, Illinois 61401, Phone (309) 345-5169, Cell Phone: (309) 368-6248, Email: Jcone2@ameren.com. Installation of the new service entrance shall be as detailed on the Plans, per the serving electric utility requirements, and as specified herein.

B. The Contractor shall coordinate and obtain the required permit(s) for new electric service from the local city building/electrical inspector as applicable. The electrical inspector for the City of Galesburg is Mr. Robert Elsbury, Phone: (309) 345-3615.

C. The Contractor shall coordinate new electric service work with the City of Galesburg.

D. **The City of Galesburg and/or IDOT shall pay for all associated electric utility company charges required to provide electric service to the pump station. The Contractor is not responsible for electric utility company charges associated with the proposed electric service to the pump station.** The Contractor shall coordinate the new electric service with the serving electric utility company and the Owner's Representative. The service entrance shall include, but not be limited to, all service entrance equipment, labor, and materials, as detailed on the Plans and specified herein, in order to provide a complete and operational electrical system.

E. The Contractor shall furnish and install all materials necessary for complete and operational installation, as specified herein, and as shown on the Plans. The complete installation and wiring shall be done in a neat, workmanlike manner. All electrical work shall comply with the requirements of the NFPA 70 – National Electrical Code (NEC), most current issue in force, the serving electric utility company requirements, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, ETL/Intertek Testing Services listing/verification (or other third party

listing), and/or the manufacturer's warranty of a device will not be permitted.

F. Contractor shall coordinate work and any power outages with the Owner's Representative. Any shutdown of existing systems shall be scheduled with and approved by the Owner's Representative prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures, including, but not limited to, 29 CFR Section 1910.147 The Control of Hazardous Energy (lockout/tagout).

G. Contactor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

3.02 UTILITY

A. Will provide and install a 480/277 VAC, 3 phase, 4 wire solidly grounded power sufficient to handle the connected loads for a 400 Amp service or as required for the respective equipment loads.

B. Will install metering.

C. Will make final connections to their utility transformer(s).

D. Will retain the right to review and approve drawings prior to installation.

3.03 CONTRACTOR

A. Shall coordinate work and verify requirements with the serving electric utility.

B. Shall coordinate work with the Owner's Representative. This will included coordinating the electric service entrance work and billing arrangements with the serving electric utility company.

C. Shall coordinate work and verify requirements with the City Electrical Inspector and applicable local codes.

D. Shall provide the necessary equipment, conduit, interface, coordination, load data, etc. for utility service as required by the serving electric utility.

E. Shall furnish and install a meter base, current transformer cabinet, and other metering equipment conforming to the serving electric utility company's requirements and as detailed on the Plans.

F. Shall furnish and install conduit and fittings to interface to the respective service equipment and extend to the utility transformer.

G. Shall furnish and install service conductors from the utility transformer to the metering equipment and service disconnect.

H. Shall furnish and install a service disconnect as detailed on the Plans and as specified herein.

I. Shall provide grounding as detailed on the Plans, specified herein and in conformance with the serving electric utility company requirements. The service entrance neutral shall be solidly grounded in the service disconnect enclosure.

J. Shall provide additional work as required by the serving electric utility and as required to provide a complete and operational electric service entrance system.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding, coordination, and testing required to complete the installation of the pump station and to place it into proper working order.

B. The supply and installation of electric service as required to complete the work as indicated on the Plans will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16421

DIVISION 16 - ELECTRICAL
SECTION 16422 – TEMPORARY POWER

1. GENERAL

1.01 DESCRIPTION OF WORK

A. The work included in this section is the supply and installation of temporary electrical power as required to complete the work as indicated on the Plans and detailed herein.

1.02 REFERENCE TO STANDARDS

A. NFPA 70 – National Electrical Code (most current issue in force).

B. NFPA 70E – Standard for Electrical Safety in the Workplace.

C. OSHA 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures.

D. Contractor shall confirm the requirements and standards as specified by the respective serving electric utility company.

1.03 RELATED WORK

A. 16010 – Basic Electrical Requirements.

B. 16110 – Raceways.

C. 16120 – Wire and Cable.

D. 16450 – Grounding.

E. 16470 – Panelboards

2. PRODUCTS

2.01 MATERIALS

A. Materials may be new or used, but shall be adequate for the purposed used, shall not create unsafe conditions, nor violate specific codes. Comply with NFPA 70 - National Electrical Code (most current issue in force), and all applicable Federal, State, and local codes in force.

3. EXECUTION

3.01 TEMPORARY ELECTRICITY DURING CONSTRUCTION

A. All temporary power connections shall be coordinated with the Owner's Representative, the Serving Electric Utility Company and the City Electrical Inspector. The serving electric utility company is Ameren, Attn. Ms. Julie Cone, Engineering Representative, 1824 Knox Highway 9, Galesburg, Illinois 61401, Phone (309) 345-5169, Cell Phone: (309) 368-6248, Email: Jcone2@ameren.com. The electrical inspector for the City of Galesburg is Mr. Robert Elsbury, Phone: (309) 345-3615. The Contractor shall make necessary arrangements to provide temporary electric service/power and lighting required during the entire construction period, including required fees and permits. Cost of such electricity used shall be borne by the Contractor.

B. Temporary Wiring shall comply with NEC Article 590 Temporary Installations as well as the other applicable articles of NEC (most current issue in force).

C. All electrical work shall comply with the requirements of the NFPA 70 – National Electrical Code (NEC), most current issue in force, the applicable serving electric utility company requirements, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, ETL/Intertek Testing Services listing/verification (or other third party listing), and/or the manufacturer's warranty of a device will not be permitted.

D. Contractor shall coordinate work and any power outages with the Owner's Representative. Any shutdown of existing systems shall be scheduled with and approved by the Owner's Representative, prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures, including, but not limited to, 29 CFR Section 1910.147 The Control of Hazardous Energy (lockout/tagout).

E. Contractor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

F. Electric services/power shall be of sufficient capacity and characteristics to supply proper voltage and current for various types of construction tools, motors, welding machines, lights, heating plant, air conditioning/ventilation system, pumps, and other equipment required. The Contractor shall provide all necessary temporary wiring, panelboards, load centers, outlets, switches, lamps, fuses, controls, and accessories. A sufficient number of electric outlets shall be provided in

each work area or floor along with adequate lighting in all work areas, stairwells, and corridors.

G. Materials used for temporary service shall not be used in permanent system unless the Resident Engineer/Resident Project Representative gives specific approval. Temporary electric service shall be so constructed and arranged as not to interfere with the progress of other trades. This system shall be erected and maintained strictly in accordance with all ordinances and requirements for temporary service pertaining thereto inclusive of OSHA and NEC.

H. All 120 VAC, 15 Amp, 20 Amp, and 30 Amp receptacle circuits shall have ground fault circuit interrupter protection for personnel, in accordance with 2014 NEC 590.6. Ground fault circuit interrupter protection will automatically disconnect the circuit when leakage current of 4-6 milli-Amps is detected.

I. Receptacles shall not be placed on the same branch circuit with temporary lighting.

J. Any Contractor who has installed a temporary utility connection as herein specified, shall, prior to final acceptance, remove temporary connections and installations and leave premises restored to condition in which it was found or upgraded.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding, coordination, and testing required to complete the installation of the pump station and to place it into proper working order.

B. The supply and installation of temporary electrical power as required to complete the work as indicated on the Plans will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16422

DIVISION 16 – ELECTRICAL
SECTION 16450 – GROUNDING AND BONDING

1. GENERAL

1.01 WORK INCLUDES

A. The work in this section includes grounding of electrical systems and equipment and basic requirements for grounding for protection of personnel, life, equipment, circuits, and systems. Grounding requirements specified in this Section may be supplemented in other Sections of these Specifications. See grounding details on the Drawings and refer to other related work sections included with these Specifications for further details.

B. Furnish and install grounding as detailed on the Plans and as specified herein.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16120 – Wire and Cable.

D. Section 16130 – Boxes

E. Section 16410 – Enclosed Circuit Breakers

F. Section 16421 – Utility Service Entrance and Metering

G. Section 16422 – Temporary Power

H. Section 16460 - Dry Type Transformers

I. Section 16470 – Panelboards

J. Section 16495 – Automatic Transfer Switches

K. Section 16620 – Standby Power Generator Systems

L. Section 16615 – Surge Protector Devices.

1.03 REFERENCE TO STANDARDS

A. NFPA 70 – National Electrical Code (NEC) (most current issue in force)

1.04 DELIVERY, STORAGE, AND HANDLING

A. Exothermic welds and hardware items shall not be shipped loose but shall be in boxes, labeled with material and equipment enclosed. Boxes shall be stored away from contact with earth and shall be protected from weather.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** In the event that the Contractor provides hard copies of shop drawings he shall submit sufficient quantities to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus four (4) copies to be retained by the Project Engineer. Shop drawings shall include the following information:

1. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Project Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

2. Shop drawings shall include cut sheets for ground rods with type, size, specifications, product data, UL listing, manufacturer, and catalog or part number.

3. Provide certification that ground rods are manufactured in the United States of America and produced from 100 percent domestic steel to comply with the Illinois **"Steel Products Procurement Act"**.

4. Shop drawings shall include cut sheets for grounding conductors/ground wire with type, size, specifications, product data, UL listing, manufacturer, and catalog or part number.

5. Shop drawings shall include cut sheets for grounding connectors (including exothermic weld type connectors) with type, size, specifications, product data, manufacturer, and catalog or part number.

1.06 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year form date of substantial completion established by the Owner.

2. PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. All grounding products shall be UL listed and labeled and suitable for the respective application.

B. Ground rods shall be UL listed, 3/4 in. diameter by 10 ft long copper-clad steel with 10 mil minimum copper coating. Where shown on the Plans or required to obtain a better grounding system, ground rods shall be coupled together to form 20 ft, 30 ft, or longer ground rods. Couplers shall be as recommended by the respective ground rod manufacturer. Steel used to manufacture ground rods shall be 100 percent domestic steel.

C. Connections to equipment enclosure frames shall be with the respective manufacturer's grounding lugs or terminals or shall be with two-hole tongue long barrel compression lugs bolted with stainless steel bolts, nuts, and washers as detailed on the Plans.

D. Connection of ground wire to ground rod shall be with exothermic weld type connections. Exothermic weld type connectors shall be Cadweld by Erico Products, Inc., Solon, Ohio, (Phone 1-800-248-9353), Thermoweld by Continental Industries, Inc., Tulsa, Oklahoma (Phone 918-663-1440) or Ultraweld by Harger, Grayslake, Illinois (Phone 1-800-842-7437), or approved equal. Where exothermic weld connections are used they shall be installed in conformance with the respective manufacturer's directions using proper molds suitable for each respective application.

E. Pipe grounding clamps shall be as detailed on the Plans.

F. Equipment ground wires shall be copper conductors sized as detailed on the Plans. Insulation shall be 600-Volt, same type as phase conductors, green in color.

G. Grounding electrode conductors shall be bare stranded annealed copper, sized as detailed on the Plans.

3. EXECUTION

3.01 INSTALLATION

The Contractor shall furnish and install all grounding shown on the Plans and/or as may be necessary or required to make a complete grounding system as required by the latest National Electrical Code (NFPA 70) in force. The reliability of the grounding system is dependent on careful, proper installation and choice of materials. Improper preparation of surfaces to be joined to make an electrical path, loose joints or corrosion can introduce impedance that will seriously impair the ability of the ground path to protect personnel and equipment and to absorb transients that can cause noise in communications circuits. The following functions are particularly important to ensure a reliable ground system:

A. All products associated with the grounding system shall be UL-listed and labeled.

B. All bolted or mechanical connections shall be coated with a corrosion preventative compound before joining, Sanchem Inc. "NO-OX-ID "A-Special" compound, or equal.

C. Metallic surfaces to be joined shall be prepared by the removal of all non-conductive material, per **2014 National Electrical Code Article 250-12**. All copper bus bars must be cleaned prior to making connections to remove surface oxidation.

D. Metallic raceway fittings shall be made up tight to provide a permanent low impedance path for all circuits. Metal conduit terminations in enclosures shall be bonded to the enclosure with UL-listed fittings suitable for grounding. Provide grounding bushings with bonding jumpers for all metal conduits entering service equipment (meter base, CT cabinet, main service breaker enclosure, etc.). Provide grounding bushings with bonding jumpers for all metal conduits entering an enclosure through concentric or eccentric knockouts that are punched or otherwise formed so as to impair the electrical connection to ground. Standard locknuts or bushings shall not be the sole means for bonding where a conduit enters an enclosure through a concentric or eccentric knockout.

E. All motor frames, pump bases, electrical equipment enclosures, panel housings, conduits, boxes, etc. have a continuous copper wire ground connection and shall be positively bonded to the respective grounding system. Conduit connectors will not be considered as adequate grounding.

F. Furnish and install ground fields, ground rings, and/or ground rods at all locations where shown on the Plans or specified herein. Ground rods for electrical installations shall be 3/4-in. diameter by 10-ft long, UL-listed, copper clad with 10-mil minimum copper coating. Top of ground rods shall be a minimum of 420140 in. below finish grade unless otherwise noted on the Plans. Ground rods shall be spaced as detailed on the Plans and in no case spaced less than one rod length apart. All connections to ground rods, ground fields, and/or ground rings shall be made with exothermic weld type connectors, Cadweld by Erico Products, Inc., Solon, Ohio, (Phone 1-800-248-9353), Thermoweld by Continental Industries, Inc., Tulsa, Oklahoma (Phone 918-663-1440) or Ultraweld by Harger, Grayslake, Illinois (Phone 1-800-842-7437), or approved equal. Exothermic weld connections shall be installed in conformance with the respective manufacturer's directions using molds as required for each respective application. Bolted connections will not be permitted at ground rods or at buried grounding electrode conductors. Grounding electrode conductors shall be bare copper sized as detailed on the Plans. In addition to the grounding work described herein and shown on the Plans, the Contractor shall test the made electrode ground rod/ground field/ground ring with an instrument specifically designed for testing ground field systems. If ground resistance exceeds **25 Ohms**, contact the Project Engineer for further direction. Copies of ground rod/ground field/ground ring test results shall be furnished to the Owner's Representative and/or the Project Engineer.

G. All connections, located above grade, between the different types of grounding conductors shall be made using UL-listed double compression crimp type connectors or UL-listed bolted ground connectors. For ground connections to

enclosures, cases and frames of electrical equipment not supplied with ground lugs the Contractor shall drill required holes for mounting a bolted ground connector. All bolted ground connectors shall be Burndy, Thomas and Betts, or equal. Tighten connections to comply with tightening torques in UL Standard 486A to assure permanent and effective grounding.

H. All metal equipment enclosures, conduits, cabinets, boxes, receptacles, motors, etc. shall be bonded to the respective grounding system.

I. Provide all boxes for proposed outlets, switches, circuit breakers, etc. with grounding screws. Provide all control panel, panelboard, transfer switch, etc., enclosures with grounding bars with individual screws, lugs, clamps, etc., for each of the grounding conductors that enter their respective enclosures. Do not terminate more than one (1) ground wire in ground lug or terminal unless the respective lug or terminal is rated for multiple conductors.

J. Each feeder circuit and/or branch circuit shall include an equipment ground wire. Metal raceway or conduit shall not meet this requirement. The equipment ground wire from equipment shall not be smaller than allowed by 2014 NEC Table 250-122 "Minimum Size Conductors or Grounding Raceway and Equipment." When conductors are adjusted in size to compensate for voltage drop, equipment-grounding conductors shall be adjusted proportionately according to circular mil area. All equipment ground wires shall be copper, either bare or insulated green in color. Where the equipment grounding conductors are insulated, they shall be identified by the color green, and shall be the same insulation type as the phase conductors.

K. Equipment ground wires shall be identified with green colored insulation for all conductors AWG or KCMIL. Green tape will not meet this requirement.

L. All utility transformer bank grounds shall be installed in accordance with the serving electric utility company's recommendation and in accordance with NEC.

M. Bond the main electrical service neutral to ground at the main service disconnect. Bond the service neutral to ground at one location only per the NEC. A grounding connection shall not be made to any neutral circuit conductor on the load side of the service disconnecting means, except as permitted by 2014 NEC 250-24.

N. The secondary neutral of all transformers (separately derived system transformers) shall be grounded in accordance with the NEC. The respective grounding electrode conductor shall be connected to the neutral point of the transformer between the transformer and the output disconnecting means. Size of the grounding electrode conductor shall be in accordance with 2014 NEC Article 250-66 and Table 250-66 unless shown larger on the Drawings. A bond shall be provided between the neutral and transformer case, or other metal that is part of the AC equipment grounding system, so as to complete a circuit for fault current to the transformer winding from the AC equipment grounding system. Size of the neutral bonding conductor shall be in accordance with 2014 NEC Article 250-102.

O. All exterior metal conduit, where not electrically continuous because of manholes, handholes, non-metallic junction boxes, etc., shall be bonded to all other metal conduit in the respective duct run, and at each end, with a copper-bonding jumper sized in conformance with 2014 NEC 250-102. Where metal conduits terminate in an enclosure (such as a motor control center, switchboard, etc) where there is not electrical continuity with the conduit and the respective enclosure, provide a bonding jumper from the respective enclosure ground bus to the conduit sized per 2014 NEC 250-102.

P. Install grounding electrode conductors, lightning protection down conductors and separate ground conductors in Schedule 40 or Schedule 80 PVC conduit or exposed where acceptable to local codes. Where grounding electrode conductors, lightning protection down conductors or individual ground conductors are run in PVC conduit, Do Not completely encircle conduit with ferrous and/or magnetic materials. Use non-metallic reinforced fiberglass strut support. Where metal conduit clamps are installed, use nylon bolts, nuts, washers and spacers to interrupt a complete metallic path from encircling the conduit. This is required to avoid girdling of ground conductors. Girdling of a ground conductor is the result of placing the conductor in a ring of magnetic material. This ring could be a metallic conduit, u-bolt or strut support pipe clamp, or other support hardware. The result of girdling ground conductors significantly increases the inductive impedance of the ground conductor. Inductive and capacitive impedance is a type of resistance that opposes the flow of alternating current. Any increase in the impedance of a ground conductor reduces its ability to effectively mitigate radio frequency noise in the ground system. The condition where a ground conductor is girdled during a lightning strike results in phenomena known as Surge Impedance Loading. Surge impedance loading is a result of voltage and current reaching 500,000 volts and 10,000 amps for a short duration. Girdling further increases the impedance at lightning frequencies of 100 kilohertz to 100 megahertz. At these power and frequency levels any increase in the impedance of the ground conductor must be controlled. During lightning discharge conditions a low inductive impedance path is more important than a low DC resistance path.

Q. Buried or concealed ground systems: Shall be accepted by Owner's Representative before backfilling or covering.

3.02 TESTING

A. Entire ground system shall be tested. Measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using fall-of-potential method. Maximum grounding system resistance shall be 25 Ohms.

B. Contractor shall test the made grounding electrode system (ground rods/ground ring/ground field/or other grounding electrodes) with an instrument specifically designed for testing grounding electrode systems. If ground resistance exceeds 25 Ohms, contact the Owner's Representative and/or the respective Project Engineer for further direction. Copies of grounding electrode system test results shall be furnished to the Owner's Representative and/or Project Engineer.

C. Copies of data and test reports shall be furnished to Owner's Representative. Report data to include technician's name, date of test, site conditions, Testing equipment manufacture and model number, and certification of test results.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding, coordination, and testing required to complete the installation of the pump station and to place it into proper working order.

B. All costs for furnishing all materials and for all preparation, assembly, and installation of these materials; for all excavation and backfilling; and for all labor, equipment, tools, and incidentals necessary to perform the grounding and bonding as detailed on the Plans and specified herein shall be considered incidental to the respective item of work for which the grounding and bonding is being installed, and no additional compensation will be allowed.

END OF SECTION 16450

DIVISION 16 – ELECTRICAL
SECTION 16460 – DRY TYPE TRANSFORMERS

1. GENERAL

1.01 DESCRIPTION OF WORK

A. This section includes the supply and installation of enclosed dry type transformers, and all required work to provide a complete and operational electrical system.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16120 – Wire and Cable.

D. Section 16190 - Supporting Devices.

E. Section 16195 – Electrical Identification.

F. Section 16450 – Grounding.

1.03 REFERENCE TO STANDARDS

A. IEEE C57.12.01 - Standard General Requirements for Dry-Type Distribution and Power Transformers including those with Solid Cast and/or Resin Encapsulated Windings.

B. ANSI C57.12.50 - Requirements for Ventilated Dry-Type Distribution Transformers, 1 to 500 kVA, Single-Phase and 15 to 500 kVA, Three-Phase, with High Voltage 601 to 34,500 V, Low-Voltage 120 to 600 V.

C. ANSI C57.110 - Recommended Practice for Establishing Transformer Capability when Supplying Non-Sinusoidal Load Currents.

D. IEEE C57.94 - Recommended Practice for Installation, Application, Operation and Maintenance of Dry-Type General Purpose Distribution and Power Transformers.

E. IEEE C57.96 - Guide for Loading Dry-Type Distribution and Power Transformers

F. NEMA ST-20 - Dry-Type Transformers for General Application

G. UL 1561 – Standard for Dry-Type General Purpose and Power Transformers

H. NFPA 70 – National Electrical Code (most current issue in force).

I. NFPA 70E – Standard for Electrical Safety in the Workplace.

J. OSHA 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures.

K. 2016 DOE (Department of Energy) Regulation regarding efficiency ratings for transformers.

1.04 DELIVERY, STORAGE AND HANDLING

A. Dry type transformers shall be stored indoors from time of delivery to job site, protected from weather and construction.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for panelboards to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** In the event that the Contractor provides hard copies of shop drawings he shall submit sufficient quantities to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus four (4) copies to be retained by the Project Engineer. Shop drawings shall include the following information:

1. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Project Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

2. Submittals for panelboards shall include outline and support point dimensions, voltage, main bus ampacity, bus material, integrated short circuit ampere rating, circuit breaker arrangement and sizes and respective enclosure. Information on circuit breakers shall include manufacturer's catalog numbers, description with number of poles, voltage ratings, Amp trip ratings, Amp interrupting current ratings, and any special features (for example switched neutral, shunt trip, etc.). Submittals shall also include manufacturer's installation instructions; indicating application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting the product.

1.06 QUALITY ASSURANCE

A. Dry-type transformers shall be manufactured and supplied by a company regularly engaged in the business of furnishing transformers. If required by the

Engineer, the manufacturer shall submit certification to a minimum of ten years experience in the manufacturer of transformers.

1.07 MAINTENANCE SERVICE (WARRANTY)

A. Transformers shall be warranted to be free from defects, material and workmanship for a period of one year from date of substantial completion established by the Owner.

2. PRODUCTS

2.01 MANUFACTURERS

A. Dry type transformers shall be manufactured by Square D, Acme Transformer, General Electric, Cutler Hammer, or approved equal.

2.02 EQUIPMENT

A. Step-Down Transformer for Pump Station. Step-down transformer for use with the 120/240 VAC power feeder circuit for Panelboard "B" shall be rated 10 KVA, 480 VAC, 1-phase, primary, 120/240 VAC, 1-phase, 3-wire secondary, 60 Hz, with UL Class 180 degree C insulation system, and 115 degree maximum temperature rise. Windings shall be Copper or Aluminum. Transformers shall be suitable for indoor/outdoor installation with a NEMA 3R weatherproof enclosure. Transformers shall be UL-listed and shall include electrostatic shielding.

3. EXECUTION

3.01 EXAMINATION

A. Dry type transformers shall be inspected for physical damage. Touch up paint matching transformer shall be used as needed.

3.02 INSTALLATION

A. All electrical work shall comply with the requirements of NFPA 70 - National Electrical Code (NEC), most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, ETL/Intertek Testing Services listing/verification, FM approval, or other third party listing, and/or the manufacturer's warranty of a device will not be permitted.

B. Contractor shall coordinate work and any power outages with the Owner's Representative and the Resident Engineer/Resident Project Representative. Any shutdown of existing systems shall be scheduled with and approved by the Owner's Representative prior to shutdown. Once shut down, the circuits shall be

labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures including, but not limited to, 29 CFR section 1910.147 The Control of Hazardous Energy (lockout/tagout).

C. Contractor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

D. Install transformers in accordance with manufacturer's instructions.

E. Set transformer plumb and level.

F. Install transformers in accordance with the seismic requirements for the area in which the installation is located as well as manufacturer's recommendations.

G. Use extreme care to eliminate noise and vibration.

H. Provide liquid tight flexible metal conduit (2 feet minimum length) for connections to transformer case. Liquid-tight, flexible metal conduit and associated fittings shall be UL-listed to meet the requirements of NEC 350.6. Do not install liquid-tight, flexible metal conduit that is not UL listed. Contractor shall confirm liquid-tight, flexible metal conduit bears the UL label prior to installation. Make conduit connections to side panel(s) of transformer enclosure.

3.03 GROUNDING OF TRANSFORMERS

A. The secondary neutral of all transformers shall be grounded unless specifically shown otherwise. See Section 16450 Grounding.

B. Size of neutral bonding conductor shall be in accordance with 2014 NEC 250.102 unless shown larger on drawings. Size of grounding electrode conductor shall be in accordance with 2014 NEC Article 250.66 and Table 250.66 unless shown larger on the drawings.

C. The grounding electrode conductor from the transformer secondary shall be bonded and referenced to the respective grounding electrode system as detailed on the Plans.

3.04 TESTING

A. Check for damage and tight connections prior to energizing transformer.

B. Adjust primary taps so that secondary voltage is with 2% of rated voltage.

C. Transformers shall be tested and calibrated per manufacturer's guidelines before energizing.

D. Measure and record input primary voltage to transformer and output secondary voltage from transformer.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding, coordination, and testing required to complete the installation of the pump station and to place it into proper working order.

B. Transformers will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END SECTION 16460

DIVISION 16 – ELECTRICAL
SECTION 16470 – PANELBOARDS

1. GENERAL

1.01 DESCRIPTION OF WORK

A. This section includes the supply and installation of panelboards, circuit breakers, and all required work to provide a complete and operational electrical system.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16120 – Wire and Cable.

D. Section 16190 - Supporting Devices.

E. Section 16195 – Electrical Identification.

F. Section 16450 – Grounding.

G. Section 16615 – Surge Protector Devices.

1.03 REFERENCE TO STANDARDS

A. Federal Specification W-P-115b, Type I, Class I.

B. Federal Specification W-G-375B (Circuit Breakers).

C. NECA (National Electrical Contractors Association) "Standard of Installation".

D. NEMA AB 1 – Molded Case Circuit Breakers, Molded Case Switches, and Circuit Breaker Enclosures.

E. NEMA ICS 2 – Industrial Control Devices, Controllers, and Assemblies.

F. NEMA KS1 Enclosed and Miscellaneous Distribution Equipment Switches (600V Maximum)

G. NEMA PB 1 – Panelboards.

H. NEMA PB 1.1 – Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.

I. NFPA 70 – National Electrical Code (most current issue in force).

J. NFPA 70E – Standard for Electrical Safety in the Workplace.

K. OSHA 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures.

L. UL 50 – Cabinets and Boxes.

M. UL Standard 67 – Panelboards.

N. UL Standard 489 – Molded Case Circuit Breakers.

1.04 DELIVERY, STORAGE AND HANDLING

A. Panelboards shall be stored indoors in the original container as delivered to the jobsite, protected from weather and construction.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for panelboards to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** In the event that the Contractor provides hard copies of shop drawings he shall submit sufficient quantities to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus four (4) copies to be retained by the Project Engineer. Shop drawings shall include the following information:

1. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Project Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

2. Submittals for panelboards shall include outline and support point dimensions, voltage, main bus ampacity, bus material, integrated short circuit ampere rating, circuit breaker arrangement and sizes and respective enclosure. Information on circuit breakers shall include manufacturer's catalog numbers, description with number of poles, voltage ratings, Amp trip ratings, Amp interrupting current ratings, and any special features (for example switched neutral, shunt trip, etc.). Submittals shall also include manufacturer's installation instructions; indicating application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting the product.

1.06 QUALITY ASSURANCE

A. Panelboards shall be manufactured and supplied by a company regularly engaged in the business of furnishing panelboards. If required by the Engineer, the manufacturer shall submit certification to a minimum of ten years experience

in the manufacturer of panelboards. Panelboards shall be manufactured in the United States of America.

1.07 REGULATORY REQUIREMENTS

A. Conform to requirements of NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and shown.

1.08 MAINTENANCE SERVICE (WARRANTY)

A. Panelboards shall be warranted to be free from defects, material and workmanship for a period of one year from date of substantial completion by the Owner.

2. PRODUCTS

2.01 MANUFACTURERS

A. Panelboards shall be as manufactured by Square D, Eaton Cutler-Hammer, General Electric or approved equal.

2.02 EQUIPMENT

A. Main Distribution Panelboard "A". Main distribution panel shall be 400 Amp, 480/277 VAC, 3-phase, 4-wire with a 400 Amp, 3-pole main breaker (reverse feed main breaker is acceptable), copper bus braced for 35,000 Amperes symmetrical (minimum) at 480 VAC, 45 inches minimum of breaker mounting space, suitable for 400 Amp frame branch breakers, in a NEMA 4X enclosure UL-listed suitable for service entrance, or NEMA 3R and 12 enclosure UL-listed suitable for service entrance, Square D, I-line, Type HCP Series, or approved equal. Enclosure shall be suitable for outdoor location, weather resistant, and corrosion resistant suitable for the respective location. All bussing shall be copper. Neutral bus shall be copper. Include separate copper equipment ground bars adequately sized for all ground wires and grounding electrode conductors to and from the panel. Main breaker and all branch and feeder breakers shall have an interrupting rating of 35,000 Amps minimum at 480 VAC and shall be constructed in accordance with NEMA AB1 and UL 489. Circuit breakers shall be equipped with individually insulated braced and protected connectors. The front faces of all circuit breakers shall be flush with each other. Large, permanent, individual circuit numbers shall be affixed to each breaker in a uniform position (or equip each breaker with a circuit card holder and neatly printed card identifying the circuit). Tripped indication shall be clearly shown by the breaker handle taking a position between ON and OFF. Provisions for additional breakers shall be such that no additional connectors will be required to add breakers. See Plans for details on size and quantity of branch and feeder breakers. Panel shall be UL-listed and bear the UL label. Provide legend plates as detailed on the Plans. Coordinate selection of two pole breakers with the manufacturer to confirm proper bus connections.

B. 120/240 VAC Panelboards: Panelboard bus structure shall be copper. Bus and main lugs or main circuit breaker shall have voltage, current, and amp interrupting current ratings as shown on the Plans. Such ratings shall be in accordance with UL Standard 67. Bus bar connections to the branch circuit breakers shall be the "distributed phase" or phase sequence type. All current carrying parts of copper bus structures shall be plated to prevent corrosion. Panelboards for service entrance applications shall be UL listed suitable for service entrance. All panelboards shall be Dead-Front Safety Type, equipped with thermal-magnetic molded case breakers, and solid neutral bus. Bussing shall be such that adjacent single pole breakers will be on different phases or polarities, and that two pole breakers can be installed at any location. Panelboard numbering shall be such that starting at the top, odd numbers shall be used in sequence down the left hand side and even numbers shall be used in sequence down the right hand side. Cabinets shall be fabricated of code gauge galvanized steel with gutters sized per National Electrical Code and shall be suitable for the respective location. Cabinets shall be finished with rust inhibiting primer and baked enamel. For outdoor installations (in non-hazardous areas) the enclosure shall be rated NEMA 4X or NEMA 3R (rain proof) and NEMA 12 (dust tight) with a hinged cover. For indoor installations (in non-hazardous areas) the enclosure shall be rated NEMA 1 or NEMA 12. Panelboard shall be provided with bolt-on circuit breakers of size, type, and ratings as detailed on the Plans. Contractor shall confirm and adjust circuit breaker amperage trip ratings as required for the respective equipment or device being fed, in accordance with the respective equipment manufacturer's recommendation and NEC. Breakers shall be 1 or 2 pole with an integral crossbar to assure simultaneous opening of all poles in multiple circuit breakers. Breakers supplying 120 VAC or 120/240 VAC circuits associated with the fuel facility equipment shall include a switched neutral feature. Breakers shall have an over-center, trip-free, toggle-type operating mechanism with quick-make, quick-break action and positive handle indication. Handles shall have "ON," "OFF," and "TRIPPED" positions. Circuit breakers shall be UL-listed in accordance with UL Standard 489 and shall be rated 120/240 volts AC, 1-phase 3-wire. A circuit directory frame and card with a clear plastic cover shall be provided on door interior. Circuit directory shall be typed or neatly hand written indicating each branch circuit of the panel board. Revise directory to reflect circuiting changes as required. All panelboards shall be UL-listed and bear the UL label. Panelboards shall be furnished with a copper equipment ground bar(s) and a separate insulated copper neutral bus.

3. EXECUTION

3.01 EXAMINATION

A. Panelboards shall be thoroughly inspected for physical damage, proper alignment, anchorage and grounding. The exterior finish shall be inspected for blemishes, nicks, and bare spots and touched up as required (where applicable) using touch-up paint provided. Inspection shall be made for proper installation and tightness of connections of all circuit breakers.

3.02 PREPARATION

A. Test for shorts and high resistance grounds. Check for faulty operation of circuit breakers.

3.03 INSTALLATION

A. All electrical work shall comply with the requirements of NFPA 70 - National Electrical Code (NEC), most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment and materials shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, ETL/Intertek Testing Services verification/listing, FM approval, or other third party listing, and/or the manufacturer's warranty of a device will not be permitted.

A. Contractor shall coordinate work and any power outages with the Owner's Representative. Any shutdown of existing systems shall be scheduled with and approved by the Owner's Representative prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures including, but not limited to, 29 CFR section 1910.147 The Control of Hazardous Energy (lockout/tagout).

B. Contractor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

C. Install panelboards in accordance with NEMA PB1.1 per manufacturer's instructions and as detailed on the Plans. Install panelboards plumb. Provide filler plates for unused spaces in panelboards.

D. Panelboards shall be installed such that the center of the grip of the operating handle of the upper most circuit breaker, shall not exceed 6 ft-6 in. from finished grade elevation or the working platform to comply with NEC 404.8(A). Panelboards shall not be installed in classified hazardous locations.

E. Where surge arrestors are required to be furnished on panelboards install them in conformance with manufacturer's instructions for the surge arrestor and the panelboard. Maintain leads as short and as straight as possible. Locate the surge protector device on the same side of the panelboard as the circuit breaker that connects it to the panelboard. Install the circuit breaker for the surge protector device as close as possible to the panelboard main breaker or main lugs. For example for a top feed main breaker/main lugs type panelboard install the circuit breaker for the surge protector device in positions 1 and 3 or in circuit positions 2 and 4. For a bottom feed main breaker/main lugs type panelboard (42 circuit) install the circuit breaker for the surge protector device in positions 39 and 41 or in circuit positions 40 and 42.

F. Install grounding bushings with ground wire connections between the bushing and the ground bus at all metal conduit terminations that enter or leave the panelboard through concentric knockouts. This does not apply to conduits sized to match the largest knockout.

G. Furnish and install circuit directory indicating the respective equipment fed by each circuit breaker. Circuit directory shall be typed or neatly hand written and shall correctly identify each circuit in the panelboard. Revise directory to reflect circuiting changes as required.

H. Provide legend plates for all panelboards to identify the area and/or equipment controlled by the panelboard. Legend plates shall be weatherproof and abrasion resistant phenolic material as specified in Section 16195. Letters shall be black on white background.

3.04 TESTING

A. Panelboards shall be thoroughly tested after installation and connection to respective loads. Lighting panelboard phases shall be measured with all major items operating. Phase loads shall be within 20 percent of each other. Rearrange circuits if required maintaining proper phasing for multi-wire circuits.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding, coordination, and testing required to complete the installation of the pump station and to place it into proper working order.

B. Panelboards will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END SECTION 16470

DIVISION 16 – ELECTRICAL
SECTION 16495 – AUTOMATIC TRANSFER SWITCHES

1. GENERAL

1.01 DESCRIPTION OF WORK

A. This section includes the supply and installation of electrically operated, mechanically held, automatic transfer switches, and all required work to provide a complete and operational electrical system, as detailed on the Plans and Specified herein.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16120 – Wire and Cable.

D. Section 16190 - Supporting Devices.

E. Section 16195 – Electrical Identification.

F. Section 16450 – Grounding.

G. Section 16620 –Standby Power Generator Systems

1.03 REFERENCE TO STANDARDS

A. NEMA ICS 1 – General Standards for Industrial Control Devices, Controllers, and Assemblies.

B. NEMA ICS 2 – Standards for Industrial Control Devices, Controllers, and Assemblies.

C. NEMA ICS 6 – Enclosures for Industrial Controls and Systems.

D. NFPA 70 – National Electrical Code (most current issue in force).

E. NFPA 70E – Standard for Electrical Safety in the Workplace.

F. NFPA 110 – Emergency and Standby Power Systems.

G. UL 1008 – Standard for Safety Transfer Switch Equipment.

H. OSHA 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures.

1.04 DELIVERY, STORAGE AND HANDLING

A. transfer switches shall be stored indoors from time of delivery to job site, protected from weather and construction.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for panelboards to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** In the event that the Contractor provides hard copies of shop drawings he shall submit sufficient quantities to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus four (4) copies to be retained by the Project Engineer. Shop drawings shall include the following information:

1. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Project Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

2. Provide catalog sheets and showing manufacturer, model number, voltage, switch size, Amperage ratings, number of poles, operating logic, withstand and closing ratings, dimensions, and enclosure details. Coordinate auto transfer switch withstand and closing ratings with the service entrance breaker/disconnect and the generator breaker/disconnect to maintain the withstand and closing ratings of the switch. Include this information with the submittal.

3. Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

4. Operation and Maintenance Data: Include instructions for operating equipment. Include instructions for operating equipment under emergency conditions when engine generator is running. List all factory settings of relays and provide relay setting and calibration instructions. Include routine preventative maintenance and lubrication schedule. List special tools, maintenance materials, and replacement parts.

1.06 QUALITY ASSURANCE

A. Automatic transfer switches shall be manufactured and supplied by a company regularly engaged in the business of furnishing automatic transfer switches. If required by the Engineer, the manufacturer shall submit certification to a

minimum of ten years experience in the manufacturer of automatic transfer switches.

1.07 MAINTENANCE SERVICE (WARRANTY)

A. Automatic transfer switches shall be warranted to be free from defects, material and workmanship for a period of one year from date of substantial completion by established by the Owner.

2. PRODUCTS

2.01 AUTOMATIC TRANSFER SWITCH

A. Switch shall function to automatically transfer predetermined loads from the main service to the generator service in the event of a power failure and to retransfer these loads to normal source after restoration of power.

B. The automatic transfer switch shall be a 400 Amp, 480/277 VAC, 3 Phase, 4-Wire, 3 Pole with solid neutral mechanically held and electrically operated by a single-solenoid mechanism energized from the source to which the load is to be transferred. The switch shall be rated for continuous duty and be inherently double throw. The switch shall be mechanically interlocked to insure only one (1) of two (2) possible positions - normal or emergency.

C. All main contacts shall be the silver alloy wiping action type. They shall be protected by arcing contacts. The operating transfer time in either direction shall not exceed 1/6 of a second. All replaceable contacts, coils, springs and control elements shall be conveniently removable from the front of the transfer switch without major disassembly or disconnection of power conductors.

D. The automatic transfer switch shall conform to the requirements of NEMA Standard ICS2 and Underwriters' Laboratories UL-1008 and shall be rated in amperes for total system transfer including control of motors, electric-discharge lamps, electric-heating and tungsten-filament lamp loads. Voltage and current ratings shall be as shown on the drawings. Transfer switches shall have withstand and closing rating of 42,000 RMS Sym. Amps., minimum per UL Standard 1008. Coordinate selection of the service entrance breaker/disconnect and the generator breaker/disconnect to maintain the withstand and closing ratings of the switch.

E. Automatic transfer switch controls shall be microprocessor based.

2.02 PRODUCT OPTIONS AND FEATURES

A. Voltage sensing for each phase of normal source. Pick-up voltage is adjustable from 85 percent to 100 percent nominal, and drop-out voltage is adjustable form 75 percent to 98 percent pick-up value. Factory set for pick-up at 90 percent and drop-out at 85 percent.

B. Time-delay override of normal source voltage-sensing delays transfer and engine start signals. Adjustable zero (0) to six (6) seconds, and factory set at one (1) second.

C. Voltage/Frequency Lockout Relay: Prevent premature transfer. Voltage pick-up is adjustable from 85 percent to 100 percent nominal. Factory set to pick-up at 90 percent. Pick-up frequency is adjustable from 90 percent to 100 percent nominal. Factory set to pick-up at 95 percent.

D. Retransfer Time Delay: Adjustable from zero (0) to thirty (30) minutes and factory set at ten (10) minutes. Provides automatic defeat of the delay upon loss of voltage or sustained undervoltage of the emergency source, provided the normal supply has been restored.

E. Bidirectional In-Phase Transfer System to control transfer operation between live sources. Shall provide variable transfer initiation which limits motor inrush current to magnitude or normal starting current ignoring unequal source voltages and wave shape distortion from solid state controlled loads. Operation shall be over a frequency difference range of ± 2 Hz. If voltage of the source carrying load drops below 70 percent, the in-phase function shall be automatically bypassed.

F. Test Switch: Simulates normal source failure.

G. Switch-Position Pilot Lights: Indicate source to which the load is connected.

H. Source-Available Indicating Lights: Supervise sources via the transfer switch normal and emergency source-sensing circuits:

1. Normal Power Supervision: Green light with nameplate engraved "Normal Source Available."
2. Emergency Power Supervision: Red light with nameplate engraved "Emergency Source Available."

I. Unassigned Auxiliary Contacts: Two (2) normally open SPDT contacts for each switch positions: Rating: 10 amperes at 240 VAC.

J. Transfer Override Switch: Overrides automatic retransfer control so the ATS will remain connected to the emergency power source regardless of the condition of the normal source. A pilot light indicates the override status.

K. Engine Starting Contacts: One isolated normally closed and 1 isolated normally open. Contacts are gold flashed or gold plates and rated 10 amperes at 32-Volt direct current minimum.

L. Engine Shut-Down Contacts: Instantaneous, to initiate shut-down sequence at engine-generator control panel after retransfer of the load to normal or preferred source. Provide manual engine disconnect switch.

M. Provide network card compatible with remote monitoring requirements in Section 16620 Standby Power Generation Systems.

N. Equipment ground bar adequately sized for all ground wires to and from the transfer switch.

2.03 ENCLOSURE

A. Enclosure for automatic transfer switch shall be NEMA 4X stainless steel with hinged cover. Provide security features to restrict access of controls and prevent unauthorized personnel from operating the transfer switch controls. Enclosure shall be pad lockable.

2.04 ACCEPTABLE PRODUCTS

A. Automatic Switch Co. 7000 Series.

B. Onan/Cummins Model OHPCD Power Command.

C. Or approved equal.

3. EXECUTION

3.01 INSTALLATION

A. All electrical work shall comply with the requirements of NFPA 70 - National Electrical Code (NEC), most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment and materials shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, ETL/Intertek Testing Services listing/verification, FM approval, or other third party listing, and/or the manufacturer's warranty of a device will not be permitted.

B. Contractor shall coordinate work and any power outages with the Owner's Representative. Any shutdown of existing systems shall be scheduled with and approved by the Owner's Representative prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures including, but not limited to, 29 CFR section 1910.147 The Control of Hazardous Energy (lockout/tagout).

C. Contractor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

D. Mount transfer switches in accordance with manufacturer's recommendations and as detailed on the Plans. Level and anchor unit.

E. Match the type and number of cables and conductors to the control and communications requirements of the transfer switch used. Mounting hardware shall be corrosion resistant stainless steel.

F. Tighten factory-made connections, including connectors, terminals, bus joints, mountings, and grounding. Tighten field-connected connectors and terminals, including screws and bolts, according to equipment manufacturer's published torque tightening values. When manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standards 486A.

G. Make equipment grounding connections for transfer switch unit as indicated and as required by the NEC.

H. Provide NEMA 4 hubs for all conduit entries into boxes or enclosures rated NEMA 4 or NEMA 4X to maintain the NEMA 4, 4X rating of the respective enclosure.

I. Equipment and Testing:

1. The services of a qualified representative of the equipment supplier shall be provided to check the installation, perform start-up adjustments, and instruct maintenance personnel in the care and proper operation of the equipment.

2. Contractor shall notify the Owner a minimum of seven (7) days prior to conducting test. The Owner must be present during testing to validate results.

3. Instruct Owner personnel on the complete operation and maintenance of transfer switch. Provide minimum of one (1) two (2) hour session.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding, coordination, and testing required to complete the installation of the pump station and to place it into proper working order.

B. Transfer switches will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END SECTION 16495

DIVISION 16 – ELECTRICAL
SECTION 16615 – SURGE PROTECTOR DEVICES

1. GENERAL

1.01 DESCRIPTION OF WORK:

A. Furnish and install AC Surge Protectors as detailed on the Plans and as specified herein.

1.02 RELATED WORK

A. Section 16111 – Conduit and Raceway.

B. Section 16120 – Wire and Cable.

C. Section 16470 – Panelboards.

D. Section 16450 – Grounding.

1.03 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for all AC surge protectors/Transient Voltage Surge Suppressors to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** In the event that the Contractor provides hard copies of shop drawings he shall submit sufficient quantities to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus four (4) copies to be retained by the Project Engineer. Shop drawings shall include the following information:

1. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Project Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

2. Provide Shop Drawings for all AC surge protectors/Transient Voltage Surge Suppressors to be installed on this project. Include specification sheets and cut sheets with manufacturer, model number, voltage rating, surge rating, and housing/enclosure rating.

1.04 STANDARDS

A. NFPA 70 – National Electrical Code (most current issue in force)

B. UL 1449, third edition, Surge Protective Devices.

C. ANSI/IEEE C62.41, Recommended Practice on Surge Voltages in Low Voltage AC Power Circuits.

1.05 DELIVERY, STORAGE AND HANDLING

A. Surge protector devices shall be stored in the original containers as delivered to the job site. Surge protector devices shall be stored in warm, dry, indoor area to prevent contact with the earth and to protect them from the weather.

2. PRODUCTS

2.01 AC SURGE PROTECTORS

A. AC power surge protectors shall be as detailed on the Plans, UL listed per UL 1449, and shall be manufactured in the United States of America.

B. AC power surge protector for the pump control panel shall be as specified in the pump control panel requirements.

3. EXECUTION

3.01 INSTALLATION

A. Install Surge Protector Devices (SPD) in conformance with the respective manufacturer's directions and recommendations. Contractor shall confirm all connections to the surge arrester (phases, neutral, and ground) are completed and secure. Connection leads to the surge arrester shall be sized per the respective manufacturer's recommendation, and as detailed herein and shall be maintained as short as possible, maximum 2 ft in length where possible, and laced together for mutual coupling. The conduit or conduit nipple connecting the SPD enclosure to the panel enclosure shall be sealed with duct seal or other nonflammable medium to prevent soot from entering the enclosure in the event of a SPD failure.

B. Maintain leads as short and as straight as possible. Locate the surge protector device on the same side of the panelboard as the circuit breaker that connects it to the panelboard.

C. Install the circuit breaker for the surge protector device as close as possible to the panelboard main breaker or main lugs. For example for a top feed main breaker/main lugs type panelboard install the circuit breaker for the surge protector device in positions 1 and 3 or in circuit positions 2 and 4. For a bottom feed main breaker/main lugs type panelboard (42 circuit) install the circuit breaker for the surge protector device in positions 39 and 41 or in circuit positions 40 and 42.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding, coordination, and testing required to complete the installation of the pump station and to place it into proper working order.

B. All surge protectors will not be paid for separately, but shall be considered incidental to the respective item of work for which the surge protective devices are being installed, and no additional compensation will be allowed.

END OF 16615

DIVISION 16 – ELECTRICAL
SECTION 16620 - STANDBY POWER GENERATOR SYSTEMS

1. GENERAL

1.01 DESCRIPTION OF WORK

A. This section consists of furnishing and installing a standby diesel engine generator system as detailed on the Plans and specified herein. The engine generator set shall be a legally required standby system as defined by National Electrical Code Article 701. The engine generator set shall be classified as a Class X (capable of providing 24 hours of continuous backup power without being refueled), Type 60 (power restoration within 60 seconds), Level 2 as defined by NFPA 110, Chapter 4. This item shall include all labor, equipment, fuel, lubricants, fluids, weatherproof housing, start battery, battery charger, muffler, sub-base fuel tank, fuel piping, concrete pad, wiring, raceways, grounding, materials, tools, utility coordination, operational instructions, labeling, startup and check out services, testing and all incidentals required to place the engine generator system, automatic transfer switch, and all associated accessories into proper working order as a completed unit to the satisfaction of the Owner and Engineer. Contractor shall also include three copies of instruction manuals, operation and maintenance manuals, and parts list bound in a durable plastic binder for the engine generator set and automatic transfer switch.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16120 – Wire and Cable.

D. Section 16195 – Electrical Identification.

E. Section 16450 – Grounding.

F. Section 16495 – Automatic Transfer Switches

1.03 REFERENCE TO STANDARDS

A. NFPA 30 - Flammable and Combustible Liquids Code.

B. NFPA 37 - Installation and Use of Stationary Combustion Engines and Gas Turbines.

C. NFPA 70 - National Electrical Code (most current issue in force).

D. NFPA 70E – Standard for Electrical Safety in the Workplace.

E. NFPA 110 - Standard for Emergency and Standby Power Systems.

F. UL 142 Standard for Safety- Steel Aboveground Tanks for Flammable and Combustible Liquids.

G. UL 2200 Standard for Stationary Engine Generator Assemblies

H. Title 41: Fire Protection, Chapter 1, Office of the State Fire Marshall, State of Illinois, Part 160 Storage, Transportation, Sale and Use of Gasoline and Volatile Oils: Rules and Regulations Relating to General Storage.

I. OSHA 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures.

J. Engine Exhaust Emissions: Comply with applicable state and local government requirements.

K. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by generator set including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

1.04 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for panelboards to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** In the event that the Contractor provides hard copies of shop drawings he shall submit sufficient quantities to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus four (4) copies to be retained by the Project Engineer. Shop drawings shall include the following information:

1. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Project Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.
2. Certified outline and installation drawings.
3. Performance data and operating characteristics.
4. Arrangement drawings showing piping, controls and accessory equipment.
5. Drawings on non-standard components and accessories.
6. Drawings on fuel system and fuel tank.
7. Product data: Catalog data marked to indicate materials being furnished.
8. Operating and Maintenance Data: Instructions Manuals, Maintenance and Operational Manuals. Provide three copies of bound manuals in durable plastic binders (8-1/2 in. x 11 in.). The manuals shall include manufacturer's maintenance and operating instructions and parts list and serial numbers for equipment.

9. Engine generator sizing report with detail of loads and steps to confirm the respective engine generator set is properly sized to start and operate the respective equipment loads. Note where the actual equipment loads exceed the specified design equipment loads, the engine generator set rating shall be adjusted to meet the demand loads for the actual equipment furnished and comply with the Specifications.

1.05 QUALITY ASSURANCE

A. Comply with specified ANSI, NEMA, NFPA, and UL requirements for engine generator set components and installation.

1.06 MAINTENANCE SERVICE (WARRANTY)

A. Engine generator set shall be warranted to be free from defects, material and workmanship for a period of two years from date of substantial completion as established by the Owner.

2. PRODUCTS

2.01 STANDBY POWER ENGINE GENERATOR SET

A. Generator shall be rated 250 KW/313 KVA minimum at 1,800 RPM, 60 Hz, 0.8 PF, and 80° C maximum temperature rise. **Unit shall be UL 2200 listed.** The generator output voltage shall be 480/277 Volt, 3 phase, 4 wire, 60 Hz. The generator shall be capable of delivering rated output (KVA) at rated frequency and power factor, at any voltage not more than five percent above or below rated voltage. The diesel engine-generator set shall be capable of single step load pick of 100 percent nameplate kW and power factor. Generator maximum allowable transient momentary voltage dip shall be 20 percent for the following loads applied in a single step.

1. 25 HP, 480 VAC, 3 Phase, Submersible Pump Motor (confirm motor full load Amperage with the respective pump motor provided).
2. 10 KVA, 480 VAC, Single Phase to 120/240 VAC, Single Phase 3-wire Step-Down Transformer
3. 100 HP, 480 VAC, 3 Phase, Submersible Pump Motor (confirm motor full load Amperage with the respective pump motor provided).

Note where the actual equipment loads exceed the above loads, the engine generator set rating shall be adjusted to meet the demand loads for the actual equipment furnished and comply with the Specifications.

B. Engine shall be diesel fueled, four cycle, water-cooled with integral mounted radiator, fan and water pump. Engine shall have six (6) cylinders and a minimum rating of 1.5 HP/KW at its operating speed of 1,800 rpm when corrected to the altitude and temperature conditions of the respective location. Intake and exhaust valves shall be heat resisting alloy steel. Exhaust valve seat inserts shall be provided. Full pressure lubrication shall be supplied by a positive displacement lube oil pump. The engine shall have air cleaners and fuel and oil filters with replaceable elements. Engine speed shall be governed by an electronic

governor to maintain automatic isochronous frequency regulation. The engine governing system shall not utilize any exposed operating linkage. Remote 2-wire, starting shall be by a 12-Volt or 24-Volt solenoid shift, electric starter. **Engine shall comply with and be certified to U.S. EPA New Source Performance Standards, 40 CFR 60 Subpart III, Tier 3 exhaust emission levels for emergency standby rated engine generator.**

C. The engine instrument panel shall contain an oil pressure gauge, coolant temperature gauge, and battery charger rate ammeter and service hour meter.

D. The fuel system shall be integral with the engine. It shall consist of fuel filter, injection pumps, lines, and nozzles. The injection pumps shall obtain fuel from basin fuel tank. The injection pumps shall be driven from the camshaft and simultaneously controlled by a rack and pinion assembly that is hydraulically actuated by signals from the engine governor. The pumps shall be of a variable displacement type to alter the volume of fuel delivered to the spray nozzles according to load demand. The nozzles shall inject fuel directly into the cylinder in the optimum spray pattern for efficient combustion. A manual fuel priming pump shall facilitate priming and bleeding air from the system.

E. Generating set shall contain a complete engine start-stop control which starts engine on closing contact and stops engine on opening contact. A cycle cranking system shall be provided to open the starting circuit if the engine is not started within the selected periods. System shall be set for three (3) cranking periods of fifteen (15) seconds each with fifteen (15) second rest period between cranking periods. All settings shall be adjustable. The engine controls shall also include provisions for remote starting. High engine temperature, low coolant temperature, high coolant temperature, low coolant level, low oil pressure, overcrank and overspeed shutdown with signal light and alarm terminals shall also be provided.

F. Generator shall be four-pole, 2/3 pitch winding, revolving field design with temperature compensated solid-state voltage regulator and Permanent Magnet exciter system. No brushes shall be allowed. The stator shall be directly connected to the engine flywheel housing, and the rotor shall be driven through a semi-flexible driving flange to insure permanent alignment. The insulation system shall be Class H as defined by NEMA MG1-1.65. The alternator shall have a 80°C Temperature rise at full load for a standby system.

G. Frequency regulation shall not exceed 0.25 percent from no load to rated load for any steady load. Voltage regulation shall be within plus or minus 0.5 percent of rated voltage, from no load to full rated load. The instantaneous voltage dip shall be less than 26 percent of rated voltage when full, three-phase, load and rated power factor is applied to alternator. Recovery to stable operation shall occur within two (2) seconds. Stable or steady state operation is defined as operation with terminal voltage remaining constant within plus or minus 1 percent of rated voltage. A rheostat shall provide a minimum of plus or minus 5 percent voltage adjustment from rated value. Temperature rise shall be within NEMA MG1-22.40, B5-4999 Part 32 and IEC 34-1.

H. The generator shall include a 400 Amp, 3 pole, 480 VAC, main circuit breaker in a NEMA 1 enclosure with solid neutral ground bar. Circuit breaker enclosure shall include provisions for pad locking the circuit breaker in the "off" position. The generator breaker shall be selected to have an Amp Interrupting Current rating that exceeds the available fault current from the generator. The generator breaker shall be selected and coordinated with the respective automatic transfer switch to maintain the withstand and closing ratings of the respective transfer switch. The generator breaker must be on the transfer switch manufacturer's approved list to maintain the switch withstand and closing ratings as detailed on the Plans and specified herein. Confirm generator breaker size with the respective engine generator manufacturer. Include legend plates labeled "GENERATOR BREAKER, 480/277 VAC, 3 PHASE, 4 WIRE".

I. The generator control panel shall contain frequency meter; running time meter; voltage adjusting rheostat; AC voltmeter, with phase selector switch, and AC ammeter with phase selector switch.

J. The engine jacket water cooling system shall be a closed circuit design with provision for filling, expansion, and de-aeration. The cooling pump shall be driven by the engine. The cooling system shall tolerate at least 25 PSI static head. Coolant recirculation shall begin when generator starts, coolant temperature shall be regulated by thermostat.

K. Engine coolant heat shall be discharged to the atmosphere by means of a unit-mounted radiator.

L. Jacket water heater(s) shall be provided to maintain coolant temperature of 90°F while the engine is idle. Heaters shall be powered at 120 VAC or 240 VAC, single phase, and include thermostatic controls. Hoses to and from the heater shall be industrial quality which exhibit long life in operational environments. Manual shutoff valves shall be incorporated to isolate the heater during servicing, including before and after heater and bleed/vent line.

M. The engine and generator shall be assembled to a common base. The generator set base shall be designed and built to resist deflection, maintain alignment, and minimize resonant linear vibration. The base shall be of heavy duty steel construction with rolled "C" channel structural members reinforced to maintain engine and generator alignment during lifting, installing, and generator operation. Structural side members shall have sufficient bottom mounting holes to locate vibration isolators. Restricted motion steel spring isolators shall be installed between the generator set base and the mounting surface. The isolators shall bolt to the base, and have a waffled or ribbed pad on their bottom surface. The pads shall be resistant to heat and age, and impervious to oil, water, antifreeze, diesel fuel, and cleaning compounds. The base shall incorporate a battery tray with hold-down clamps within the rails.

N. Provide muffler for unit. Muffler shall be "critical" type capable of attenuation of a minimum of 28 dB throughout the range of 60 through 8,000 hertz. Provide seamless stainless steel flexible exhaust tube and rain cap. Exhaust discharge shall be vertical.

O. Batteries for starting and control shall be heavy duty SLI lead acid type with battery cables and connectors. Battery tray shall be located within the frame. Starting batteries shall be rated 12-Volt DC or 24 Volt DC with a minimum of 180 ampere-hour and 700 CCA. Sizing shall consider specific application requirements of engine oil viscosity, ambient starting temperature, control voltage, overcharging and vibration. Batteries shall be located as close to the starting motor as practical, away from spark sources, in a relatively cool ambient, and permit easy inspection and maintenance.

P. Battery charger shall provide a rated output voltage of plus/minus 1 percent from no load to full load with A.C. variation of plus/minus 10 percent, minimum of 10 ampere output. Unit shall have automatic adjustable float and equalize ranges, overload protection, and automatic d.c. voltage regulation. Unit shall be solid state type employing silicone diode full wave rectifiers and shall have d.c. ammeter and voltmeter. Unit shall have fused input and output and shall be mounted on wall. Alarm circuits per NFPA 110, for low battery voltage, high battery voltage, and battery charger malfunction. Battery charger shall be located inside the engine generator set enclosure.

Q. Provide a weather protective, level 2 quiet (sound attenuated to limit sound levels to 75 dB or less at 7 meters), tamperproof, enclosure. Enclosure shall be constructed of reinforced sheet steel, prime coated, and finish painted. Provide enclosure for engine, generator, control panel, engine safety control, start batteries, battery charger and accessories. Enclosure shall have sufficient louvered openings to allow entrance of outside air for engine and generator cooling at full load. Louvered openings shall be designed to exclude driving rain and snow. Provide properly arranged and sized hinged panels in the enclosure to allow convenient access to engine, generator, and control equipment for maintenance and operation. Provide lockable, hinged panels with spring latches to hold panels closed securely and not allow panels to vibrate. Brace housing internally to prevent excessive vibration when generator set is in operation. All exterior bolts shall be tamper-proof. Enclosure shall be rodent proofed. Provide a GFCI receptacle inside the enclosure for maintenance.

R. Include an emergency stop red mushroom head type push button on the engine generator control panel and a second emergency stop station located remote from the engine generator set per the requirements of NFPA 37. Include all associated control and interface wiring and conduit. Remote emergency stop push button shall be front operated red mushroom knob, with "PUSH EMERGENCY STOP" printed on the knob, maintained contact push pull type with two (2) universal contact blocks (one (1) normally open and one (1) normally closed for each block), with contacts rated 10 Amps at 120 VAC and 125 VDC, Square D, Class 9001, SKR9RO5H2, or equal. Confirm contact arrangement is compatible with the respective engine generator and adjust as applicable. Include extra deep push button enclosure rated NEMA 4X stainless steel for outdoor applications, Hoffman E-1PBGXSS or equal. Contractor shall verify push button enclosure is adequately sized for the respective operator and contact blocks. Verify quantity of contact blocks required as detailed on the plans or as recommended by the engine generator set manufacturer. Provide guard for emergency stop push button to prevent accidental activation, Square D

Class 9001, Type K56YM, or similar type guard. Include weatherproof engraved phenolic legend plate with red background labeled:

"ENGINE GENERATOR
EMERGENCY STOP
PUSH TO STOP
PULL TO RESET"

S. The generator set shall be built, tested and shipped by one (1) manufacturer so there is one (1) source of supply and responsibility. The performance of the generating set shall be certified by an independent testing laboratory as to the set's full power rating, stability and voltage and frequency regulation.

T. Acceptable Manufacturers:

1. Cummins Power Generation, Inc.
2. Caterpillar
3. Or approved equal.

2.02 FUEL TANK

A. Generator set shall be furnished with sub-base mounted fuel tank with minimum usable fuel capacity to operate not less than twenty-four (24) hours' continuous operation at 100 percent rated power output, based on a tank that is no more than 90 percent full. The sub-base mounted fuel tank shall be dual wall corrosion resistant steel channel and sheet construction, with all welded seams. The tank shall be manufactured to UL 142 standards and shall be UL 142 listed and bear the UL label on tank.

B. The tank shall be installed and anchored within a steel secondary containment basin having a minimum capacity of 100 percent that of the tank. The containment shall be protected against intrusion of debris, falling water. The containment shall be equipped with a leak detector that shall activate the "rupture" alarm described below. A drain with ball valve shall be supplied.

C. Fuel tank shall include float and alarm bell with silence pushbutton to alert the operator when tank is full. Floats shall activate and deactivate the sounding of the bell. Set high level float at 90 percent full. Provide float switch for low and high level remote alarms.

D. Tank accessories shall include liquid level fuel gage, pressure relief vents, foot/check valve and locking gas cap.

E. Tank shall have a rupture basin float switch to activate remote alarm when liquid is sensed in tank containment basin.

F. Provide flexible fuel lines and engine supply and return piping and shut off valves.

G. The fuel tank shall be painted in accordance with tank manufacturer recommendations.

2.03 CONCRETE

A. Concrete for engine generator pad shall conform to Section 1020 PORTLAND CEMENT CONCRETE of the Standard Specifications for Road and Bridge Construction and as detailed on the Plans.

B. Concrete for electrical work shall be composed of fine aggregate, coarse aggregate, portland cement, and water so proportioned and mixed as to produce a plastic, workable mixture. Fine aggregate shall be of hard, dense, durable, clean, and uncoated sand. The coarse aggregate shall be reasonably well graded from 3/16 to 1 in. The fine and coarse aggregates shall be free from injurious amounts of dirt, vegetable matter, soft fragments or other deleterious substances. Water shall be fresh, clean, and free from salts, alkali, organic matter, and other impurities. Concrete shall have a compressive strength of 3,500 psi at the age of twenty-eight (28) days. Slump shall not exceed 3 in. Re-tempering of concrete will not be permitted. Exposed, unformed concrete surfaces shall be given a smooth, wood float finish. Concrete shall be cured for a period of not less than seven (7) days, and concrete made with high early strength portland cement shall be repaired by patching honeycombed or otherwise defective areas with cement mortar as directed by the Architect/Engineer. Air entrain concrete exposed to weather using and air-entraining admixture conforming to ASTM C 260. Air content shall be between 4 and 6 percent.

2.04 FIRE EXTINGUISHERS

A. Furnish and install two fire extinguishers to meet the requirements of Title 41: Fire Protection, Chapter 1, Office of the State Fire Marshall, State of Illinois, Part 160 Storage, Transportation, Sale and Use of Gasoline and Volatile Oils: Rules and Regulations Relating to General Storage, Section 160.400. Fire extinguishers shall be UL rating of at least 4A:60B:C, 10 pound dry chemical, Amerex Model B456 or approved equal.

3. EXECUTION

3.01 INSTALLATION

A. All electrical work shall comply with the requirements of NFPA 70 - National Electrical Code (NEC), most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment and materials shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, ETL/Intertek Testing Services listing/verification, FM approval, or other third party listing, and/or the manufacturer's warranty of a device will not be permitted.

B. Contractor shall coordinate work and any power outages with the Owner's Representative. Any shutdown of existing systems shall be scheduled with and approved by the Owner's Representative prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures including, but not limited to, 29 CFR section 1910.147 The Control of Hazardous Energy (lockout/tagout).

C. Contractor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

D. Contractor shall install unit to conform to manufacturers written installation requirements and in accord with NFPA 30, 37, 70, 110 and all applicable local codes.

E. Contractor shall complete the Application for Non-Dispensing Aboveground Bulk Storage Tank Installation and submit to the Office of the Illinois State Fire Marshall, Technical Service Division, James R. Thompson Center, 100 West Randolph Street, Suite 4-600, Chicago, Illinois 60601, Phone: 312-814-8960.

F. Base mounted fuel tank installation shall comply with the applicable requirements of Title 41: Fire Protection, Chapter 1, Office of the State Fire Marshall, State of Illinois, Part 160 Storage, Transportation, Sale and Use of Gasoline and Volatile Oils: Rules and Regulations Relating to General Storage. Maintain 10 feet minimum separation between the engine generator fuel tank and combustible materials.

G. Base mounted fuel tank and fill supply piping shall be installed in accordance with manufacturer's written instructions and in accord with applicable referenced standards, code and ordinances.

H. The engine exhaust system shall be installed to discharge combustion gases quickly and silently with minimum restriction. System including silencer shall be designed for minimum restriction and, in no case, shall back pressure exceed 27 in. H2O. Provide heavy walled piping, Schedule 40, with radii of 90 bends at least 1-1/2 times the pipe diameter. Piping shall be installed with 9 in. minimum clearance from combustible material or incorporate appropriate insulation and shielding. Piping shall be supported and braced to prevent weight or thermal growth being transferred to the engine and flexible expansion fittings provided to accommodate thermal growth. Support dampers and springs shall be included where necessary to isolate vibration. Long runs of pipe shall be pitched away from the engine and water traps with drain installed at the lowest point. Exhaust stack shall be extended to avoid nuisance fumes and odors, and outlet cut at 45 to minimize noise. Engine exhaust piping shall be completely insulated.

I. Generator set shall be shimmed and leveled and bolted to concrete base.

J. Concrete work shall conform to the requirements of these specifications and as detailed on the Plans.

K. All final conduit connections to the engine generator set shall be with UL listed liquid tight flexible metal conduit. Liquid-tight, flexible metal conduit and associated fittings shall be UL-listed to meet the requirements of NEC 350.6. Do not install liquid-tight, flexible metal conduit that is not UL listed. Contractor shall confirm liquid-tight, flexible metal conduit bears the UL label prior to installation.

L. Provide start-up service as recommended by manufacturer, including but not limited to, fill coolant system with anti-freeze solution for freeze protection to -20°F, all oil reservoirs filled, fuel system filled and checked.

M. Demonstrate at site in presence of Owner full functional capability under manual and automatic modes of operation. Perform a full load test using building load and resistive load banks to provide 100 percent specified KW rating for a four (4) hour test period. Correct all defects that occur during load testing. Contractor shall notify the Owner a minimum of seven (7) days prior to conducting test:

1. Test the operation of the unit at 100 percent full load rating for four (4) hours.
2. After the first half-hour operation and at 100 percent full load, record the following: Voltage and amperage (3-phase), frequency, fuel pressure, oil pressure, water temperature, and exhaust gas temperature at engine exhaust outlet.
3. Test the operation of the unit on the respective pump station equipment loads to confirm the equipment operates properly on engine generator power.
4. Include cost of fuel for testing and fill engine generator fuel tank to normal full level upon completion of testing.

N. Contractor shall fill the fuel tank and system with No. 2 diesel oil meeting manufacturer's recommendations as part of this contract.

O. Clean interior and exterior of engine generator enclosure.

P. Include the services of the manufacturer's representative to check final connections, inspect the installation, and supervise start-up and testing of the system.

Q. Instruct Owner's personnel on the complete operation and maintenance of system:

1. Instruction shall consist of minimum two (2), two (2) hour sessions.
2. Contractor shall notify the Owner a minimum of seven (7) days prior to conducting instruction sessions.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. This work will be paid for at the contract lump sum price for PUMP STATION ELECTRICAL WORK which shall include all labor, equipment, materials, associated supports, hardware, concrete work, tools, operational instructions, utility service work, standby engine generator system work, grounding, coordination, and testing required to complete the installation of the pump station and to place it into proper working order.

B. The engine generator set will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

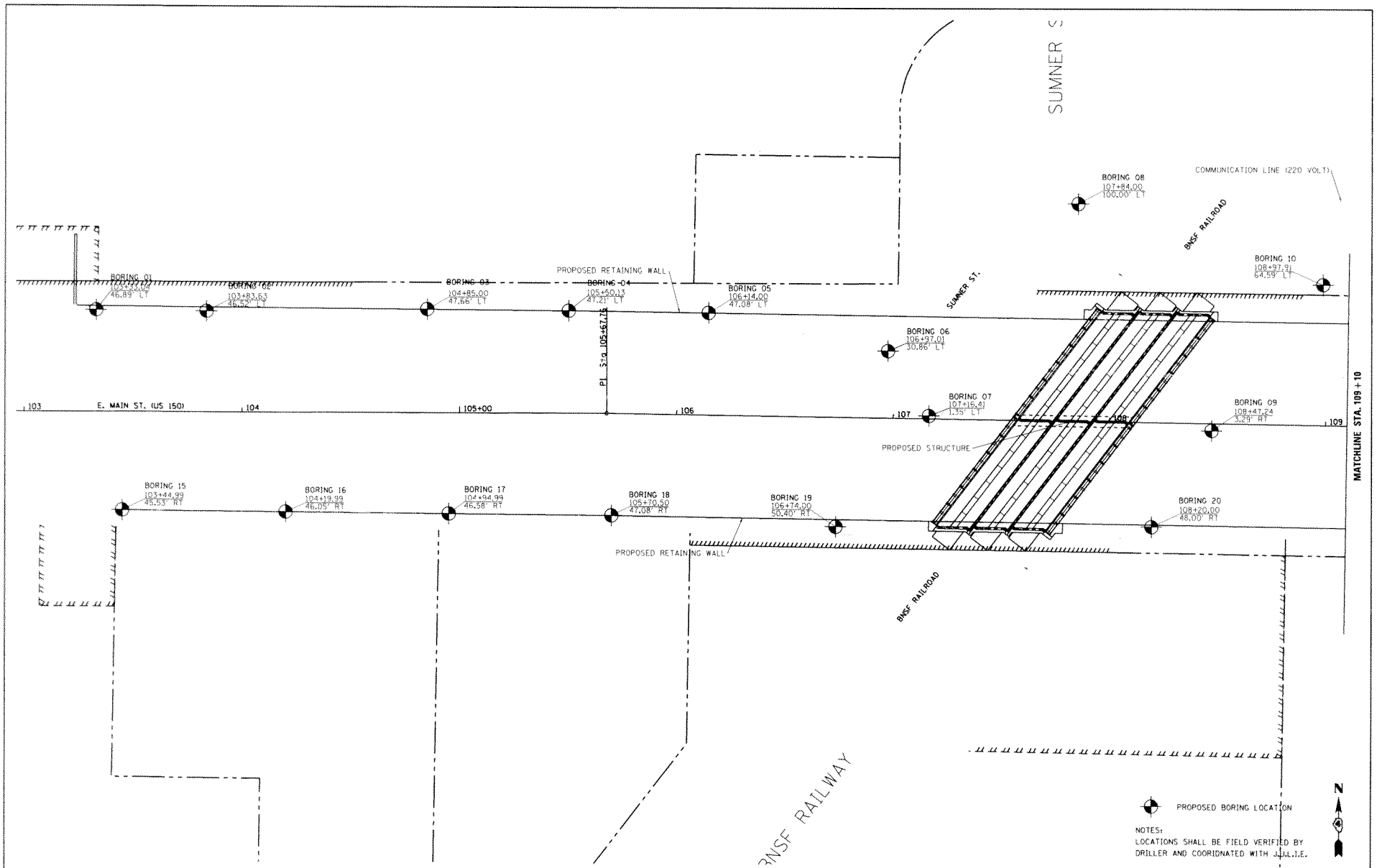
END SECTION 16620

ATTACHMENT B

BUILDING DEMOLITION SPECIFICATIONS
AND
ASBESTOS SURVEY RESULTS

ATTACHMENT C

GEOTECHNICAL INVESTIGATION SOIL PARAMETERS



TERRA ENGINEERING LTD.

USER NAME = dnb	DESIGNED - LNF		REVISED -
	DRAWN - LNF		REVISED -
PLOT SCALE = 39.9924 ' / in.	CHECKED -		REVISED -
PLOT DATE = 6/28/2013	DATE - 03/13/2013		REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EAST MAIN ST
BORING LOCATION PLAN

SCALE: 20.00 | SHEET NO. 1 OF 3 SHEETS | STA. 103+00 | TO STA. 109+10

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
6800	05-00500-19-GS	KNOX	3	1
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT	HPP-1036(003)	

CONTRACT NO.

287

Illinois Department of Transportation

Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/24/13

ROUTE FAP 6800 (US 150) DESCRIPTION East Main Street Under BNSF Railroad LOGGED BY T. Fehl

SECTION 05-00500-19-GS LOCATION Galesburg, SEC. 11, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox DRILLING METHOD Hollow-Stem Auger HAMMER TYPE Automatic

STRUCT. NO.
Station

BORING NO. B-07
Station 107+16
Offset 1.4 ft Left
Ground Surface Elev. 781.71 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 757.7 ft ▼
Upon Completion 770.8 ft ▽
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
BITUMINOUS CONCRETE (5.5") 781.25				Stiff, Gray-Brown And Brown SILTY CLAY *(continued)*	3		
RED BRICK (9.5") 780.92					4 5	1.2 B	26
PORTLAND CEMENT CONCRETE (25.5") 779.58				760.21			
	2			Medium, Light Brown CLAY LOAM	3		
Very Stiff, Black CLAY LOAM With Trace Of Organic Matter (Fill) DD = 99 PCF	2 2	2.3 B	23	DD = 97 PCF	5 5	0.7 B	24
777.71				757.71 ▼			
Stiff, Black SILTY CLAY With Small Amount of Organic Matter -5	3			Medium, Light Brown SANDY CLAY LOAM -25	5		
	4 5	1.4 B	27		6 7	0.9 B	18
775.21							
Medium, Blue-Gray And Olive-Green SILTY CLAY	2			754.21	8		
DD = 90 PCF	2 3	0.6 B	30	Very Stiff, Gray-Brown CLAY (Glacial Till) DD = 115 PCF	9 10	2.2 B	17
772.71							
Medium To Stiff, Blue-Gray And Olive-Green SILTY CLAY LOAM -10	2			-30	6		
▽	3 3	0.9 B	26		7 9	2.6 B	16
	3						
DD = 96 PCF	3 4	1.1 B	25				
767.71							
Medium, Dark Gray SILTY CLAY -15	2			-35	8		
	2 3	0.8 B	27	DD = 118 PCF	10 11	3.1 B	16
764.71							
	4						
Stiff, Gray-Brown And Brown SILTY CLAY DD = 95 PCF	5 6	1.4 B	25	743.71			
				Stiff, Gray CLAY (Glacial Till)			
-20				-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

738

Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/24/13

ROUTE FAP 6800 (US 150) DESCRIPTION East Main Street Under BNSF Railroad LOGGED BY T. Fehl

SECTION 05-00500-19-GS LOCATION Galesburg, SEC. 11, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox DRILLING METHOD Hollow-Stem Auger HAMMER TYPE Automatic

STRUCT. NO.
Station

BORING NO. B-07
Station 107+16
Offset 1.4 ft Left
Ground Surface Elev. 781.71 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 757.7 ft ▼
Upon Completion 770.8 ft ▽
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material
	6			Stiff, Gray CLAY (Glacial Till) *(continued)*
	7	1.6	17	
	8	B		
738.21				
				Hard, Gray CLAY (Glacial Till)
-45	8			
	9	4.3	14	DD = 121 PCF
	12	B		
734.71				
				Stiff, Gray CLAY (Glacial Till)
-50	7			
	7	1.9	16	
	7	B		
729.21				
				Medium-Density, Gray, Fine-Grained SAND With Some Silt (3 Feet Blow In)
-55	5			
	12	-	-	
	14			
723.71				
				Very Stiff, Gray CLAY LOAM (Glacial Till)
-60				

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material
	10			Very Stiff, Gray CLAY LOAM (Glacial Till) *(continued)*
	12	3.7	13	
	17	B		
-65	12			
	21	2.7	15	DD = 120 PCF
	25	B		
-70	18			
711.21				
	29	-	-	Very Dense, Gray, Fine- To Coarse-Grained SAND
	39			
				(Glacial Till at 77 - 79 Feet)
-75	15			
	23	-	-	
	29			
702.71				
				Medium-Density, Gray, Fine-Grained SAND
-80				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

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Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/24/13

ROUTE FAP 6800 (US 150) DESCRIPTION East Main Street Under BNSF Railroad LOGGED BY T. Fehl

SECTION 05-00500-19-GS LOCATION Galesburg, SEC. 11, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox DRILLING METHOD Hollow-Stem Auger HAMMER TYPE Automatic

STRUCT. NO.
Station

BORING NO. B-07
Station 107+16
Offset 1.4 ft Left
Ground Surface Elev. 781.71 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 757.7 ft ▼
Upon Completion 770.8 ft ▽
After - Hrs. - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Medium-Density, Gray, Fine-Grained SAND *(continued)*		7		
		11	-	-
		13		
699.71				
CLAY LOAM (Glacial Till)				
697.71				
Medium-Density, Gray, Medium-To Coarse-Grained SAND With Some Fine-Grained Gravel And Silt	-85	5		
		10	-	11
		12		
693.71				
Hard, Gray CLAY LOAM (Glacial Till)	-90	8		
		12	4.5	13
		16	P	
688.71				
Very Stiff, Dark Gray And Gray SILTY CLAY LOAM	-95	7		
DD = 104 PCF		7	2.7	23
		8	B	
683.21				
Very Stiff, Gray SILT	-100			

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff, Gray SILT *(continued)*		6		
		7	2.1	24
		8	B	
676.71	-105	8		
Hard, Gray CLAY SHALE		27	4.4	15
DD = 115 PCF		41	B	
	-110			
		41	4.5	13
		69	P	
	-115			
(AUGER REFUSAL AT (-)117.0 FEET)		96/4"	4.5	12
			P	
664.71				
End of Boring	-120			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

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Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 6/4/13

ROUTE FAP 6800 (US 150) DESCRIPTION East Main Street Under BNSF Railroad LOGGED BY T. Fehl

SECTION 05-00500-19-GS LOCATION Galesburg, SEC. 11, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox DRILLING METHOD Hollow-Stem Auger HAMMER TYPE Automatic

STRUCT. NO. _____
Station _____

BORING NO. B-08
Station 107+84
Offset 100.0 ft Left
Ground Surface Elev. 778.20 ft

Surface Water Elev. _____ ft
Stream Bed Elev. _____ ft

Groundwater Elev.:
First Encounter 753.2 ft ▼
Upon Completion - ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				BITUMINOUS CONCRETE (4.0") 777.87
				PORTLAND CEMENT CONCRETE (13.0") 777.12
				Medium, Light Brown And Gray SILTY CLAY
	2			
	2 2	0.7 B	29	DD = 91 PCF
-5	2			
	2 3	0.8 B	27	
				771.20
	2			Stiff, Brown SILTY CLAY
	3 3	1.0 B	24	DD = 96 PCF
-10	3			
	3 3	1.1 B	23	
				766.70
	3			Stiff, Brown And Gray-Brown CLAY
	4 4	1.4 B	27	DD = 93 PCF
-15	3			
	4 5	1.8 B	26	
				761.20
	2			Medium, Light Brown CLAY LOAM
	2 3	0.5 B	22	DD = 98 PCF
-20				
	2			Medium, Light Brown CLAY LOAM *(continued)*
	2 3	0.6 B	21	
				756.70
	5			Stiff, Gray-Brown CLAY LOAM GLACIAL TILL
	6 6	1.6 B	17	DD = 116 PCF
▼-25	5			
	6 8	1.8 B	16	
				751.20
	8			Very Stiff, Gray CLAY LOAM GLACIAL TILL
	8 9	2.3 B	14	DD = 118 PCF
-30	8			
	9 12	3.5 B	13	
-35	7			
	9 12	3.4 B	14	DD = 120 PCF
				740.70
-40				Very Stiff, Gray CLAY GLACIAL TILL

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

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Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 6/4/13

ROUTE FAP 6800 (US 150) **DESCRIPTION** East Main Street Under BNSF Railroad **LOGGED BY** T. Fehl

SECTION 05-00500-19-GS **LOCATION** Galesburg, **SEC.** 11, **TWP.** 11N, **RNG.** 1E, 4th **PM,**
Latitude , Longitude

COUNTY Knox **DRILLING METHOD** Hollow-Stem Auger **HAMMER TYPE** Automatic

STRUCT. NO.
Station

BORING NO. B-08
Station 107+84
Offset 100.0 ft Left
Ground Surface Elev. 778.20 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 753.2 ft ▼
Upon Completion - ft
After - **Hrs.** - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff, Gray CLAY GLACIAL TILL *(continued)*	7		
	8	3.3	16
	10	B	
735.20			
Stiff, Gray CLAY GLACIAL TILL			
-45	8		
DD = 115 PCF	9	1.8	18
	10	B	
730.20			
Medium-Density, Gray, Fine- To Medium-Grained SAND With Considerable Silt			
-50	7		
	9	-	-
	12		
724.70			
Very Stiff, Gray CLAY LOAM GLACIAL TIL			
-55	7		
DD = 118 PCF	9	2.3	16
	10	B	
-60			

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff, Gray CLAY LOAM GLACIAL TIL *(continued)*	7		
	9	2.8	14
	12	B	
715.70			
Very Stiff, Gray CLAY GLACIAL TILL			
-65	9		
DD = 117 PCF	12	3.2	16
	17	B	
710.20			
Hard, Gray CLAY GLACIAL TIL			
-70	18		
	21	4.9	14
	26	B	
-75	15		
DD = 120 PCF	21	4.6	14
	29	B	
699.70			
-80			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

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Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 6/4/13

ROUTE FAP 6800 (US 150) DESCRIPTION East Main Street Under BNSF Railroad LOGGED BY T. Fehl

SECTION 05-00500-19-GS LOCATION Galesburg, SEC. 11, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox DRILLING METHOD Hollow-Stem Auger HAMMER TYPE Automatic

STRUCT. NO.
Station

BORING NO. B-08
Station 107+84
Offset 100.0 ft Left
Ground Surface Elev. 778.20 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 753.2 ft ▼
Upon Completion - ft
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
	15			Dense, Gray, Medium- To Coarse-Grained SAND And Fine-Grained GRAVEL With Considerable Silty Clay *(continued)*
	20	-	-	
	21			
695.20				
				Stiff, Gray CLAY LOAM GLACIAL TILL
-85	10			
	11	1.1	17	DD = 117 PCF
	13	B		
690.70				
				Very Stiff, Gray SILT
-90				
	15			
	29	3.1	16	
	33	S		
686.20				
				Stiff, Gray SILT
-95	10			
	15	1.2	19	DD = 114 PCF
	23	B		
678.70				
-100				

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
	21	-	-	Very Dense, Gray, Medium- To Coarse-Grained SAND And Fine-Grained GRAVEL *(continued)*
	57/6"			
674.70				
				Hard, Gray CLAY SHALE
				SEE ROCK CORE LOG FOR CONTINUATION OF BORING
-105				
	31	4.5	16	
	97/4"	P		
672.20				
				End of Boring
-110				
-115				
-120				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

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Illinois Department of Transportation

Rock Core Log

Route: FAP 6800 Structure No.: (Exist.) (Prop.) Date: 6/07/13 Page: 1 of 1

Section: 05-00500-19-GS Description: East Main Street Under BNSF Railroad

County: Knox Logged by: Krusemark

Boring No.: B-08 Coring Method: Rotary Core Diameter: 2.0 in

Station: 107+84 Barrel Type: NW

Offset: 100' Barrel Size: 10'

Latitude: Top of Rock Elev.: 103.5 ft

Longitude: Begin Core Elev.: 105.0 ft

Rock Type, Description and Observations	ELEV. (ft)	DEPTH (ft)	CORE No.	RECOV. (%)	R.Q.D. (%)	TIME (min/ft)	U.C.S. Qu (tsf)
Hard, Gray CLAY SHALE		105					
							17.9
		110	1	70	36	4	
Hard, Dark Gray CLAY SHALE With Thin Seams Of Limestone		115					4.6
							13.6
Hard, Gray SHALE		120	2	86	69	4	
							9.3
Hard, Dark Gray CLAY SHALE							

Color pictures of the cores taken (Y/N): Attached Cores will be disposed of after: 10/01/2013

Cores will be stored for examination at: 2406 West Nebraska Avenue - Peoria, Illinois

The U.C.S. Qu column represents the Unconfined Compressive Strength using ASTM D-2938

Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/25/13

ROUTE FAP 6800 (US 150) **DESCRIPTION** East Main Street Under BNSF Railroad **LOGGED BY** T. Fehl

SECTION 05-00500-19-GS **LOCATION** Galesburg, **SEC.** 11, **TWP.** 11N, **RNG.** 1E, 4th **PM,**
Latitude , Longitude

COUNTY Knox **DRILLING METHOD** Hollow-Stem Auger **HAMMER TYPE** Automatic

STRUCT. NO.
Station

BORING NO. B-09
Station 108+47
Offset 3.3 ft Right
Ground Surface Elev. 781.21 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 760.2 ft ▼
Upon Completion 769.1 ft ▽
After - **Hrs.** - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
				BITUMINOUS CONCRETE (4.5") 780.83
				RED BRICK (8.5" 780.50
				PORTLAND CEMENT CONCRETE (13.0") 780.13 779.79 779.54
	2			POSSIBLE RAILROAD TIES (17.0") DD = 91 PCF
	3 3	1.1 B	28	CINDERS (20.0")
				Stiff, Light Brown And Gray SILTY CLAY 777.21
-5	2			Medium, Light Brown And Gray Mottled Dark Brown SILTY CLAY
	2 3	0.7 B	29	
				774.71
	3			Stiff, Gray And Light Brown SILTY CLAY LOAM DD = 97 PCF
	3 4	1.1 B	25	
-10	3			
	4 5	1.2 B	24	
				769.21 ▽
	1			Medium, Brown SILTY CLAY DD = 94 PCF
	2 3	0.9 B	26	
-15	2			
	2 2	0.7 B	27	
				764.71
	2			Stiff, Light Brown And Gray SILTY CLAY DD = 96 PCF
	3 3	1.2 B	25	
				762.21
-20				Medium, Light Brown CLAY LOAM

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
	2			Medium, Light Brown CLAY LOAM *(continued)* ▼
	3 3	0.7 B	25	
				759.21
	9			Medium-Density, Gray-Brown, Fine- To Coarse-Grained SAND With Some Fine-Grained Gravel And Silt
	11 13	-	18	
				756.71
-25	12			Medium-Density, Light Brown, Fine- To Medium-Grained SAND With Considerable Silt
	13 15	-	20	
				754.21
	7			Very Stiff, Gray CLAY LOAM (Glacial Till) DD = 118 PCF
	8 8	2.1 B	15	
				752.21
-30	8			Very Stiff, Gray CLAY (Glacial Till)
	9 10	2.7 B	16	
-35	8			
	9 10	3.9 B	15	DD = 118 PCF
-40				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

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Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/25/13

ROUTE FAP 6800 (US 150) DESCRIPTION East Main Street Under BNSF Railroad LOGGED BY T. Fehl

SECTION 05-00500-19-GS LOCATION Galesburg, SEC. 11, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox DRILLING METHOD Hollow-Stem Auger HAMMER TYPE Automatic

STRUCT. NO.
Station

BORING NO. B-09
Station 108+47
Offset 3.3 ft Right
Ground Surface Elev. 781.21 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 760.2 ft ▼
Upon Completion 769.1 ft ▽
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
	7			Very Stiff, Gray CLAY (Glacial Till) *(continued)*
	8	2.1	18	
	9	B		
-45	10			DD = 117 PCF
	12	3.0	16	
	13	B		
732.21				
				Loose, Gray, Fine- To Medium-Grained SAND
-50	2			
	2	-	-	
	3			
728.21				
				Medium-Density, Gray, Fine-Grained SAND
-55	7			
	8	-	-	
	9			
723.71				
				Very Stiff, Gray CLAY (Glacial Till)
-60				

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
	7			Very Stiff, Gray CLAY (Glacial Till) *(continued)*
	10	3.3	15	
	15	B		
718.21				
				Very Stiff, Gray CLAY LOAM (Glacial Till)
-65	10			DD = 118 PCF
	13	2.2	15	
	14	B		
-70	11			
	12	2.5	14	
	14	B		
707.71				
				Dense, Gray, Medium- To Coarse-Grained SAND With Some Fine-Grained Gravel And Silt
-75	12			
	14	-	11	
	18			
703.21				
				Very Dense, Gray, Medium- To Coarse-Grained SAND And Fine- To Coarse-Grained GRAVEL With Considerable Silty Clay Loam
-80				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/25/13

ROUTE FAP 6800 (US 150) DESCRIPTION East Main Street Under BNSF Railroad LOGGED BY T. Fehl

SECTION 05-00500-19-GS LOCATION Galesburg, SEC. 11, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox DRILLING METHOD Hollow-Stem Auger HAMMER TYPE Automatic

STRUCT. NO. _____
Station _____

BORING NO. B-09
Station 108+47
Offset 3.3 ft Right
Ground Surface Elev. 781.21 ft

Surface Water Elev. _____ ft
Stream Bed Elev. _____ ft

Groundwater Elev.:
First Encounter 760.2 ft ▼
Upon Completion 769.1 ft ▽
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
	43	-	13	Very Dense, Gray, Medium- To Coarse-Grained SAND And Fine- To Coarse-Grained GRAVEL With Considerable Silty Clay Loam *(continued)*
	68			
697.21				
-85	7			Stiff, Gray CLAY LOAM (Glacial Till)
	7	1.9	16	DD = 117 PCF
	10	B		
694.21				
				Dense, Gray, Fine- To Coarse-Grained SAND
-90	18			
	15	-	-	
	22			
688.21				
				Very Stiff, Gray SILT
-95	7			
	8	2.2	22	DD = 111 PCF
	9	B		
-100				

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
	6			Very Stiff, Gray SILT *(continued)*
	9	2.6	20	
	10	B		
676.11				
-105	8	2.9	17	Very Stiff, Gray NEAR CLAY SHALE DD = 115 PCF
	67/6"	B		
673.21				
				Hard, Gray CLAY SHALE
-110	103/4"	4.5	14	
		P		
				AUGER REFUSAL AT (-)117.0 FEET
-115	112/3"	4.5	13	
		P		
664.21				
				End of Boring
-120				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

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Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/16/13

ROUTE FAP 6800 (US 150) DESCRIPTION East Main Street Under BNSF Railroad LOGGED BY T. Fehl

SECTION 05-00500-19-GS LOCATION Galesburg, SEC. 11, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox DRILLING METHOD Hollow-Stem Auger HAMMER TYPE Automatic

STRUCT. NO.
Station

BORING NO. B-10
Station 108+98
Offset 64.6 ft Left
Ground Surface Elev. 780.50 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 753.5 ft ▼
Upon Completion 772.5 ft ▽
After 24 Hrs. 773.4 ft ▽

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Dark Brown SILTY CLAY Organic Topsoil (16.0")			
779.20			
Very Stiff, Light Brown, Gray And Gray-Brown SILTY CLAY (Possible Fill)	4		
DD = 97 PCF	5 5	2.8 B	23
-5	5		
	6 7	3.4 B	22
774.00			
Medium, Light Brown And Gray SILTY CLAY ▽	2		
DD = 93 PCF ▽	3 3	0.8 B	26
-10	2		
	2 2	0.6 B	26
768.50			
Stiff, Brown SILTY CLAY	3		
DD = 96 PCF	4 5	1.2 B	24
-15	3		
	3 6	1.3 B	23
764.00			
Medium, Gray-Brown And Gray CLAY LOAM	3		
DD = 98 PCF	3 3	0.6 B	22
761.50			
Stiff, Light Brown And Gray CLAY			
-20			

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
	3		
Stiff, Light Brown And Gray CLAY *(continued)*	4 3	1.1 B	25
759.00			
Very Stiff, Gray-Brown And Light Brown CLAY LOAM (Glacial Till)	6		
DD = 119 PCF	7 9	3.5 B	13
-25	8		
	10 13	3.8 B	13
753.50 ▼			
Very Stiff, Gray CLAY (Glacial Till)	7		
DD = 116 PCF	11 12	2.3 B	16
-30	7		
DD = 115 PCF	13 15	2.2 B	16
-35	7		
	9 11	2.5 B	15
-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

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Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/16/13

ROUTE FAP 6800 (US 150) DESCRIPTION East Main Street Under BNSF Railroad LOGGED BY T. Fehl

SECTION 05-00500-19-GS LOCATION Galesburg, SEC. 11, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox DRILLING METHOD Hollow-Stem Auger HAMMER TYPE Automatic

STRUCT. NO.
Station

BORING NO. B-10
Station 108+98
Offset 64.6 ft Left
Ground Surface Elev. 780.50 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 753.5 ft ▼
Upon Completion 772.5 ft ▽
After 24 Hrs. 773.4 ft ▽

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff, Gray CLAY (Glacial Till) *(continued)* DD = 116 PCF		7		
		12	2.4	15
		15	B	
	737.00			
Hard, Gray-Brown CLAY LOAM (Glacial Till)				
	-45	12		
		13	4.4	11
		14	B	
	731.00			
Medium-Density, Gray, Fine- To Medium-Grained SAND With Some Silty Clay Loam	-50	4		
		6	-	17
		7		
	728.00			
Very Stiff, Gray CLAY (Glacial Till) (Coarse-Grained Gravel and Cobbles at 53.5 to 55 feet)				
	-55	8		
		12	3.5	16
		14	B	
	-60			

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff, Gray CLAY (Glacial Till) (Coarse-Grained Gravel and Cobbles at 53.5 to 55 feet) *(continued)* DD = 117 PCF		12		
		17	3.3	15
		19	B	
	-65	9		
		11	3.2	16
		14	B	
	713.50			
Dense, Gray, Fine- To Medium-Grained SAND With Some Silty Clay Loam	-70	15		
		21	-	12
		28		
	707.50			
Very Stiff, Gray CLAY LOAM (Glacial Till)	-75	10		
		12	3.2	13
		15	B	
	703.00			
Very Stiff, Gray CLAY (Glacial Till)	-80			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

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Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/16/13

ROUTE FAP 6800 (US 150) DESCRIPTION East Main Street Under BNSF Railroad LOGGED BY T. Fehl

SECTION 05-00500-19-GS LOCATION Galesburg, SEC. 11, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox DRILLING METHOD Hollow-Stem Auger HAMMER TYPE Automatic

STRUCT. NO.
Station

BORING NO. B-10
Station 108+98
Offset 64.6 ft Left
Ground Surface Elev. 780.50 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 753.5 ft
Upon Completion 772.5 ft
After 24 Hrs. 773.4 ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff, Gray CLAY (Glacial Till) *(continued)* DD = 116 PCF	10		
	13 16	2.8 B	16
-85	12		
	24 34	3.3 B	15
692.50 Dense, Gray, Fine-Grained SAND With Considerable Silt			
-90	12		
	17 18	-	14
-95	15		
	17 31	-	15
681.00 Hard, Gray CLAY SHALE -100			
Hard, Gray CLAY SHALE *(continued)* DD = 116 PCF	12		
	15 18	4.7 B	16
-105			
	25 86/6"	4.5 P	15
-110			
	91/4"	4.5 P	14
-115			
	87/2"	4.5 P	12
662.50 End of Boring -120			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

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Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/22/13

ROUTE FAP 6800 (US 150) **DESCRIPTION** East Main Street Under BNSF Railroad **LOGGED BY** T. Fehl

SECTION 05-00500-19-GS **LOCATION** Galesburg, **SEC.** 14, **TWP.** 11N, **RNG.** 1E, 4th **PM**,
Latitude , **Longitude**

COUNTY Knox **DRILLING METHOD** Hollow-Stem Auger **HAMMER TYPE** Automatic

STRUCT. NO.
Station

BORING NO. B-19
Station 106+74
Offset 50.4 ft Right
Ground Surface Elev. 781.06 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 758.1 ft ▼
Upon Completion 771.2 ft ▽
After 24 **Hrs.** 773.0 ft ▽

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Description
780.73				PORTLAND CEMENT CONCRETE (4.0")
780.39				CINDERS (8.0")
	2			Medium, Dark Brown And Brown CLAY LOAM With Some Fine-Grained Gravel (Probable Fill) DD = 101 PCF
	2 2	0.9 B	23	
777.56				Medium, Dark Brown SILTY CLAY
-5	2			
	2 3	1.0 B	31	
774.06				Medium, Light Brown And Gray Mottled Dark Brown SILTY CLAY LOAM DD = 96 PCF ▼
	2			
	2 2	0.6 B	26	
771.56				Soft, Light Brown And Gray Mottled Dark Brown SILTY CLAY LOAM ▽
-10	2			
	1 2	0.3 B	28	
769.06				Medium, Gray-Brown And Brown SILTY CLAY DD = 97 PCF
	2			
	2 3	0.9 B	26	
-15	2			
	2 3	1.0 B	25	
764.56				Stiff, Light Brown CLAY LOAM With Trace Of Fine-Grained Gravel DD = 108 PCF
	3			
	4 5	1.2 B	20	
-20				
	3			Stiff, Light Brown CLAY LOAM With Trace Of Fine-Grained Gravel *(continued)*
	5 6	1.3 B	21	
759.06				Medium, Light Brown SANDY CLAY LOAM ▼
	1			
	2 2	0.7 P	19	
756.56				Medium, Gray-Brown CLAY (Glacial Till) DD = 112 PCF
-25	1			
	2 2	0.9 B	18	
754.06				Very Stiff, Gray CLAY (Glacial Till)
	5			
	7 10	2.8 B	16	
-30	5			
	8 14	2.6 B	16	
747.56				Stiff, Gray CLAY (Glacial Till)
-35	5			
	8 10	1.9 B	17	
743.56				Very Stiff, Gray CLAY (Glacial Till) (Probable Sand Seam at 41 to 43 Feet)
-40				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

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Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/22/13

ROUTE FAP 6800 (US 150) DESCRIPTION East Main Street Under BNSF Railroad LOGGED BY T. Fehl

SECTION 05-00500-19-GS LOCATION Galesburg, SEC. 14, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox DRILLING METHOD Hollow-Stem Auger HAMMER TYPE Automatic

STRUCT. NO.
Station

BORING NO. B-19
Station 106+74
Offset 50.4 ft Right
Ground Surface Elev. 781.06 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 758.1 ft ▼
Upon Completion 771.2 ft ▽
After 24 Hrs. 773.0 ft ▽

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Soil Description
	5			Very Stiff, Gray CLAY (Glacial Till)
	7	2.4	15	(Probable Sand Seam at 41 to 43 Feet) *(continued)*
	11	B		DD = 122 PCF
-45	10			
	12	3.8	15	
	15	B		
733.56				Hard, Gray CLAY (Glacial Till)
-50	8			DD = 120 PCF
	12	4.2	14	
	19	B		
728.06				Very Stiff, Gray CLAY (Glacial Till)
-55	10			
	12	3.0	15	
	14	B		
723.06				Hard, Gray CLAY (Glacial Till)
-60				
	10			Hard, Gray CLAY (Glacial Till) *(continued)* DD = 120 PCF
	12	4.1	14	
	15	B		
718.06				Very Stiff, Gray CLAY LOAM (Glacial Till)
-65	12			
	16	2.7	15	
	25	B		
714.56				Very Dense, Gray, Medium- To Coarse-Grained SAND And Coarse-Grained GRAVEL
-70	18			
	27	-	-	
	37			
709.06				Medium-Density, Gray, Medium- To Coarse-Grained SAND And Fine-Grained GRAVEL With Considerable Silty Clay
-75	10			
	12	-	-	
	14			
702.56				Very Stiff, Gray CLAY (Glacial Till)
-80				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

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Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/22/13

ROUTE FAP 6800 (US 150) DESCRIPTION East Main Street Under BNSF Railroad LOGGED BY T. Fehl

SECTION 05-00500-19-GS LOCATION Galesburg, SEC. 14, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox DRILLING METHOD Hollow-Stem Auger HAMMER TYPE Automatic

STRUCT. NO.
Station

BORING NO. B-19
Station 106+74
Offset 50.4 ft Right
Ground Surface Elev. 781.06 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 758.1 ft ▼
Upon Completion 771.2 ft ▽
After 24 Hrs. 773.0 ft ▽

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Soil Description
	8			Very Stiff, Gray CLAY (Glacial Till) *(continued)* DD = 101 PCF
	10 14	2.0 B	21	
698.06				
				Very Stiff, Gray SILT With Trace Of Organic Matter
-85	12			
	15 19	3.4 B	20	
-90	14			DD = 94 PCF
	15 21	3.0 B	22	
687.06				
-95	5			Stiff, Gray SILT With Trace of Organic Matter
	5 7	1.7 B	24	
-100				
	5			Stiff, Gray SILT With Trace of Organic Matter *(continued)* DD = 91 PCF
	7 8	1.0 B	26	
679.06				
				Gray SAND And GRAVEL
678.06				
				Very Stiff, Gray CLAY SHALE
-105	27			
	47 61	2.5 B	20	
672.56				
				Hard, Gray CLAY SHALE
-110				
	27 87/6"	4.5 P	15	AUGER REFUSAL AT (-)118.0 FEET
-115				
	92/4"	4.5 P	13	
663.06				
				End of Boring
-120				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

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Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/30/13

ROUTE FAP 6800 (US 150) DESCRIPTION East Main Street Under BNSF Railroad LOGGED BY T. Fehl

SECTION 05-00500-19-GS LOCATION Galesburg, SEC. 14, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox DRILLING METHOD Hollow-Stem Auger HAMMER TYPE Automatic

STRUCT. NO.
Station

BORING NO. B-20
Station 108+20
Offset 48.0 ft Right
Ground Surface Elev. 781.55 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 760.1 ft ▼
Upon Completion 762.3 ft ▽
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
781.05 PORTLAND CEMENT CONCRETE (6.0")			
780.05 Dark Brown SILTY CLAY (18.0")			
Stiff, Light Brown And Gray Mottled Dark Brown SILTY CLAY DD = 89 PCF	2		
	3 4	1.4 B	30
-5	3		
	3 4	1.5 B	29
774.55			
Medium, Gray And Light Brown SILTY CLAY LOAM DD = 92 PCF	1		
	2 2	0.6 B	27
772.05			
-10 Stiff, Gray And Light Brown SILTY CLAY LOAM	2		
	4 4	1.1 B	25
769.55			
Medium, Brown SILTY CLAY DD = 91 PCF	2		
	2 2	0.7 B	28
-15	2		
	2 2	0.8 B	27
765.05			
Stiff, Brown And Gray SILTY CLAY DD = 95 PCF	2		
	3 3	1.3 B	25
▽ -20			

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Stiff, Brown And Gray SILTY CLAY *(continued)*	2		
	3 4	1.1 B	26
760.05 ▼ Medium-Density, Brown, Medium- To Coarse-Grained SAND And Fine-Grained GRAVEL With Some Silt	6		
	7 9	-	16
-25	7		
	8 12	-	14
754.55			
Stiff, Gray CLAY LOAM (Glacial Till) DD = 115 PCF	3		
	4 7	1.6 B	16
752.05			
-30 Very Stiff, Gray CLAY (Glacial Till)	3		
	4 7	2.2 B	16
747.55			
Hard, Gray CLAY (Glacial Till)			
-35 DD = 118 PCF	6		
	8 12	4.1 B	13
743.55			
Very Stiff, Gray CLAY (Glacial Till)			
-40			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

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Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/30/13

ROUTE FAP 6800 (US 150) **DESCRIPTION** East Main Street Under BNSF Railroad **LOGGED BY** T. Fehl

SECTION 05-00500-19-GS **LOCATION** Galesburg, SEC. 14, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox **DRILLING METHOD** Hollow-Stem Auger **HAMMER TYPE** Automatic

STRUCT. NO.
Station

BORING NO. B-20
Station 108+20
Offset 48.0 ft Right
Ground Surface Elev. 781.55 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 760.1 ft ▼
Upon Completion 762.3 ft ▽
After - **Hrs.** - ft

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff, Gray CLAY (Glacial Till) *(continued)*		6		
		7	2.5	14
		12	B	
	738.55			
Hard, Dark Gray CLAY (Glacial Till)	-45	10		
DD = 120 PCF		17	7.1	13
		19	B	
	733.05			
Loose, Gray, Fine-Grained SAND	-50	3		
		4	-	-
		5		
	728.55			
Medium-Density, Gray, Fine-Grained SAND With Some Silt	-55	8		
		10	-	-
		12		
	723.05			
Very Stiff, Gray CLAY (Glacial Till)	-60			

	DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
Very Stiff, Gray CLAY (Glacial Till) *(continued)*		12		
		13	3.7	16
		16	B	
	718.55			
Very Stiff, Gray CLAY LOAM (Glacial Till)	-65	10		
DD = 120 PCF		12	2.4	13
		15	B	
	713.05			
Very Dense, Gray, Fine- To Medium-Grained SAND With Some Fine-Grained Gravel And Silt	-70			
		22	-	11
		57		
	708.55			
Very Stiff, Gray CLAY LOAM (Glacial Till)	-75	8		
DD = 120 PCF		10	2.7	14
		12	B	
	-80			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

BBS, form 137 (Rev. 8-99)

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Illinois Department of Transportation
Division of Highways
Whitney & Associates

SOIL BORING LOG

Date 4/30/13

ROUTE FAP 6800 (US 150) DESCRIPTION East Main Street Under BNSF Railroad LOGGED BY T. Fehl

SECTION 05-00500-19-GS LOCATION Galesburg, SEC. 14, TWP. 11N, RNG. 1E, 4th PM,
Latitude , Longitude

COUNTY Knox DRILLING METHOD Hollow-Stem Auger HAMMER TYPE Automatic

STRUCT. NO.
Station

BORING NO. B-20
Station 108+20
Offset 48.0 ft Right
Ground Surface Elev. 781.55 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 760.1 ft ▼
Upon Completion 762.3 ft ▽
After - Hrs. - ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material
	12			Very Stiff, Gray CLAY LOAM (Glacial Till) *(continued)*
	15 18	3.0 B	13	
698.05				
-85				Very Stiff, Gray CLAY LOAM With Seam of Fine- To Medium-Grained Sand (Glacial Till)
	7			
	8 20	3.0 P	14	
693.05				
-90				Dense, Gray, Fine- To Coarse-Grained SAND With Some Fine-Grained Gravel
	14			
	16 17	-	-	
687.55				
-95				Very Stiff, Gray SILT
	6			DD = 105 PCF
	7 9	2.1 B	22	
-100				

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)	Material
	8			Very Stiff, Gray SILT *(continued)*
	10 11	2.8 B	19	
677.55				
-105				Very Stiff, Gray, Near CLAY SHALE
	14			
	26 33	3.3 B	17	DD = 116 PCF
674.55				
-110				Hard, Gray CLAY SHALE
	97/6"	4.5 P	14	
				AUGER REFUSAL AT (-)117.0 FEET
-115				
	105/4"	4.5 P	13	
664.55				
-120				End of Boring

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

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Soil Properties for Boring B-07

STA. 107+16
Offset 1.4 ft Left
Water Table Elevation 770.8 FT

Depth (Ft)	Elevation (Ft)			Abbreviated Soil Description	Friction (ϕ)	Cohesion tsf	Unit Weight (pcf)		Soil Modulus k (pci)	50 % Strain e50 (pci)	k_o	k_a	k_p
							γ_{wet}	γ_{sat}					
0.5	781.7	to	781.3	BITUMINOUS CONCRETE (5.5")									
0.8	781.3	to	780.9	RED BRICK (9.5")									
2.1	780.9	to	779.6	PORTLAND CEMENT CONCRETE (25.5")									
4.0	779.6	to	777.7	CLAY LOAM		1.15	122.0		1000.0	0.005	0.46	0.29	3.39
6.5	777.7	to	775.2	SILTY CLAY		0.70	120.0	152.4	500.0	0.007	0.55	0.38	2.66
9.0	775.2	to	772.7	SILTY CLAY		0.30	117.0	156.0	100.0	0.01	0.55	0.38	2.66
14.0	772.7	to	767.7	SILTY CLAY LOAM		0.50	120.0	146.8	100.0	0.01	0.50	0.33	3.00
17.0	767.7	to	764.7	SILTY CLAY		0.40	120.0	152.4	100.0	0.01	0.55	0.38	2.66
21.5	764.7	to	760.2	SILTY CLAY		0.65	119.0	150.0	500.0	0.007	0.55	0.38	2.66
24.0	760.2	to	757.7	CLAY LOAM		0.35	120.0		100.0	0.01	0.50	0.33	3.00
27.5	757.7	to	754.2	SANDY CLAY LOAM		0.45	118.0		100.0	0.01	0.50	0.33	3.00
38.0	754.2	to	743.7	CLAY		1.32	136.0		1000.0	0.005	0.55	0.38	2.66
43.5	743.7	to	738.2	CLAY		0.80	124.0		500.0	0.007	0.55	0.38	2.66
47.0	738.2	to	734.7	CLAY		2.15	138.0		2000.0	0.004	0.55	0.38	2.66
52.5	734.7	to	729.2	CLAY		0.95	124.0		500.0	0.007	0.55	0.38	2.66
58.0	729.2	to	723.7	SAND	34		115.0		60.0		0.44	0.28	3.54
70.5	723.7	to	711.2	CLAY LOAM		1.60	138.0		1000.0	0.005	0.50	0.33	3.00
79.0	711.2	to	702.7	SAND	35		120.0		60.0		0.43	0.27	3.69
82.0	702.7	to	699.7	SAND	34		117.0		60.0		0.44	0.28	3.54
84.0	699.7	to	697.7	CLAY LOAM							0.50	0.33	3.00
88.0	697.7	to	693.7	SAND	33		117.0		60.0		0.46	0.29	3.39
93.0	693.7	to	688.7	GLAY LOAM		2.25	122.0		2000.0	0.004	0.50	0.33	3.00
98.5	688.7	to	683.2	SILTY CLAY LOAM		1.35	128.0		1000.0	0.005	0.50	0.33	3.00
105.0	683.2	to	676.7	SILT		1.05	115.0		1000.0	0.005	0.46	0.29	3.39
117.0	676.7	to	664.7	GRAY SHALE		2.20	132.0		2000.0	0.004	0.41	0.26	3.85

Lateral pressure coefficents are based on :

- friction angle between fill and wall = 0 degrees
- angle of fill to the horizontal = 0 degrees
- angle of back face of wall to the horizontal = 90 degrees

Soil Properties for Boring B-8

STA. 107+84
Offset 100.0 ft Left

Depth (Ft)	Elevation (Ft)			Abbreviated Soil Description	Friction (ϕ)	Cohesion tsf	Unit Weight (pcf) γ_{wet}	Unit Weight (pcf) γ_{sat}	Soil Modulus k (pci)	50 % e50 (pci)	k_o	k_a	k_p
0.3	778.2	to	777.9	BITUMINOUS CONCRETE (4")									
0.8	777.9	to	777.1	PORTLAND CEMENT CONCRETE (13")									
5.9	777.1	to	771.2	SILTY CLAY		0.38	112.0	116.5	100.0	0.01	0.55	0.38	2.66
4.5	771.2	to	766.7	SILTY CLAY		0.53	120.0		500.0	0.007	0.55	0.38	2.66
5.5	766.7	to	761.2	CLAY		0.80	124.0		500.0	0.007	0.55	0.38	2.66
4.5	761.2	to	756.7	CLAY LOAM		0.28	122.0		100.0	0.01	0.50	0.33	3.00
5.5	756.7	to	751.2	CLAY LOAM		0.85	122.0		500.0	0.007	0.50	0.33	3.00
10.5	751.2	to	740.7	CLAY LOAM		1.53	122.0		1000.0	0.005	0.50	0.33	3.00
5.5	740.7	to	735.2	CLAY		1.65	124.0		1000.0	0.005	0.55	0.38	2.66
5.0	735.2	to	730.2	CLAY		0.90	124.0		500.0	0.007	0.55	0.38	2.66
5.5	730.2	to	724.7	SAND	33		117.0		60.0		0.46	0.29	3.39
9.0	724.7	to	715.7	CLAY LOAM		1.28	122.0		1000.0	0.005	0.50	0.33	3.00
5.5	715.7	to	710.2	CLAY		1.60	124.0		1000.0	0.005	0.55	0.38	2.66
10.5	710.2	to	699.7	CLAY		2.38	124.0		2000.0	0.004	0.55	0.38	2.66
4.5	699.7	to	695.2	SAND AND GRAVEL	35		117.0		125.0		0.43	0.27	3.69
4.5	695.2	to	690.7	CLAY LOAM		0.55	122.0		500.0	0.007	0.50	0.33	3.00
4.5	690.7	to	686.2	SILT		1.55	115.0		1000.0	0.005	0.46	0.29	3.39
7.5	686.2	to	678.7	SILT		0.60	115.0		500.0	0.007	0.46	0.29	3.39
4.0	678.7	to	674.7	SAND AND GRAVEL	35		117.0		125.0		0.43	0.27	3.69
2.5	674.7	to	672.2	CLAY SHALE		2.25	124.0		2000.0	0.004			

Lateral pressure coefficents are based on :

- friction angle between fill and wall = 0 degrees
- angle of fill to the horizontal = 0 degrees
- angle of back face of wall to the horizontal = 90 degrees

Soil Properties for Boring B-09

STA. 108+47
Offset 3.3 FT RIGHT
Water Table Elevation 769.1 FT

Depth (Ft)	Elevation (Ft)			Abbreviated Soil Description	Friction (ϕ)	Cohesion tsf	Unit Weight (pcf)		Soil Modulus k (pci)	50 % Strain e50 (pci)	k_o	k_a	k_p
							γ_{wet}	γ_{sat}					
0.4	781.2	to	780.8	BITUMINOUS CONCRETE (4.5")									
1.2	780.8	to	780.5	RED BRICK (8.5")									
1.6	780.5	to	780.1	PORTLAND CEMENT CONCRETE (13.0")									
1.9	780.1	to	779.8	POSSIBLE RAILROAD TIES (17")									
2.2	779.8	to	779.5	CINDERS (20")									
4.5	779.5	to	777.2	SILTY CLAY		0.55	120.0	153.6	500.0	0.007	0.55	0.38	2.66
7.0	777.2	to	774.7	SILTY CLAY		0.35	120.0	154.8	100.0	0.01	0.55	0.38	2.66
12.5	774.7	to	769.2	SILTY CLAY LOAM		0.58	121.0	145.7	500.0	0.007	0.50	0.33	3.00
17.0	769.2	to	764.7	SILTY CLAY		0.40	118.0	151.8	100.0	0.01	0.55	0.38	2.66
19.5	764.7	to	762.2	SILTY CLAY		0.60	120.0	150.0	500.0	0.007	0.55	0.38	2.66
22.5	762.2	to	759.2	CLAY LOAM		0.35	122.0	152.5	100.0	0.01	0.50	0.33	3.00
25.0	759.2	to	756.7	SAND	34		117.0		60.0		0.44	0.28	3.54
27.5	756.7	to	754.2	SAND	35		117.0	140.4	60.0		0.43	0.27	3.69
29.5	754.2	to	752.2	CLAY LOAM		1.05	136.0		1000.0	0.005	0.50	0.33	3.00
49.5	752.2	to	732.2	CLAY		1.46	136.0		1000.0	0.005	0.55	0.38	2.66
53.5	732.2	to	728.2	SAND	28		115.0		20.0		0.53	0.36	2.77
58.0	728.2	to	723.7	SAND	32		116.0		20.0		0.47	0.31	3.25
63.5	723.7	to	718.2	CLAY		1.65	124.0		1000.0	0.005	0.55	0.38	2.66
74.0	718.2	to	707.7	CLAY LOAM		1.18	136.0		1000.0	0.005	0.50	0.33	3.00
78.5	707.7	to	703.2	SAND	35		120.0		60.0		0.43	0.27	3.69
84.5	703.2	to	697.2	SAND AND GRAVEL	35		120.0		60.0		0.43	0.27	3.69
87.5	697.2	to	694.2	CLAY LOAM		0.95	136.0		500.0	0.007	0.50	0.33	3.00
93.5	694.2	to	688.2	SAND	35		120.0		60.0		0.43	0.27	3.69
105.6	688.2	to	676.1	SILT		1.20	117.0	142.7	1000.0	0.005	0.46	0.29	3.39
108.5	676.1	to	673.2	NEAR CLAY		1.45	135.0		1000.0	0.005			
117.5	673.2	to	664.2	CLAY SHALE		2.25	124.0		2000.0	0.004			

Lateral pressure coefficents are based on :

- friction angle between fill and wall = 0 degrees
- angle of fill to the horizontal = 0 degrees
- angle of back face of wall to the horizontal = 90 degrees

Soil Properties for Boring B-10

STA. 108+98
Offset 64.6 ft Left
Water Table Elevation 772.5 FT

Depth (Ft)	Elevation (Ft)			Abbreviated Soil Description	Friction (ϕ)	Cohesion tsf	Unit Weight (pcf)		Soil Modulus k (pci)	50 % Strain e50 (pci)	k_a	k_o	k_p
							γ_{wet}	γ_{sat}					
2.5	780.5	to	779.2	SILTY CLAY									
7.7	779.2	to	774.0	SILTY CLAY		1.55	119		1000.0	0.005	0.55	0.38	2.66
13.2	774.0	to	768.5	SILTY CLAY		0.35	117	151.2	100.0	0.01	0.55	0.38	2.66
17.7	768.5	to	764.0	SILTY CLAY		0.63	119		500.0	0.007	0.55	0.38	2.66
20.2	764.0	to	761.5	CLAY LOAM		0.30	120		100.0	0.01	0.50	0.33	3.00
22.7	761.5	to	759.0	CLAY		0.55	124	155.0	500.0	0.007	0.55	0.38	2.66
28.2	759.0	to	753.5	CLAY LOAM		1.83	134		1000.0	0.005	0.50	0.33	3.00
44.7	753.5	to	737.0	CLAY		1.18	134		1000.0	0.005	0.55	0.38	2.66
50.7	737.0	to	731.0	CLAY LOAM		2.20	122		2000.0	0.004	0.50	0.33	3.00
53.7	731.0	to	728.0	SAND	32		116		20.0		0.47	0.31	3.25
68.2	728.0	to	713.5	CLAY		1.67	135		1000.0	0.005	0.55	0.38	2.66
74.2	713.5	to	707.5	SAND	35		116		60.0		0.43	0.27	3.69
78.7	707.5	to	703.0	CLAY LOAM		1.60	122		1000.0	0.005	0.50	0.33	3.00
89.2	703.0	to	692.5	CLAY		1.53	135		1000.0	0.005	0.55	0.38	2.66
100.7	692.5	to	681.0	SAND	35		120		60.0		0.43	0.27	3.69
119.2	681.0	to	662.5	CLAY SHALE		2.28	135		2000.0	0.004			

Lateral pressure coefficents are based on :

- friction angle between fill and wall = 0 degrees
- angle of fill to the horizontal = 0 degrees
- angle of back face of wall to the horizontal = 90 degrees

Soil Properties for Boring B-19

STA. 106+74
Offset 50.4 ft Right
Water Table Elevation 771.2 FT

Depth (Ft)	Elevation (Ft)			Abbreviated Soil Description	Friction (ϕ)	Cohesion tsf	Unit Weight (pcf)		Soil Modulus k (pci)	50 % Strain e50 (pci)	k_o	k_a	k_p
							γ_{wet}	γ_{sat}					
1.0	781.1	to	780.7	PORTLAND CEMENT CONCRETE (4")									
1.3	780.7	to	780.4	CINDERS (8")									
4.2	780.4	to	777.6	CLAY LOAM		0.45	124.0		100.0	0.01			
7.7	777.6	to	774.1	SILTY CLAY		0.50	120.0	157.2	100.0	0.01	0.55	0.38	2.66
10.2	774.1	to	771.6	SILTY CLAY LOAM		0.30	120.0	151.2	100.0	0.01	0.50	0.33	3.00
12.7	771.6	to	769.1	SILTY CLAY LOAM		0.15	117.0	149.8	30.0	0.02	0.50	0.33	3.00
17.2	769.1	to	764.6	SILTY CLAY		0.48	122.0	150.6	100.0	0.01	0.55	0.38	2.66
22.7	764.6	to	759.1	CLAY LOAM		0.63	130.0		500.0	0.007	0.50	0.33	3.00
25.2	759.1	to	756.6	SANDY CLAY LOAM		0.35	115.0		100.0	0.01	0.50	0.33	3.00
27.7	756.6	to	754.1	CLAY		0.45	124.0		100.0	0.01	0.55	0.38	2.66
34.2	754.1	to	747.6	CLAY		1.35	132.0		1000.0	0.005	0.55	0.38	2.66
38.2	747.6	to	743.6	CLAY		0.95	139.0		500.0	0.007	0.55	0.38	2.66
48.2	743.6	to	733.6	CLAY		1.55	140.0		1000.0	0.005	0.55	0.38	2.66
53.7	733.6	to	728.1	CLAY		2.10	137.0		2000.0	0.004	0.55	0.38	2.66
58.7	728.1	to	723.1	CLAY		1.50	137.0		1000.0	0.005	0.55	0.38	2.66
63.7	723.1	to	718.1	CLAY		2.05	137.0		2000.0	0.004	0.55	0.38	2.66
67.2	718.1	to	714.6	CLAY LOAM		1.35	122.0		1000.0	0.005	0.50	0.33	3.00
72.7	714.6	to	709.1	SAND AND GRAVEL	35		120.0		60.0		0.43	0.27	3.69
79.2	709.1	to	702.6	SAND AND GRAVEL	34		117.0		60.0		0.44	0.28	3.54
83.7	702.6	to	698.1	CLAY		1.00	122.0		500.0	0.007	0.55	0.38	2.66
94.7	698.1	to	687.1	SILT		1.60	115.0	139.2	1000.0	0.005	0.46	0.29	3.39
102.7	687.1	to	679.1	SILT		0.68	115.0	143.8	500.0	0.007	0.46	0.29	3.39
103.7	679.1	to	678.1	SAND AND GRAVEL									
109.2	678.1	to	672.6	CLAY SHALE		1.25	124.0		1000.0	0.005			
118.7	672.6	to	663.1	CLAY SHALE		2.25	124.0		2000.0	0.004			

Lateral pressure coefficents are based on :

- friction angle between fill and wall = 0 degrees
- angle of fill to the horizontal = 0 degrees
- angle of back face of wall to the horizontal = 90 degrees

Soil Properties for Boring B-20

STA. 108+20
Offset 48.0 ft Right
Water Table Elevation 762.3 FT

Depth (Ft)	Elevation (Ft)			Abbreviated Soil Description	Friction (♦)	Cohesion tsf	Unit Weight (pcf) γ_{wet}	Unit Weight (pcf) γ_{sat}	Soil Modulus k (pci)	50 % Strain e50 (pci)	k_o	k_a	k_p
0.7	781.6	to	781.1	PORTLAND CEMENT CONCRETE (6")									
1.7	781.1	to	780.1	SILTY CLAY (18")									
7.2	780.1	to	774.5	SILTY CLAY		0.73	116.0	155.4	500.0	0.007	0.55	0.38	2.66
9.7	774.5	to	772.1	SILTY CLAY		0.30	117.0	148.6	100.0	0.01	0.55	0.38	2.66
12.2	772.1	to	769.6	SILTY CLAY LOAM		0.55	117.0	146.3	500.0	0.007	0.50	0.33	3.00
16.7	769.6	to	765.1	SILTY CLAY		0.38	116.0	153.0	100.0	0.01	0.55	0.38	2.66
21.7	765.1	to	760.1	SILTY CLAY		0.60	119.0	150.6	500.0	0.007	0.55	0.38	2.66
27.2	760.1	to	754.6	SAND AND GRAVEL	32.5		117.0		20.0		0.46	0.30	3.32
29.7	754.6	to	752.1	CLAY LOAM		0.80	133.0		500.0	0.007	0.50	0.33	3.00
34.2	752.1	to	747.6	CLAY		1.10	124.0		1000.0	0.005	0.55	0.38	2.66
38.2	747.6	to	743.6	CLAY		2.05	133.0		2000.0	0.004	0.55	0.38	2.66
43.2	743.6	to	738.6	CLAY		1.25	124.0		1000.0	0.005	0.55	0.38	2.66
48.7	738.6	to	733.1	CLAY		3.55	136.0		2000.0	0.004	0.55	0.38	2.66
53.2	733.1	to	728.6	SAND	29		115.0		20.0		0.52	0.35	2.88
58.7	728.6	to	723.1	SAND	33		117.0		20.0		0.46	0.29	3.39
63.2	723.1	to	718.6	CLAY		1.85	124.0		1000.0	0.005	0.55	0.38	2.66
68.7	718.6	to	713.1	CLAY LOAM		1.20	136.0		1000.0	0.005	0.50	0.33	3.00
73.2	713.1	to	708.6	SAND	35		120.0		60.0		0.43	0.27	3.69
83.7	708.6	to	698.1	CLAY LOAM		1.43	137.0		1000.0	0.005	0.50	0.33	3.00
88.7	698.1	to	693.1	CLAY LOAM		1.50	122.0		1000.0	0.005	0.50	0.33	3.00
94.2	693.1	to	687.6	SAND	35		120.0		60.0		0.43	0.27	3.69
104.2	687.6	to	677.6	SILT		1.23	128.0	138.6	1000.0	0.005	0.46	0.29	3.39
107.2	677.6	to	674.6	CLAY SHALE		1.65	136.0		1000.0	0.005			
117.2	674.6	to	664.6	CLAY SHALE		2.25	136.0		2000.0	0.004			

Lateral pressure coefficents are based on :

- friction angle between fill and wall = 0 degrees
- angle of fill to the horizontal = 0 degrees
- angle of back face of wall to the horizontal = 90 degrees

ATTACHMENT D

BNSF CONTRACT REQUIREMENTS

BNSF RAILWAY

EXHIBIT "C-1"

Agreement Between BNSF RAILWAY COMPANY and the CONTRACTOR

Railway File: _____

Agency Project: _____

<%Contractor.LegalName%> [Insert contractor's legal name here](hereinafter called "Contractor"), has entered into an agreement (hereinafter called "Agreement") dated _____, 201_, with for the performance of certain work in connection with the following project:_____ Performance of such work will necessarily require Contractor to enter **BNSF RAILWAY COMPANY** (hereinafter called "Railway") right of way and property (hereinafter called "Railway Property"). The Agreement provides that no work will be commenced within Railway Property until the Contractor employed in connection with said work for (i) executes and delivers to Railway an Agreement in the form hereof, and (ii) provides insurance of the coverage and limits specified in such Agreement and Section 3 herein. If this Agreement is executed by a party who is not the Owner, General Partner, President or Vice President of Contractor, Contractor must furnish evidence to Railway certifying that the signatory is empowered to execute this Agreement on behalf of Contractor.

Accordingly, in consideration of Railway granting permission to Contractor to enter upon Railway Property and as an inducement for such entry, Contractor, effective on the date of the Agreement, has agreed and does hereby agree with Railway as follows:

1) RELEASE OF LIABILITY AND INDEMNITY

Contractor hereby waives, releases, indemnifies, defends and holds harmless Railway for all judgments, awards, claims, demands, and expenses (including attorneys' fees), for injury or death to all persons, including Railway's and Contractor's officers and employees, and for loss and damage to property belonging to any person, arising in any manner from Contractor's or any of Contractor's subcontractors' acts or omissions or any work performed on or about Railway's property or right-of-way. **THE LIABILITY ASSUMED BY CONTRACTOR WILL NOT BE AFFECTED BY THE FACT, IF IT IS A FACT, THAT THE DESTRUCTION, DAMAGE, DEATH, OR INJURY WAS OCCASIONED BY OR CONTRIBUTED TO BY THE NEGLIGENCE OF RAILWAY, ITS AGENTS, SERVANTS, EMPLOYEES OR OTHERWISE, EXCEPT TO THE EXTENT THAT SUCH CLAIMS ARE PROXIMATELY CAUSED BY THE INTENSIONAL MISCONDUCT OR GROSS NEGLIGENCE OF RAILWAY.**

THE INDEMNIFICATION OBLIGATION ASSUMED BY CONTRACTOR INCLUDES ANY CLAIMS, SUITS OR JUDGMENTS BROUGHT AGAINST RAILWAY UNDER THE FEDERAL EMPLOYEE'S LIABILITY ACT, INCLUDING CLAIMS FOR STRICT LIABILITY UNDER THE SAFETY APPLIANCE ACT OR THE LOCOMOTIVE INSPECTION ACT, WHENEVER SO CLAIMED.

Contractor further agrees, at its expense, in the name and on behalf of Railway, that it will adjust and settle all claims made against Railway, and will, at Railway's discretion, appear and defend any suits or actions of law or in equity brought against Railway on any claim or cause of action arising or growing out of or in any manner connected with any liability assumed by Contractor under this Agreement for which Railway is liable or is alleged to be liable. Railway will give notice to Contractor, in writing, of the receipt or dependency of such claims and thereupon Contractor must proceed to adjust and handle to a conclusion such claims, and in the event of a suit being brought against Railway, Railway may forward summons and complaint or other process in connection therewith to Contractor, and Contractor, at Railway's discretion, must defend, adjust, or settle such suits and protect, indemnify, and save harmless Railway from and against all damages, judgments, decrees, attorney's fees, costs, and expenses growing out of or resulting from or incident to any such claims or suits.

In addition to any other provision of this Agreement, in the event that all or any portion of this Article shall be deemed to be inapplicable for any reason, including without limitation as a result of a decision of an applicable court, legislative enactment or regulatory order, the parties agree that this Article shall be interpreted as requiring Contractor to indemnify Railway to the fullest extent permitted by applicable law. **THROUGH THIS AGREEMENT THE PARTIES EXPRESSLY INTEND FOR CONTRACTOR TO INDEMNIFY RAILWAY FOR RAILWAY'S ACTS OF NEGLIGENCE.**

It is mutually understood and agreed that the assumption of liabilities and indemnification provided for in this Agreement survive any termination of this Agreement.

2) TERM

This Agreement is effective from the date of the Agreement until (i) the completion of the project set forth herein, and (ii) full and complete payment to Railway of any and all sums or other amounts owing and due hereunder.

3) INSURANCE

Contractor shall, at its sole cost and expense, procure and maintain during the life of this Agreement the following insurance coverage:

A. Commercial General Liability insurance. This insurance shall contain broad form contractual liability with a combined single limit of a minimum of $5,000,000 each occurrence and an aggregate limit of at least $10,000,000 but in no event less than the amount otherwise carried by the Contractor. Coverage must be purchased on a post 2004 ISO occurrence form or equivalent and include coverage for, but not limit to the following:

- Bodily Injury and Property Damage
- Personal Injury and Advertising Injury
- Fire legal liability
- Products and completed operations

This policy shall also contain the following endorsements, which shall be indicated on the certificate of insurance:

- The definition of insured contract shall be amended to remove any exclusion or other limitation for any work being done within 50 feet of railroad property.
- Waver of subrogation in favor of and acceptable to Railway.
- Additional insured endorsement in favor of and acceptable to Railway.
- Separation of insureds.
- The policy shall be primary and non-contributing with respect to any insurance carried by Railway.

It is agreed that the workers' compensation and employers' liability related exclusions in the Commercial General Liability insurance policy(s) required herein are intended to apply to employees of the policy holder and shall not apply to ***Railway*** employees.

No other endorsements limiting coverage as respects obligations under this Agreement may be included on the policy with regard to the work being performed under this agreement.

B. Business Automobile Insurance. This insurance shall contain a combined single limit of at least $1,000,000 per occurrence, and include coverage for, but not limited to the following:

- Bodily injury and property damage
- Any and all vehicles owned, used or hired

The policy shall also contain the following endorsements or language, which shall be indicated on the certificate of insurance:

- Waiver of subrogation in favor of and acceptable to Railway.
- Additional insured endorsement in favor of and acceptable to Railway.
- Separation of insureds.

- The policy shall be primary and non-contributing with respect to any insurance carried by Railway.

C. Workers Compensation and Employers Liability insurance including coverage for, but not limited to:

- Contractor's statutory liability under the worker's compensation laws of the state(s) in which the work is to be performed. If optional under State law, the insurance must cover all employees anyway.
- Employers' Liability (Part B) with limits of at least $500,000 each accident, $500,000 by disease policy limit, $500,000 by disease each employee.

This policy shall also contain the following endorsements or language, which shall be indicated on the certificate of insurance:

- Waiver of subrogation in favor of and acceptable to Railway.

D. Railroad Protective Liability insurance naming only the ***Railway*** as the Insured with coverage of at least $5,000,000 per occurrence and $10,000,000 in the aggregate. The policy Must be issued on a standard ISO form CG 00 35 12 04 and include the following:

- Endorsed to include the Pollution Exclusion Amendment
- Endorsed to include the Limited Seepage and Pollution Endorsement.
- Endorsed to remove any exclusion for punitive damages.
- No other endorsements restricting coverage may be added.
- The original policy must be provided to the ***Railway*** prior to performing any work or services under this Agreement
- Definition of "Physical Damage to Property" shall be endorsed to read: "means direct and accidental loss of or damage to all property owned by any named insured and all property in any named insured' care, custody, and control arising out of the acts or omissions of the contractor named on the Declarations.

In lieu of providing a Railroad Protective Liability Policy, Licensee may participate (if available) in Railway's Blanket Railroad Protective Liability Insurance Policy.

Other Requirements:

Where allowable by law, all policies (applying to coverage listed above) shall contain no exclusion for punitive damages.

Contractor agrees to waive its right of recovery against ***Railway*** for all claims and suits against ***Railway***. In addition, its insurers, through the terms of the policy or policy endorsement, waive their right of subrogation against ***Railway*** for all claims and suits. Contractor further waives its

right of recovery, and its insurers also waive their right of subrogation against ***Railway*** for loss of its owned or leased property or property under Contractor's care, custody or control.

Allocated Loss Expense shall be in addition to all policy limits for coverages referenced above.

Contractor is not allowed to self-insure without the prior written consent of ***Railway.*** If granted by ***Railway***, any self-insured retention or other financial responsibility for claims shall be covered directly by Contractor in lieu of insurance. Any and all ***Railway*** liabilities that would otherwise, in accordance with the provisions of this Agreement, be covered by Contractor's insurance will be covered as if Contractor elected not to include a deductible, self-insured retention or other financial responsibility for claims.

Prior to commencing services, Contractor shall furnish to ***Railway*** an acceptable certificate(s) of insurance from an authorized representative evidencing the required coverage(s), endorsements, and amendments. The certificate should be directed to the following address:

BNSF Railway Company
c/o CertFocus
P.O. Box 140528
Kansas City, MO 64114
Toll Free: 877-576-2378
Fax number: 817-840-7487
Email: BNSF@certfocus.com
www.certfocus.com

Contractor shall notify ***Railway*** in writing at least 30 days prior to any cancellation, non-renewal, substitution or material alteration.

Any insurance policy shall be written by a reputable insurance company acceptable to ***Railway*** or with a current Best's Guide Rating of A- and Class VII or better, and authorized to do business in the state(s) in which the service is to be provided.

If coverage is purchased on a "claims made" basis, Contractor hereby agrees to maintain coverage in force for a minimum of three years after expiration, cancellation or termination of this Agreement. Annually Contractor agrees to provide evidence of such coverage as required hereunder.

Contractor represents that this Agreement has been thoroughly reviewed by Contractor's insurance agent(s)/broker(s), who have been instructed by Contractor to procure the insurance coverage required by this Agreement.

Not more frequently than once every five years, ***Railway*** may reasonably modify the required insurance coverage to reflect then-current risk management practices in the railroad industry and underwriting practices in the insurance industry.

If any portion of the operation is to be subcontracted by Contractor, Contractor shall require that the subcontractor shall provide and maintain insurance coverage(s) as set forth herein, naming ***Railway*** as an additional insured, and shall require that the subcontractor shall release, defend and indemnify ***Railway*** to the same extent and under the same terms and conditions as Contractor is required to release, defend and indemnify ***Railway*** herein.

Failure to provide evidence as required by this section shall entitle, but not require, ***Railway*** to terminate this Agreement immediately. Acceptance of a certificate that does not comply with this section shall not operate as a waiver of Contractor's obligations hereunder.

The fact that insurance (including, without limitation, self-insurance) is obtained by Contractor shall not be deemed to release or diminish the liability of Contractor including, without limitation, liability under the indemnity provisions of this Agreement. Damages recoverable by ***Railway*** shall not be limited by the amount of the required insurance coverage.

In the event of a claim or lawsuit involving ***Railway*** arising out of this agreement, Contractor will make available any required policy covering such claim or lawsuit.

These insurance provisions are intended to be a separate and distinct obligation on the part of the Contractor. Therefore, these provisions shall be enforceable and Contractor shall be bound thereby regardless of whether or not indemnity provisions are determined to be enforceable in the jurisdiction in which the work covered hereunder is performed.

For purposes of this section, ***Railway*** shall mean "Burlington Northern Santa Fe LLC", "BNSF Railway Company" and the subsidiaries, successors, assigns and affiliates of each.

4) SALES AND OTHER TAXES

In the event applicable sales taxes of a state or political subdivision of a state of the United States are levied or assessed in connection with and directly related to any amounts invoiced by Contractor to Railway ("Sales Taxes"), Railway shall be responsible for paying only the Sales Taxes that Contractor separately states on the invoice or other billing documents provided to Railway; *provided, however,* that (i) nothing herein shall preclude Railway from claiming whatever Sales Tax exemptions are applicable to amounts Contractor bills Railway, (ii) Contractor shall be responsible for all sales, use, excise, consumption, services and other taxes which may accrue on all services, materials, equipment, supplies or fixtures that Contractor and its subcontractors use or consume in the performance of this Agreement, (iii) Contractor shall be responsible for Sales Taxes (together with any penalties, fines or interest thereon) that Contractor fails to separately state on the invoice or other billing documents provided to Railway or fails to collect at the time of payment by Railway of invoiced amounts (except where Railway claims a Sales Tax exemption), and (iv) Contractor shall be responsible

for Sales Taxes (together with any penalties, fines or interest thereon) if Contractor fails to issue separate invoices for each state in which Contractor delivers goods, provides services or, if applicable, transfers intangible rights to Railway.

Upon request, Contractor shall provide Railway satisfactory evidence that all taxes (together with any penalties, fines or interest thereon) that Contractor is responsible to pay under this Agreement have been paid. If a written claim is made against Contractor for Sales Taxes with respect to which Railway may be liable for under this Agreement, Contractor shall promptly notify Railway of such claim and provide Railway copies of all correspondence received from the taxing authority. Railway shall have the right to contest, protest, or claim a refund, in Railway's own name, any Sales Taxes paid by Railway to Contractor or for which Railway might otherwise be responsible for under this Agreement; provided, however, that if Railway is not permitted by law to contest any such Sales Tax in its own name, Contractor shall, if requested by Railway at Railway's sole cost and expense, contest in Contractor's own name the validity, applicability or amount of such Sales Tax and allow Railway to control and conduct such contest.

Railway retains the right to withhold from payments made under this Agreement amounts required to be withheld under tax laws of any jurisdiction. If Contractor is claiming a withholding exemption or a reduction in the withholding rate of any jurisdiction on any payments under this Agreement, before any payments are made (and in each succeeding period or year as required by law), Contractor agrees to furnish to Railway a properly completed exemption form prescribed by such jurisdiction. Contractor shall be responsible for any taxes, interest or penalties assessed against Railway with respect to withholding taxes that Railway does not withhold from payments to Contractor.

5) EXHIBIT "C" CONTRACTOR REQUIREMENTS

The Contractor must observe and comply with all provisions, obligations, requirements and limitations contained in the Agreement, and the Contractor Requirements set forth on Exhibit "C" attached to the Agreement and this Agreement, including, but not be limited to, payment of all costs incurred for any damages to Railway roadbed, tracks, and/or appurtenances thereto, resulting from use, occupancy, or presence of its employees, representatives, or agents or subcontractors on or about the construction site. Contractor shall execute a Temporary Construction Crossing Agreement or Private Crossing Agreement (http://www.bnsf.com/communities/faqs/permits-real-estate/), for any temporary crossing requested to aid in the construction of this Project, if approved by BNSF.

6) TRAIN DELAY

Contractor is responsible for and hereby indemnifies and holds harmless Railway (including its affiliated railway companies, and its tenants) for, from and against all damages arising from any unscheduled delay to a freight or passenger train which affects Railway's ability to fully utilize its equipment and to meet customer service and contract obligations. Contractor will be

billed, as further provided below, for the economic losses arising from loss of use of equipment, contractual loss of incentive pay and bonuses and contractual penalties resulting from train delays, whether caused by Contractor, or subcontractors, or by the Railway performing work under this Agreement. Railway agrees that it will not perform any act to unnecessarily cause train delay.

For loss of use of equipment, Contractor will be billed the current freight train hour rate per train as determined from Railway's records. Any disruption to train traffic may cause delays to multiple trains at the same time for the same period.

Additionally, the parties acknowledge that passenger, U.S. mail trains and certain other grain, intermodal, coal and freight trains operate under incentive/penalty contracts between Railway and its customer(s). Under these arrangements, if Railway does not meet its contract service commitments, Railway may suffer loss of performance or incentive pay and/or be subject to penalty payments. Contractor is responsible for any train performance and incentive penalties or other contractual economic losses actually incurred by Railway which are attributable to a train delay caused by Contractor or its subcontractors.

The contractual relationship between Railway and its customers is proprietary and confidential. In the event of a train delay covered by this Agreement, Railway will share information relevant to any train delay to the extent consistent with Railway confidentiality obligations. The rate then in effect at the time of performance by the Contractor hereunder will be used to calculate the actual costs of train delay pursuant to this agreement.

Contractor and its subcontractors must give Railway's representative (_____) _____ (__) weeks advance notice of the times and dates for proposed work windows. Railway and Contractor will establish mutually agreeable work windows for the project. Railway has the right at any time to revise or change the work windows due to train operations or service obligations. Railway will not be responsible for any additional costs or expenses resulting from a change in work windows. Additional costs or expenses resulting from a change in work windows shall be accounted for in Contractor's expenses for the project.

Contractor and subcontractors must plan, schedule, coordinate and conduct all Contractor's work so as to not cause any delays to any trains.

IN WITNESS WHEREOF, each of the parties hereto has caused this Agreement to be executed by its duly authorized officer the day and year first above written.

<%Contractor.LegalName%>

By:_____

Printed Name:_____

Title: _____

BNSF Railway Company

By: _____

Name: _____
Manager Public Projects

Accepted and effective this _____day of 20__.

Contact Person: _____

Address: _____

City:_____

State: _____ Zip: _____

Fax:_____

Phone: _____

E-mail:_____

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 1 . 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.

DRAINAGE SYSTEM
Effective: June 10, 1994
Revised: June 24, 2015

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) 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) and a minimum wall thickness of 0.10 in. (2.54 mm). The adhesive for joining pipe and fittings shall be as recommended by the manufacturer. 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 ultraviolet protection shall be designed to withstand a minimum of 2,500 hours of accelerated weathering when tested in conformance with the requirements in ASTM Designation: G 154. Lamps shall be UV-8 (313 nm wavelength). The resting cycle shall be 4 hours of ultraviolet exposure at 140°F (60°C), and then 4 hours of condensate exposure at 120°F (49°C). After testing, the surface of the pipe shall exhibit no fiber exposure, crazing, or checking, and only a slight chalking or color change. 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) 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) for all pipe under 12 in. (300 mm) in diameter and 2 in. (50 mm) for diameters 12 in. (300 mm) 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.

DRILLED SOLDIER PILE RETAINING WALL
Effective: September 20, 2001
Revised: January 3, 2014

Description. This work shall consist of providing all labor, materials, and equipment necessary to fabricate and furnish the soldier piles, create and maintain the shaft excavations, set and brace the soldier piles into position and encase the soldier piles in concrete to the specified elevation. Also included in this work is the backfilling of the remainder of the shaft excavation with Controlled Low-Strength Material (CLSM), and the furnishing and installation of lagging. All work shall be according to the details shown on the plans and as directed by the Engineer.

The remainder of the retaining wall components as shown on the plans, such as concrete facing, shear studs, reinforcement bars, tie backs, hand rails, and various drainage items etc., are not included in this Special Provision but are paid for as specified elsewhere in this Contract.

Materials. The materials used for the soldier piles and lagging shall satisfy the following requirements:

(a) The structural steel components for the soldier piles shall conform to the requirements of AASHTO M270, Grade 36 (M270M Grade 250), unless otherwise designated on the plans.

(b) The soldier pile encasement concrete shall be Class DS according to Article 516.02.

(c) The Controlled Low-Strength Material (CLSM), used for backfilling shaft excavations above the soldier pile encasement concrete and for backfilling secant lagging excavations, to the existing ground surface, shall be according to Section 1019.

(d) Temporary casing shall be produced by electric seam, butt, or spiral welding to produce a smooth wall surface, fabricated from steel satisfying ASTM A252 Grade 2. The minimum wall thickness shall be as required to resist the anticipated installation and dewatering stresses, as determined by the Contractor, but in no case less than 1/4 in. (6 mm).

(e) Drilling slurry shall consist of a polymer or mineral base material. Mineral slurry shall have both a mineral grain size that will remain in suspension with sufficient viscosity and gel characteristics to transport excavated material to a suitable screening system. The percentage and specific gravity of the material used to make the suspension shall be sufficient to maintain the stability of the excavation and to allow proper concrete placement. For polymer slurry, the calcium hardness of the mixing water shall not exceed 100 mg/L.

(f) Timber Lagging. The minimum tabulated unit stress in bending (Fb), used for the design of the timber lagging, shall be 1000 psi (6.9 MPa) unless otherwise specified on the plans. When treated timber lagging is specified on the plans, the method of treatment shall be according to Article 1007.12. All timber shall meet the inspection requirements of Article 1007.01.

(g) Precast Concrete Lagging. Precast concrete lagging shall be according to Section 504 of the Standard Specifications, except as modified herein. Unless specified otherwise, precast concrete lagging surfaces exposed to view in the completed wall shall be finished according to Article 503.15. When specified on the plans, the exposed surface shall be finished with a concrete form liner approved by the Engineer. 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. Reinforcement for precast concrete lagging shall be epoxy coated. Lifting inserts shall have a total minimum design capacity based on yield strength of 4 times the dead load calculated for the width of lagging used. Fabric bearing pads, when specified on the plans, shall meet the requirements of Section 1082. Threaded inserts, or other accessories, cast into the precast concrete lagging shall be galvanized according to AASHTO M111 or M232 as applicable.

Equipment. The drilling equipment shall have adequate capacity, including power, torque and down thrust, to create a shaft excavation of the maximum diameter specified to a depth of 20 percent beyond the depths shown on the plans. Concrete equipment shall be according to Article 1020.03.

Construction Requirements. The shaft excavation for each soldier pile shall extend to the tip elevation indicated on the plans for soldier piles terminating in soil or to the required embedment in rock when rock is indicated on the contract plans. The Contractor shall satisfy the following requirements:

(a) Drilling Methods. The soldier pile installation shall be according to Articles 516.06(a),(b), or(c).

No shaft excavation shall be made adjacent to a soldier pile with encasement concrete that has a compressive strength less than 1500 psi (10.35 MPa), nor adjacent to secant lagging until the CLSM has reach sufficient strength to maintain its position and shape unless otherwise approved by the Engineer. Materials removed or generated from the shaft excavations shall be disposed of by the Contractor according to Article 202.03. Excavation by blasting will not be permitted.

(b) Drilling Slurry. During construction, the level of the slurry shall be maintained at a height sufficient to prevent caving of the hole. In the event of a sudden or significant loss of slurry to the hole, the construction of that shaft shall be stopped and the shaft excavation backfilled or supported by temporary casing until a method to stop slurry loss, or an alternate construction procedure, has been developed and approved by the Engineer.

(c) Obstructions. Obstructions shall be defined as any object (such as but not limited to, boulders, logs, old foundations, etc.) that cannot be removed with normal earth drilling procedures, but requires special augers, tooling, core barrels or rock augers 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 core, break up, push aside, or remove the obstruction. Lost tools or equipment in the excavation, as a

result of the Contractor's operation, shall not be defined as obstructions and shall be removed at the Contractor's expense.

(d) Top of Rock. The top of rock will be considered as the point where rock, defined as bedded deposits and conglomerate deposits exhibiting the physical characteristics and difficulty of rock removal as determined by the Engineer, is encountered which cannot be drilled with earth augers and/or underreaming tools configured to be effective in the soils indicated in the contract documents, and requires the use of special rock augers, core barrels, air tools, blasting, or other methods of hand excavation.

(e) Design Modifications. If the top of rock elevation encountered is below that estimated on the plans, such that the soldier pile length above rock is increased by more than 10 percent, the Engineer shall be contacted to determine if any soldier pile design changes are required. In addition, if the type of soil or rock encountered is not similar to that shown in the subsurface exploration data, the Engineer shall be contacted to determine if revisions are necessary.

(f) Soldier Pile Fabrication and Placement. The soldier pile is defined as the structural steel section(s) shown on the plans as well as any connecting plates used to join multiple sections. The types of soldier piles shall be defined as HP, W Sections, or Built-Up Sections. Cleaning and painting of all steel components, when specified, shall be as shown on the plans and accomplished according to Section 506. This work will not be paid for separately, but shall be considered included in the cost of Furnishing Soldier Piles of the type specified.

The soldier pile shall be shop fabricated such that no field welding is required. The Contractor shall attach suitable bracing or support to maintain the position of the soldier pile within the shaft excavation such that the final location will satisfy the Construction Tolerances portion of this Special Provision. The bracing or supports shall remain in place until the concrete for encasement has reached a minimum compressive strength of 1500 psi (10.35 MPa).

When embedment in rock is indicated on the plans, modification to the length of a soldier pile may be required to satisfy the required embedment. The modification shall be made to the top of the soldier pile unless otherwise approved by the Engineer. When the top of rock encountered is above the estimated elevation indicated on the plans, the soldier piles shall be cut to the required length. If the top of rock encountered is below that estimated on the plans, the Contractor shall either furnish longer soldier piles or splice on additional length of soldier pile per Article 512.05(a) to satisfy the required embedment in rock. In order to avoid delays, the Contractor may have additional soldier pile sections fabricated as necessary to make the required adjustments. Additional soldier pile quantities, above those shown on the plans, shall not be furnished without prior written approval by the Engineer.

(g) Concrete Placement. Concrete work shall be performed according to Article 516.12 and as specified herein.

The soldier pile encasement concrete pour shall be made in a continuous manner from the bottom of the shaft excavation to the elevation indicated on the plans. Concrete shall be placed as soon as possible after the excavation is completed and the soldier pile is secured in the proper position. Uneven levels of concrete placed in front, behind, and on the sides of the soldier pile shall be minimized to avoid soldier pile movement, and to ensure complete encasement.

Following the soldier pile encasement concrete pour, the remaining portion of the shaft excavation shall be backfilled with CLSM according to Section 593. CLSM Secant lagging placement shall be placed as soon as practical after the shaft excavation is cleared.

(h) Construction Tolerances. The soldier piles shall be installed within the excavation to satisfy the following tolerances:

(1) The center of the soldier pile shall be within 2 in. (50 mm) of plan location in any direction at the top of the pile.

(2) The out of vertical plumbness of the soldier pile shall not exceed 1/8 in./ft. (10 mm/m)

(3) The top of the soldier pile shall be within ±2 in. (±50 mm) of the plan elevation.

(i) Timber Lagging. Timber lagging, when required by the plans, installed below the original ground surface, shall be placed from the top down as the excavation proceeds. Lagging shown above grade shall be installed and backfilled against prior to installing any permanent facing to minimize post construction deflections. Over-excavation required to place the timber lagging behind the flanges of the soldier piles shall be the minimum necessary to install the lagging. Any voids produced behind the lagging shall be filled with porous granular embankment at the Contractors expense. When the plans require the Contractor to design the timber lagging, the design shall be based on established practices published in FHWA or AASHTO documents considering lateral earth pressure, construction loading, traffic surcharges and the lagging span length(s). The nominal thickness of the lagging selected shall not be less than 3 in. (75 mm) and shall satisfy the minimum tabulated unit stress in bending (Fb) stated elsewhere in this Special Provision. The Contractor shall be responsible for the successful performance of the lagging system until the concrete facing is installed. When the nominal timber lagging thickness(s) and allowable stress are specified on the plans, the timber shall be according to Article 1007.03.

(j) Precast Concrete Lagging. Precast concrete lagging, when required by the plans, installed below the original ground surface, shall be placed from the top down as the excavation proceeds. Lagging shown above grade shall be installed and backfilled against prior to installing any permanent facing to minimize post construction deflections. Over-excavation required to place the precast lagging behind the flanges of the soldier piles shall be the minimum necessary to install the lagging. Any voids produced behind the lagging shall be filled with porous granular embankment at the Contractor's expense. When the plans require the Contractor to design the precast concrete lagging, the design shall be based on established practices published in FHWA or AASHTO documents considering lateral earth pressure, construction loading, traffic surcharges and the lagging span length(s). The

Contractor shall be responsible for the successful performance of the lagging system until the permanent concrete facing, when specified on the plans, is installed.

The precast concrete lagging shall be reinforced with a minimum of 0.31 square inches/foot (655 Sq. mm/meter) of horizontal and vertical reinforcement per unit width of lagging with a minimum thickness of 3 in. (75 mm).

When precast concrete lagging is exposed to view in the completed wall, shop drawings for the lagging shall be submitted according to Article 1042.03(b) and Article 105.04 of the Standard Specifications. The supplier selected by the Contractor shall submit complete design calculations and shop drawings, prepared and sealed by an Illinois Licensed Structural Engineer, for approval by the Engineer.

(k) Structure Excavation. When structure excavation is necessary to place a concrete facing, it shall be made and paid for according to Section 502 except that the horizontal limits for structure excavation shall be from the face of the soldier pile 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 bottom of the concrete facing. The additional excavation necessary to place the lagging whether through soil or CLSM shall be included in this work.

(l) Geocomposite Wall Drain. When required by the plans, the geocomposite wall drain shall be installed and paid for according to Section 591 except that, in the case where a concrete facing is specified on the plans, the wall drain shall be installed on the concrete facing side of the lagging with the pervious (fabric) side of the drain installed to face the lagging. When a concrete facing is not specified on the plans, the pervious (fabric) side of the drain shall be installed to face the soil. In this case, the drain shall be installed in stages as the lagging is installed. The wall drain shall be placed in sections and spliced, or kept on a continuous roll, so that as each piece of lagging is placed, the drain can be properly located as the excavation proceeds.

Method of Measurement. The furnishing of soldier piles will be measured for payment in feet (meters) along the centerline of the soldier pile for each of the types specified. The length shall be determined as the difference between the plan top of soldier pile and the final as built shaft excavation bottom.

The drilling and setting of soldier piles in soil and rock, will be measured for payment and the volumes computed in cubic feet (cubic meters) for the shaft excavation required to set the soldier piles according to the plans and specifications, and accepted by the Engineer. These volumes shall be the theoretical volumes computed using the diameter(s) of the shaft(s) shown in the plans and the depth of the excavation in soil and/or rock as appropriate. The depth in soil will be defined as the difference in elevation between the ground surface at the time of concrete placement and the bottom of the shaft excavation or the top of rock (when present), whichever is encountered first. The depth in rock will be defined as the difference in elevation between the measured top of rock and the bottom of the shaft excavation.

Drilling and placing CLSM secant lagging shall be measured for payment in cubic feet (cubic meters) of the shaft excavation required to install the secant lagging as shown in the plans.

This volume shall be the theoretical volume computed using the diameter(s) shown on the plans and the difference in elevation between the as built shaft excavation bottom and the ground surface at the time of the CLSM placement.

Timber and precast concrete lagging shall be measured for payment in square feet (square meters) of lagging installed to the limits as shown on the plans. The quantity shall be calculated using the minimum lagging length required on the plans multiplied by the as-installed height of lagging, for each bay of lagging spanning between the soldier piles.

Basis of Payment. The furnishing of soldier piles will be paid for at the contract unit price per foot (meter) for FURNISHING SOLDIER PILES, of the type specified, for the total number of feet (meters) furnished to the job site. The cost of any field splices required due to changes in top of rock elevation shall be paid for according to Article 109.04.

The drilling and setting of soldier piles will be paid for at the contract unit price per cubic foot (cubic meter) for DRILLING AND SETTING SOLDIER PILES (IN SOIL) and DRILLING AND SETTING SOLDIER PILES (IN ROCK). The required shaft excavation, soldier pile encasement concrete and any CLSM backfill required around each soldier pile will not be paid for separately but shall be included in this item.

Timber lagging will be paid for at the contract unit price per square foot (square meter) for UNTREATED TIMBER LAGGING, or TREATED TIMBER LAGGING as detailed on the plans. Precast concrete lagging will be paid for at the contract unit price per square foot (square meter) for PRECAST CONCRETE LAGGING as detailed on the plans.

The secant lagging will be paid for at the contract unit price per cubic foot (cubic meter) for SECANT LAGGING. The required shaft excavation and CLSM backfill required to fill that excavation shall be included in this item.

Obstruction mitigation shall be paid for according to Article 109.04.

No additional compensation, other than noted above, will be allowed for removing and disposing of excavated materials, for furnishing and placing concrete, CLSM, bracing, lining, temporary casings placed and removed or left in place, or for any excavation made or concrete placed outside of the plan diameter(s) of the shaft(s) specified.

DRIVEN SOLDIER PILE RETAINING WALL
Effective: November 13, 2002
Revised: January 3, 2014

Description. This work shall consist of providing all labor, materials, and equipment necessary to fabricate, furnish, and drive the soldier piles into position to the specified elevations. Also included in this work is the furnishing and installation of lagging. All work shall be according to the details shown on the plans and as directed by the Engineer.

The remainder of the retaining wall components, if any, as shown on the plans, such as concrete facing, shear studs, reinforcement bars, tie backs, hand rails, and various drainage items etc., are not included in this Special Provision but are paid for as specified elsewhere in this Contract.

Materials. The materials used for the soldier piles and lagging shall satisfy the following requirements:

(a) The structural steel components for the soldier piles shall conform to the requirements of AASHTO M270, Grade 36 (AASHTO M270M, Grade 250), unless otherwise designated on the plans.

(b) The Controlled Low-Strength Material (CLSM), used for backfilling shaft excavations to the existing ground surface, shall be according to the Section 1019.

(c) Timber Lagging. The minimum tabulated unit stress in bending (Fb), used for the design of the timber lagging, shall be 1000 psi (6.9 MPa) unless otherwise specified on the plans. When treated timber lagging is specified on the plans, the method of treatment shall be according to Article 1007.12. All timber shall meet the inspection requirements of Article 1007.01.

(d) Precast Concrete Lagging. Precast concrete lagging shall be according to Section 504 of the Standard Specifications, except as modified herein. Unless specified otherwise, precast concrete lagging surfaces exposed to view in the completed wall shall be finished according to Article 503.15. When specified on the plans, the exposed surface shall be finished with a concrete form liner approved by the Engineer. 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. Reinforcement for precast concrete lagging shall be epoxy coated. Lifting inserts shall have a total minimum design capacity based on yield strength of 4 times the dead load calculated for the width of lagging used. Fabric bearing pads, when specified on the plans, shall meet the requirements of Section 1082. Threaded inserts, or other accessories, cast into the precast concrete lagging shall be galvanized according to AASHTO M111 or M232 as applicable.

Construction Requirements. The Contractor shall satisfy the following requirements:

(a) Soldier Pile Fabrication and Placement. The soldier pile is defined as the structural steel section(s) shown on the plans as well as any connecting plates used to join multiple sections. The types of soldier piles shall be defined as HP, W Sections, or Built-Up Sections. Cleaning and painting of all steel components, when specified, shall be as shown on the plans and accomplished according to Section 506. This work will not be paid for separately, but shall be considered included in the cost of Furnishing Soldier Piles of the type specified.

The soldier pile shall be shop fabricated such that no field welding is required. Piles shall be supplied and driven without splices unless approved by the Engineer. Soldier piles furnished with extra length shall be driven to the required tip elevation and cut to satisfy the top of pile elevation or driven past the required tip elevation to avoid cutting. Standard vibratory or impact hammers may be used to install the soldier piles. The Contractor shall use suitable bracing or pile leads to maintain the position of the soldier pile while driving such that the final location will satisfy the Construction Tolerances portion of this Special Provision. At the contractors option and at no extra cost to the department, the piles may be installed by setting them in predrilled excavations and backfilling with CLSM according to Section 593. The drilling methods used to maintain the shaft excavation side wall stability during the various phases of shaft excavation and concrete placement, must be appropriate for the site conditions encountered.

(b) Obstructions. Obstructions shall be defined as any object (such as but not limited to, boulders, logs, old foundations, etc.) that cannot be penetrated with normal pile driving procedures, but requires special augers, tooling, core barrels or rock augers 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 core, break up, push aside, or remove the obstruction.

(c) Construction Tolerances. The soldier piles shall be installed to satisfy the following tolerances:

(1) The center of the soldier pile shall be within 2 in. (50 mm) of plan location in any direction at the top of the pile.

(2) The out of vertical plumbness of the soldier pile shall not exceed 1/8 in./ft. (10 mm/m).

(3) The top of the soldier pile shall be within ±2 in. (±50 mm) of the plan elevation.

(d) Timber Lagging. Timber lagging, when required by the plans, installed below the original ground surface, shall be placed from the top down as the excavation proceeds. Lagging shown above grade shall be installed and backfilled against prior to installing any permanent facing to minimize post construction deflections. Over-excavation required to place the timber lagging behind the flanges of the soldier piles shall be the minimum necessary to install the lagging. Any voids produced behind the lagging shall be filled with porous granular embankment at the Contractors expense. When the plans require the Contractor to design the timber lagging, the design shall be based on established practices published in FHWA or AASHTO documents considering lateral earth pressure, construction loading,

traffic surcharges and the lagging span length(s). The nominal thickness of the lagging selected shall not be less than 3 in. (75 mm) and shall satisfy the minimum tabulated unit stress in bending (Fb) stated elsewhere in this Special Provision. The Contractor shall be responsible for the successful performance of the lagging system until the concrete facing is installed. When the nominal timber lagging thickness(s) and allowable stress are specified on the plans, the timber shall be rough cut or surfaced and according to Article 1007.03.

(e) Precast Concrete Lagging. Precast concrete lagging, when required by the plans, installed below the original ground surface, shall be placed from the top down as the excavation proceeds. Lagging shown above grade shall be installed and backfilled against prior to installing any permanent facing to minimize post construction deflections. Over-excavation required to place the precast lagging behind the flanges of the soldier piles shall be the minimum necessary to install the lagging. Any voids produced behind the lagging shall be filled with porous granular embankment at the Contractor's expense. When the plans require the Contractor to design the precast concrete lagging, the design shall be based on established practices published in FHWA or AASHTO documents considering lateral earth pressure, construction loading, traffic surcharges and the lagging span length(s). The Contractor shall be responsible for the successful performance of the lagging system until the permanent concrete facing, when specified on the plans, is installed.

The precast concrete lagging shall be reinforced with a minimum of 0.31 square inches/foot (655 Sq. mm/meter) of horizontal and vertical reinforcement per unit width of lagging with a minimum thickness of 3 in. (75 mm).

When precast concrete lagging is exposed to view in the completed wall, shop drawings for the lagging shall be submitted according to Article 1042.03(b) and Article 105.04 of the Standard Specifications. The supplier selected by the Contractor shall submit complete design calculations and shop drawings, prepared and sealed by an Illinois Licensed Structural Engineer, for approval by the Engineer.

(f) Structure Excavation. When structure excavation is necessary to place a concrete facing, it shall be made and paid for according to Section 502 except that the horizontal limits for structure excavation shall be from the face of the soldier pile 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 bottom of the concrete facing. The additional excavation necessary to place the lagging whether through soil or CLSM shall be included in this work.

(g) Geocomposite Wall Drain. When required by the plans, the geocomposite wall drain shall be installed and paid for according to Section 591 except that, in the case where a concrete facing is specified on the plans, the wall drain shall be installed on the concrete facing side of the lagging with the pervious (fabric) side of the drain installed to face the lagging. When a concrete facing is not specified on the plans, the pervious (fabric) side of the drain shall be installed to face the soil. In this case, the drain shall be installed in stages as the lagging is installed. The wall drain shall be placed in sections and spliced, or kept on a continuous roll, so that as each piece of lagging is placed, the drain can be properly located as the excavation proceeds.

Method of Measurement. The furnishing and driving of soldier piles will be measured for payment in feet (meters) along the centerline of the soldier pile for each of the types specified. The length shall be determined as the difference between the plan top of soldier pile and the required tip elevation.

Timber and precast lagging shall be measured for payment in square feet (square meters) of timber lagging installed to the limits as shown on the plans. The quantity shall be calculated using the minimum lagging length required on the plans multiplied by the as installed height of lagging, for each bay of lagging spanning between the soldier piles.

Basis of Payment. The furnishing of soldier piles will be paid for at the contract unit price per foot (meter) for FURNISHING SOLDIER PILES, of the type specified, for the total number of feet (meters) required by the plan design.

The driving of soldier piles will be paid for at the contract unit price per foot (meter) for DRIVING SOLDIER PILES. Any bracing, cutoffs, or splicing required will not be paid for separately but shall be included in this item.

The timber lagging will be paid for at the contract unit price per square foot (square meter) for UNTREATED TIMBER LAGGING, or TREATED TIMBER LAGGING as detailed on the plans. Precast concrete lagging will be paid for at the contract unit price per square foot (square meter) for PRECAST CONCRETE LAGGING as detailed on the plans.

Obstruction mitigation shall be paid for according to Article 109.04.

TEMPORARY SOIL RETENTION SYSTEM
Effective: December 30, 2002
Revised : May 11, 2009

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 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.

PIPE UNDERDRAINS FOR STRUCTURES
Effective: May 17, 2000
Revised: January 22, 2010

Description. This work shall consist of furnishing and installing a pipe underdrain system as shown on the plans, as specified herein, and as directed by the Engineer.

Materials. Materials shall meet the requirements as set forth below:

The perforated pipe underdrain shall be according to Article 601.02 of the Standard Specifications. Outlet pipes or pipes connecting to a separate storm sewer system shall not be perforated.

The drainage aggregate shall be a combination of one or more of the following gradations, FA1, FA2, CA5, CA7, CA8, CA11, or CA13 thru 16, according to Sections 1003 and 1004 of the Standard Specifications.

The fabric surrounding the drainage aggregate shall be Geotechnical Fabric for French Drains according to Article 1080.05 of the Standard Specifications.

Construction Requirements. All work shall be according to the applicable requirements of Section 601 of the Standard Specifications except as modified below.

The pipe underdrains shall consist of a perforated pipe drain situated at the bottom of an area of drainage aggregate wrapped completely in geotechnical fabric and shall be installed to the lines and gradients as shown on the plans.

Method of Measurement. Pipe Underdrains for Structures shall be measured for payment in feet (meters), in place. Measurement shall be along the centerline of the pipe underdrains. All connectors, outlet pipes, elbows, and all other miscellaneous items shall be included in the measurement. Concrete headwalls shall be included in the cost of Pipe Underdrains for Structures, but shall not be included in the measurement for payment.

Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for PIPE UNDERDRAINS FOR STRUCTURES of the diameter specified. Furnishing and installation of the drainage aggregate, geotechnical fabric, forming holes in structural elements and any excavation required, will not be paid for separately, but shall be included in the cost of the pipe underdrains for structures.

SEGMENTAL CONCRETE BLOCK WALL
Effective: January 7, 1999
Revised: October 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.

(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 104.

(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 40,000 tons (36,300 metric 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.

GRANULAR BACKFILL FOR STRUCTURES
Effective: April 19, 2012
Revised: October 30, 2012

Revise Section 586 of the Standard Specifications to read:

SECTION 586. GRANULAR BACKFILL FOR STRUCTURES

586.01 Description. This work shall consist of furnishing, transporting and placing granular backfill for abutment structures.

586.02 Materials. Materials shall be according to the following.

Item	Article/Section
(a) Fine Aggregate	1003.04
(b) Coarse Aggregates	1004.05

CONSTRUCTION REQUIREMENTS

586.03 General. This work shall be done according to Article 502.10 except as modified below. The backfill volume shall be backfilled, with granular material as specified in Article 586.02, to the required elevation as shown in the contract plans. The backfill volume shall be placed in convenient lifts for the full width to be backfilled. Unless otherwise specified in the contract plans, mechanical compaction will not be required. A deposit of gravel or crushed stone placed behind drain holes shall not be required. All drains not covered by geocomposite wall drains or other devices to prevent loss of backfill material shall be covered by sufficient filter fabric material meeting the requirements of Section 1080 and Section 282 with either 6 or 8 oz/sq yd (200 or 270 g/sq m) material allowed, with free edges overlapping the drain hole by at least 12 in. (300 mm) in all directions.

The granular backfill shall be brought to the finished grade as shown in the contract plans. When concrete is to be cast on top of the granular backfill, the Contractor, subject to approval of the Engineer, may prepare the top surface of the fill to receive the concrete as he/she deems necessary for satisfactory placement at no additional cost to the Department.

586.04 Method of Measurement. This work will be measured for payment as follows.

(a) Contract Quantities. The requirements for the use of contract quantities shall conform to Article 202.07(a).

(b) Measured Quantities. This work will be measured for payment in place and the volume computed in cubic yards (cubic meters). The volume will be determined by the method of average end areas behind the abutment.

586.05 Basis of Payment. This work will be paid for at the contract unit price per cubic yard (cubic meter) for GRANULAR BACKFILL FOR STRUCTURES.

WEEP HOLE DRAINS FOR ABUTMENTS, WINGWALLS, RETAINING WALLS AND CULVERTS

Effective: April 19, 2012

Revised: October 22, 2013

Delete the last paragraphs of Articles 205.05 and 502.10 and replace with the following.

"If a geocomposite wall drain according to Section 591 is not specified, a prefabricated geocomposite strip drain according to Section 1040.07 shall be placed at the back of each drain hole. The strip drain shall be 24 inches (600 mm) wide and 48 inches (1.220 m) tall. The strip drain shall be centered over the drain hole with the bottom located 12 inches (300 mm) below the bottom of the drain hole. All form boards or other obstructions shall be removed from the drain holes before placing any geocomposite strip drain."

Revise the last sentence of the first paragraph of Article 503.11 to read as follows.

"Drain holes shall be covered to prevent the leakage of backfill material according to Article 502.10."

Revise the title of Article 1040.07 to Geocomposite Wall Drains and Strip Drains.

State of Illinois
Department of Transportation
Bureau of Local Roads and Streets

SPECIAL PROVISION FOR INSURANCE

Effective: February 1, 2007
Revised: August 1, 2007

All references to Sections or Articles in this specification shall be construed to mean specific Section or Article of the Standard Specifications for Road and Bridge Construction, adopted by the Department of Transportation.

The Contractor shall name the following entities as additional insured under the Contractor's general liability insurance policy in accordance with Article 107.27:

City of Galesburg

The entities listed above and their officers, employees, and agents shall be indemnified and held harmless in accordance with Article 107.26.

AGGREGATE SUBGRADE IMPROVEMENT (BDE)

Effective: April 1, 2012
Revised: January 1, 2013

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	1004.06
(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, CS 02, and RR 01 but shall not exceed 40 percent of the total product. The top size of the 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, CS 02, or RR 01 are used in lower lifts.

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 CA 02, CA 06, or CA 10 shall be 12 in. (300 mm). The maximum nominal lift thickness of aggregate gradations CS 01, CS 02, and RR 01 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 the contract specifies that a granular subbase is to be placed on the aggregate subgrade improvement, the 3 in. (75 mm) of capping aggregate shall be the same gradation and may be placed with the underlying aggregate subgrade improvement material.

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) or ton (metric ton) 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 thickness less than or equal to 12 in. (300 mm) shall be CA 2, CA 6, CA 10, or CS 01.

The coarse aggregate gradation for total subgrade thickness more than 12 in. (300 mm) shall be CS 01, CS 02 or RR 01(see Article 1005.01(c)).

	COARSE AGGREGATE SUBGRADE GRADATIONS				
Grad No.	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."

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BUILDING REMOVAL - CASE I (NON-FRIABLE AND FRIABLE ASBESTOS ABATEMENT) (BDE)

Effective: September 1, 1990
Revised: April 1, 2010

BUILDING REMOVAL: This work shall consist of the removal and disposal of _____ building(s), together with all foundations, retaining walls, and piers, down to a plane 1 ft (300 mm) below the ultimate or existing grade in the area and also all incidental and collateral work necessary to complete the removal of the building(s) in a manner approved by the Engineer. Any holes, such as basements, shall be filled with a suitable granular material. The building(s) are identified as follows:

Bldg. No.	Parcel No.	Location	Description

Discontinuance of Utilities: The Contractor shall arrange for the discontinuance of all utility services and the removal of the metering devices that serve the building(s) according to the respective requirements and regulations of the City, County, or utility companies involved. The Contractor shall disconnect and seal, in an approved manner, all service outlets that serve any building(s) he/she is to remove.

Signs: Immediately upon execution of the contract and prior to the wrecking of any structures, the Contractor shall be required to paint or stencil, in contrasting colors of an oil base paint, on all four sides of each residence and two opposite sides of other structures, the following sign:

PROPERTY ACQUIRED FOR
HIGHWAY CONSTRUCTION
TO BE DEMOLISHED BY THE

VANDALS WILL BE PROSECUTED

The signs shall be positioned in a prominent location on the structure so that they can be easily seen and read and at a sufficient height to prevent defacing. The Contractor shall not paint signs nor start demolition of any building(s) prior to the time that the State becomes the owner of the respective building(s).

All friable asbestos shall be removed from the building(s) prior to demolition. The Contractor has the option of removing the non-friable asbestos prior to demolition or demolishing the building(s) with the non-friable asbestos in place. Refer to the Special Provisions titled "Asbestos Abatement (General Conditions)", "Removal and Disposal of Friable Asbestos Building No._____", and "Removal and Disposal of Non-Friable Asbestos Building No. _____" contained herein.

Basis of Payment: This work will be paid for at the contract lump sum unit price for BUILDING REMOVAL, numbers as listed above, which price shall be payment in full for complete removal of the buildings and structures, including any necessary backfilling material as specified herein. The lump sum unit price(s) for this work shall represent the cost of demolition and disposal assuming all asbestos, friable and non-friable, is removed prior to demolition. Any salvage value shall be reflected in the contract unit price for this item.

EXPLANATION OF BIDDING TERMS: Three separate contract unit price items have been established for the removal of each building. They are:

1. BUILDING REMOVAL NO. _____
2. REMOVAL AND DISPOSAL OF FRIABLE ASBESTOS, BUILDING NO. _____
3. REMOVAL AND DISPOSAL OF NON-FRIABLE ASBESTOS, BUILDING NO. _____

The Contractor shall have two options available for the removal and disposal of the non-friable asbestos.

The pay item for removal and disposal of non-friable asbestos will not be deleted regardless of the option chosen by the Contractor.

ASBESTOS ABATEMENT (GENERAL CONDITIONS): This work consists of the removal and disposal of friable and non-friable asbestos from the building(s) to be demolished. All work shall be done according to the requirements of the U.S. Environmental Protection Agency (USEPA), the Illinois Environmental Protection Agency (IEPA), the Occupational Safety and Health Administration (OSHA), the Special Provisions for "Removal and Disposal of Friable Asbestos, Building No._____" and "Removal and Disposal of Non-Friable Asbestos, Building No. _____", and as outlined herein.

Sketches indicating the location of Asbestos Containing Material (ACM) are included in the proposal on pages _____ thru _____. Also refer to the Materials Description Table on page _____ for a brief description and location of the various materials. Also included is a Materials Quantities Table on page _____. This table states whether the ACM is friable or non-friable and gives the approximate quantity. The quantities are given only for information and it shall be the Contractor's responsibility to determine the exact quantities prior to submitting his/her bid.

The work involved in the removal and disposal of friable asbestos, and non-friable asbestos if done prior to demolition, shall be performed by a Contractor or Sub-Contractor prequalified with the Illinois Capital Development Board.

The Contractor shall provide a shipping manifest, similar to the one shown on page _____, to the Engineer for the disposal of all ACM wastes.

Permits: The Contractor shall apply for permit(s) in compliance with applicable regulations of the Illinois Environmental Protection Agency. Any and all other permits required by other federal, state, or local agencies for carrying on the work shall be the responsibility of the Contractor. Copies of these permits shall be sent to the district office and the Engineer.

Notifications: The "Demolition/Renovation Notice" form, which can be obtained from the IEPA office, shall be completed and submitted to the address listed below at least ten days prior to commencement of any asbestos removal or demolition activity. Separate notices shall be sent for the asbestos removal work and the building demolition if they are done as separate operations.

Asbestos Demolition/Renovation Coordinator
Illinois Environmental Protection Agency
Division of Air Pollution Control
P. O. Box 19276
Springfield, Illinois 62794-9276
(217)785-1743

Notices shall be updated if there is a change in the starting date or the amount of asbestos changes by more than 20 percent.

Submittals:

A. All submittals and notices shall be made to the Engineer, except where otherwise specified herein.

B. Submittals that shall be made prior to start of work:

1. Submittals required under Asbestos Abatement Experience.

2. Submit documentation indicating that all employees have had medical examinations and instruction on the hazards of asbestos exposure, on use and fitting of respirators, on protective dress, on use of showers, on entry and exit from work areas, and on all aspects of work procedures and protective measures as specified in Worker Protection Procedures.

3. Submit manufacturer's certification stating that vacuums, ventilation equipment, and other equipment required to contain airborne fibers conform to ANSI 29.2.

4. Submit to the Engineer the brand name, manufacturer, and specification of all sealants or surfactants to be used. Testing under existing conditions will be required at the direction of the Engineer.

5. Submit proof that all required permits, site locations, and arrangements for transport and disposal of asbestos-containing or asbestos-contaminated materials, supplies, and the like have been obtained (i.e., a letter of authorization to utilize designated landfill).

6. Submit a list of penalties, including liquidated damages, incurred through non-compliance with asbestos abatement project specifications.

7. Submit a detailed plan of the procedures proposed for use in complying with the requirements of this specification. Include in the plan the location and layout of decontamination units, the sequencing of work, the respiratory protection plan to be used during this work, a site safety plan, a disposal plan including the location of an approved disposal site, and a detailed description of the methods to be used to control pollution. The plan shall be submitted to the Engineer prior to the start of work.

8. Submit proof of written notification and compliance with Paragraph "Notifications".

C. Submittals that shall be made upon completion of abatement work:

1. Submit copies of all waste chain-of-custodies, trip tickets, and disposal receipts for all asbestos waste materials removed from the work area;

2. Submit daily copies of work site entry logbooks with information on worker and visitor access;

3. Submit logs documenting filter changes on respirators, HEPA vacuums, negative pressure ventilation units, and other engineering controls; and

4. Submit results of any bulk material analysis and air sampling data collected during the course of the abatement including results of any on-site testing by any federal, state, or local agency.

Certificate of Insurance:

A. The Contractor shall document general liability insurance for personal injury, occupational disease and sickness or death, and property damage.

B. The Contractor shall document current Workmen's Compensation Insurance coverage.

C. The Contractor shall supply insurance certificates as specified by the Department.

Asbestos Abatement Experience:

A. Company Experience: Prior to starting work, the Contractor shall supply evidence that he/she has been prequalified with the Illinois Capital Development Board and that he/she has been included on the Illinois Department of Public Health's list of approved Contractors.

B. Personnel Experience:

1. For Superintendent, the Contractor shall supply:

a. Evidence of knowledge of applicable regulations in safety and environmental protection is required as well as training in asbestos abatement as evidenced by the successful completion of a training course in supervision of asbestos abatement as specified in 40 CFR 763, Subpart E, Appendix C, EPA Model Contractor Accreditation Plan. A copy of the certificate of successful completion shall be provided to the Engineer prior to the start of work.

b. Documentation of experience with abatement work in a supervisory position as evidenced through supervising at least two asbestos abatement projects; provide names, contact, phone number, and locations of two projects in which the individual(s) has worked in a supervisory capacity.

2. For workers involved in the removal of friable and non-friable asbestos, the Contractor shall provide training as evidenced by the participation and successful completion of an accredited training course for asbestos abatement workers as specified in 40 CFR 763, Subpart E, Appendix C, EPA Model Contractor Accreditation Plan. A copy of the certificate of successful completion shall be provided to all employees who will be working on this project.

ABATEMENT AIR MONITORING: The Contractor shall comply with the following:

A. Personal Monitoring: All personal monitoring shall be conducted per specifications listed in OSHA regulation, Title 29, Code of Federal Regulation 1926.58. All area sampling shall be conducted according to 40 CFR Part 763.90. All air monitoring equipment shall be calibrated and maintained in proper operating condition. Excursion limits shall be monitored daily. Personal monitoring is the responsibility of the Contractor. Additional personal samples may be required by the Engineer at any time during the project.

B. Contained Work Areas for Removal of Friable Asbestos: Area samples shall be collected for the department within the work area daily. A minimum of one sample shall be taken outside of the abatement area removal operations. The Engineer will also have the option to require additional personal samples and/or clearance samples during this type of work.

C. Interior Non-Friable Asbestos-Containing Materials: The Contractor shall perform personal air monitoring during removal of all nonfriable Transite and floor tile removal

operations. The Engineer will also have the option to require additional personal samples and/or clearance samples during this type of work.

D. Exterior Non-Friable Asbestos-Containing Materials: The Contractor shall perform personal air monitoring during removal of all nonfriable cementitious panels, piping, roofing felts, and built up roofing materials that contain asbestos.

   The Contractor shall conduct down wind area sampling to monitor airborne fiber levels at a frequency of no less than three per day.

E. Air Monitoring Professional

   1. All air sampling shall be conducted by a qualified Air Sampling Professional supplied by the Contractor. The Air Sampling Professional shall submit documentation of successful completion of the National Institute for Occupational Safety and Health (NIOSH) course #582 - "Sampling and Evaluating Airborne Asbestos Dust".

   2. Air sampling shall be conducted according to NIOSH Method 7400. The results of these tests shall be provided to the Engineer within 24 hours of the collection of air samples.

REMOVAL AND DISPOSAL OF FRIABLE ASBESTOS, BUILDING NO. _____: This work consists of the removal and disposal of all friable asbestos from the building(s) prior to demolition. The work shall be done according to the Special Provision titled "Asbestos Abatement (General Conditions)" and as outlined herein.

This work will be paid for at the contract unit price per lump sum for REMOVAL AND DISPOSAL OF FRIABLE ASBESTOS, BUILDING NO. _____, as shown, which price shall include furnishing all labor, materials, equipment and services required to remove and dispose of the friable asbestos.

REMOVAL AND DISPOSAL OF NON-FRIABLE ASBESTOS, BUILDING NO. _____: The Contractor has the option of removing and disposing of the non-friable asbestos prior to demolition of the building(s) or demolishing the building(s) with the non-friable asbestos in place.

Option #1 - If the Contractor chooses to remove all non-friable asbestos prior to demolition, the work shall be done according to the Special Provision titled "Asbestos Abatement (General Conditions)".

Option #2 - If the Contractor chooses to demolish the building(s) with the non-friable asbestos in place, the following provisions shall apply:

1. Continuously wet all non-friable ACM and other building debris with water during demolition.

2. Dispose of all demolition debris as asbestos containing material by placing it in lined, covered transport haulers and placing it in an approved landfill.

This work will be paid for at the contract unit price per lump sum for REMOVAL AND DISPOSAL OF NON-FRIABLE ASBESTOS, BUILDING NO. _____, as shown.

The cost for this work shall be determined as follows:

Option #1 - Actual cost of removal and disposal of non-friable asbestos.

Option #2 - The difference in cost between removing and disposing of the building if all non-friable asbestos is left in place and removing and disposing of the building assuming all non-friable asbestos is removed prior to demolition.

The cost of removing and disposing of the building(s), assuming all asbestos, friable and non-friable is removed first, shall be represented by the pay item "BUILDING REMOVAL NO. _____".

Regardless of the option chosen by the Contractor, this pay item will not be deleted, nor will the pay item BUILDING REMOVAL NO. _____ be deleted.

EXAMPLE

Attached are Appendixes A - D. These appendixes are examples of the information to be included in the proposal and referred to on page 3 of the Special Provision.

Appendix A are the sketches of the building(s) noted on page 1 of the Special Provision. These sketches show the location of asbestos on each floor of the building(s).

Appendix B provides a "Material Description Table" also referred to on page 3 of the Special Provision.

Appendix C is a "Material Quantities Table" and is referred to on page 3 of the Special Provision.

Appendix D is a sample of a Shipping Manifest form referred to on page 3.

Appendix E is a sample of the building(s) identification needed on page 1.

APPENDIX B

MATERIAL DESCRIPTION TABLE

Material Description	% And Type Of Asbestos	Location, Description, Sample Number (If Applicable)
I. Ike and Swanies Tap		
Pipe Insulation	55% & 60% chrysotile	Typical of all insulated piping in Basement area and in wall on 1st Floor. Fair condition. Some debris present in Basement.
Freezer cork Mastic	10% chrysotile	Cork wall and ceiling mastic is in Freezer Room in Basement area. Poor condition. Sample AX656.
Floor tile	10% chrysotile	First floor in west portion of building. Floor tile is located under carpet. Poor condition. Sample AX652.
II. Peoria Hotel Building		
Pipe Insulation	20% & 30% chrysotile	Typical of most insulated piping in Basement area. 1st Floor and 2nd Floor. Fair condition. Abundant debris present in Basement. Sample AX660 and Sample AX663.
HW Tank Insulation	55% chrysotile	Tank located in Mechanical Room on the Basement Floor. Tank insulation is in fair condition. ACM debris is throughout Mechanical Room. Sample AX664.
Freezer Cork Mastic	10% chrysotile	Cork wall and ceiling mastic is in Freezer Room in Basement area. Poor condition. Same as Sample AX656.

Floor tile	10% chrysotile 12% chrysotile	First floor in the main hotel building. Floor tile is in poor condition. Sample AX561 and Sample AX662.
Transite Siding	25% chrysotile	Located on an out building in back of main hotel, 1st Floor. Debris on ground and in Basement area Sample AX666.

APPENDIX C

MATERIAL QUANTITIES TABLE

The following are approximate quantities of ACM to be removed from the building indicated. These material quantities do not indicate the cleaning required to remove asbestos debris and resulting contamination from the work areas.

I. Ike and Swanies Tap

Material	Floor	Quantity Present	Friable
Pipe Insulation	Basement	140 L.F.	Yes
Pipe Insulation	1st Floor	20 L.F.	Yes
Cork Mastic	Basement	900 S.F.	No
Floor Tile	1st Floor	1225 S.F.	No
Carpet	1st Floor	1225 S.F.	No

II. Peoria Hotel Building

Material	Floor	Quantity Present	Friable
Tank Insulation	Basement Mech RM	115 L.F.	Yes
Pipe Insulation	Basement Mech RM	335 L.F.	Yes
Pipe Insulation	Basement (remaining)	770 L.F.	Yes
Pipe Insulation	1st Floor	120 S.F.	Yes
Pipe Insulation	2nd Floor	40 S.F.	Yes
Cork Mastic	Basement	400 S.F.	No
Floor Tile	lst Floor	1300 S.F.	No
Linoleum	lst Floor	75 S.F.	No
Transite Siding	lst Floor	225 S.F.	No

APPENDIX D

SHIPPING MANIFEST

Generator

1. Work Site Name and Mailing Address	Owner's Name		Owner's Telephone No.
2. Operator's Name and Address			Operator's. Telephone No
3. Waste Disposal Site (WDS) Name Mailing Address, and Physical Site Location			WDS Telephone No.
4. Name and Address of Responsible Agency			
5. Description of Materials			
6. Containers	No.	Type	
7. Total Quantity	M^3	(Yd^3)	
8. Special Handling Instructions and Additional Information			
9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.			
Printed/Typed Name & Title	Signature		Month Day Year

Transporter

10. Transporter 1 (Acknowledgement of Receipt of Materials)		
Printed/Typed Name & Title Address and Telephone No.	Signature	Month Day Year
11. Transporter 2 (Acknowledgement of Receipt of Materials)		
Printed/Typed Name & Title Address and Telephone No.	Signature	Month Day Year

Disposal Site

12. Discrepancy Indication Space		
13. Waste Disposal Site Owner or Operator: Certification of Receipt of Asbestos Materials Covered By This Manifest Except As Noted in Item 12		
Printed/Typed Name & Title	Signature	Month Day Year

APPENDIX D

INSTRUCTIONS

Waste Generator Section (Items 1-9)

1. Enter the name of the facility at which asbestos waste is generated and the address where the facility is located. In the appropriate spaces, also enter the name of the owner of the facility and the owner's phone number.

2. If a demolition or renovation, enter the name and address of the Company and authorized agent responsible for performing the asbestos removal. In the appropriate spaces, also enter the phone number of the operator.

3. Enter the name, address, and physical site location of the waste disposal site (WDS) that will be receiving the asbestos materials. In the appropriate spaces, also enter the phone number of the WDS. Enter "on-site" if the waste will be disposed of on the generator's property.

4. Provide the name and address of the local, State, or EPA Regional Office responsible for administering the asbestos NESHAP program.

5. Indicate the types of asbestos waste materials generated. If from a demolition or renovation, indicate the amount of asbestos that is

   - Friable asbestos material
   - Nonfriable asbestos material

6. Enter the number of containers used to transport the asbestos materials listed in Item 5. Also enter one of the following container codes used in transporting each type of asbestos material (specify any other type of container used if not listed below):

   DM - Metal drums, barrels
   DP - Plastic drums, barrels
   BA - 6 mil plastic bags or wrapping

7. Enter the quantities of each type of asbestos material removed in units of cubic meters (cubic yards).

8. Use this space to indicate special transportation, treatment, storage or disposal or Bill of Lading information. If an alternate waste disposal site is designated, note it here. Emergency response telephone numbers or similar information may be included here.

9. The authorized agent of the waste generator shall read and then sign and date this certification. The date is the date of receipt by transporter.

NOTE: The waste generator shall retain a copy of this form.

APPENDIX D

INSTRUCTIONS

Transporter Section (Items 10 & 11)

10. & 11. Enter name, address, and telephone number of each transporter used, if applicable. Print or type the full name and title of person accepting responsibility and acknowledging receipt of materials as listed on this waste shipment record for transport.

NOTE: The transporter shall retain a copy of this form.

Disposal Site Section (Items 12 & 13)

12. The authorized representative of the WDS shall note in this space any discrepancy between waste described on this mainfest and waste actually received as well as any improperly enclosed or contained waste. Any rejected materials should be listed and destination of those materials provided. A site that converts asbestos-containing waste material to nonasbestos material is considered a WDS.

13. The signature (by hand) of the authorized WDS agent indicates acceptance and agreement with statements on this manifest except as noted in Item 12. The date is the date of signature and receipt of shipment.

NOTE: The WDS shall retain a completed copy of this form. The WDS shall also send a completed copy to the operator listed in Item 2.

APPENDIX E

Bldg. No.	Parcel No.	Location	Description
1	408D005	210-212 Franklin, Peoria	2 story 60'x40' brick & masonry, 50% basement 50% crawl space
2	408D010	203-211 Franklin, Peoria	Section 1: 1 story 30'x17'-4" brick & masonry slab Section 2: 2 story 36'x81' brick & masonry full basement Section 3: 3 story 50'x72' brick & masonry full basement Section 4: 2 story 134'x38' brick & masonry, partial basement

5026I

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."

80334

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."

80335

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE)

Effective: September 1, 2000
Revised: November 2, 2015

FEDERAL OBLIGATION. The Department of Transportation, as a recipient of federal financial assistance, is required to take all necessary and reasonable steps to ensure nondiscrimination in the award and administration of contracts. Consequently, the federal regulatory provisions of 49 CFR Part 26 apply to this contract concerning the utilization of disadvantaged business enterprises. For the purposes of this Special Provision, a disadvantaged business enterprise (DBE) means a business certified by the Department in accordance with the requirements of 49 CFR Part 26 and listed in the Illinois Unified Certification Program (IL UCP) DBE Directory.

STATE OBLIGATION. This Special Provision will also be used by the Department to satisfy the requirements of the Business Enterprise for Minorities, Females, and Persons with Disabilities Act, 30 ILCS 575. When this Special Provision is used to satisfy state law requirements on 100 percent state-funded contracts, the federal government has no involvement in such contracts (not a federal-aid contract) and no responsibility to oversee the implementation of this Special Provision by the Department on those contracts. DBE participation on 100 percent state-funded contracts will not be credited toward fulfilling the Department's annual overall DBE goal required by the US Department of Transportation to comply with the federal DBE program requirements.

CONTRACTOR ASSURANCE. The Contractor makes the following assurance and agrees to include the assurance in each subcontract that the Contractor signs with a subcontractor.

> The Contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of contracts funded in whole or in part with federal or state funds. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:
>
> (a) Withholding progress payments;
>
> (b) Assessing sanctions;
>
> (c) Liquidated damages; and/or
>
> (d) Disqualifying the Contractor from future bidding as non-responsible.

OVERALL GOAL SET FOR THE DEPARTMENT. As a requirement of compliance with 49 CFR Part 26, the Department has set an overall goal for DBE participation in its federally assisted contracts. That goal applies to all federal-aid funds the Department will expend in its federally assisted contracts for the subject reporting fiscal year. The Department is required to make a

good faith effort to achieve the overall goal. The dollar amount paid to all approved DBE companies performing work called for in this contract is eligible to be credited toward fulfillment of the Department's overall goal.

CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. This contract includes a specific DBE utilization goal established by the Department. The goal has been included because the Department has determined that the work of this contract has subcontracting opportunities that may be suitable for performance by DBE companies. The determination is based on an assessment of the type of work, the location of the work, and the availability of DBE companies to do a part of the work. The assessment indicates that, in the absence of unlawful discrimination, and in an arena of fair and open competition, DBE companies can be expected to perform 3.00 % 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:
http://www.idot.illinois.gov/doing-business/certifications/disadvantaged-business-enterprise-certification/il-ucp-directory/index.

BIDDING PROCEDURES. Compliance with this Special Provision is required prior to the award of the contract and the failure of the low bidder to comply will render the bid not responsive.

In order to assure the timely award of the contract, the low bidder shall submit:

(a) The bidder shall submit a Disadvantaged Business Utilization Plan on completed Department forms SBE 2025 and 2026.

(1) The final Utilization Plan must be submitted within five calendar days after the date of the letting.

(2) To meet the five day requirement, the bidder may send the Utilization Plan electronically by scanning and sending to DOT.DBE.UP@illinois.gov or faxing to (217) 785-1524. The subject line must include the bid Item Number and the Letting date. The Utilization Plan should be sent as one .pdf file, rather than multiple files and emails for the same Item Number. It is the responsibility of the bidder to obtain confirmation of email or fax delivery.

Alternatively, the Utilization Plan may be sent by certified mail or delivery service within the five business day period. If a question arises concerning the mailing date of a Utilization Plan, the mailing date will be established by the U.S. Postal Service postmark on the original certified mail receipt from the U.S. Postal Service or the receipt issued by a delivery service. It is the responsibility of the bidder to ensure the postmark or receipt date is affixed within the five days if the bidder intends to rely upon mailing or delivery to satisfy the submission day requirement. The Utilization Plan is to be submitted to:

Illinois Department of Transportation
Bureau of Small Business Enterprises
Contract Compliance Section
2300 South Dirksen Parkway, Room 319
Springfield, Illinois 62764

The Department will not accept a Utilization Plan if it does not meet the five day submittal requirement and the bid will be declared not responsive. In the event the bid is declared not responsive due to a failure to submit a Utilization Plan or failure to comply with the bidding procedures set forth herein, the Department may elect to cause the forfeiture of the penal sum of the bidder's proposal guaranty, and may deny authorization to bid the project if re-advertised for bids. The Department reserves the right to invite any other bidder to submit a Utilization Plan at any time for award consideration or to extend the time for award.

(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 Utilization 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 scanned or 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 Utilization 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 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 subsection (c)(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. If the Utilization Plan is not approved because it is deficient as a technical matter, unless waived by the Department, the bidder will be notified and will be allowed no more than a five calendar day period in order to cure the deficiency.

(c) The bidder may request administrative reconsideration of a determination adverse to the bidder within the five working days after the receipt of the notification date of the determination by delivering the request to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764 (Telefax: (217) 785-1524). Deposit of the request in the United States mail on or before the fifth business day shall not be deemed delivery. The determination shall become final if a request is not made and delivered. A request may provide additional written documentation or argument concerning the issues raised in the determination statement of reasons, provided the documentation and arguments address efforts made prior to submitting the bid. The request will be forwarded to the Department's Reconsideration Officer. The Reconsideration Officer will extend an opportunity to the bidder to meet in person in order to consider all issues of documentation and whether the bidder made a good faith effort to meet the goal. After the review by the Reconsideration Officer, the bidder will be sent a written decision within ten working days after receipt of the request for consideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. A final decision by the Reconsideration

Officer that a good faith effort was made shall approve the Utilization Plan submitted by the bidder and shall clear the contract for award. A final decision that a good faith effort was not made shall render the bid not responsive.

CALCULATING DBE PARTICIPATION. The Utilization Plan values represent work anticipated to be performed and paid for upon satisfactory completion. The Department is only able to count toward the achievement of the overall goal and the contract goal the value of payments made for the work actually performed by DBE companies. In addition, a DBE must perform a commercially useful function on the contract to be counted. A commercially useful function is generally performed when the DBE is responsible for the work and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. The Department and Contractor are governed by the provisions of 49 CFR Part 26.55(c) on questions of commercially useful functions as it affects the work. Specific counting guidelines are provided in 49 CFR Part 26.55, the provisions of which govern over the summary contained herein.

(a) DBE as the Contractor: 100 percent goal credit for that portion of the work performed by the DBE's own forces, including the cost of materials and supplies. Work that a DBE subcontracts to a non-DBE does not count toward the DBE goals.

(b) DBE as a joint venture Contractor: 100 percent goal credit for that portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work performed by the DBE's own forces.

(c) DBE as a subcontractor: 100 percent goal credit for the work of the subcontract performed by the DBE's own forces, including the cost of materials and supplies, excluding the purchase of materials and supplies or the lease of equipment by the DBE subcontractor from the prime Contractor or its affiliates. Work that a DBE subcontractor in turn subcontracts to a non-DBE does not count toward the DBE goal.

(d) DBE as a trucker: 100 percent goal credit for trucking participation provided the DBE is responsible for the management and supervision of the entire trucking operation for which it is responsible. At least one truck owned, operated, licensed, and insured by the DBE must be used on the contract. Credit will be given for the following:

(1) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.

(2) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission is receives as a result of the lease arrangement.

(e) DBE as a material supplier:

(1) 60 percent goal credit for the cost of the materials or supplies purchased from a DBE regular dealer.

(2) 100 percent goal credit for the cost of materials of supplies obtained from a DBE manufacturer.

(3) 100 percent credit for the value of reasonable fees and commissions for the procurement of materials and supplies if not a DBE regular dealer or DBE 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 DBE Participation Commitment Statement.

(a) NO AMENDMENT. No amendment to the Utilization Plan may be made without prior written approval from the Department's Bureau of Small Business Enterprises. All requests for amendment to the Utilization Plan shall be submitted to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764. Telephone number (217) 785-4611. Telefax number (217) 785-1524.

(b) CHANGES TO WORK. Any deviation from the DBE condition-of-award or contract plans, specifications, or special provisions must be approved, in writing, by the Department as provided elsewhere in the Contract. The Contractor shall notify affected DBEs in writing of any changes in the scope of work which result in a reduction in the dollar amount condition-of-award to the contract. Where the revision includes work committed to a new DBE subcontractor, not previously involved in the project, then a Request for Approval of Subcontractor, Department form BC 260A or AER 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) of this part. 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 in the Utilization Plan.

As stated above, the Contractor shall not terminate or replace a DBE subcontractor listed in the approved Utilization Plan without prior written consent. This includes, but is not limited to, instances in which the Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm. Written consent will be granted only if the Bureau of Small Business Enterprises agrees, for reasons stated in its concurrence document, that the Contractor has good cause to terminate or replace the DBE firm. Before transmitting to the Bureau of Small Business Enterprises any request to terminate and/or substitute a DBE subcontractor, the Contractor shall give notice in writing to the DBE subcontractor,

with a copy to the Bureau, of its intent to request to terminate and/or substitute, and the reason for the request. The Contractor shall give the DBE five days to respond to the Contractor's notice. The DBE so notified shall advise the Bureau and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Bureau should not approve the Contractor's action. If required in a particular case as a matter of public necessity, the Bureau may provide a response period shorter than five days.

For purposes of this paragraph, good cause includes the following circumstances:

(1) The listed DBE subcontractor fails or refuses to execute a written contract;

(2) The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor;

(3) The listed DBE subcontractor fails or refuses to meet the prime Contractor's reasonable, nondiscriminatory bond requirements;

(4) The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;

(5) The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1200 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 Resident 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. The result of the reconsideration process is not administratively appealable to the U.S. Department of Transportation.

EQUAL EMPLOYMENT OPPORTUNITY (BDE)

Effective: April 1, 2015

FEDERAL AID CONTRACTS. Revise the following section of Check Sheet #1 of the Recurring Special Provisions to read:

"EQUAL EMPLOYMENT OPPORTUNITY

In the event of the Contractor's noncompliance with the provisions of this Equal Employment Opportunity Clause, the Illinois Human Rights Act, or the Illinois Department of Human Rights Rules and Regulations, the Contractor may be declared ineligible for future contracts or subcontracts with the State of Illinois or any of its political sub-divisions or municipal corporations, and the contract may be cancelled or voided in whole or in part, and such other sanctions or penalties may be imposed or remedies invoked as provided by statute or regulation.

During the performance of this Contract, the Contractor agrees as follows:

(1) That it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status, or an unfavorable discharge from military service; and further that it will examine all job classifications to determine if minority persons or women are underutilized and will take appropriate affirmative action to rectify any such underutilization.

(2) That, if it hires additional employees in order to perform this contract or any portion hereof, it will determine the availability (according to the Illinois Department of Human Rights Rules and Regulations) of minorities and women in the area(s) from which it may reasonably recruit and it will hire for each job classification for which employees are hired in such a way that minorities and women are not underutilized.

(3) That, in all solicitations or advertisements for employees placed by it or on its behalf, it will state that all applicants will be afforded equal opportunity without discrimination because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status or an unfavorable discharge from military service.

(4) That it will send to each labor organization or representative of workers with which it has or is bound by a collective bargaining or other agreement or understanding, a notice advising such labor organization or representative of the Contractor's obligations under the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations. If any labor organization or representative fails or refuses to cooperate with the Contractor in its efforts to comply with such Act and Rules and Regulations, the

Contractor will promptly so notify the Illinois Department of Human Rights and IDOT and will recruit employees from other sources when necessary to fulfill its obligations thereunder.

(5) That it will submit reports as required by the Illinois Department of Human Rights Rules and Regulations, furnish all relevant information as may from time to time be requested by the Illinois Department of Human Rights or IDOT, and in all respects comply with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.

(6) That it will permit access to all relevant books, records, accounts, and work sites by personnel of IDOT and the Illinois Department of Human Rights for purposes of investigation to ascertain compliance with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.

(7) That it will include verbatim or by reference the provisions of this clause in every subcontract it awards under which any portion of the contract obligations are undertaken or assumed, so that the provisions will be binding upon the subcontractor. In the same manner as with other provisions of this contract, the Contractor will be liable for compliance with applicable provisions of this clause by subcontractors; and further it will promptly notify IDOT and the Illinois Department of Human Rights in the event any subcontractor fails or refuses to comply with these provisions. In addition, the Contractor will not utilize any subcontractor declared by the Illinois Human Rights Commission to be ineligible for contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations."

STATE CONTRACTS. Revise Section II of Check Sheet #5 of the Recurring Special Provisions to read:

"II. EQUAL EMPLOYMENT OPPORTUNITY

In the event of the Contractor's noncompliance with the provisions of this Equal Employment Opportunity Clause, the Illinois Human Rights Act or the Illinois Department of Human Rights Rules and Regulations, the Contractor may be declared ineligible for future contracts or subcontracts with the State of Illinois or any of its political sub-divisions or municipal corporations, and the contract may be cancelled or voided in whole or in part, and such other sanctions or penalties may be imposed or remedies invoked as provided by statute or regulation.

During the performance of this Contract, the Contractor agrees as follows:

1. That it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status, or an unfavorable discharge from military service; and further

that it will examine all job classifications to determine if minority persons or women are underutilized and will take appropriate affirmative action to rectify any such underutilization.

2. That, if it hires additional employees in order to perform this contract or any portion hereof, it will determine the availability (according to the Illinois Department of Human Rights Rules and Regulations) of minorities and women in the area(s) from which it may reasonably recruit and it will hire for each job classification for which employees are hired in such a way that minorities and women are not underutilized.

3. That, in all solicitations or advertisements for employees placed by it or on its behalf, it will state that all applicants will be afforded equal opportunity without discrimination because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status, or an unfavorable discharge from military service.

4. That it will send to each labor organization or representative of workers with which it has or is bound by a collective bargaining or other agreement or understanding, a notice advising such labor organization or representative of the Contractor's obligations under the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations. If any labor organization or representative fails or refuses to cooperate with the Contractor in its efforts to comply with such Act and Rules and Regulations, the Contractor will promptly so notify the Illinois Department of Human Rights and IDOT and will recruit employees from other sources when necessary to fulfill its obligations thereunder.

5. That it will submit reports as required by the Illinois Department of Human Rights Rules and Regulations, furnish all relevant information as may from time to time be requested by the Illinois Department of Human Rights or IDOT, and in all respects comply with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.

6. That it will permit access to all relevant books, records, accounts and work sites by personnel of IDOT and the Illinois Department of Human Rights for purposes of investigation to ascertain compliance with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.

7. That it will include verbatim or by reference the provisions of this clause in every subcontract it awards under which any portion of the contract obligations are undertaken or assumed, so that the provisions will be binding upon the subcontractor. In the same manner as with other provisions of this contract, the Contractor will be liable for compliance with applicable provisions of this clause by subcontractors; and further it will promptly notify IDOT and the Illinois Department of Human Rights in the event any subcontractor fails or refuses to comply with these provisions. In addition, the Contractor will not utilize any subcontractor declared by the Illinois Human Rights

Commission to be ineligible for contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations."

80358

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

Use	Mixture	Aggregates Allowed	
HMA Low ESAL	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	
HMA High ESAL Low ESAL	Binder IL-19.0 or IL-19.0L SMA Binder	Allowed Alone or in Combination [5/]: Crushed Gravel Carbonate Crushed Stone[2/] Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Concrete[3/]	
HMA High ESAL Low ESAL	C Surface and Leveling Binder IL-9.5 or IL-9.5L SMA Ndesign 50 Surface	Allowed Alone or in Combination [5/]: Crushed Gravel Carbonate Crushed Stone[2/] Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag[4/] Crushed Concrete[3/]	
HMA High ESAL	D Surface and Leveling Binder IL-9.5 SMA Ndesign 50 Surface	Allowed Alone or in Combination [5/]: Crushed Gravel Carbonate Crushed Stone (other than Limestone)[2/] Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag[4/] Crushed Concrete[3/]	
		Other Combinations Allowed:	
		Up to...	*With...*
		25% Limestone	Dolomite

Use	Mixture	Aggregates Allowed	
		50% Limestone	Any Mixture D aggregate other than Dolomite
		75% Limestone	Crushed Slag (ACBF) or Crushed Sandstone
HMA High ESAL	E Surface IL-9.5 SMA Ndesign 80 Surface	<u>Allowed Alone or in Combination</u> [5/]: Crushed Gravel Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag Crushed Concrete[3/] No Limestone.	
		<u>Other Combinations Allowed:</u>	
		Up to...	*With...*
		50% Dolomite[2/]	Any Mixture E aggregate
		75% Dolomite[2/]	Crushed Sandstone, Crushed Slag (ACBF), Crushed Steel Slag, or Crystalline Crushed Stone
		75% Crushed Gravel or Crushed Concrete[3/]	Crushed Sandstone, Crystalline Crushed Stone, Crushed Slag (ACBF), or Crushed Steel Slag
HMA High ESAL	F Surface IL-9.5 SMA Ndesign 80 Surface	<u>Allowed Alone or in Combination</u> [5/]: Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag No Limestone.	
		<u>Other Combinations Allowed</u>:	

Use	Mixture	Aggregates Allowed	
		Up to...	*With...*
		50% Crushed Gravel, Crushed Concrete[3/], or Dolomite[2/]	Crushed Sandstone, Crushed Slag (ACBF), Crushed Steel Slag, or Crystalline Crushed Stone

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."

80265

FUEL COST ADJUSTMENT (BDE) (RETURN FORM WITH BID)

Effective: April 1, 2009
Revised: July 1, 2015

Description. Fuel cost adjustments will be made to provide additional compensation to the Contractor, or a credit to the Department, for fluctuations in fuel 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 fuel cost adjustments for all categories of work. Failure to indicate "Yes" for any category of work will make that category of work exempt from fuel cost adjustment.

General. The fuel cost adjustment shall apply to contract pay items as grouped by category. The adjustment shall only apply to those categories of work checked "Yes", and only when the cumulative plan quantities for a category exceed the required threshold. Adjustments to work items in a category, either up or down, and extra work paid for by agreed unit price will be subject to fuel cost adjustment only when the category representing the added work was subject to the fuel cost adjustment. Extra work paid for at a lump sum price or by force account will not be subject to fuel cost adjustment. Category descriptions and thresholds for application and the fuel usage factors which are applicable to each are as follows:

(a) Categories of Work.

(1) Category A: Earthwork. Contract pay items performed under Sections 202, 204, and 206 including any modified standard or nonstandard items where the character of the work to be performed is considered earthwork. The cumulative total of all applicable item plan quantities shall exceed 25,000 cu yd (20,000 cu m). Included in the fuel usage factor is a weighted average 0.10 gal/cu yd (0.50 liters/cu m) factor for trucking.

(2) Category B: Subbases and Aggregate Base Courses. Contract pay items constructed under Sections 311, 312 and 351 including any modified standard or nonstandard items where the character of the work to be performed is considered construction of a subbase or aggregate, stabilized or modified base course. The cumulative total of all applicable item plan quantities shall exceed 5000 tons (4500 metric tons). Included in the fuel usage factor is a 0.60 gal/ton (2.50 liters/metric ton) factor for trucking.

(3) Category C: Hot-Mix Asphalt (HMA) Bases, Pavements and Shoulders. Contract pay items constructed under Sections 355, 406, 407 and 482 including any modified standard or nonstandard items where the character of the work to be performed is considered HMA bases, pavements and shoulders. The cumulative total of all applicable item plan quantities shall exceed 5000 tons (4500 metric tons). Included in the fuel usage factor is 0.60 gal/ton (2.50 liters/metric ton) factor for trucking.

(4) Category D: Portland Cement Concrete (PCC) Bases, Pavements and Shoulders. Contract pay items constructed under Sections 353, 420, 421 and 483 including any modified standard or nonstandard items where the character of the work to be performed is considered PCC base, pavement or shoulder. The cumulative total of all applicable item plan quantities shall exceed 7500 sq yd (6000 sq m). Included in the fuel usage factor is 1.20 gal/cu yd (5.94 liters/cu m) factor for trucking.

(5) Category E: Structures. Structure items having a cumulative bid price that exceeds $250,000 for pay items constructed under Sections 502, 503, 504, 505, 512, 516 and 540 including any modified standard or nonstandard items where the character of the work to be performed is considered structure work when similar to that performed under these sections and not included in categories A through D.

(b) Fuel Usage Factors.

English Units

Category	Factor	Units
A - Earthwork	0.34	gal / cu yd
B – Subbase and Aggregate Base courses	0.62	gal / ton
C – HMA Bases, Pavements and Shoulders	1.05	gal / ton
D – PCC Bases, Pavements and Shoulders	2.53	gal / cu yd
E – Structures	8.00	gal / $1000

Metric Units

Category	Factor	Units
A - Earthwork	1.68	liters / cu m
B – Subbase and Aggregate Base courses	2.58	liters / metric ton
C – HMA Bases, Pavements and Shoulders	4.37	liters / metric ton
D – PCC Bases, Pavements and Shoulders	12.52	liters / cu m
E – Structures	30.28	liters / $1000

(c) Quantity Conversion Factors.

Category	Conversion	Factor
B	sq yd to ton	0.057 ton / sq yd / in depth
	sq m to metric ton	0.00243 metric ton / sq m / mm depth
C	sq yd to ton	0.056 ton / sq yd / in depth
	sq m to metric ton	0.00239 m ton / sq m / mm depth
D	sq yd to cu yd	0.028 cu yd / sq yd / in depth
	sq m to cu m	0.001 cu m / sq m / mm depth

Method of Adjustment. Fuel cost adjustments will be computed as follows.

$CA = (FPI_P - FPI_L) \times FUF \times Q$

Where: CA = Cost Adjustment, $
FPI_P = Fuel Price Index, as published by the Department for the month the work is performed, $/gal ($/liter)
FPI_L = Fuel Price Index, as published by the Department for the month prior to the letting for work paid for at the contract price; or for the month the agreed unit price letter is submitted by the Contractor for extra work paid for by agreed unit price, $/gal ($/liter)
FUF = Fuel Usage Factor in the pay item(s) being adjusted
Q = Authorized construction Quantity, tons (metric tons) or cu yd (cu m)

The entire FUF indicated in paragraph (b) will be used regardless of use of trucking to perform the work.

Basis of Payment. Fuel cost adjustments may be positive or negative but will only be made when there is a difference between the FPI_L and FPI_P in excess of five percent, as calculated by:

Percent Difference = $\{(FPI_L - FPI_P) \div FPI_L\} \times 100$

Fuel cost adjustments will be calculated for each calendar month in which applicable work is performed; and will be paid or deducted when all other contract requirements for the items of work 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 FUEL 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 fuel cost adjustments in all categories. Failure to indicate "Yes" for any category of work at the time of bid will make that category of work exempt from fuel 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 categories of work?

Category A Earthwork.	Yes	☐
Category B Subbases and Aggregate Base Courses	Yes	☐
Category C HMA Bases, Pavements and Shoulders	Yes	☐
Category D PCC Bases, Pavements and Shoulders	Yes	☐
Category E Structures	Yes	☐

Signature: _____ **Date:** _____

80229

HOT-MIX ASPHALT - DENSITY TESTING OF LONGITUDINAL JOINTS (BDE)

Effective: January 1, 2010
Revised: April 1, 2012

Description. This work shall consist of testing the density of longitudinal joints as part of the quality control/quality assurance (QC/QA) of hot-mix asphalt (HMA). Work shall be according to Section 1030 of the Standard Specifications except as follows.

Quality Control/Quality Assurance (QC/QA). Delete the second and third sentence of the third paragraph of Article 1030.05(d)(3) of the Standard Specifications.

Add the following paragraphs to the end of Article 1030.05(d)(3) of the Standard Specifications:

"Longitudinal joint density testing shall be performed at each random density test location. Longitudinal joint testing shall be located at a distance equal to the lift thickness or a minimum of 4 in. (100 mm), from each pavement edge. (i.e. for a 5 in. (125 mm) lift the near edge of the density gauge or core barrel shall be within 5 in. (125 mm) from the edge of pavement.) Longitudinal joint density testing shall be performed using either a correlated nuclear gauge or cores.

a. Confined Edge. Each confined edge density shall be represented by a one-minute nuclear density reading or a core density and shall be included in the average of density readings or core densities taken across the mat which represents the Individual Test.

b. Unconfined Edge. Each unconfined edge joint density shall be represented by an average of three one-minute density readings or a single core density at the given density test location and shall meet the density requirements specified herein. The three one-minute readings shall be spaced ten feet apart longitudinally along the unconfined pavement edge and centered at the random density test location."

Revise the Density Control Limits table in Article 1030.05(d)(4) of the Standard Specifications to read:

"Mixture Composition	Parameter	Individual Test (includes confined edges)	Unconfined Edge Joint Density Minimum
IL-4.75	Ndesign = 50	93.0 – 97.4%	91.0%
IL-9.5, IL-12.5	Ndesign ≥ 90	92.0 – 96.0%	90.0%
IL-9.5,IL-9.5L, IL-12.5	Ndesign < 90	92.5 – 97.4%	90.0%
IL-19.0, IL-25.0	Ndesign ≥ 90	93.0 – 96.0%	90.0%
IL-19.0, IL-19.0L, IL-25.0	Ndesign < 90	93.0 – 97.4%	90.0%

SMA	Ndesign = 50 & 80	93.5 – 97.4%	91.0%
All Other	Ndesign = 30	93.0 - 97.4%	90.0%"

80246

HOT-MIX ASPHALT – MIXTURE DESIGN COMPOSITION AND VOLUMETRIC REQUIREMENTS (BDE)

Effective: November 1, 2013
Revised: November 1, 2014

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)
IL-9.5, IL-9.5L	1 1/4 (32)
SMA-12.5	1 1/2 (38)
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."

Remove footnote 3/ from the tables and at the end of the tables in Article 1004.01(c) of the Standard Specifications.

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 and/or CA 13 CA 16
HMA Low ESAL	IL-19.0L IL-9.5L Stabilized Subbase or Shoulders	CA 11 1/ CA 16

1/ CA 16 or CA 13 may be blended with the gradations listed."

Revise the nomenclature table in Article 1030.01 of the Standard Specifications to read:

"High ESAL	IL-19.0 binder; IL-9.5 surface
Low ESAL	IL-19.0L binder; IL-9.5L surface; Stabilized Subbase (HMA)1/; HMA Shoulders2/

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.

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.

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 12.5 4/		IL-9.5 mm		IL-4.75 mm	
	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	90	99		100		100
3/8 in. (9.5 mm)			50	85	90	100		100
#4 (4.75 mm)	40	60	20	40	32	69	90	100
#8 (2.36 mm)	26	42	16	24 5/	32	52 2/	70	90
#16 (1.18 mm)	15	30			10	32	50	65
#50 (300 µm)	6	15			4	15	15	30
#100 (150 µm)	4	9			3	10	10	18
#200 (75 µm)	3	6	8.0	11.0 3/	4	6	7	9
Ratio Dust/Asphalt Binder		1.0				1.0		1.0 3/

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 24 percent."

Delete Article 1030.04(a)(3) of the Standard Specifications.

Delete Article 1030.04(a)(4) of the Standard Specifications.

Revise the table in Article 1030.04(b)(1) of the Standard Specifications to read:

"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 76-83 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.

ESALs (million)	Ndesign	Design Air Voids Target %	Voids in the Mineral Aggregate (VMA), % min.	Voids Filled with Asphalt (VFA), %
≤ 10	50	4.0	16.0	75 – 80
> 10	80	4.0	17.0	75 – 80"

Delete Article 1030.04(b)(4) of the Standard Specifications.

Delete Article 1030.04(b)(5) from the Supplemental Specifications.

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)	

"Parameter	Frequency of Tests High ESAL Mixture Low ESAL Mixture	Test Method See Manual of Test Procedures for Materials
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 Low ESAL		SMA		IL-4.75	
	Individual Test	Moving Avg. of 4	Individual 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 = 50 & 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.

HOT-MIX ASPHALT – MIXTURE DESIGN VERIFICATION AND PRODUCTION (BDE)

Effective: November 1, 2013
Revised: November 1, 2014

Description. This special provision provides 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. This special provision also provides the plant requirements for hydrated lime addition systems used in the production of High ESAL, IL-4.75, and SMA mixes.

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 (Illinois Modified AASHTO T 324) and the Tensile Strength Test (Illinois Modified 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 necessary changes to the mix and provide passing Hamburg Wheel and tensile strength test results from a private lab. The Department will verify the passing results.

All new and renewal mix designs shall meet the following requirements for verification testing.

(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/]

PG Grade	Number of Passes
PG 58-xx (or lower)	5,000
PG 64-xx	7,500
PG 70-xx	15,000
PG 76-xx (or higher)	20,000

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.

(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 550 kPa (80 psi) 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 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."

System for Hydrated Lime Addition. Revise the fourth sentence of the third paragraph of Article 1030.04(c) of the Standard Specifications to read:

"The method of application shall be according to Article 1102.01(a)(10)."

Replace the first three sentences of the second paragraph of Article 1102.01(a)(10) of the Standard Specifications to read:

"When hydrated lime is used as the anti-strip additive, a separate bin or tank and feeder system shall be provided to store and accurately proportion the lime onto the aggregate either as a slurry, as dry lime applied to damp aggregates, or as dry lime injected onto the hot aggregates prior to adding the liquid asphalt cement. If the hydrated lime is added either as a slurry or as dry lime on damp aggregates, the lime and aggregates shall be mixed by a power driven pugmill to provide a uniform coating of the lime prior to entering the dryer. If dry hydrated lime is added to the hot dry aggregates in a dryer-drum plant, the lime shall be added in such a manner that the lime will not become entrained into the air stream of the dryer-drum and that thorough dry mixing shall occur prior to the injection point of the liquid asphalt. When a batch plant is used, the hydrated lime shall be added to the mixture in the weigh hopper or as approved by the Engineer."

Basis of Payment. Replace the seventh paragraph of Article 406.14 of the Standard Specifications with the following:

"For 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.

If an anti-stripping additive is required for any other HMA mix, the cost of the additive will be paid for according to Article 109.04. The cost incurred in introducing the additive into 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."

80323

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."

80348

LRFD STORM SEWER BURIAL TABLES (BDE)

Effective: November 1, 2013
Revised: April 1, 2015

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	1040.08
(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 — Fill Height: 3' and less With 1' minimum cover								Type 2 — 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	X	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	II	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	X	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	II	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
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
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	III	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

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 Iinterior
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	III	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

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
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

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 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."

80325

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 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."

80342

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."

80254

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)	--"

80352

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)."

80343

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."

80328

RAILROAD PROTECTIVE LIABILITY INSURANCE (5 and 10) (BDE)

Effective: January 1, 2006

Description. Railroad Protective Liability and Property Damage Liability Insurance shall be carried according to Article 107.11 of the Standard Specifications, except the limits shall be a minimum of $5,000,000 combined single limit per occurrence for bodily injury liability and property damage liability with an aggregate limit of $10,000,000 over the life of the policy. A separate policy is required for each railroad unless otherwise noted.

NAMED INSURED & ADDRESS	NUMBER & SPEED OF PASSENGER TRAINS	NUMBER & SPEED OF FREIGHT TRAINS
BNSF RAILWAY COMPANY 2650 Lou Menk Drive Fort Worth, TX 76131-2830	8 @ 79 MPH	56 @ 79 MPH

DOT/AAR No.: 062981N
RR Division: Chicago
RR Mile Post: 162.16
RR Sub-Division: Mendota

For Freight/Passenger Information Contact: Brian Soyk Phone: (630) 692-6295
For Insurance Information Contact: Rosa Martinez, Marsh Co. Phone: (214) 303-8519

DOT/AAR No.:
RR Division:
RR Mile Post:
RR Sub-Division:

For Freight/Passenger Information Contact: Phone:
For Insurance Information Contact: Phone:

Approval of Insurance. The original and one certified copy of each required policy shall be submitted to the following address for approval:

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

The Contractor will be advised when the Department has received approval of the insurance from the railroad(s). Before any work begins on railroad right-of-way, the Contractor shall submit to the Engineer evidence that the required insurance has been approved by the railroad(s). The Contractor shall also provide the Engineer with the expiration date of each required policy.

Basis of Payment. Providing Railroad Protective Liability and Property Damage Liability Insurance will be paid for at the contract unit price per Lump Sum for RAILROAD PROTECTIVE LIABILITY INSURANCE.

80157

RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES (BDE)

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 produced by cold milling or crushing an existing hot-mix asphalt (HMA) pavement. 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 93 percent passing the #4 (4.75 mm) sieve based on a dry shake gradation. RAS shall be uniform in gradation and asphalt binder content and 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. No additional RAP shall be added to the pile after the pile has been sealed. Stockpiles shall be sufficiently separated to prevent intermingling at the base. Stockpiles shall be identified by signs indicating the type as listed below (i.e. "Homogeneous Surface").

Prior to milling, the Contractor shall request the District provide documentation on the quality of the RAP to clarify the appropriate stockpile.

(1) Fractionated RAP (FRAP). FRAP shall consist of RAP from Class I, HMA (High and Low ESAL) 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 fractionated prior to testing by screening into a minimum of two size 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 shall pass the sieve size specified below for the mix into which the FRAP will be incorporated.

Mixture FRAP will be used in:	Sieve Size that 100% of FRAP Shall Pass
IL-25.0	2 in. (50 mm)
IL-19.0	1 1/2 in. (40 mm)
IL-12.5	1 in. (25 mm)
IL-9.5	3/4 in. (20 mm)
IL-4.75	1/2 in. (13 mm)

(2) Homogeneous. Homogeneous RAP stockpiles shall consist of RAP from Class I, HMA (High and Low ESAL) mixtures and represent: 1) the same aggregate quality, but shall be at least C quality; 2) the same type of crushed aggregate (either crushed natural aggregate, ACBF slag, or steel slag); 3) similar gradation; and 4) similar asphalt binder content. If approved by the Engineer, combined single pass surface/binder millings may be considered "homogenous" with a quality rating dictated by the lowest coarse aggregate quality present in the mixture.

(3) Conglomerate. Conglomerate RAP stockpiles shall consist of RAP from Class I, HMA (High and Low ESAL) 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 prior to testing by crushing to where all RAP shall pass the 5/8 in. (16 mm) or smaller screen. Conglomerate RAP stockpiles shall not contain steel slag.

(4) Conglomerate "D" Quality (DQ). Conglomerate DQ RAP stockpiles shall consist of RAP from Class I, HMA (High or Low ESAL), or "All Other" (as defined by Article 1030.04(a)(3)) mixtures. 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.

(5) Non-Quality. RAP stockpiles that do not meet the requirements of the stockpile categories listed above shall be classified as "Non-Quality".

RAP/FRAP containing contaminants, such as earth, brick, sand, concrete, sheet asphalt, bituminous surface treatment (i.e. chip seal), pavement fabric, joint sealants, 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 not be intermingled. Each stockpile shall be signed indicating what type of RAS is present.

Unless otherwise specified by the Engineer, mechanically blending manufactured sand (FM 20 or FM 22) up to an equal weight of RAS with the processed RAS will be permitted to improve workability. The sand shall be "B Quality" or better from an approved Aggregate Gradation Control System source. The sand shall be 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. RAP/FRAP and RAS testing shall be according to the following.

(a) RAP/FRAP Testing. When used in HMA, the RAP/FRAP shall be sampled and tested either during or after stockpiling.

(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) 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.

Each sample shall be split to obtain two equal 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 or RAS blended with manufactured sand shall be sampled and tested during stockpiling according to Illinois Department of Transportation Policy Memorandum, "Reclaimed Asphalt Shingle (RAS) Source".

Samples shall be collected during stockpiling 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 250 tons (225 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 or RAS blended with manufactured sand shall be stockpiled 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.

Before testing, each sample shall be split to obtain two test samples. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall perform a washed extraction and test for unacceptable materials on 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.

If the sampling and testing was performed at the shingle processing facility in accordance with the QC Plan, the Contractor shall obtain and make available all of the test results from start of the initial stockpile.

1031.04 Evaluation of Tests. Evaluation of tests results shall be according to the following.

(a) Evaluation of RAP/FRAP Test Results. All of the extraction results shall be compiled and averaged for asphalt binder content and gradation and, when applicable G_{mm}. Individual extraction test results, when compared to the averages, will be accepted if within the tolerances listed below.

Parameter	FRAP/Homogeneous /Conglomerate	Conglomerate "D" Quality
1 in. (25 mm)		± 5 %
1/2 in. (12.5 mm)	± 8 %	± 15 %
No. 4 (4.75 mm)	± 6 %	± 13 %
No. 8 (2.36 mm)	± 5 %	
No. 16 (1.18 mm)		± 15 %
No. 30 (600 µm)	± 5 %	
No. 200 (75 µm)	± 2.0 %	± 4.0 %
Asphalt Binder	± 0.4 % 1/	± 0.5 %
G_{mm}	± 0.03	

1/ The tolerance for FRAP shall be ± 0.3 %.

If more than 20 percent of the individual sieves and/or asphalt binder content tests are out of the above tolerances, the RAP/FRAP shall not be used in HMA unless the

RAP/FRAP representing the failing tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

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)".

(b) Evaluation of RAS and RAS Blended with Manufactured Sand 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. Individual test results, when compared to the averages, 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)	± 2.0 %
Asphalt Binder Content	± 1.5 %

If more than 20 percent of the individual sieves and/or asphalt binder content tests are out of the above tolerances, or if the percent unacceptable material exceeds 0.5 percent by weight of material retained on the # 4 (4.75 mm) sieve, the RAS or RAS blend shall not be used in Department projects. All test data and acceptance ranges shall be sent to the District for evaluation.

1031.05 Quality Designation of Aggregate in RAP/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. Coarse and fine FRAP 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.

1031.06 Use of RAP/FRAP and/or RAS in HMA. The use of RAP/FRAP and/or RAS shall be a Contractor's option when constructing HMA in all contracts.

(a) RAP/FRAP. The use of RAP/FRAP in HMA shall be as follows.

(1) Coarse Aggregate Size. The coarse aggregate in all RAP shall be equal to or less than the nominal maximum size requirement for the HMA mixture to be produced.

(2) Steel Slag Stockpiles. Homogeneous RAP stockpiles containing steel slag will be approved for use in all HMA (High ESAL and Low ESAL) Surface and Binder Mixture applications.

(3) Use in HMA Surface Mixtures (High and Low ESAL). RAP/FRAP stockpiles for use in HMA surface mixtures (High and Low ESAL) shall be FRAP or homogeneous in which the coarse aggregate is Class B quality or better. RAP/FRAP from Conglomerate stockpiles shall be considered equivalent to limestone for frictional considerations. Known frictional contributions from plus #4 (4.75 mm) homogeneous RAP and FRAP stockpiles will be accounted for in meeting frictional requirements in the specified mixture.

(4) Use in HMA Binder Mixtures (High and Low ESAL), HMA Base Course, and HMA Base Course Widening. RAP/FRAP stockpiles for use in HMA binder mixtures (High and Low ESAL), HMA base course, and HMA base course widening shall be FRAP, homogeneous, or conglomerate, in which the coarse aggregate is Class C quality or better.

(5) Use in Shoulders and Subbase. RAP/FRAP stockpiles for use in HMA shoulders and stabilized subbase (HMA) shall be FRAP, homogeneous, conglomerate, or conglomerate DQ.

(6) When the Contractor chooses the RAP option, the percentage of RAP shall not exceed the amounts indicated in Article 1031.06(c)(1) below for a given N Design.

(b) RAS. RAS meeting Type 1 or Type 2 requirements will be permitted in all HMA applications as specified herein.

(c) RAP/FRAP and/or RAS Usage Limits. Type 1 or Type 2 RAS may be used alone or in conjunction with RAP or FRAP in HMA mixtures up to a maximum of 5.0% by weight of the total mix.

(1) RAP/RAS. When RAP is used alone or RAP is used in conjunction with RAS, the percentage of virgin asphalt binder replacement shall not exceed the amounts listed in the Max RAP/RAS ABR table listed below for the given Ndesign.

RAP/RAS Maximum Asphalt Binder Replacement (ABR) Percentage

HMA Mixtures 1/, 2/	RAP/RAS Maximum ABR %		
Ndesign	Binder/Leveling Binder	Surface	Polymer Modified
30	30	30	10
50	25	15	10
70	15	10	10
90	10	10	10
105	10	10	10

1/ For HMA "All Other" (shoulder and stabilized subbase) N-30, the RAP/RAS ABR shall not exceed 50 percent of the mixture.

2/ When RAP/RAS ABR exceeds 20 percent, the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent ABR would require a virgin asphalt binder grade of PG64-22 to be reduced to a PG58-28). If warm mix asphalt (WMA) technology is utilized, and production temperatures do not exceed 275 °F (135 °C) the high and low virgin asphalt binder grades shall each be reduced by one grade when RAP/RAS ABR exceeds 25 percent (i.e. 26 percent RAP/RAS ABR would require a virgin asphalt binder grade of PG64-22 to be reduced to a PG58-28).

(2) FRAP/RAS. When FRAP is used alone or FRAP is used in conjunction with RAS, the percentage of virgin asphalt binder replacement shall not exceed the amounts listed in the FRAP/RAS table listed below for the given N design.

FRAP/RAS Maximum Asphalt Binder Replacement (ABR) Percentage

HMA Mixtures 1/, 2/	FRAP/RAS Maximum ABR %		
Ndesign	Binder/Leveling Binder	Surface	Polymer Modified 3/, 4/
30	50	40	10

50	40	35	10
70	40	30	10
90	40	30	10
105	40	30	10

1/ For HMA "All Other" (shoulder and stabilized subbase) N30, the FRAP/RAS ABR shall not exceed 50 percent of the mixture.

2/ When FRAP/RAS ABR exceeds 20 percent for all mixes the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent ABR would require a virgin asphalt binder grade of PG64-22 to be reduced to a PG58-28). If warm mix asphalt (WMA) technology is utilized, and production temperatures do not exceed 275 °F (135 °C) the high and low virgin asphalt binder grades shall each be reduced by one grade when FRAP/RAS ABR exceeds 25 percent (i.e. 26 percent ABR would require a virgin asphalt binder grade of PG64-22 to be reduced to a PG58-28).

3/ For SMA the FRAP/RAS ABR shall not exceed 20 percent.

4/ For IL-4.75 mix the FRAP/RAS ABR shall not exceed 30 percent.

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) RAP/FRAP and/or RAS. RAP/FRAP and/or RAS mix designs shall be submitted for verification. If additional RAP/FRAP stockpiles are tested and found that no more than 20 percent of the results, as defined under "Testing" herein, are outside of the control tolerances set for the original RAP/FRAP stockpile and HMA mix design, and meets all of the requirements herein, the additional RAP/FRAP stockpiles may be used in the original mix 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 RAP/FRAP and/or RAS shall be as follows.

(a) RAP/FRAP. The coarse aggregate in all RAP/FRAP used shall be equal to or less than the nominal maximum size requirement for the HMA mixture being produced.

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 RAP 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 the RAP/FRAP control tolerances or QC/QA test results require corrective action, the Contractor shall cease production of the mixture containing RAP/FRAP and either switch to the virgin aggregate design or submit a new RAP/FRAP design.

(b) 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.

(c) RAP/FRAP and/or RAS. HMA plants utilizing RAP/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 RAP/FRAP/RAS 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 RAP/FRAP material as a percent of the total mix to the nearest 0.1 percent.

h. Aggregate and RAP/FRAP moisture compensators in percent as set on the control panel. (Required when accumulated or individual aggregate and RAP/FRAP are printed in wet condition.)

(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).

e. RAP/FRAP/RAS weight to the nearest pound (kilogram).

f. Virgin asphalt binder weight to the nearest pound (kilogram).

g. Residual asphalt binder in the RAP/FRAP/RAS 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 in aggregate surface course (temporary access entrances only) and aggregate wedge shoulders Type B 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. (37.5 mm) sieve. The RAP material shall be reasonably well graded from coarse to fine. RAP material that is gap-graded or single sized will not be accepted."

80306

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

80350

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."

80327

SIDEWALK, CORNER, OR CROSSWALK CLOSURE (BDE)

Effective: January 1, 2015
Revised: April 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."

80354

STEEL COST ADJUSTMENT (BDE) (RETURN FORM WITH BID)

Effective: April 2, 2004
Revised: July 1, 2015

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 have a contract value of $10,000 or greater.

The adjustments shall apply to the above items when they are part of the original proposed construction, or added as extra work and paid for by agreed unit prices. The adjustments shall not apply when the item is added as extra work and paid for at a lump sum price or by force account.

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 for work paid for at the contract price; or for the month the agreed unit price letter is submitted by the Contractor for extra work paid for by agreed unit price,. 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:

$$\text{Percent Difference} = \{(MPI_L - MPI_M) \div MPI_L\} \times 100$$

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:** _____

80127

TEMPORARY CONCRETE BARRIER (BDE)

Effective: January 1, 2015
Revised: July 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	1006.10(a)
(c) Connecting Pins and Anchor Pins (Note 1)	
(d) Connecting Loop Bars (Note 2)	
(e) Packaged Rapid Hardening Mortar or Concrete	1018

Note 1. Connecting Pins and Anchor Pins shall be according to the requirements of ASTM F 1554 Grade 36 (Grade 250).

Note 2. 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 on the plans. Anchor pins shall not be installed through bridge decks, unless otherwise noted.

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."

80355

TRAINING SPECIAL PROVISIONS (BDE) This Training Special Provision supersedes Section 7b of the Special Provision entitled "Specific Equal Employment Opportunity Responsibilities," and is in implementation of 23 U.S.C. 140(a).

As part of the contractor's equal employment opportunity affirmative action program, training shall be provided as follows:

The contractor shall provide on-the-job training aimed at developing full journeyman in the type of trade or job classification involved. The number of trainees to be trained under this contract will be 1 . 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 will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.

METHOD OF MEASUREMENT The unit of measurement is in hours.

BASIS OF PAYMENT This work will be paid for at the contract unit price of 80 cents per hour for TRAINEES. The estimated total number of hours, unit price and total price have been included in the schedule of prices.

20338

UNDERPASS LUMINAIRE (BDE)

Effective: August 1, 2014
Revised: April 1, 2015

Revise the first paragraph of Article 821.06 of the Standard Specifications to read:

"**821.06 Underpass Installation.** When attached directly to a structure, the underpass luminaire shall have stainless steel brackets installed between the luminaire and the structure to create a gap of not less than 1 in. (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 Type 304 stainless steel. All seams in the housing enclosure shall be welded by continuous welds.

The housing shall have an opening for installation of 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."

Delete Article 1067.04(c) of the Standard Specifications.

80345

WEEKLY DBE TRUCKING REPORTS (BDE)

Effective: June 2, 2012
Revised: April 2, 2015

The Contractor shall submit a weekly report of Disadvantaged Business Enterprise (DBE) trucks hired by the Contractor or subcontractors (i.e. not owned by the Contractor or subcontractors) that are used for DBE goal credit.

The report shall be submitted to the Engineer on Department form "SBE 723" within ten business days following the reporting period. The reporting period shall be Monday through Sunday for each week reportable trucking activities occur.

Any costs associated with providing weekly DBE trucking reports shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed.

80302

WORKING DAYS (BDE)

Effective: January 1, 2002

The Contractor shall complete the work within 120 working days.

80071

REVISIONS TO THE ILLINOIS PREVAILING WAGE RATES

The Prevailing rates of wages are included in the Contract proposals which are subject to Check Sheet #5 of the Supplemental Specifications and Recurring Special Provisions. The rates have been ascertained and certified by the Illinois Department of Labor for the locality in which the work is to be performed and for each craft or type of work or mechanic needed to execute the work of the Contract. As required by Prevailing Wage Act (820 ILCS 130/0.01, et seq.) and Check Sheet #5 of the Contract, not less than the rates of wages ascertained by the Illinois Department of Labor and as revised during the performance of a Contract shall be paid to all laborers, workers and mechanics performing work under the Contract. Post the scale of wages in a prominent and easily accessible place at the site of work.

If the Illinois Department of Labor revises the prevailing rates of wages to be paid as listed in the specification of rates, the contractor shall post the revised rates of wages and shall pay not less than the revised rates of wages. Current wage rate information shall be obtained by visiting the Illinois Department of Labor web site at http://www.state.il.us/agency/idol/ or by calling 312-793-2814. It is the responsibility of the contractor to review the rates applicable to the work of the contract at regular intervals in order to insure the timely payment of current rates. Provision of this information to the contractor by means of the Illinois Department of Labor web site satisfies the notification of revisions by the Department to the contractor pursuant to the Act, and the contractor agrees that no additional notice is required. The contractor shall notify each of its subcontractors of the revised rates of wages.