

# **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.dot.il.gov/desenv/delett.html> before submitting final bid information.

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

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

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

## **STANDARD GUIDELINES FOR SUBMITTING BIDS**

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

## **BID SUBMITTAL CHECKLIST**

- Cover page** (the sheet that has the item number on it) – This should be the first page of your bid proposal, **followed by your bid (the Schedule of Prices/Pay Items)**. If you are using special software or CBID to generate your schedule of prices, do not include the blank pages of the schedule of prices that came with the proposal package.
- Page 4 (Item 9)** – Check “YES” if you will use a subcontractor(s) with an annual value over \$50,000. Include the subcontractor(s) name, address, general type of work to be performed and the dollar amount. If you will use subcontractor(s) but are uncertain who or the dollar amount; check “YES” but leave the lines blank.
- After page 4** – Insert the following documents: The **Illinois Office Affidavit** (Not applicable to federally funded projects) followed by Cost Adjustments for Steel, Bituminous and Fuel (if applicable) and the Contractor Letter of Assent (if applicable). The general rule should be, if you don’t know where it goes, put it after page 4.
- Page 10 (Paragraph J)** – Check “YES” or “NO” whether your company has any business in Iran.
- Page 10 (Paragraph K)** – (Not applicable to federally funded projects) List the name of the apprenticeship and training program sponsor holding the certificate of registration from the US Department of Labor. If no applicable program exists, please indicate the work/job category **Your bid will not be read if this is not completed.** Do not include certificates with your bid. Keep the certificates in your office in case they are requested by IDOT.
- Page 11 (Paragraph L)** – A copy of your State Board of Elections certificate of registration is no longer required with your bid.
- Page 11 (Paragraph M)** – Indicate if your company has hired a lobbyist in connection with the job for which you are submitting the bid proposal.
- Page 12 (Paragraph C)** – This is a work sheet to determine if a completed Form A is required. It is not part of the form and you do not need to make copies for each completed Form A.
- Pages 14-17 (Form A)** – One Form A (4 pages) is required for each applicable person in your company. Copies of the forms can be used and only need to be changed when the information changes. The certification signature and date must be original for each letting. **Do not staple the forms together.** If you answered “NO” to all of the questions in Paragraph C (page 12), complete the first section (page 14) with your company information and then sign and date the Not Applicable statement on page 17.
- Page 18 (Form B)** - If you check “YES” to having other current or pending contracts it is acceptable to use the phrase, “See Affidavit of Availability on file”. **Ownership Certification** (at the bottom of the page) - Check N/A if the Form A(s) you submitted accounts for 100 percent of the company ownership. Check YES if any percentage of ownership falls outside of the parameters that require reporting on the Form A. Checking NO indicates that the Form A(s) you submitted is not correct and you will be required to submit a revised Form A.
- Page 20 (Workforce Projection)** – Be sure to include the Duration of the Project. It is acceptable to use the phrase “Per Contract Specifications”.

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

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

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

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

**QUESTIONS: pre-letting up to execution of the contract**

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

**QUESTIONS: following contract execution**

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

RETURN WITH BID

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Proposal Submitted By
Name
Address
City

Letting January 17, 2014

**NOTICE TO PROSPECTIVE BIDDERS**

This proposal can be used for bidding purposes by only those companies that request and receive written AUTHORIZATION TO BID from IDOT's Central Bureau of Construction.

**BIDDERS NEED NOT RETURN THE ENTIRE PROPOSAL**

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



**Illinois Department  
of Transportation**

Springfield, Illinois 62764

**Contract No. 63875  
LAKE County  
Section 07-00086-08-CH  
Route FAU 3704 (River Road)  
Project CMM-9003(064)  
District 1 Construction Funds**

PLEASE MARK THE APPROPRIATE BOX BELOW:

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

Prepared by

F

Checked by

(Printed by authority of the State of Illinois)

**Page intentionally left blank**

RETURN WITH BID



PROPOSAL

TO THE DEPARTMENT OF TRANSPORTATION

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

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

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

**Contract No. 63875  
LAKE County  
Section 07-00086-08-CH  
Project CMM-9003(064)  
Route FAU 3704 (River Road)  
District 1 Construction Funds**

**Reconstruct the intersection of River Road at Roberts Road to provide a multi-lane roundabout. Earth stabilization, pavement widening and resurfacing, culvert replacement, storm sewer, sidewalks, curb and gutter, cast in place retaining wall, lighting and landscaping, located in the Village of Lake Barrington.**

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.

**RETURN WITH BID**

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:

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

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

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

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

**Attach Cashier's Check or Certified Check Here**

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

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

Item \_\_\_\_\_

Section No. \_\_\_\_\_

County \_\_\_\_\_

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

**RETURN WITH BID**

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 do business 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)

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COUNTY NAME	CODE	DIST	SECTION NUMBER	PROJECT NUMBER	ROUTE
LAKE	097	01	07-00086-08-CH	CMM-9003/064/000	FAU 3704

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
A2000118	T-ACERX FREM AB 3	EACH	4.000	X	=		
A2002920	T-CELTIS OCCID 2-1/2	EACH	3.000	X	=		
A2005020	T-GYMNOCLA DIO 2-1/2	EACH	3.000	X	=		
A2006416	T-QUERCUS ALBA 2	EACH	3.000	X	=		
A2006516	T-QUERCUS BICOL 2	EACH	6.000	X	=		
A2007120	T-QUERCUS RUBRA 2-1/2	EACH	13.000	X	=		
A2007620	T-TAXODIUM DIS 2-1/2	EACH	2.000	X	=		
A2016616	T-QUERCUS ELLIP 2	EACH	3.000	X	=		
B2000568	T-AMELAN CAN SF 7'	EACH	9.000	X	=		
B2001566	T-CRATAE CRUS SF 6'	EACH	8.000	X	=		
D2000172	E-ABIES CONCOLOR 6'	EACH	2.000	X	=		
D2002272	E-PICEA PUNG GLAU 6'	EACH	5.000	X	=		
K0013000	P PL PRAIRI 2X4 DPPLG	UNIT	4.000	X	=		
K0013020	P PL PRAIRIE TY GAL P	UNIT	30.000	X	=		
K0013055	P PL WETLAND EMERGENT	ACRE	0.240	X	=		

FAU 3704  
07-00086-08-CH  
LAKE

ILLINOIS DEPARTMENT OF TRANSPORTATION  
SCHEDULE OF PRICES  
CONTRACT NUMBER - 63875

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RUN DATE - 12/10/13  
RUN TIME - 183112

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
K1003680	MULCH	SQ YD	2,983.000	X	=		
LR503200	LOAD CHARGE	LOAD	6.000	X	=		
XX001249	ORNAMENTAL FENCE	FOOT	99.000	X	=		
XX005054	LANDSCAPE PLANTI COMP	L SUM	1.000	X	=		
XX005920	SEEDING WET PRAIRIE	ACRE	0.240	X	=		
XX005940	REMOTE CONTR VIDEO SY	EACH	1.000	X	=		
XX006622	EMERG/ SHORE SEED MIX	ACRE	0.560	X	=		
XX006652	STAMP CLRD PCC MED 4	SQ FT	2,539.000	X	=		
XX006655	LYR II DATALINK SWITCH	EACH	1.000	X	=		
XX006658	FLOCCULATION LOGS	EACH	20.000	X	=		
XX006659	FLOCCULATION POWDER	POUND	100.000	X	=		
XX006660	WETLAND PLANTS	EACH	1,165.000	X	=		
XX006709	SEED CL 5 MOD MES PRA	ACRE	2.820	X	=		
XX006898	STAMPED COLORED PCC	SQ FT	2,315.000	X	=		
XX007023	STAIN CONC STRUCTURES	SQ YD	93.000	X	=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
XX007860	AGG BASE CSE SPL	SQ YD	710.000 X	=	=	=	=
XX008253	VIDEO ENCODER	EACH	1.000 X	=	=	=	=
XX008392	OUTDR RTD NTRK CABLE	FOOT	30.000 X	=	=	=	=
XX008865	PERMEABLE PLSTIC BERM	FOOT	528.000 X	=	=	=	=
XX008873	AGG SURF CSE SPL	TON	111.000 X	=	=	=	=
XX008916	CONT STIFFNESS COLUMN	L SUM	1.000 X	=	=	=	=
X0322871	MAINT EROS CONT SYS	L SUM	1.000 X	=	=	=	=
X0322936	REMOV EX FLAR END SEC	EACH	4.000 X	=	=	=	=
X0324455	DRILL/SET SOLD P SOIL	CU FT	415.000 X	=	=	=	=
X0324597	CCTV CABINET	EACH	1.000 X	=	=	=	=
X0426200	DEWATERING	L SUM	1.000 X	=	=	=	=
X2110100	TOPSOIL F & P SPL	CU YD	1,000.000 X	=	=	=	=
X2111100	TOPSOIL EXC & PLAC SP	CU YD	4,428.000 X	=	=	=	=
X2501010	SEEDING CL 2 MOD	ACRE	0.180 X	=	=	=	=
X2510635	HD EROS CONT BLANK SP	SQ YD	7,107.000 X	=	=	=	=

FAU 3704  
07-00086-08-CH  
LAKE

ILLINOIS DEPARTMENT OF TRANSPORTATION  
SCHEDULE OF PRICES  
CONTRACT NUMBER - 63875

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RUN DATE - 12/10/13  
RUN TIME - 183112

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
X2511630	EROS CONT BLANKET SPL	SQ YD	338.000	X	=		
X2511640	EROS CONT BLANKET MOD	SQ YD	17,226.000	X	=		
X2800400	PERIMETER EROS BAR SP	FOOT	2,482.000	X	=		
X4023000	TEMP ACCESS- ROAD	EACH	1.000	X	=		
X5860110	GRANULAR BACKFILL STR	CU YD	10.000	X	=		
X6700405	ENGR FLD OFF A MOD	CAL MO	18.000	X	=		
X7010216	TRAF CONT & PROT SPL	L SUM	1.000	X	=		
X7230400	INST EXTRUDED SN PAN	SQ FT	144.000	X	=		
X7810300	REC REF PVT MARKER	EACH	119.000	X	=		
Z0007118	UNTREATED TIMBER LAG	SQ FT	435.000	X	=		
Z0013302	SEGMENT CONC BLK WALL	SQ FT	795.000	X	=		
Z0013797	STAB CONSTR ENTRANCE	SQ YD	108.000	X	=		
Z0019600	DUST CONTROL WATERING	UNIT	10.000	X	=		
Z0022800	FENCE REMOVAL	FOOT	1,104.000	X	=		
Z0026402	FUR SOLDIER PILES HP	FOOT	186.000	X	=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
Z0027800	GEOTECH FABRIC	SQ YD	710.000 X				
Z0030850	TEMP INFO SIGNING	SQ FT	103.000 X				
Z0041500	PLUG EX CULVERTS	EACH	2.000 X				
Z0046304	P UNDR FOR STRUCT 4	FOOT	123.000 X				
Z0062456	TEMP PAVEMENT	SQ YD	1,608.000 X				
Z0070200	SURVEY MONUMENTS	EACH	1.000 X				
Z0073002	TEMP SOIL RETEN SYSTM	SQ FT	9,860.000 X				
Z0076600	TRAINEES	HOUR	1,500.000 X		0.80		1,200.00
Z0076604	TRAINEES TPG	HOUR	1,500.000 X		10.00		15,000.00
20100110	TREE REMOV 6-15	UNIT	1,607.000 X				
20100210	TREE REMOV OVER 15	UNIT	359.000 X				
20101000	TEMPORARY FENCE	FOOT	2,482.000 X				
20101100	TREE TRUNK PROTECTION	EACH	28.000 X				
20200100	EARTH EXCAVATION	CU YD	25,529.000 X				
20201200	REM & DISP UNS MATL	CU YD	1,348.000 X				

FAU 3704  
07-00086-08-CH  
LAKE

ILLINOIS DEPARTMENT OF TRANSPORTATION  
SCHEDULE OF PRICES  
CONTRACT NUMBER - 63875

ECMS002 DTGECM03 ECMR003 PAGE 6  
RUN DATE - 12/10/13  
RUN TIME - 183112

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
20800150	TRENCH BACKFILL	CU YD	75.000				
21001000	GEOTECH FAB F/GR STAB	SQ YD	12,401.000				
21301052	EXPLOR TRENCH 52	FOOT	200.000				
25000322	SEEDING CL 5A	ACRE	2.950				
25000400	NITROGEN FERT NUTR	POUND	509.000				
25000600	POTASSIUM FERT NUTR	POUND	509.000				
25100630	EROSION CONTR BLANKET	SQ YD	7,161.000				
28000250	TEMP EROS CONTR SEED	POUND	586.000				
28000305	TEMP DITCH CHECKS	FOOT	476.000				
28000315	AGG DITCH CHECKS	TON	2.000				
28000400	PERIMETER EROS BAR	FOOT	2,267.000				
28000500	INLET & PIPE PROTECT	EACH	49.000				
28000510	INLET FILTERS	EACH	19.000				
28100109	STONE RIPRAP CL A5	SQ YD	153.000				
28200200	FILTER FABRIC	SQ YD	153.000				

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
30300001	AGG SUBGRADE IMPROVE	CU YD	16,595.000	X	=	=	
30300104	AGG SUBGRADE IMPR 4	SQ YD	297.000	X	=	=	
30300112	AGG SUBGRADE IMPR 12	SQ YD	12,401.000	X	=	=	
35101600	AGG BASE CSE B 4	SQ YD	3,045.000	X	=	=	
35101800	AGG BASE CSE B 6	SQ YD	769.000	X	=	=	
40600100	BIT MATLS PR CT	GALLON	2,973.000	X	=	=	
40600982	HMA SURF REM BUTT JT	SQ YD	57.000	X	=	=	
40603340	HMA SC "D" N70	TON	437.000	X	=	=	
40701911	HMA PAVT FD 11 1/2	SQ YD	9,364.000	X	=	=	
42001200	PAVEMENT FABRIC	SQ YD	257.000	X	=	=	
42001300	PROTECTIVE COAT	SQ YD	3,060.000	X	=	=	
42400200	PC CONC SIDEWALK 5	SQ FT	9,106.000	X	=	=	
42400800	DETECTABLE WARNINGS	SQ FT	296.000	X	=	=	
44000100	PAVEMENT REM	SQ YD	9,695.000	X	=	=	
44000157	HMA SURF REM 2	SQ YD	2,821.000	X	=	=	

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
44000500	COMB CURB GUTTER REM	FOOT	787.000 X	=			
44201735	CL D PATCH T4 7	SQ YD	78.000 X	=			
44300200	STRIP REF CR CON TR	FOOT	8,151.000 X	=			
48101500	AGGREGATE SHLDS B 6	SQ YD	754.000 X	=			
50105220	PIPE CULVERT REMOV	FOOT	119.000 X	=			
50200100	STRUCTURE EXCAVATION	CU YD	68.000 X	=			
50300225	CONC STRUCT	CU YD	28.300 X	=			
50300285	FORM LINER TEX SURF	SQ FT	465.000 X	=			
50500505	STUD SHEAR CONNECTORS	EACH	200.000 X	=			
50800205	REINF BARS, EPOXY CTD	POUND	3,120.000 X	=			
542A1057	P CUL CL A 2 12	FOOT	111.000 X	=			
542A1060	P CUL CL A 2 15	FOOT	50.000 X	=			
542A1087	P CUL CL A 2 42	FOOT	88.000 X	=			
54213657	PRC FLAR END SEC 12	EACH	3.000 X	=			
54213660	PRC FLAR END SEC 15	EACH	2.000 X	=			



ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
54213669	PRC FLAR END SEC 24	EACH	3.000 X	=			
54213687	PRC FLAR END SEC 42	EACH	2.000 X	=			
5422A012	P CUL CL A 2 12 TEMP	FOOT	268.000 X	=			
550A0340	STORM SEW CL A 2 12	FOOT	1,039.000 X	=			
550A0360	STORM SEW CL A 2 15	FOOT	183.000 X	=			
550A0380	STORM SEW CL A 2 18	FOOT	186.000 X	=			
550A0410	STORM SEW CL A 2 24	FOOT	611.000 X	=			
55100500	STORM SEWER REM 12	FOOT	782.000 X	=			
59100100	GEOCOMPOSITE WALL DR	SQ YD	48.000 X	=			
60107600	PIPE UNDERDRAINS 4	FOOT	3,379.000 X	=			
60200105	CB TA 4 DIA T1F OL	EACH	1.000 X	=			
60200805	CB TA 4 DIA T8G	EACH	1.000 X	=			
60201105	CB TA 4 DIA T11F&G	EACH	4.000 X	=			
60201340	CB TA 4 DIA T24F&G	EACH	6.000 X	=			
60205040	CB TA 5 DIA T24F&G	EACH	1.000 X	=			

FAU 3704  
 07-00086-08-CH  
 LAKE

ILLINOIS DEPARTMENT OF TRANSPORTATION  
 SCHEDULE OF PRICES  
 CONTRACT NUMBER - 63875

ECMS002 DTGECM03 ECMR003 PAGE 10  
 RUN DATE - 12/10/13  
 RUN TIME - 183112

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
60218400	MAN TA 4 DIA T1F CL	EACH	2.000				
60221100	MAN TA 5 DIA T1F CL	EACH	3.000				
60234200	INLETS TA T1F OL	EACH	1.000				
60236200	INLETS TA T8G	EACH	1.000				
60236800	INLETS TA T11F&G	EACH	3.000				
60237470	INLETS TA T24F&G	EACH	6.000				
60500040	REMOV MANHOLES	EACH	1.000				
60500050	REMOV CATCH BAS	EACH	1.000				
60500060	REMOV INLETS	EACH	6.000				
60600605	CONC CURB TB	FOOT	458.000				
60602800	CONC GUTTER TB	FOOT	98.000				
60603800	COMB CC&G TB6.12	FOOT	2,151.000				
60605000	COMB CC&G TB6.24	FOOT	3,750.000				
60608300	COMB CC&G TM2.12	FOOT	258.000				
67100100	MOBILIZATION	L SUM	1.000				

FAU 3704  
07-00086-08-CH  
LAKE

ILLINOIS DEPARTMENT OF TRANSPORTATION  
SCHEDULE OF PRICES  
CONTRACT NUMBER - 63875

ECMS002 DTGECM03 ECMR003 PAGE 11  
RUN DATE - 12/10/13  
RUN TIME - 183112

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
70106800	CHANGEABLE MESSAGE SN	CAL MO	18.000 X	=	=	=	=
70300220	TEMP PVT MK LINE 4	FOOT	14,473.000 X	=	=	=	=
70300240	TEMP PVT MK LINE 6	FOOT	150.000 X	=	=	=	=
70300280	TEMP PVT MK LINE 24	FOOT	30.000 X	=	=	=	=
70301000	WORK ZONE PAVT MK REM	SQ FT	2,617.000 X	=	=	=	=
70400100	TEMP CONC BARRIER	FOOT	1,875.000 X	=	=	=	=
70400200	REL TEMP CONC BARRIER	FOOT	1,819.000 X	=	=	=	=
70600275	IMP ATTN TEMP SUN TL2	EACH	4.000 X	=	=	=	=
70600355	IMP ATTN REL S U TL2	EACH	2.000 X	=	=	=	=
72000100	SIGN PANEL T1	SQ FT	617.000 X	=	=	=	=
72000200	SIGN PANEL T2	SQ FT	20.000 X	=	=	=	=
72400100	REMOV SIN PAN ASSY TA	EACH	18.000 X	=	=	=	=
72400200	REMOV SIN PAN ASSY TB	EACH	8.000 X	=	=	=	=
72400500	RELOC SIN PAN ASSY TA	EACH	1.000 X	=	=	=	=
72700100	STR STL SIN SUP BA	POUND	2,376.000 X	=	=	=	=

FAU 3704  
07-00086-08-CH  
LAKE

ILLINOIS DEPARTMENT OF TRANSPORTATION  
SCHEDULE OF PRICES  
CONTRACT NUMBER - 63875

ECMS002 DTGECM03 ECMR003 PAGE 12  
RUN DATE - 12/10/13  
RUN TIME - 183112

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
72800100	TELES STL SIN SUPPORT	FOOT	902.000 X	=	=	=	=
73100100	BASE TEL STL SIN SUPP	EACH	17.000 X	=	=	=	=
73400100	CONC FOUNDATION	CU YD	6.000 X	=	=	=	=
78000100	THPL PVT MK LTR & SYM	SQ FT	492.000 X	=	=	=	=
78000200	THPL PVT MK LINE 4	FOOT	4,467.000 X	=	=	=	=
78000300	THPL PVT MK LINE 5	FOOT	4,032.000 X	=	=	=	=
78000400	THPL PVT MK LINE 6	FOOT	429.000 X	=	=	=	=
78000500	THPL PVT MK LINE 8	FOOT	481.000 X	=	=	=	=
78000600	THPL PVT MK LINE 12	FOOT	694.000 X	=	=	=	=
78000650	THPL PVT MK LINE 24	FOOT	11.000 X	=	=	=	=
78300100	PAVT MARKING REMOVAL	SQ FT	2,401.000 X	=	=	=	=
80400100	ELECT SERV INSTALL	EACH	1.000 X	=	=	=	=
80400200	ELECT UTIL SERV CONN	L SUM	1.000 X	=	=	=	=
81028200	UNDRGRD C GALVS 2	FOOT	50.000 X	=	=	=	=
81028240	UNDRGRD C GALVS 4	FOOT	240.000 X	=	=	=	=

1,200

00

1,200

00

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
81603010	UD 2#10#10GXLPUSE 3/4	FOOT	35.000 X	=			
81603060	UD 3#8 #10G XLPUSE 1	FOOT	600.000 X	=			
81702150	EC C XLP USE 1C 2	FOOT	150.000 X	=			
82102250	LUM SV HOR MT 250W	EACH	15.000 X	=			
82500360	LT CONT BASEM 480V100	EACH	1.000 X	=			
83060120	LT P GS 30MH 8MA	EACH	11.000 X	=			
83060150	LT P GS 30MH 15MA	EACH	4.000 X	=			
83600300	LIGHT POLE FDN 30D	FOOT	150.000 X	=			
89502375	REMOV EX TS EQUIP	EACH	1.000 X	=			

TOTAL \$

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

## RETURN WITH BID

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

#### I. GENERAL

**A.** Article 50 of the 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 days after the officer, member, or employee takes office or is employed.

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

## RETURN WITH BID

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 bid for a State contract or as recompense for not having bid on a State contract is guilty of a Class 4 felony. Any person who accepts any money or other valuable thing for not bidding for a State contract or who withholds a bid in consideration of the promise for the payment of money or other valuable thing is guilty of a Class 4 felony.

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 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.

## RETURN WITH BID

### 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 shall contain a certification by the bidder or contractor or subcontractor, respectively, that the bidder, contractor, or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the CPO may declare the related contract void if any of the certifications required by this Section are false.



## RETURN WITH BID

### **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.

### **F. Educational Loan**

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

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 provides:

(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.

## RETURN WITH BID

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

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

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

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

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

Check the appropriate statement:

Company has no business operations in Iran to disclose.

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

## RETURN WITH BID

### **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.**

**NA-FEDERAL**

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

**RETURN WITH BID**

**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 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.

## RETURN WITH BID

### IV. DISCLOSURES

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

The 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 \$25,000 shall be accompanied by disclosure of the financial interests of the bidder. This disclosed information for the successful bidder, will be maintained as public information subject to release by request pursuant to the Freedom of Information Act, filed with the Procurement Policy Board, and shall be incorporated as a material term of the contract. Furthermore, pursuant to Section 5-5, the Procurement Policy Board may review a proposal, bid, or contract and issue a recommendation to void a contract or reject a proposal or bid based on any violation of the 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 200 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any person or entity holding any ownership share that is in excess of 5%. The disclosure shall include the names, addresses, and dollar or proportionate share of ownership of each person making the disclosure, their instrument of ownership or beneficial relationship, and notice of any potential conflict of interest resulting from the current ownership or beneficial interest of each person making the disclosure having any of the relationships identified in Section 50-35 and on the disclosure form.  
**The current annual salary of the Governor is \$177,412.00.**

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

2. Disclosure Forms. Disclosure Form A is attached for use concerning the individuals meeting the above ownership or distributive share requirements. 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 200 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any person or entity holding any ownership share that is in excess of 5%. If a bidder is not subject to Federal 10K reporting, the bidder must determine if any individuals are required by law to complete a financial disclosure form. To do this, the bidder should answer each of the following questions. A "YES" answer indicates Form A must be completed. If the answer to each of the following questions is "NO", then the NOT APPLICABLE STATEMENT on Form A must be signed and dated by a person that is authorized to execute contracts for the bidding company. Note: These questions are for assistance only and are not required to be completed.

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

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

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

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

## RETURN WITH BID

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

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

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

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

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

RETURN WITH BID

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form A Financial Information & Potential Conflicts of Interest Disclosure

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

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

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

DISCLOSURE OF FINANCIAL INFORMATION

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

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

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

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

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

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

**RETURN WITH BID**

3. If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor, are you entitled to receive (i) more than 7 1/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of 100% of the annual salary of the Governor? Yes \_\_\_ No \_\_\_
4. If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor, are you and your spouse or minor children entitled to receive (i) more than 15% in 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 \_\_\_

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

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

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

1. Is your spouse or any minor children currently an officer or employee of the Capitol Development Board or the Illinois State Toll Highway Authority? Yes \_\_\_ No \_\_\_
2. Is your spouse or any minor children currently appointed to or employed by any agency of the State of Illinois? If your spouse or minor children is/are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, provide the name of the spouse and/or minor children, the name of the State agency for which he/she is employed and his/her annual salary. \_\_\_\_\_
- 
3. If your spouse or any minor children is/are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, are you entitled to receive (i) more than 7 1/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess 100% of the annual salary of the Governor? Yes \_\_\_ No \_\_\_
4. If your spouse or any minor children are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, are you and your spouse or any minor children entitled to receive (i) more than 15% in the aggregate of the total distributable income from your firm, partnership, association or corporation, or (ii) an amount in excess of two times the salary of the Governor? Yes \_\_\_ No \_\_\_

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

---

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

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

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

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

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**RETURN WITH BID**

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

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(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 BID**

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

Name of person(s): \_\_\_\_\_

Nature of disclosure: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**APPLICABLE STATEMENT**

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

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

**NOT APPLICABLE STATEMENT**

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

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

\_\_\_\_\_  
Signature of Authorized Representative Date

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

RETURN WITH BID

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form B Other Contracts & Financial Related Information Disclosure

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

Disclosure of the information contained in this Form is required by the 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 bids in excess of \$25,000, and for all open-ended contracts.

DISCLOSURE OF OTHER CONTRACTS AND PROCUREMENT RELATED INFORMATION

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

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

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

THE FOLLOWING STATEMENT MUST BE CHECKED

Signature of Authorized Representative, Date

OWNERSHIP CERTIFICATION

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

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

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

## **RETURN WITH BID**

### **SPECIAL NOTICE TO CONTRACTORS**

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

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

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



RETURN WITH BID

**Contract No. 63875**  
**LAKE County**  
**Section 07-00086-08-CH**  
**Project CMM-9003(064)**  
**Route FAU 3704 (River Road)**  
**District 1 Construction Funds**

**PART I. IDENTIFICATION**

Dept. 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

TABLE B

TOTAL Workforce Projection for Contract												
JOB CATEGORIES	TOTAL EMPLOYEES		MINORITY EMPLOYEES						TRAINEES			
			BLACK		HISPANIC		*OTHER MINOR.		APPREN- TICES		ON THE JOB TRAINEES	
	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												
<b>TOTAL</b>												

CURRENT EMPLOYEES TO BE ASSIGNED TO CONTRACT			
TOTAL EMPLOYEES		MINORITY EMPLOYEES	
M	F	M	F

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								

<b>FOR DEPARTMENT USE ONLY</b>          
--

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

**Note: See instructions on page 2**

**RETURN WITH BID**

**Contract No. 63875  
LAKE County  
Section 07-00086-08-CH  
Project CMM-9003(064)  
Route FAU 3704 (River Road)  
District 1 Construction Funds**

**PART II. WORKFORCE PROJECTION - continued**

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

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

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

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

**PART III. AFFIRMATIVE ACTION PLAN**

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

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

Address \_\_\_\_\_

**NOTICE REGARDING SIGNATURE**

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

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

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

**RETURN WITH BID**

**ADDITIONAL FEDERAL REQUIREMENTS**

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

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

**RETURN WITH BID**

**Contract No. 63875  
LAKE County  
Section 07-00086-08-CH  
Project CMM-9003(064)  
Route FAU 3704 (River Road)  
District 1 Construction Funds**

PROPOSAL SIGNATURE SHEET

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

(IF AN INDIVIDUAL)

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

(IF A CO-PARTNERSHIP)

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

(IF A CORPORATION)

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

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

Attest \_\_\_\_\_  
Signature \_\_\_\_\_  
Business Address \_\_\_\_\_

(IF A JOINT VENTURE)

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

Attest \_\_\_\_\_  
Signature \_\_\_\_\_  
Business Address \_\_\_\_\_  
\_\_\_\_\_

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





**Illinois Department of Transportation**

**Return with Bid**  
(If Applicable)

**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 MEN 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., \_\_\_\_\_.

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

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

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

By \_\_\_\_\_  
(Signature and Title)

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

**Notary for PRINCIPAL**

**Notary for SURETY**

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_

Signed and attested before me on \_\_\_\_\_ (date)  
by \_\_\_\_\_  
(Name of Person)

Signed and attested before me on \_\_\_\_\_ (date)  
by \_\_\_\_\_  
(Name of Person)

(Seal) \_\_\_\_\_  
(Signature of Notary Public)

(Seal) \_\_\_\_\_  
(Signature of Notary Public)

\_\_\_\_\_  
(Date Commission Expires)

\_\_\_\_\_  
(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 \_\_\_\_\_



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., \_\_\_\_\_.

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

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

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

By \_\_\_\_\_  
(Signature and Title)

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

**Notary for PRINCIPAL**

**Notary for SURETY**

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_

STATE OF \_\_\_\_\_  
COUNTY OF \_\_\_\_\_

Signed and attested before me on \_\_\_\_\_ (date)  
by \_\_\_\_\_

Signed and attested before me on \_\_\_\_\_ (date)  
by \_\_\_\_\_

(Name of Person)

(Name of Person)

(Seal) \_\_\_\_\_  
(Signature of Notary Public)

(Seal) \_\_\_\_\_  
(Signature of Notary Public)

\_\_\_\_\_  
(Date Commission Expires)

\_\_\_\_\_  
(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 \_\_\_\_\_

**(1) Policy**

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

**(2) Obligation**

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

**(3) Project and Bid Identification**

Complete the following information concerning the project and bid:

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

**(4) Assurance**

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

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

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

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

Disadvantaged Business Participation \_\_\_\_\_ percent

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

\_\_\_\_\_  
Company

By \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

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

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

Bureau of Small Business Enterprises 2300 South Dirksen Parkway Springfield, Illinois 62764	<b>Local Let Projects</b> 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.



Subcontractor Registration \_\_\_\_\_

Letting \_\_\_\_\_

Participation Statement

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

(1) Instructions

Contract \_\_\_\_\_

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

(2) Work

Table with 5 columns: Pay Item No., Description, Quantity, Unit Price, Total. Includes a Total row at the bottom right.

(3) Partial Payment Items

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

(4) Commitment

The undersigned certify that the information included herein is true and correct, and that the DBE firm listed below has agreed to perform a commercially useful function in the work of the contract item(s) listed above and to execute a contract with the prime contractor.

Signature for Prime Contractor

Title \_\_\_\_\_

Date \_\_\_\_\_

Contact \_\_\_\_\_

Phone \_\_\_\_\_

Firm Name \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Signature for DBE Firm

Title \_\_\_\_\_

Date \_\_\_\_\_

Contact Person \_\_\_\_\_

Phone \_\_\_\_\_

Firm Name \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

E \_\_\_\_\_

WC \_\_\_\_\_

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

# PROPOSAL ENVELOPE



## 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. 63875  
LAKE County  
Section 07-00086-08-CH  
Project CMM-9003(064)  
Route FAU 3704 (River Road)  
District 1 Construction Funds**



**Illinois Department of Transportation**

## **SUBCONTRACTOR DOCUMENTATION**

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

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

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

## RETURN WITH SUBCONTRACT

### STATE ETHICAL STANDARDS GOVERNING SUBCONTRACTORS

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

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

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

#### **A. Bribery**

Section 50-5. Bribery.

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

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

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

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

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

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

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

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

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

#### **B. Felons**

Section 50-10. Felons.

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

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



## RETURN WITH SUBCONTRACT

### **C. Debt Delinquency**

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

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

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

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

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

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

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

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

<hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/>		
Name of Subcontracting Company		
<hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/>		
Authorized Officer	<hr style="border: 0; border-top: 1px solid black; margin-bottom: 5px;"/>	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 200 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any person or entity holding any ownership share that is in excess of 5%. The disclosure shall include the names, addresses, and dollar or proportionate share of ownership of each person making the disclosure, their instrument of ownership or beneficial relationship, and notice of any potential conflict of interest resulting from the current ownership or beneficial interest of each person making the disclosure having any of the relationships identified in Section 50-35 and on the disclosure form.

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

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

2. Disclosure Forms. Disclosure Form A is attached for use concerning the individuals meeting the above ownership or distributive share requirements. 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 200 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any person or entity holding any ownership share that is in excess of 5%. If a subcontractor is not subject to Federal 10K reporting, the subcontractor must determine if any individuals are required by law to complete a financial disclosure form. To do this, the subcontractor should answer each of the following questions. A "YES" answer indicates Form A must be completed. If the answer to each of the following questions is "NO", then the **NOT APPLICABLE STATEMENT** on the second page of Form A must be signed and dated by a person that is authorized to execute contracts for the subcontracting company. Note: These questions are for assistance only and are not required to be completed.

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

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

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

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

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

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

## RETURN WITH SUBCONTRACT

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

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

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

**ILLINOIS DEPARTMENT  
OF TRANSPORTATION**

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

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

Disclosure of the information contained in this Form is required by the Section 50-35 of the 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)**

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

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

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

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

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

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

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

**RETURN WITH SUBCONTRACT**

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

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

---

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

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

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

1. Is your spouse or any minor children currently an officer or employee of the Capitol Development Board or the Illinois 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 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 salary of the Governor?  
Yes \_\_\_ No \_\_\_

---

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

---

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

---

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

---

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

---

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

**RETURN WITH SUBCONTRACT**

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

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

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

**3 Communication Disclosure.**

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

Name and address of person(s): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**RETURN WITH SUBCONTRACT**

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

Name of person(s): \_\_\_\_\_

Nature of disclosure: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**APPLICABLE STATEMENT**

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

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

**NOT APPLICABLE STATEMENT**

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

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

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

RETURN WITH SUBCONTRACT

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form B Subcontractor: Other Contracts & Financial Related Information Disclosure

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

Disclosure of the information contained in this Form is required by the Section 50-35 of the 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 the bottom of this page.

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

THE FOLLOWING STATEMENT MUST BE CHECKED

Signature box with fields: Signature of Authorized Officer, Date

OWNERSHIP CERTIFICATION

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

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

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





- 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 (ics-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 o'clock a.m. January 17, 2014. All bids will be gathered, sorted, publicly opened and read in the auditorium at the Department of Transportation's Harry R. Hanley Building shortly after the 10:00 a.m. cut off time.
- 2. DESCRIPTION OF WORK.** The proposed improvement is identified and advertised for bids in the Invitation for Bids as:

**Contract No. 63875  
LAKE County  
Section 07-00086-08-CH  
Project CMM-9003(064)  
Route FAU 3704 (River Road)  
District 1 Construction Funds**

**Reconstruct the intersection of River Road at Roberts Road to provide a multi-lane roundabout. Earth stabilization, pavement widening and resurfacing, culvert replacement, storm sewer, sidewalks, curb and gutter, cast in place retaining wall, lighting and landscaping, located in the Village of Lake Barrington.**

- 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

Ann L. Schneider,  
Secretary

INDEX  
FOR  
SUPPLEMENTAL SPECIFICATIONS  
AND RECURRING SPECIAL PROVISIONS

Adopted January 1, 2014

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

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River Road at Roberts Road  
Section 07-00086-08-CH  
Lake County  
Contract No. 63875

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INDEX LOCAL ROADS AND STREETS SPECIAL PROVISIONS

<u>LR #</u>	<u>Pg #</u>	<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
LR SD12		<input type="checkbox"/> Slab Movement Detection Device	Nov. 11, 1984	Jan. 1, 2007
LR SD13		<input type="checkbox"/> Required Cold Milled Surface Texture	Nov. 1, 1987	Jan. 1, 2007
LR SD406		<input type="checkbox"/> <b>RESCINDED</b>		
LR 102-2		<input type="checkbox"/> Bidding Requirements and Conditions for Contract Proposals	Jan. 1, 2001	Jan. 1, 2014
LR 105	429	<input checked="" type="checkbox"/> Cooperation with Utilities	Jan. 1, 1999	Jan. 1, 2007
LR 107-2		<input type="checkbox"/> Railroad Protective Liability Insurance for Local Lettings	Mar. 1, 2005	Jan. 1, 2006
LR 107-4	432	<input checked="" type="checkbox"/> Insurance	Feb. 1, 2007	Aug. 1, 2007
LR 107-7		<input type="checkbox"/> Wages of Employees on Public Works	Jan. 1, 1999	Jan. 1, 2014
LR 108		<input type="checkbox"/> Combination Bids	Jan. 1, 1994	Mar. 1, 2005
LR 109		<input type="checkbox"/> Equipment Rental Rates	Jan. 1, 2012	
LR 212		<input type="checkbox"/> Shaping Roadway	Aug. 1, 1969	Jan. 1, 2002
LR 355-1		<input type="checkbox"/> Bituminous Stabilized Base Course, Road Mix or Traveling Plant Mix	Oct. 1, 1973	Jan. 1, 2007
LR 355-2		<input type="checkbox"/> Bituminous Stabilized Base Course, Plant Mix	Feb. 20, 1963	Jan. 1, 2007
LR 400-1		<input type="checkbox"/> Bituminous Treated Earth Surface	Jan. 1, 2007	Apr. 1, 2012
LR 400-2		<input type="checkbox"/> Bituminous Surface Plant Mix (Class B)	Jan. 1, 2008	
LR 400-3		<input type="checkbox"/> Hot In-Place Recycling (HIR) – Surface Recycling	Jan. 1, 2012	
LR 400-4		<input type="checkbox"/> Full-Depth Reclamation (FDR) with Emulsified Asphalt	Apr. 1, 2012	Jun. 1, 2012
LR 400-5		<input type="checkbox"/> Cold In-Place Recycling (CIR) With Emulsified Asphalt	Apr. 1, 2012	Jun. 1, 2012
LR 400-6		<input type="checkbox"/> Cold In Place Recycling (CIR) with Foamed Asphalt	June 1, 2012	
LR 400-7		<input type="checkbox"/> Full-Depth Reclamation (FDR) with Foamed Asphalt	June 1, 2012	
LR 402		<input type="checkbox"/> Salt Stabilized Surface Course	Feb. 20, 1963	Jan. 1, 2007
LR 403-1		<input type="checkbox"/> Surface Profile Milling of Existing, Recycled or Reclaimed Flexible Pavement	Apr. 1, 2012	Jun. 1, 2012
LR 403-2		<input type="checkbox"/> Bituminous Hot Mix Sand Seal Coat	Aug. 1, 1969	Jan. 1, 2007
LR 406		<input type="checkbox"/> Filling HMA Core Holes with Non-shrink Grout	Jan. 1, 2008	
LR 420		<input type="checkbox"/> PCC Pavement (Special)	May 12, 1964	Jan. 2, 2007
LR 442		<input type="checkbox"/> Bituminous Patching Mixtures for Maintenance Use	Jan. 1, 2004	Jun. 1, 2007
LR 451		<input type="checkbox"/> Crack Filling Bituminous Pavement with Fiber-Asphalt	Oct. 1, 1991	Jan. 1, 2007
LR 503-1		<input type="checkbox"/> Furnishing Class SI Concrete	Oct. 1, 1973	Jan. 1, 2002
LR 503-2		<input type="checkbox"/> Furnishing Class SI Concrete (Short Load)	Jan. 1, 1989	Jan. 1, 2002
LR 542		<input type="checkbox"/> Pipe Culverts, Type _____ (Furnished)	Sep. 1, 1964	Jan. 1, 2007
LR 663		<input type="checkbox"/> Calcium Chloride Applied	Jun. 1, 1958	Jan. 1, 2007
LR 702		<input type="checkbox"/> Construction and Maintenance Signs	Jan. 1, 2004	Jun. 1, 2007
LR 1000-1		<input type="checkbox"/> 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		<input type="checkbox"/> Cold In-Place Recycling (CIR) and Full Depth Reclamation (FDR) with Foamed Asphalt Mix Design Procedures	June 1, 2012	
LR 1004		<input type="checkbox"/> Coarse Aggregate for Bituminous Surface Treatment	Jan. 1, 2002	Jan. 1, 2007
LR 1030		<input type="checkbox"/> Growth Curve	Mar. 1, 2008	Jan. 1, 2010
LR 1032-1		<input type="checkbox"/> Emulsified Asphalts	Jan. 1, 2007	Feb. 7, 2008
LR 1102		<input type="checkbox"/> Road Mix or Traveling Plan Mix Equipment	Jan. 1, 2007	

**BDE SPECIAL PROVISIONS**  
For the January 17 and February 28, 2014 Lettings

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

<u>File Name</u>	<u>Pg.</u>	<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
80240		Above Grade Inlet Protection	July 1, 2009	Jan. 1, 2012
* 80099		Accessible Pedestrian Signals (APS)	April 1, 2003	Jan. 1, 2014
80274		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	Aug. 1, 2013
80241		Bridge Demolition Debris	July 1, 2009	
50261		Building Removal-Case I (Non-Friable and Friable Asbestos)	Sept. 1, 1990	April 1, 2010
50481		Building Removal-Case II (Non-Friable Asbestos)	Sept. 1, 1990	April 1, 2010
50491		Building Removal-Case III (Friable Asbestos)	Sept. 1, 1990	April 1, 2010
50531		Building Removal-Case IV (No Asbestos)	Sept. 1, 1990	April 1, 2010
80292		Coarse Aggregate in Bridge Approach Slabs/Footings	April 1, 2012	April 1, 2013
80310		Coated Galvanized Steel Conduit	Jan. 1, 2013	
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	
80294		Concrete Box Culverts with Skews ≤ 30 Degrees Regardless of Design Fill and Skews > 30 Degrees with Design Fills > 5 Feet	April 1, 2012	
80311		Concrete End Sections for Pipe Culverts	Jan. 1, 2013	
* 80277		Concrete Mix Design – Department Provided	Jan. 1, 2012	Jan. 1, 2014
* 80261	433	X Construction Air Quality – Diesel Retrofit	June 1, 2010	Jan. 1, 2014
80029	436	X Disadvantaged Business Enterprise Participation	Sept. 1, 2000	Aug. 2, 2011
80265		Friction Aggregate	Jan. 1, 2011	
80229	446	X Fuel Cost Adjustment	April 1, 2009	July 1, 2009
* 80329		Glare Screen	Jan. 1, 2014	
80303	450	X Granular Materials	Nov. 1, 2012	
80304		Grooving for Recessed Pavement Markings	Nov. 1, 2012	Jan. 1, 2013
80246	451	X Hot-Mix Asphalt – Density Testing of Longitudinal Joints	Jan. 1, 2010	April 1, 2012
80322		Hot-Mix Asphalt – Mixture Design Composition and Volumetric Requirements	Nov 1, 2013	
80323		Hot-Mix Asphalt – Mixture Design Verification and Production	Nov 1, 2013	
80315		Insertion Lining of Culverts	Jan. 1, 2013	Nov 1, 2013
80324	453	X LRFD Pipe Culvert Burial Tables	Nov 1, 2013	
80325	473	X LRFD Storm Sewer Burial Tables	Nov 1, 2013	
80045		Material Transfer Device	June 15, 1999	Jan. 1, 2009
80165		Moisture Cured Urethane Paint System	Nov. 1, 2006	Jan. 1, 2010
* 80330		Pavement Marking for Bike Symbol	Jan. 1, 2014	
80298		Pavement Marking Tape Type IV	April 1, 2012	
80254		Pavement Patching	Jan. 1, 2010	
* 80331	483	X Payrolls and Payroll Records	Jan. 1, 2014	
* 80332		Portland Cement Concrete – Curing of Abutments and Piers	Jan. 1, 2014	
80326	485	X Portland Cement Concrete Equipment	Nov 1, 2013	
80300		Preformed Plastic Pavement Marking Type D - Inlaid	April 1, 2012	
* 80328	486	X Progress Payments	Nov. 2, 2013	
* 80281	487	Quality Control/Quality Assurance of Concrete Mixes	Jan. 1, 2012	Jan. 1, 2014
34261		Railroad Protective Liability Insurance	Dec. 1, 1986	Jan. 1, 2006
80157		Railroad Protective Liability Insurance (5 and 10)	Jan. 1, 2006	

<u>File Name</u>	<u>Pg.</u>	<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
80306		Reclaimed Asphalt Pavement (RAP) and Reclaimed Asphalt Shingles (RAS)	Nov. 1, 2012	Nov. 1, 2013
80327	503	X Reinforcement bars	Nov 1, 2013	
80283	505	X Removal and Disposal of Regulated Substances	Jan. 1, 2012	Nov. 2, 2012
80319	509	X Removal and Disposal of Surplus Materials	Nov. 2, 2012	
80307		Seeding	Nov. 1, 2012	
80127		Steel Cost Adjustment	April 2, 2004	April 1, 2009
80317		Surface Testing of Hot-Mix Asphalt Overlays	Jan. 1, 2013	
80301		Tracking the Use of Pesticides	Aug. 1, 2012	
* 80333		Traffic Control Setup and Removal Freeway/Expressway	Jan. 1, 2014	
20338	510	X Training Special Provisions	Oct. 15, 1975	
80318		Traversable Pipe Grate	Jan. 1, 2013	April 1, 2013
80288	513	X Warm Mix Asphalt	Jan. 1, 2012	Nov. 1, 2013
80302	517	X Weekly DBE Trucking Reports	June 2, 2012	
80289		Wet Reflective Thermoplastic Pavement Marking	Jan. 1, 2012	
80071		Working Days	Jan. 1, 2002	

The following special provisions are in the 2014 Supplemental Specifications and Recurring Special Provisions:

<u>File Name</u>	<u>Special Provision Title</u>	<u>New Location</u>	<u>Effective</u>	<u>Revised</u>
80309	Anchor Bolts	Articles 1006.09, 1070.01, and 1070.03	Jan. 1, 2013	
80276	Bridge Relief Joint Sealer	Article 503.19 and Sections 588 and 589	Jan. 1, 2012	Aug. 1, 2012
80312	Drain Pipe, Tile, Drainage Mat, and Wall Drain	Article 101.01, 1040.03, and 1040.04	Jan. 1, 2013	
80313	Fabric Bearing Pads	Article 1082.01	Jan. 1, 2013	
80169	High Tension Cable Median Barrier	Section 644 and Article 1106.02	Jan. 1, 2007	Jan. 1, 2013
80320	Liquidated Damages	Article 108.09	April 1, 2013	
80297	Modified Urethane Pavement Marking	Section 780, Articles 1095.09 and 1105.04	April 1, 2012	
80253	Moveable Traffic Barrier	Section 707 and Article 1106.02	Jan. 1, 2010	Jan. 1, 2013
80231	Pavement Marking Removal	Recurring CS #33	April 1, 2009	
80321	Pavement Removal	Article 440.07	April 1, 2013	
80022	Payments to Subcontractors	Article 109.11	June 1, 2000	Jan. 1, 2006
80316	Placing and Consolidating Concrete	Articles 503.06, 503.07, and 516.12	Jan. 1, 2013	
80278	Planting Woody Plants	Section 253 and Article 1081.01	Jan. 1, 2012	Aug. 1, 2012
80305	Polyurea Pavement Markings	Article 780.14	Nov. 1, 2012	Jan. 1, 2013
80279	Portland Cement Concrete	Sections 312, 503, 1003, 1004, 1019, and 1020	Jan. 1, 2012	Nov. 1, 2013
80218	Preventive Maintenance – Bituminous Surface Treatment	Recurring CS #34	Jan. 1, 2009	April 1, 2012
80219	Preventive Maintenance – Cape Seal	Recurring CS #35	Jan. 1, 2009	April 1, 2012
80220	Preventive Maintenance – Micro Surfacing	Recurring CS #36	Jan. 1, 2009	April 1, 2012
80221	Preventive Maintenance – Slurry Seal	Recurring CS #37	Jan. 1, 2009	April 1, 2012
80224	Restoring Bridge Approach Pavements Using High-Density Foam	Recurring CS #39	Jan. 1, 2009	Jan. 1, 2012
80255	Stone Matrix Asphalt	Sections 406, 1003, 1004, 1030, and 1011	Jan. 1, 2010	Aug. 1, 2013
80143	Subcontractor Mobilization Payments	Article 109.12	April 2, 2005	April 1, 2011

<u>File Name</u>	<u>Special Provision Title</u>	<u>New Location</u>	<u>Effective</u>	<u>Revised</u>
80308	Synthetic Fibers in Concrete Gutter, Curb, Median and Paved Ditch	Articles 606.02 and 606.11	Nov. 1, 2012	
80286	Temporary Erosion and Sediment Control	Articles 280.04 and 280.08	Jan. 1, 2012	
80225	Temporary Raised Pavement Marker	Recurring CS #38	Jan. 1, 2009	
80256	Temporary Water Filled Barrier	Section 708 and Article 1106.02	Jan. 1, 2010	Jan. 1, 2013
80273	Traffic Control Deficiency Deduction	Article 105.03	Aug. 1, 2011	
80270	Utility Coordination and Conflicts	Articles 105.07, 107.19, 107.31, 107.37, 107.38, 107.39 and 107.40	April 1, 2011	Jan. 1, 2012

The following special provisions require additional information from the designer. 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

## GUIDE BRIDGE SPECIAL PROVISION INDEX/CHECK SHEET

Effective as of the: January 17, 2014 Letting

Pg #	√	File Name	Title	Effective	Revised
		GBSP 4	Polymer Modified Portland Cement Mortar	June 7, 1994	July 26, 2013
		GBSP 12	Drainage System	June 10, 1994	Jan 1, 2007
		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	Oct 15, 2011
		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	July 26, 2013
		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	Oct 30, 2012
		GBSP 30	Bridge Deck Latex Concrete Overlay	May 15, 1995	Jan 18, 2011
		GBSP 31	Bridge Deck High-Reactivity Metakaolin (HRM) Conc Overlay	Jan 21, 2000	Oct 30, 2012
		GBSP 32	Temporary Sheet Piling	Sept 2, 1994	Jan 31, 2012
		GBSP 33	Pedestrian Truss Superstructure	Jan 13, 1998	Aug 17, 2012
		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	July 26, 2013
518	X	GBSP 42	Drilled Soldier Pile Retaining Wall	Sept 20, 2001	Aug 17, 2012
		GBSP 43	Driven Soldier Pile Retaining Wall	Nov 13, 2002	Aug 17, 2012
524	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
		GBSP 47	High Performance Concrete Structures	Aug 5, 2002	Jan 1, 2007
526	X	GBSP 51	Pipe Underdrain for Structures	May 17, 2000	Jan 22, 2010
		GBSP 53	Structural Repair of Concrete	Mar 15, 2006	July 26, 2013
		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	July 26, 2013
		GBSP 59	Diamond Grinding and Surface Testing Bridge Sections	Dec 6, 2004	July 9, 2008
		GBSP 60	Containment and Disposal of Non-Lead Paint Cleaning Residues	Nov 25, 2004	Mar 6, 2009
		GBSP 61	Slipform Parapet	June 1, 2007	Aug 17, 2012
		GBSP 62	Concrete Deck Beams	June 13, 2008	Oct 9, 2009
		GBSP 64	Segmental Concrete Block Wall	Jan 7, 1999	Oct 30, 2012
		GBSP 65	Precast Modular Retaining Walls	Mar 19, 2001	Oct 30, 2012
		GBSP 66	Wave Equation Analysis of Piles	Nov 14, 2008	
		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	Oct 15, 2011
		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	
527	X	GBSP 76	Granular Backfill for Structures	April 19, 2012	Oct 30, 2012
		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	

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
GBSP52	Porous Granular Embankment (Special)	Replaced by GBSP76

**STATE OF ILLINOIS**

**SPECIAL PROVISIONS**

The following Special Provisions supplement the “Standard Specifications for Road and Bridge Construction”, adopted January 1, 2012, the latest edition of the “Manual on Uniform Traffic Control Devices for Streets and Highways”, and the “Manual of Test Procedures of Materials” in effect on the date of invitation of 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 River Road at Roberts Road Intersection Improvements, in the Village of Lake Barrington, Illinois in Lake County, and in case of conflict with any part or parts of said specifications, the said Special Provisions shall take precedence and shall govern.

**LOCATION OF PROJECT**

The project is located in Lake County, Illinois, in the Village of Lake Barrington, in the north half of the Section 3 in Township 43 North, Range 9 East of the Third Principal Meridian in Cuba Township. The proposed intersection improvement is located at the intersection of River Road (FAU 3704) and Roberts Road (FAU 3705) and is under the jurisdiction of the Lake County Division of Transportation. Relative to major arterials, the project is located approximately 1.1 miles west of Illinois Route 59 and 1.5 miles southwest of US Route 12. The total gross and net length of the project is 2766.2 feet (0.52 mi.).

**DESCRIPTION OF PROJECT**

The work consists of replacing the existing signalized intersection with a multi-lane roundabout. The ground underneath the proposed roadway will be stabilized using geotechnical methods to provide a solid roadway foundation. A 7 foot tall retaining wall will be installed, replacing the 42” culvert under River Road, installing storm sewer, shoulder improvements, sidewalks, segmented block retaining wall, pavement widening, pavement markings, and resurfacing and all incidental and collateral work necessary to complete the project as shown on the plans and described herein.

**MAINTENANCE OF ROADWAYS**

Effective: September 30, 1985

Revised: November 1, 1996

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

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

**STATUS OF UTILITIES TO BE ADJUSTED**

Effective: January 30, 1987

Revised: January 24, 2013

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

NAME OF UTILITY	TYPE	LOCATION	Estimated Duration of Time for the Completion of Relocation or Adjustments
AT&T 1000 Commerce Drive Oak Brook, IL 60523 Attention: Bruce Brown 630-573-5715	Telephone Wiring	South side of Roberts Road, west side of River Road	50 Days
Comcast 688 Industrial Drive Elmhurst, IL 60123 Attention: Robert Schuller 630-573-5715	Overhead and Underground Cable	South side of Roberts Road	20 Days
ComEd Facility Relocation Department Lincoln Center 2 - 6th Floor Oak Brook Terrace, IL 60181 Attention: David Schacht 630-437-2129	Overhead and Underground Electric	<u>OH</u> : South side of Roberts road, west side of River Road. <u>UG</u> : Beneath Roberts Road across from Oak Hill	50 Days
Nicor Gas 300 W. Terracotta Avenue Crystal Lake, IL 60014 Attention: Chris Winters 815-261-9418	6" Gas Main	South side of Roberts Road, underground feed across Roberts Road to Oak Hill	50 Days

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

- 1) Proposed right of way is clear for contract award.
- 2) Final plans have been sent to and received by the utility company.
- 3) Utility permit is received by the Department and the Department is ready to issue said permit.



- 4) If a permit has not been submitted, a 15 day letter is sent to the utility company notifying them they have 15 days to provide their permit application. After allowing 15 days for submission of the permit the 90 day notice is sent to the utility company.
- 5) Any time within the 90 day relocation period the utility company may request a waiver for additional time to complete their relocation. The Department has 10 days to review and respond to a waiver request.

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

### **WORKING DAYS FOLLOWING MILESTONE COMPLETION**

#### MILESTONE

#### DESCRIPTION OF WORK FOR MILESTONE

Milestone 1

Contractor's geotechnical engineer determines the settlement criteria has been attained for successful completion of Stage I ground improvement activities as specified in the special provision CONTROLLED STIFFNESS COLUMNS and the project plans and all work necessary to facilitate completion of that task. This milestone is anticipated to be reached within 60 working days; however actual site conditions may result in a shorter or longer time duration that cannot be accurately predicted.

The Contractor shall complete all work within 90 working days following the completion of Milestone 1.

Under extenuating circumstances the Engineer may direct that certain items of work, not affecting the safe opening of the roadway to traffic, may be completed within the guaranteed working days allowed for cleanup work and punch list items. Temporary lane closures for this work may be allowed at the discretion of the Engineer.

The Contractor will not be allowed any extra compensation for working longer hours or using extra shifts, working on weekends, or during holidays to meet the specified working days. Article 108.09 or the Special Provision for "Failure to Complete the Work on Time", if included in this contract, shall apply to the number of working days.

### **INCENTIVE/DISINCENTIVE FOR STAGED CONSTRUCTION**

**Description:** The purpose of this Special Provision is to ensure the least amount of disruption to the motorists during the construction of Stage III and the associated road closure and detour as identified within the project plans and as defined below. The Contractor shall note that the working days allotted for the overall project and the calendar days for the Stage III closure and detour are based on an expedited work schedule.

Traffic Configurations:

- A. Stage I – Roberts Road open to traffic in both eastbound and westbound directions on existing pavement. River Road closed to traffic. Access to Oak Hill Rd. to be maintained at all times for local traffic.
- B. Stage II – Roberts Road open to traffic in both eastbound and westbound directions on pavement constructed during Stage I. River Road closed to traffic. Access to Oak Hill Rd. to be maintained at all times for local traffic.
- C. Stage III – Both Roberts Road and River Road closed to traffic. Access to Oak Hill Rd. to be maintained at all times for local traffic.

Stage III Closure and Detour:

The Contractor shall schedule his/her operations so as to minimize the closure to the driving public during Stage III to the greatest extent possible. The Contractor will be allowed **twenty (20)** calendar days combined for Stage III. The allotted time shall start when full closure of both River and Roberts Road occurs (Stage III). The disincentive/incentive described herein applies only to the Stage III work and associated 20 calendar day limit for this work.

Conditions:

The allotted time shall end when traffic is open on both River Road and Roberts Road with the following conditions:

- Median curb and gutter poured, and the following:
  - In landscaped medians, medians shall be backfilled and rough graded for establishment of final landscaping with the full height at center of roundabout in place.
  - Stamped Colored Median Surface in place in all locations identified on the plans.
- Frame and grates for storm sewers cast flush with median curb and gutter and open to acceptance of stormwater.
- Final surface course in place for both reconstruction and resurfacing sections as indicated on the plans.
- Final pavement markings placed.
- Final signage placed.
- Lighting foundations poured; lights energized and operational.

The following are not required for opening of traffic:

- Topsoil and landscaping (including placement of trees)
- Sidewalks and bike paths.

**Failure to Complete the Work on Time:** Should the Contractor fail to complete the work on or before the allotted time, the Contractor shall be liable to the Department in the amount of \$11,500 for each calendar day beyond allotted time. Such cost penalties may be deducted from any moneys due the Contractor. Liquidated Damages per Article 108.09 of the Standard Specifications shall be applied if the work extends beyond the allotted number of working days for the entire project.

In the event that the Contractor fails to open the roadway to traffic in the allotted time and exceeds the number of Working Days per the project Special Provisions, both cost penalties set forth in this Special Provision and Liquidated Damages per Article 108.09 of the Standard Specifications shall apply. In fixing the cost penalties as set out herein, the desire is to establish a certain mode of calculation for the work because the Department's actual loss, in the event of delay, cannot be predetermined, would be difficult to ascertain, and a matter of argument and unprofitable litigation. This mode is an equitable rule for measurement of the Department's actual loss and fairly takes into account the loss of the use of the roadway. The Department shall not be required to provide any actual losses to recover these cost penalties, as these penalties are very difficult to ascertain. Furthermore, no provision of this clause shall be construed as a penalty, as such is not the intention of the parties.

**Incentive Payment Plan:** The nature of this project is such that delays and inconvenience to the motorists and the community need to be reduced to the maximum extent possible. On this basis the Contractor shall be entitled to an Incentive Payment for the staging of work as set forth above. The Incentive Payment shall be paid at the rate of \$11,500 per calendar day for each day of completion prior to the end of the allotted time period. The maximum payment under this Incentive Plan will be limited to ten (10) calendar days.

A calendar day is every day on the calendar and starts at 12:00 midnight and ends at the following 12:00 midnight, twenty-four hours later. No payment will be paid for any day less than twenty-four hours.

Should the Contractor be delayed in the commencement, prosecution, or completion of the work for any reason, there shall be no extension of the incentive payment calculation date even though there may be granted an extension of time for completion of work unless significant extra work is added to the Contract by the Department. No Incentive Payment will be made if the Contractor fails to complete the work before the allotted time or within such extended time allowed by the Department. Failure of the Contractor to complete all work as required by this Special Provision shall release and discharge the State, the Department, and all its officers, agents, and employees from and all claims and demands for the payment of any incentive amount or cost penalties arising from the refusal to pay any incentive amount.

**TRAFFIC CONTROL PLAN (L.C.-T- Section 700)**  
Effective 06/01/2012

Traffic Control shall be performed according to the applicable sections of the "Standard Specifications", the "Supplemental Specifications", the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways", the "Quality Standard for Work Zone Traffic Control Devices", any special details and Highway Standards as shown on the plans and the special provisions contained herein.

Special attention is called to Articles 105.03(b), 105.05, and 107.09, and to Sections 701, 704, and 782 of the "Standard Specifications", and to the following Highway Standards, Details, Recurring Special Provisions and Special Provisions contained herein, relating to traffic control.

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

**STANDARDS**

701001-02	Off-Road Operations, 2L, 2W, More Than 15 ft. Away
701006-05	Off-Road Operations, 2L, 2W, 15 ft. (4.5 m) to 24 in. (600 mm) From Pavement Edge
701201-04	Lane Closure, 2L, 2W, Day Only, For Speeds $\geq$ 45 MPH
701301-04	Lane Closure, 2L, 2W, Short Time Operations
701306-03	Lane Closure, 2L, 2W, Slow Moving Operations Day Only, For Speeds $\geq$ 45 MPH
701311-03	Lane Closure, 2L, 2W, Moving Operations - Day Only
701326-04	Lane Closure, 2L, 2W, Pavement Widening, For Speeds $\geq$ 45 MPH
701331-04	Lane Closure, 2L, 2W, With Run-Around, For Speeds $\geq$ 45 MPH
701501-06	Lane Closure, 2L, 2W, Undivided
701901-03	Traffic Control Devices
704001-07	Temporary Concrete Barrier
720001-01	Sign Panel Mounting Details
720006-04	Sign Panel Erection Details
720021-02	Extruded Aluminum Type Sign Panel
728001-01	Telescoping Steel Sign Support
731001-01	Base for Telescoping Steel Sign Support

**DETAILS**

BD400-05	Butt Joint and HMA Taper Details
TC-22	Arterial Road Information Sign
LC7000	2L, 2W, Off-Road Operations Day Operations Only
LC7004	Traffic Control and Protection for Side Roads, Intersections, and Driveways
LC7200	Direction Indicator Barricades
LC7203	Work Zone Speed Limit Signing Diagram
LC7800	Typical Pavement Markings For County Highways
LC7802	Short Term Pavement Markings

**RECURRING SPECIAL PROVISIONS**

LRS3 Special Provision for Work Zone Traffic Control Surveillance

**DETOURS**

Detours and road closures on county maintained roads within Lake County, Illinois shall be according to the applicable Articles and Sections of the “Standard Specifications”, the “Supplemental Specifications”, the “Illinois Manual on Uniform Traffic Control Devices for Streets and Highways”, the Lake County Division of Transportation’s Detour Procedures and Guidelines, any special details and Highway Standards as shown on the Detour Plan and the Special Provisions contained herein. The LCDOT Detour Procedures and Guidelines are available from the LCDOT, Traffic Engineering Section upon request.

**Traffic Control and Protection (Special) (L.C.-T- Section 700)**  
Effective 06/01/2012

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

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

**701.01 Description.** This item of work shall consist of furnishing, installing, maintaining, replacing, relocating and removing all traffic control devices used for the purpose of regulating, warning or directing traffic during the construction or maintenance of this improvement.

**Article 701.02 Materials** shall be modified by adding the following paragraph:

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

**Article 701.04 General** shall be modified by adding the following as the first paragraph:

Traffic Control and Protection (Special) shall be provided as shown on the plans and applicable Highway Standards; as required in these special provisions and the applicable sections of the “Standard Specifications”; and/or as directed by the Engineer.

**Article 701.04 General** shall be modified by adding the following to the fourth paragraph:

The Contractor shall dispatch men, materials, and equipment to correct any such deficiencies. The Contractor shall respond to any call from LCDOT concerning any request for improving or correcting traffic control devices and begin making the requested repairs within two hours from the time of notification.

**Article 701.10 Surveillance** shall be replaced with the following:

The Contractor is required to conduct routine inspections of the work site at a frequency that will allow for the timely replacement of any traffic control device that has become

displaced, worn or damaged to the extent that it no longer conforms to the shape, dimensions, color and operational requirements of the MUTCD, the Traffic Control Standards, the IDOT Quality Standard For Work Zone Traffic Control Devices, or will no longer present a neat appearance to motorists. A sufficient quantity of replacement devices, based on vulnerability to damage, shall be readily available to meet this requirement.

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

**Article 701.13 Flaggers (a)** shall be modified by revising the second paragraph of subparagraph (a) by adding the following:

The Engineer will determine when a side road or entrance shall be closed to traffic. The flagger shall be positioned as shown on the plans or as directed by the Engineer.

**Article 701.14 Signs (a)** Road Construction Ahead Signs shall be modified by changing the following in the paragraph:

**“ROAD WORK AHEAD” signs shall be required in lieu of “ROAD CONSTRUCTION AHEAD” SIGNS**

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

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

All permanent “SPEED LIMIT” signs located within the work zone shall be removed or covered. If the speed limit sign is to be covered, it shall be done in a manner that no part of the legend shall be visible in any lighting condition. This work shall be completed by the Contractor after the method of covering the speed limit signs has been approved by the Engineer.

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

The work zone speed limit signs will be removed when roadway conditions return to normal or when the construction project is suspended for more than 30 days.

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

- (c) Temporary Construction Information Signs. When indicated in the traffic control plan or as directed by the Engineer the Contractor shall furnish, install, maintain, relocate, and remove for various stages of construction Temporary Construction Information Signs.

Temporary Construction Information Signs may include:

Driveway	White Legend on Green Background
Caution – New Lanes Open	Black Legend on Orange Background

The signs, as shown on Lake County Detail LC7201, shall be installed according to the traffic control plan and/or as directed by the Engineer.

**Article 701.15 Traffic Control Devices** (b) Type I, II and III Barricades shall be deleted and replaced with the following:

**Type II barricades shall be used at all locations that call for Type I, or Type II barricades.**

Type II barricades are used to channelize traffic; to delineate unattended obstacles, patches, excavations, drop-offs, and other hazards; and as check barricades

Any drop off greater than three inches, but less than six inches, located within eight feet of the pavement edge shall be protected by Type II barricades equipped with mono-directional steady burn lights. The barricades shall be placed at a spacing of 100 feet center to center. For any drop off within eight feet of the pavement edge that exceeds six inches, the Type II barricades equipped with mono-directional steady burn lights shall be placed at a spacing of 50 feet center to center. Barricades that must be placed in excavated areas shall have leg extensions installed so that the top of the barricade is in compliance with the height requirements of IDOT Standard 701901.

Check barricades shall be placed in work areas perpendicular to traffic every 1,000 feet, at one per lane and one per shoulder, to prevent motorists from using work areas as a traveled way. Two additional check barricades shall be placed in advance of each patch excavation or any other hazard in the work area. The first will be placed at the edge of the open traffic lane and the second centered on the closed lane. Check barricades shall be Type II and equipped with flashing amber light.

Type III barricades are used to close traffic lanes and to close roads.

**Article 701.15 Traffic Control Devices (e)** Direction Indicator Barricades shall be modified by adding the following paragraph.

**The direction indicator barricades shall meet the requirements for Type II barricades as stated in this special provision. The top panel, which faces traffic, shall be as shown in IDOT Highway Standard 701901. The top panel, facing away from traffic shall have a 12 inch x 24 inch orange and white diagonal panel. The bottom panels shall be eight inches x 24 inches with orange and white diagonal sheeting, as shown in LCDOT's Special Detail LC7200.**

**Article 701.15 Traffic Control Devices (j)** Portable Changeable Message Signs shall be modified by adding the following paragraphs:

The PCMS shall be compatible and fully functional with the LCDOT's Transportation Management Center PASSAGE PCMS Control Software. A list of approved PCMS's manufacturers and traffic control vendors is available upon request from the LCDOT. The PCMS shall be tested and approved by the LCDOT and can be sufficiently controlled by the LCDOT NTCIP compliant software. If the PCMS has not been tested or approved by either the Illinois State Toll Highway Authority or the LCDOT then the PCMS will need to be tested and certified by the Delcan Corporation at the Contractor's expense.

Lake County Division of Transportation (PASSAGE)

Software Developer:

Delcan

650 East Algonquin Road, Suite 101

Schaumburg, IL 60173

In case of a Traffic Incident Management (TIM) event or other County/State declared Emergency Management event, the use of the PCMS may be pre-empted from the Contractor's use by the Lake County Transportation Management Center for the duration of the incident. If the PCMS must be moved from the limits of the work site to an offsite location to better facilitate the use of the PCMS during the incident, the Contractor will be compensated for the labor and equipment to move the PCMS to the designated location and back, according to Article 109.04 (b) of the "Standard Specifications". In order to facilitate the movement of the PCMS in a timely manner, the LCDOT may use County Forces to move the PCMS to the designated location and/or back, at no additional cost to the Contractor.



When the sign(s) are displaying messages, they shall be considered a traffic control device. At all other times when no message is displayed, they shall be considered equipment.

**Basis of Payment.** Changeable message signs will be paid for at the contract unit price per calendar month for each sign as CHANGEABLE MESSAGE SIGN, as stated in Article 701.20 of this special provision.

**Article 701.17 Specific Construction Operations (c) Surface Courses and Pavement (1) Prime Coat** shall be replaced by the following:

- (1) Prime Coat. "FRESH OIL" signs (W21-2) shall be used when the prime coat is applied to pavement that is open to traffic. The signs shall remain in place until tracking of the prime ceases. These signs shall be erected a minimum of 500 feet preceding the start of the prime and on all side roads within the posted area. The signs on the side roads shall be posted a minimum of 200 feet from the mainline pavement. These signs are excluded from the time requirements of Article 701.04 of the "Standard Specifications" as modified by this special provision (above). Non-compliance with the provisions of this section, by the Contractor, shall result in an immediate traffic control deficiency deduction. All signs shall have an amber flashing light attached.

**Article 701.17 Specific Procedures (c) Surface Courses and Pavement (2) Cold Milling** shall be replaced by the following:

- (2) Cold Milling. "ROUGH GROOVED SURFACE" signs (W8-1107) shall be used when the road has been cold milled and is open to traffic. The signs shall remain in place until the milled surface condition no longer exists. These signs shall be erected a minimum of 500 feet preceding the start of the milled pavement and on all side roads within the posted area. The signs on the side roads shall be posted a minimum of 200 feet from the mainline pavement. Non-compliance with the provisions of this section, by the Contractor, shall result in an immediate traffic control deficiency deduction. All signs shall have an amber flashing light attached.

**Article 701.17 Specific Procedures (c) Surface Course and Pavement** shall be modified by adding the following paragraph:

- (6) Area Reflective Crack Control Treatment Fabric. "SLIPPERY WHEN WET" signs (W8-5) shall be used when crack control fabric is applied to pavement that is open to traffic. These signs shall remain in place until the binder course is laid. The signs shall be erected a minimum of 500 feet preceding the start of the crack control treatment and on all side roads within the posted area. The signs on the side roads shall be posted a minimum of 200 feet from the mainline pavement.

These signs are excluded from the time requirements of Article 701.04 of the "Standard Specifications" as modified by this special provision (above). Non-compliance with the provisions of this section, by the Contractor, shall result in an immediate traffic control deficiency deduction. All signs shall have an amber flashing light attached.

**Article 701.18 Highway Standards Application** (b) Standard 701316 and 701321 (2) g. Detector Loops, shall be replaced with the following:

- g. Detection. Microwave Vehicle Sensors shall be installed as directed by the Engineer. The LCDOT shall approve the proposed microwave vehicle sensor before the Contractor may furnish or install it. The Contractor shall install, wire and adjust the alignment of the sensor according to the manufacturer's recommendations and requirements. The Engineer shall approve the installation. An alternate method of detection may be used if it has been demonstrated and approved by the Department.

The microwave vehicle sensor shall meet the following requirements:

- Detection Range: Adjustable to 60 feet
- Detection Angle: Adjustable, horizontal and vertical
- Detection Pattern: 16 degree beam width minimum [at 50 feet the pattern shall be approximately 15.5 feet wide]
- Mounting: Heavy-duty bracket, predrilled and slotted for pole mounting
- LED Indicator Light: For detection verification

**Article 701.18 Highway Standards Application** (j) Urban Traffic Control, Standards 701501, 701502, 701601, 701602, 701606, 701701, and 701801 (1) General, shall be modified by adding the following paragraphs:

Whenever a lane is closed to traffic using IDOT standard 701601, 701606, or 701701, the pavement width transition sign (W4-2R or W4-2L) shall be used in lieu of the "WORKERS" sign (W21-1 or W21-1a)

Whenever any vehicle, equipment, workers or their activities infringe on the shoulder or within 15 feet of the traveled way, and the traveled way remains unobstructed, then the applicable Traffic Control Standard shall be 701006, 701011, 701101, or 701701. The "SHOULDER WORK AHEAD" sign (W21-5(0)-48) shall be used in lieu of the "WORKERS" sign (W21-1 or W-21-1a).

**Article 701.18 Highway Standards Application** shall be modified by adding the following section (l):

(l) IDOT standard 701331. When IDOT standard 701331 is specified on two-lane, two-way roadways, a "LANE SHIFT AHEAD" sign shall be added 500 feet in advance of W1-3 or W1-4 sign. The Road Work sign (W20-1) shall be extended to a total of 1500' from the start of the lane shift.

**Article 701.19 Method of Measurement** shall be replaced completely with the following:

**701.19 Method of Measurement.**

These items of work will be measured on a lump sum basis for furnishing installing, maintaining, replacing, relocating and removing the traffic control devices required in the plans and these special provisions.

**Article 701.20 Basis of Payment** shall be replaced completely with the following:

**701.20 Basis of Payment**

This work will be paid for at the contract unit price per lump sum for TRAFFIC CONTROL AND PROTECTION (SPECIAL). The payment will be in full for all labor, materials, transportation, and incidentals necessary to furnish, install, maintain, replace, relocate and remove all traffic control devices indicated in the plans and specifications, except for the following items, which will be paid for separately.

- 1) Temporary Bridge Traffic Signals
- 2) Temporary Rumble Strips [where each is defined as 25 feet]
- 3) Temporary Raised Pavement Markers
- 4) Sand module impact attenuators
- 5) Portable Changeable Message Signs
- 6) Temporary Concrete Barrier
- 7) Temporary Pavement Marking-Letters and Symbols
- 8) Temporary Pavement Marking-Line at width specified

The salvage value of the materials removed shall be reflected in the bid price for this item.

Any delays or inconveniences incurred by the Contractor while complying with these requirements shall be considered as part of TRAFFIC CONTROL AND PROTECTION (SPECIAL) and no additional compensation will be allowed.

Any traffic control devices required by the Engineer to implement the Traffic Control Plan as shown in the plans and specifications of the contract shall be considered included in the pay item TRAFFIC CONTROL AND PROTECTION (SPECIAL).

If the Engineer requires additional work involving a substantial change of location and/or work which differs in design and/or work requiring a change in the type of construction, as stated in Article 104.02(d) of the "Standard Specifications", the standards and/or the designs, other than those required in the plans, will be made available to the Contractor at least one week in advance of

the change in traffic control. Payment for any additional traffic control required for the reasons listed above will be in accordance with Article 109.04 of the "Standard Specifications".

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

In the event the sum total of all work items for which traffic control and protection is required is increased or decreased by more than ten percent, the contract bid price for TRAFFIC CONTROL AND PROTECTION will be adjusted per the formula in Article 701.20 of the Standard Specifications.

The value of the work items used in calculating the increase and decrease will include only items that have been added to or deducted from the contract under Article 104.02 of the "Standard Specifications" and only items that require the use of TRAFFIC CONTROL AND PROTECTION (SPECIAL).

In the event the Department cancels or alters any portion of the contract that result in the elimination or incompleteness of any portion of the work, payment for partially completed work will be made according to Article 104.02 of the "Standard Specifications".

**AGGREGATE SUBGRADE IMPROVEMENT (D-1)**

Effective: February 22, 2012

Revised: November 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
(b) Reclaimed Asphalt Pavement (RAP) (Notes 1, 2 and 3) .....	1031

Note 1. Crushed RAP, from either full depth or single lift removal, may be mechanically blended with aggregate gradations CS 01 or CS 02 but shall not exceed 40 percent of the total product. The top size of the Coarse RAP shall be less than 4 in. (100 mm) and well graded.

Note 2. RAP having 100 percent passing the 1 1/2 in. (37.5 mm) sieve and being well graded, may be used as capping aggregate in the top 3 in. (75 mm) when aggregate gradations CS 01 or CS 02 are used in lower lifts. When RAP is blended with any of the coarse aggregates, the blending shall be done with mechanically calibrated feeders.

Note 3. The RAP used for aggregate subgrade improvement shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications".

**303.03 Equipment.** The vibratory machine shall be according to Article 1101.01, or as approved by the Engineer.

**303.04 Soil Preparation.** The stability of the soil shall be according to the Department's Subgrade Stability Manual for the aggregate thickness specified.

**303.05 Placing Aggregate.** The maximum nominal lift thickness of aggregate gradations CS 01 or CS 02 shall be 24 in. (600 mm).

**303.06 Capping Aggregate.** The top surface of the aggregate subgrade shall consist of a minimum 3 in. (75 mm) of aggregate gradations CA 06 or CA 10. When Reclaimed Asphalt Pavement (RAP) is used, it shall be crushed and screened where 100 percent is passing the 1 1/2 in. (37.5 mm) sieve and being well graded. RAP that has been fractionated to size will not be permitted for use in capping. Capping aggregate will not be required when the aggregate subgrade improvement is used as a cubic yard pay item for undercut applications. When RAP is blended with any of the coarse aggregates, the blending shall be done with mechanically calibrated feeders.

**303.07 Compaction.** All aggregate lifts shall be compacted to the satisfaction of the Engineer. If the moisture content of the material is such that compaction cannot be obtained, sufficient water shall be added so that satisfactory compaction can be obtained.

**303.08 Finishing and Maintenance of Aggregate Subgrade Improvement.** The aggregate subgrade improvement shall be finished to the lines, grades, and cross sections shown on the plans, or as directed by the Engineer. The aggregate subgrade improvement shall be maintained in a smooth and compacted condition.

**303.09 Method of Measurement.** This work will be measured for payment according to Article 311.08.

**303.10 Basis of Payment.** This work will be paid for at the contract unit price per cubic yard (cubic meter) for AGGREGATE SUBGRADE IMPROVEMENT or at the contract unit price per square yard (square meter) for AGGREGATE SUBGRADE IMPROVEMENT, of the thickness specified.

Add the following to Section 1004 of the Standard Specifications:

“ **1004.06 Coarse Aggregate for Aggregate Subgrade Improvement.** The aggregate shall be according to Article 1004.01 and the following.

- (a) Description. The coarse aggregate shall be crushed gravel, crushed stone, or crushed concrete.
- (b) Quality. The coarse aggregate shall consist of sound durable particles reasonably free of deleterious materials.
- (c) Gradation.
  - (1) The coarse aggregate gradation for total subgrade thicknesses of 12 in. (300 mm) or greater shall be CS 01 or CS 02.

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.
- (3) Gradation deleterious count shall not exceed 10% of total RAP and 5% of other by total weight.

**BITUMINOUS PRIME COAT FOR HMA PAVEMENT (FULL DEPTH) (D-1)**

Effective: May 1, 2007

Revise Article 407.06(b) of the Standard Specifications to read:

“A bituminous prime coat shall be applied between each lift of HMA according to Article 406.05(b) at a rate of 0.02 to 0.05 gal/sq yd (0.1 to 0.2 L/sq m), the exact rate to be determined by the Engineer.”

Revise the second paragraph of Article 407.12 of the Standard Specifications to read:

“Prime Coat will be paid for at the contract unit price per gallon (liter) or per ton (metric ton) for BITUMINOUS MATERIALS (PRIME COAT).”

**COARSE AGGREGATE FOR BACKFILL, TRENCH BACKFILL AND BEDDING (D-1)**

Effective: November 1, 2011

Revised: November 1, 2013

This work shall be according to Section 1004.05 of the Standard Specifications except for the following:

Reclaimed Asphalt Pavement (RAP) maybe blended with gravel, crushed gravel, crushed stone crushed concrete, crushed slag, chats, crushed sand stone or wet bottom boiler slag. The RAP used shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications". The RAP shall be uniformly graded and shall pass the 1.0 in. (25 mm) screen. When RAP is blended with any of the coarse aggregate listed above, the blending shall be done mechanically with calibrated feeders. The feeders shall have an accuracy of  $\pm 2.0$  percent of the actual quantity of material delivered. The final blended product shall not contain more than 40 percent by weight RAP.

The coarse aggregate listed above shall meet CA 6 and CA 10 gradations prior to being blended with the processed and uniformly graded RAP. Gradation deleterious count shall not exceed 10% of total RAP and 5% of other by total weight.

**EMBANKMENT I**

Effective: March 1, 2011

Revised: November 1, 2013

Description. This work shall be according to Section 205 of the Standard Specifications except for the following.

Material. All material shall be approved by the District Geotechnical Engineer. The proposed material must meet the following requirements.

- a) The laboratory Standard Dry Density shall be a minimum of 90 lb/cu ft (1450 kg/cu m) when determined according to AASHTO T 99 (Method C).
- b) The organic content shall be less than ten percent determined according to AASHTO T 194 (Wet Combustion).
- c) Soils which demonstrate the following properties shall be restricted to the interior of the embankment and shall be covered on both the sides and top of the embankment by a minimum of 3 ft (900 mm) of soil not considered detrimental in terms of erosion potential or excess volume change.
  - 1) A grain size distribution with less than 35 percent passing the number 75 um (#200) sieve.
  - 2) A plasticity index (PI) of less than 12.

- 3) A liquid limit (LL) in excess of 50.
- d) Reclaimed asphalt shall not be used within the ground water table or as a fill if ground water is present.
- e) The RAP used shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications". Gradation deleterious count shall not exceed 10% of total RAP and 5% of other by total weight.

### CONSTRUCTION REQUIREMENTS

Samples. Embankment material shall be sampled, tested, and approved before use. The contractor shall identify embankment sources, and provide equipment as the Engineer requires, for the collection of samples from those sources. Samples will be furnished to the Geotechnical Engineer a minimum of three weeks prior to use in order that laboratory tests for approval and compaction can be performed. Embankment material placement cannot begin until tests are completed and approval given.

Placing Material. In addition to Article 202.03, broken concrete, reclaimed asphalt with no expansive aggregate, or uncontaminated dirt and sand generated from construction or demolition activities shall be placed in 6 inches (150 mm) lifts and disked with the underlying lift until a uniform homogenous material is formed. This process also applies to the overlaying lifts. The disk must have a minimum blade diameter of 24 inches (600 mm).

When embankments are to be constructed on hillsides or existing slopes that are steeper than 3H:1V, steps shall be keyed into the existing slope by stepping and benching as shown in the plans or as directed by the engineer.

Compaction. Soils classification for moisture content control will be determined by the Soils Inspector using visual field examination techniques and the IDH Textural Classification Chart.

When tested for density in place each lift shall have a maximum moisture content as follows.

- a) A maximum of 110 percent of the optimum moisture for all forms of clay soils.
- b) A maximum of 105 percent of the optimum moisture for all forms of clay loam soils.

Stability. The requirement for embankment stability in Article 205.04 will be measured with a Dynamic Cone Penetrometer (DCP) according to the test method in the IDOT Geotechnical Manual. The penetration rate must be equal or less than 1.5 inches (38 mm) per blow.

Basis of Payment. This work will not be paid separately but will be considered as included in the various items of excavation.



**EMBANKMENT II**

Effective: March 1, 2011

Revised: November 1, 2013

Description. This work shall be according to Section 205 of the Standard Specifications except for the following.

Material. Reclaimed asphalt shall not be used within the ground water table or as a fill if ground water is present. The RAP used shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications". Gradation deleterious count shall not exceed 10% of total RAP and 5% of other by total weight.

**CONSTRUCTION REQUIREMENTS**

Samples. Embankment material shall be sampled and tested before use. The contractor shall identify embankment sources, and provide equipment as the Engineer requires, for the collection of samples from those sources. Samples will be furnished to the Geotechnical Engineer a minimum of three weeks prior to use in order that laboratory tests for compaction can be performed. Embankment material placement cannot begin until tests are completed.

Placing Material. In addition to Article 202.03, broken concrete, reclaimed asphalt with no expansive aggregate, or uncontaminated dirt and sand generated from construction or demolition activities shall be placed in 6 inches (150 mm) lifts and disked with the underlying lift until a uniform homogenous material is formed. This process also applies to the overlaying lifts. The disk must have a minimum blade diameter of 24 inches (600 mm).

When embankments are to be constructed on hillsides or existing slopes that are steeper than 3H:1V, steps shall be keyed into the existing slope by stepping and benching as shown in the plans or as directed by the Engineer.

Compaction. Soils classification for moisture content control will be determined by the Soils Inspector using visual field examination techniques and the IDH Textural Classification Chart.

When tested for density in place each lift shall have a maximum moisture content as follows.

- a) A maximum of 110 percent of the optimum moisture for all forms of clay soils.
- b) A maximum of 105 percent of the optimum moisture for all forms of clay loam soils.

Stability. The requirement for embankment stability in article 205.04 will be measured with a Dynamic Cone Penetrometer (DCP) according to the test method in the IDOT Geotechnical Manual. The penetration rate must be equal or less than 1.5 inches (38 mm) per blow.

Basis of Payment. This work will not be paid separately but will be considered as included in the various items of excavation.

**FINE AGGREGATE FOR HOT-MIX ASPHALT (HMA) (D-1)**

Effective: May 1, 2007  
 Revised: January 1, 2012

Revise Article 1003.03 (c) of the Standard Specifications to read:

“(c) Gradation. The fine aggregate gradation for all HMA shall be FA1, FA 2, FA 20, FA 21 or FA 22. When Reclaimed Asphalt Pavement (RAP) is incorporated in the HMA design, the use of FA 21 Gradation will not be permitted.

**FRICTION SURFACE AGGREGATE (D-1)**

Effective: January 1, 2011  
 Revised: November 1, 2013

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 revisions.

(a) Description. The coarse aggregate for HMA shall be according to the following table.

Use	Mixture	Aggregates Allowed
Class A	Seal or Cover	<u>Allowed Alone or in Combination:</u> Gravel Crushed Gravel Carbonate Crushed Stone Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag Crushed Concrete

Use	Mixture	Aggregates Allowed	
HMA All Other	Shoulders	<u>Allowed Alone or in Combination:</u> Gravel Crushed Gravel Carbonate Crushed Stone Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) <sup>1/</sup> Crushed Steel Slag <sup>1/</sup> Crushed Concrete	
HMA High ESAL Low ESAL	C Surface IL-12.5,IL-9.5, or IL-9.5L	<u>Allowed Alone or in Combination:</u> Crushed Gravel Carbonate Crushed Stone Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) <sup>1/</sup> Crushed Steel Slag <sup>1/</sup> Crushed Concrete	
HMA High ESAL	D Surface IL-12.5 or IL-9.5	<u>Allowed Alone or in Combination:</u> Crushed Gravel Carbonate Crushed Stone (other than Limestone) Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) <sup>1/</sup> Crushed Steel Slag <sup>1/</sup> Crushed Concrete	
		<u>Other Combinations Allowed:</u>	
		<i>Up to...</i>	<i>With...</i>
		25% Limestone	Dolomite
		50% Limestone	Any Mixture D aggregate other than Dolomite
75% Limestone	Crushed Slag (ACBF) <sup>1/</sup> or Crushed Sandstone		

Use	Mixture	Aggregates Allowed				
HMA High ESAL	F Surface IL-12.5 or IL-9.5	<u>Allowed Alone or in Combination:</u>  Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) <sup>1/</sup> Crushed Steel Slag <sup>1/</sup>  No Limestone or no Crushed Gravel alone.				
		<u>Other Combinations Allowed:</u>  <table border="1"> <tr> <td><i>Up to...</i></td> <td><i>With...</i></td> </tr> <tr> <td>50% Crushed Gravel, or Dolomite</td> <td>Crushed Sandstone, Crushed Slag (ACBF)<sup>1/</sup>, Crushed Steel Slag<sup>1/</sup>, or Crystalline Crushed Stone</td> </tr> </table>	<i>Up to...</i>	<i>With...</i>	50% Crushed Gravel, or Dolomite	Crushed Sandstone, Crushed Slag (ACBF) <sup>1/</sup> , Crushed Steel Slag <sup>1/</sup> , or Crystalline Crushed Stone
		<i>Up to...</i>	<i>With...</i>			
50% Crushed Gravel, or Dolomite	Crushed Sandstone, Crushed Slag (ACBF) <sup>1/</sup> , Crushed Steel Slag <sup>1/</sup> , or Crystalline Crushed Stone					
Crystalline Crushed Stone Crushed Sandstone Crushed Steel Slag						
HMA High ESAL	SMA Ndesign 80 Surface	Crystalline Crushed Stone Crushed Sandstone Crushed Steel Slag				

1/ When either slag is used, the blend percentages listed shall be by volume.

Add the following to Article 1004.03 (b):

“ When using Crushed Concrete, the quality shall be determined as follows. The Contractor shall obtain a representative sample from the stockpile, witnessed by the Engineer, at a frequency of 2500 tons (2300 metric tons). The sample shall be a minimum of 50 lb (25 kg). The Contractor shall submit the sample to the District Office. 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 by weight will be applied for acceptance. The stockpile shall be sealed until test results are complete and found to meet the specifications above.”

**GROUND TIRE RUBBER (GTR) MODIFIED ASPHALT BINDER (D-1)**

Effective: June 26, 2006  
 Revised: January 1, 2013

Add the following to the end of article 1032.05 of the Standard Specifications:

“(c) Ground Tire Rubber (GTR) Modified Asphalt Binder. A quantity of 10.0 to 14.0 percent GTR (Note 1) shall be blended by dry unit weight with a PG 64-28 to make a GTR 70-28 or a PG 58-28 to make a GTR 64-28. The base PG 64-28 and PG 58-28 asphalt binders shall meet the requirements of Article 1032.05(a). Compatible polymers may be added during production. The GTR modified asphalt binder shall meet the requirements of the following table.

Test	Asphalt Grade GTR 70-28	Asphalt Grade GTR 64-28
Flash Point (C.O.C.), AASHTO T 48, °F (°C), min.	450 (232)	450 (232)
Rotational Viscosity, AASHTO T 316 @ 275 °F (135 °C), Poises, Pa·s, max.	30 (3)	30 (3)
Softening Point, AASHTO T 53, °F (°C), min.	135 (57)	130 (54)
Elastic Recovery, ASTM D 6084, Procedure A (sieve waived) @ 77 °F, (25 °C), aged, ss, 100 mm elongation, 5 cm/min., cut immediately, %, min.	65	65

Note 1. GTR shall be produced from processing automobile and/or light truck tires by the ambient grinding method. GTR shall not exceed 1/16 in. (2 mm) in any dimension and shall contain no free metal particles or other materials. A mineral powder (such as talc) meeting the requirements of AASHTO M 17 may be added, up to a maximum of four percent by weight of GTR to reduce sticking and caking of the GTR particles. When tested in accordance with Illinois modified AASHTO T 27, a 50 g sample of the GTR shall conform to the following gradation requirements:

Sieve Size	Percent Passing
No. 16 (1.18 mm)	100
No. 30 (600 µm)	95 ± 5
No. 50 (300 µm)	> 20

Add the following to the end of Note 1. of article 1030.03 of the Standard Specifications:

“A dedicated storage tank for the Ground Tire Rubber (GTR) modified asphalt binder shall be provided. This tank must be capable of providing continuous mechanical mixing throughout by

continuous agitation and recirculation of the asphalt binder to provide a uniform mixture. The tank shall be heated and capable of maintaining the temperature of the asphalt binder at 300 °F to 350 °F (149 °C to 177 °C). The asphalt binder metering systems of dryer drum plants shall be calibrated with the actual GTR modified asphalt binder material with an accuracy of ± 0.40 percent.”

Revise 1030.02(c) of the Standard Specifications to read:

“(c) RAP Materials (Note 3) .....1031”

Add the following note to 1030.02 of the Standard Specifications:

Note 3. When using reclaimed asphalt pavement and/or reclaimed asphalt shingles, the maximum asphalt binder replacement percentage shall be according to the most recent special provision for recycled materials.

**HEAT OF HYDRATION CONTROL FOR CONCRETE STRUCTURES (D-1)**

Effective: November 1, 2013

Article 1020.15 shall not apply.

**HMA MIXTURE DESIGN REQUIREMENTS (D-1)**

Effective: January 1, 2013

Revised: November 1, 2013

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, the mixture and test strip will not be paid for and the mixture shall be removed at the Contractor’s expense. An additional test strip and 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, the mixture shall be removed. Removal will be paid in accordance to Article 109.04 of the Standard Specifications. This initial mixture and test strip will be paid for at the contract unit prices. The additional mixture will be paid for at the contract unit price, and any additional test strips will be paid for at one half the unit price of each test strip.”

**1) Design Composition and Volumetric Requirements**

Revise the following table in Article 1030.01 of the Standard Specifications to read.

High ESAL	IL-25.0 binder; IL-19.0 binder; IL-12.5 surface; IL-9.5 surface; IL-4.75, SMA
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Revise the following table in Article 1030.04(a)(1):

“(1) High ESAL Mixtures. The Job Mix Formula (JMF) shall fall within the following limits.

High ESAL, MIXTURE COMPOSITION (% PASSING) <sup>1/</sup>														
Sieve Size	IL-25.0 mm		IL-19.0 mm		IL-12.5 mm		IL-9.5 mm		IL-4.75 mm		SMA <sup>4/</sup> IL-12.5 mm		SMA <sup>4/</sup> IL-9.5 mm	
	Min	max	min	max	min	max	min	max	min	max	min	max	min	max
1 1/2 in (37.5 mm)		100												
1 in. (25 mm)	90	100		100										
3/4 in. (19 mm)		90	82	100		100					100			
1/2 in. (12.5 mm)	45	75	50	85	90	100		100		100	80	100		100
3/8 in. (9.5 mm)						89	90	100		100		65	90	100
#4 (4.75 mm)	24	42 <sup>2/</sup>	24	50 <sup>2/</sup>	28	65	32	69	90	100	20	30	36	50
#8 (2.36 mm)	16	31	20	36	28	48 <sup>3/</sup>	32	52 <sup>3/</sup>	70	90	16	24 <sup>5/</sup>	16	32
#16 (1.18 mm)	10	22	10	25	10	32	10	32	50	65				
#30 (600 μm)											12	16	12	18
#50 (300 μm)	4	12	4	12	4	15	4	15	15	30				
#100 (150 μm)	3	9	3	9	3	10	3	10	10	18				
#200 (75 μm)	3	6	3	6	4	6	4	6	7	9 <sup>6/</sup>	7.0	9.0 <sup>6/</sup>	7.5	9.5 <sup>6/</sup>
Ratio Dust/Asphalt Binder		1.0		1.0		1.0		1.0		1.0		1.5		1.5

- 1/ Based on percent of total aggregate weight.
- 2/ The mixture composition shall not exceed 40 percent passing the #4 (4.75 mm) sieve for binder courses with Ndesign ≥ 90.
- 3/ The mixture composition shall not exceed 44 percent passing the #8 (2.36 mm) sieve for surface courses with Ndesign ≥ 90.
- 4/ The maximum percent passing the 20 µm sieve shall be ≤ 3 percent.
- 5/ When establishing the Adjusted Job Mix Formula (AJMF) the #8 (2.36mm) sieve shall not be adjusted above 24 percent.
- 6/ Additional minus No. 200 (0.075 mm) material required by the mix design shall be mineral filler, unless otherwise approved by the Engineer.”

Delete Article 1030.04(a)(4) of the Standard Specifications.

Revise Article 1030.04(b)(1) of the Standard Specifications to read.

“(1) High ESAL Mixtures. The target value for the air voids of the HMA shall be 4.0 percent and for IL-4.75 it shall be 3.5 percent at the design number of gyrations. The VMA and VFA of the HMA design shall be based on the nominal maximum size of the aggregate in the mix, and shall conform to the following requirements.

VOLUMETRIC REQUIREMENTS High ESAL						
Ndesign	Voids in the Mineral Aggregate (VMA), % minimum					Voids Filled with Asphalt Binder (VFA), %
	IL-25.0	IL-19.0	IL-12.5	IL-9.5	IL-4.75 <sup>1/</sup>	
50	12.0	13.0	14.0	15.0	18.5	65 – 78 <sup>2/</sup>
70						
90						
105						

- 1/ Maximum Draindown for IL-4.75 shall be 0.3%
- 2/ VFA for IL-4.75 shall be 72-85%”

Delete Article 1030.04(b) (4) of the Standard Specifications.

Revise table in Article 1030.04(b)(5) as follows:

“(5) SMA Mixtures.



Volumetric Requirements SMA <sup>1/</sup>			
Ndesign	Design Air Voids Target %	Voids in the Mineral Aggregate (VMA), % min.	Voids Filled with Asphalt (VFA), %
80 <sup>4/</sup>	3.5	17 <sup>2/</sup>	75 - 83
		16 <sup>3/</sup>	

- 1/ Maximum Draindown shall be 0.3%.
- 2/ Applies when specific gravity of coarse aggregate is  $\geq 2.760$ .
- 3/ Applies when specific gravity of coarse aggregate is  $< 2.760$ .
- 4/ For surface course, coarse aggregate shall be Class B Quality; the coarse aggregate can be crushed steel slag, crystalline crushed stone or crushed sandstone.\*  
 For binder course, coarse aggregate shall be crushed stone (dolomite), crushed gravel, crystalline crushed stone, or crushed sandstone.\*

\*Blending of different types of aggregate will not be permitted.

**2) Design Verification and Production**

Description. The following states the requirements for Hamburg Wheel and Tensile Strength testing for High ESAL, IL-4.75, and Stone Matrix Asphalt (SMA) hot-mix asphalt (HMA) mixes during mix design verification and production.

When the options of Warm Mix Asphalt, Reclaimed Asphalt Shingles, or Reclaimed Asphalt Pavement are used by the Contractor, the Hamburg Wheel and tensile strength requirements in this special provision will be superseded by the special provisions for Warm Mix Asphalt and/or by the District special provision for Reclaimed Asphalt Pavement and Reclaimed Asphalt Shingles as applicable.

Mix Design Testing. Add the following to Article 1030.04 of the Standard Specifications:

“(d) Verification Testing. High ESAL, IL-4.75, and SMA mix designs submitted for verification will be tested to ensure that the resulting mix designs will pass the required criteria for the Hamburg Wheel Test (IL mod AASHTO T-324) and the Tensile Strength Test (IL mod AASHTO T-283). The Department will perform a verification test on gyratory specimens compacted by the Contractor. If the mix fails the Department’s verification test, the Contractor shall make the necessary changes to the mix and resubmit compacted specimens to the Department for verification. If the mix fails again, the mix design will be rejected.

All new and renewal mix designs will be required to be tested, prior to submittal for Department verification meeting the following requirements:

- (1)Hamburg Wheel Test criteria.

Asphalt Binder Grade	# Repetitions	Max Rut Depth (mm)
PG 70 -XX (or higher)	20,000	12.5
PG 64 -XX (or lower)	10,000	12.5

Note: For SMA Designs (N-80) the maximum rut depth is 6.0 mm at 20,000 repetitions.  
 For IL 4.75mm Designs (N-50) the maximum rut depth is 9.0mm at 15,000 repetitions.

- (2) Tensile Strength Criteria. The minimum allowable conditioned tensile strength shall be 415 kPa (60 psi) 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 1380 kPa (200 psi).”

Production Testing.

Revise first paragraph of Article 1030.06(a) to read:

“(a) High ESAL and IL-4.75 Mixtures. For each contract, a 300 ton (275 metric tons) test strip, except for IL -4.75 it will be 400 ton (363 metric ton), will be required at the beginning of HMA production for each mixture with a quantity of 3000 tons (2750 metric tons) or more according to the Manual of Test Procedures for Materials “Hot Mix Asphalt Test Strip Procedures”.”

Delete second paragraph of Article 1030.06 (a).

Revise first sentence in fourth paragraph of Article 1030.06 (a) to read:

“Before constructing the test strip, target values shall be determined by applying gradation correction factors to the JMF when applicable.”

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).

Add the following to Article 1030.06 of the Standard Specifications:

- “(c) Hamburg Wheel Test. All HMA mixtures shall be sampled within the first 500 tons (450 metric tons) on the first day of production or during start up with a split reserved for the Department. The mix sample shall be tested according to the Illinois Modified AASHTO T 324 and shall meet the requirements specified herein. Mix production shall not exceed 1500 tons (1350 metric tons) or one day’s production, whichever comes first, until the testing is completed and the mixture is found to be in conformance. The requirement to cease mix production may be waived if the plant produced mixture demonstrates conformance prior to start of mix production for a contract.

The Department may conduct additional Hamburg Wheel Tests on production material as determined by the Engineer. If the mixture fails to meet the Hamburg Wheel criteria, no further mixture will be accepted until the Contractor takes such action as is necessary to furnish a mixture meeting the criteria”

The Contractor shall immediately cease production upon notification by the Engineer of failing Hamburg Wheel test. All prior produced material may be paved out provided all other mixture criteria are being met. No additional mixture shall be produced until the Engineer receives passing Hamburg Wheel tests.

Basis of Payment. Revise the seventh paragraph of Article 406.14 of the Standard Specifications to read:

“For all mixes designed and verified under the Hamburg Wheel criteria, the cost of furnishing and introducing anti-stripping additives in the HMA will not be paid for separately, but shall be considered as included in the contract unit price of the HMA item involved.

No additional compensation will be awarded to the Contractor because of reduced production rates associated with the addition of the anti-stripping additive.”

#### **HOT MIX ASPHALT MIXTURE IL-4.75 (D-1)**

Effective: January 1, 2007

Revised: November 1, 2013

Description. This work shall consist of constructing Hot-Mix Asphalt (HMA) surface course or leveling binder with an IL-4.75 mixture. Work shall be according to Sections 406, 1030, 1031 and 1032 of the Standard Specifications except as modified herein.

#### Materials.

Revise Article 1030.02 (b), (c), (d) and (g) of the Standard Specifications to read:

- (b) Fine aggregate (Note 1 and 5)

Note 5. The gradation for IL-4.75 shall be FA 1, FA 2, FA 20 or FA 22.

- (c) Reclaimed or recycled material. Only processed FRAP or RAS will be permitted in the IL-4.75 mixture. Refer to D1 version for Reclaimed Asphalt Pavement and Reclaimed Asphalt Shingles special provision.
- (d) Mineral Filler. Mineral filler shall conform to the requirements of Article 1011.01 of the Standard Specifications. Collected HMA baghouse dust may be used as Mineral Filler provided it meets the gradation outlined in Article 1011 of the Standard Specifications and a separate mix design is created.
- (g) Asphalt Binder (AB). The AB shall be either Elvaloy or SBS/SBR with a PG 76-22 value. The AB shall meet the requirements of Article 1032.05(b) of the Standard Specifications; however the elastic recovery of the AB shall be 80 minimum.

The AB shall be shipped, maintained, and stored at the mix plant according to the manufacturer's requirements. It shall be placed in an empty tank and not blended with other asphalt cements.

Mixture Design. The percentage of new natural sand shall not exceed 25% if FRAP or RAS is used. For designs without FRAP or RAS the sand fraction of the final blend shall be at least 50% manufacture stone sand.

Mixture Production. Plant modifications may be required to accommodate the addition of higher percentages of mineral filler as required by the JMF.

During production, mineral filler shall not be stored in the same silo as collected dust. This may require any previously collected bag house dust in a storage silo prior to production of the IL-4.75 mixture to be wasted. Only metered bag house dust may be returned back directly to the mix. Any additional minus No. 200 (75 µm) material needed to produce the IL-4.75 shall be mineral filler.

As an option, collected bag-house dust may be used in lieu of manufactured mineral filler, provided; 1) there is enough available for the production of the IL-4.75 mix for the entire project and 2) a mix design was prepared with collected bag-house dust.

The mixture shall be produced within the temperature range recommended by the asphalt cement producer; but not less than 325 °F (165 °C).

The amount of moisture remaining in the finished mixture (at silo discharge) shall be less than 0.3 percent based on the weight of the test sample after drying.

Mixtures contain steel slag sand or aggregate having absorptions  $\geq 2.5$  percent shall have a silo storage plus haul time of not less than 1.5 hours.

Placement.

Revise Article 406.06 (b) (2) a. to read as follows:

“a. The surface shall be dry for at least 12 hours, and clean, prior to placement of the mixture.

As an option, the contractor will be allowed to use a heated drier, at no additional cost to the Department, to expedite the drying of the pavement. No mix will be placed in areas of standing water or areas that show evidence of moisture or dampness. The use of a heated drier will be stopped if the pavement shows signs of damaged.”

**RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES (D-1)**

Effective: November 1, 2012

Revise: November 1, 2013

Revise Section 1031 of the Standard Specifications to read:

**“SECTION 1031. RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES**

**1031.01 Description.** Reclaimed asphalt pavement and reclaimed asphalt shingles shall be according to the following.

- (a) Reclaimed Asphalt Pavement (RAP). RAP is the material resulting from cold milling or crushing an existing hot-mix asphalt (HMA) pavement. RAP will be considered processed FRAP after completion of both crushing and screening to size. The Contractor shall supply written documentation that the RAP originated from routes or airfields under federal, state, or local agency jurisdiction.
- (b) Reclaimed Asphalt Shingles (RAS). Reclaimed asphalt shingles (RAS). RAS is from the processing and grinding of preconsumer or post-consumer shingles. RAS shall be a clean and uniform material with a maximum of 0.5 percent unacceptable material, as defined in Bureau of Materials and Physical Research Policy Memorandum “Reclaimed Asphalt Shingle (RAS) Sources”, by weight of RAS. All RAS used shall come from a Bureau of Materials and Physical Research approved processing facility where it shall be ground and processed to 100 percent passing the 3/8 in. (9.5 mm) sieve and 90 percent passing the #4 (4.75 mm) sieve . RAS shall meet the testing requirements specified herein. In addition, RAS shall meet the following Type 1 or Type 2 requirements.
  - (1) Type 1. Type 1 RAS shall be processed, preconsumer asphalt shingles salvaged from the manufacture of residential asphalt roofing shingles.
  - (2) Type 2. Type 2 RAS shall be processed post-consumer shingles only, salvaged from residential, or four unit or less dwellings not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP).

**1031.02 Stockpiles.** RAP and RAS stockpiles shall be according to the following.

- (a) RAP Stockpiles. The Contractor shall construct individual, sealed RAP stockpiles meeting one of the following definitions. Additional processed RAP (FRAP) shall be stockpiled in a separate working pile, as designated in the QC Plan, and only added to the sealed stockpile when test results for the working pile are complete and are found to meet tolerances specified herein for the original sealed FRAP stockpile. Stockpiles shall be sufficiently separated to prevent intermingling at the base. All stockpiles (including unprocessed RAP and FRAP) shall be identified by signs indicating the type as listed below (i.e. “Non- Quality, FRAP -#4 or Type 2 RAS”, etc...).
- (1) Fractionated RAP (FRAP). FRAP shall consist of RAP from Class I, Superpave HMA (High and Low ESAL) or equivalent mixtures. The coarse aggregate in FRAP shall be crushed aggregate and may represent more than one aggregate type and/or quality but shall be at least C quality. All FRAP shall be processed prior to testing and sized into fractions with the separation occurring on or between the #4 (4.75 mm) and 1/2 in. (12.5 mm) sieves. Agglomerations shall be minimized such that 100 percent of the RAP in the coarse fraction shall pass the maximum sieve size specified for the mix the FRAP will be used in.

- (2) Restricted FRAP (B quality) stockpiles shall consist of RAP from Class I, Superpave (High ESAL), or HMA (High ESAL). If approved by the Engineer, the aggregate from a maximum 3.0 inch single combined pass of surface/binder milling will be classified as B quality. All millings from this application will be processed into FRAP as described previously.
- (3) Conglomerate. Conglomerate RAP stockpiles shall consist of RAP from Class I, Superpave HMA (High and Low ESAL) or equivalent mixtures. The coarse aggregate in this RAP shall be crushed aggregate and may represent more than one aggregate type and/or quality but shall be at least C quality. This RAP may have an inconsistent gradation and/or asphalt binder content prior to processing. All conglomerate RAP shall be processed (FRAP) prior to testing. Conglomerate RAP stockpiles shall not contain steel slag or other expansive material as determined by the Department.
- (4) Conglomerate "D" Quality (DQ). Conglomerate DQ RAP stockpiles shall consist of RAP from HMA shoulders, bituminous stabilized subbases or Superpave (Low ESAL)/HMA (Low ESAL) IL-19.0L binder mixture. The coarse aggregate in this RAP may be crushed or round but shall be at least D quality. This RAP may have an inconsistent gradation and/or asphalt binder content. Conglomerate DQ RAP stockpiles shall not contain steel slag or other expansive material as determined by the Department.
- (5) Non-Quality. RAP stockpiles that do not meet the requirements of the stockpile categories listed above shall be classified as "Non-Quality".

RAP or FRAP containing contaminants, such as earth, brick, sand, concrete, sheet asphalt, bituminous surface treatment (i.e. chip seal), pavement fabric, joint sealants, plant cleanout etc., will be unacceptable unless the contaminants are removed to the satisfaction of the Engineer. Sheet asphalt shall be stockpiled separately.

- (b) RAS Stockpiles. Type 1 and Type 2 RAS shall be stockpiled separately and shall be sufficiently separated to prevent intermingling at the base. Each stockpile shall be signed indicating what type of RAS is present.  
However, a RAS source may submit a written request to the Department for approval to blend mechanically a specified ratio of type 1 RAS with type 2 RAS. The source will not be permitted to change the ratio of the blend without the Department prior written approval. The Engineer's written approval will be required, to mechanically blend RAS with any fine aggregate produced under the AGCS, up to an equal weight of RAS, to improve workability. The fine aggregate shall be "B Quality" or better from an approved Aggregate Gradation Control System source. The fine aggregate shall be one that is approved for use in the HMA mixture and accounted for in the mix design and during HMA production.

Records identifying the shingle processing facility supplying the RAS, RAS type and lot number shall be maintained by project contract number and kept for a minimum of three years.

**1031.03 Testing.** FRAP and RAS testing shall be according to the following.

- (a) FRAP Testing. When used in HMA, the FRAP shall be sampled and tested either during processing or after stockpiling. It shall also be sampled during HMA production.
- (1) During Stockpiling. For testing during stockpiling, washed extraction samples shall be run at the minimum frequency of one sample per 500 tons (450 metric tons) for the first 2000 tons (1800 metric tons) and one sample per 2000 tons (1800 metric tons) thereafter. A minimum of five tests shall be required for stockpiles less than 4000 tons (3600 metric tons).
  - (2) Incoming Material. For testing as incoming material, washed extraction samples shall be run at a minimum frequency of one sample per 2000 tons (1800 metric tons) or once per week, whichever comes first.
  - (3) After Stockpiling. For testing after stockpiling, the Contractor shall submit a plan for approval to the District proposing a satisfactory method of sampling and testing the RAP/FRAP pile either in-situ or by restockpiling. The sampling plan shall meet the minimum frequency required above and detail the procedure used to obtain representative samples throughout the pile for testing.

Before extraction, each field sample of FRAP, shall be split to obtain two samples of test sample size. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall extract the other test sample according to Department procedure. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

- (b) RAS Testing. RAS shall be sampled and tested during stockpiling according to Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Shingle (RAS) Sources". The Contractor shall also sample as incoming material at the HMA plant.
- (1) During Stockpiling. Washed extraction and testing for unacceptable materials shall be run at the minimum frequency of one sample per 200 tons (180 metric tons) for the first 1000 tons (900 metric tons) and one sample per 1000 tons (900 metric tons) thereafter. A minimum of five samples are required for stockpiles less than 1000 tons (900 metric tons). Once a  $\leq 1000$  ton (900 metric ton), five-sample/test stockpile has been established it shall be sealed. Additional incoming RAS shall be in a separate working pile as designated in the Quality Control plan and only added to the sealed stockpile when the test results of the working pile are complete and are found to meet the tolerances specified herein for the original sealed RAS stockpile.
  - (2) Incoming Material. For testing as incoming material at the HMA plant, washed extraction shall be run at the minimum frequency of one sample per 250 tons (227 metric tons). A minimum of five samples are required for stockpiles less than 1000 tons (900 metric tons). The incoming material test results shall meet the tolerances specified herein.

The Contractor shall obtain and make available all test results from start of the initial stockpile sampled and tested at the shingle processing facility in accordance with the facility's QC Plan.

Before extraction, each field sample shall be split to obtain two samples of test sample size. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall extract the other test sample according to Department procedures. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

**1031.04 Evaluation of Tests.** Evaluation of tests results shall be according to the following.

- (a) Evaluation of FRAP Test Results. All test results shall be compiled to include asphalt binder content, gradation and, when applicable (for slag),  $G_{mm}$ . A five test average of results from the original pile will be used in the mix designs. Individual extraction test results run thereafter, shall be compared to the average used for the mix design, and will be accepted if within the tolerances listed below.

Parameter	FRAP
No. 4 (4.75 mm)	± 6 %
No. 8 (2.36 mm)	± 5 %
No. 30 (600 $\mu$ m)	± 5 %
No. 200 (75 $\mu$ m)	± 2.0 %
Asphalt Binder	± 0.3 %
$G_{mm}$	± 0.03 <sup>1/</sup>

- 1/ For stockpile with slag or steel slag present as determined in the current Manual of Test Procedures Appendix B 21, "Determination of Reclaimed Asphalt Pavement Aggregate Bulk Specific Gravity".

If any individual sieve and/or asphalt binder content tests are out of the above tolerances when compared to the average used for the mix design, the FRAP stockpile shall not be used in Hot-Mix Asphalt unless the FRAP representing those tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

The Contractor shall maintain a representative moving average of five tests to be used for Hot-Mix Asphalt production.

With the approval of the Engineer, the ignition oven may be substituted for extractions according to the Illinois Test Procedure, "Calibration of the Ignition Oven for the Purpose of Characterizing Reclaimed Asphalt Pavement (RAP)" or Illinois Modified AASHTO T-164-11, Test Method A.

- (b) Evaluation of RAS Test Results. All of the test results, with the exception of percent unacceptable materials, shall be compiled and averaged for asphalt binder content and gradation. A five test average of results from the original pile will be used in the mix designs. Individual test results run thereafter, when compared to the average used for the mix design, will be accepted if within the tolerances listed below.



Parameter	RAS
No. 8 (2.36 mm)	± 5 %
No. 16 (1.18 mm)	± 5 %
No. 30 (600 µm)	± 4 %
No. 200 (75 µm)	± 2.5 %
Asphalt Binder Content	± 2.0 %

If any individual sieve and/or asphalt binder content tests are out of the above tolerances when compared to the average used for the mix design, the RAS shall not be used in Hot-Mix Asphalt unless the RAS representing those tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

- (c) Quality Assurance by the Engineer. The Engineer may witness the sampling and splitting conduct assurance tests on split samples taken by the Contractor for quality control testing a minimum of once a month.

The overall testing frequency will be performed over the entire range of Contractor samples for asphalt binder content and gradation. The Engineer may select any or all split samples for assurance testing. The test results will be made available to the Contractor as soon as they become available.

The Engineer will notify the Contractor of observed deficiencies.

Differences between the Contractor's and the Engineer's split sample test results will be considered acceptable if within the following limits.

Test Parameter	Acceptable Limits of Precision	
	FRAP	RAS
% Passing: <sup>1/</sup>		
1 / 2 in.	5.0%	
No. 4	5.0%	
No. 8	3.0%	4.0%
No. 30	2.0%	3.0%
No. 200	2.2%	2.5%
Asphalt Binder Content	0.3%	1.0%
G <sub>mm</sub>	0.030	

1/ Based on washed extraction.

In the event comparisons are outside the above acceptable limits of precision, the Engineer will immediately investigate.

- (d) Acceptance by the Engineer. Acceptable of the material will be based on the validation of the Contractor's quality control by the assurance process.

**1031.05 Quality Designation of Aggregate in RAP and FRAP.**

- (a) RAP. The aggregate quality of the RAP for homogenous, conglomerate, and conglomerate “D” quality stockpiles shall be set by the lowest quality of coarse aggregate in the RAP stockpile and are designated as follows.
- (1) RAP from Class I, Superpave/HMA (High ESAL), or (Low ESAL) IL-9.5L surface mixtures are designated as containing Class B quality coarse aggregate.
  - (2) RAP from Superpave/HMA (Low ESAL) IL-19.0L binder mixture is designated as Class D quality coarse aggregate.
  - (3) RAP from Class I, Superpave/HMA (High ESAL) binder mixtures, bituminous base course mixtures, and bituminous base course widening mixtures are designated as containing Class C quality coarse aggregate.
  - (4) RAP from bituminous stabilized subbase and BAM shoulders are designated as containing Class D quality coarse aggregate.
- (b) FRAP. If the Engineer has documentation of the quality of the FRAP aggregate, the Contractor shall use the assigned quality provided by the Engineer.

If the quality is not known, the quality shall be determined as follows. Fractionated RAP stockpiles containing plus #4 (4.75 mm) sieve coarse aggregate shall have a maximum tonnage of 5,000 tons (4,500 metric tons). The Contractor shall obtain a representative sample witnessed by the Engineer. The sample shall be a minimum of 50 lb (25 kg). The sample shall be extracted according to Illinois Modified AASHTO T 164 by a consultant prequalified by the Department for the specified testing. The consultant shall submit the test results along with the recovered aggregate to the District Office. The cost for this testing shall be paid by the Contractor. The District will forward the sample to the BMPR Aggregate Lab for MicroDeval Testing, according to Illinois Modified AASHTO T 327. A maximum loss of 15.0 percent will be applied for all HMA applications. The fine aggregate portion of the fractionated RAP shall not be used in any HMA mixtures that require a minimum of “B” quality aggregate or better, until the coarse aggregate fraction has been determined to be acceptable thru a MicroDeval Testing.

**1031.06 Use of FRAP and/or RAS in HMA.** The use of FRAP and/or RAS shall be a Contractor’s option when constructing HMA in all contracts.

- (a) FRAP. The use of FRAP in HMA shall be as follows.
- (1) Coarse Aggregate Size (after extraction). The coarse aggregate in all FRAP shall be equal to or less than the nominal maximum size requirement for the HMA mixture to be produced.
  - (2) Steel Slag Stockpiles. FRAP stockpiles containing steel slag or other expansive material, as determined by the Department, shall be homogeneous and will be approved for use in HMA (High ESAL and Low ESAL) mixtures regardless of lift or mix type.

- (3) Use in HMA Surface Mixtures (High and Low ESAL). FRAP stockpiles for use in HMA surface mixtures (High and Low ESAL) shall have coarse aggregate that is Class B quality or better. FRAP shall be considered equivalent to limestone for frictional considerations unless produced/screened to minus 3/8 inch.
  - (4) Use in HMA Binder Mixtures (High and Low ESAL), HMA Base Course, and HMA Base Course Widening. FRAP stockpiles for use in HMA binder mixtures (High and Low ESAL), HMA base course, and HMA base course widening shall be FRAP in which the coarse aggregate is Class C quality or better.
  - (5) Use in Shoulders and Subbase. FRAP stockpiles for use in HMA shoulders and stabilized subbase (HMA) shall be FRAP, Restricted FRAP, conglomerate, or conglomerate DQ.
- (b) RAS. RAS meeting Type 1 or Type 2 requirements will be permitted in all HMA applications as specified herein.
- (c) FRAP and/or RAS Usage Limits. Type 1 or Type 2 RAS may be used alone or in conjunction with FRAP in HMA mixtures up to a maximum of 5.0% by weight of the total mix.

When FRAP, RAS or FRAP in conjunction with RAS is used, the percent of virgin asphalt binder replacement (ABR) shall not exceed the amounts indicated in the table below for a given N Design.

Max Asphalt Binder Replacement for FRAP with RAS Combination

HMA Mixtures <sup>1/2/4/</sup>	Maximum % ABR		
Ndesign	Binder/Leveling Binder	Surface	Polymer Modified <sup>3/</sup>
30L	50	40	30
50	40	35	30
70	40	30	30
90	40	30	30
4.75 mm N-50			40
SMA N-80			30

- 1/ For HMA “All Other” (shoulder and stabilized subbase) N-30, the percent asphalt binder replacement shall not exceed 50% of the total asphalt binder in the mixture.
- 2/ When the binder replacement exceeds 15 percent for all mixes, except for SMA and IL-4.75, the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent binder replacement using a virgin asphalt binder grade of PG64-22 will be reduced to a PG58-28). When constructing full depth HMA and the ABR is less than 15 percent, the required virgin asphalt binder grade shall be PG64-28.

- 3/ When the ABR for SMA or IL-4.75 is 15 percent or less, the required virgin asphalt binder shall be SBS PG76-22 and the elastic recovery shall be a minimum of 80. When the ABR for SMA or IL-4.75 exceeds 15%, the virgin asphalt binder grade shall be SBS PG70-28 and the elastic recovery shall be a minimum of 80.
- 4/ When FRAP or RAS is used alone, the maximum percent asphalt binder replacement designated on the table shall be reduced by 10%.

**1031.07 HMA Mix Designs.** At the Contractor's option, HMA mixtures may be constructed utilizing RAP/FRAP and/or RAS material meeting the detailed requirements specified herein.

- (a) FRAP and/or RAS. FRAP and /or RAS mix designs shall be submitted for verification. If additional FRAP or RAS stockpiles are tested and found to be within tolerance, as defined under "Evaluation of Tests" herein, and meet all requirements herein, the additional FRAP or RAS stockpiles may be used in the original design at the percent previously verified.
- (b) RAS. Type 1 and Type 2 RAS are not interchangeable in a mix design. A RAS stone bulk specific gravity (Gsb) of 2.500 shall be used for mix design purposes.

**1031.08 HMA Production.** HMA production utilizing FRAP and/or RAS shall be as follows.

To remove or reduce agglomerated material, a scalping screen, gator, crushing unit, or comparable sizing device approved by the Engineer shall be used in the RAS and FRAP feed system to remove or reduce oversized material. If material passing the sizing device adversely affects the mix production or quality of the mix, the sizing device shall be set at a size specified by the Engineer.

If during mix production, corrective actions fail to maintain FRAP, RAS or QC/QA test results within control tolerances or the requirements listed herein the Contractor shall cease production of the mixture containing FRAP or RAS and conduct an investigation that may require a new mix design.

- (a) RAS. RAS shall be incorporated into the HMA mixture either by a separate weight depletion system or by using the RAP weigh belt. Either feed system shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes. The portion of RAS shall be controlled accurately to within  $\pm 0.5$  percent of the amount of RAS utilized. When using the weight depletion system, flow indicators or sensing devices shall be provided and interlocked with the plant controls such that the mixture production is halted when RAS flow is interrupted.
- (b) HMA Plant Requirements. HMA plants utilizing FRAP and/or RAS shall be capable of automatically recording and printing the following information.
  - (1) Dryer Drum Plants.
    - a. Date, month, year, and time to the nearest minute for each print.

- b. HMA mix number assigned by the Department.
  - c. Accumulated weight of dry aggregate (combined or individual) in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).
  - d. Accumulated dry weight of RAS and FRAP in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).
  - e. Accumulated mineral filler in revolutions, tons (metric tons), etc. to the nearest 0.1 unit.
  - f. Accumulated asphalt binder in gallons (liters), tons (metric tons), etc. to the nearest 0.1 unit.
  - g. Residual asphalt binder in the RAS and FRAP material as a percent of the total mix to the nearest 0.1 percent.
  - h. Aggregate RAS and FRAP moisture compensators in percent as set on the control panel. (Required when accumulated or individual aggregate and RAS and FRAP are printed in wet condition.)
  - i. When producing mixtures with FRAP and/or RAS, a positive dust control system shall be utilized.
  - j. Accumulated mixture tonnage.
  - k. Dust Removed (accumulated to the nearest 0.1 ton)
- (2) Batch Plants.
- a. Date, month, year, and time to the nearest minute for each print.
  - b. HMA mix number assigned by the Department.
  - c. Individual virgin aggregate hot bin batch weights to the nearest pound (kilogram).
  - d. Mineral filler weight to the nearest pound (kilogram).
  - f. RAS and FRAP weight to the nearest pound (kilogram).
  - g. Virgin asphalt binder weight to the nearest pound (kilogram).
  - h. Residual asphalt binder in the RAS and FRAP material as a percent of the total mix to the nearest 0.1 percent.

The printouts shall be maintained in a file at the plant for a minimum of one year or as directed by the Engineer and shall be made available upon request. The printing system will be inspected by

the Engineer prior to production and verified at the beginning of each construction season thereafter.

**1031.09 RAP in Aggregate Surface Course and Aggregate Shoulders.** The use of RAP or FRAP in aggregate surface course and aggregate shoulders shall be as follows.

- (a) Stockpiles and Testing. RAP stockpiles may be any of those listed in Article 1031.02, except “Non-Quality” and “FRAP”. The testing requirements of Article 1031.03 shall not apply. RAP used to construct aggregate surface course and aggregate shoulders shall be according to the current Bureau of Materials and Physical Research’s Policy Memorandum, “Reclaimed Asphalt Pavement (RAP) for Aggregate Applications”
- (b) Gradation. One hundred percent of the RAP material shall pass the 1 1/2 in. (37.5mm) sieve. The RAP material shall be reasonably well graded from coarse to fine. RAP material that is gap-graded, FRAP, or single sized will not be accepted for use as Aggregate Surface Course and Aggregate Shoulders.”

**MODIFIED IDOT STANDARD PAY ITEM**  
**SPECIAL PROVISIONS**

**20100XXX TREE REMOVAL (XX)**

Effective: January 1, 2007

Revised: August 1, 2011

**Description:** This work shall consist of cutting, grubbing, removing and disposing of trees and stumps.

**General:** The work shall be performed according to Article 201.04 of the “Standard Specifications” and the following:

*Cut trees and limbs shall be disposed of within five working days. The cut trees and limbs shall be disposed of according to Article 202.03 of the “Standard Specifications”.*

**Method of Measurement:** Tree Removal will be measured for payment according to Article 201.10(b) of the “Standard Specifications”.

**Basis of Payment:** This work will be paid for at the contract unit price per unit diameter for TREE REMOVAL of the size range specified. *The unit price shall include all equipment, materials and labor required to remove and dispose of designated trees and stumps.*

**20101100 TREE TRUNK PROTECTION**

Effective: January 1, 2007

**Description:** This work shall consist of furnishing, installing and removing tree trunk protection for trees adjacent to the project site.

**General:** The work shall be performed according to Article 201.05 of the “Standard Specifications” and the following:

*Prior to construction, the Contractor shall install a snow fence or other highly visible barrier around designated trees in a manner meeting the Engineer’s approval. Visual barriers, such as single strand wire or plastic flagging, are not acceptable for this purpose. The barrier shall be maintained in the proper location and in good repair until the completion of construction. Removal and disposal of the barrier shall be the Contractor’s responsibility.*

**Method of Measurement:** Tree Trunk Protection will be measured for payment as each per tree according to Article 201.10(c) of the “Standard Specifications”.

**Basis of Payment:** This work will be paid for at the contract unit price per each for TREE TRUNK PROTECTION.

**20200100 EARTH EXCAVATION**

Effective: January 1, 2007

Revised: August 1, 2011

**Description:** This work shall consist of the excavation and transportation of suitable excavated material to embankment locations throughout the limits of the project. This work shall also consist of the excavation, transportation and disposal of excess and unsuitable materials.

**General:** This work shall conform to the requirements of Section 202 of the “Standard Specifications” and the following:

**For this Project the Earth Excavation shall consist of:**

1.  *Excavation to the subgrade elevation.*
2.  *Excavation for topsoil placement.*
3.  *The removal of bituminous material not included in any other pay item.*
4.  *Undercutting, as determined by the Engineer to include:*
  - a.  *Removal of existing topsoil under proposed embankment.*
  - b.  *Removal of unsuitable material in wet areas.*
5.  *Undercutting, based on the recommendations of the soil survey and report.*
  - a. *An estimated quantity of excavation for undercutting has been included in the quantity of Earth Excavation and is shown on the plans.*
  - b. *Undercutting may be employed only at the discretion of the Engineer after it has been determined that the provisions of Section 301 of the “Standard Specifications” will not yield sufficient results to allow the timely progress of the project.*

Removal and disposal of unstable, unsuitable and/or excess material will be paid for separately as Removal and Disposal of Unsuitable Material or Topsoil Excavation and Placement, Special. All unstable, unsuitable and/or excess material shall be disposed of outside the right-of-way according to Article 202.03 of the “Standard Specifications”.

Earth moved more than once due to construction staging and/or procedures selected by the Contractor, will not be paid for separately, but shall be considered included in the unit cost of Earth Excavation.

**A Soil Survey and Report:**

Was performed – A copy is available online with the project plans and contract specifications and is also available via request from the Lake County Division of Transportation.

Was not performed.

**Method of Measurement:** Earth Excavation will be measured in its original position and the volume in cubic yards computed by the method of average end areas.

**Basis of Payment:** This work will be paid for at the contract unit price per cubic yard for EARTH EXCAVATION. *The unit price shall include all equipment and labor required to excavate, transport and distribute earth.*

**20800150 TRENCH BACKFILL**

Effective: January 1, 2007

Revised: August 1, 2011

**Description:** This work shall consist of furnishing and placing aggregate backfill in all trenches made in the subgrade of the proposed improvement, and all trenches where the inner edge of the trench is within two feet of the proposed edge of pavement, curb, gutter, curb and gutter, stabilized shoulder, and/or sidewalk.

**Materials:** The aggregate shall meet the requirements of Article 208.02 of the “Standard Specifications”. A local material meeting the approval of the Engineer may be substituted.

**General:** The work shall be performed according to Section 208 of the “Standard Specifications”.

**Method of Measurement:** Trench Backfill shall be furnished and placed for full width of the excavated trench. The length and depth of the trench backfill shall be measured in place in feet. The trench width used to calculate the quantity of Trench Backfill will be measured in feet but it shall be subject to the following maximum width:

*The maximum pay width for backfilling storm sewer and culvert trenches shall be the outside diameter of the pipe plus 18” for trench depths up to five feet (no shoring required), or the outside diameter of the pipe plus 36” for trench depths over five feet (shoring required). Maximum Trench widths for round pipe up to 48” in diameter are included on the Lake County standard LC0020 shown on the plans.*

**Basis of Payment:** This work will be paid for at the contract unit price per cubic yard for TRENCH BACKFILL. *The unit price shall include all equipment, materials and labor required to furnish and place the trench backfill.*



**21301052      EXPLORATION TRENCH 52" DEPTH**

**Description:** This work shall consist of constructing a trench for the purpose of locating existing tile lines, farm underdrains, or other underground appurtenances within the construction limits of the proposed improvement.

**General:** The work shall be performed according to Section 213 of the "Standard Specifications". The exploration trench(es) shall be constructed at a location(s) as directed by the Engineer.

The trench shall be deep enough to expose the underground line, and the width of the trench shall be sufficient to allow proper investigation to determine if the tile line needs to be replaced.

**Method of Measurement:** *An estimated length of exploration trench is included in the summary of quantities to establish a unit price only. The exploration trench will be measured for payment in feet of actual trench constructed.*

**Basis of Payment:** This work will be paid for at the contract unit price per FOOT for EXPLORATION TRENCH 52" DEPTH. *Payment will be based on actual length of trench explored without a change in unit price because of adjustment in plan quantities, and no extra compensation will be allowed for any delays, inconveniences, or damage sustained by the Contractor in performing the work. The unit price shall include all equipment, materials, and labor required to construct the trench.*

**25100630      EROSION CONTROL BLANKET**

**Description:** This work shall consist of furnishing and placing erosion control blanket over seeded areas as indicated on the plans.

**Materials:** The erosion control blanket shall meet the requirements of Article 1081.10 of the "Standard Specifications."

**General:** The work shall be performed according to Article 251.04 of the "Standard Specifications".

**Method of Measurement:** This work will be measured for payment in place in square yards of actual area covered.

**Basis of Payment:** This work will be paid for at the contract unit price per square yard for EROSION CONTROL BLANKET. *The unit price shall include all equipment, materials and labor required to furnish and place the erosion control blanket*

**28000305      TEMPORARY DITCH CHECKS**

**Description:** This work shall consist of constructing, maintaining, and removing temporary ditch checks.

**General:** The work shall be performed according to Section 280 of the "Standard Specifications", LCDOT Standard Drawing LC2050 and the following:

*The temporary ditch check shall be triangular shaped, urethane foam covered with a geotextile fabric. The temporary ditch check shall be installed on a geotextile fabric apron. The temporary ditch check shall have a triangle base 16" – 20" wide and a minimum triangle height of 8" – 10". The temporary ditch checks shall be installed at the locations specified on the Erosion Control Plan, and/or as directed by the Engineer. The temporary ditch check installation shall be according to the detail shown on the plans and the manufacturer's recommendations.*

*The geotextile fabric shall conform to Article 1080.05 of the "Standard Specifications", for Geotechnical Fabric for French Drains.*

*The temporary ditch checks shall remain in place until just before placing the final landscaping in the ditch area. The Contractor shall not remove the temporary ditch checks if it is raining and/or rain is in the immediate forecast.*

*The ditch checks shall become the property of the Contractor upon their removal.*

**Method of Measurement:** *Temporary Ditch Checks will be measured in place and the length calculated in feet for each ditch check section actually installed.*

**Basis of Payment:** This work will be paid for at the contract unit price per foot for TEMPORARY DITCH CHECKS. *The unit price shall include all labor, equipment and materials necessary for their installation and removal. The maintenance of this item shall be included with and paid for as part of the contract total price for MAINTENANCE OF EROSION CONTROL SYSTEM.*

#### **28000400 PERIMETER EROSION BARRIER**

Effective: January 1, 2007

Revised: August 1, 2011

**Description:** This work shall consist of constructing, removing and disposing of perimeter erosion barrier as part of the project's temporary erosion control system.

**General:** The work shall be performed according to Section 280 of the "Standard Specifications" and the following:

The perimeter erosion barrier shall be limited to temporary silt filter fence meeting the requirements of AASHTO Standard M 288-00. This specification is applicable to the use of a geotextile as a vertical, permeable interceptor designed to remove suspended soil from overland water flow. The function of a temporary silt fence is to filter and allow settlement of soil particles from sediment-laden water. The purpose is to prevent the eroded soil from being transported off the construction site by water runoff.

All removed materials shall be disposed of outside the right-of-way according to Article 202.03 of the "Standard Specifications".

**Materials:**

Geotextile Requirements: The geotextile used for the temporary silt fence shall be classified as supported (with a wire or polymeric mesh backing) or unsupported (no backing). The temporary silt fence geotextile shall meet the requirements of Table 6 included below. All numeric values except Apparent Opening Size (AOS) represent Minimum Average Roll Values (MARV as defined in ASTM D4439). The values for AOS are the Maximum Average Roll Values.

Table 6 – Temporary Silt Fence Requirements

Requirements	Test Methods	Wire Backed Supported Silt Fence <sup>a</sup>	Unsupported Silt Fence	
			Geotextile Elongation $\geq 50\%$ <sup>b</sup>	Geotextile Elongation $< 50\%$ <sup>b</sup>
Maximum Post Spacing		4 feet	4 feet	6 feet
Grab Strength	ASTM D 4632			
Machine direction		90 lbs	124 lbs	124 lbs
X-Machine direction		90 lbs	100 lbs	100lbs
Permittivity <sup>c</sup>	ASTM D 4491	0.05 sec <sup>-1</sup>	0.05 sec <sup>-1</sup>	0.05 sec <sup>-1</sup>
Apparent Opening Size	ASTM D 4751	0.024in maximum average roll value		
Ultraviolet stability (retained strength)	ASTM D 4355	70% after 500 hours of exposure		

Notes:

- a) Silt fence support shall consist of 14-gauge steel wire with a mesh backing of 6" x 6" or prefabricated polymeric mesh of equivalent strength.
- b) As measured according to ASTM D 4632.
- c) These default filtration property values are based on empirical evidence with a variety of sediments. For environmentally sensitive areas, a review of previous experience and/or site or regionally specific geotextile tests should be performed by the agency to confirm suitability of these requirements.

Support Posts: The support posts may be composed of wood, steel or a synthetic material. The posts shall be a minimum length of 3 feet plus the buried depth. They shall have sufficient strength to resist damage during installation and to the support the applied loads due to material build up behind the silt fence.

- 1) Hardwood posts shall be a minimum of 1.2" x 1.2"
- 2) No. 2 southern pine posts shall be a minimum of 2.6" x 2.6"
- 3) Steel posts may be U, T, L, or C shape, weighing 1.3 lbs per foot.

Fence Support: The wire or polymer support fence shall be at least 30" high and strong enough to support the applied loads. Polymer support fences shall meet the same ultraviolet degradation requirements as the geotextile material (see table 6).

The wire support fence shall:

- Be a minimum of 14-gauge.
- Have a minimum of six horizontal wires.
- The maximum vertical wire spacing shall be 6”.

**Construction:**

The silt fence shall be installed with a minimum height above ground of 30”. The geotextile at the bottom of the fence shall be buried, in a “J” configuration to a minimum depth of 6”, in a trench so that no flow can pass under the silt fence. The trench shall be backfilled and the soil compacted over the geotextile.

The geotextile shall be spliced together with a sewn seam or two sections of fence may be overlapped instead. The sewn seam shall be positioned only at a support post.

The Contractor must demonstrate to the satisfaction of the Engineer that the geotextile can withstand the anticipated sediment loading.

The posts shall be placed at the spacing shown on the project plans. The posts shall be driven or placed a minimum of 20” into the ground. The depth shall be increased to 24” if the fence is placed on a slope of 3:1 or greater. If the 20” depth is impossible to obtain, the posts shall be adequately secured to prevent overturning of the fence due to sediment loading.

The support fence shall be securely fastened to the upslope side of the fence post. The support fence shall extend from the ground surface to the top of the geotextile.

When un-supported fence is used, the geotextile shall be securely fastened to the fence posts.

Field monitoring shall be performed to verify that the placement of an armor system does not damage the geotextile.

Silt fences should be continuous and transverse to the flow. The silt fence should follow the contours of the site as closely as possible. The fence shall also be placed such that run off cannot flow around the end(s) of the fence.

The silt fence should be located so that the drainage area is limited to an area equivalent to 1000 square feet for each 10 feet of fence length. Caution should be used where the site slope is greater than 1:1, and/or water flow rates exceed 0.1 cubic feet per second for each 10 feet of fence length.

**Maintenance:**

The Contractor shall inspect all temporary silt fences immediately after each rainfall and at least daily during prolonged rainfall. The Contractor shall immediately correct any deficiencies.

The Contractor shall also make a daily review of the location of silt fences in areas where construction activities have altered the natural contour and drainage runoff to ensure that the silt fences area properly located for effectiveness. Where deficiencies exist as determined by the Engineer, additional silt fence shall be installed as directed by the Engineer.

Damaged or otherwise ineffective silt fences shall be repaired or replaced promptly.

Sediment deposits shall either be removed when the deposit reaches half the height of the fence or a second silt fence shall be installed as directed by the Engineer.

The silt fence shall remain in place until the Engineer directs it to be removed. After the fence removal, the Contractor shall remove and dispose of any excess sediment accumulations, dress the area to give it a pleasing appearance, and cover with vegetation all bare areas according to the contract requirements.

The removed silt fence may be used at other locations provided the geotextile and other material requirements continue to be met to the satisfaction of the Engineer.

**Method of Measurement:** This work will be measured for payment in place in feet.

**Basis of Payment:** This work will be paid for at the contract unit price per foot for PERIMETER EROSION BARRIER. *The unit price shall include all work and materials necessary to properly install the barrier and to remove and dispose of the used materials at the completion of the project. Maintenance requirements shall be included and paid for under the special provision for MAINTENANCE OF EROSION CONTROL SYSTEM.*

**30300112 AGGREGATE SUBGRADE IMPROVEMENT 12"**

Effective: January 1, 2007

Revised: February 1, 2013

**Description:** This work shall consist of furnishing and constructing a 12" thick aggregate subgrade on a prepared subbase. The subgrade shall be placed in 2 lifts.

**Materials:** The aggregate in the first lift shall be a porous granular embankment meeting the requirements of Article 1004.05 of the "Standard Specifications" except as follows:

1. *Crushed Stone, Crushed Blast Furnace Slag, or Crushed Concrete meeting the requirements of the following table will be permitted.*

Sieve Size	Percent Passing
8"	100
6"	97 +/- 3
4"	90 +/- 10
2"	45 +/- 25
#4	20 +/- 20
#200	5 +/- 5

2. *Crushed Gravel meeting the requirements of the following table will be permitted.*

Sieve Size	Percent Passing
8"	100
6"	97 +/- 3
4"	90 +/- 10

2"	55 +/- 25
#4	30 +/- 20
#200	5 +/- 5

3. *Crushed RAP, from either full depth or single lift removal, may be mechanically blended with the above aggregate materials but shall not exceed 40 percent of the total product. The RAP shall have a top size of 4" and be well graded.*

*Steel slag and other expansive materials will not be permitted.*

*Crushed Gravel shall be defined as meeting a target of 97% with +/-3% variance for one-face or more crushed according to Crushed Particle Content: ASTM D 5821 (Illinois Modified).*

The aggregate in the second lift shall be a capping aggregate. The material shall be limited to the following:

1. *Crushed Stone, Crushed Blast Furnace Slag, Crushed Concrete, and Crushed Gravel having a gradation CA 6 in accordance with the requirements of Article 1004.01 of the "Standard Specifications". Steel slag and other expansive materials will not be permitted.*
2. *Reclaimed asphalt pavement (RAP) meeting the requirements of Section 1031 of the "Standard Specifications" and the following:*
  - *100% passing the 3 inch sieve.*
  - *Well graded down through fines.*
    - *The RAP shall not contain steel slag or other expansive material. RAP proposed for use as a capping aggregate shall be tested by the Department to determine if it is expansive or not. Non-expansive RAP will be allowed for use in the capping aggregate.*

**Equipment:** A vibratory roller meeting the requirements of Article 1101.01(g) of the "Standard Specifications" shall be used to roll each lift of material.

**Construction Requirements:** The first lift shall be 8" thick. The material shall be a porous granular embankment. The work shall be done according to the applicable portions of Section 207 of the "Standard Specifications". The second lift shall be a 4" (nominal) thick capping aggregate. The work shall be done according to the applicable portions of Section 351 of the "Standard Specifications".

A vibratory roller shall be used to roll each lift of material to obtain the desired keying or interlock and necessary compaction. The Engineer will verify that adequate keying has been obtained.

All aggregate 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.

**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.

**Method of Measurement:** Aggregate Subgrade Improvement 12” will be measured for payment in square yards according to Article 311.08(b) of the “Standard Specifications”.

**Basis of Payment:** This work will be paid for at the contract unit price per square yard for AGGREGATE SUBGRADE IMPROVEMENT 12”. *The unit price shall include all equipment, materials and labor required to furnish and place both lifts.*

**35101600 AGGREGATE BASE COURSE, TYPE B 4”**

**35101800 AGGREGATE BASE COURSE, TYPE B 6”**

Effective: December 14, 2012

**Description:** This work shall consist of furnishing and placing aggregate base course material on a prepared subgrade or subbase.

**Materials:** The aggregate shall meet the requirements of Article 1004.04 of the “Standard Specifications” except that:

*The aggregate material shall be limited to crushed gravel, crushed stone or crushed concrete.*

*The plasticity index requirements will be waived.*

**General:** The work shall be performed according to Section 351 of the “Standard Specifications”.

**Method of Measurement:** Aggregate Base Course, Type B will be measured for payment in square yards of the thickness specified according to Article 311.08(b) of the “Standard Specifications”.

**Basis of Payment:** This work will be paid for at the contract unit price per square yard for AGGREGATE BASE COURSE, TYPE B of the depth specified. *The unit price shall include all equipment, materials and labor required to furnish and place the base course.*

**40600100 BITUMINOUS MATERIALS (PRIME COAT)**

Effective: January 1, 2007

Revised: August 1, 2011

**Description:** This work shall consist of furnishing and placing a prime coat on a prepared base or hot-mix asphalt layer.

**Materials:** The bituminous materials shall meet the requirements of Section 1032 of the “Standard Specifications” except that the material shall be limited as follows:

*Emulsified asphalt will only be allowed between May 15th and September 1st. RC-70 asphalt shall be used in lieu of emulsified asphalt on or before May 15<sup>th</sup>, and on or after September 1st.*

*On days between May 15th and September 1st, when the air temperature is in question, the exact type of priming asphalt shall be determined by the Engineer.*

**General:** The work shall be performed according to Article 406.05(b) of the “Standard Specifications” and the following:

*The Prime Coat material shall be SS-1 on hot-mix asphalt surfaces and MC30 on aggregate surfaces.*

*The Contractor shall erect, to the Engineer’s satisfaction, 36 inch (minimum size) FRESH OIL AHEAD, signs prior to applying the prime coat.*

*Shields, covers or other suitable equipment shall be provided by the Contractor to protect the motoring public, adjoining pavement, curbs, and/or structures during the application of the prime coat.*

**Method of Measurement:** The Contractor will be required to present a weight ticket of the truckload prior to applying the prime coat. After application the truck shall then be weighed again in order to determine the net weight of prime coat that has been placed. Both tickets shall be stamped by a certified weighmaster. The quantity in gallons shall be computed according to Article 1032.02 of the “Standard Specifications”.

**Basis of Payment:** This work will be paid for at the contract unit price per gallon for BITUMINOUS MATERIALS (PRIME COAT). *The unit price shall include all equipment, materials and labor required to furnish and apply the prime coat.*

**42001300 PROTECTIVE COAT**

Effective: January 1, 2007

Revised: August 1, 2011

**Description:** This work shall consist of applying a protective coat to exposed concrete surfaces.

**Materials:** The protective coat shall meet the requirements of Article 1023.01 of the “Standard Specifications”.

**General:** The work shall be performed according to Article 420.18 of the “Standard Specifications” except that:

*The protective coat shall be applied to the exposed surfaces of all concrete pavements and appurtenances regardless of the calendar date limitations contained in the first paragraph of Article 420.18 of the “Standard Specifications”.*

**Method of Measurement:** The exposed surfaces of all concrete pavements and appurtenances will be measured in place and the area computed in square yards.

**Basis of Payment:** This work will be paid for at the contract unit price per square yard for PROTECTIVE COAT. *The unit price shall include all materials, equipment and labor required for two*



*applications of protective coat to exposed surfaces of concrete pavements and appurtenances. The unit price shall include both applications with no additional compensation for the second coat.*

**42400800      DETECTABLE WARNINGS**

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

**Materials:** The detectable warnings shall be cast iron panels of the sizes shown on the plans and shall meet the following material specification:

The detectable warning plate shall be constructed of gray iron meeting the requirements of Article 1006.14 of the "Standard Specifications" and ASTM A48, CLASS 35B; or cast ductile iron meeting the requirements of Article 1006.15 of the "Standard Specifications".

The coating system shall consist of a rust inhibiting epoxy primer and a finish coat.

The epoxy primer shall have the following properties:

Property	Test Method	Performance
Humidity	ASTM D1735	1000 Hours Minimum
Water Immersion	ASTM D870	250 Hours Minimum
Corrosion Resistance (Salt Spray)	ASTM B117	1000 Hours Minimum

Cold Rolled Steel Lab Panels

The finish coat shall be a powder coat and shall have the following properties:

Property	Test Method	Performance
Color	---	Federal Yellow
Corrosion Resistance (Salt Spray)	ASTM B117	1000 Hours Minimum

Cold Rolled Steel Lab Panels

**General:** The installation of detectable warnings shall meet the requirements of Article 424.09 of the "Standard Specifications". Grey iron plates shall be installed in concrete accessibility ramps only. Ductile iron plates may be installed in either concrete or hot-mix asphalt (HMA) accessibility ramps.

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

**Basis of Payment:** This work will be paid for at the contract unit price per square foot of DETECTABLE WARNINGS. *The unit price shall include all equipment, materials and labor required to install the panels.*

**440001XX HOT-MIX ASPHALT SURFACE REMOVAL**

**X4401198 HOT-MIX ASPHALT SURFACE REMOVAL VARIABLE DEPTH**

**Description:** This work shall consist of removing the existing hot-mix asphalt (HMA) surface to a depth specified on the plans with a self-propelled milling machine.

**General:** The work shall be performed according to Section 440 of the “Standard Specifications” and the following:

*If the milling machine cuts too deep or tears out areas of the existing pavement which were not designated for removal, the holes shall be filled with leveling binder at the Contractor's expense.*

*Temporary ramps at butt joints shall be provided according to Article 406.08 of the “Standard Specifications”. Temporary ramps will be paid for separately as HOT MIX ASPHALT SURFACE REMOVAL – BUTT JOINT.*

*Penalty – Failure by the Contractor to provide the temporary bituminous ramp (butt joint) shall be grounds for assessment of a penalty of **\$100.00** per day, per ramp location, for each calendar day thereafter that such facility remains incomplete, after written notification from the Engineer. Such penalty shall be deducted from monies due or to become due to the Contractor under the Contract.*

**Method of Measurement:** Hot-Mix Asphalt Surface Removal will be measured for payment in place and the area computed in square yards for each specified increment thickness of material removed.

**Basis of Payment:** This work will be paid for at the contract unit price per square yard for HOT-MIX ASPHALT SURFACE REMOVAL of the depth specified. *The unit price shall include all equipment, materials, and labor required to remove the HMA surface.*

**48101500 AGGREGATE SHOULDERS, TYPE B 6”**

Effective: December 14, 2012

**Description:** This work shall consist of furnishing, placing, shaping, and compacting aggregate on a prepared subgrade adjacent to the edges of the completed pavement structure or stabilized shoulder.

**Materials:** The aggregate shall meet the requirements of Article 1004.04 of the “Standard Specifications” except that:

*The aggregate material shall be limited to crushed gravel or crushed stone.*

*The plasticity index requirements will be waived.*

**General:** The work shall be performed according to Section 481 of the “Standard Specifications”.

**Basis of Payment:** This work will be paid for at the contract unit price per SQUARE YARD for AGGREGATE SHOULDERS, TYPE B 6”. *The unit price shall include all equipment, materials and labor required to furnish, weigh and place the aggregate shoulder.*

**50300285 FORM LINER TEXTURED SURFACE**

Effective: January 1, 2007

Revised: August 1, 2011

**Description:** This work will consist of providing a textured finish on exposed cast-in-place or precast concrete surfaces.

**Materials:** The materials shall meet the requirements of Article 503.02 of the “Standard Specifications” and the following:

The patterning of the form liner shall appear natural and non-repeating. Seam lines or match lines caused from two or more molds coming together will not be apparent when viewing the final wall.

The molds shall not compress more than ¼ inch when concrete is poured at a rate of ten vertical feet per hour. The molds shall be removable without causing any deterioration of the surface or the underlying concrete.

The forms shall be constructed so that the completed concrete structures conform to the shape, lines and dimensions of the components of the approved pattern. The forms shall be properly braced or tied together to maintain position and shape. The forms shall be made sufficiently tight to prevent leakage of the mortar. The formwork shall have the strength and stability to ensure the finished concrete dimensions are within the tolerances specified herein.

The Lake County Division of Transportation has pre-approved the following form liner suppliers and patterns for the textured surface:

Manufacturer	Pattern Number	Pattern Name
<b>Custom Rock International</b> 1156 Homer Street St. Paul, Minnesota 55116 (800) 637-2447 www.custom-rock.com	Pattern Number 12005	Bearpath Coursed Stone
	Pattern Number 12010	Minnehaha Blend
<b>Fitzgerald Formliners</b> 1341 East Pomona Street Santa Ana, California 92705 (714) 547-6710 www.formliners.com	Pattern Number 17910	Antietam Drystack
	Pattern Number 17911	San Diego Drystack
<b>Greenstreak</b> 3400 Tree Court Industrial Boulevard St. Louis, Missouri 63122 (800) 325-9504 www.greenstreak.com	Pattern Number 328	Dry Stack Random Stone

The form ties shall be made of either metal or fiberglass. Metal ties, which result in a portion of the tie permanently embedded in the concrete, shall be designed to separate at least one inch back from the finished surface, leaving only a neat hole that can be plugged with patching material. The Contractor shall submit the type of form ties to the Engineer, for approval prior to use in this work,

The joints shall be colored to simulate real mortar.

Class SI concrete used for cast-in-place structures shall contain a high range water-reducing admixture meeting the requirements of Article 1021.03(c) of the "Standard Specifications" to obtain a 5" – 7" slump.

**Sample Panel:** The Contractor shall select a form liner pattern from above or propose an equivalent form liner. The form liner shall meet the requirements of Article 503.06(a) and the following:

For a proposed equivalent the Contractor shall submit to the Engineer one specification and catalog cut sheet for the style(s) of architectural form liner proposed for use on the project. Note that the same style of form liner shall be used on all surfaces within the project limits. The submittal shall be made no later than 14 calendar days from the date of notification to proceed with the contract. Upon receipt of the information, the Engineer, in consultation with Lake County Division of Transportation (LCDOT) and other local government agencies will have 30 calendar days to approve and notify the Contractor of which style of form liner is to be used on the project.

Upon receipt of notification of the style of form liner to be used or if the Contractor is proposing a form liner from the pre-approved list, he/she shall submit a proposed procedure for obtaining the simulated finish. The procedure shall include plans and details for the form liner pattern and dimensions, and be submitted for the Engineer's approval no later than 30 calendar days from the date of notification of approval of the style type. If such plans and details are not satisfactory to the Engineer and LCDOT, the Contractor shall make any changes as may be required by the Engineer or LCDOT at no additional cost to the Department.

Upon approval of the form liner plans and details, the Contractor shall submit a 3' by 3' (minimum) sample concrete panel of the simulated stone masonry finish. The sample panel shall be delivered and positioned on the job site at a location to be determined by the Engineer. The sample shall also include the concrete stain if it is included in the contract.

**General:** The work shall be performed according to Article 503.06 of the "Standard Specifications" and the following:

The form liners shall be installed according to the manufacturers' recommendations to achieve the highest quality concrete appearance possible. The form liners shall withstand the concrete placement pressures without leakage, physical or visual defects.

The Contractor shall clean the form liners, removing any buildup prior to each use. The Contractor shall inspect each form for blemishes or tears and make repairs as needed following manufacturer's recommendations.

The Contractor shall install the form liners with less than ¼ inch separation between them. The molds shall be attached securely to the forms following manufacturer's recommendations. The panels shall be

attached to each other with flush seams and seams filled as necessary to eliminate visible evidence of seams in the cast concrete.

The liner butt joints shall be blended into the pattern so as to eliminate visible vertical or horizontal seams and conspicuous form butt joint marks. The liner joints shall fall within pattern joints or reveals. The finished textures shall be continuous without visual disruption and properly aligned over adjacent and multiple liner panels. Continuous or single liner panels shall be used where liner joints may interrupt the intended pattern. Panel remnants shall not be pieced together.

The Contractor shall notify the Engineer at least 48 hours prior to placing concrete. Concrete shall not be placed until the Engineer has inspected the formwork and the placement of reinforcing bars for compliance with the plans.

The Contractor shall apply the form release agent to all surfaces of the form liner which will come in contact with concrete, according to the manufacturers' recommendations.

The Contractor shall employ proper consolidation methods to ensure the highest quality finish. Internal vibration shall be achieved with a vibrator of appropriate size, the highest frequency, and low - moderate amplitude. Concrete placement shall be in lifts not to exceed 1.5 feet. Internal vibrator operation shall be at appropriate intervals and depths and withdrawn slowly enough to assure a minimal amount of surface air voids and the best possible finish without causing segregation. An external form vibrator may be required to assure the proper results. The use of an external form vibrator must be approved by the form liner manufacturer and the Department.

The Contractor shall coordinate concrete pours to prevent visible differences between individual pours or batches. Concrete pours shall be continuous between construction or expansion joints. Cold joints shall not occur within continuous form liner pattern fields.

The form liners shall be stripped between 12 and 24 hours as recommended by the manufacturer. When stripping the forms the Contractor shall avoid creating defects in finished surface.

Wall ties shall be coordinated with the liner and form to achieve the least visible result. Place form ties at thinnest points of molds (high points of finished wall). Neatly patch the remaining hole after disengaging the protruding portion of the tie so that it will not be visible after coloring the concrete surface.

Where an expansion joint must occur at a point other than at mortar or rustication joints, such as at the face of concrete texture, which is to have the appearance of stone, consult manufacturer for proper treatment of expansion material.

Curing methods shall meet the requirements of Article 1020.13 of the "Standard Specifications" and be compatible with the desired aesthetic result. The use of curing compounds will not be allowed. No rubbing of flat areas or other repairs should be required after the form removal. The finished exposed formed concrete surfaces shall be free of visible vertical seams, horizontal seams, and butt joint marks. Grinding and chipping of finished formed surfaces shall be avoided.

**Method of Measurement:** Form Liner Textured Surfaces 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 feet for FORM LINER TEXTURED SURFACE. *The unit price shall include all equipment, materials and labor required to complete the textured surface on the exposed concrete surface.*

### **SECTION 602 RESTRICTED DEPTH DRAINAGE STRUCTURES**

Effective: June 9, 2011  
Revised: August 1, 2011

**Description:** This work shall consist of constructing restricted depth manholes, catch basins and inlets with a specified frame and grate/lid at locations identified on the plans.

**Materials:** The materials shall meet the requirements of Article 602.02 of the "Standard Specifications".

**General:** The work shall be performed according to Section 602 of the "Standard Specifications"; the applicable IDOT Highway Standard(s) for the drainage structure type (manhole, catch basin or inlet); the IDOT Highway Standard Drawing 602601 [flat slab top] and the following:

- *The reinforced concrete slab shall be used in lieu of the cone section.*
- *A 24" sump shall be provided in a Catch Basin.*
- *For structures having Type 8 grates, a 24" inside diameter by 4" (minimum) high riser shall be installed on the flat slab to provide earth cover over the slab for vegetation.*

**Method of Measurement:** This work will be measured per each of the type drainage structure installed. *Drainage structures of like type, size and frame and grate/lid will be counted under the same pay item regardless of whether a cone section (regular) or flat slab (restricted depth) top is used.*

**Basis of Payment:** This work will be paid for at the contract unit price per each for MANHOLES, CATCH BASINS or INLETS, of the type and diameter specified, and with the frame and grate or frame and lid specified. *The unit price shall include all equipment, labor and materials to install the drainage structure. No additional compensation will be made for drainage structures constructed as restricted depth.*

### **60107600 PIPE UNDERDRAINS 4"**

Effective: January 1, 2007  
Revised: August 1, 2011

**Description:** This work shall consist of constructing pipe underdrains.

**Materials:** The pipe underdrain materials shall meet the requirements of Article 601.02 of the "Standard Specifications" except that:

*The pipe shall be limited to:*

- *(m) Perforated Polyvinyl Chloride (PVC) Pipe [1040.03(b)]*
- *(n) Perforated Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior [1040.03(c)]*
- *(r) Perforated Corrugated Polyethylene Pipe with a Smooth Interior [1040.04(a)]*

**General:** The work shall be performed according to Section 601 of the “Standard Specifications” and the following:

Rodent shields and square concrete collars (where required) as shown on LCDOT drawing LC6020 shall be included in PIPE UNDERDRAINS 4”.

**Method of Measurement:** Pipe Underdrains shall be measured in place, in feet, of actual pipe installed.

**Basis of Payment:** This work will be paid for at the contract unit price per foot of PIPE UNDERDRAINS 4”. *The unit price shall include furnishing and placing all pipe, fittings, connecting pipes, rodent shields, bedding, and concrete collars. The unit price shall also include all equipment, materials, and labor required to furnish and construct the pipe underdrains.*

#### **6020XXXX CATCH BASINS, TYPE A**

Effective: January 1, 2007

Revised: August 1, 2011

**Description:** This work shall consist of constructing type A catch basins with frames and grates and/or frames and lids.

**Materials:** The materials shall meet the requirements of Article 602.02 of the “Standard Specifications”.

**General:** The work shall be performed according to Section 602 of the “Standard Specifications”, IDOT Standard Drawing 602001 and the following:

*The half trap option shown on Standard 602001 shall not be required.*

*A 24" sump shall be provided.*

**Basis of Payment:** This work will be paid for at the contract unit price per each for CATCH BASINS, TYPE A of the diameter specified, and with the frame and grate and/or frame and lid specified. *The unit price shall include all equipment, materials and labor required to construct the catch basin.*

#### **60605000 COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.24**

Effective: January 1, 2007

Revised: August 1, 2011

**Description:** This work shall consist of constructing type B-6.24 concrete curb and gutter.

**Materials:** The materials shall meet the requirements of Article 606.02 of the "Standard Specifications".

**General:** The work shall be performed according to Section 606 of the "Standard Specifications", IDOT Standard Drawing 606001 and the following:

*One inch expansion joints shall be constructed at maximum intervals of 150 feet.*

*The end treatments as shown on the plans shall conform to the applicable special details. Where no end treatment is specified, curb and gutter endings shall be transitioned to a flat section over the final six feet.*

**Method of Measurement:** Combination Concrete Curb and Gutter, Type B-6.24 will be measured for payment in feet. The measurement will be made along the face of curb according to Article 606.14 of the "Standard Specifications". *Transitions between Type B-6.24 and Type M-2.24 Curb and Gutter or Type B-6.12 Curb and Gutter will be paid for at the contract unit price per foot for as COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.24. The transition length will be 10 feet unless otherwise shown on the plans.*

**Basis of Payment:** This work will be paid for at the contract unit price per foot for COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.24. *The unit price shall include all equipment, materials and labor required to construct the curb and gutter.*



**PROJECT SPECIAL PROVISIONS**

**K0013000 PERENNIAL PLANTS, PRAIRIE TYPE, 2" DIAMETER BY 4" DEEP PLUG**

**Description:** This work shall consist of providing perennial plants, as noted on the plans, and generally follow the specifications as noted in Section 254 Planting Perennial Plants, in the "Standard Specifications." The work shall consist of delivery and placement of perennial plants as noted and detailed in the plans with the following specific requirements:

1. Plants included are to be herbaceous plants and native grass as noted on the plan.
2. All plants supplied are to be in 2" x 4" rooted plugs.
3. All plants are to follow a layout of spacing of one and one-half feet (1.5 feet) in rows as noted on the plans.

**Method of Measurement:** Perennial plants will be measured for payment per UNIT planted. One hundred (100) perennial plants are equal to one (1) UNIT.

**Basis of Payment:** This work shall be paid for at the contract unit price per UNIT for PERENNIAL PLANTS, PRAIRIE TYPE, 2" DIAMETER BY 4" DEEP PLUG. Payment is incumbent on the health and vigor of the plants after the establishment period, and correction/replacement must be made by the Contractor of those plants not living before full payment is allowed.

**K0013020 PERENNIAL PLANTS, PRAIRIE TYPE, GALLON POT**

**Description:** This work shall consist of providing perennial plants, as noted on the plans, and generally follow the specifications as noted in Section 254 Planting Perennial Plants, in the "Standard Specifications." The work shall consist of delivery and placement of perennial plants as noted and detailed in the plans with the following specific requirements:

1. Plant shall be *Nepeta Faassenii* "Walker's Low" (Walker's Low Catmint)
2. All plants supplied are to be in 1 gallon containers
3. All plants are to follow a layout of spacing of one and one-half feet (1.5 feet) in 4 rows as noted on the plans.

**Method of Measurement:** Perennial plants will be measured for payment per UNIT planted. One hundred (100) perennial plants are equal to one (1) UNIT.

**Basis of Payment:** This work shall be paid for at the contract unit price per UNIT for PERENNIAL PLANTS, PRAIRIE TYPE, GALLON POT. Payment is incumbent on the health and vigor of the plants after the establishment period, and correction/replacement must be made by the Contractor of those plants not living before full payment is allowed.

**K1003680 MULCH**

**Description:** This work consist of the placement of three inches (3 inches) depth of shredded hardwood bark mulch over the tree planting area surfaces within the project right-of-way (not Forest Preserve property) as determined by the engineer. Typically this work shall be accomplished AFTER planting work has been completed. Keep mulch at least six (6) inches away from tree trunks.

**Method of Measurement:** Mulch will be measured in payment in SQUARE YARDS placed.

**Basis of Payment:** This work shall be paid for at the contract unit price per SQUARE YARD for MULCH. The price shall include all labor, materials, delivery, and placement over all tree planting area surfaces as specified in the Description above.

**X0322871 MAINTENANCE OF EROSION CONTROL SYSTEM**

**Description:** This work shall consist of maintaining the temporary erosion control systems installed by the Contractor on the project. The maintenance shall be performed as directed by the Engineer, to control siltation at all times during the duration of the project.

**General:** The work shall be performed according to Section 280 of the “Standard Specifications” and the following:

The Maintenance of Erosion Control System work item shall include:

- Any repairs to the various temporary erosion control systems.
- The removal of entrapped sediment.
- Cleaning of any silt filter fabric.
- Other items as specified in project special provisions relating to erosion control.

When a temporary erosion control system is in need of maintenance, the Engineer will give the Contractor written notice. If the Contractor fails to maintain the temporary erosion control systems within 48 hours of receiving the written notice, the Engineer may proceed to maintain the systems as deemed necessary. The cost of this maintenance will be deducted from any compensation due, or which may become due the Contractor under this contract.

The sediment basin(s) shall be cleaned out (accumulated silt removed) any time the basin(s) become 75% filled. Any additional materials and work required by the Engineer will be measured and paid for as specified.

Removed sediment and other materials shall be disposed of according to Article 202.03 of the “Standard Specifications”.

**Method of Measurement:** Work performed under this pay item shall be submitted by the Contractor to the Engineer on a lump sum basis. The Engineer may use any, all or none of this pay item.

The quantity for this item is established by the Lake County Division of Transportation, based on the

Engineer’s Estimate and the following formula.

<u>Contract Pay Item</u>	<u>Percent of Engineer’s Estimate for Pay Item</u>
<i>Temporary Ditch Checks</i>	<i>20%</i>
<i>Perimeter Erosion Barrier</i>	<i>100%</i>
<i>Inlet Protection (Special)</i>	<i>60%</i>
<i>Inlet Filters</i>	<i>60%</i>
<i>Seeding Sodding, Seeding (complete) Sodding (complete) *</i>	<i>20%</i>

*\* if more than one of these items is included in the pay items then the sum is used. Temporary erosion control seeding is not included in the maintenance calculation.*

*The plan-measured quantity for MAINTENANCE OF EROSION CONTROL SYSTEM for this contract is **3,082 units**.*

**Basis of Payment:** The unit price for MAINTENANCE OF EROSION CONTROL SYSTEM will be LUMP SUM according to the formula as established above by plan measured quantities. Therefore the LUMP SUM will equal \$3,082.00 of work performed according to Article 109.04 (b) of the “Standard Specifications”.

**X0322936 REMOVE EXISTING FLARED END SECTION**

**Description:** This work shall consist of the removal and disposal of flared end sections as shown on the Plans in accordance with Section 551.

**Basis of Payment:** This work shall be measured and paid for at the contract unit price per EACH for REMOVE EXISTING FLARED END SECTION and shall include all labor, excavation, backfill, material, and equipment to complete this item as specified.

**X0426200 DEWATERING**

This work shall be done in accordance with the applicable portions of Section 281 of the Standard Specifications and shall include the furnishing, installing, maintaining and removing of a TEMPORARY DEWATERING DITCH at the location shown on the plans.

**MATERIALS:**

1. SEDIMENT CONTAINER FILTER BAG - Sediment Control Filter Bags must be ACF Environmental ERO-TEX dewatering filter bag, US Fabrics filter bag, or JMD Enviro-Protection filter bag of the size required to adequately filter pumped water per the manufacturers' specifications.
2. TEMPORARY DEWATERING SUMP - Materials for Dewatering Sump must be 2 inch Coarse Aggregate and a filter fabric, with a ¼ to ½ inch hardware cloth wire placed around the standpipe prior to attaching the filter fabric, as shown on the detail Drawings.
3. FLOCCULATION POWDER - The polymer must be a water-soluble anionic polyacrylamide (PAM) used to minimize soil erosion, bind soil particles, remove suspended particles, and act as a construction aide. All site-specific soils must be tested by a qualified person each time a PAM is used. The polymer must be used in accordance with manufacturer's guidelines and as approved by the Engineer.
  - a. Anionic PAM mixture must have  $\leq 0.05\%$  free acrylamide monomer by weight as established by the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA).
  - b. The PAM mixture must be accompanied by manufacturers written instructions to ensure proper (1) Product and Site Preparation, (2) Application, (3) Maintenance/Re-application, (4) Storage, and (5) Safety, in accordance with Occupational Health and Safety Administration (OSHA) material safety data sheet (MSDS) requirements and other applicable guidelines including manufacturer's recommendations for specified use.
  - c. Anionic PAM application must comply with all federal, state, and local laws, rules or regulations governing anionic PAM. The Contractor will be responsible for securing required permits.
  - d. In addition to soil testing, a Qualified Person must design the installation plan for the polymers based on mix time and point of entry.
  - e. The materials used must be harmless to plant and aquatic life.
  - f. Different types of polymers may be required for each soil type or combination of soils. The manufacturer or supplier will provide general written application methods, based on site conditions, such as slope and soil type.
4. VISQUENE/PLASTIC LINER – A plastic liner passing ASTM E1745 Class A, B, and C shall be used to line the ditch.
5. JUTE NETTING –
  - a. Jute netting must be of a uniform, open, plain weave, undyed and unbleached single jut yarn. The yarn must be of loosely twisted construction and must not vary in thickness by more than one-half its normal diameter.
  - b. Minimum width must be 48 inches, + or – 1 inch from manufacturer's rated width.
  - c. Seventy-eight warp ends per 4 feet of width.
  - d. Forty one weft ends per yard.
  - e. Weight must average 1.22 lbs per linear yard with a tolerance of + or – 5%.
  - f. Jute netting must be used in conjunction with polymer (PAM) as per Engineer direction.

6. Other Items - All other materials such as straw bales, lathe, etc shall be in compliance with Section 280 of the Standard Specifications and must meet commercial grade standards and must be approved by the Engineer before being incorporated into the Project.

CONSTRUCTION METHODS:

TEMPORARY DEWATERING DITCH – This work shall include the furnishing, installing, maintaining and removing of the TEMPORARY DEWATERING DITCH as shown on the Drawings or as directed by the Engineer to provide a drainage path to convey the flow of water pumped from the various work zones in a positive direction toward the creek. The bottom of the ditch is to be constructed with VISQUENE/PLASTIC LINER with an outside edge of hay bales, staked into the ground and a layer of JUTE NETTING with FLOCCULATION POWDER. Also, AGGREGATE DITCH CHECKS must be provided according to the plans to provide an energy dissipater with a layer of JUTE NETTING over each AGGREGATE DITCH CHECK. Behind each AGGREGATE DITCH CHECK the contractor must place a FLOCCULATION LOG as directed by the engineer. The VISQUENE/PLASTIC LINER, Riprap and JUTE NETTING must be inspected by the Engineer, before the TEMPORARY DEWATERING DITCH may convey flow.

1. Dewatering:

- a. TEMPORARY DEWATERING SUMP. Pumping water from open trenches or other areas must be performed in a manner to minimize the turbidity of the pumped water in accordance with Illinois Urban Manual IL-650. This pumping shall utilize an inlet hose with filter fabric over the intake and positioned in an aggregate-filled hole near the bottom of the trench. The intake hose shall be supported on a floatation or similar device so as not to pump directly from the bottom of the basin, trench, etc. Water must be pumped directly into a Sediment Containment Filter Bag. All materials, labor and excavation required to prepare the TEMPORARY DEWATERING SUMP are included in the cost of DEWATERING.
- b. SEDIMENT CONTAINER FILTER BAG. Water must be pumped directly to a SEDIMENT CONTAINER FILTER BAG. A SEDIMENT CONTAINER FILTER BAG must be used according to the manufacturer's instructions, as modified by the Contract Drawings and Specifications. The SEDIMENT CONTAINER FILTER BAG must be placed on 4" of compacted CA-6 bedding.

2. FLOCCULATION POWDER & FLOCCULATION LOG:

- a. All vendors and suppliers of polyacrylamide (PAM), PAM mix or blends must present or supply a written toxicity report which verifies that the PAM, PAM mix or blend exhibits acceptable toxicity parameters which meet or exceed the requirements for the state and federal water quality standards. No Cationic formulations of PAM, PAM blends, polymers of Chitosan are allowed for use under this Specification.

The manufacturer or supplier must provide a product expiration date for anionic PAM mixtures based on product expiration date of PAM in pure form.

The application method must provide uniform coverage to the target area and avoid drift to non-target areas. The applicator of anionic PAM must document, at the time of application, the following:

- i. Name of applicator
- ii. Application rate per acre
- iii. Date applied
- iv. Product type
- v. Weather conditions during application
- vi. Method of application

Copies of this documentation must be entered into the Contractor's monitoring log or project diary and made available upon request.

Unused liquid anionic PAM mixtures must be minimized. Excess material will not be applied at a rate greater than the maximum application rate. Disposal must not occur in Waters of the U.S. (W.U.S.) and storm water conveyance systems (i.e. Storm sewer manholes, storm sewer inlets, ditches, and culverts).

Anionic PAM mixtures must achieve P 80% reduction in soil loss as measured by a 1 hour storm duration 2"/hour rainfall simulator test performed in accordance with methods used by Bubbenzer and Patterson (1982) as pre-qualification for field testing.

Performance of anionic PAM mixtures must be verified and field tested. The manufacturer must provide a toxicological report for the Polymer Binder performed by a third-party, EPA approved laboratory.

Anionic PAM use must conform to all federal, state, and local laws, rules, and regulations regarding use, discharge, and disposal of chemical materials.

- b. FLOCCULATION LOG Application: A FLOCCULATION LOG is a semi-hydrated polyacrylamide block that when placed within storm water or construction site discharge, will remove fine particles and reduce NTU values. Placement of the flocculation log should be as close to the source of particle suspension as possible. Ideal performance of the flocculation logs results when used in conjunction with other best management practices. Each flocculation log is formulated for the soil and water chemistry at the site. Soil and water samples shall be taken by the Contractor and tested to determine which formula flocculation log is needed along with proper placement.
- c. The POLYMER and FLOCCULATION LOG will be paid for at the contract unit price for each respective pay item.

MEASUREMENT/PAYMENT:

1. DEWATERING. This work will be measured for payment as LUMP SUM and shall include furnishing, excavation, installation, maintenance and removal of TEMPORARY DEWATERING

SUMP, JUTE NETTING, and SEDIMENT CONTAINER FILTER BAG and items required for the construction of the TEMPORARY DEWATERING DITCH as detailed on the plans such as excavation, VISQUENE/PLASTIC LINER, filter fabrics, straw bales, lathe and any other related work necessary to provide a work zone free of excessive water levels. Maintenance efforts such as excavation of sediment from TEMPORARY DEWATERING DITCH and/or replacement of the SEDIMENT CONTAINER FILTER BAG will not be paid for separately but will be considered included in the cost for DEWATERING.

Pumping: Means and methods of pumping water from excavated trenches, footing excavations, or other areas will be considered included in the work item to which it pertains and will not be paid for separately.

2. FLOCCULATION POWDER and FLOCCULATION LOG: These items of work will not be measured and paid for separately per the contract unit pay item as specified in these Special Provisions.
3. AGGREGATE DITCH CHECKS – The AGGREGATE DITCH CHECKS identified to be in the Temporary Dewatering Ditch on the downstream side of the sediment containment filter bag will be paid for separately at the contract unit price per TON for AGGREGATE DITCH CHECKS.

**X2110100 TOPSOIL FURNISH AND PLACE, SPECIAL**

**Description:** This work shall consist of furnishing, excavating, transporting and placing topsoil.

**Materials:** The topsoil shall be furnished from outside the right-of-way and shall meet the requirements of Article 1081.05(a) of the “Standard Specifications”.

**General:** The work shall be performed according to Section 211 of the “Standard Specifications” and the following:

The work shall also comply with the "Illinois State Agency Historic Resources Preservation Act" (Public Act 86-707, effective January 1, 1990). Under this Act:

1. *The Contractor shall complete an Environmental Survey Request Form for Borrow/Waste/Use Areas (BDE form 2289 4/15/10 included herein), along with all required attachments, and submit them to the Engineer at the earliest possible date.*
2. *The Engineer shall submit the Environmental Survey Request to the Illinois Department of Transportation for review and approval. Any costs incurred associated with said review and approval will be borne by the Contractor.*
3. *The Contractor shall not begin work on any Borrow/Use areas until the Environmental Survey Request has been approved.*

The Contractor shall collect one representative soil sample from the proposed growing surface which shall be analyzed by an agricultural laboratory approved by the Engineer. The Contractor shall submit

the proposed laboratory name and address to the Engineer at the pre-construction conference. The soils analysis shall include (but is not limited to) the recommended application rates of nitrogen and potassium fertilizer nutrients. Plan quantities reflect the appropriate thickness of topsoil placement in all disturbed areas.

**Method of Measurement:** TOPSOIL FURNISH AND PLACE, SPECIAL will be measured for payment in CUBIC YARDS according to Article 211.07 of the "Standard Specifications" based on the thickness specified with in the plans.

**Basis of Payment:** This work will be paid for at the contract unit price per SQUARE YARD for TOPSOIL FURNISH AND PLACE, of the thickness specified. This pay item is provisional; the quantity will only be used if existing site topsoil strip, paid for as TOPSOIL EXCAVATION AND PLACEMENT, SPECIAL is determined by the engineer to be unusable or unsatisfactory. *The cost of the soil analysis will not be paid for separately, but will be included in the cost of TOPSOIL FURNISH AND PLACE of the thickness specified. The unit price shall include all equipment, materials and labor required to furnish and place the topsoil.*

**X2111100 TOPSOIL EXCAVATION AND PLACEMENT, SPECIAL**

**Description:** This work shall consist of excavating, transporting, and stockpiling on site in an area located within the plans; this work shall also consist of placing topsoil at the thickness specified on the plans.

**Materials:** The topsoil shall be furnished from within the project limits. If it is determined by the engineer that some of the material is not reusable as suitable topsoil, contractor shall follow TOPSOIL FURNISH AND PLACE, SPECIAL and follow all applicable standards of that pay item for furnishing from areas outside the project limits.

**General:** Before stripping or removing topsoil, the Contractor shall mow or otherwise remove all heavy grass, weeds, or other vegetation over areas from which topsoil is to be stockpiled and reused onsite. Equipment and methods of operation shall avoid lifting subsoil or other unsuitable material.

**Stockpiling:**

The topsoil shall be kept separate from other excavated materials and be removed to a depth of 12". Salvaged topsoil shall be placed at the location specified on the plans, or on a well-drained area in accordance with approved erosion control measures. Salvaged topsoil shall be placed in piles of neat conformation and temporarily seeded and/or mulched immediately after final shaping of the pile.

**Surface Preparation:**

The Contractor shall completely prepare the surface of all areas to be covered with topsoil under this item and finish them to the lines indicated on the Plans set to the proposed finished grade. The surfaces shall be free from rock or other foreign material which is 1-1/2-inches or greater in any dimension. Before placing the topsoil, all construction work in the area shall have been completed.



Placing and Spreading:

1. Topsoil shall be placed and spread over the areas designated to a depth that, after natural settlement, the completed work shall be in accordance with the thickness, lines, grades, and elevations shown on the Plans.
2. After spreading the salvaged topsoil, all large stiff clods, hard lumps, large rocks, roots, stumps, litter, or other foreign matter shall be raked up, removed from the topsoiled area, and disposed of by the Contractor. This work shall be completed in a manner that will permit seeding or planting, without additional soil preparation. If pulverization is determined necessary by the Engineer, labor and equipment required for proper topsoil preparation shall be included in this pay item.
3. Where subsoils on slopes are of a character that will not blend with the topsoil, the Contractor shall roughen, ridge, or serrate the subsoil to provide a bond for the topsoil until the seeds can germinate and develop roots into the subsoil.

**Method of Measurement:** TOPSOIL EXCAVATION AND PLACEMENT, SPECIAL will be measured for payment in CUBIC YARDS according to Article 211.07 of the “Standard Specifications” based on the thickness specified with in the plans.

**Basis of Payment:** This work will be paid for at the contract unit price per CUBIC YARD for TOPSOIL EXCAVATION AND PLACEMENT, SPECIAL, of the thickness specified on the plans. Stripping, stockpiling, stabilizing, and ultimate placement and grading for seed or sodding placement shall all be included in the cost of this pay item. Topsoil not used following completion of respread activities, or topsoil determined to be unusable shall be paid for according to REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL.

X2501010 SEEDING, CLASS 2 (MODIFIED)

This work shall be done in accordance with the applicable portions of Article 250 of the Standard Specifications with the following revision to 250.07 – Seeding Mixtures which will amend the seed mix of CLASS 2 to the mix as follows:

<u>Species or Mix</u>	<u>Rate (lbs / A)</u>	<u>% +/-</u>
Fine Fescue Mix	200	80%
Perennial Rye Mix	50	20%
 TOTAL	 250lbs./A	 100%

- a. Fine Fescue Mix shall be a blend of creeping red, chewings, hard and sheep’s fescue; acceptable commercial blends include Highlands Fescue Mix, Legend Fine Fescue Blend and Greenskeeper National Links Mixture.
- b. Perennial Rye Mix shall be a blend of at least three improved cultivars selected for disease resistance.

**Basis of Payment:** This work shall be measured and place and paid for according to Article 250.10 per ACRE of SEEDING, CLASS 2(MODIFIED) placed.

**X2510635 HEAVY DUTY EROSION CONTROL BLANKET, SPECIAL**

**Description:** This work shall consist of furnishing and placing erosion control blanket over seeded areas on slopes 3:1 or steeper, or in locations as indicated on the plans.

**Materials:** The erosion control blanket shall meet the requirements of Article 1081.10 of the “Standard Specifications”, except that:

*The blanket material shall be limited to 100% biodegradable coconut fiber erosion control blanket with natural fiber netting.*

**General:** The work shall be performed according to Article 251.04 of the “Standard Specifications”.

**Method of Measurement:** This work will be measured for payment in place in square yards of actual area covered.

**Basis of Payment:** This work will be paid for at the contract unit price per square yard for HEAVY DUTY EROSION CONTROL BLANKET, SPECIAL. *The unit price shall include all equipment, materials and labor required to furnish and place the erosion control blanket*

**X2511630 EROSION CONTROL BLANKET (SPECIAL)**

**Description:** This work shall consist of furnishing, placing and removing erosion control mat in ditch bottoms along with a flocculation powder application as a temporary erosion control measure before final stabilization with erosion control blanket and seeding.

**Materials:** The erosion control blanket shall be limited to jute fabric according to the following:

The erosion control mat shall be a woven fabric of a uniform open weave of single jute yarn. The jute yarn shall be of loosely twisted construction with an average twist of not less than 1½ turns per 1”. The average size of the warp and weft yarns shall be approximately the same. The woven fabric shall be supplied in rolled strips with a certificate of compliance certifying that the jute fabric erosion mat conforms to the following:

- *That the erosion control mat is a minimum 48” wide with a tolerance of minus 1”.*
- *That the erosion control mat has 78 warp ends, +/- 1 for each 48” of width.*
- *That the erosion control mat has 45 weft yarns, +/- 2, per linear yard of length.*
- *That the erosion control mat weighs 92 pounds per 100 square yards +/- 10 percent, measured under average atmospheric conditions.*
- *That the erosion control mat is non-toxic to vegetation.*

**General:** The work shall be performed according to Article 251.04 of the “Standard Specifications” and the manufacturer’s recommendations.

**Method of Measurement:** This work will be measured for payment per square yard of material placed. *Each installation of the erosion control mat shall be measured for payment. The flocculation powder will be measured separately according to the special provision for FLOCCULATION POWDER contained herein.*

**Basis of Payment:** This work will be paid for at the contract unit price per square yard for EROSION CONTROL BLANKET (SPECIAL). *The unit price shall include all labor, equipment and materials necessary for installation, removal and disposal of the erosion control mat. The flocculation powder will be paid for separately according to the special provision for FLOCCULATION POWDER contained herein.*

**X2511640 EROSION CONTROL BLANKET (MODIFIED)**

**Description:** This work shall consist of furnishing, placing and removing erosion control mat in areas as specified on the plans within the Lake County Forest Preserves Natural Areas.

**Materials:** Erosion control blanket shall be:

1. S75BN Single Net Straw Blanket, a 9.3-lb. leno-woven biodegradable jute top netting with 100% straw fiber matrix

Erosion control blanket staples for LCFP Class 1 and 2 seed mix areas shall be:

1. E-Staples, 6” in length, composed of Polyhydroxyalkanoate (PHA) plastic and 100% biodegradable from microbial activity in accordance with ASTM D5338 and ASTM D5271, as provided by:

**General:** The work shall be performed according to Article 251.04 of the “Standard Specifications,” the manufacturer’s recommendations, and the following:

Immediately after seeding is complete, place erosion control blanket on all areas as designated on the plans. Refer to the manufacturer’s recommendation for selection of staple patterns and quantities appropriate to the site conditions.

The Contractor shall guarantee that all erosion control blanket remains securely in place until a minimum of 90% of the ground has been stabilized by germination and growth of permanent or temporary seed. Erosion control blanket shall be restapled, reapplied or otherwise reset as specified as often as necessary until stabilization has been achieved

**Method of Measurement:** This work will be measured for payment per square yard of material placed.

**Basis of Payment:** This work will be paid for at the contract unit price per square yard for EROSION CONTROL BLANKET (MODIFIED). *The unit price shall include all labor, equipment and materials necessary for installation, removal and disposal of the erosion control blanket.*

**X2800400 PERIMETER EROSION BARRIER, SPECIAL**

**Description:** This work shall consist of constructing, removing, and disposing of perimeter erosion barrier, special as part of the project’s temporary erosion control system. Perimeter erosion control barrier, special shall be utilized adjacent to existing wetlands.

**General:** The work shall be performed according to Section 280 of the “Standard Specifications,” special provision 28000400 “PERIMETER EROSION BARRIER” and the following:

**Materials:**

**Geotextile Requirements:** The geotextile used for the temporary silt fence shall be classified as supported (with a wire or polymeric mesh backing) or unsupported (no backing). The temporary silt fence geotextile shall meet the requirements of the Table included below. All numeric values except Apparent Opening Size (AOS) represent Minimum Average Roll Values (MARV as defined in ASTM D4439). The values for AOS are the Maximum Average Roll Values.

Table – Temporary Silt Fence Requirements

Requirements	Test Methods	Wire Backed Supported Silt Fence <sup>a</sup>
Maximum Post Spacing		4 feet
Grab Strength	ASTM D4632	
Machine Direction		90 lbs
X-Machine Direction		90 lbs
Permittivity <sup>b</sup>	ASTM D4491	0.05 sec <sup>-1</sup>
Apparent Opening Size	ASTM D4751	0.024in maximum average roll value
Ultraviolet Stability	ASTM D4355	70% after 500 hours of exposure

Notes:

- a) Silt fence support shall consist of 14-gauge steel wire with a mesh backing of 6”x6” or prefabricated polymeric mesh of equivalent strength.
- b) These default filtration property values are based on empirical evidence with a variety of sediments. For environmentally sensitive areas, a review of previous experience and/or site or regionally specific geotextile tests should be performed to confirm the suitability of these requirements.

The wire support fence shall:

- 1) Be a minimum of 14-gauge
- 2) Have a minimum of six horizontal wires
- 3) The maximum vertical wire spacing shall be 6”

Method of Measurement: This work will be measured for payment in place by FOOT.

Basis of Payment: This work will be paid for at the contract unit price per FOOT for PERIMETER EROSION BARRIER, SPECIAL. The unit price shall include all work and materials necessary to properly install the barrier and to remove and dispose of the used materials at the completion of the project. Maintenance requirements shall be included and paid for according to Section 280 of the "Standard Specifications."

**X4023000 AGGREGATE SURFACE COURSE FOR TEMPORARY ACCESS**

Effective: April 1, 2001

Revised: January 2, 2007

Revise Article 402.10 of the Standard Specifications to read:

"402.10 For Temporary Access. The contractor shall construct and maintain aggregate surface course for temporary access to private entrances, commercial entrances and roads according to Article 402.07 and as directed by the Engineer.

The aggregate surface course shall be constructed to the dimensions and grades specified below, except as modified by the plans or as directed by the Engineer.

- (a) Private Entrance. The minimum width shall be 12 ft (3.6 m). The minimum compacted thickness shall be 6 in. (150 mm). The maximum grade shall be eight percent, except as required to match the existing grade.
- (b) Commercial Entrance. The minimum width shall be 24 ft (7.2 m). The minimum compacted thickness shall be 9 in. (230 mm). The maximum grade shall be six percent, except as required to match the existing grade.
- (c) Road. The minimum width shall be 24 ft (7.2 m). The minimum compacted thickness shall be 9 in. (230 mm). The grade and elevation shall be the same as the removed pavement, except as required to meet the grade of any new pavement constructed.

Maintaining the temporary access shall include relocating and/or regrading the aggregate surface course for any operation that may disturb or remove the temporary access. The same type and gradation of material used to construct the temporary access shall be used to maintain it.

When use of the temporary access is discontinued, the aggregate shall be removed and utilized in the permanent construction or disposed of according to Article 202.03."

Add the following to Article 402.12 of the Standard Specifications:

"Aggregate surface course for temporary access will be measured for payment as each for every private entrance, commercial entrance or road constructed for the purpose of temporary access. If a residential drive, commercial entrance, or road is to be constructed under multiple stages, the aggregate needed to

construct the second or subsequent stages will not be measured for payment but shall be included in the cost per each of the type specified.”

Revise the second paragraph of Article 402.13 of the Standard Specifications to read:

“Aggregate surface course for temporary access will be paid for at the contract unit price per each for TEMPORARY ACCESS (PRIVATE ENTRANCE), TEMPORARY ACCESS (COMMERCIAL ENTRANCE) or TEMPORARY ACCESS (ROAD).

**X6700405 ENGINEER’S FIELD OFFICE, TYPE A (MODIFIED)**

**Description:** This work shall consist of furnishing and maintaining in good condition, for the exclusive use of the Engineer, a weatherproof building at a location approved by the Engineer.

**General:** The field office shall meet the requirements of Article 670.02 of the “Standard Specifications”, and the following:

- *An electric pencil sharpener shall be included in the field office equipment.*
- *A hand sanitizer shall be included in the restroom facilities.*

**Basis of Payment:** This item will be paid for at the contract unit price per calendar month for ENGINEER’S FIELD OFFICE, TYPE A (MODIFIED). *The unit price shall include all supplies, equipment, materials and labor required to furnish and maintain the field office.*

**X7230400 INSTALL EXTRUDED SIGN PANEL**

**Description:** This work shall include supplying and installation of roundabout diagrammatic signs as indicated on the plans.

**Material:** The sign panel material shall conform to applicable provisions of Section 1091 of the “Standard Specifications” for a Type 3 sign.

**Details:**

Cross Section Shape/Slotted Holes shall conform to IDOT Highway Standard 720021-02 “Sign Panels Extruded Aluminum Type” and all applicable bolted aluminum extrusions material properties from Article 1090.03 and all other applicable articles from Section 1090 of the “Standard Specifications.”

**Support:**

Steel supports shall be paid for separately as the standard IDOT pay item 72700100 STRUCTURAL STEEL SIGN SUPPORT, BREAKWAY in POUNDS. I-Beam designation shall be W10x22 for this breakaway support.

Foundation:

Concrete foundation shall be paid for separately as the standard IDOT pay item 73400100 CONCRETE FOUNDATIONS in CUBIC YARDS. Each foundation shall be 2 ½' (W) x 5' (D) to restrain and support the breakaway posts and sign panel.

Installation:

Installation practices shall follow Section 720 of the "Standard Specifications" except shall follow the Support and Foundation specifications herein.

**Method Of Measurement:** This work shall be measured for payment per SQUARE FOOT of sign panel, edge to edge (horizontally and vertically) as designated on the plans.

**Basis of Payment:** This item will be paid for at the contract unit price per SQUARE FOOT of sign panel as designated on the plans for INSTALL EXTRUDED SIGN PANEL. Supports and Foundation shall be paid for separately as indicated in this Special Provision. *The unit price shall include all supplies, equipment, materials and labor required to furnish and install the signs.*

**X7810300 RECESSED REFLECTIVE PAVEMENT MARKER**

This work shall be according to Section 781 of the Standard Specifications except as modified herein.

Installation: The recessed reflective pavement markers shall be constructed by removing a 5" x 24" area of the HMA pavement at a depth of ¾". This depressed area shall be tapered vertically from the full depth of ¾ inches to 0 inches in 30 inches at both ends for the two-way markers and at the approach end only for the on-way markers. The depressed area shall be orientated lengthwise and longitudinally with respect to the roadway.

An pavement marker shall be placed and cemented with epoxy in the center of the ¾" deep depressed area. A shop drawing of the pavement marker shall be provided to the Engineer for approval prior to placement.

The recessed area shall be cleaned free of all loose material by means of sand blasting and also free of moisture before the placement of the pavement marker. All excess material resulting from the construction of the recessed area shall be completely removed from the surface of the roadway by means of vacuum sweeper truck.

**Basis of Payment:** This work shall be measure and paid for at the contract unit price per each for RECESSED REFLECTIVE PAVEMENT MARKER, which price shall be payment in full for all labor, materials, and equipment necessary to complete the work as described herein.

**XX001249 ORNAMENTAL FENCE**

**Description:** This work shall consist of furnishing and installing a rackable ornamental fence that meets the requirements specified on the details within the project plans.

**General:** The ORNAMENTAL FENCE as specified on the plans shall be placed atop the proposed retaining wall north of the roundabout center.

Steel material for fence panels and posts shall conform to the requirements of ASTM A653/A653M with a minimum yield strength of 45,000 psi (310 MPa) and a minimum coating weight of 0.60 oz/ft<sup>2</sup>.

Installation shall follow the manufacturer’s specifications.

Manufactured fence system shall be capable of meeting the vertical load, horizontal load, and infill performance requirements under ASTM F2408.

The standard height of the fence shall be 48” (4’) with a post-to-post spacing of 8’ O.C. Nominal. Air post spacing shall be 3-15/16” typical or as approved by the Engineer. The color shall be black. Coated panels and posts shall meet the performance requirements as follows:

	<u>ASTM Test Method</u>
Adhesion	D3359 – Method B
Corrosion Resistance	B117, D714, & D1654
Impact Resistance	D2794
Weathering Resistance	D822 & D2254

The contractor is to provide shop drawings to the Engineer prior to placing order to ensure proper selection.

**Basis of Payment:** All labor posts, footings, footing installation, welding, mounts, brackets and panels and all other items per the manufacturer’s specifications required for installing the fence to specification and detail shall be included in the overall unit cost per FOOT of ORNAMENTAL FENCE.

**XX006652 STAMPED COLORED PCC MEDIAN SURFACE, 4” (SPECIAL)**  
**XX006898 STAMPED COLORED PORTLAND CEMENT CONCRETE**

**Description:** This work shall consist of constructing integrally colored portland cement concrete median pavement with an imprinted pattern, surface hardener, and cure/sealer. The concrete median shall be four inches thick and pavement 10 inches thick.

**Submittals:** Manufacturer’s data sheets shall be submitted on each product to be used, including preparation instructions, storage and handling requirements, and installation methods.



**Quality Assurance:** The installer shall provide a qualified foreman or supervisor who has a minimum of three years' experience with imprinted and textured concrete, and who has successfully completed at least five imprinted concrete installations of high quality and similar in scope to that required. The concrete shall be cast-in-place on the job site by trained and experienced workers. Materials shall be obtained from the same source for all the colored and imprinted work.

**Mock-Up:** Prior to beginning work the Contractor shall provide field samples of integrally colored portland cement concrete with an imprinted pattern, surface hardener, and cure/sealer. The samples shall be 48 inches by 48 inches in size with the surface colors and patterns specified. The Contractor shall not proceed with the median work until the workmanship, pattern, color, and sheen are approved by Engineer. The Contractor shall refinish the mock-ups or provide additional samples as required to obtain Engineer's approval.

**Materials:** The contractor shall furnish all materials according to Section 606 of the "Standard Specifications" and the following:

The Contractor shall furnish the materials and construct the median surface using the Textured Pattern, Integral Color and Color Hardener from the manufacturers listed below. The final pattern and color selections will be approved by Engineer.

Manufacturer	Textured Pattern	Integral Color	Color Hardener
Bomanite Corporation P.O. Box 599 Madera, CA 93639-0599 Phone: (559) 673-2411 Fax: (559) 673-8246	Canyon Stone	Sienna (IC)	Caramel (CH)
Scofield Systems L.M. Scofield Company 1652 E. Main Street Suite 200 St. Charles, IL 60174 Phone: (630) 377-5959 Fax: (630) 377-5952	Canyon Stone	Barcelona Brown (1017)	Pecan Tan (A-55)

Brickform Solomon Colors, Inc. 11061 Jersey Boulevard Rancho Cucamonga, CA 91730 Phone: (800) 483-9628 Fax: (217) 744-2605	Brickform Random Stone	Mesa Buff (LC- 2310)	Sun Buff (1090)
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The Integral Coloring admixture shall be a non-fading synthetic oxide pigment meeting ASTM C979 at a 6% minimum percent loading and a maximum 8% loading by weight of the cementitious materials in the mix. The Contractor shall add the integral color according to manufacturer’s instructions.

The Color Hardener shall be applied to the surface of the concrete according to the manufacturer’s instructions and recommended application techniques.

The form release agent shall be provided in clear liquid form and shall be applied to the surface of the concrete according to the manufacturer’s instructions and recommended application techniques.

The curing agent shall be a liquid membrane-forming clear curing compound conforming to AASHTO M148, Type 1. The Contractor shall apply the curing compound for integrally colored concrete according to the manufacturer’s instructions and recommended application techniques. The curing compound shall be applied at a uniform interval after each pour to maintain consistency in finished coloration.

The Contractor shall use admixtures designed for use and compatibility with colored concrete pigments. Do not use calcium chloride or admixtures containing chlorides. The Contractor shall use the same admixtures for colored concrete pavement throughout the project.

Joint fillers shall be selected to match the integral colors selected for the project.

**Equipment:** Imprinting tools shall be used for texturing freshly placed concrete in a pattern/texture as approved by Engineer. The tools shall be used according to the manufacturer’s instructions.

**General:** This work shall be performed according to Section 606 of the “Standard Specifications” and the following:

The colored concrete mixes for the entire project are to be consistent. If the Contractor chooses to provide mixes with High Early Strength, then all colored concrete will be provided with the same mix.

If additional water is added to the colored concrete once a truck is on site, this concrete will be rejected.

If the Engineer allows, minimal amounts of water may be applied to the surface of the colored concrete to complete the final surface finishing operations. If too much water is added to the surface of the colored concrete during final surface finishing operations such that the colored concrete no longer conforms to the approved color, the colored concrete may be rejected and replaced at the direction of the Engineer.

The Contractor shall cover and protect adjacent construction and concrete from discoloration and spillage during placement and curing of the colored concrete. The Contractor shall remove and replace discolored concrete as the Engineer directs.

The Contractor shall uniformly apply the liquid release agent onto the colored, still plastic state concrete, to provide a clean release of imprinting tools from the concrete surface without lifting imprint or rearing concrete.

The Contractor shall monitor the setting up of the concrete. Once the concrete is ready for imprinting, the Contractor shall accurately align and place the imprinting stamps uniformly pressing or pounding the imprint tools to produce the required pattern and depth of imprint on the concrete surface. The Contractor shall:

- Remove the platform tools immediately.
- Hand texture and stamp edges and surfaces unable to be imprinted with the stamping mats.
- Touch up imperfections such as broken corners, double imprints, and surface cracks.

Do not cure colored concrete using plastic sheeting unless necessary due to weather conditions. Plastic sheeting shall not be laid directly on top of the concrete, as discoloration will occur. Plastic shall be suspended above the concrete.

All completed areas of colored concrete shall be of consistent color and appearance and shall meet the approval of the Engineer. Any finished areas that are rejected by the Engineer shall be removed and replaced by the Contractor at no additional cost to the County.

**Method of Measurement:** Stamped Colored Portland Cement Concrete and Stamped Colored Portland Cement Concrete Median Surface 4 Inch (Special) will be measured for payment in place and the area computed in square feet. The concrete curb and gutter around the median and pavement will be measured for payment separately.

**Basis of Payment:** This work will be paid for at the contract unit price per square foot for STAMPED COLORED PORTLAND CEMENT CONCRETE and STAMPED COLORED PORTLAND CEMENT CONCRETE MEDIAN SURFACE 4 INCH (SPECIAL). *The unit price shall include all labor, equipment and materials necessary to construct the stamped concrete.*

XX006658 FLOCCULATION LOGS  
XX006659 FLOCCULATION POWDER

Effective: January 1, 2007  
Revised: August 1, 2011

**Description:** This work shall consist of furnishing and applying Flocculation Logs and/or Flocculation Powder on the project site to minimize soil erosion, bind soil particles, remove suspended particles, and act as a construction aide.

**Materials:** The polymer shall be a water soluble anionic polyacrylamide (PAM). PAMs are manufactured in various forms to be used on specific soil types. Using the wrong PAM may result in performance failures. All site specific soils shall be tested by a Certified Professional in Erosion and Sediment Control (CPESC) each time a PAM is used. The following measures shall be adhered to:

- a) Toxicity: All vendors and suppliers of PAM, PAM mix, or PAM blends, shall supply a written toxicity report, which verifies that the PAM, PAM mix or PAM blends, exhibits acceptable toxicity parameters which meet or exceed the requirements for the State and Federal Water Quality Standards. **Cationic formulations of PAM, PAM blends, polymers or Chitosan are not allowed.**
- b) Performance: All vendors and suppliers of PAM, PAM mix or PAM blends shall supply written "site specific" testing results, demonstrating that a performance of 95% or greater of nephelometric turbidity units (NTU) or total suspended solids (TSS) is achieved from samples taken. In addition to soil testing, a CPESC shall design the installation plan for the polymers based on mix time and point of entry.
- c) Safety: PAM shall be mixed and/or applied in according to all Occupational Safety and Health Administration (OSHA) material safety data sheet (MSDS) requirements and the manufacturer's recommendations for the specified use.

#### **Construction Requirements:**

**Flocculation Powder Dry Form Application:** Dry form powder may be applied by hand spreader or mechanical spreader. Pre-mixing of dry form PAM into fertilizer, seed or other soil amendments is allowed when approved by the CPESC. The application method shall insure uniform coverage of the target area. Application rates typically range from 10 – 18 pounds per acre.

**Flocculation Powder Hydraulically Applied Application:** PAM is typically used as part of hydraulically applied slurry containing at least mulch and seed to quickly establish vegetation (temporary or permanent). When used without seed, PAM provides temporary erosion protection for cut & fill surfaces. Application rates typically range from 10 - 18 pounds per acre.

**Flocculation Powder Installation constraints:** Flocculation Powder shall be applied to non-frozen soil surfaces, only. An unfrozen soil surface is defined as any exposed soil surface free of snow, standing water, ice crystals, etc., which is comprised of discrete soil particles unbound to one another by surface or interstacy ice. The temperature shall be at least 40° F, when hydraulically applying the Flocculation Powder

**Flocculation Log Installation:** A Flocculation Log is a semi-hydrated polyacrylamide block that is placed within storm water and/or construction site drainage to remove fine particles and reduce NTU values. Placement of Flocculation Logs should be as close to the source of particle suspension as possible. Ideal performance of the Flocculation Logs occurs when the product is used in conjunction with other best management practices (BMPs). Each Flocculation Log is specifically formulated for the soil and water chemistry at the site. Soil and water samples will determine which formula Flocculation Log is needed. The samples will also aid in determining proper placement.

**Flocculation Products Maintenance plan:** As with any other BMP, this system will need to have a maintenance plan in place. The Contractor shall perform the following items as directed by the Engineer:

1. Reapplication of Flocculation Powder to disturbed areas
2. Reapplication of Flocculation Powder to temporary areas
3. Replacement of Flocculation Logs
4. Adjustments to the Storm Water Pollution Prevention Plan

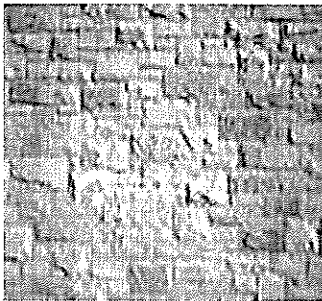
**Method of Measurement:** An estimated quantity of Flocculation Logs is included in the summary of quantities to establish a unit price only. A typical dry log weighs about 10 pounds and is approximately 5" x 4" x 12". Payment will be made based on the actual number of logs used. An estimated quantity of Flocculation Powder is included in the summary of quantities to establish a unit price only. Payment will be made based on the actual quantity (weight) of powder applied.

**Basis of Payment:** FLOCCULATION LOGS will be paid for at the contract unit price per each. FLOCCULATION POWDER will be paid for at the contract unit price per pound. *Payment will be based on the actual number of logs and/or the actual weight of the powder used without a change in unit price because of adjustment in plan quantities, and no extra compensation will be allowed for any delays, inconveniences or damage sustained by the Contractor in performing the work. The unit price shall include all equipment, materials and labor required to furnish and apply flocculation logs and/or flocculation powder.*

#### **XX007023 STAINING CONCRETE STRUCTURES**

Effective: January 1, 2007

Revised: August 1, 2011



**Description:** This work shall consist of staining permanently exposed surfaces of designated concrete structures to replicate actual stone masonry.

The stain shall match the colors of natural limestone as shown in the photo. The stain mix shall also achieve the color variations present in natural limestone. Final coloration of the cast stone concrete surface shall accurately simulate the appearance of real stone including the multiple colors, shades, flecking, and veining that are apparent in real stone. It shall also simulate the colors that may be present from aging, e.g. staining from oxidation, rusting and/or organic staining from soil and vegetation.

**Materials:** The stain shall create a surface finish that is breathable (allowing water vapor transmission), and that resists deterioration from water, acid, alkali, fungi, sunlight and/or weathering. The stain shall be odor free and V.O.C. compliant. The stain shall meet the requirements for weathering resistance of 2000 hours accelerated exposure.

**Sample Panel:** Upon receipt of notification of the style of form liner to be used the Contractor shall submit a proposed procedure for obtaining the simulated finish using the approved architectural form liner

style and stain - see the special provision for FORM LINER TEXTURED SURFACE. The procedure shall include plans and details for the form liner pattern and dimensions, and be submitted for the Engineer's approval no later than 30 calendar days following the date of notification of approval of the form liner style type. If such plans and details are not satisfactory to the Engineer, the Contractor shall make any changes as may be required by the Engineer at no additional cost to the Department.

Upon approval of the form liner plans and details, the Contractor shall submit a 3' by 3' (minimum) sample concrete panel of the simulated stone masonry finish to include staining. The sample panel shall be delivered and positioned on the job site at a location to be determined by the Engineer.

**General:** The surfaces to be stained shall be structurally sound, clean, dry, and fully cured. The concrete shall be at least 30 days old prior to applying the stain. Curing agents shall be removed a minimum of 14 days prior to staining to allow the concrete to dry out.

Temperature and relative humidity conditions shall meet the manufacturer's application instructions. Do not apply the stain under rainy conditions or within three days after surfaces become wet from rainfall or other moisture. Do not apply when the weather is foggy or overcast.

The concrete surface shall be cleaned prior to the applying the stain materials. The methods and materials used for cleaning the substrate shall be as recommended by the manufacturer of the stain. The Contractor shall insure that the surface is free of latency, dirt, dust, grease, efflorescence, paint, or other foreign material. The Contractor shall not use sandblasting as a cleaning method. The preferred method to remove latency is pressure washing with water, at a minimum 3000 psi (3-4 gal/min), using fan nozzle. The nozzle should be positioned perpendicular to and at a distance of 1-2 feet from the concrete surface. The cleaned surface shall be free of blemishes, discoloration, surface voids and unnatural form marks.

The stain shall be thoroughly mixed according to the manufacturer's directions using an air-driven or other explosion-proof power mixer. Mix all containers thoroughly prior to application. Do not thin the material. Materials shall be applied at the rate as recommended by the manufacturer. Absorption rates may be increased or decreased depending upon the surface texture and porosity of the substrate so as to achieve even staining.

A test area of ten square feet shall be prepared and the stain applied to the surface to verify the surface preparation, adhesion and color. Once the Engineer has approved the results from the test area the application of the stain to the rest of the exposed surfaces may be completed.

Take precautions to ensure that workmen and work areas are adequately protected from fire and health hazards resulting from handling, mixing and application of materials. Furnish all the necessary equipment to complete the work. Provide drop cloths and other forms of protection necessary to protect all adjoining work and surfaces to render them completely free of overspray and splash from the concrete stain work. Any surfaces, which have been damaged or splattered, shall be cleaned, restored, or replaced to the satisfaction of the Engineer.

Avoid staining the "mortar joints" by providing suitable protection over the joints during the staining process.

Schedule the color stain application with earthwork and back-filling of any wall areas making sure that all simulated stone texture that might fall below grade is colored prior to back-filling. Delay adjacent plantings until color application is completed. Coordinate work to permit coloring applications without interference from other trades. Where exposed soil or pavement is adjacent which may spatter dirt or soil from rainfall, or where surface may be subject to over-spray from other processes, provide temporary cover of completed work.

**Method of Measurement:** The exposed surfaces stained, will be measured in place and the area computed in square yards.

**Basis of Payment:** This work will be paid for at the contract unit price per square yards for STAINING CONCRETE STRUCTURES. *The unit price shall include all equipment, materials and labor required to stain the exposed concrete surfaces.*

**XX007860    AGGREGATE BASE COURSE, SPECIAL**

**Description:** This work shall consist of furnishing all materials, equipment, and labor in performance of the placing, grading, and compacting aggregate base course for the trail located on Lake County Forest Preserve property as indicated on the project plans.

**Materials:** Aggregate materials for use as aggregate base course shall be CA-6, Type B, in conformance with IDOT Standard Specification Article 1004.01. The source of the material shall be approved by the Engineer prior to delivery. Samples of the proposed material shall be submitted to the Engineer prior to delivery and installation.

**Construction Requirements:** No aggregate base course shall be placed until the subgrade has been approved by the Engineer.

The work shall meet the applicable portions of Section 301 and 351 of the IDOT Standard Specifications except as herein noted.

The Contractor shall establish all grades to achieve the minimum thickness indicated in the Contract Documents prior to ordering delivery of granular base material. The Department shall not be responsible for any costs associated with the delivery of surplus granular material.

Aggregate base course shall be placed with a paver box or other method approved by Engineer to ensure uniform width, depth, crown, and final surface smoothness. The crown shall be 3.3 percent for an aggregate surface trail and 2.0 percent for an HMA surface trail. Placement of the aggregate base shall closely follow the horizontal alignment as staked in the field. The paver box operator shall possess sufficient skills and experience to perform the work.

Aggregate base course shall be compacted half the trail width at a time to preserve the specified crown. Compaction shall be to a minimum of ninety-five percent (95%) Standard Proctor in accordance with the IDOT Standard Specifications. Any portion of the proposed trail without the required crown after compaction will not be accepted by the Engineer and the contractor will be required to take whatever steps necessary to provide the required crown. All irregularities in the trail base course shall be smoothed

out. Depressions shall be filled, high points cut down and the entire aggregate base course edge shall be trimmed and finished uniformly.

The Contractor shall perform a proof roll of the aggregate base course with the Engineer present for approval. Any failures of the base course, as determined by the Engineer, that occur during the proof rolling shall be immediately repaired and subjected to retesting until all areas have passed the testing or proof rolling.

**Method of Measurement:** This work will be measured for payment per SQUARE YARD of aggregate base course placed.

**Basis of Payment:** This work will be paid for at the contract unit price per SQUARE YARD for AGGREGATE BASE COURSE, SPECIAL.

**XX008865 PERMEABLE PLASTIC BERM**

**Description:** This work shall consist of furnishing, installing, and removing a permeable plastic berm. The plastic berm may be used in conjunction with erosion control mat, sediment bags and other components of a water treatment train and/or as a temporary ditch check while establishing final landscaping.

**For this project the Permeable Plastic Berms shall be used for:**

- A component of a water treatment train*
- A temporary ditch check while establishing final landscaping*

**Materials:** The permeable plastic berm shall be constructed of High Density Polyethylene (HDPE) with a UV inhibitor. The permeable plastic berm shall have 35-40% porosity. The berm shall be a minimum of 8¾" tall.

**General:** The work shall be performed according to Section 280 of the "Standard Specifications", and the manufacturer's recommendations.

**Water Treatment Train:**

*The permeable plastic berm shall be used in conjunction with the erosion control mat, flocculation powder and other components to form a water treatment train as directed by the Engineer. The permeable plastic berm shall become the property of the Contractor upon the dismantling and removal of the water treatment train.*

**Temporary Ditch Check:**

*The permeable plastic berm shall be used as a temporary ditch check in ditch lines where the erosion control blanket has been placed and the seeding operations performed. The permeable plastic berms shall be placed in the locations of the Temporary Ditch Checks and/or as directed by the Engineer. Their installation shall be according to the detail shown on the plans and the manufacturer's recommendations. After the final landscaping has been established to the*



*satisfaction of the Engineer the permeable plastic berm shall be removed by the Contractor. The permeable plastic berm shall become the property of the Contractor upon removal.*

**Method of Measurement:**

Water Treatment Train: *The permeable plastic berm will be measured for payment in feet for the actual length used in a water treatment train.*

Temporary Ditch Check: *The Permeable Plastic Berm will be measured in place and the length calculated in feet for each permeable plastic berm actually installed.*

**Basis of Payment:** This work will be paid for at the contract unit price per foot for PERMEABLE PLASTIC BERM. *The unit price shall include all labor, equipment and materials necessary for the installation and removal of the plastic berm regardless of use. When used as a temporary ditch check the maintenance of this item shall be included with and paid for as part of the contract lump sum price for MAINTENANCE OF EROSION CONTROL SYSTEM.*

**XX008873 AGGREGATE SURFACE COURSE (SPECIAL)**

**Description:** This work shall consist of furnishing all materials, equipment, and labor in performance of the placing, grading, and compacting aggregate surface course for the trail located on Lake County Forest Preserves property as indicated on the project plans.

**Materials:** Aggregate surfaces for trail construction shall be crushed aggregate material complying with IDOT Standard Specification Article 1003.01 gradation FA-21. Screenings shall consist of 100% crushed material. Limestone screenings are not acceptable. Contractor shall submit samples of specified material to the Engineer for approval prior to delivery and placement. Furnished material shall be obtained from one of the following locations:

1. Meyer Material Company  
Dyer Lake, Wisconsin Quarry  
815-385-4920
2. Thelen Sand and Gravel  
Route 173 (North Pit)  
Antioch, Illinois  
Prime Bike Path Mix  
847-395-3313
3. Payne & Dolan, Inc.  
28327 W. Route 173  
Antioch, IL 60002  
Prime Bike Path Mix  
847-838-3700

**Construction Requirements:** This work shall consist of furnishing all materials, equipment, and labor and performance of all required operations for the installation of the aggregate surface course for construction of the proposed trail.

The work shall meet the applicable portions of Section 402 of the IDOT Standard Specifications except as herein noted. No surface course shall be placed until the base course has been approved by the Engineer. Aggregate surface course shall be placed with a paver box or other method approved by the Engineer to ensure uniform width, depth, crown, and final surface smoothness. The crown shall be 3.3 percent. The paver box operator shall possess sufficient skills and experience to perform the work.

Trail surface course shall be compacted half the trail width at a time, to preserve the crown of 3.3 percent. Compaction shall be to a minimum of ninety-five percent (95%) Standard Proctor in accordance with the IDOT Standard Specifications. Any portion of the proposed trail without the required crown after compaction will not be accepted by the Engineer and the contractor shall be required to take whatever steps necessary to provide the required crown. All irregularities in the trail surface shall be smoothed out. Depressions shall be filled and the entire trail surface shall be trimmed and finished uniformly.

**Method of Measurement:** This work will be measured for payment per TON of aggregate surface course placed.

**Basis of Payment:** This work will be paid for at the contract unit price per TON for AGGREGATE SURFACE COURSE (SPECIAL)

#### **XX008916 CONTROLLED STIFFNESS COLUMNS**

**Description.** This work shall consist of furnishing design calculations, shop drawings, materials, and labor necessary to construct controlled stiffness columns ground improvements, CONTROLLED STIFFNESS COLUMNS, over the approximate horizontal limits as specified on the contract plans, or as modified by the Contractor's approved design. This work shall include monitoring and testing of controlled stiffness column ground improvements. The installation of the controlled stiffness columns shall also include the removal of excavation spoils as a result of the installation process of the controlled stiffness columns. Removal shall also include any portion of the aggregate subgrade improvement material contaminated by the contractors operations. The excavated material is all assumed to be unsuitable and shall either be disposed of or used in accordance with the IDOT Standard Specifications for unsuitable soils. The cost of installation of the controlled stiffness columns shall include the cost of hauling, stockpiling and disposal, if required by the Engineer of the excavated material.

The contractor shall obtain supplemental soil samples within 10 days of the start of work. A minimum of 4 supplemental borings shall be taken. This work shall include undisturbed sampling, consolidation testing and field vane shear testing for the purpose of evaluating strength, stability (long-term and short-term) and settlement. Any addition sampling and testing deemed necessary by the contractor for proper design shall be included in the work. The cost for this work is included in the cost of the CONTROLLED STIFFNESS COLUMNS pay item.

Ground improvement sequence and details shall be as shown on the Contract Plans and approved Shop Drawings. All costs for ground improvement mobilization for multiple construction seasons, and

multiple construction stages, are included in the ground improvement item.

(a) List of Approved Controlled Stiffness Column Types and Vendor Information.

- i. *Controlled Modulus Column (CMC) by Menard (Phone: 1-800-326-6015).*
- ii. *Auger Pressure Grouted Displacement Piling (APGD) by Berkel & Company Contractors, Inc. (Phone:1-913-422-3588).*
- iii. *Rigid Inclusions (RI) by Hayward Baker (Phone: 1-630-339-4300).*

(b) References. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

1.2012 IDOT Standard Specifications for Highway and Bridge Construction

2.American Society of Testing and Materials (ASTM).

- a. ASTM D1143 / D1143M - 07e1 Standard Test Methods for Deep Foundations Under Static Axial Compressive Load.
- b. ASTM C873/C873M-10a Standard Test Method for Compressive Strength of Concrete Cylinders Cast in Place in Cylindrical Molds.

(c) Definitions.

- 1.Controlled Stiffness Columns: Controlled Stiffness Columns may consist of CMC, APGD or RI. The purpose of the controlled stiffness columns is to provide ground improvement and support for highway embankment fill.
- 2.Test Controlled Stiffness Column: Test Controlled Stiffness Column is a column that is installed at non-production controlled stiffness column locations. These test columns shall be installed, integrity tested, and then statically load tested ahead of the production controlled stiffness columns to allow for performance and evaluation of load tests.
- 3.Load Transfer Pad: A load transfer pad will be constructed at the top of the controlled stiffness columns. The load transfer pad shall consist of compacted granular fill with layers of high strength geotextile reinforcement as designed by the Contractor. The purpose of the pad is to transfer the majority of the embankment loads to the controlled stiffness columns, thereby providing adequate support above and between the controlled stiffness columns.

(d) Subsurface Conditions.

- 1.Borings completed within the limits of the project encountered varying thicknesses of cohesive clay soils, organic soils, peat, cohesionless soils, sand and sandy loam soils.

2. Groundwater was recorded between approximately 9.5 feet to 23.5 feet below the natural ground at the time of drilling, which was performed in September of 2009 and October-November of 2012. It is anticipated that the groundwater level will rise during prolonged periods of precipitation or flooding, and perched groundwater may be present.
3. Installation of the controlled stiffness columns will typically require penetration in the 2.5 foot thick compacted granular fill layer that will be constructed at the ground surface to serve as a working platform and lower portion of the load transfer pad.

**Submittals.** No later than thirty (30) days prior to beginning work, the Contractor shall submit to the Engineer for approval the following information:

- (a) Shop drawings that include spacing, diameter, installation procedure and sequence of construction with sufficient details including transitions areas, planned cut off and tip elevations, material, proposed equipment, and mix design. The design shall conform to the criteria in the Design Criteria and Construction sections of this Specification.
- (b) The Contractor shall submit a load testing program to verify the design in accordance with the requirements of this special provision. The submittal shall include the following:
  - a. The load test program shall be performed prior to any production of controlled stiffness columns.
  - b. The controlled stiffness column production shall only start upon completion of the load test program and after the Contractor issues the final tip elevations and spacing of the controlled stiffness columns.
  - c. A total of two load tests shall be performed on controlled stiffness columns in accordance with ASTM D 1143 to 150% of the design load. The location of the test inclusions will be selected by the Engineer. The contractor shall accommodate in his schedule the performance of the two load tests.
  - d. The design load shall be determined by the Contractor.
  - e. The Contractor shall submit design calculations for the load test reaction piles including diameter, type, reinforcement, depth as well as the reaction frame and beams. All details and supporting calculations shall be submitted for review by the Engineer. The Contractor shall design the reaction piles and frame for minimum three (3) times the design load. All shop drawings and calculations shall be signed and sealed by a Licensed Professional Engineer in the state of Illinois.
  - f. At least 7 days prior to performing the testing, calibration records for load cells, hydraulic jacks, pumps and pressure gauges shall be submitted.
  - g. The Contractor shall submit a complete load test report within 3 days of completion of each test along with installation criteria, final tip elevations and planned spacing for the production

controlled stiffness columns. The Engineer shall evaluate the plans and results of the load tests and within 3 days.

**h.** The test controlled stiffness columns shall be instrumented with 5 levels of strain gauges.

- (c) Shop Drawings: Furnish shop drawings and final design calculations at least 10 days prior starting production controlled stiffness columns. Each controlled stiffness column shall receive a reference number, which will be indicated on the shop drawings. The shop drawing submittal shall also show cutoff elevations, typical sections and detail drawings as required.
- (d) The Contractor shall submit as-built plans for the installed controlled stiffness columns with the load transfer pad based on actual, elevations, locations and tip elevations.
- (e) Work Plan: The Contractor shall submit to the Engineer for review, details of the equipment, sequence, and method of installation. The submittal should include a detailed narrative of the Contractor's Quality Control Plan.
- (f) Materials: Provide documentation for all imported materials including pertinent laboratory test results prior to delivery on site.
  - a. Aggregate Subgrade Improvement for use in the load transfer pad: Provide the material source and results of recent gradation testing. Deliver a representative 5 gallon bucket sample of the product to the Engineer a minimum 10 days prior to delivery on site.
  - b. Geotextile for use in the load transfer pad: Provide the manufacturer's specifications and material source. Deliver samples of the product to the Engineer a minimum of 10 days prior to delivery on site.
- (g) Qualifications: Documentation of the Contractor's qualifications shall show that he/she has been engaged in successful design and installation of deep ground improvements for at least five years, and designed and constructed a minimum of five similar projects in similar scope utilizing the deep ground improvement method proposed for the subject project. A list of previous projects including name, description, relative size and contact person with phone number shall be provided.

Evidence that the proposed project superintendent for the ground improvement installation has a minimum of three years of method specific experience. Resumes of Contractor's site superintendent and/or foreman shall also be provided.

Qualifications of the firm that will be performing the pile integrity tests shall also be provided. See Verification Program section in this special provision for PIT testing submittal requirements.

- (h) Installation Criteria: The Contractor shall be responsible for the shop drawings of the deep ground improvement system, with the following constraints:

- i. The controlled stiffness columns may consist of CMC, APGD, or RI. No other substitute shall be accepted. The design shall conform to the requirements summarized in the plan documents.
- ii. The load transfer pad shall be as designed by the Contractor and as specified herein.

**Materials.** Use the following or as approved by the Engineer.

**(a) Load Transfer Pad.**

- i. The aggregate subgrade improvement material used to construct the load transfer pad/embankment fill, shall conform to the requirements of the District 1, Aggregate Subgrade Improvement special provision.
- ii. The aggregate subgrade improvement material shall be placed and compacted according to the applicable portions of Sections 205 and 301 of the Standard Specifications. Aggregate subgrade improvement material should generally be placed in loose 8 inch lifts and compacted to the requirements of Article 205.06 of the Standard Specifications.
- iii. Geotextile reinforcement requirements for the load transfer pad shall be determined by the Contractor. Geotextile shall be low-strain, high-strength.

**(b) Controlled Stiffness Column Grout.**

- i. Portland Cement.  
Shall conform to requirements of Article 1001 of the Standard Specifications
  - a. Type I or Type II.
  - b. Cement shall be from an approved source per the IDOT Approved Materials List of Qualified Cement Plants. If the brand or type of cement is changed during the course of the project, additional grout mix tests shall be conducted to ensure consistency of quality and performance.
- ii. Fluidifier.
  - a. Water Reducing Agent.
    - See IDOT Approved Materials List for Mid-Range Water Reducing Admixtures.
  - b. Retardant.
    - See IDOT Approved Materials List for Retarding Admixtures.
- iii. Water.  
Shall conform to requirements of Section 1002 of the Standard Specifications
- iv. Grout Mix.
  - a. Proportion by weight to produce a grout capable of being satisfactorily pumped and of penetrating and filling all voids.
  - b. Minimum Compressive Strength:
    - 3,000 psi at 28 days.
    - 1,500 psi at 7 days as required prior to pile integrity testing.

- c. Minimum Flow Cone Rate and Slump shall be determined by the contractor.
- d. The grout mix shall be designed utilizing fluidifiers as needed to maintain the range of acceptable fluid consistency (flow cone rate) for a period of at least 2 hours.
- e. Grout Mix: Contractor's certified and successfully tested grout design approved by the Engineer for incorporation into piles.

(c) Controlled Stiffness Column Concrete.

1. All materials, proportioning, air entraining, mixing, slump, and transporting of PCC shall be according to Section 1020 of the Standard Specifications, except as modified herein.
2. Water/cement ratio: not to exceed 0.45.
3. Use Class SI PCC mixture with a slump of 4 inches  $\pm$  1.5 inches.
4. Portland cement: meet the requirements of ASTM C 150 Type I / II and Section 1020 of the Standard Specifications.
5. Air entrainment: apply Section 1020 of the Standard Specifications.
6. Mid-range water reducer is required according to Section 1020.05 of the Standard Specifications.
7. Retarder is required according to Section 1020.05 of the Standard Specifications to maintain workable concrete.
8. Do not use Ground Granulated Blast Furnace Slag.
9. Minimum Compressive Strength:
  - 3,000 psi at 28 days.
  - 1,500 psi at 7 days as required prior to pile integrity testing.

**Design Criteria.** The Contractor shall provide controlled stiffness columns ground improvement plan with shop drawings, and design computations, using an Allowable Stress Design that meets the performance requirements. These requirements include the global stability factor of safety at various location along the south toe of the proposed embankment, tolerable settlement amounts at various times and the equivalent uniform service bearing pressure applied at various locations and the factor of safety required. The following Allowable Stress minimum performance requirements shall be used:

- (a) A factor of safety of 1.5 against global slope stability failure.
- (b) A factor of safety of 2.5 against equivalent uniform service bearing pressure failure.
- (c) Total settlement not to exceed 4 inches and settlement after completing pavement construction not to exceed 1 inch. Differential settlement between controlled stiffness columns after completing pavement construction shall not exceed 1/2 inch.

The design shall use strength parameters for the soil, obtained from the soil boring logs and any geotechnical laboratory testing data provided in the Contract Plans and specifications for stability and bearing capacity analyses. Settlement shall be assessed using appropriate soil parameters. Any additional subsurface information needed to design the controlled stiffness columns shall be the responsibility of the Contractor.

The controlled stiffness columns ground improvement design shall include a live load surcharge equivalent to 2 feet of soil. The controlled stiffness columns ground improvement design need not consider seismic loadings. The Contractor shall be responsible for the design of the single load tests reaction frames and reaction piles.

**Construction.** The construction procedures shall be determined by the Contractor and submitted for approval with the shop drawings. The following are the minimum requirements that the Contractor will be expected to follow unless otherwise approved in the shop drawings submittal.

A. Equipment.

1. The Contractor shall use machines or combinations of machines and equipment that are in good working condition, are safe to operate and will produce the results specified herein.
2. The Contractor shall use equipment that is capable of advancing the controlled stiffness column through the subsurface materials efficiently and timely to meet the project schedule.
3. The equipment shall be of sufficient size and capacity, and be capable of installing controlled stiffness columns to the depth required by the Contractor's design.

B. Site Preparation. Inspect the site prior to the start of operations to verify the deep ground improvements can be constructed using the proposed equipment.

C. Controlled Stiffness Column Construction.

- i. Test Installation: Install test elements prior to the start of controlled stiffness column production. The load test results will be signed and sealed by the Contractor's Professional Engineer licensed in the state of Illinois and submitted to the Engineer. No payment shall be made for load tests which were unsatisfactorily performed as determined by the Contractor and/or the Engineer.
- ii. Schedule: The Contractor shall mobilize and maintain sufficient equipment, materials, and personnel to complete the work in accordance with project milestones and shall coordinate operations with all other aspects of the project.
- iii. Installation Sequence: The Contractor shall install the controlled stiffness columns in accordance with the sequence detailed in the approved work plan. If adjacent controlled stiffness columns are observed to be influenced by the installation of a neighboring controlled stiffness column, the installation sequence shall be modified to prevent disturbance of controlled stiffness columns. Any required modifications to the sequence, or mitigation of



controlled stiffness columns deemed unusable due to disturbance, shall be completed by the Contractor at the expense of the Contractor with no extension in the project.

- iv. Depth: Install the controlled stiffness columns through the first layer of the load transfer pad (work platform) to the minimum tip elevation, or deeper as required to found the controlled stiffness columns in a suitable bearing stratum, as determined by the Contractor's Engineer.
- v. Obstructions: In the event that obstructions are encountered during installation of a controlled stiffness column that cannot be penetrated with reasonable effort, one or more of the following procedures will be used:
  - Position the element a short distance away from the original position.
  - Pre-drill the obstruction.
  - Install additional elements to bridge over the obstruction.

Any change made to the design or controlled stiffness column layout because of obstructions shall be evaluated by the Contractor and approved by the Engineer. The Contractor shall provide to the Engineer an as-built submittal no later than 7 calendar days after the modification has been performed on site. This submittal shall be signed and sealed by the Licensed Professional Engineer in the state of Illinois responsible to the Contractor and having stamped the design submittals. All elements that are abandoned due to obstructions or equipment malfunction shall be completely backfilled with grout.

- vi. Cut-off Elevation: Cutoff the controlled stiffness columns to the top elevation of the first layer of the load transfer pad, or slightly higher to allow any required trimming or removal of low strength material at the butt of the controlled stiffness column. The cut-off elevation of each controlled stiffness column shall be established with an accuracy of +/- 0.1 feet.
- vii. Protection of Controlled Stiffness Columns: Perform excavation for the load transfer pad, controlled stiffness column installation, and embankment construction in such a way to prevent the damage to the controlled stiffness columns or disturbance of the soil matrix between the controlled stiffness columns.
- viii. Load Testing: Following a cure time (if applicable) to achieve the design strength, perform axial load tests on selected controlled stiffness columns. At the test location, excavate to the bottom of the load transfer pad elevation. Perform the excavation, load test setup, load testing, and backfill the excavation, in a single shift.

#### D. Excavation.

- i. Cure time: The upper portion of the Load Transfer Pad construction (above the Work Platform) shall not begin in any area until the controlled stiffness column design strength has been reached. If any controlled stiffness column is broken during placement of compacted aggregate subgrade improvement construction, the Contractor shall propose a remediation solution within 2 days and construction shall resume only if all parties are in agreement with the remediation solution and the remediation has taken place.

- ii. Load Test Evaluation: Excavation for the work platform shall not begin until the results of the load testing program on controlled stiffness columns has been submitted and approved by the Engineer.
- iii. Operations on earthwork shall be suspended at any time when satisfactory results cannot be obtained because of rain, freezing, or other unsatisfactory conditions of the field. The Contractor shall drag, blade, or slope the embankment to provide proper surface drainage. In wet weather conditions, the Contractor shall dewater as required to prevent the accumulation of ponded water in excavations for embankment construction, and the earthwork should be done in sections to minimize the need for such dewatering.
- iv. The excavation necessary to provide a level surface to construct the work platform is shown on the Contract Plans and is included in the unsuitable excavation and earth excavation items. The depth of excavation is also reflected in the area for temporary soil retention system. If the contractor's work platform/load transfer pad design requires less excavation than shown on the Contract Plans it shall be clearly shown on the all submittals.
- v. Disposal of Excavation Spoils: See Contract Plans and Specification.

**E. Load Transfer Pad Construction**

- i. Place and compact the first layer of the aggregate subgrade improvement for the work platform portion until the layer is 2.5 feet in thickness, or as determined suitable based on field conditions. Install the controlled stiffness columns after the installation of the first 2.5 feet of the pad. Geotextile layers shall be placed as shown on the Contractors approved shop drawings.
- ii. Any rutting or pumping of the load transfer pad that occurs during installation of the controlled stiffness columns should be measured and the Engineer notified. If practical, reroute construction traffic to avoid further damage to the underlying in-situ soils, or remove and replace the pumping material with compacted granular fill.

**Construction Tolerances.** The controlled stiffness columns shall be constructed to the following tolerances:

- a. Surveying: Prior to installation of the controlled stiffness columns, each controlled stiffness column location shall be surveyed by an approved surveyor paid for by the Contractor. The Contractor shall provide all survey layouts, maintain utility clearances and provide any required coordination with the Engineer and any other local, state, and federal agencies having jurisdiction, prior to the start of construction. The location of each controlled stiffness column shall be marked and numbered using a lath or flag.
- b. Plan position: The center of the completed controlled stiffness column shall be within 3 inches of the plan location.
- c. Verticality: The axis of the completed controlled stiffness column shall not deviate more than 2% from vertical controlled stiffness columns. The verticality of the mast of the rig shall be checked by the operator before start of the installation for each controlled stiffness column. The operator

shall indicate on the daily drilling log for each controlled stiffness column that verticality was within tolerance by checking the appropriate box on the installation log.

- d. Diameter: The completed controlled stiffness column diameter shall not deviate more than 10% from the plan diameter.

Rejection: Controlled Stiffness Columns improperly located or installed beyond the maximum allowable tolerances or reported to be defective as a result of pile integrity testing, shall be abandoned and replaced with new controlled stiffness columns unless the Contractor and the Contractor's designer propose a remedial measure which is acceptable to the Engineer, either of which will be done at the expense of the Contractor.

**Verification Program.** The Contractor shall develop and maintain a monitoring and documentation procedure during the installation of all controlled stiffness columns to verify they satisfy the design and performance requirements. The Contractor shall provide qualified personnel to continuously observe and record the required data.

The following describes the minimum inspection and testing required in the Contractor's Quality Control (CQC) Plan and Program for the work of this section and is for CQC only. The implementation of the Contractor Quality Control Program does not relieve the Contractor from the responsibility to provide the work in accordance with the contract documents, applicable codes, regulations, and governing authorities.

1. Quality Control: Supervision, Inspection, and Records.

- a. The Contractor must have an onsite field engineer to manage all of his QC activities on the project including pile integrity testing, grout sampling (if applicable) and other testing at frequencies defined by Contractor in the Design Submittal and approved by the Engineer. Monitoring, recording of the data and evaluation of load tests, and inspection and recording of data for production controlled stiffness column construction, subgrade preparation, and the construction of the load transfer pad shall be done under the direct supervision of a geotechnical Professional Engineer registered in the State of Illinois on the staff of the Contractor or a sub-consultant to the Contractor. The geotechnical engineer shall have supervised a minimum of five similar deep ground improvement projects.

b. Records:

- 1) A daily report form shall be completed by the Contractor and provided to the Engineer to document the work performed each day and the adequacy of each controlled stiffness column. An accurate record shall be kept for all controlled stiffness columns as installed (identified by location number). The record shall indicate the controlled stiffness column location, length, elevation of top and bottom of each controlled stiffness column, date and time of construction, and other pertinent installation details as indicated in the Design Submittal and approved by the Engineer. Details of obstructions, delays and any unusual issues shall be included. Immediately report any unusual conditions encountered during installation. Any corrective measures shall also be recorded. Daily reports shall be signed by the Contractor's superintendent and by the inspector. A complete tabulation of all records pertaining to approved controlled stiffness column installation shall be certified by the Contractor's engineer and shall be delivered to the Engineer no later than 14 days

after the completion of the controlled stiffness column work. All testing and inspection documents shall be reviewed and approved by the Contractor's engineer certifying the controlled stiffness columns and load transfer pad will be suitable for embankment support.

- 2) Provide on a daily basis pertinent installation data as defined in the Design Submittal and approved by the Engineer. These documents shall be prepared continuously as the production progresses and shall be submitted to the Engineer no later than 1 working day after the installation of a rigid column. Ensure the Engineer has complete access at all times to data for the controlled stiffness column installation, as required.
- 3) Aggregate Subgrade Improvement material: Perform a gradation sieve analysis at the beginning of the job and for every change in source and/or type of material. Perform proof-rolling of the top of the load transfer pad. The proof-rolling shall cover the entire work area, and the wheel pass spacing shall be equal to the axle length of the dump truck. All required testing will be completed to the satisfaction of the Engineer at the expense of the Contractor.
- 4) Concrete and Grout: Conduct strength testing of the concrete in accordance with ASTM C 873. The Contractor shall furnish a sufficient quantity of molded and cured cylinders measuring 3 inches in diameter by 6 inches high for required strength tests on concrete. For testing grout, the Contractor shall furnish a sufficient quantity of cubes with 2 inch sides. The Contractor shall provide molds, and a curing environment conforming to the requirements of ASTM C 873. At a minimum, the Contractor shall prepare a set of four test cylinders or cubes for each 50 cubic yards of concrete or grout placed or a minimum of two sets of four cylinders or cubes each per day (whichever is greater). One cylinder or cube from each set shall be tested for strength at 1, 2, 7, and 28 days. Provide certified strength test results to the Engineer for acceptance.

## 2. Monitoring and Testing.

- i. Monitoring methods to evaluate the performance of the global controlled stiffness column improvement system after construction of the overlying embankment. This will include installation of settlement plates and may also include monitoring points, inclinometers, piezometers or other instrumentation.
- ii. Pile Integrity Testing: Pile Integrity Testing (PIT) shall be performed on approximately 10% of the Controlled Stiffness Columns (RI, APGD, and CMC). The PIT shall be performed in accordance with ASTM D5882 - 07 Standard Test Method for Low Strain Impact Integrity Testing of Deep Foundations. The production elements selected for the PIT shall be at the discretion of the Engineer based on daily records indicate likelihood of anomalies in the inclusions. The PIT shall be performed by a firm qualified to do such testing. Documentation of the firm's qualifications shall show that he/she has successfully performed PIT testing for at least five years, and for a minimum of 5 similar projects. A list of previous projects including name, description, relative size and contact person with phone number shall be

provided. A report of the test results shall be provided to the Engineer within 48 hours of test completion.

**Method of Measurement.** Construction of the load transfer pad will be measured for payment in place to the nearest cubic yard at the locations shown on the plans.

**Basis of Payment.** All costs for controlled stiffness columns ground improvement mobilizations; work platform; soil sampling and testing; shop drawings; monitoring methods; pile integrity testing; and all work to complete the controlled stiffness columns ground improvement is included in the contract lump sum price for CONTRACTOR DESIGNED GROUND IMPROVEMENT and no additional compensation will be made for their construction.

Compacted granular fill for the embankment above the work platform shall be paid for as AGGREGATE SUBGRADE IMPROVEMENT. Should the contractor elect to use a thinner work platform than the 2.5' recommended per the plans, the difference in subgrade shall not be paid for but included in the cost of CONTRACTOR DESIGNED GROUND IMPROVEMENT. Geotextile reinforcement fabric will not be paid for separately, but shall be considered to be included with this work.

#### **Z0013302      SEGMENTAL CONCRETE BLOCK WALL**

**Description:** This work shall consist of furnishing the design computations, shop plans, materials, equipment and labor to construct a Segmental Concrete Block Retaining Wall at the location in the plans per the Lake County standard detail LC2101, also included within the plans.

**General:** The wall shall consist of a leveling pad, pre-cast concrete blocks, select granular backfill and, if required by the design, soil reinforcement. The materials, fabrication, and construction of the wall components are subject to approval by the Engineer. The Engineer reserves the right to obtain random samples for material testing. 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. The shop plans shall be sealed by an Illinois Licensed Professional 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:

1. Plan, elevation, and cross section sheet(s) for each wall showing the following:
  - a. 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 granular backfill 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.

- b. 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.
  - c. Typical cross section(s) showing the limits of the select granular backfill, 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.
  - d. All general notes required for constructing the wall.
2. 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 feet 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".
  3. 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.
  4. 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.
  5. 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.
  6. All block types (standard, cap, corner, and radius turning blocks) shall be detailed showing all dimensions.
  7. 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.

The initial submittal shall include three sets of prints of the detail shop plans and one set of calculations. One set of plans will be returned to the Contractor with any corrections indicated. After approval, the Contractor shall furnish the Engineer with eight sets of corrected plan prints for distribution. 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.

**Materials:** The materials shall meet the following requirements:

1. Pre-cast Concrete Block: The block proposed for use shall be produced according to the Department’s Policy Memorandum “Quality Control/ Quality Assurance Program for Precast Concrete Products”, and shall conform to the requirements of ASTM C 1372 except as follows:
  - a. Fly ash shall be according to Article 1010.01 and Article 1010.03 of the “Standard Specifications”.
  - b. Ground granulated blast-furnace slag shall be according Section 1016 of the “Standard Specifications”.
  - c. Aggregate shall be according to Article 1003.02 and Article 1004.02 of the “Standard Specifications”, with the exception of gradation. Chert gravel may be used based on past in-service satisfactory performance, in the environment in which the product was used.
  - d. Water shall be according to Section 1002 of the “Standard Specifications”.
  - e. 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.
2. Select Granular Backfill: The material behind the blocks and above a 1:1 slope extending upward from either the back of the bottom block or soil reinforcement (whichever is greater) shall consist of either a coarse aggregate according to Article 1004.06(a) of the “Standard Specifications”, or a fine aggregate according to the first sentence of Article 1003.04(a) of the “Standard Specifications”. The aggregate used shall also meet the following:

a. Coarse Aggregate Gradation	CA 6 thru CA 16 (Article 1004.01(c))
b. Fine Aggregate Gradation	FA 1, FA 2, or FA 20 (Article 1003.01(c))
c. Coarse Aggregate Quality	Minimum Class C (Article 1004.01(b))
d. Fine Aggregate Quality	Minimum Class C (Article 1003.01(b))
e. Internal Friction Angle	34° minimum (AASHTO T 236)
f. pH	4.5 to 9 (AASHTO T 289)

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 D 4491 of 0.008 cm/sec. All fabric overlaps shall be 6” 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” wide continuous gradation filter to prevent the select fill material from passing through the block joints.

3. Leveling pad: The material shall be either Class SI concrete according to Article 1020.04 of the “Standard Specifications”, or compacted coarse aggregate according to Article 1004.04, (a) and

(b) of the "Standard Specifications". The compacted coarse aggregate gradation shall be CA 6 or CA 10.

4. 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. The following standards shall be used in determining and demonstrating the soil reinforcement capacities:

ASTM D-638	Test Method for Tensile Properties of Plastic
ASTM D-1248	Specification for Polyethylene Plastics Molding and Extrusion Materials
ASTM D-4218	Test Method for Carbon Black Content in Polyethylene Compounds
ASTM D-5262	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 granular backfill volume shall be graded to the design elevation and compacted according to Article 205.05 of the "Standard Specifications", except the minimum required compaction shall be 95 percent of the standard laboratory density. 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 of the "Standard Specifications".



The select granular backfill 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 granular backfill 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" loose measurement or the proposed block height.

The select granular backfill shall be compacted according to Article 205.05 of the "Standard Specifications", except the minimum required compaction shall be 95 percent of the standard laboratory density. Compaction shall be achieved using a minimum of three passes of a lightweight mechanical tamper, roller, or vibratory system. The top 12" 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 1/2" when measured along a 10' straight edge.

**Method of Measurement:** Segmental Concrete Block Wall will be measured in place and the area of the wall face computed in square feet. The wall face is measured 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 for SEGMENTAL CONCRETE BLOCK WALL installed. *The unit price shall include all equipment, materials and labor required to design and construct the segmental block wall, leveling pad, and backfill.*

#### **Z0013797 STABILIZED CONSTRUCTION ENTRANCE**

**Description:** This work shall consist of constructing a stabilized construction entrance, including furnishing, installing, maintaining and removing a stabilized pad of aggregate underlain with filter fabric, as shown on the plans or directed by the Engineer.

**Materials:** The materials used shall meet the requirements of the following:

Aggregate: *The aggregate shall be limited to IDOT Coarse Aggregate Gradation CA-1.*

Filter Fabric: *The filter fabric shall be made of synthetic polymers composed of at least 85 percent by weight polypropylene, polyesters, polyamides, polyethylene, polyolefins, or polyvinylidene-chlorides. The geotextile shall be free of any chemical treatment or coating that significantly reduces its porosity. Fibers shall contain stabilizers and/or inhibitors to enhance resistance to ultraviolet lights.*

**Construction Requirements:** *The aggregate shall be at least six inches thick. The aggregate shall not be placed until the entrance area has been inspected and approved by the Engineer.*

*The aggregate shall be dumped and spread into place in approximately horizontal layers. The layer(s) shall not exceed three feet in thickness. The aggregate shall be placed in such a manner as to produce a*

*reasonably homogeneous stable fill that contains no segregated pockets of larger or smaller fragments or large unfilled space caused by bridging of larger fragments. No compaction shall be required beyond that resulting from the placing and spreading operations.*

*The construction entrance shall have a minimum width of 14 feet and a minimum length of 50 feet.*

*All surface water flowing or diverted toward the construction entrance shall be piped across the entrance. Any pipe used for this will be considered included in the unit price for STABILIZED CONSTRUCTION ENTRANCE. The stabilized construction entrance shall have positive drainage away from the roadway.*

*The entrance shall remain in place and be maintained until the disturbed area is stabilized. Any sediment spilled onto public right-of-way(s) shall be removed immediately. All removed materials shall be disposed of outside the limits of the right-of-way according to Article 202.03 of the "Standard Specifications" and/or as directed by the Engineer.*

**Method of Measurement:** The Stabilized Construction Entrance will be measured in place and the area computed in square yards.

**Basis of Payment:** The work will be paid for at the contract unit price per square yard for STABILIZED CONSTRUCTION ENTRANCE. *The unit price shall include all material, labor, equipment and any other items required to complete the construction entrance.*

#### **Z0019600      DUST CONTROL WATERING**

**Description:** This work shall consist of furnishing and applying water to control dust and air-borne dirt generated by construction activities.

**General:** This work shall be performed according to Article 107.36 of the "Standard Specifications" and the following:

Revise Article 107.36 of the "Standard Specifications" as follows:

*Replace sub-paragraph (d) of under the third paragraph with the following:*

*(d) Dust shall be controlled by the uniform application of sprinkled water and shall be applied only when directed and in a manner approved by the Engineer. All equipment used for this work shall meet with the Engineer's approval and shall be equipped with adequate measuring devices for determining the exact amount of water discharged. All water used shall be properly documented by ticket or other approved means.*

*The Contractor is reminded of the provisions of Article 107.18 of the "Special Provisions" regarding the procurement of water from fire hydrants.*

**Method of Measurement:** This work will be measured in units of gallons of water applied. One unit is equivalent to 1,000 gallons of water applied.

**Basis of Payment:** This work will be paid for at the contract unit price per unit for DUST CONTROL WATERING. *The unit price shall include all equipment, materials and labor required to control dust.*

**Z0022800 FENCE REMOVAL**

Effective: March 21, 2008

Revised: August 1, 2011

**Description:** This work shall consist of the removal and disposal of an existing fence from the project site.

**General:** *The Contractor shall remove all components of the existing fence including any concrete used to anchor fence posts, bracing, guy wires, posts, and/or gates. All removed materials shall be disposed of outside the limits of the right-of-way according to Article 202.03 of the "Standard Specifications" and/or as directed by the Engineer.*

**Method of Measurement:** This work will be measured for payment in feet, along the top of the existing fence, from center to center of end posts, excluding the length occupied by gates.

**Basis of Payment:** This work will be paid for at the contract unit price per foot for FENCE REMOVAL. *The unit price shall include all equipment, materials and labor required to remove and dispose of the fence.*

**Z0027800 GEOTECHNICAL FABRIC**

This work shall consist of furnishing and installing Geotechnical Fabric on subgrade at the locations shown on the plans in accordance with Section 210 of the Standard Specification.

This work will be measured in place and paid for at the contract unit price per SQUARE YARD for GEOTECHNICAL FABRIC.

**Z0030850 TEMPORARY INFORMATION SIGNING**

Effective: November 13, 1996

Revised: January 2, 2007

Description.

This work shall consist of furnishing, installing, maintaining, relocating for various states of construction and eventually removing temporary informational signs. Included in this item may be ground mount signs, skid mount signs, truss mount signs, bridge mount signs, and overlay sign panels which cover portions of existing signs.

Materials.

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

	<u>Item</u>	<u>Article/Section</u>
a.)	Sign Base (Notes 1 & 2)	1090
b.)	Sign Face ( Note 3)	1091
c.)	Sign Legends	1092
d.)	Sign Supports	1093
e.)	Overlay Panels (Note 4)	1090.02

- Note 1. The Contractor may use 5/8 inch (16 mm) instead of 3/4 inch (19 mm) thick plywood.  
Note 2. Type A sheeting can be used on the plywood base.  
Note 3. All sign faces shall be Type A except all orange signs shall meet the requirements of Article 1106.01.  
Note 4. The overlay panels shall be 0.08 inch (2 mm) thick.

**GENERAL CONSTRUCTION REQUIRMENTS**

Installation.

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

Signs which are placed along the roadway and/or within the construction zone shall be installed according to the requirements of Article 701.14 and Article 720.04. The signs shall be 7 ft (2.1 m) above the near edge of the pavement and shall be a minimum of 2 ft (600 mm) beyond the edge of the paved shoulder. A minimum of two (2) posts shall be used.

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

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

Method Of Measurement.

This work shall be measured for payment in square feet (square meters) edge to edge (horizontally and vertically).

All hardware, posts or skids, supports, bases for ground mounted signs, connections, which are required for mounting these signs will be included as part of this pay item.

Basis Of Payment.

This work shall be paid for at the contract unit price per square foot (square meter) for TEMPORARY INFORMATION SIGNING.

**Z0041500 PLUG EXISTING CULVERTS**

Description: This work shall consist of plugging and abandoning temporary pipe culverts where shown on the plans or as directed by the engineer. The exposed pipe end shall be capped with

bricks and mortar to seal the pipe. All culverts to be left in place shall be filled with a slurry seal as approved by the Engineer. This work shall be in conformance with Article 550 of the Standard Specifications.

If the Engineer determines that the temporary culvert(s) in the plans are able to be removed, the removal shall be paid for as PLUG EXISTING CULVERTS.

Method of Measurement: This work shall be measured for payment by EACH culvert plugged and filled.

Basis of Payment: This work shall be paid for at the contract unit price for PLUG EXISTING CULVERTS, EACH.

### **Z0062456 TEMPORARY PAVEMENT**

Effective: March 1, 2003

Revised: April 10, 2008

Description: This work shall consist of constructing a temporary pavement at the locations shown on the plans or as directed by the Engineer.

The contractor shall use either Portland Cement Concrete according to Sections 353 and 354 of the Standard Specifications or HMA according to Sections 355, 356, and 406 of the Standard Specifications, and other applicable HMA special provisions as contained herein. The HMA mixtures to be used shall be specified in the plans. The thickness of the Temporary Pavement shall be as described in the plans. The Contractor shall have the option of constructing either material type if both Portland Cement Concrete and HMA are shown in the plans.

Articles 355.08 and 406.11 of the Standard Specifications shall not apply.

The removal of the Temporary Pavement, if required, shall conform to Section 440 of the Standard Specifications.

Method of Measurement: Temporary Pavement will be measured in place and the area computed in SQUARE YARDS (square meters).

Basis of Payment: This work will be paid for at the contract unit price per square yard for TEMPORARY PAVEMENT.

Removal of TEMPORARY PAVEMENT will be paid for at the contract unit price per square yard for PAVEMENT REMOVAL.

**Z0070200 SURVEY MONUMENTS**

**Description:** This work shall consist of installing survey monument(s) at the location(s) shown on the plans.

**Materials:** The Lake County Division of Transportation will supply the survey monument(s). The Contractor shall supply all the materials necessary to install the monument(s).

**General:** After the final surface course has been placed, the Engineer will install four Mag nails for each point to be monumented. The Contractor shall use the following procedure to install the survey monument(s):

- 1) At each monument location, the Contractor shall install four Mag nails in the surface. Each nail shall be one foot from the center and in a direct line with the opposite nail to be used for setting the new monument.
- 2) The Contractor shall use a hammer drill mounted with 1-1/4" diameter masonry bit, to drill a hole 4-1/2" deep, centered within the four Mag nails.
- 3) The Contractor shall use a drilling machine mounted with a four inch diamond core bit to cut a hole, 3/4" deep, centered on the initial hole. The Contractor shall chisel out the hole to a level depth of 3/4".
- 4) The Contractor shall fill the hole with an epoxy adhesive. The adhesive shall meet the requirements of ASTM Specification C881, Type IV, Grade 3 for temperatures at or above 50 degrees Fahrenheit or AASHTO Specification M237-90, Table 2 Type III for the two component, epoxy adhesive if the temperature is between 31 degrees Fahrenheit and 49 degrees Fahrenheit. Selection of adhesive shall be approved by the Engineer before installation.
- 5) The Contractor shall place the new monument in the center of the hole. Set the monument so that the center of the legend top is 3/8" below the pavement or ground surface. Aggregate can be used to adjust the monument elevation to obtain the correct depth.
- 6) The Contractor shall use the four Mag nails and a string line or 1/8" chalk line to center the monument to the nearest 0.005 foot. This can be accomplished by drawing the string across two diagonally opposite Mag nails.
- 7) Each monument shall be protected from traffic for a minimum of 90 minutes, if applicable.

**Basis of Payment:** This work shall be paid for at the contract unit price per EACH for SURVEY MONUMENTS. The unit price shall include all labor, equipment and materials required to complete the monument installation.

**ARTICLE 202.03 UNCONTAMINATED SOIL DISPOSAL**

Effective: February 18, 2013

**Description:** This work shall consist of the off-site disposal at pre-approved CCDD facilities of uncontaminated soil generated by Lake County Division of Transportation (LCDOT) contract construction projects. This provision does not apply to soil that is targeted for reuse by LCDOT.

**LCDOT's Responsibility:** LCDOT will collect and analyze soil samples for pH from the areas with no Potential Impacted Properties (PIPs), and complete the associated IEPA 662 form. The Contractor is relieved of the requirement to have the pH testing performed according to Article 202.03 as revised by the BDE special provision Removal and Disposal of Surplus Materials, included herein. For areas with PIPs, LCDOT will perform the applicable soil testing based on LCDOT's due diligence procedures, and complete the associated IEPA 663 forms. Signed IEPA forms 662 and/or 663 are included in the bid package.

**Contractor's Responsibility:**

The Contractor is expected to use one or more of the County's pre-approved uncontaminated soil disposal facilities listed below. Should a Contractor elect to use an alternate facility for uncontaminated soil disposal, the Contractor shall be responsible for all costs associated with testing, trucking, and tipping fees for proper disposal of all accepted loads, and all costs associated with proper disposal of all rejected loads.

The Contractor shall stage and transport material to the pre-approved receiving facility and shall be responsible for coordination with such facilities on operating hours.

Fourteen days prior to earthwork activities, the Contractor shall submit a Material Disposal Plan that details methods of removal and disposal of all un-contaminated soil leaving the site for review and approval by the Engineer.

In the event that the pre-approved disposal facility rejects the material, the Contractor shall return the material to the project site for stockpile at a location and manner designated by the Engineer according to the special provision for LOAD CHARGE. **No soil testing shall be conducted by the Contractor with the exception of onsite PID screening (at the Contractor's option).**

**Method of Measurement.** This work will not be measured for payment.

**Basis for Payment.** The off-site disposal of uncontaminated soil, including transportation, facility disposal fees and all other work necessary, will not be paid for but shall be included in the contract unit price per cubic yard of EARTH EXCAVATION. Rejected Loads will be paid for according to the special provision for LOAD CHARGE.

**Pre-Approved Facilities for Receiving Uncontaminated Soil from LCDOT Projects**

Midwest Aggregates 28435 W. Route 173 Antioch, IL 60002 (847) 395-2595 Mr. Jim Mertes	Reliable Sand and Gravel Co., Inc. 2121 S River Road McHenry, IL 60051 (815) 385-5020 Mr. Don Roberts	47 Acres/Southwind Business Park 2250 Southwind Boulevard Bartlett, IL 60103 (630) 497-8700 Mr. William Haworth
Lake in the Hills CCDD Pingree Rd/Virginia Rd Lake in the Hills, IL 60156 (630) 497-8700 Mr. Michael Vondra	Reliable Lyons CCDD 4226 S Lawndale Avenue Lyons, IL 60534 (630) 497-8700 Mr. William Haworth	Blue Heron Business Park – Bartlett 23108 W Bartlett Road Bartlett, IL 60103 Mr. William Haworth
Petersen Sand & Gravel CCDD 914 W Route 120 Lakemoor, IL 60050 (847) 395-3313 Mr. Steve Thelen	Raymond Street – CCDD 1400 Route 25 South Elgin, IL 60177 (630) 497-8700 Mr. William Haworth	Gifford East – CCDD 1395 Gifford Road Elgin, IL 60120 Mr. William Haworth
Thelen Sand & Gravel 28955 E IL Route 173 Antioch, IL 60002 (847) 395-3313 Mr. Steve Thelen	Middle St – CCDD 1155 W Middle St South Elgin, IL 60177 (630) 497-8700 Mr. William Haworth	

**LR503200 LOAD CHARGE**

**Description:** This work shall consist of transporting loads that have been rejected by CCDD facilities back to the project site, and stockpiling the material on the project site at a location specified by the Engineer.

**General:** The work shall be performed in accordance with the applicable portions of the



UNCONTAMINATED SOIL DISPOSAL special provision and the following:

*This pay item is being provided to establish a unit price for transportation costs in the event that material is rejected at a CCDD facility and must be returned to the project site. Work shall include transporting the rejected material back to the project site, furnishing and installing plastic sheeting for the material to be placed on to prevent contact with the existing ground, placing the material in a pile or separated piles as directed by the Engineer, and covering the material to protect it from the weather. An excavator or loader may be required push the material into a tighter pile or spread the material on the plastic.*

*After further analysis by the Engineer of the rejected material, additional work effort will be necessary and will be paid separately according to Art. 109.04.*

**Method of Measurement:** Payment shall be made per 20 cu yd load of material that is either en route to a CCDD facility, or at a CCDD facility and must be returned to the project site.

**Basis of Payment:** LOAD CHARGE will be paid for at the contract unit price per LOAD. A load shall consist of 20 cubic yards of rejected material. If the truck capacity is greater or less than 20 cubic yards, the load shall be adjusted proportionally. (A truck with a 12 cu yd capacity would counts as 12/20 or 0.60 loads).

Payment will be made for all trucks traveling from the CCDD site back to the project site, and for all trucks that were en route to the CCDD site and were turned back to the project site.

The unit price shall include all equipment, materials and labor required to transport and stockpile the rejected loads.

**SPECIAL PROVISIONS FOR PLANTING & NATURAL AREAS INSTALLATION**

**GENERAL**

The following special provisions supplement the current version of the *Standard Specifications for Road and Bridge Construction* ("Standard Specifications") and the *Supplemental Specifications and Recurring Special Provisions*. These special provisions apply to, and govern the proposed improvements designated in the project improvement plans. In the case of conflict with any part or parts of the "Standard Specifications", these special provisions shall take precedence and shall govern.

References to "The Engineer" in the plans and special provisions shall be as defined in Article 101.34 of the "Standard Specifications" and shall be interpreted to mean the authorized representative of the Lake County Division of Transportation (LCDOT).

References to "The Contractor" shall be as defined in Article 101.12 of the "Standard Specifications". References to "The Subcontractor" shall be as defined in Article 101.46 of the "Standard Specifications".

**DESCRIPTION OF IMPROVEMENT**

This work consists of a Natural Area Installation (NAI), within the scope of a larger highway improvement project, on lands owned by the Lake County Forest Preserve District (LCFPD). The work includes the natural area construction, site stabilization activities, and native vegetation installation, according to the project plans and special provisions. A Three Year Maintenance and Monitoring Period (MMP) shall follow the vegetation installation as detailed in the following special provisions, with final turnover based on acceptance criteria for the establishment of the NAI. The trail and six foot mow strip are not part of the natural area.

**XX005054 LANDSCAPE PLANTING COMPLETE**

**Description:** The work shall consist of maintenance and monitoring over a Three Year Maintenance and Monitoring Period (MMP). All work specified herein shall adhere to the following Specifications and is subject to approval by the Engineer. All work to complete the MMP shall be paid for as LANDSCAPE PLANTING COMPLETE.

**Basis of Payment:** The work necessary to successfully monitor and complete the work as outlined in these Special Provisions shall be paid for as LUMP SUM for LANDSCAPE PLANTING COMPLETE. All items to be paid for separately (seeding, trees, shrubs, etc.) are specified within this document;

**ACCEPTABLE SEEDING & PLANTING DATES**

**Dormant Seeding**

October 15 – December 31

Wetland Plugging

June 1 – July 15

Tree & Shrub Planting

August 15 – November 15

**THREE YEAR MAINTENANCE AND MONITORING PERIOD**

The Three Year Maintenance and Monitoring Period (MMP) will begin the year after planting, regardless of when planting occurs. In the event that the plantings are not completed in one calendar year, the MMP will begin the year after all the plantings have been completed.

During the MMP, the Engineer will visit the site a minimum of three times a year in the growing season. The site visits will occur on or about May 1, July 1, and September 1, in the planting year(s) and each of the three years of the MMP. The visits will be conducted to determine the progress and health of the vegetation within the native planting area. The Engineer will evaluate the status of the plantings and the level of the acceptance criteria achieved. Additionally, the Engineer will determine if remedial measures are required and will recommend procedures to correct any deficiencies in the plantings.

The vegetative monitoring will be based on meander surveys of the various disturbed areas and ten (10) random plots to determine coverage and presence or absence of appropriate plant species. Large community types will have multiple meander surveys completed each year in order to provide a representative evaluation of the overall area and to be able to clearly identify those areas (if any) which are deficient.

In the middle of the growing season of each year of the MMP, the Engineer will evaluate the installed plant materials according to the acceptance criteria contained in these special provisions. An annual report will be issued at the end of each year of the MMP. The report will address, at a minimum, the level of acceptance criteria met and include any applicable remedial recommendations.

Contractor shall conduct monthly site visits throughout the growing season to conduct maintenance as prescribed by the Engineer. Examples of potential remedial recommendations may include, but are not limited to: mowing for control of non-native and invasive species in mid-June and/or mid-August; additional dormant seeding; prescribed burning in the early spring (February-March); applying herbicide to weedy or non-native vegetation.

At the end of the 3rd year of the MMP, if all of the NAI passes the acceptance criteria, the MMP will be completed. If, however, the Engineer determines that some areas and/or plant materials do not pass the acceptance criteria, the MMP will be extended for those areas. The Contractor's

responsibility for maintenance and monitoring in the areas that meet the acceptance criteria will end.

Maintenance and Monitoring will be paid for according to LANDSCAPE PLANTING COMPLETE.

**Construction Limits:** The Contractor shall work within the project limits as shown on the plans. The approximate location of Contractor's access to the work site will be as shown on plans and/or as designated by the Engineer. The Engineer reserves the right to alter the project limits to avoid damage to environmentally sensitive areas. The Contractor may maintain uncovered storage and parking only in those areas designated by Engineer.

**Layout of Work:** The Engineer shall provide the Contractor with a planting plan that indicates locations for the installation of trees and shrubs. The planting locations will be staked by the Engineer and reviewed and approved by LCFPD prior to installation. Trees will be planted individually, while shrubs will generally be planted in groups of three to five, or as directed by Engineer.

**Site Access:** Work site access shall be limited to the designated site access point as shown on the plans or as determined in the field by the Engineer and the Contractor. The site access shall not cross a regulated waterway or wetland without the approval of the U.S. Army Corps of Engineers and/or the Lake County Stormwater Management Commission, and then only after obtaining all necessary regulatory permits. The Contractor shall maintain access to the work site at no additional cost to LCDOT.

If access to the site is directly from a public highway, the Contractor shall not park any vehicles on or block traffic on the roadway. The Contractor shall provide warning signs for vehicles entering and leaving the site. All public highways shall be kept clean of any debris from the site work. If dirt and debris are tracked onto adjacent public streets, highways, or LCFPD trails, drives, or parking areas, the Contractor shall thoroughly clean the pavement by 3:00 p.m. each workday or as often as required by Engineer. If any municipality or public agency, including LCDOT and/or LCFPD, is called to clean the pavement, all associated expenses shall be paid by the Contractor.

The Contractor shall follow posted weight limits along public roadways; the Contractor shall bear any and all associated expenses necessary to comply with this requirement.

The Contractor's vehicles, equipment, and supplies shall be stored at staging area(s) identified on the engineering plans or as designated by the Engineer. Following the project completion, the staging area(s) shall be restored to its original condition by the Contractor, at no additional cost to LCDOT. Any damage to equipment during movement and storage shall be the responsibility of the Contractor.

**Incidental Site Restoration:** Upon completion of the work, the Contractor shall:

Remove all debris and excess materials from the Site.

Smooth over, restore, fine grade, and seed with seed mix approved by Engineer any disturbed areas identified by Engineer to ensure positive drainage in a manner acceptable to the Engineer.

The Contractor shall take all necessary and reasonable precautions to prevent any damage to existing trees, foliage, plant materials, wetlands, structures, roads, parking lots, trails, turf areas, finished topsoil areas, and property owned by LCDOT, LCFPD, or other public or private entities.

Any area(s) disturbed by the Contractor shall be restored to its original condition by the Contractor, at the Contractor's expense. The opinion of Engineer shall be final in determining acceptability of restored areas.

**Protection and Care of Trees and Shrubs that are to Remain:** The Contractor shall not:

- Damage, cut, prune, transplant or remove any tree.
- Attach any rope, wire, nail or other object to any tree.
- Allow any gaseous, liquid or solid substance or equipment to contact any tree or the soil located within the drip line of any tree.
- Impair normal surface drainage around any tree.
- Allow any fire to burn which could injure any tree.
- Act in any way to affect the vigor or appearance of any tree.

**Protection of Streams, Lakes, and Reservoirs:** The Contractor shall provide adequate planning and supervision during all work including construction methods, processes and clean-up procedures, necessary to prevent water pollution and to control erosion.

If spoil material is excavated, dredged or otherwise produced out of a waterway, the Contractor shall not return or discharge such material into the waterway or any other body of water (unless discharge has been approved in accordance with applicable laws), but shall deposit it in a self-contained area in compliance with all applicable laws. The Contractor shall perform all backfilling with clean material and in a manner so as to prevent any violation(s) of applicable water quality standards.

#### **LOW GROUND PRESSURE EQUIPMENT**

Due to the sensitivity of organic topsoil to compaction, the Contractor shall use equipment classified by the manufacturer as Low Ground Pressure (LGP) for work in the construction area. This does not apply to the designated staging area. This equipment includes track type tractors, pan scrapers, excavators, haulers, seeders, and any field assistance vehicles. Where available, tracked equipment is preferred; unless a rubber tired vehicle can be shown to have a lower ground pressure for a particular application.

**Ground Pressure Requirements:** Track type equipment shall not exceed a ground pressure of 6 pounds per square inch. Wheel type equipment must not exceed a ground pressure of 12 pounds per square inch. The Engineer may approve exceptions to the requirement for LGP equipment for specific activities.

**Submittal Requirements:** If requested, the Contractor shall submit the equipment manufacturer's specification for total weight and ground pressure for approval by the Engineer.

**Method of Measurement and Basis of Payment:** This work will not be measured for payment. The cost of providing and operating Low Ground Pressure Equipment shall be included in the appropriate seeding/planting work item.

**TIME OF COMPLETION AND WORK SCHEDULE**

The Contractor shall complete all work and applicable erosion control measures concurrently with the completion of construction, except as noted in the following special provisions. Soil erosion shall be prevented by stabilizing exposed soil areas by permanent seeding. If permanent seeding is not possible, temporary seeding shall be applied to all exposed soil areas within seven days of exposure according to the procedures outlined in the NPDES permit.

**NATURAL AREA INSTALLATION - PLANT MATERIALS**

Pav Code	Description	Unit
A2006416	TREE, QUERCUS ALBA (WHITE OAK), 2" CALIPER, BALLED AND BURLAPPED	EACH
A2006516	TREE, QUERCUS BICOLOR (SWAMP WHITE OAK), 2" CALIPER, BALLED AND BURLAPPED	EACH
A2007120	TREE, QUERCUS RUBRA (RED OAK), 2-1/2" CALIPER, BALLED AND BURLAPPED	EACH
A2016616	TREE, QUERCUS ELLIPSOIDALIS (HILL'S OAK), 2" CALIPER, BALLED AND BURLAPPED	EACH
B2000568	TREE, AMELANCHIER CANADENSIS (SHADBLOW SERVICEBERRY), 7' HEIGHT, SHRUB FORM, BALLED AND BURLAPPED	EACH
B2001566	TREE, CRATAEGUS CRUGALLI (COCKSPUR HAWTHORN), 6' HEIGHT, SHRUB FORM, BALLED AND BURLAPPED	EACH
K0013055	PERENNIAL PLANTS, WETLAND EMERGENT	ACRE
XX005920	SEEDING WET PRAIRIE	ACRE

XX006622	EMERGENT / SHORELINE SEED MIX	ACRE
XX006660	WETLAND PLANTS	EACH
XX006709	SEEDING, CLASS 5 (MODIFIED) MESIC PRAIRIE	ACRE

Seeding mixes and wetland plug species list are as shown in the following sections of this Special Provision.

**K0013055 PERENNIAL PLANTS, WETLAND EMERGENT**

**Description:** The work shall follow the specifications as established in these special provisions. The plants included are to follow the list within these special provisions as follows:

<b>Species</b>	<b>Plants/Acre</b>
<i>Acorus calamus</i>	300
<i>Calamagrotis canadensis</i>	400
<i>Carex atherodes</i>	300
<i>Carex comosa</i>	400
<i>Carex lacustris</i>	400
<i>Carex pellita</i>	300
<i>Carex sartwellii</i>	200
<i>Carex scoparia</i>	200
<i>Carex stricta</i>	400
<i>Carex trichocarpa</i>	200
<i>Oxypolis rigidor</i>	100
<i>Polygonum coccineum</i>	100
<i>Polygonum amphibium var stipulaceum</i>	100
<i>Pontedaria cordata</i>	400
<i>Sagittaria latifolia</i>	600
<i>Sagittaria rigida</i>	500
<i>Scirpus cyperinus</i>	200
<i>Scirpus fluviatilis</i>	250
<i>Scirpus vallidus creber</i>	250
<i>Scutellaria epilobifolia</i>	250
<i>Sium suave</i>	150
<i>Sparganium eurycarpum</i>	600
<i>Spartina pectinata</i>	600
<b>Total plugs per acre</b>	<b>8000</b>

**Basis of Payment:** The work shall be measured and paid for by ACRE of PERENNIAL PLANTS, WETLAND EMERGENT for the types specified.

**XX005920 SEEDING WET PRAIRIE**

**Description:** The work shall follow the specifications as established in these special provisions. The seed mix is as follows:

<b>Species</b>	<b>Ozs/Acre</b>
Graminoid	
Calamagrotis canadensis	4.12
Carex atherodes	1.98
Carex aquatilis var altior	1.98
Carex buxbaumii	0.99
Carex conjuncta	0.897
Carex cristetella	0.765
Carex frankii	2.56
Carex hystercina	2.56
Carex lacustris	16
Carex lupulina	16
Eleocharis acicularis	0.75
Eleocharis erythropoda	0.798
Elymus canadensis	48
Elymus virginicus	48
Glyceria striata	5.4
Juncus dudleyi	0.25
Juncus effusus	0.76
Juncus torreyi	0.76
Leersia oryzoides	8.65
Muhlenbergia glomerata	2.34
Muhlenbergia mexicana	2.34
Scirpus atrovirens	4.12
Scirpus cyperinus	2.76
Spartina pectinata	12.34
<b>Total Ounces/acre</b>	<b>200.527</b>
Forbs	
Alisma subcordatum	2
Asclepias incarnata	16
Aster novae-angliae	6



Aster praealtus	0.852
Aster puniceus var firmus	0.852
Aster simplex	0.82
Aster umbellatus	0.951
Boltonia asteroides var recognita	0.75
Campanula aparinoides	0.069
Cassia hebecarpa	1.025
Chelone glabra	2.15
Cicuta maculata	0.65
Cirsium muticum	4.32
Coreopsis triteris	5.36
Eupatorium perfoliatum	1.25
Eupatorium maculatum	3.56
Gentiana andrewsii	0.35
Gentiana crinita	0.39
Helenium autumnale	2.65
Hibiscus laevis	4.89
Impatiens capensis	3.21
Iris virginica shrevei	16
Liatris spicata	4.5
Lilium michiganense	10.21
Lobelia cardinalis	1.32
Lobelia siphilitica	0.5
Lycopus americanus	0.516
Lysimachia quadriflora	0.516
Lythrum alatum	0.063
Mentha arvensis villosa	1.23
Mimulus ringens	0.25
Oxypolis rigidor	3.54
Pedicularis lanceolata	1.23
Penthorum sedoides	0.5
Phlox glaberrima	2.47
Physostegia virginiana	2.68
Pycnanthemum virginianum	1.84
Rumex verticillatus	2.56
Sagittaria latifolia	4.74
Scutellaria lateriflora	0.687
Sium suave	1.23
Silphium perfoliatum	0.54

Solidago graminifolia	0.5
Solidago ohioensis	0.789
Solidago patula	0.789
Solidago riddellii	1.24
Sparganium eurycarpum	18.2
Spiraea alba	1.45
Vernonia fasciculata	4.56
Verbena hastata	6.41
<b>Total Ounces/acre</b>	<b>149.158</b>

**Basis of Payment:** The work shall be measured and paid for by ACRE of SEEDING WET PRAIRIE placed.

**XX006622 EMERGENT / SHORELINE SEED MIX**

**Description:** The work shall follow the specifications as established in these special provisions. The seed mix is as follows:

<b>Species</b>	<b>Ozs/Acre</b>
Graminoid	
<i>Andropogon gerardii</i>	2.4
<i>Bromus ciliatus</i>	0.66
<i>Calamagrotis canadensis</i>	4.52
<i>Carex annectens v. xanthoc.</i>	2.13
<i>Carex bebbi</i>	0.8
<i>Carex brevior</i>	2.89
<i>Carex cristatella</i>	1.86
<i>Carex frankii</i>	3.21
<i>Carex hystercina</i>	2.84
<i>Carex lurida</i>	0.72
<i>Carex vulpinoidea</i>	2.01
<i>Eleocharis acicularis</i>	0.476
<i>Eleocharis erythropoda</i>	0.6
<i>Elymus canadensis</i>	32
<i>Elymus virginicus</i>	32
<i>Glyceria striata</i>	1.45
<i>Juncus dudleyi</i>	0.145
<i>Panicum virgatum</i>	4.07
<i>Scirpus atrovirens</i>	0.8
<i>Scirpus penddulus</i>	0.5

<i>Sorghastrum nutans</i>	2.66
<i>Spartina pectinata</i>	16.18
<b>Total Ounces/acre</b>	<b>121.157</b>

Forbs

<i>Actinomeris alternifolia</i>	2.76
<i>Anemone canadensis</i>	2.12
<i>Asclepias incarnata</i>	8.17
<i>Asclepias purpurascens</i>	10.94
<i>Aster novae-angliae (DF)</i>	2.77
<i>Aster puniceus</i>	1.4
<i>Aster umbellatum</i>	1.18
<i>Bidens cernua</i>	2.29
<i>Boltonia ateroides var. recognita</i>	0.54
<i>Campanula aparinoides</i>	0.39
<i>Chelone glabra</i>	1.96
<i>Cicuta maculata</i>	0.74
<i>Cassia hebecarpa</i>	6.22
<i>Coreopsis tripteris</i>	1.43
<i>Desmodium canadense</i>	2.12
<i>Eryngium yuccifolium</i>	2.44
<i>Eupatorium maculatum</i>	0.5
<i>Eupatorium perfoliatum</i>	2.09
<i>Gentiana andrewsii</i>	0.54
<i>Helenium autumnale</i>	0.78
<i>Iris virginica shrevei</i>	12.91
<i>Liatris spicata</i>	1.22
<i>Lobelia kalmii</i>	0.42
<i>Lobelia siphilitica</i>	0.4
<i>Lycopus americanus</i>	0.59
<i>Lysimachia quadriflora</i>	0.44
<i>Lythrum alatum</i>	0.55
<i>Mimulus ringens</i>	0.44
<i>Monarda fistulosa</i>	2.18
<i>Oxypolis rigidior</i>	2.16
<i>Pedicularis lanceolata</i>	4.73
<i>Penstemon digitalis</i>	2.75
<i>Phlox glaberrima interior</i>	0.55
<i>Pycnatheum virginianum</i>	0.17
<i>Rudbeckia speciosa var sullivanii</i>	1.43

<i>Rudbeckia submentosa</i>	0.93
<i>Rudbeckia triloba</i>	0.81
<i>Scutellaria lateriflora</i>	0.37
<i>Silphium laciniatum</i>	0.83
<i>Silphium perfoliatum</i>	0.08
<i>Solidago graminifolia</i>	0.17
<i>Solidago ohioensis</i>	0.44
<i>Solidago riddellii</i>	0.42
<i>Solidago rigida</i>	0.78
<i>Thalictrum dasycarpum</i>	0.8
<i>Vernonia fasciculata</i>	0.5
<i>Verbena hastata</i>	0.69
<i>Zizia aurea</i>	5.45
<b>Total Ounces/acre</b>	<b>94.6</b>

**Basis of Payment:** The work shall be measured and paid for by ACRE of EMERGENT / SHORELINE SEED MIX placed.

**XX006660 WETLAND PLANTS**

**Description:** The work shall follow the specifications as established in these special provisions. The plants included are to follow the list within these special provisions as follows:

<b>Species</b>	<b>Plants/Acre</b>
<i>Brasenia schreberi</i>	600
<i>Ceratophyllum demersum</i>	200
<i>Elodea canadensis</i>	600
<i>Lemna minor</i>	200
<i>Lemna trisulca</i>	200
<i>Myriophyllum exalbescens</i>	200
<i>Najas flexilis</i>	600
<i>Nuphar advena</i>	800
<i>Nuphar variegatum</i>	800
<i>Nyphaeae tuberosa</i>	800
<i>Sagittaria latiflora</i>	800
<i>Vallisneria americana</i>	400
<i>Wolffia columbiana</i>	200
<b>Total Plugs per acre</b>	<b>6400</b>

**Basis of Payment:** This work shall be measured and paid for at the contract unit price per EACH of WETLAND PLANTS for the types specified.

**XX006709 SEEDING, CLAS 5 (MODIFIED) MESIC PRAIRIE**

**Description:** The work shall follow the specifications as established in these special provisions. The seed mix is as follows:

<b>Species</b>	<b>Ozs/Acre</b>
Graminoid	
<i>Andropogon gerardii</i>	0.836
<i>Andropogon scoparius</i>	53.43
<i>Bouteloua curtipendula</i>	26.85
<i>Bromus kalmii</i>	8.04
<i>Carex brevior</i>	2.12
<i>Carex gravida</i>	0.7
<i>Carex normalis</i>	0.662
<i>Carex rosea</i>	2.72
<i>Carex scoparia</i>	0.816
<i>Elymus canadensis</i>	53.37
<b>Total Ounces/acre</b>	<b>149.544</b>
Forbs	
<i>Allium cernuum</i>	2.87
<i>Anemone cylindrica (DF)</i>	0.42
<i>Anemone virginiana (DF)</i>	1.06
<i>Antennaria plantaginifolia (DF)</i>	0.53
<i>Asclepias sullivanti (DF)</i>	1.8
<i>Asclepias tuberosa (DF)</i>	0.83
<i>Aster azureus (DF)</i>	0.5
<i>Aster laevis (DF)</i>	1.07
<i>Aster novae-angliae (DF)</i>	1.7
<i>Aster ptarmicoides (DF)</i>	1.71
<i>Aster sagittifolius (DF)</i>	0.52
<i>Astragalus canadense</i>	1.03
<i>Baptisia leucantha</i>	2.9
<i>Baptisia leucophaea</i>	2.76
<i>Cacalia atriplicifolia (DF)</i>	2.42
<i>Cassia fasciculata</i>	10.8
<i>Coreopsis palmata</i>	2.91
<i>Coreopsis tripteris</i>	1.33
<i>Desmodium canadense</i>	1.8

<i>Desmodium illinoense (DH)</i>	0.366
<i>Dodecatheon meadia</i>	0.553
<i>Echinacea pallida</i>	5.55
<i>Eryngium yuccifolium</i>	4.12
<i>Gaura biennis</i>	3.46
<i>Gentiana flavida</i>	0.203
<i>Gentiana quinquefolia</i>	0.206
<i>Helianthus occidentalis</i>	1.13
<i>Heliopsis helianthoides</i>	10.7
<i>Heuchera richardsonii</i>	0.019
<i>Lespedeza capitata (DH)</i>	2.74
<i>Liatris aspera (DF)</i>	1.42
<i>Liatris pycnostachya (DF)</i>	0.373
<i>Lobelia siphilitica</i>	0.52
<i>Monarda fistulosa</i>	2.03
<i>Parthenium integrifolium</i>	0.8
<i>Pedicularis canadensis</i>	0.766
<i>Penstemon digitalis</i>	2.71
<i>Petalostemum candidum (DH)</i>	1.91
<i>Petalostemum purpureum (DH)</i>	6.08
<i>Phlox pilosa</i>	0.71
<i>Potentilla arguta</i>	0.4
<i>Pycnanthemum virginica</i>	0.366
<i>Ratibida pinnata</i>	5.45
<i>Rudbeckia hirta</i>	5.41
<i>Rudbeckia subtomentosa</i>	2.07
<i>Rudbeckia triloba</i>	1.36
<i>Ruellia humilis</i>	4.16
<i>Silphium integrifolium</i>	2.08
<i>Silphium laciniatum</i>	1.37
<i>Silphium terebinthinaceum</i>	2.71
<i>Sisyrinchium angustifolium</i>	0.556
<i>Solidago nemoralis (DF)</i>	0.5
<i>Solidago rigida (DF)</i>	2.93
<i>Thaspium trifoliatum</i>	1.13
<i>Tradescantia ohimensis</i>	2.7
<i>Verbena hastata</i>	0.766
<i>Verbena stricta</i>	0.7
<i>Veronicastrum virginica</i>	0.5
<i>Zizia aptera</i>	5.29

<i>Zizia aurea</i>	5.37
<b>Total Ounces/acre</b>	<b>131.144</b>

**Basis of Payment:** The work shall be measured and paid for by ACRE of SEEDING, CLAS 5 (MODIFIED) MESIC PRAIRIE placed.

### SEEDING SPECIFICATIONS

Description: The work shall consist of preparing the seed bed and placing the seed and other materials in the seed bed. Seeding will consist of graminoids tolerant of herbicide.

Materials:

General:

The classes of seed mixtures and combinations of mixtures are designated on the plans. The Engineer will approve any variations in seed mixture in writing.

The seeds shall meet the requirements of Article 1081.04 of the "Standard Specifications". All seed materials shall conform to the Standards of the American Association for Nursery Stock (ANSI Z60.1-1980). In the event there is a discrepancy between ANSI Z60.1-1980 and this special provision, the more restrictive requirement shall govern.

All seeds shall be of straight species. No horticultural varieties shall be acceptable.

Forb seeds shall have undergone a period of appropriate stratification at the source of supply.

Seed containing noxious weeds shall not be accepted, nor shall seed collected from the wild.

All native seed shall be provided on a pure live seed (PLS) basis where available. PLS shall be defined as (purity) x (total germination). Total germination is defined as (germination + hard seeds + dormant seeds). TZ can be substituted in lieu of total germination, if necessary. Actual seed amounts used on the project will vary with the actual percent of PLS in the seed lot. Seed supplied to the site shall contain documentation of PLS testing and, if required, adjustment of the seed weights in order to provide 100 percent PLS standards. PLS adjustment must be based on seed test results no older than 12 months. For prairie cordgrass and prairie dropseed, test results should be no older than 6 months.

### Delivery, Handling, and Temporary Storage:

All seed shall be furnished in sealed containers.

Seed packaging shall be protected from moisture and extreme heat. Seed that has become wet, moldy, or otherwise damaged in transit or storage shall not be acceptable.

All seed shall be shipped in single-species containers directly from the supplier and shall be mixed at the time of planting by the Contractor. Seed species mixed by the supplier shall not be acceptable.

The seed packaging for all species shall be clearly labeled on the outside with the following information:

- The scientific name of species.
- The PLS value, PLS weight, and bulk weight.
- The pure weight and bulk weight if seed is not available as PLS.
- The year of seed production and the date of seed tests.
- All Seed tests shall be attached to the packaging for all species at time of delivery.
- The seed shall be stored in a temperature-controlled environment.

Seed containers shall be stored off the ground and indoors. Onsite storage of seed shall be at the Contractor's own risk. Any damage incurred to seed stock while stored on-site shall not relieve the Contractor from his/her responsibility for furnishing and installing all materials in strict accordance with the contract documents, nor will any additional compensation be allowed.

Endomycorrhizal Inoculant: All native seed mixes shall be combined with an appropriate endomycorrhizal inoculant such as AM 120 Mycorrhizal Inoculum (or comparable). The inoculant application rate shall be a minimum of 40 lbs/acre.

No fertilizers shall be used for this work. Erosion control blanket will be installed as shown on the plans.

**Construction Requirements:**

Seeding Time:

Seed shall be installed as dormant and/or frost seed installation from October 15 through December 31.

All areas to be seeded shall have at least twelve inches of pulverized topsoil as specified on the plans.

Soil in the graded upland and wetland restoration/creation locations shall be disked or raked to a depth of three inches with a disk tiller or other equipment approved by the Engineer, in order to loosen the soil and ensure good seed-soil contact. The Engineer may determine that disking or rototilling soils is not needed as this process could bring additional weed seeds to the surface.

For planting areas that have not been disturbed by grading operations, the Contractor shall not disk or rototill the soils prior to planting unless the areas have been heavily compacted by traffic and/or as directed by the Engineer. Seedbed preparation in such areas may involve the application of a broad-spectrum herbicide followed by thatch removal, repeat herbicide application, and seed installation.



If compaction is present in graded areas, chisel plowing the upper three to six inches will be performed using a construction ripper or similar equipment.

The prepared surface shall be relatively free from weeds, clods, stones, and rivulets, gullies, crusting and caking. All soil particles shall be reduced to a size not larger than 0.5 inch in the largest dimension.

If the long-term (i.e., permanent) seed matrix is not installed with the temporary cover crop, the permanent matrix will be planted in the first available dormant seeding season.

Methods:

Seed shall be installed via broadcast method designed to install native grass and wildflower on surfaces where the soil is sufficiently firm to support such equipment. The Contractor shall determine the optimal method and equipment for seed installation in each area.

Ungraded areas shall be interseeded (or other method as determined appropriate by the Contractor) following the control of more aggressive species such as goldenrod. Broadcast application shall not be used in areas that lack exposed soils.

The seed shall be mixed with a granular form of endomycorrhizal inoculant at a rate of 40 lbs/acre.

Prior to starting work, seeders shall be calibrated and adjusted to sow seeds at the required seeding rate.

A mechanical broadcast seeder may be used. The equipment shall be operated in a manner to ensure complete coverage of the entire area to be seeded. The seed shall be broadcast in two separate applications, with each application of seed overlapping the previous application by one-half the weight to ensure double coverage of the seeded area. For example, half the weight of seed would be installed in a north-south direction and the remaining half would be installed in an east-west direction. Within 12 hours following broadcast seeding or as soon as site conditions permit, the Contractor shall rake, drag, or roll broadcast seeded areas perpendicular to the slope. Where soil conditions are too wet or slopes are too steep for mechanical broadcasting, hand broadcasting or hydraulic application of the seed is acceptable on exposed soils only. Broadcast seed shall be mixed with an equal amount of inert filler (e.g., perlite, ground corn cobs, or vermiculite) to ensure even distribution.

The last areas to be seeded/re-seeded will be the equipment access points.

Ideally, seeding shall occur when the soil is moist to dry-damp and shall be timed such that rainfall occurs within 48 hours of seeding (particularly if seeding in early spring). No seed shall be sown when winds exceed a velocity of ten miles per hour or when the ground is not in proper condition for seeding. No seed shall be sown until the purity testing has been completed for the seeds to be used. Only seeds meeting the noxious weed requirements shall be used.

The Engineer shall notify the LCDOT 48 hours prior to the commencement of seeding operations.

All areas seeded shall be protected from erosion and sedimentation. The Engineer may reduce erosion and sediment control requirements based on site conditions and/or planting season which would result in a cost savings to LCDOT. Erosion and sediment control measures shall be installed as detailed in the plans and special provisions.

Those areas in which mulch or seed has been disturbed prior to final acceptance by the Engineer shall be re-mulched at no additional cost to the Department.

Acceptance Criteria:

For acceptance, seeding areas shall meet the following conditions at the end of each growing season, the end of the Three Year Maintenance and Monitoring Period and upon final acceptance:

No more than 0.5 square meters in size shall be devoid of vegetation at any time and upon final acceptance.

During each year of the monitoring and management period and upon final acceptance none of the five most dominant species within the planted areas shall be non-native or invasive species, including but not limited to: Cattail (*Typha* spp.), Reed Canary Grass (*Phalaris arundinacea*), Purple Loosestrife (*Lythrum salicaria*), Common Reed (*Phragmites australis*), Canada Thistle (*Cirsium arvense*), Sandbar Willow (*Salix exigua*), Kentucky Blue Grass (*Poa pratensis*), and White Sweet Clover (*Melilotus alba*).

At the end of the first MMP year, at least 30% of the vegetative coverage (as measured by aerial coverage) will consist of native species seeded.

At the end of the second MMP year, at least 50% of the vegetative coverage (as measured by aerial coverage) will consist of native species seeded.

At the end of the third MMP year, at least 95% of the vegetative coverage (as measured by aerial coverage) will consist of native species seeded.

**PLUG PLANTING SPECIFICATIONS**

Description: The work shall consist of procuring, transporting, installing and maintaining all plants as specified herein. This work shall also include water, weeding and replacement of plants when required; the cost of supplemental watering shall be included in LANDSCAPE PLANTING COMPLETE.

Submittals: Prior to delivery of any materials to the site, the Contractor shall submit a written description of the plant materials provided for this portion of the work to the Engineer. This description shall include any or all of the following:

- Original source of seed or other propagation materials (i.e. cuttings)

- Plant propagation records
- Name and location of plant supplier or propagation location, if different from Bidder
- Plants shall not be delivered to project site until this submittal has been approved.

Materials:

WATER: Water shall be free from oil, acid, alkali, salts, and other harmful substances. Water may be utilized from potable or non-potable sources such as lakes and ponds. LCDOT shall not be responsible for providing water. Any available water sources located on the property shall not be utilized without permission from the Engineer.

PLANTS

- All plants shall be guaranteed to be true to species name and variety. The original source of propagules (seeds, cuttings, etc.) of plants shall be guaranteed within a 200-mile radius of Lake County, Illinois.
- Any shipments/deliveries of plants shall be packaged and delivered so as to ensure the viability of the plant material. The Engineer may consider substitutions, and reserves the right to make additions and/or deletions of quantities and species. If specified plant material is unavailable, the Engineer shall approve of substitutes. Up to five (5) alternate species may be used if all of the desired species are not available.
- Adjustments will be made at no cost to the contract.
- Approval of substitutes shall in no way waive any performance requirements of the contract.
- Alternate species must fill the same ecological niche as the species they are substituting for and must be submitted and approved by the Engineer.

Plants may be delivered in one of the two following forms:

Container/Plug:

- Container with dimensions of 2.5" x 2.5" square x 3.5" deep, consisting of 32 plants per flat. Potted plants with containers equivalent to or larger are also acceptable.
- Smaller plugs (e.g., flats of 50, 72, 96 etc.) may be considered if 2.5" pots are not available.

Bare Root:

- All species desired in bare root format shall consist of only dormant tubers, corms, rhizomes, etc. No green, actively growing vegetative material will be accepted. All bare root plants shall have at least one full growing season prior to the delivery date (2+ years old).

First-Year plants will be considered if Second-Year plants are unavailable. However, at time of installation, First-Year plants shall have the root and shoot development consistent with Second-Year plants (i.e. they shall have root systems that have filled the container and are ready for installation).

Bare root material shall be refrigerated at all time prior to installation. All plants shall be healthy, rooted out, and ready for immediate installation upon delivery. The Contractor shall replace any plants that are deemed inconsistent with these characteristics at their expense.

The planting stock shall comply with governmental regulations prevailing at the source of supply and the job site. All planting stock shall be nursery propagated in accordance with good horticultural practice. Collected stock or nursery grown wild plants will not be permitted. All planting stock shall be healthy, free of all fungi and bacterial discoloration, and deformities.

#### Construction Requirements:

#### PLANTING SCHEDULES

Supply and installation of all plant materials for this project is to occur between June 1 and July 15.

#### TRANSPORTATION AND STORAGE

Plants shall be handled, transported and stored at all times in accordance with the best horticultural practices. Plants handled otherwise will be subject to rejection by the Engineer. All plant material, except container grown, shall be dormant upon delivery to the site, unless otherwise approved by the Engineer.

Plants shall be shipped with legible labels stating correct name and size of plant, securely attached to individual plants or to bundles of like variety and size. Containers of plants shall be individually labeled as specified.

The Contractor shall maintain responsibility for caring for the plants.

Predator protection is not required. However, proposed predator protection plans may be submitted for review to the Engineer prior to installation if the Contractor deems it beneficial.

#### PLANT INSTALLATION DEPTHS

- All aquatic species shall be installed in water 1-3' deep, or as deep as feasible. All aquatic species (Lilies) shall be secured to the soil with nails or landscape staples of 8" length or greater.
- All emergent aquatic species shall be installed in water 6-18" deep depending on species. Pontedaria shall be secured to the soil with nails or landscape staples of 6" length or greater.
- All sedge meadow species shall be installed in water depths of 2-8 depending on species.
- All wet prairie species shall be installed in saturated soils at the perimeter of the wetlands or in very shallow water depending on species.

#### PLANT INSTALLATION

Plants shall be installed and staked in areas to receive plugs to limit the opportunity for weedy and invasive species to establish. Plugs shall be installed through slits cut into the blanket where necessary.

**SITE CONDITIONS-**The Contractor shall examine and verify the acceptability of the job site. The Contractor shall correct any unacceptable conditions if conditions detrimental to plant growth are encountered such as rubble fill, adverse drainage conditions, or obstructions.

**WATERING-**Plugs shall be watered immediately upon installation. Supplemental watering of planted areas shall be performed at the discretion of the Engineer and included in the cost of LANDSCAPE PLANTING COMPLETE. Watering may be necessary in order to conform to the guarantee requirements as described in this section.

Acceptance Criteria:

For acceptance, areas planted with plugs shall meet the following conditions at the end of each growing season, the end of the Three Year Maintenance and Monitoring Period and upon final acceptance:

At the end of each MMP year and upon final acceptance, at least 90% of the plugs will be present and thriving.

At the end of each MMP year and upon final acceptance, no more than 0.5 square meters in size shall be devoid of vegetation at any time and upon final acceptance.

At the end of each MMP year and upon final acceptance, the area shall be free of invasive on or non-native species, including but not limited to: Cattail (*Typha* spp.), Reed Canary Grass (*Phalaris arundinacea*), Purple Loosestrife (*Lythrum salicaria*), Common Reed (*Phragmites australis*), and Sandbar Willow (*Salix exigua*).

**TREE AND SHRUB PLANTING SPECIFICATIONS**

**Description:** This work shall consist of the procurement, transportation, installation, and maintenance of all trees and shrubs as specified herein and at the direction of the Engineer. This work shall also include mulching, watering, and replacing of plants when required. A certified arborist or forester shall specify and oversee pruning and other techniques deemed necessary to preserve the trees.

**Materials:** Plant material shall comply with Section 253 and Section 1081 of the "Standard Specifications" and the following:

**Substitutions:** Substitutions shall not be permitted unless authorized by the Engineer. If it is determined submitted that any plant specified is not obtainable, a proposal shall be considered for the use of the nearest equivalent size or variety with a corresponding and equitable adjustment to the contract price. The proof and proposal shall be submitted in writing and shall be subject to verification by the Engineer.

**Planting Stock:** All tree and shrub stock shall conform to container size and type; caliper size; and/or height requirements, as shown on the plans and special provisions. Plants shall conform to the most recent version of the American Standard for Nursery Stock ANSI Z60.1 (American Nursery

and Landscape Association, Washington D.C.) when not superseded by specifications herein. Any deviations shall be approved by the Engineer in writing prior to shipment.

Tree and shrub stock shall be of a size and structure as considered reasonable and normal for that particular size or caliper size, as shown on the plans and special provisions. All stock may be rejected if the root system does not fill the container. Conversely, the root mass shall not be excessively "root-bound" or contain excessive circular growth of roots. All stock shall conform to one of the four growing methods described below, depending on the size and type requested. Refer to the Whitcomb System® for more information ([www.rootmaker.com](http://www.rootmaker.com)).

**Container-grown Five Gallon Stock:** Container-grown five gallon stock shall be grown and supplied in either RootMaker® Grounder™ hard-sided containers (RMI-5G), or RootTrapper® soft-sided containers (RT5, five gallon).

**Field-grown Five Gallon Stock:** Field-grown stock shall be grown in knit fabric in ground containers (i.e., "root bags"). In-ground containers shall be eight to ten inches in diameter. Field-grown stock shall be spring dug, with the knit fabric in ground containers removed and shall be immediately transplanted into above ground containers. Roots shall be pruned so as to accommodate the transplanting into above ground containers. No tree or shrub stock shall be accepted if the soil mass is cracked or broken. Five gallon stock shall be supplied in either RootMaker® Grounder™ hard-sided containers (RMI-5G), or RootTrapper® soft-sided containers (RT5, five gallon).

**Container-grown Larger Stock:** Trees of one to four inch caliper and larger shrubs. Container-grown stock shall be supplied in RootTrapper® soft-sided containers only. Containers shall be RT15, 15 gallon size (i.e. 15 inches tall by 18 inches wide), unless otherwise specified.

**Field-grown Larger Stock:** Trees of one to four inch caliper and larger shrubs. Field-grown stock shall be grown in knit fabric in ground containers (i.e. "root bags"). In-ground containers shall be 12 to 16 inches in diameter. Field-grown stock shall be spring dug, with the knit fabric in-ground containers removed and immediately transplanted into above ground containers. Roots shall be pruned so as to accommodate transplanting into above ground containers. No tree or shrub stock shall be accepted if the soil mass is cracked or broken. Stock shall be supplied in RootTrapper soft-sided containers only. Containers shall be the RT15, 15 gallon size (i.e. 15 inches tall by 18 inches wide), unless otherwise specified.

**Character, Appearance, and Quality:** Plants shall be true to genus and species and shall have a normal habit of growth. They shall be sound, healthy, and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae, and shall have healthy and well-developed root systems. They shall be free from physical damage or adverse conditions that would prevent thriving with the specified result. All trees shall have straight trunks and all old abrasions completely calloused over. Cut branches over 0.75 inches in diameter must be completely healed/calloused over. Any tree exhibiting cut branches that have not completely healed/calloused over will be rejected. They shall be free of objectionable disfigurements. Under grown, overgrown, or root-bound plants shall be rejected.

**Inspection:** The Engineer reserves the right to inspect and approve plant material for quality, size and species at the place of growth or upon delivery to the site. The Contractor shall provide the

Engineer with the opportunity to inspect all plant material before installation. Rejected plants shall be removed from the site immediately and replaced with acceptable material at Contractor's expense. All plants shall comply with current federal, state, and county laws and quarantines requiring inspection for plant diseases and pest infestations.

**Plant Hardiness:** All plants shall be grown under climate conditions similar to those in the locality of the project. The Contractor shall, upon request, supply a list of plant material sources, with the name, address and phone number of the grower. If the Contractor has any questions of suitability, (s)he shall contact the Engineer prior to submitting a bid. It shall be assumed by the Engineer that all plant material was propagated from seed. If material to be supplied was propagated from cuttings or other methods, the Contractor must specify the alternative propagation method.

**Guarantee for Growth and Quality:** Unless otherwise specified, the Contractor shall guarantee all plant material until acceptance by Engineer. Unacceptable plant material will be rejected and replaced at no additional cost to the Department.

During the guarantee period, and upon written notice from the Engineer, following field inspection by the Contractor and Engineer, the Contractor shall promptly replace any trees or shrubs that are unacceptable at no additional cost to the Department.

Plant material, which upon inspection is found to be alive but not possessing the character and/or quality as originally specified, shall be replaced by the Contractor at no additional cost to the Department.

All replacement plant material shall meet or exceed the standards set forth in this Contract for the original plantings in size and quality. If mutually agreed upon and approved by the Engineer, replacement plantings of size and quantity differing from the original plant material may satisfy this guarantee for growth.

Replacement plant material shall be supplied and/or installed upon the first opportunity to do so with respect to season, weather, and availability.

**Planting Seasons:** The Contractor shall recognize that field-grown plant stock being requested in this Contract are considered a "spring dig" only (within the industry), and cannot be dug from the nursery during the summer, fall or winter seasons without prior approval of the Engineer.

**Digging and Handling:** No plants, other than samples, shall be dug or delivered to the project until inspections have been made; or until the plants or samples have been approved; or until the Engineer has authorized delivery. This authorization shall not relieve the Contractor from inspections or rejections of materials by the Engineer at a later date. Plants are to be handled in such a manner so that roots, stems and branches are adequately protected at all times from drying and other injury. Any plants showing results of desiccation due to any cause such as digging, transporting, handling or planting practice shall be rejected. No plant shall be bound with wire or rope at any time. Plants shall be lifted and handled without causing damage to the plants. Plants shall be protected from sun or drying winds.

Unless otherwise specified, all field-grown stock shall be dug in the spring only and immediately transplanted in the specified above-ground container. Field-grown stock shall be dug with a firm, natural soil masses of sufficient diameter and depth so as to include all fibrous and feeding roots. No plant with soil masses that are broken or cracked before or during planting operations will be accepted unless approved by the Engineer.

#### Shipping and Delivery:

Plants shall be shipped with legible labels, stating the correct name and size, and securely attached to individual plants.

The Contractor shall coordinate with the Engineer in order to develop a mutually agreeable approximate delivery schedule and delivery locations.

The Engineer shall approve the location for plant delivery.

Ash Tree (*Fraxinus* spp.): Due to infestations and quarantines of ash trees resulting from the introduction of the Emerald Ash Borer, LCDOT will not be planting Ash species in any natural areas.

#### Layout and Planting:

Plants shall be planted only when the air temperature exceeds 35 degrees Fahrenheit.

Trees shall be spaced a minimum of ten feet apart. Trees and shrubs shall be planted in the areas as shown on the plans.

#### Planting Pit:

The diameter of the plant pit for trees, shrubs, and herbaceous plants shall be twice the diameter of the root ball to facilitate proper root growth. The pit depth of pit shall be sufficient for the bottom of the root ball to rest on firm native soil at the bottom of the pit. Any deviation in the size of the planting pit shall be approved by Engineer.

If an auger type apparatus is utilized to excavate a plant pit, the Contractor shall scarify the sides of the plant pit sufficiently to eliminate any glazing of the soil due to the use of an auger.

If a backhoe or similar apparatus is utilized to excavate the plant pit, the Contractor shall break all large clods of soil from excavation into smaller bits no larger than two inch size prior to backfilling.

Unless otherwise specified, all excess excavated clay and soil shall be spread evenly around the planting area.

Normal and reasonable care shall be given to each plant during planting so as not to damage any limbs or the trunk, or to break the root ball. Any plants that are mishandled and damaged shall immediately be replaced with identical specified material at the Contractor's expense.



All trees shall be placed at a depth so that the trunk flare remains one to two inches above the natural surrounding finished grade. Excess soil shall be removed from the top of the root ball to properly identify the natural trunk flare. Adventitious roots growing above the trunk flare and potential girdling roots shall be properly pruned. Care shall be given to each tree to avoid damaging the trunk.

All shrubs shall be placed at a depth so that the top of the root ball remains one to two inches above the natural surrounding finish grade.

Shrubs will be installed in groupings of three to ten shrubs per group, or as directed by the Engineer.

The Contractor shall backfill trees with the native topsoil from the excavation.

The backfill shall be placed around the root system. All trees shall be set plumb and braced rigidly in position until the planting soil has been tamped solidly around the ball and roots. During backfilling, the Contractor shall periodically and thoroughly tamp the backfill to eliminate air pockets to reduce the potential for future settling.

All trees should have a soil ring, two to five inches above surrounding grade, installed at a diameter approximately twice the root ball diameter to facilitate watering.

All tags and ropes shall be removed and disposed of from each plant after planting.

**Mulching:** Mulching method and material shall follow the Project Special Provision MULCH.

**Pruning:** Pruning shall be performed after planting, if necessary. Remove only dead and/or damaged branches. Trees and shrubs shall be pruned by a professional arborist in conformance with the Tree Care Industry Association's (formerly National Arborist Association) Pruning Standards. The pruning shall comply with Article 253.09 of the "Standard Specifications".

**Deer Protection:** The Contractor shall furnish, install, and maintain fencing to protect trees and shrubs from deer. This fence shall be included in the unit cost associated with the tree or shrub pay item.

The Contractor shall protect each individual tree and groupings of shrubs with a circle of fencing with the following minimum dimensions:

The fence height shall be a minimum of five feet. The diameter of the fencing circle shall be four to five feet for individual trees and 12 to 15 feet for shrub groups, depending on the number of shrubs in the group.

Fence openings shall be no larger than two inches by four inches.

The fencing shall be secured in place with a sufficient number of metal light-duty "T-posts," "U-posts," rebar or similar material and wire fasteners that will secure the fence in all weather conditions (typically one to three posts, depending on the "stiffness" or gauge of the metal fencing). Plastic, wood or any other non-metal post materials are not permitted.

The fencing material shall be metal welded wire, woven wire, poultry fence or similar material. Plastic, fabric, and/or other fencing non-metal materials are not permitted.

Alternative methods used by the Contractor to protect trees from "buck rubs" (not twig browsing) may be considered by the Engineer and may be implemented by the Contractor upon approval by the Engineer. Shrubs shall be protected from deer browse and "buck rubs".

The Contractor shall monitor the condition of the fence monthly, making any repairs or replacements as necessary. Additionally, the Contractor shall make repairs and/or replace fencing when notified by the Engineer that such action is necessary.

Deer protection fencing shall remain in place for the duration of the Three Year Maintenance and Monitoring Period. Maintenance shall continue until the acceptance criteria are met, at which time all fencing shall be removed without causing damage to the tree or shrub. Maintenance and removal of the fencing shall be considered included with LANDSCAPE PLANTING COMPLETE.

#### Watering of Trees and Shrubs:

If the trees and shrubs cannot be installed (including installation of deer protection) on the day of delivery, the Contractor shall be responsible for successive watering, as required until plants are installed, to maintain adequate soil moisture around the root ball of each plant.

Thorough watering of trees after installation in the tree pit and then again after backfilling shall be performed on the day of planting. Trees and shrubs shall be watered slowly and evenly to allow saturation of the entire root zone to a six-inch minimum depth. The rate of application shall limit runoff and maximize saturation. Watering shall be completed without injury to the tree or the work site. Once the ground settles, following watering, additional backfill shall be placed to match the level of the finished grade. Approved watering equipment shall be present at the work site, in a fully operational condition prior to the start of planting.

Until final payment for all work under this contract is made, the Contractor shall be responsible for successive watering as required to maintain adequate soil moisture around the root ball of each plant and even moisture throughout sodded areas.

#### Additional Watering - First Growing Season:

The Contractor shall provide additional watering during the first growing season (June – October) following planting and shall not be paid for the supplemental watering separately but considered included with LANDSCAPE PLANTING COMPLETE.

At least two additional applications of water shall be required for each tree and clump of shrubs during the growing season. The watering shall be completed at the discretion of the Engineer. The watering shall be completed within seven days following the Engineer's notification to the Contractor that watering is necessary.

The additional two applications of water shall typically be required during the months of June through August, when precipitation has not occurred during a two week period. Under drought

conditions, up to three additional applications of water may be required during the first growing season. The timing of additional water applications is entirely dependent on local weather conditions, however, the first watering is typically necessary by mid-to late June, with a second watering required in late July.

For each additional watering, the Contractor shall apply ten gallons of water per tree and ten gallons of water per shrub. A pick-up truck with a large water tank in the bed or the equivalent shall be allowed in the planting area for purposes of watering. The Contractor shall monitor the intensity of the water pressure so that mulch around the trees and shrubs is not dislodged. The Contractor shall flag each tree and clump of shrubs after watering to ensure that all trees and shrubs are watered. Flags shall be removed after each watering.

The Contractor shall be responsible for replacing (including material and labor costs), at a 1:1 ratio, any tree or shrub damaged during the watering process and shall guarantee all replacements until they "leaf out" in the spring following planting.

**Inspection and Acceptance:** Once all plants have been installed, the Contractor shall notify the Engineer. The Engineer will then inspect the plantings, at which time all trees and shrubs planted according to Section 253 of the "Standard Specifications" that are in a live, healthy condition will be accepted for payment. Plants not in a live and healthy condition shall be replaced at the Contractor's expense.

**Period of Establishment:** The period of establishment shall be as defined in Article 253.14 of the "Standard Specifications". Plant care during the period of establishment shall be according to Article 253.15 of the "Standard Specifications".

**Method of Measurement:** Trees and shrubs will be measured for payment per each in place, of the species, type and size specified. Deer Protection shall not be measured separately, but shall be included in the unit cost of the Trees and Shrubs to be planted.

**Basis of Payment:** This work will be paid for at the contract unit price per each for TREE and SHRUB planting of the species, type and size specified, according to Article 253.17 of the "Standard Specifications". The unit price shall include all labor, tools, and materials necessary to complete the work as specified. The unit price shall also include furnishing; handling; storing; preparation and planting; excavation; backfill; deer protection; and post-planting pruning. Maintenance and removal of fencing and Supplemental Watering is to be considered included in LANDSCAPE PLANTING COMPLETE.

**MMP:** This pay item is covered under the Three Year Maintenance and Monitoring Period. As described in the NAI special provisions, release of the Landscaping Performance Guarantee will be based on meeting the acceptance criteria for all included pay items.

**Acceptance Criteria:** For acceptance, 100 percent of all trees and shrubs shall be alive and successfully rooted at the end of the Three Year Maintenance and Monitoring Period.

## **HERBICIDE APPLICATION SPECIFICATIONS**

### **REQUIREMENTS**

1. Field Crew Chief must have a minimum of three (3) years of experience in invasive vegetation control and herbicide applications in natural areas to be qualified to work on this project.
2. Fifty percent of field crew shall have at least 2 years' experience with: working in natural areas; plant identification (growing season identification characteristics of invasive and native species); and herbicide use.
3. All field crew members applying herbicide are required to have a current State of Illinois Pesticide Operator's or Applicator's License. Contractor shall have at least one crew member with an Applicator's License to oversee Operators.
4. Complete projects by imposed deadlines in a professional and timely fashion.
5. Contact project manager before and after each herbicide application

### **GOALS/PERFORMANCE**

The goal of this project is to achieve a 99% or greater reduction of each target species at the end of the growing season through foliar application of herbicide (See TREATMENT GUIDLINES) within the Work Site.

For the purposes of this project, the contractor shall apply as many applications of herbicide as needed to attain the 99% kill rate for each species. The contractor shall make the initial herbicide treatment and make a follow-up visit in 14-21 days depending on the chemical used to complete a follow-up visit. It is the contractor's responsibility to schedule the first follow-up visit in a timely manner and should not rely on the confirmation from the project manager. If 99% kill for each species is not achieved by the follow-up application, additional follow-up applications may be required.

Work shall be completed in a diligent, efficient, and timely manner. The District will conduct unannounced site inspections to assess the efficiency of the field crew. If at any time, the District observes work that is unacceptable, whether in application or in efficiency, the Contractor shall be required to replace the field crew member in question with another qualified crew member.

### **HERBICIDE APPLICATION AND CONDITIONS**

**The Contractor shall apply herbicide in a wick/sponge or spot-application method, not in a broadcast method unless pre-approved by the Engineer.** Application methods shall follow product label specifications. Care shall be taken not to damage any non-target species. Herbicides shall be applied to target species with hand-held wick/sponge applicators or sprayers. Contractor's ability to use any other equipment, including ATV's and broadcast sprayers is prohibited due to the quality of the vegetation and lack of accessibility.

The Contractor shall be responsible for positively identifying all target species before they are treated with herbicide. It is the responsibility of the contractor to implement a marking system for designating target species should it become necessary. Care should be taken to prevent non-target species impacts from excessive herbicide drift. Damage to large areas of non-target species shall require the contractor to restore these areas to the pre-damage conditions at the contractor's expense.

The Engineer may cease herbicide applications if proper precautions are not followed, or if weather conditions prohibit proper application.

**WEATHER CONDITIONS**

The Contractor shall adhere to the following protocol when determining whether conditions are appropriate for chemical application:

- A. Wind speeds within the label specifications at the project site.
- B. If the chance of precipitation is 40% or greater, the contractor shall call the District’s Project Manager 24 hours in advance of the predicted weather to discuss work for the day in question.
- C. The Contractor shall not apply herbicide if the likelihood of precipitation is greater than 50% within the next 12 hours, unless otherwise directed by the District.
- D. If weather conditions are questionable, the decision to proceed shall be left to the discretion of the District’s Project Manager.

**TREATMENT GUIDELINES**

Phragmites shall be treated with the herbicide with the active ingredient Imazapyr. Small stands shall be treated with a wick/sponge application of 1.25% solution (1.6 oz of herbicide concentrate/gallon of water) + non-ionic surfactant (or methylated seed oil). Care should be given to treat at least 75% of the plant stem/leaves. Larger stands may be treated with hand-held, low volume, spot sprayers with the same solution described above.

Cattails shall be treated with an aquatic approved glyphosate herbicide. A 25% solution (32 oz of herbicide concentrate/gallon of water) + non-ionic surfactant shall be applied to Cattails via wick application only.

In areas with standing water, an aquatic approved herbicide (Engineer approved) shall be used on all target species. All application procedures shall follow label specifications.

**TIMING OF TREATMENT**

Chemical treatments shall reduce each target species by 99% within the Work Site and shall be made following the project schedule below:

Species	Treatment	Start Date*	Completion Date*
Phragmites	1st	June 10, 2014	June 14, 2014
	2nd	July 1, 2015	July 10, 2015
	As needed to attain goal	July 15, 2016	September 30, 2016
Cattails	1st	May 1, 2014	May 15, 2014
	2nd	May 30, 2015	June 10, 2015

	As need to attain goal	June 1, 2016	July 1, 2016
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\*The actual start and completion dates will be determined by the site conditions, primarily wetness, weather, stage of species growth, and need for follow-up treatments.

**RECORD KEEPING**

An Herbicide Record Sheet for each application shall be kept and a final report submitted to the District. This record of application shall document, at the time of each herbicide application, temperature range, percent humidity, wind speed and direction, last precipitation event and amount, type of herbicide used, amount of herbicide used, and number of hours worked during each application.

**SAFETY**

Contractor shall operate all equipment and apply all herbicides in a safe manner consistent with product labeling and instructions. Applicators should wear all necessary personal protective equipment outlined on pesticide label including: eye, skin, and respiratory protection. Contractor shall, at minimum, maintain an eyewash station and first aid kit on site when employees are working. Contractor shall meet all local, state, and federal safety requirements.

The Contractor is responsible for immediate resolution of any damages and other incidents resulting from the use of herbicides or other chemicals. These incidents include but are not limited to spills, smoke, fumes and vapors. The contractor will bear all cost for the resolution of these incidents.

**RESPONSIBILITY**

Throughout the progress of the work on the project, the Engineer shall:

1. Notify the Contractor in writing to proceed with the Work described herein and designate in writing a person to act as the Engineer’s representative with respect to the services to be rendered under this Agreement.
2. Provide the Contractor with the Herbicide Record Sheet to track herbicide use for the duration of the project.

**SITE ACCESS AND STAGING AREA**

Access to the site during construction shall be along River Road. Additional access points may be available via LCDOT right-of-way. The Engineer will work to secure access through these points. Vehicles shall not be stored overnight. The staging area does not have electricity or water. Mixing, loading and rinsing of equipment and herbicide containers shall take place off-site. Following Stage III opening of traffic, access to the site for maintenance and monitoring shall occur off of Roberts Road.

**NOTES:**

1. PLEASE REFER TO PLANTING PROCEDURE IN THE SPECIFICATIONS PRIOR TO USING THIS DETAIL.

2. PRUNE ONLY DEAD OR DAMAGED BRANCHES. ALL OTHER PRUNING SHALL BE PERFORMED ONLY AT THE DIRECTION OF THE OWNER.

3. LOOSEN SOIL AT ALL UNEXCAVATED PORTIONS OF TREE RING TO A MIN DEPTH OF 8" USING A SPADING FORK OR BY OTHER MEANS APPROVED BY THE OWNER.

4. NO STAKING REQUIRED.

5. REMOVE AND DISPOSE OFF SITE, ANY TURF OR OTHER VEGETATION WITHIN THE MULCH RING.

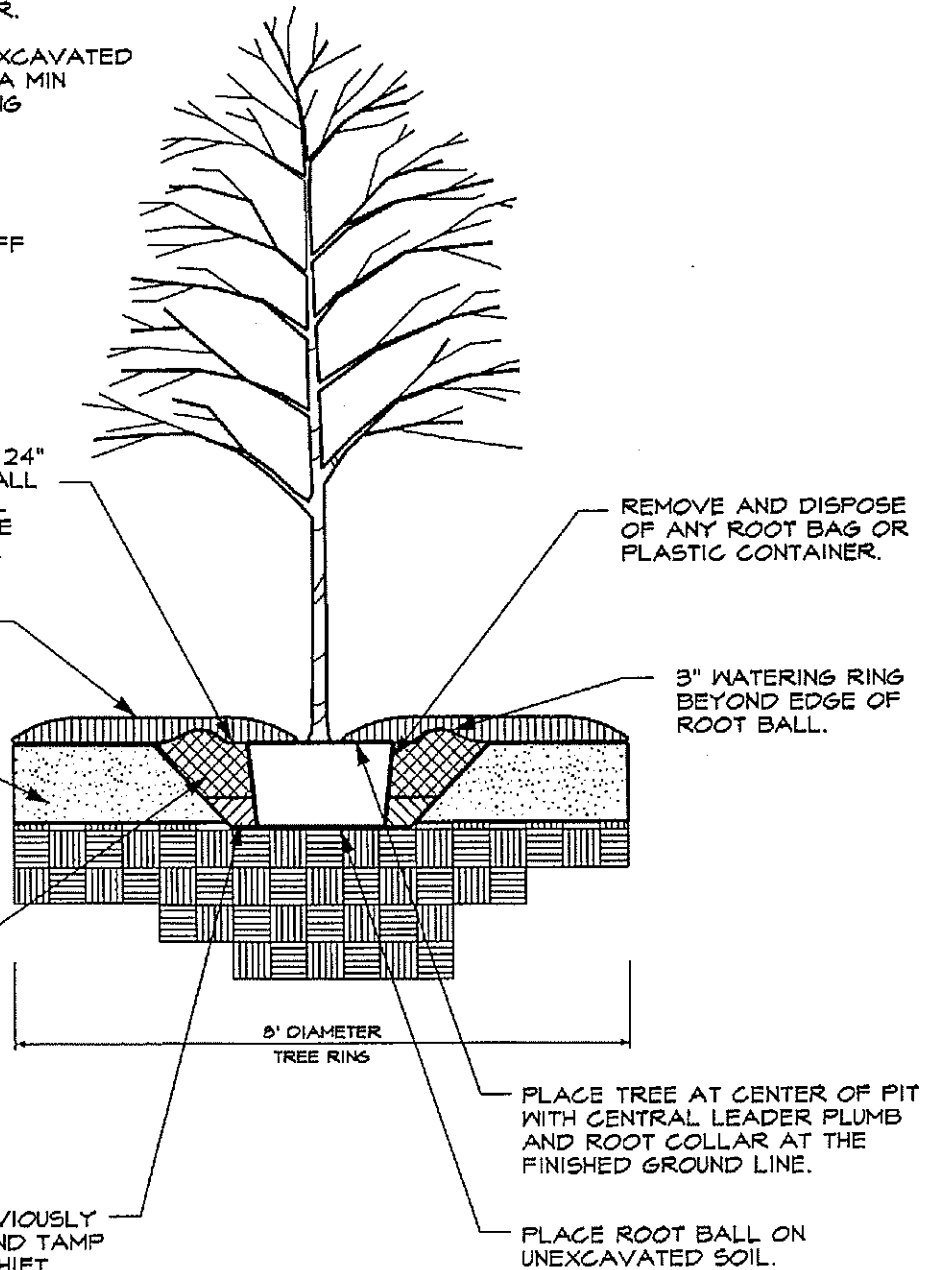
DIG PLANTING PIT AT LEAST 24" GREATER THAN THE ROOT BALL DIAMETER. THE SIDES SHALL SLOPE INWARD TOWARDS THE BOTTOM OF THE ROOT BALL.

3-4" MULCH. DO NOT PLACE MULCH IN CONTACT WITH TREE TRUNK.

FORK SOIL TO MIN 8" DEPTH (DO NOT TURN SOIL).

BACKFILL WITH LESS COMPACTION AND WITH EXISTING SOIL FROM UPPER PORTION OF TREE PIT. INCORPORATE MYCORRHIZAL INNOCLANT PER MANUFACTURER'S RECOMMENDATIONS.

BACKFILL FIRMLY WITH PREVIOUSLY EXCAVATED NATIVE SOIL AND TAMP SO ROOT BALL DOES NOT SHIFT.



**TREE PLANTING DETAIL**  
**ROOT BAG AND CONTAINER TREES**

NO SCALE

**TRAFFIC SIGNAL SPECIAL PROVISIONS**

**Effective: January 1, 2013**

All work and equipment performed and installed under this Contract shall be governed by and shall comply with:

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

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

The following terms and acronyms are used:

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

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



The work performed under this contract shall consist of furnishing and installing all traffic signal work as specified on the plans and as specified herein in a manner acceptable and approved by the Engineer.

**SUBMITTALS.**

Revise Article 801.05 of the Standard Specifications to read:

General requirements include:

- a. All material approval requests shall be submitted at the preconstruction meeting.
- b. Product data and shop drawings shall be assembled by pay item. Only the top sheet of each pay item submittal will be stamped by the LCDOT Traffic Department with the review status, except shop drawings for mast arm pole assemblies will be stamped with the review status on each sheet.
- c. Four complete copies of the manufacturer's descriptive literatures and technical data for the traffic signal materials. If the literature contains more than one item, the Contractor shall indicate which item or items will be furnished.
- d. Seven complete copies of the shop drawings for the mast arm assemblies and poles, and the combination mast arm assemblies and poles showing, in detail, the fabrication thereof and the certified mill analyses of the materials used in the fabrication, anchor rods, and reinforcing materials.
- e. Partial or incomplete submittals will be returned without review.
- f. Certain non-standard mast arm poles and structures will require additional review from IDOT's Bureau of Bridges and Structures. Examples include special mast arms and non-standard length mast arm pole assemblies. The contractor shall account for the additional review time in their schedule.
- g. The contract number or permit number, project location/limits and corresponding pay code number must be on each sheet of correspondence, catalog cuts and mast arm poles and assemblies drawings.
- h. Where certifications and/or warranties are specified, the information submitted for approval shall include certifications and warranties. Certifications involving inspections, and/or tests of material shall be complete with all test data, dates, and times.
- i. After the Engineer reviews the submittals for conformance with the design concept of the project, the Engineer will stamp the drawings indicating their status as 'APPROVED', 'APPROVED AS CORRECTED', 'NOT APPROVED',

or 'RESUBMIT'. Since the Engineer's review is for conformance with the design concept only, it is the Contractor's responsibility to coordinate the various items into a working system as specified. The Contractor shall not be relieved from responsibility for errors or omissions in the shop, working, layout drawings, or other documents by the Engineer's approval thereof. The Contractor must still be in full compliance with contract and specification requirements.

- j. All submitted items reviewed and marked 'APPROVED AS CORRECTED', 'NOT APPROVED', or 'RESUBMIT' are to be resubmitted in their entirety, unless otherwise indicated within the submittal comments., with a disposition of previous comments to verify contract compliance at no additional cost to the contract.
- k. Exceptions to and deviations from the requirements of the Contract Documents will not be allowed. It is the Contractor's responsibility to note any deviations from Contract requirements at the time of submittal and to make any requests for deviations in writing to the Engineer. In general, substitutions will not be acceptable. Requests for substitutions must demonstrate that the proposed substitution is superior to the material or equipment required by the Contract Documents. No exceptions, deviations or substitutions will be permitted without the approval of the Engineer.

#### **MARKING PROPOSED LOCATIONS**

Revise "Marking Proposed Locations for Highway Lighting System" of Article 801.09 to read "Marking Proposed Locations for Highway Lighting System and Traffic Signals."

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

Add the following to Article 801.10 of the "Standard Specifications":

All cabinets, including temporary traffic signal cabinets, shall be assembled by an approved equipment supplier in IDOT District 1. LCDOT reserves the right to request that any controller and cabinet be tested at an IDOT District 1 approved equipment supplier's facility prior to field installation. Such testing will be at no extra cost to the contract. All permanent or temporary "railroad interconnected" controllers and cabinets, shall be new, built, tested and approved by the controller equipment vendor, in the vendor's IDOT District 1 approved facility, prior to field installation. The vendor shall provide the technical equipment and assistance as required by the Engineer to fully test this equipment.

#### **MAINTENANCE AND RESPONSIBILITY**

Revise Article 801.11 of the "Standard Specifications" to read:

- a. Existing traffic signal installations and/or any electrical facilities at locations included in this contract may be altered or reconstructed totally or partially as part of the work on this contract. The Contractor is hereby advised that all traffic control equipment presently installed at these locations may be the property of the State of Illinois, Department of Transportation, Division of Highways, County, Private Developer, or the Municipality in which it is located. Once the Contractor has begun any work on any

portion of the project, all traffic signals within the limits of this contract or those which have the pay item MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION, TEMPORARY TRAFFIC SIGNAL INSTALLATION, and/or MAINTENANCE OF EXISTING FLASHING BEACON INSTALLATION, shall become the full responsibility of the Contractor. The Contractor shall supply the Engineer and the County's Traffic Signal Maintenance Contractor two 24-hour emergency contact names and telephone numbers. The Contractor shall provide sufficient qualified personnel to respond to all notifications of malfunctions on a round-the-clock basis (24 hours a day, 7 days a week). The Contractor is required to keep a time and date log of all maintenance items, including the time of the initial report, the response time, and the time of final permanent repair. The Contractor shall provide this information to the Engineer, upon request.

- b. When the project has a pay item for MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION, TEMPORARY TRAFFIC SIGNAL INSTALLATION, and/or MAINTENANCE OF EXISTING FLASHING BEACON INSTALLATION, the Contractor must notify the Traffic Engineer at **(847) 377-7000** of their intent to begin any physical construction work on the project or any portion thereof. This notification must be a minimum of seven (7) working days prior to the start of construction to allow sufficient time for an inspection of the existing traffic signal installation(s) and the transfer of maintenance to the Contractor. If work is started prior to the inspection, maintenance of the traffic signal installation(s) will be immediately transferred to the Contractor without an inspection. The Contractor shall then become responsible for repairing or replacing all equipment that is not operating properly or is damaged at no cost to the owner of the traffic signal. Final repairs to or the replacement of damaged equipment must meet the approval of the Engineer at the time of final inspection or the traffic signal installation will not be accepted.
- c. Contracts that don't include traffic signal installations or modifications, but do include pay items for milling or pavement patching which may result in the destruction of traffic signal loops, do not require maintenance transfer. These contracts do require a notification of intent to work and an inspection. A minimum of seven (7) working days prior to the loop removal, the Contractor shall notify the Traffic Engineer at **(847) 377-7000**, at which time arrangements will be made to adjust the traffic controller timing to compensate for the absence of detection.
- d. The Contractor is advised that the existing and/or temporary traffic signal installation must remain in operation during all construction stages, except for the most unavoidable down time. Any plan to shutdown the traffic signal installation for a period exceeding fifteen (15) minutes must receive prior approval from the Engineer. Approval to shutdown the traffic signal installation will only be granted during the hours of 9:00 A.M. to 3:00 P.M. on weekdays. Shutdowns will not be allowed during inclement weather, weekends or holiday periods.
- e. The Contractor shall be fully responsible for the safe and efficient operation of the traffic signals. Any inquiry, complaint or request by the Division, the County's Traffic

Signal Maintenance Contractor or the public, shall be investigated and repairs started. The Contractor shall restore service and complete permanent repairs in accordance with the following Repair Timetable. Failure to provide this service will result in liquidated damages of \$500 per day per occurrence. The Traffic Engineer reserves the right to assign any work not completed within this timeframe to the County's Traffic Signal Maintenance Contractor. All costs associated to repair this uncompleted work shall be the responsibility of the Contractor. Failure to pay these costs to the Traffic Signal Maintenance Contractor within one month after the incident will result in additional liquidated damages of \$500 per month per occurrence. Unpaid bills will be deducted from the cost of the Contract. The County's Traffic Signal Maintenance Contractor may inspect any signaling device on the Division's highway system at any time without notification.

Immediately after performing any work related to a signal maintenance item (troubleshooting, temporary repair, permanent repair, etc.) the Contractor shall contact the Lake County PASSAGE Transportation Management Center (TMC) at **(847) 377-7000**.

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

**REPAIR TIMETABLE**  
 (non cumulative)

<u>ITEM</u>	<u>RESPONSE</u> <u>TIME</u>	<u>SERVICE</u> <u>RESTORATION</u>	<u>PERMANENT</u> <u>REPAIRS</u>
<b>KNOCKDOWNS/FAILURE/DAMAGE:</b>			
Cabinet	1 hr	24hrs	2 wks
Controller (Local or Master)	1 hr	24hrs	2 wks
Detector Loop	1 hr	n.a.	3 wks
Loop Detector/Amplifier	1 hr	4 hrs	2 wks
MVP Sensor	1 hr	4 hrs	2 wks
PTZ Camera	2 hrs	48 hrs	2 wks
Detector Interface Card/Mini Hub	1 hr	4 hrs	2 wks
Modem	2 hrs	NWD	2 wks
Load Switch	1 hr	2 hrs	2 hrs
Signal Head/Lenses	1 hr	2 hrs	NWD
Pole/Mast Arm	1 hr	2 hrs	ENG
Cabling/Conduit	1 hr	4 hrs	ENG
Interconnect/Communication	1 hr	NWD	ENG
Graffiti/Advertising	NWD	NWD	NWD
Telemetry, Electrical	1 hr	2 hrs	NWD
Ethernet Switches/Video Encoders	1 hr	48 hrs	2 wks
Highway Advisory Radio (HAR)	1 hr	48 hrs	2 wks
Indicators/switches/LEDs/displays	NWD	n.a.	2 wks
Outages not covered elsewhere	1 hr	2 hrs	NWD
Filter/Cleanliness/fans/thermostat	NWD	NWD	n.a.

Misalignment (conflicting)	1 hr	2 hrs	NWD
Misalignment (non-conflicting)	2 hrs	4 hrs	NWD

**COMPLAINTS/CALLS/ALARMS:**

Timing/Phasing/Programming	1 hr	2 hrs	ENG
Coordination Alarm/Cycle Fail	NWD	ENG	ENG
Controller Alarm/Status Change	1 hr	NWD	1 wk
Detector Alarm/Status change	NWD	NWD	ENG
CMU Flash/Local Flash	1 hr	2 hrs	1 wk
Door Open/Maint. Req.	2 hrs	4 hrs	NWD

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

**LIQUIDATED DAMAGES FOR UNTIMELY WORK**

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

**DAMAGE TO TRAFFIC SIGNAL SYSTEM**

Revise Article 801.12(b) of the "Standard Specifications" to read:

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

Automatic Traffic Enforcement equipment, such as Red Light Enforcement cameras, detectors, and peripheral equipment, damaged or not operating properly from any cause whatsoever, shall be the responsibility of the municipality or the Automatic Traffic Enforcement company per Permit agreement.

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

Revise Article 801.15(b) of the "Standard Specifications" to read:

It is LCDOT's intent to have all electric work completed and the equipment field-tested by the vendor, prior to LCDOT's "turn-on" field inspection. The Contractor must have all traffic signal work completed and the electrical service installation connected by the utility company prior to

requesting an inspection and "turn-on" of the traffic signal installation. In the event the Traffic Engineer determines that the work is not complete and that the inspection will require more than two (2) hours to complete, the inspection shall be canceled and the Contractor will be required to reschedule at another date.

The Contractor may request a "turn-on" and inspection of the completed traffic signal installation at each separate location. This request must be made to the Traffic Engineer at **(847) 377-7000** a minimum of seven (7) working days prior to the time of the requested inspection. LCDOT will not grant a field inspection until the Contractor provides notification that the equipment has been field tested, and the intersection is operating according to contract requirements.

Signal indications being tested shall match the lane configurations and markings at the intersection. If any conflicting signal indications are visible to motorist or pedestrians while testing, Contractor shall be responsible to provide police officer(s) to direct traffic. In addition, the Contractor shall provide a representative from the control equipment vendor's office to attend the traffic signal inspection for both permanent and temporary traffic signal "turn-ons". Upon demonstration that the signals are operating properly and that all work has been completed in accordance with the contract and to the satisfaction of the Traffic Engineer, the Traffic Engineer will then allow the signals to be placed in continuous operation. The Agency that is responsible for the maintenance of each traffic signal installation will reassume the traffic signal maintenance upon acceptance by the Traffic Engineer.

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

1. One (1) set of as-built signal plans.
2. One (1) letter from the electrical contractor certifying that all material and equipment provided and installed as part of the project is in accordance with the approved catalog cuts and shop drawings.
3. A knowledgeable representative of the controller equipment supplier shall be present at the traffic signal "turn-on". The representative shall be knowledgeable concerning the cabinet design and the controller functions.
4. One (1) CD or electronic version of the cabinet box prints.
5. One (1) copy of the operation and service manuals for the signal controller and the associated control equipment.
6. Five (5) copies (11" x 17") of the cabinet wiring diagrams.
7. Five (5) copies of the traffic signal installation cable log.
8. All manufacturer and contractor warranties and guarantees required by Article 801.14.

Acceptance of the traffic signal equipment by LCDOT shall be based on the inspection results at the traffic signal "turn-on". If approved, the traffic signal acceptance shall be given verbally at the "turn-on" inspection, followed by written correspondence from the Traffic Engineer. The Contractor shall be responsible for all traffic signal equipment and associated maintenance thereof until LCDOT acceptance is granted. Any "punch list" work remaining after the installation is accepted shall be completed within thirty (30) calendar days of the acceptance date. If this work is not completed within thirty days, LCDOT reserves the right to have the work completed by others at the Contractor's expense. This cost will be in addition to Liquidated Damages for Untimely Work.

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

All cost of work and materials required to comply with the above requirements shall be included in the pay item bid prices, under which the subject materials and signal equipment are paid, and no additional compensation will be allowed. Materials and signal equipment not complying with the above requirements will be subject to removal and disposal at the Contractor's expense.

#### **LOCATING UNDERGROUND FACILITIES**

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

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

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

The exact location of all utilities shall be field verified by the Contractor before the installation of any components of the traffic signal system. For locations of utilities call J.U.L.I.E. at **1-800-892-0123**. For the locations of some utilities, other Agencies or Municipalities may need to be contacted.

#### **MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION**

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

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

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

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

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

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

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

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

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

The Contractor shall respond to all emergency calls from the County or others within one hour after notification and provide immediate corrective action. When equipment has been damaged or becomes faulty beyond repair, the Contractor shall replace it with new and identical equipment. The cost of furnishing and installing the replaced equipment shall be borne by the Contractor at no additional charge to the County. The Contractor may institute action to recover damages from a responsible third party. If at any time the Contractor fails to perform all work as specified herein to keep the traffic signal installation in proper operating condition or if the Engineer cannot contact the Contractor's designated personnel, the Engineer shall have the County's Traffic Signal Maintenance Contractor perform the maintenance work required. The County's Traffic Signal Maintenance Contractor shall bill the Contractor for the total cost of the work. The Contractor shall pay this bill within thirty (30) days of the date of receipt of the invoice or the cost of such work will be deducted from the amount due the Contractor. The Contractor shall allow the County's Traffic Signal Maintenance Contractor to make reviews of the existing traffic signal installation that has been transferred to the Contractor for maintenance.

The Engineer may require the Contractor to transfer maintenance of a signal back to the County's Traffic Signal Maintenance Contractor (or other electrical contractor) for a short time. This may become necessary due to other signal projects in the area, or if the County needs to



perform work at the signal. Any costs incurred by the Contractor for maintenance transfer inspections of this type shall be included in cost of pay item MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION.

Any proposed activity in the vicinity of a highway-rail grade crossing must adhere to the guidelines set forth in the current edition of the Manual on Uniform Traffic Control Devices (MUTCD) regarding work in temporary traffic control zones in the vicinity of highway-rail grade crossings which states that lane restrictions, flagging, or other operations shall not create conditions where vehicles can be queued across the railroad tracks. If the queuing of vehicles across the tracks cannot be avoided, a uniformed law enforcement officer or flagger shall be provided at the crossing to prevent vehicles from stopping on the tracks, even if automatic warning devices are in place.

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

#### **TEMPORARY TRAFFIC SIGNAL INSTALLATION**

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

Only an approved equipment vendor will be allowed to assemble the temporary traffic signal cabinet. Also, an approved equipment vendor shall assemble and test a temporary railroad traffic signal cabinet. (Refer to the "Inspection of Electrical Systems" specification) A representative of the approved control equipment vendor shall be present at the temporary traffic signal turn-on inspection.

Only controllers compatible with "Centracs" software (NTCIP) or "Aries" software, currently in use by LCDOT, will be approved for use at temporary signal locations. Controller software compatibility requirements are based upon the controller's location in the communication system, and shall be as shown on the plans. All controllers used for temporary traffic signals shall be fully-actuated NEMA microprocessor based with RS232 data entry ports compatible with existing monitoring software, installed in NEMA TS-1 or TS-2 cabinets with 8 phase back panels, capable of supplying 255 seconds of cycle length and individual phase length settings up to 99 seconds. On projects with one lane open and two way traffic flow, such as bridge deck repairs, the temporary bridge signal controller shall be capable of providing an adjustable all red clearance setting of up to 30 seconds in length. All controllers used for temporary traffic signals shall meet or exceed the requirements of Section 857 of the "Standard Specifications" with regards to internal time base coordination and preemption.

All temporary traffic signal cabinets shall have a closed bottom made of aluminum alloy. The bottom shall be sealed along the entire perimeter of the cabinet base to ensure a water, dust and insect-proof seal. The bottom shall provide a minimum of two (2) 4-inch diameter holes to run the electric cables through. The 4-inch diameter holes shall have a bushing installed to protect the electric cables and shall be sealed after the electric cables are installed.

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

Grounding shall be provided for the temporary traffic signal cabinet meeting or exceeding the applicable portions of the National Electrical Code, Section 806 of the "Standard

Specifications” and the “Grounding of Traffic Signal Systems” section of these special provisions.

All traffic signal head sections shall be twelve (12) inches. Traffic signal sections shall be LED with expandable view, unless otherwise approved by the Engineer. The temporary traffic signal heads shall be placed as indicated on the temporary traffic signal plan or as directed by the Traffic Engineer. The Contractor shall furnish enough cable slack to relocate heads to any position on the span wire or at locations illustrated on the plans for construction staging. The temporary traffic signal shall remain in operation during all signal head relocations. Each temporary traffic signal head shall have its own cable from the controller cabinet to the signal head.

All temporary traffic signal installations shall have vehicular detection installed as shown on the plans or as directed by the Engineer. Pedestrian push buttons shall be provided for all pedestrian signal heads/phases as shown on the plans or as directed by the Engineer. All approaches shall have vehicular detection provided by vehicle detection system as shown on the plans or as directed by the Engineer. The Contractor shall install, wire, and adjust the alignment of the video vehicle detection system in accordance to the manufacturer’s recommendations and requirements. The Contractor shall be responsible for adjusting the alignment of the video vehicle detection system for all construction staging changes and for maintaining proper alignment throughout the project. A representative of the approved control equipment vendor shall be present and assist the contractor in setting up and maintaining the video vehicle detection system. An in-cabinet video monitor shall be provided with all video vehicle detection systems and shall be included in the item Temporary Traffic Signal Installation.

When called for in the plans, the UPS cabinet shall be mounted to the temporary traffic signal cabinet and meet the requirements of UNINTERRUPTABLE POWER SUPPLY of these Special Provisions.

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

All emergency vehicle priority equipment (light detectors, light detector amplifiers, confirmation beacons, etc.) as shown on the temporary traffic signal plans shall be provided by the Contractor. It shall be the Contractor’s responsibility to contact the municipality or fire district to verify the brand of emergency vehicle priority equipment to be installed prior to the contract bidding. The equipment must be completely compatible with all components of signal equipment currently in use by the County. All light operated systems shall operate at a uniform rate of 14.035 hz  $\pm$ 0.002, or as otherwise required by the Engineer. All labor and material required to install and maintain the Emergency Vehicle Priority system shall be included in the cost of the item TEMPORARY TRAFFIC SIGNAL INSTALLATION.

When directed by the Engineer, this item shall also include operational items such as: controller database changes, timing changes, activation/deactivation of phases, relocation of signal heads, relocation / reconfiguration of detectors (microwave and/or video), and bagging / unbagging signal heads. On temporary traffic signal installations with detector loops, coilable non-metallic conduit shall be used for detector loop raceways from the saw-cut to 10 feet up the wood pole, unless otherwise shown on the plans. Coilable non-metallic conduit shall meet the requirements of NEC Article 343 and meet the requirements of COILABLE NON-METALLIC CONDUIT of the Special Provisions.

All existing street name and intersection regulatory signs shall be removed from existing poles and relocated to the temporary signal span wire. If new mast arm assemblies and posts are specified for the permanent signals, the signs shall be relocated to the new equipment at no extra cost.

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

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

Maintenance shall meet the requirements of the "Standard Specifications" and the "Maintenance of Existing Traffic Signal Installation" section of these special provisions. Maintenance of temporary signals and of the existing signals shall be included in the cost of this item. When temporary traffic signals are to be installed at locations where existing signals are presently operating, the Contractor shall be fully responsible for the maintenance of the existing signal installation as soon as he begins any physical work on any portion of the project. Maintenance responsibility of the existing signals shall be incidental to the item TEMPORARY TRAFFIC SIGNAL INSTALLATION. In addition, a minimum of seven (7) days prior to assuming maintenance of the existing traffic signal installation(s) under this contract, the Contractor shall contact the Traffic Engineer (847) 377-7000 to request an inspection of the installation(s).

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

Basis of Payment: This work shall be paid for at the contract unit price each for TEMPORARY TRAFFIC SIGNAL INSTALLATION which shall include all costs for the installation, vehicular

detection system, UPS, modification, maintenance, operational items, complete removal of the temporary traffic signal, and all material required to complete the work.

#### **REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT**

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

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

The Contractor shall safely store and arrange for delivery of all equipment that will remain the property of LCDOT. The Contractor shall deliver, unload and stack the equipment at the owner's facility, as directed by the Engineer, within 30 days of removing it from the traffic signal installation. The Contractor shall provide three (3) copies of a list of equipment that is to remain the property of LCDOT including model and serial numbers where applicable. The Contractor shall also provide a copy of the contract plan or special provisions showing the quantities and type of equipment to be delivered. Controllers and peripheral equipment from the same location shall be boxed together (equipment from different locations may not be mixed) and all boxes and controller cabinets shall be clearly marked or labeled with the location from which they were removed. The Contractor shall be responsible for the condition of the traffic signal equipment from the time of removal until the acceptance of a receipt written by the owner indicating that the items have been returned in good condition.

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

#### **RESTORATION OF WORK AREA**

Add to Section 801 of the "Standard Specifications":

Restoration of the traffic signal work area shall be included in the related pay item such as foundation, conduit, handhole, trench and backfill, etc. and no extra compensation shall be allowed. All roadway surfaces such as shoulders, medians, sidewalks, pavement, etc. shall be restored to match the previously existing conditions. All damage to mowed lawns shall be replaced with an approved sod, and all damage to unmowed fields shall be seeded, in accordance with Section 250 and 252 of the "Standard Specifications" respectively.

#### **CABINET NEATNESS**

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

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

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

The County shall not accept maintenance of the traffic signal installations until the requirements of this specification are satisfied.

#### **VENDOR REPRESENTATION**

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

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

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

#### **INTERRUPTION OF COMMUNICATION**

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

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

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

#### **ELECTRIC SERVICE INSTALLATION**

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

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

General. The electric service installation shall be the electric service disconnecting means and it shall be identified as suitable for use as service equipment.

The electric utility contact information is noted on the plans and represents the current information at the time of contract preparation. The Contractor must request in writing for service and/or service modification within 10 days of contract award and must follow-up with the electric utility to assure all necessary documents and payment are received by the utility. The Contractor shall forward copies of all correspondence between the contractor and utility company to the Engineer of Traffic.

Materials.

- a. General. The completed control panel shall be constructed in accordance with UL Std. 508, Industrial Control Panel, and carry the UL label. Wire terminations shall be UL listed.
- b. Enclosures. All electrical service enclosures shall be UL 50, single door design, fabricated from Type 5052 H-32 aluminum or stainless steel. All seams shall be continuous welded and ground smooth, and the cabinet shall be sized to adequately house all required components with extra space for arrangement and termination of wiring. Enclosures shall meet the following additional requirements:
  1. Pole Mounted Cabinet. The cabinet shall be NEMA Type 4X. Stainless steel screws and clamps shall secure the cover and assure a watertight seal. The cover shall be removable by pulling the continuous stainless steel hinge pin. The cabinet shall have an oil-resistant gasket and a lock kit shall be provided with an internal O-ring in the locking mechanism assuring a watertight and dust-tight seal. A minimum size of 14-inches high, 9-inches wide and 8-inches deep is required. The cabinet shall be channel mounted to a wooden utility pole using assemblies recommended by the manufacturer.
  2. Ground Mounted Cabinet. The cabinet shall be NEMA Type 3R with back panel. The cabinet frame and door shall be 0.125-inch thick, the top 0.250-inch thick, and the bottom 0.500-inch thick. The door and door opening shall be double flanged. The door shall be approximately 80% of the front surface, with a full-length tamperproof stainless steel .075-inch thick hinge bolted to the cabinet with stainless steel carriage bolts and nylock nuts. The locking mechanism shall be slam-latch type with a keyhole cover. A minimum size of 40-inches high, 16-inches wide, and 15-inches deep is required. The cabinet shall be mounted upon a square Type A concrete foundation as indicated on the plans. The foundation is paid for separately.

- c. Surge Protector. Overvoltage protection, with LED indicator, shall be provided for the 120-volt load circuit by the means MOV and thermal fusing technology. The response time shall be <5n seconds and operate within a range of -40C to +85C. The surge protector shall be UL 1449 Listed.
- d. Circuit Breakers. Circuit breakers shall be standard UL listed molded case, thermal-magnetic bolt-on type, with trip-free indicating handles. 120-volt circuit breakers shall have an interrupting rating of not less than 65,000 rms symmetrical amperes. Unless otherwise indicated, the main disconnect circuit breaker for the traffic signal controller shall be rated 60 amperes, 120 V and the auxiliary circuit breakers shall be rated 10 amperes, 120 V.
- e. Fuses, Fuseholders and Power Indicating Light. Fuses shall be small-dimensional cylindrical fuses of the dual element time-delay type. The fuses shall be rated for 600 V AC and shall have a UL listed interrupting rating of not less than 10,000 rms symmetrical amperes at rated voltage. The power indicating light shall be LED type with a green colored lens and shall be energized when electric utility power is present.
- f. Ground and Neutral Bus Bars. A single copper ground and neutral bus bar, mounted on the equipment panel shall be provided. Ground and neutral conductors shall be separated on the bus bar. Compression lugs, plus 2 spare lugs, shall be sized to accommodate the cables with the heads of the connector screws painted green for ground connections and white for neutral connections.
- g. Utility Services Connection. The Contractor shall notify the Utility Company marketing representative a minimum of 30 working days prior to the anticipated date of hook-up. This 30-day advance notification will begin only after the Utility Company marketing representative has received service charge payments from the Contractor. Prior to contacting the Utility Company for service connection, the service installation controller cabinet and cable must be installed for inspection by the Utility Company.
- h. Ground Rod. Ground rods shall be copper-clad steel, a minimum of 10-feet in length, and 3/4-inch in diameter. Ground rod resistance measurements to ground shall be 25 ohms or less. If necessary additional rods shall be installed to meet resistance requirements at no additional cost to the contract.

#### Installation

- a. General. The Contractor shall confirm the orientation of the traffic service installation and its door side with the Engineer, prior to installation. All conduit entrances into the service installation shall be sealed with a pliable waterproof material.
- b. Pole Mounted. Brackets designed for pole mounting shall be used. All mounting hardware shall be stainless steel. Mounting height shall be as noted on the plans or as directed by the Engineer.

- c. Ground Mounted. The service installation shall be mounted plumb and level on the foundation and fastened to the anchor bolts with hot-dipped galvanized or stainless steel nuts and washers. The space between the bottom of the enclosure and the top of the foundation shall be caulked at the base with silicone.

The service installation shall be paid for at the contract unit price each for SERVICE INSTALLATION of the type specified which shall be payment in full for furnishing and installing the service installation complete. The type A foundation which includes the ground rod shall be paid for separately. SERVICE INSTALLATION, POLE MOUNTED shall include the 3/4-inch grounding conduit, ground rod, and pole mount assembly. Any changes by the utility companies shall be approved by the Engineer and paid for as an addition to the contract according to Article 109.05 of the "Standard Specifications".

#### **GROUNDING OF TRAFFIC SIGNAL SYSTEMS**

Revise Section 806 of the "Standard Specifications" to read:

General. All traffic signal systems, equipment and appurtenances shall be properly grounded in strict conformance with the NEC. See "IDOT District One Standard Traffic Signal Design Details" for additional information.

The grounding electrode system shall include a ground rod installed in all foundations, and the service installation. An additional ground rod will be required at locations where measured resistance to ground exceeds 25 ohms. Ground rods are included in the associated pay items and will not be paid for separately. Testing shall be according to Article 801.13.

- a) The grounded conductor (neutral conductor) shall be white color-coded. This conductor shall be bonded to the equipment-grounding conductor only at the Electric Service Installation. All power cables shall include one neutral conductor of the same size.
- b) The equipment-grounding conductor shall be green color-coded. The following is in addition to Article 1087.01 of the "Standard Specifications".
  - 1) Equipment-grounding conductors shall be XLP insulated No. 6, unless otherwise noted on the plans, and bonded to the grounded conductor (neutral conductor) only at the electric service installation. The Earth shall not be used as the equipment-grounding conductor, and no splices shall be allowed in the cable between ground rods. The equipment-grounding conductor is paid for separately.
  - 2) Equipment-grounding conductors shall be bonded, using a UL listed grounding connector, to all traffic signal mast arm poles, traffic signal posts, pedestrian posts, pull boxes, handhole frames and covers and other metallic enclosures throughout the traffic signal wiring system, except where noted herein. A UL listed electrical joint compound shall be applied to all conductors' terminations, connector threads and contact points.
  - 3) All metallic and non-metallic raceways containing traffic signal circuit runs shall have a continuous equipment-grounding conductor, with the following exceptions: Raceways containing only detector loop lead-in circuits, circuits under 50 volts and/or fiber optic cable will not be required to include an equipment-grounding conductor.



- c) The grounding electrode conductor shall be similar to the equipment-grounding conductor in color coding (green) and size. The grounding electrode conductor is used to connect the ground rod to the equipment-grounding conductor and is bonded to ground rods via exothermic welding, UL listed pressure connectors, UL listed clamps or other UL approved listed means.

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

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

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

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

Mechanical connections to the frame and cover may be approved in lieu of the listed welding procedures. The contractor shall submit a detailed plan indicating the proposed connectors and installation procedures for review and approval by the Engineer prior to the start of any work on this item.

The grounding cable shall be paid for separately.

Basis of Payment: This work shall be paid for at the contract unit price each for GROUNDING EXISTING HANDHOLE FRAME AND COVER, which shall be payment in full for grounding one handhole complete, regardless of the type of handhole or its location.

#### **UNDERGROUND CONDUIT**

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

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

Description. This item shall consist of furnishing and installing galvanized steel conduit, fittings and accessories in the ground, either pushed, trenched, plowed, or directionally bored, with fittings complete as specified herein and as shown on the Contract drawings.

Add the following to Article 810.04 of the "Standard Specifications":

Pavement, driveways, and curbs shall not be removed to install electrical conduits. All buried conduits shall be placed at a minimum depth of 30 inches, except under railroad tracks, where

the minimum depth shall meet the written requirements of the railroad company. All conduit couplings shall be threaded. Conduits terminating in junction and pull boxes shall be terminated with galvanized steel bushings.

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

Revise Article 810.07 of the "Standard Specifications" to read:

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

### **CONCRETE FOUNDATIONS**

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

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

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

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

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

Concrete Foundations, Type E for Mast Arm and Combination Mast Arm Poles shall be 15 ft. minimum depth and in accordance with the latest edition of IDOT standard 878001.

The Resident Engineer shall approve the foundation excavation prior to placing any concrete.

### **HANDHOLES**

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

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

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

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

### **COILABLE NON-METALLIC CONDUIT**

Description. This work shall consist of furnishing and installing empty coilable non-metallic conduit (CNC) for detector loop raceways.

General. The CNC installation shall be in accordance with Sections 810 and 811 of the Standard Specifications except for the following:

Add the following to Article 810.03 of the Standard Specifications:

CNC meeting the requirements of NEC Article 353 shall be used for detector loop raceways to the handholes.

Add the following to Article 811.03 of the Standard Specifications:

On temporary traffic signal installations with detector loops, CNC meeting the requirements of NEC Article 353 shall be used for detector loop raceways from the saw-cut to 10 feet (3m) up the wood pole, unless otherwise shown on the plans

Basis of Payment. All installations of CNC shall be included in the cost of the contract and not paid for separately.

### **DETECTOR LOOP**

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

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

Loop detectors shall be installed according to the requirements of the "IDOT District 1 Standard Traffic Signal Design Details". Saw-cuts (homeruns on preformed detector loops) from the loop to the edge of pavement shall be made perpendicular to the edge of pavement in order to minimize the length of the saw cut (homerun), unless otherwise directed by the Engineer or as shown on the plans. Polyethylene unit duct shall be used for detector loop raceways to the handholes. Coilable non-metallic conduit shall meet the requirements of NEC Article 343. All coilable non-metallic conduit used for traffic signal loop detector runs shall be included in cost of the detector loop.

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

The resistance to ground for new detector loops shall be a minimum of 500 megaohms under any conditions of weather or moisture. Inductance shall be more than 50 microhenries and less than 700 microhenries. Quality readings shall be more than 5. All new or replacement lead-in cables shall be connected to the loop interface panel using appropriate crimp-on, spade type connectors. Detector loop measurements shall include the saw cut and the length of the loop lead-in to the edge of pavement. The lead-in wire, including all necessary connections for proper operations, from the edge of pavement to the handhole, shall be included in the cost of the detector loop. Coilable non-metallic conduit, trench and backfill, and drilling of pavement or handholes shall be incidental to detector loop quantities.

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

- (a) Type I: Each detector loop, which is to be installed in new asphalt pavement, must be placed in the pavement below the surface course. Each detector loop, which is to be installed in an existing asphalt or concrete pavement, shall be located to miss existing pavement cracks, if possible. Loop sealant used to seal new loops shall consist of a two-component thixotropic, chemically-cured polyurethane. The sealant will be Chemque Q-Seal 295, Perol Elastic Cement A/C Grade or an approved equal. The sealant shall be installed 1/8 inch below the pavement surface. Excess sealant, which accumulates on the surface, shall be removed immediately. Loop sealant used to reseal existing loops shall be composed of an asphalt-based compound. The sealant will be Doseal 230 or an approved equal.
- (b) Preformed. This work shall consist of furnishing and installing a rubberized heat resistant preformed traffic signal loop in accordance with the "Standard Specifications", except for the following:

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

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

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

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

If in the opinion of the Engineer construction conditions are suitable for loop installation(s), the Engineer shall notify the Contractor to proceed. The detector loops shall be installed and fully operational within fourteen (14) calendar days following notification to proceed by the Engineer. This 14-day period shall be in effect throughout the entire year, including the off season, regardless of the Contractor's working day status. Failure by the Contractor to complete the loop installation(s) within the specified timeframe shall result in liquidated damages in the amount of \$500.00 per calendar day, per occurrence.

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

#### ELECTRIC CABLE

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

Add the following to the Article 1076.04(d) of the Standard Specifications:

Service cable may be single or multiple conductor cable.

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

### **GROUNDING CABLE**

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

Add to Article 817.02 of the "Standard Specifications":

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

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

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

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

### **RAILROAD INTERCONNECT CABLE**

The cable shall meet the requirements of Section 873 of the "Standard Specifications", except for the following:

Add the following to Article 873.02 of the "Standard Specifications":

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

Revise Article 873.06 of the "Standard Specifications" to read:

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

### **ELECTRIC CABLE IN CONDUIT, COAXIAL**

This work shall consist of furnishing and installing a Belden 1694A RG-6/U Type Digital Coaxial Cable or approved equal. The cable shall be a 75-ohm coaxial cable with 18 AWG solid bare copper conductor, tinned copper braided shield (95% min), and black polyvinyl chloride jacket. The nominal outside diameter shall be 0.274 inches. Amphenol 31-71032 (or equivalent) BNC plug connectors shall be used at both the PTZ camera and traffic signal cabinet ends of the cable. An Amphenol CLT-2 crimping tool is required for the termination.

No splices shall be allowed in the cable between the PTZ camera and the traffic signal cabinet.

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

#### **EMERGENCY VEHICLE PRIORITY SYSTEM LINE SENSOR CABLE, NO. 20 3/C**

This work shall consist of furnishing and installing lead-in cable for light detectors installed at existing and/or proposed traffic signal installations as part of an emergency vehicle priority system. The work includes installation of the lead-in cables in existing and/or new conduit. The electric cable shall be shielded and have (3) stranded conductors colored blue, orange, and yellow with a stranded tinned copper drain wire. The cable shall meet the requirements of the manufacturer of the Emergency Vehicle Priority System Equipment.

Basis of Payment. This work will be paid for at the contract unit price per foot for EMERGENCY VEHICLE PRIORITY SYSTEM LINE SENSOR CABLE, NO. 20 3/C, which price shall be payment in full for furnishing, installing and making all electrical connections necessary for proper operations.

#### **ELECTRICAL CABLE IN CONDUIT, VIDEO NO 20 4 C**

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

Basis of payment. This work will be paid for at the contract unit price per foot for ELECTRIC CABLE IN CONDUIT, VIDEO NO. 20 4 C, which price shall be payment in full for furnishing the material, making all electrical connections and installing the cable complete, measured as specified herein.

#### **OUTDOOR RATED NETWORK CABLE**

This work shall consist of furnishing and installing a network cable from the traffic signal cabinet to the associated field device shown on the plans.

The outdoor rated network cable shall be a black Category 5e cable, meeting the TIA/EIA 568-B.2 telecommunication standards. The cable shall be composed of 24 AWG solid bare copper conductors, twisted pairs, polyolefin insulation, inner LLPE jacket, overall shield (100% coverage), 24 AWG stranded TC drain wire, industrial grade sunlight- and oil-resistant LLPE jacket. The cable shall be capable of performing from -40 °C to 70 °C.

Each end of the cable shall be terminated with an RJ-45 connector installed according to the TIA/EIA 568B standard. The drain wire at each end shall be terminated with a ring lug and attached to a suitable ground point.

The cable shall be Belden 7937A or approved equivalent.

The work shall be performed according to the applicable portions of Section 873 of the "Standard Specifications", and details as shown on the plans.

Basis of payment. This work will be paid for at the contract unit price per foot for OUTDOOR RATED NETWORK CABLE. The unit price shall include furnishing and installing the cable, and making all connections necessary for proper operation. Furnishing and installing the RJ-45 connectors, ring terminals and grounding the OUTDOOR RATED NETWORK CABLE shall be included in the cost of this pay item.

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

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

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

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

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

Cabinets shall be designed for NEMA TS2 Type 1 operation. All cabinets shall be pre-wired for a minimum of eight (8) phases of vehicular, four (4) phases of pedestrian, and four (4) phases of overlap operation. Individual load switches shall be provided for each vehicle, pedestrian and right turn overlap phase.

- Cabinets – Controller cabinets shall have a footprint of approximately 44 inches wide by 26 inches deep. Type IV cabinets shall be 65 inches high, and shall provide a third shelf for mounting additional equipment. Type V cabinets shall be 77 inches high. Cabinets shall be fabricated of 1/8" thick unpainted aluminum alloy 5052-H32. The surface shall be smooth, free of marks and scratches. All external hardware shall be stainless steel.
- Cabinet Doors – Provide front and rear doors of NEMA type 3R construction with cellular neoprene gasket that is rain tight. Door hinges shall be continuous 14-gauge stainless steel and shall be secured with ¼-20 stainless steel carriage bolts. Standard equipment shall include a three-point locking system that secures the door at the top, bottom and center. A corbin lock with two keys shall also be furnished. The door shall be equipped with a two-position doorstop, one at 90° and one at 120°.
- Controller Harness – Provide a TS2 Type 2 "A" harness in addition to the TS2 Type 1 harness.
- Surge Protection – Atlantic Scientific ZoneIT Model 91391 base station, Model 91375 ZoneIT pluggable module (50kA rating) with LED status indicators, or approved equivalent.
- BIU – Containment screw required.
- Switch Guards – All switches shall be guarded.



- Back Panel – The back panel wiring shall be securely covered with a piece of plexiglass, minimum thickness 1/8-inch.
- Heating – One (1) 200-watt, thermostatically-controlled, Hoffman electric heater, or approved equivalent.
- Lighting – Four (4) LED light assemblies shall be included along the top and sides of the cabinet. The LED panels shall be controlled by a wall switch. Relume Traffic Control Box LED panels and power supply, or approved equivalent.
- Plan & Wiring Diagrams – 12" x 16" moisture sealed container attached to door.
- The cabinet shall be equipped with a pull-out drawer/shelf assembly. A 1 ½ inch deep drawer shall be provided in the cabinet, mounted directly beneath the controller support shelf. The drawer shall have a hinged top cover and shall be capable of accommodating one (1) complete set of cabinet prints and manuals. This drawer shall support 50 lbs. in weight when fully extended. The drawer shall open and close smoothly. Drawer dimensions shall make maximum use of available depth offered by the controller shelf and be a minimum of 24 inches wide.
- Detector Racks – Full-size rack fully wired to support one BIU, sixteen channels of vehicle detection, and four channels of EVP.
- Field Wiring Labels – All field wiring shall be labeled.
- Field Wiring Termination – Approved channel lugs required.
- Power Supply – Provide a nonconductive shield.
- Circuit Breaker – The signal circuit breaker shall be sized for the proposed load, but shall not be rated less than thirty (30) amps.
- Police Door – Provide wiring and termination for plug-in manual phase advance switch.
- Railroad Pre-Emption Test Switch – Eaton 8830K13 SHA 1250 or approved equivalent.
- MMU – 16 Channel, LCD display, IP addressable (Ethernet) Malfunction Management Unit. The MMU shall be connected to the Ethernet switch with a CAT 5e cable, and configured for proper communication.
- Door Alarm – The front and rear doors shall be equipped with switches wired to the traffic signal controller alarm 1 input for logging and reporting of a door open condition.

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

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

The controller shall meet the requirements for NEMA-TS2 standards for a Type 1 Cabinet. The controller shall be the latest model available that is compatible with "Centracs" software or "Aries" software, currently in use by LCDOT. Controller software compatibility requirements are based upon the controller's location in the communication system, and shall be as shown on the plans. The controller shall have the latest version of NTCIP software installed, and be equipped with an Ethernet port and a removable data key to save the controller database.

The cabinet shall be NEMA TS2 Type 1 design, meeting the requirements of CONTROLLER CABINET AND PERIPHERAL EQUIPMENT.

Basis of payment. This item will be paid for at the contract unit price each for FULL-ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL which price shall be payment in full for furnishing and installing the cabinet and controller, complete with necessary connections and equipment for proper operation, at a location designated by the Engineer.

**TRAFFIC ACTUATED CONTROLLER & CABINET INTERCONNECTED WITH RAILROADS**

Add the following to Articles 1073.01 (c) (2) and 1074.03 (a) (5) (e) of the Standard Specifications:

Controllers and cabinets shall be new and NEMA TS2 Type 1 design.

A method of monitoring and/or providing redundancy to the railroad preemptor input to the controller shall be included as a component of the Railroad, Full Actuated Controller and Cabinet installation and be verified by the traffic signal equipment supplier prior to installation. The cabinet shall be NEMA TS2 Type 1 design, meeting the requirements of CONTROLLER CABINET AND PERIPHERAL EQUIPMENT and FULL ACTUATED CONTROLLER, IN TYPE IV CABINET, (SPECIAL).

Railroad interconnected controllers and cabinets shall be assembled only by an approved traffic signal equipment supplier. All railroad interconnected (including temporary railroad interconnect) controllers and cabinets shall be new, built, tested and approved by the controller equipment vendor, in the vendor's IDOT District 1 facility, prior to field installation. The vendor shall provide the technical equipment and assistance as required by the Engineer to fully test this equipment.

**MASTER CONTROLLER**

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

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

This item shall also include the installation of an outdoor network interface for termination of the telephone service and a US Robotics 56k modem. The outdoor network interface shall be mounted to the inside of the cabinet in a location suitable to provide access for termination of the telephone service. The outdoor network interface shall be equipped with a standard Three-Electrode Heavy Duty Gas Tube Surge Arrestor.

**INTERSECTION MONITOR**

This item shall consist of furnishing and installing an Intersection Monitor at a new or existing traffic signal controller. This item is necessary at isolated (non-interconnected) traffic signals in order to monitor the intersection and controller operations. The Intersection Monitor shall be either an internal module installed in the controller, or an external data key, and shall be the latest model available. The Intersection Monitor shall be fully compatible with "Aries" traffic signal management software, currently in use by LCDOT.

This item shall also include the installation of an outdoor network interface for termination of the telephone service and a US Robotics 56k modem. The outdoor network interface shall be mounted to the inside of the cabinet in a location suitable to provide access for termination of the telephone service. The outdoor network interface shall be equipped with a standard Three-Electrode Heavy Duty Gas Tube Surge Arrestor.

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

**INDUCTIVE LOOP DETECTOR.**

Add the following to Article 1079.01 of the Standard Specifications:

Contracts requiring new cabinets shall provide for rack mounted detector amplifier cards. Detector amplifiers shall provide LCD displays with loop frequency, inductance, and change of inductance readings.

**UNINTERRUPTABLE POWER SUPPLY, SPECIAL**

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

Revise Article 1074.04(a) (1) of the Standard Specifications to read:

The UPS shall be line interactive or double conversion and provide voltage regulation and power conditioning when utilizing utility power.

The UPS shall be sized appropriately for the intersection's normal traffic signal operating connected load, plus 20 percent (20%). The total connected traffic signal load shall not exceed the published ratings for the UPS. The UPS shall provide a minimum of six (6) hours of normal operation run-time for signalized intersections with LED type signal head optics at 77 °F (25 °C) (minimum 700 W/1000VA active output capacity, with 90 percent minimum inverter efficiency).

Revise Article 1074.04(a) (10) of the Standard Specifications to read:

The UPS shall be compatible with the County's approved traffic controller assemblies utilizing NEMA TS 1 or NEMA TS 2 controllers and cabinet components for full time operation.

Revise Article 1074.04(a) (17) of the Standard Specifications to read:

When the intersection is in battery backup mode, the UPS shall bypass all internal cabinet lights, ventilation fans, cabinet heaters, service receptacles, any lighted street name signs, any automated enforcement equipment and any other devices directed by the Engineer.

Revise Article 1074.04(b) (2)b of the Standard Specifications to read:

Batteries, inverter/charger and power transfer relay shall be housed in a separate NEMA Type 3R cabinet. The cabinet shall be Aluminum alloy, 5052-H32, 0.125-inch thick and have a natural mill finish.

Revise Article 1074.04(b) (2)c of the Standard Specifications to read:

No more than three batteries shall be mounted on individual shelves for a cabinet housing six batteries and no more than four batteries per shelf for a cabinet housing eight batteries.

Add the following to Article 1074.04(b) (2)e of the Standard Specifications:

The door shall be equipped with a two-position doorstop, one at 90° and one at 120°.

Revise Article 1074.04(b) (2)g of the Standard Specifications to read:

The door shall open to the entire cabinet and have a neoprene gasket, an Aluminum continuous piano hinge with stainless steel pin, and a three point locking system. The cabinet shall be provided with a main door lock which shall operate with a traffic industry conventional No. 2 key. Provisions for padlocking the door shall be provided.

Add the following to Article 1074.04(b) (2) of the Standard Specifications:

j. The battery cabinet shall have provisions for an external generator connection.

Add the following to Article 1074.04(c) of the Standard Specifications:

(8) The UPS shall include a tip or kill switch installed in the battery cabinet, which shall completely disconnect power from the UPS when the switch is manually activated.

(9) The UPS shall incorporate a flanged electric generator inlet for charging the batteries and operating the UPS. The generator connector provided shall be a NEMA L5-15P or NEMA L5-30P locking plug. The connector shall be rated for a minimum of 15/125VAC.

(10) A power adapter cord shall be provided which converts the supplied NEMA locking connector to a NEMA 5-15P plug. The power adapter cord shall be rated for a minimum of 15A/125VAC and shall be a minimum of 12 inches in length.

(11) Access to the generator inlet shall be from a secured weatherproof lift cover plate or behind a locked battery cabinet police panel.

#### Battery System.

Revise Article 1074.04(d) (3) of the Standard Specifications to read:

All batteries supplied in the UPS shall be either gel cell or AGM type, deep cycle, completely sealed, prismatic lead calcium based, silver alloy, valve regulated lead acid (VRLA) requiring no maintenance. All batteries in a UPS installation shall be the same type; mixing of gel cell and AGM types within a UPS installation is not permitted.

Revise Article 1074.04(d) (4) of the Standard Specifications to read:

Batteries shall be certified by the manufacturer to operate over a temperature range of -13 to 160 °F (-25 to + 71 °C) for gel cell batteries and -40 to 140 °F (-40 to + 60 °C) for AGM type batteries.

Add the following to Article 1074.04(d) of the Standard Specifications:

- (9) The UPS shall consist of an even number of batteries that are capable of maintaining normal operation of the signalized intersection for a minimum of six hours. Calculations shall be provided showing the number of batteries of the type supplied that are needed to satisfy this requirement. A minimum of four batteries shall be provided.

Add the following to the Article 1074.04 of the Standard Specifications:

- (e) Warranty. The warranty for an uninterruptable power supply (UPS) shall cover a minimum of two years from date the equipment is placed in operation; however, the batteries of the UPS shall be warranted for full replacement for a minimum of five years from the date the traffic signal and UPS are placed into service.

Basis of payment. This item shall be paid for at the contract unit price, each, for furnishing and installing the UNINTERRUPTABLE POWER SUPPLY, SPECIAL. The price shall include the UPS/Inverter unit, Bypass Switch, Batteries, Cabinet, wiring harnesses, power adapter cord, and all associated equipment and materials necessary for proper operation.

**EMERGENCY VEHICLE PRIORITY SYSTEM**

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

If not marked in the Contract plans, it shall be the Contractor's responsibility to contact the municipality or fire district to verify the brand of emergency vehicle preemption equipment to be installed prior to the contract bidding. The equipment must be of the latest type manufactured and must be completely compatible with all components of signal equipment currently in use by the County.

All new installations shall be equipped with confirmation beacons as shown on the IDOT District 1 "Standard Traffic Signal Design Details". The confirmation beacon shall consist of a PAR 38 white LED flood lamp (90 watt equivalent, approved by the Engineer) for each direction of traffic. The lamp shall have an adjustable mount with a weatherproof enclosure for cable splicing. All hardware shall be cast aluminum or stainless steel. Holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires. In order to maintain uniformity between communities, the confirmation beacons shall indicate when the control equipment receives the preemption signal. The preemption movement shall be signalized by a flashing indication at the rate specified by Section 4L.01 of "MUTCD". The stopped preempted movements shall be signalized by a continuous indication.

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

This item shall include any required modifications to an existing traffic signal controller as a result of the addition of the EMERGENCY VEHICLE PRIORITY SYSTEM.

Basis of Payment. The work shall be paid for at the contract unit price each for furnishing and installing LIGHT DETECTOR and LIGHT DETECTOR AMPLIFIER. Furnishing and installing the confirmation beacon shall be included in the cost of the Light Detector. Any required modifications to the traffic signal controller shall be included in the cost of the LIGHT

DETECTOR AMPLIFIER. The light detector amplifier shall be paid for on a basis of (1) one each per intersection controller and shall provide operation for all movements required in the pre-emption phase sequence.

**STEEL MAST ARM ASSEMBLY AND POLE**

**STEEL COMBINATION MAST ARM ASSEMBLY AND POLE**

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

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

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

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

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

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

The base of the mast arm pole shall be protected by a bolt-on galvanized metal shroud or an approved equal. The shroud shall be of sufficient strength to deter pedestrian and vehicular damage. The shroud shall be constructed and designed to allow air to circulate throughout the mast arm but not allow infestation of insects or other animals, and such that it is not hazardous to probing fingers and feet. All mounting hardware shall be stainless steel.

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

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

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

Base covers for mast arm poles shall be cast aluminum. All mast arms, mast arm poles, luminaire arms, and any exposed steel hardware shall be hot-dipped galvanized, and then powder-coated black by the supplier/manufacturer, as described below or an approved alternative finishing method. Cast aluminum base covers shall be powder-coated black by the supplier/manufacturer, as described below or an approved alternative finishing method.

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

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

The manufacturer shall warranty the finish of all components for a period of at least 5 years from the date of shipment. The contractor shall provide a copy of the warranty to the Engineer, upon request.

All chips, scrapes, scratches, etc. in the paint shall be touched-up by the Contractor according to the manufacturer's recommendations, with matching paint supplied by the manufacturer.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

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

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

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

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

Luminaires shall be installed at a minimum mounting height of forty-five (45) feet, and shall be paid for separately.

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

- Round, tapered, 16-sharp fluted pole.
- Round, tapered, smooth, standard-curved, flange-connected, traffic signal mast arm

The two-piece mast arm base cover shall be cast aluminum, and shall be manufactured and/or supplied by the same company as the mast arm assembly and pole. Manufacturer designations for the two-piece mast arm base cover to be used with (SPECIAL) MAST ARM ASSEMBLIES include the following:

- Hamilton 6401SS (Sternberg)
- Lake County AC1 base cover (Valmont)

#### **LUMINAIRE**

Add the following to Article 1067.01(e) of the "Standard Specifications":

The luminaire housing shall be cobra head style.

Revise Article 1067.01(i) of the "Standard Specifications" to read:

The luminaire shall be painted black or powder-coated black to match the finish of STEEL COMBINATION MAST ARM ASSEMBLY AND POLE (SPECIAL).

#### **TRAFFIC SIGNAL POST**

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

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

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

#### **TRAFFIC SIGNAL POST (SPECIAL)**

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

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

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

All chips, scrapes, scratches, etc. in the paint shall be touched-up by the Contractor according to the manufacturer's recommendations, with matching paint supplied by the manufacturer.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

Pedestrian pushbutton stations shall be mounted to signal posts according to the following: The top and bottom of the station shall be secured by drilling, tapping, and installing a 3/8-inch stainless steel threaded bolt. Self-tapping screws are not allowed. Anti-seize lubricating compound shall be applied to all pushbutton and pushbutton station hardware. Spacers made of 3/4-inch aluminum conduit shall be installed behind the pushbutton station, to level and plumb the station.

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



- Round, straight (non-tapered), five (5)-inch diameter, 12-flat fluted post.
- A ball center cap for the top of the post, instead of a tenon.
- The base section of the post shall be approximately forty-three (43) inches tall.

Manufacturer designations for TRAFFIC SIGNAL POST (SPECIAL) include the following:

- MainStreet Series (100SJ) base (Beacon)
- Hamilton Series (5400D) base (Sternberg)

### **PEDESTRIAN PUSH-BUTTON**

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

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

Pedestrian Push-button assembly shall be a Campbell Company 4 EVR CL with Enlightened Interface Module (ENIM), a Polara Bulldog BDL3-Y with Latching Push Button Control Unit (LPBCU), or approved equivalent.

The pedestrian station shall be a Campbell Company 912H Station, Polara PBF9X12 or approved equivalent.

The station shall be installed with a 9-inch by 12-inch retro-reflective sign, according to the following: Where pedestrian signal heads are used, pedestrian signs shall provide the "Push Button for" legend, with the Walking Man symbol and arrow (R10-3). Where no pedestrian signal heads are used, pedestrian signs shall provide the "Push Button for Green Light" legend with arrow (R10-4 with arrow), or as specified on the plans.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

Anti-seize lubricating compound shall be applied to all pushbutton and pushbutton station hardware.

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

### **ILLUMINATED SIGN, LIGHT EMITTING DIODE**

Delete last sentence of Article 1084.01(a) and add "Mounting hardware shall be black polycarbonate or galvanized steel and similar to mounting Signal Head hardware and bracket specified herein and shall provide tool free access to the interior."

Revise the second paragraph of Article 1084.01(a) of the Standard Specifications to read:

The exterior surface of the housing shall be acid-etched and shop painted with one coat of zinc-chromate primer and two coats of exterior enamel. The housing shall be the same color (yellow or black) to match the existing or proposed signal heads. The painting shall be according to Section 851.

Add the following to Article 1084.01 (b) of the Standard Specifications:

The message shall be formed by rows of LEDs. The sign face shall be 24 inches by 24 inches .

Add the following to Article 1084.01 of the Standard Specifications:

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

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

Basis of payment. This work shall be paid for at the unit price each for ILLUMINATED SIGN, LIGHT EMITTING DIODE.

#### **LED INTERNALLY ILLUMINATED STREET NAME SIGN**

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

##### (a) Description.

The LEDs shall be white in color and utilize InGaN or UV thermally efficient technology. The LED Light Engines shall be designed to fit inside a standard fluorescent illuminated street sign housing in lieu of fluorescent lamps and ballasts. The LED internally-illuminated street name sign shall display the designated street name clearly and legibly in the daylight hours without being energized and at night when energized. The sign assembly shall consist of a four-, six-, or eight-foot aluminum housing. White translucent 3M DG<sup>3</sup> reflective sheeting sign faces with the street name applied in 3M/Scotchlite Series 1177 or current 3M equivalent transparent green shall be installed in hinged doors on the side of the sign for easy access to perform general cleaning and maintenance operations. Illumination shall occur with LED Light Engine as specified.

##### (b) Environmental Requirements.

The LED lamp shall be rated for use in the ambient operating temperature range of -40 to +50°C (-40 to +122°F) for storage in the ambient temperature range of -40 to +75°C (-40 to +167°F).

##### (c) General Construction.

1. The LED Light Engine shall be a single, self-contained device, for installation in an existing street sign housing. The power supply must be designed to fit and mounted on the inside wall at one end of the street sign housing. The LED Light Engine shall be mounted within the inner top portion of the housing and no components of the light source shall sit between the sign faces.
2. The assembly and manufacturing processes of the LED Light Engine shall be designed to ensure that all LED and electronic components are adequately supported

to withstand mechanical shocks and vibrations in compliance with the specifications of the ANSI, C136.31-2001 standards.

(d) Mechanical Construction.

1. The sign shall be constructed using a weatherproof, aluminum housing consisting of an extruded aluminum top with a minimum thickness of .140" x 10 3/4" deep (including the drip edge). The extruded aluminum bottom is .094" thick x 5 7/8" deep. The ends of the housing shall be cast aluminum with a minimum thickness of .250". A six-foot sign shall be 72 5/8" long and 22 5/16" tall and not weigh more than 77 pounds. An eight-foot sign shall be 96 5/8" long and 22 5/16" tall and not weigh more than 92 pounds. All corners are continuous TIG (Tungsten Inert Gas) welded to provide a weatherproof seal around the entire housing.
2. The door shall be constructed of extruded aluminum. Two corners are continuous TIG welded with the other two screwed together to make one side of the door removable for installation of the sign face. The door is fastened to the housing on the bottom by a full length, .040" x 1 1/8" open stainless steel hinge. The door shall be held secure onto a 1" wide by 5/32" thick neoprene gasket by three (six total for two-way sign) quarter-turn fasteners to form a watertight seal between the door and the housing.
3. The sign face shall be constructed of .125" white translucent polycarbonate. The letters shall be 8" upper case and 6" lower case. The sign face legend background shall consist of 3M/Scotchlite Series 4090T or current equivalent 3M translucent DG<sup>3</sup> white VIP (Visual Impact Performance) diamond grade sheeting (ATSM Type 9) and 3M/Scotchlite Series 1177 or current 3M equivalent transparent green acrylic EC (electronic cut-able) film applied to the front of the sign face. The legend shall be framed by a white polycarbonate border. A logo symbol and/or name of the community may be included with approval of the Engineer.
4. All surfaces of the sign shall be etched and primed in accordance to industry standards before receiving appropriate color coats of industrial enamel. The sign frame shall be painted black with a durable powder coated process.
5. All fasteners and hardware shall be corrosion resistant stainless steel. No tools are required for routine maintenance.
6. All wiring shall be secured by insulated wire compression nuts.
7. A wire entrance junction box shall be supplied with the sign assembly. The box may be supplied mounted to the exterior or interior of the sign and provide a weather tight seal.
8. Each sign shall be activated by a photocell mounted/installed on the side of the sign frame.
9. Brackets and Mounting: LED internally-illuminated street name signs will be factory drilled to accommodate mast arm two-point support assembly mounting brackets.

(e) Electrical.

1. Photocell shall be rated 105-305V, turn on at 1.5 fcs. with a 3-5 second delay. A manufacturer's warranty of six (6) years shall be provided. Power consumption shall be no greater than 1 watt at 120V.
2. The LED Light Engine shall operate from a 60 +/- 3 cycle AC line power over a voltage range of 80 to 135 Vac rms. Fluctuations in line voltage over the range of 80 to 135 Vac shall not affect luminous intensity by more than +/- 10%.
3. Total harmonic distortion induced into the AC power line by the LED Light Engine, operated at a nominal operating voltage, and at a temperature of +25°C (+77°F), shall not exceed 20%.
4. The LED Light Engine shall be cycled ON and OFF with a photocell as shown on the detail sheet and shall not exceed the following maximum power values:

4-Foot Sign	60 W
6-Foot Sign	90 W
8-Foot Sign	120 W

The signs shall not be energized when traffic signals are powered by an alternate energy source such as a generator or uninterruptable power source (UPS). The signs shall be connected to the generator or UPS bypass circuitry.

(f) Photometric Requirements.

1. The entire surface of the sign panel shall be evenly illuminated. The average maintained luminous intensity measured across the letters, operating under the conditions defined in Environmental Requirements and Wattage Sections shall be of a minimum value of 100 cd/m<sup>2</sup>.
2. The manufacturer shall make available independent laboratory test results to verify compliance to Voltage Range and Luminous Intensity Distribution Sections.
3. Twelve (12) 1.25 watt LED units shall be mounted on 1-inch x 22-inch metal cone printed circuit boards (MCPCB). The viewing angle shall be 120 degrees. LED shall have a color temperature of 5200k nominal, CRI of 80 with a life expectancy of 75,000 hrs.

(g) Quality Assurance.

The LED Light Engine shall be manufactured in accordance with a vendor quality assurance (QA) program. The production QA shall include statistically controlled routine tests to ensure minimum performance levels of the LED Light Engine build to meet this specification. QA process and test result documentations shall be kept on file for a minimum period of seven (7) years. The LED Light Engine that does not satisfy the production QA testing performance requirements shall not be labeled, advertised, or sold as conforming to these specifications. Each LED Light Engine shall be identified by a manufacturer's serial number for warranty purposes. LED Light Engines shall be replaced or repaired if they fail to function as intended due to workmanship or material defects within the first sixty (60) months from the date of acceptance. LED Light Engines that exhibit luminous intensities less than the minimum value specified in Photometric Section

within the first thirty-six (36) months from the date of acceptance shall be replaced or repaired.

The sign shall be mounted on the mast arm three feet to the right of the furthest right signal head, as viewed by the approaching traffic.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

The Manufacturer/Vendor shall supply shop drawings of the fixtures, sign, sign message and mounting hardware for approval. All hardware used to install the sign shall be in accordance with the manufacturer's recommendations.

Basis of Payment. This work will be paid for at the contract unit price each for furnishing and installing LED INTERNALLY ILLUMINATED STREET NAME SIGN, of the size specified, complete in place, including photocell and all related hardware, wiring, and connections required for proper operations. The #14 2/C cable from the signal cabinet to the sign shall be paid for separately.

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

Add the following to Article 720.02 of the Standard Specifications:

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

#### **SIGNAL HEADS**

Add the following to Section 1078 of the Standard Specifications to read:

All vehicle signal and pedestrian signal heads shall provide 12-inch displays, with glossy black polycarbonate housings, with the following exception: At locations where existing yellow polycarbonate heads will remain, all new signal heads shall be yellow to match the existing ones. Connecting hardware and mounting brackets shall be polycarbonate, the same color as the heads, or galvanized. A corrosive resistant anti-seize lubricant shall be applied to all metallic mounting bracket joints, and shall be visible to the inspector at the signal turn-on. Where required, incandescent bulbs shall be manufactured by Duratest, Sylvania or an approved equal.

#### **SIGNAL HEAD, LED**

This work shall consist of furnishing and installing a traffic signal head with light emitting diodes (LED) of the type specified in the plans, in accordance with Sections 880 and 1078 of the Standard Specifications for Road and Bridge Construction, and the following.

The lens of the LED signal module shall be tinted with a wavelength-matched color to reduce sun phantom effect and enhance on/off contrast. The tinting shall be uniform across the lens face, and shall not affect chromaticity. The lens shall be smooth, with the same uniform appearance as incandescent lenses.

Each individual LED signal module shall be clearly marked with the manufacturer's name, model number, date of manufacture, nominal operating voltage, and power consumption in watts.

The LED signal module shall have a one-piece neoprene gasket.

The LEDs arrow indication shall be a solid display with a minimum of three (3) outlining rows of LEDs and at least one (1) fill row of LEDs.

All LED signal modules shall be warranted for 5 years from the date of traffic signal turn-on against failures due to manufacturing, workmanship, or material defects including modules which exhibit luminous intensities less than the minimum values specified by the Institute for Transportation Engineers (ITE) LED purchase specification, "Vehicle Traffic Control Signal Heads: LED Circular Signal Supplement". Any modules that do not meet these warranty requirements shall be replaced or repaired at no expense to the County. The manufacturer's written warranty for the LED signal modules shall be included in the product submittal to the County.

**PEDESTRIAN SIGNAL HEAD, LED**  
**PEDESTRIAN SIGNAL HEAD, LED, COUNTDOWN**

This work shall consist of furnishing and installing a pedestrian countdown signal head, with light emitting diodes (LED) of the type specified in the plans, in accordance with Section 881 and Article 1078.02 of the Standard Specifications for Road and Bridge Construction, and the following.

Pedestrian Countdown Signal Heads shall not be used at signalized intersections where traffic signals and railroad warning devices are interconnected.

The nominal message-bearing surface of pedestrian signal heads shall be 12 in. x 12 in.

Pedestrian Countdown Signal Heads shall consist of two (2) 12-inch by 12-inch modules aligned vertically. The top module of the unit shall be overlapping full "HAND" and full "MAN" symbols. The bottom module of the unit shall be a two digit numerical countdown display ("00" to "99"). The counter shall begin countdown at the beginning of the pedestrian clearance interval as the pictogram of the hand starts flashing. The counter shall execute a countdown of the time, in seconds, of the pedestrian clearance interval synchronized with the controller and ending at (0) at the expiration of the pedestrian clearance interval. The counter shall be blank at all other times.

The visor for each signal shall be the tunnel visor.

The signal module shall have a one-piece neoprene gasket.

The signal module identification labels and warranty shall be according to the SIGNAL HEAD, LED section of these specifications.

**SIGNAL HEAD, LED, RETROFIT**

This work shall consist of furnishing and installing vehicle or pedestrian LED signal modules in an existing signal head, of the type and mounting specified in the plans, according to the following.

All vehicle and pedestrian LED Retrofit signal modules shall fully comply with the SIGNAL HEAD, LED; PEDESTRIAN SIGNAL HEAD, LED; and PEDESTRIAN SIGNAL HEAD, LED, COUNTDOWN sections of these specifications.

Basis of Payment. This item shall be paid for at the contract unit price each for SIGNAL HEAD, LED, of the type and mounting specified, RETROFIT or PEDESTRIAN SIGNAL HEAD, LED, RETROFIT; or PEDESTRIAN SIGNAL HEAD, LED, COUNTDOWN, RETROFIT, which price shall be payment in full for furnishing the equipment described above including LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition.

**TRAFFIC SIGNAL BACKPLATE**

Delete the second sentence of the fourth paragraph of Article 1078.03 of the Standard Specifications.

Add the following to the fourth paragraph of Article 1078.03 of the Standard Specifications:

When retro reflective sheeting is specified, it shall be Type ZZ sheeting according to Article 1091.03 and applied in preferred orientation for the maximum angularity according to the manufacturer's recommendations. The retro reflective sheeting shall be installed under a controlled environment at the manufacturer/supplier before shipment to the contractor. The aluminum backplate shall be prepared and cleaned, following recommendations of the retro reflective sheeting manufacturer.

**VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION)**

This specification sets forth the minimum requirements for a system that monitors vehicles on a roadway via processing of video images and provides detector outputs to a traffic signal controller. This work shall consist of furnishing and installing video cameras, all cables, video processors, controller interface unit, and remote communication module to operate a video vehicle detection system at one signalized intersection.

The video detection system, (complete intersection) shall be one of the following or approved equal:

- Autoscope Encore, Terra TIP, Terra TAP
- Iteris RZ-4 WDR, Vantage Edge 2, Vantage TS2-IM, Edge Connect
- Autoscope AIS-IV, Terra RackVision,

All the cables from the detection cameras to the traffic signal cabinet and within the traffic signal cabinet itself shall be included in the cost of this item.

The video detection system, (complete intersection) shall also include a LCD monitor in the traffic signal cabinet with BNC connector for video input.

The video detection camera shall be installed on top of the luminaire arm. However, occasionally overhead utility wires obstruct the camera's field of view and prevent proper detector placement. When this occurs, the camera shall be installed on a J-hook below the luminaire arm, instead of the normal mounting bracket. The cost of the J-hook shall be included in the cost of this item.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

Surge protection and grounding shall be provided to protect the video detection cameras and components located in the traffic signal cabinet.

In order for the Traffic Engineer to manipulate detection zones and view the video signal over a high-speed connection, the VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION) must be connected to either the LCDOT Gigabit Ethernet network or a VIDEO TRANSMISSION SYSTEM.

If the VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION) is being connected to the Gigabit Ethernet network, the remote communications module shall communicate over 10/100 Base T Ethernet to a LAYER II (DATA LINK) SWITCH and/or a LAYER III (NETWORK) SWITCH. The Layer II and Layer III switches shall be installed according to the plans, and shall be paid for separately.

Basis of Payment. This item will be paid for at the contract unit price each for VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION) which price shall be payment in full for furnishing all associated equipment, cables and hardware required, installing the system at one signalized intersection, and placing the system in operation to the satisfaction of the Engineer.

#### **REMOTE-CONTROLLED VIDEO SYSTEM**

This pay item shall include providing and installing a remote-controlled video system at a location designated by the Engineer. The remote-controlled video system shall be a PELCO Spectra IV SE Series Discreet Dome System or approved equal. This pay item shall include a color camera (minimum 35x optical zoom), dome assembly, all mounting hardware, connectors, cables, and related equipment necessary to complete the installation in accordance with the manufacturer's specifications.

The PTZ control, power, and coax cables from the traffic signal cabinet shall be paid for separately.

The camera shall be installed as shown on the plans, either on the luminaire arm near the luminaire, or on the combination mast arm assembly pole, angled toward the center of the intersection. When installed on the pole, the camera shall be mounted with a 14-inch pendant arm with integral transformer / power supply (Pelco IWM24-GY or approved equal). When installed on the luminaire arm, the camera shall be installed with a 30-degree tilt-adjustable bracket, and the external power supply (Pelco WCS1-4 or approved equal) shall be installed



on the pole. Cameras and external power supplies shall be installed with stainless steel straps.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

The contractor shall contact the Traffic Engineer prior to installing the Pelco camera and associated wiring, to receive final approval on the camera location.

In order for the Traffic Engineer to control the camera remotely and view the video signal over a high-speed connection, the REMOTE-CONTROLLED VIDEO SYSTEM must be connected to either the LCDOT Gigabit Ethernet network or a VIDEO TRANSMISSION SYSTEM.

If the REMOTE-CONTROLLED VIDEO SYSTEM is being connected to the Gigabit Ethernet network, then a LAYER II (DATA LINK) SWITCH and/or a LAYER III (NETWORK) SWITCH will be required. Layer II and Layer III switches shall be installed according to the plans, and shall be paid for separately.

If the REMOTE-CONTROLLED VIDEO SYSTEM is being connected to a new or existing VIDEO TRANSMISSION SYSTEM, then fiber-optic video/data transmitters and receivers may be required. Fiber-optic video/data transmitters and receivers are necessary whenever the REMOTE-CONTROLLED VIDEO SYSTEM and the VIDEO TRANSMISSION SYSTEM are installed at separate signalized intersections. When required, fiber-optic video/data transmitters and receivers shall be installed according to the plans, and shall be included in the cost of this item. The VIDEO TRANSMISSION SYSTEM shall be paid for separately.

Basis of Payment. This item will be paid for at the contract unit price each for REMOTE-CONTROLLED VIDEO SYSTEM, which price shall be payment in full for furnishing all associated equipment required, installing the system complete and in place, and placing the system in operation to the satisfaction of the Engineer.

#### CAMERA MOUNTING ASSEMBLY

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

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

Basis of payment. This work shall be paid for at the contract unit price each for CAMERA MOUNTING ASSEMBLY, which shall include all necessary mounting hardware, labor, and incidentals necessary to securely fasten the assembly to an existing pole and placing the camera in operation to the satisfaction of the Engineer. The camera, cables, connectors, and

related equipment shall be paid for separately as part of REMOTE-CONTROLLED VIDEO SYSTEM.

#### VIDEO TRANSMISSION SYSTEM

This specification sets forth the minimum requirements for a video transmission system that allows a user to transmit video output from multiple cameras to a remote location, via video transmitter(s) and a high-speed communication link.

The high-speed communication link will be either an ISDN phone line or DSL connection as indicated on the plans.

The VIDEO TRANSMISSION SYSTEM may be installed in either the intersection traffic signal cabinet or in the VIDEO COMMUNICATIONS CABINET. The Cabinet shall be paid for separately.

The VIDEO TRANSMISSION SYSTEM may include the relocation of existing video transmitter(s), ISDN modems, Cisco router, and/or high-speed Internet modem(s) to a new traffic signal cabinet. The relocation of such existing equipment to a new traffic signal cabinet shall be performed as directed by the Engineer and included in the cost of the VIDEO TRANSMISSION SYSTEM. Any item damaged during removal, storage, or reinstallation shall be repaired or replaced in kind to the satisfaction of the Engineer at the Contractor's expense.

#### System Components:

The system shall consist of video transmitter(s) (ADPRO Fast Tx or approved equal) or a high-speed Internet modem(s), a Cisco Router, and related connection cables.

#### High-Speed Internet Modem:

The high-speed Internet modem shall be provided by the County or the Internet Service Provider.

The Cisco Router shall be procured from Delcan, the County's Passage engineering consultant. Delcan shall program this equipment for the appropriate location in the County's communication network.

Basis of payment. This item will be paid for at the contract unit price each for VIDEO TRANSMISSION SYSTEM, which price shall be payment in full for furnishing and/or relocating all associated equipment required, installing the system complete and in place, and placing the system in operation to the satisfaction of the Engineer

#### COMMUNICATIONS CABINET

This specification sets forth the minimum requirements for a communications cabinet to be installed at the location(s) shown in the plans.

The Communications Cabinet shall be a Model 332 (Type 170) Controller Cabinet, with heat exchanger, or approved equal. The heat exchanger shall be thermostatically controlled to maintain the temperature between 32°F and 122°F within the enclosure. The cabinet shall be constructed of 0.125"-thickness, alloy-5052 sheet aluminum. The surface shall have a smooth, natural aluminum mill finish. The cabinet shall measure 24" wide x 30" deep x 55" high.

The communications cabinet shall have front and rear doors of NEMA type 3R construction with cellular neoprene gasket that is rain tight. Door hinges shall be continuous 14-gauge stainless steel and shall be secured with ¼-20 stainless steel carriage bolts. Standard equipment shall include a three-point locking system that secures the door at the top, bottom and center. A corbin lock with two keys shall also be furnished. The front and rear doors shall be equipped with a two-position doorstop, one at 90° and one at 120°. Door locking rods are ¼" x ¾" aluminum turned edgeways with 1" nylon rollers. Door handles shall be cast aluminum.

The front and rear doors shall be equipped with alarm switches wired to an I/O module. The I/O module shall be connected to the Layer III network switch to transmit door open and closed alarms to the TMC. The I/O device shall be a Moxa E2210, Advantech ADAM-6050, or approved equal meeting the following requirements:

- 10/100BaseT LAN connection
- Supports Modbus/TCP over a TCP/IP network
- Minimum of 8 digital dry-contact inputs (logic level 0 = short to GND, logic level 1 = open)
- -10C to +60C Power: 24VDC nominal
- Mounting: DIN rail

The communications cabinet shall be base mounted and equipped with inside flanges and anchoring holes in the front and back of the cabinet for anchoring to a base.

The communications cabinet shall be equipped with a 19" Electronic Industries Association (EIA) rack using 1.75" hole spacing for the purpose of mounting rack-mountable cabinet equipment. The cabinet shall include a fiber optic connector housing, Corning Cable Systems CCH-04U, or approved equal, and a splice housing, Corning Cable Systems CSH-03U, or approved equal, mounted on the 19" rack.

The communications cabinet shall also be equipped with a 15A rackmount power distribution unit and a pull-out drawer/ shelf assembly.

The heat exchanger handles the air inside the communication cabinet, as necessary, to maintain the equipment within the desired temperature range. Therefore, the cabinet shall be fully enclosed, with no louvers in any doors or side panels. No fans or thermostats shall be installed in the communication cabinet.

A power panel shall be included with the cabinet and shall include the following:

- 50-amp circuit breaker. This circuit breaker shall supply power to all devices in the cabinet.
- The main breaker shall be thermal magnetic type, U.L. listed for HACR service, with a minimum of 20,000 amp interrupting capacity.
- Two 15-amp load breakers with minimum 10,000 amp interrupting capacity.
- Two 20-amp load breakers with minimum 10,000 amp interrupting capacity.
- Atlantic Scientific ZoneIT Model 91391 base station, Model 91375 ZoneIT pluggable module (50kA rating) surge arrestor, with LED status indicators, or approved equivalent.
- A 15-position neutral bus bar capable of connecting three #12 wires per position.

- A 7-position ground bus bar capable of connecting three #12 wires per position.
- A NEMA type 5-15R GFI convenience outlet.

The heat exchanger shall be mounted on the side of the communications cabinet and conform to the following specifications.

- Maximum dimensions of 47 inches high x 15 inches wide x 11 inches deep
- The unit shall provide closed-loop system cooling and heating. (Heater option shall be included with the unit.)
- Unit shall be fully gasketed and maintain the NEMA 3R enclosure rating
- Shall utilize a high efficiency, convoluted, refrigerant-free, aluminum heat transfer element
- Shall operate under maximum enclosure temperature of 150°F and maximum ambient temperature of 131°F
- The unit shall dissipate a minimum of 54 Watts per °F
- Shall operate on 115 VAC, 60 Hz
- The heat exchanger shall be hard-wired to the communications cabinet power supply.
- Unit shall be UL listed

Basis of payment. This item will be paid for at the contract unit price each for COMMUNICATIONS CABINET, which price shall be payment in full for furnishing all associated equipment and labor, and installing the cabinet as shown on the plans and to the satisfaction of the Engineer. The Layer III switch, fiber optic splices and terminations, the video transmission system, if applicable, and the concrete foundation for the cabinet shall be paid for separately.

#### LAYER II (DATA LINK) SWITCH

This specification sets forth the minimum requirements for a layer II Ethernet switch that will transmit data from one traffic signal cabinet to another traffic signal cabinet containing a layer II switch or a layer III (Network) switch. The layer II switch shall be a Cisco Catalyst 2955 Series Intelligent Ethernet Switch, or approved equal.

The Layer II (Data Link) Switch shall be procured from Delcan, the County's Passage engineering consultant. Delcan shall program this equipment for the appropriate location in the County's communication network.

The layer II switch and its power supply shall be mounted to either a standard DIN rail or an equipment mounting channel in the cabinet. The power supply shall be hard-wired to the cabinet power, not plugged into one of the traffic signal cabinet power outlets.

Basis of Payment. This item will be paid for at the contract unit price each for LAYER II (DATA LINK) SWITCH, which price shall be payment in full for furnishing and installing the switch, and all necessary connectors, cables, fiber optic jumpers, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer. The VIDEO ENCODER, MEDIA CONVERTERS, and TERMINAL SERVERS shall be paid for separately.

#### LAYER III (NETWORK) SWITCH

This specification sets forth the minimum requirements for a layer III switch that will transmit video data from one traffic signal cabinet to another traffic signal cabinet or to another location having a layer III switch. The layer III switch shall be a Cisco Catalyst 3560 Series Intelligent Ethernet Switch, or approved equal.

The Layer III (Network) Switch shall be procured from Delcan, the County's Passage engineering consultant. Delcan shall program this equipment for the appropriate location in the County's communication network.

The layer III switch shall be mounted to the 19-inch equipment rack inside the cabinet. The layer III switch shall be plugged into the 15A power distribution unit inside the cabinet.

Basis of Payment. This item will be paid for at the contract unit price each for LAYER III (NETWORK) SWITCH, which price shall be payment in full for furnishing and installing the switch, and all necessary connectors, cables, fiber optic jumpers, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer. The VIDEO ENCODER, LAYER III FIBER OPTIC TRANSCEIVER MODULES, MEDIA CONVERTERS, and TERMINAL SERVERS shall be paid for separately.

FIBER OPTIC TRANSCEIVER MODULE, SFP TYPE, LONG DISTANCE

This specification sets forth the minimum requirements for a fiber optic transceiver module that plugs into a Cisco layer III gigabit ethernet switch. The module shall be a small form pluggable (SFP), long distance, single mode transceiver, Cisco GLC-LH-SM, or approved equivalent. The transceiver shall be installed in the Cisco layer III switch at the location shown on the plans.

Basis of payment. This item will be paid for at the contract unit price each for FIBER OPTIC TRANSCEIVER MODULE, SFP TYPE, LONG DISTANCE, which price shall be payment in full for furnishing and installing the module, and all necessary connectors, cables, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

FIBER OPTIC TRANSCEIVER MODULE, SFP TYPE, EXTRA LONG DISTANCE

This specification sets forth the minimum requirements for a fiber optic transceiver module that plugs into a Cisco layer III gigabit ethernet switch. The module shall be a small form pluggable (SFP), extra-long distance, single mode transceiver, Cisco GLC-ZX-SM, or approved equivalent. The transceiver shall be installed in the Cisco layer III switch at the location shown on the plans.

Basis of payment. This item will be paid for at the contract unit price each for FIBER OPTIC TRANSCEIVER MODULE, SFP TYPE, EXTRA LONG DISTANCE, which price shall be payment in full for furnishing and installing the module, and all necessary connectors, cables, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

FIBER OPTIC TRANSCEIVER MODULE, GBIC TYPE, LONG DISTANCE

This specification sets forth the minimum requirements for a fiber optic transceiver module that plugs into a Cisco layer III gigabit ethernet switch. The module shall be a Gigabit Interface Converter (GBIC) type, long distance, single mode transceiver, Cisco WS-G5486, or approved equivalent. The transceiver shall be installed in the Cisco layer III switch at the location shown on the plans. This type of transceiver module is intended for use with earlier models of Cisco layer III switches.

Basis of payment. This item will be paid for at the contract unit price each for FIBER OPTIC TRANSCEIVER MODULE, GBIC TYPE, LONG DISTANCE, which price shall be payment in full for furnishing and installing the module, and all necessary connectors, cables, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

FIBER OPTIC TRANSCEIVER MODULE, GBIC TYPE, EXTRA LONG DISTANCE

This specification sets forth the minimum requirements for a fiber optic transceiver module that plugs into a Cisco layer III gigabit Ethernet switch. The module shall be a Gigabit Interface Converter (GBIC) type, extra long distance, single mode transceiver, Cisco WS-G5487, or approved equivalent. The transceiver shall be installed in the Cisco layer III switch at the location shown on the plans. This type of transceiver module is intended for use with earlier models of Cisco layer III switches.

Basis of payment. This item will be paid for at the contract unit price each for FIBER OPTIC TRANSCEIVER MODULE, GBIC TYPE, EXTRA LONG DISTANCE, which price shall be payment in full for furnishing and installing the module, and all necessary connectors, cables, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

VIDEO ENCODER

This specification sets forth the minimum requirements for a video encoder that will transmit video data from one traffic signal cabinet to another traffic signal cabinet or to another location having a layer three switch.

The video encoder shall be an Optelecom Model C-50e MPEG-4 video encoder/decoder, or an Optelecom Model C-54e E-MC 4-channel MPEG-4 encoder, as shown on the plans, or approved equivalent. Other video encoder/decoders submitted for approval must be compatible with the Lake County Passage Advanced Traffic Management System (ATMS) software and VideoLAN VLC Media Player Release 0.8.6D or later.

The VIDEO ENCODER shall be procured from Delcan, the County's Passage engineering consultant. Delcan shall program this equipment for the appropriate location in the County's communication network.

The video encoder shall be mounted on a 16 gauge (min.) aluminum plate, and the plate shall be mounted to the cabinet side rails.

The power supply shall be mounted to either a standard DIN rail or an equipment mounting channel in the cabinet. The power supply shall be hard-wired to the cabinet power, not plugged into one of the traffic signal cabinet power outlets.

Basis of payment. This item will be paid for at the contract unit price each for VIDEO ENCODER, which price shall be payment in full for furnishing and installing the encoder, and all necessary connectors, cables, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

MEDIA CONVERTER

This specification sets forth the minimum requirements for an unmanaged Ethernet switch that performs copper-to-fiber media conversion at 10/100Mbps speeds.

The media converter shall be a Ruggedcom RMC40 Series, (Model RMC40-HI-C200) four-port, unmanaged Ethernet switch, or approved equivalent. The power supply shall be the HI voltage type (85-264VAC) and ports 3 and 4 shall be for single-mode fiber with SC connectors.

The media converter shall be mounted to either a standard DIN rail or an equipment mounting channel in the cabinet. The power supply shall be hard-wired to the traffic signal cabinet power, not plugged into one of the traffic signal cabinet power outlets. When the media converter is mounted within a communications cabinet, the power supply shall be connected to the power distribution center.

Basis of payment. This item will be paid for at the contract unit price each for MEDIA CONVERTER, which price shall be payment in full for furnishing and installing the media converter, and all necessary connectors, cables, fiber optic jumpers, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

#### TERMINAL SERVER

This specification sets forth the minimum requirements for a terminal server that will transmit signal controller data from one or more traffic signal controllers onto the Lake County PASSAGE Gigabit Ethernet network.

The terminal server shall be a Digi PortServer TS Hcc 4 four-port serial-to-Ethernet device, or approved equivalent, installed at the location shown on the plans. The terminal server shall be properly configured for its location within the Lake County PASSAGE Network, and for proper communication with the signal equipment being connected to it.

Basis of payment. This item will be paid for at the contract unit price each for TERMINAL SERVER, which price shall be payment in full for furnishing, installing, and configuring the terminal server, and all necessary connectors, cables, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

#### FIBER OPTIC CABLE

Add the following to Section 871 and Section 1076.02 of the "Standard Specifications":

This work shall consist of furnishing and installing Fiber Optical cable in conduit with all accessories and connectors. The cable shall be of the type, size, and the number of fibers specified with twelve fibers per buffer tube.

The distribution enclosure shall be a Corning Model WIC-04P Wall-Mountable Interconnect Center, or approved equivalent, capable of accommodating the required number of fibers. The distribution enclosure shall be included in the cost of the fiber optic cable, including connections to any existing cables.

All fibers being terminated shall be connected to the distribution enclosure and labeled at the connector and also at the enclosure bulkhead. The label shall include the direction and also the fiber number (e.g. S1, S2, N11, N12).

All splices and terminations on the installed fiber optic cable shall be included in the cost of the fiber optic cable. The splicing of the installed fiber optic cable to any existing fiber optic cable shall be included in the cost of this pay item.

All terminations and splices required only on existing fiber optic cable shall be paid for separately in accordance with the pay item TERMINATE FIBER IN CABINET or SPLICE FIBER IN CABINET.

The quality of the fiber optic cable, including all splices and terminations, shall be verified by testing and documentation in accordance with Article 801.13(d) of the "Standard Specifications", to the satisfaction of the Engineer.

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

Singlemode: The contractor shall splice and/or terminate the number of singlemode fibers shown on the project plans, if any. Singlemode fiber terminations shall utilize pre-fabricated, factory-terminated pigtailed fusion spliced to bare fibers. The pre-fabricated pigtailed shall have all of their fibers color coded to match the singlemode fibers in the fiber optic cable. All fusion splices shall be secured on Corning splice trays, Models M67-068, M67-110, or approved equivalent, capable of accommodating the required number of fusion splices. All single-mode connectors shall be SC compatible, with ceramic ferrules.

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

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

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

#### TERMINATE FIBER IN CABINET

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

All multi-mode connectors shall be ST compatible, with ceramic ferrules. Singlemode fiber terminations shall utilize pre-fabricated, factory-terminated (SC compatible) pigtailed fusion spliced to bare fibers. . The pre-fabricated pigtailed shall have all of their fibers color coded to match the singlemode fibers in the fiber optic cable. All fusion splices shall be secured on



Corning splice trays, Models M67-068, M67-110, or approved equivalent, capable of accommodating the required number of fusion splices. Splice trays and connector bulkheads shall be included in the cost of TERMINATE FIBER IN CABINET, and shall not be paid for separately. Connector bulkheads shall be the proper type for the fiber enclosure at the location, and shall be properly secured to the enclosure.

The quality of all fiber splices shall be verified by testing and documentation in accordance with Article 801.13(d) of the "Standard Specifications", to the satisfaction of the Engineer.

Basis of payment. This work shall be paid for at the contract unit price each for each fiber terminated in a field cabinet or inside a building as TERMINATE FIBER IN CABINET, which will be payment in full for terminating each required multimode or singlemode fiber, including all connectors, pigtails, splice trays, bulkheads, testing and documentation. The splicing of pigtails for singlemode fibers is included in the cost of TERMINATE FIBER IN CABINET, and shall not be paid for separately. This pay item shall not be used to pay for fiber terminations and/or splices completed to meet the requirements of FIBER OPTIC CABLE IN CONDUIT.

#### SPLICE FIBER IN CABINET

This work shall consist of fusion splicing singlemode fibers in a field cabinet or inside a building as indicated on the plans and as directed by the Engineer. Splices shall be secured in fiber optic splice trays within fiber optic distribution enclosures. The splice trays shall be Corning Models M67-068, M67-110, or approved equivalent, capable of accommodating the required number of fusion splices. Splice trays shall be included in the cost of SPLICE FIBER IN CABINET and shall not be paid for separately.

The quality of all fiber splices shall be verified by testing and documentation in accordance with Article 801.13(d) of the "Standard Specifications", to the satisfaction of the Engineer.

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

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

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

#### FIBER OPTIC TRACER CABLE

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

In order to trace the fiber optic cable after installation, an XLP black insulated copper cable No. 14 shall be pulled in the same conduit as the fiber optic cable. The tracer cable shall be continuous, and extend a minimum of 3 feet into the controller cabinet. The tracer cable shall be clearly marked and identified. In order to minimize the number of splices required, the tracer cable shall incorporate maximum lengths of cable supplied by the manufacturer. Splicing of the tracer cable will be allowed at the handholes only. The tracer cable splice shall use a Western Union splice soldered with resin core flux. All exposed surfaces of the solder shall be smooth. Splices shall be soldered using a soldering iron. Blowtorches or other devices which oxidize copper cable shall not be allowed for soldering operations. The splice shall be covered with underwater grade WCSMW 30/100 heat shrink tube, minimum length four (4) inches and with a minimum one (1) inch coverage over the XLP insulation.

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

#### **WIRELESS TRANSMISSION SYSTEM SHORT RANGE**

This work shall consist of the installation of a new node on the Lake County PASSAGE wireless network. This item includes the directional antenna and power injector, associated cables / wiring, and all mounting hardware.

The WIRELESS TRANSMISSION SYSTEM SHORT RANGE includes:

- One (1) Proxim TsunamiMP.11 5054-R Subscriber unit with Integrated 23dBi Antenna (Model 5054-SUR-US) or approved equivalent.
- Two (2) Proxim Model 76394 surge suppressors, or approved equivalent.
- Power wiring from the radio power injector to the circuit breaker.
- All mounting hardware.

All components of this item shall be installed as shown on the plans. The radio transceiver and antenna shall be installed as high as possible on the mast arm assembly pole. The antenna shall be directed / aimed at another antenna on the County's wireless system, (e.g. aimed at a sector antenna on a water tower), as shown on the plans and as directed by the Engineer. The power injector shall be installed inside the traffic signal cabinet.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

The WIRELESS TRANSMISSION SYSTEM SHORT RANGE electronics shall be procured from Delcan, the County's Passage engineering consultant. Delcan shall program this equipment for the appropriate location in the County's communication network.

Basis of payment. This item will be paid for at the contract unit price each for WIRELESS TRANSMISSION SYSTEM SHORT RANGE, which price shall be payment in full for furnishing and installing the power injector, antenna, and all associated connectors, cables, hardware, and other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

The Outdoor Rated Network Cable from the antenna to the traffic signal cabinet shall be paid for separately.

**WIRELESS TRANSMISSION SYSTEM LONG RANGE**

This work shall consist of the installation of a new node on the Lake County PASSAGE wireless network. This item includes the directional antenna and power injector, associated cables / wiring, and all mounting hardware.

The WIRELESS TRANSMISSION SYSTEM LONG RANGE includes:

- One (1) Proxim TsunamiMP.11 5054-R-LR Subscriber unit for extended range with Integrated 23dBi Antenna (Model 5054-SUR-LR-US) or approved equivalent.
- Two (2) Proxim Model 76394 surge suppressors, or approved equivalent.
- Power wiring from the radio power injector to the circuit breaker.
- All mounting hardware.

All components of this item shall be installed as shown on the plans. The radio transceiver and antenna shall be installed as high as possible on the mast arm assembly pole. The antenna shall be directed / aimed at another antenna on the County's wireless system, (e.g. aimed at a sector antenna on a water tower), as shown on the plans and as directed by the Engineer. The power injector shall be installed inside the traffic signal cabinet.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

The WIRELESS TRANSMISSION SYSTEM LONG RANGE electronics shall be procured from Delcan, the County's Passage engineering consultant. Delcan shall program this equipment for the appropriate location in the County's communication network.

Basis of payment. This item will be paid for at the contract unit price each for WIRELESS TRANSMISSION SYSTEM LONG RANGE, which price shall be payment in full for furnishing and installing the power injector, antenna, and all associated connectors, cables, hardware, and other peripheral equipment, and placing it in operation to the satisfaction of the Engineer. The Outdoor Rated Network Cable from the antenna to the traffic signal cabinet shall be paid for separately.

**WIRELESS TRANSMISSION SYSTEM EXTRA LONG RANGE**

This work shall consist of the installation of a new node on the Lake County PASSAGE wireless network. This item includes the radio, directional antenna and power injector, associated cables / wiring, and all mounting hardware.

The WIRELESS TRANSMISSION SYSTEM EXTRA LONG RANGE includes:

- One (1) Proxim TsunamiMP.11 (Model 5054-SUA-LR-US) Subscriber unit for extended range with type N connector
- One (1) RadioWaves 28dBi Antenna (Model FP2-5-28) or approved equivalent.
- One (1) low loss RF coaxial cable, 3 foot, N to N
- Two (2) Proxim Model 76394 surge suppressors, or approved equivalent.
- Power wiring from the radio power injector to the circuit breaker.
- All mounting hardware.

All components of this item shall be installed as shown on the plans. The radio transceiver and antenna shall be installed as high as possible on the mast arm assembly pole. The antenna shall be directed / aimed at another antenna on the County's wireless system, (e.g. aimed at a sector antenna on a water tower), as shown on the plans and as directed by the Engineer. The power injector shall be installed inside the traffic signal cabinet.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

The WIRELESS TRANSMISSION SYSTEM EXTRA LONG RANGE electronics shall be procured from Delcan, the County's Passage engineering consultant. Delcan shall program this equipment for the appropriate location in the County's communication network.

Basis of payment. This item will be paid for at the contract unit price each for WIRELESS TRANSMISSION SYSTEM EXTRA LONG RANGE, which price shall be payment in full for furnishing and installing the power injector, antenna, and all associated connectors, cables, hardware, and other peripheral equipment, and placing it in operation to the satisfaction of the Engineer. The Outdoor Rated Network Cable from the radio to the traffic signal cabinet shall be paid for separately.

#### **WIRELESS TRANSMISSION SYSTEM POINT TO POINT**

This work shall consist of the installation of a new node on the Lake County PASSAGE wireless network. This item includes the directional antenna and power injector, associated cables / wiring, and all mounting hardware.

The WIRELESS TRANSMISSION SYSTEM POINT TO POINT includes:

- One (1) Proxim Tsunami Quick Bridge unit with Integrated 23dBi Antenna (Model QB-8150-LINK-US) or approved equivalent.
- Two (2) Proxim Model 76394 surge suppressors, or approved equivalent.
- Power wiring from the radio power injector to the circuit breaker.
- All mounting hardware.

All components of this item shall be installed as shown on the plans. The radio transceiver and antenna shall be installed as high as possible on the mast arm assembly pole. The antenna shall be directed / aimed at another antenna on the County's wireless system, (e.g. aimed at corresponding antenna at other intersection), as shown on the plans and as directed by the Engineer. The power injector shall be installed inside the traffic signal cabinet.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

The WIRELESS TRANSMISSION SYSTEM POINT TO POINT electronics shall be procured from Delcan, the County's Passage engineering consultant. Delcan shall program this equipment for the appropriate location in the County's communication network.

Basis of payment. This item will be paid for at the contract unit price each for WIRELESS TRANSMISSION SYSTEM POINT TO POINT, which price shall be payment in full for furnishing and installing the power injector, antenna, and all associated connectors, cables, hardware, and other peripheral equipment, and placing it in operation to the satisfaction of the

Engineer. The Outdoor Rated Network Cable from the antenna to the traffic signal cabinet shall be paid for separately.

**WIRELESS TRANSMISSION SYSTEM BACKHAUL**

This work shall consist of the installation of a new node on the Lake County PASSAGE wireless network. This item includes the directional antenna and power injector, associated cables / wiring, and all mounting hardware.

The WIRELESS TRANSMISSION SYSTEM BACKHAUL includes:

- One (1) Proxim Tsunami licensed backhaul radio (Model GX-800) or approved equivalent.
- One (1) 2 foot dish antenna or other as specified on plans
- Two (2) Proxim Model 76394 surge suppressors, or approved equivalent.
- Power wiring from the radio power injector to the circuit breaker.
- All mounting hardware.

All components of this item shall be installed as shown on the plans. The radio transceiver and antenna shall be installed as high as possible on the mast arm assembly pole or tower as shown on plans. The antenna shall be directed / aimed at another antenna on the County's wireless system, (e.g. aimed at corresponding antenna at other intersection / tower), as shown on the plans and as directed by the Engineer. The power injector shall be installed inside the traffic signal / grade level cabinet.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

The WIRELESS TRANSMISSION SYSTEM BACKHAUL electronics shall be procured from Delcan, the County's Passage engineering consultant. Delcan shall program this equipment for the appropriate location in the County's communication network.

Basis of payment. This item will be paid for at the contract unit price each for WIRELESS TRANSMISSION SYSTEM BACKHAUL, which price shall be payment in full for furnishing and installing the power injector, antenna, and all associated connectors, cables, hardware, and other peripheral equipment, and placing it in operation to the satisfaction of the Engineer. The Outdoor Rated Network Cable from the antenna to the traffic signal cabinet shall be paid for separately.

**WIRELESS TRANSMISSION SYSTEM BASE STATION**

This work shall consist of the installation of a new node on the Lake County PASSAGE wireless network. This item includes the directional antenna and power injector, associated cables / wiring, and all mounting hardware.

The WIRELESS TRANSMISSION SYSTEM BASE STATION includes:

- One (1) Proxim Tsunami base station long range unit (Model 5054-BSU-R-LR) or approved equivalent.
- One (1) 60 degree sector antenna or other as shown on the plans.
- Two (2) Proxim Model 76394 surge suppressors, or approved equivalent.
- Power wiring from the radio power injector to the circuit breaker.
- All mounting hardware and poles.

All components of this item shall be installed as shown on the plans. The radio transceiver and antenna shall be installed on a new mounting pole or other as shown on the plans. The antenna shall be directed / aimed according to the azimuth settings listed in the plans and as directed by the Engineer. The power injector shall be installed inside the cabinet.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

The WIRELESS TRANSMISSION SYSTEM BASE STATION electronics shall be procured from Delcan, the County's Passage engineering consultant. Delcan shall program this equipment for the appropriate location in the County's communication network.

Basis of payment. This item will be paid for at the contract unit price each for WIRELESS TRANSMISSION SYSTEM BASE STATION, which price shall be payment in full for furnishing and installing the power injector, antenna, and all associated connectors, cables, hardware, and other peripheral equipment, and placing it in operation to the satisfaction of the Engineer. The Outdoor Rated Network Cable from the antenna to the cabinet shall be paid for separately.

**RELOCATE EXISTING VIDEO DETECTION SYSTEM (COMPLETE INTERSECTION)**

This work shall consist of the removal, storage, and relocation of an existing video detection system (complete intersection) from one traffic signal installation (temporary or permanent) to another traffic signal installation (temporary or permanent). This item shall also include the relocation of the remote-controlled video system according to the plans.

The video detection system (complete intersection) shall be removed and relocated as shown in the plans. Any damage sustained to the video detection system during removal, storage, transport, and/or reinstallation operations shall be repaired or replaced in kind to the satisfaction of the Engineer at the Contractor's expense.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

Basis of payment. This item will be paid for at the contract unit price each for RELOCATE EXISTING VIDEO DETECTION SYSTEM (COMPLETE INTERSECTION), which price shall be payment in full for disconnecting the existing video detection system, remote-controlled video system, packaging/storing it, transporting it, and relocating it to the new location complete and operating to the satisfaction of the Engineer.

**RELOCATE EXISTING REMOTE-CONTROLLED VIDEO SYSTEM**

This work shall consist of the removal, storage, and relocation of an existing remote-controlled video system from one traffic signal installation (temporary or permanent) to another traffic signal installation (temporary or permanent). This pay item shall be used when only the remote-controlled video system is being relocated. This pay item shall not be used when the remote-controlled video system is being relocated as part of RELOCATE EXISTING VIDEO DETECTION SYSTEM (COMPLETE INTERSECTION).

The remote-controlled video system shall be removed and relocated as shown in the plans. Any damage sustained to the remote-controlled video system during removal, storage, transport, and/or reinstallation operations shall be repaired or replaced in kind to the satisfaction of the Engineer at the Contractor's expense.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

Basis of payment. This item will be paid for at the contract unit price each for RELOCATE EXISTING REMOTE-CONTROLLED VIDEO SYSTEM, which price shall be payment in full for disconnecting the existing remote-controlled video system, packaging/storing it, transporting it, and relocating it to the new location complete and operating to the satisfaction of the Engineer.

#### **RELOCATE EXISTING SWITCH**

This work shall consist of the removal, storage, and relocation of an existing layer two or layer three switch from one traffic signal installation to another traffic signal installation.

The switch shall be removed and relocated as shown in the plans. Any damage sustained to the switch during removal, storage, transport, and/or reinstallation operations shall be repaired or replaced in kind to the satisfaction of the Engineer at the Contractor's expense.

Basis of payment. This item will be paid for at the contract unit price each for RELOCATE EXISTING SWITCH, which price shall be payment in full for disconnecting the existing switch, packaging/storing it, transporting it, and relocating it to the new location complete and operating to the satisfaction of the Engineer. This item shall also include the relocation and reinstallation of the switch power supply, and all fiber optic jumper cables necessary for proper operation.

#### **TEMPORARY TRAFFIC SIGNAL TIMING**

This work shall consist of developing and maintaining appropriate traffic signal timings for the specified intersection for the entirety of the construction project beginning with any changes to the existing traffic patterns including lane shifts or lane reductions. This shall include the period prior to the turn-on of any temporary traffic signal installation. This item can also be utilized to make temporary timing adjustments to existing traffic signals required by detours or other temporary conditions.

All timings and adjustments necessary for this work shall be performed by an approved Consultant who has previous experience in optimizing Closed Loop Traffic signal Systems for District One of the Illinois Department of Transportation. The Contractor shall contact the Traffic Signal Engineer at (847) 705-4424 for a listing of approved Consultants.

The following tasks are associated with TEMPORARY TRAFFIC SIGNAL TIMINGS.

- (a) Consultant shall attend temporary traffic signal inspection (turn-on) and/or detour meeting and conduct on-site implementation of the traffic signal timings. Make fine-tuning adjustments to the timings in the field to alleviate observed adverse operating conditions and to enhance operations.
- (b) Consultant shall provide monthly observation of traffic signal operations in the field.

- (c) Consultant shall provide on-site consultation and adjust timings as necessary for construction stage changes, temporary traffic signal phase changes, and any other conditions affecting timing and phasing, including lane closures, detours, and other construction activities.
- (d) Consultant shall make timing adjustments and prepare comment responses as directed by the Area Traffic Signal Operations Engineer.

Basis of Payment. The work shall be paid for at the contract unit price each for TEMPORARY TRAFFIC SIGNAL TIMING, which price shall be payment in full for performing all work described herein per intersection. When the temporary traffic signal installation is turned on, traffic control is installed, or the detour is implemented, 50 percent of the bid price will be paid. The remaining 50 percent of the bid price will be paid following the removal of the temporary traffic signal installation, traffic control and/or detour.

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

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

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

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

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

After the signal improvements are completed, the signal shall be re-optimized as specified by an approved Consultant who has previous experience in optimizing Closed Loop Traffic Signal Systems for District One of the Illinois Department of Transportation. The Contractor shall contact the Traffic Signal Engineer at (847) 377-7000 for a listing of approved Consultants. Traffic signal system optimization work, including fine-tuning adjustments of the optimized system, shall follow the requirements stated in the most recent IDOT District 1 SCAT Guidelines, except as note herein.

All work shall be based upon the LCDOT Countywide Synchro model. The Consultant shall contact the LCDOT at 847-377-7000 to acquire the required portion of the countywide model to be updated for the particular project. Upon completion of the project, the Consultant shall provide the LCDOT with the revised and updated files for inclusion into the Countywide Synchro Model.



The Consultant shall confer with the Traffic Signal Engineer prior to optimizing the system to determine if any extraordinary conditions exist that would affect traffic flows in the vicinity of the system, in which case, the Consultant may be instructed to wait until the conditions return to normal or to follow specific instructions regarding the optimization.

(a) LEVEL I Re-Optimization

1. The following tasks are associated with LEVEL I Re-Optimization.
  - a. Appropriate signal timings shall be developed for the subject intersection and existing timings shall be utilized for the rest of the intersections in the system.
  - b. Proposed signal timing plan for the new or modified intersection(s) shall be forwarded to the County for review prior to implementation.
  - c. Consultant shall conduct on-site implementation of the timings at the turn-on and make fine-tuning adjustments to the timings of the subject intersection in the field to alleviate observed adverse operating conditions and to enhance operations.
  - d. All patterns associated with Transit Signal Priority and Incident Response Plans are to be reviewed and adjusted as required.
2. The following deliverables shall be provided for LEVEL I Re-Optimization.
  - a. Consultant shall furnish to the County a cover letter describing the extent of the re-optimization work performed.

(b) LEVEL II Re-Optimization

1. In addition to the requirements described in the LEVEL I Re-Optimization above, the following tasks are associated with LEVEL II Re-Optimization.
  - a. Traffic counts shall be taken at the subject intersection after the traffic signals are approved for operation by the Area Traffic Signal Operations Engineer. Manual turning movement counts shall be conducted from 6:30 a.m. to 9:30 a.m., 11:00 a.m. to 1:00 p.m., and 3:30 p.m. to 6:30 p.m. on a typical weekday from midday Monday to midday Friday. The turning movement counts shall identify cars, and single-unit, multi-unit heavy vehicles, and transit buses.
  - b. Traffic responsive program operation shall be evaluated to verify proper pattern selection and lack of oscillation and a report of the operation shall be provided to IDOT.
  - c. All patterns associated with Transit Signal Priority and Incident Response Plans are to be reviewed and adjusted as required.
2. The following deliverables shall be provided for LEVEL II Re-Optimization.
  - a. Consultant shall furnish to the County one (1) copy of a technical memorandum for the optimized system. The technical memorandum shall include the following elements:
    1. Brief description of the project
    2. Printed copies of the analysis output from Synchro (or other appropriate approved optimization software file)
    3. Printed copies of the traffic counts conducted at the subject intersection

- b. Consultant shall furnish to the County two (2) CDs for the optimized system. The CDs shall include the following elements:
  1. Electronic copy of the technical memorandum in PDF format
  2. Revised Synchro files (or other appropriate, approved optimization software file) including the new signal and the rest of the signals in the closed loop system or as identified by the Engineer
  3. Traffic counts conducted at the subject intersection
  4. The CD case shall include a clearly readable label displaying the same information securely affixed to the side and front.

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

#### **OPTIMIZE TRAFFIC SIGNAL SYSTEM**

Description. This work shall consist of optimizing a closed loop traffic signal system.

OPTIMIZE TRAFFIC SIGNAL SYSTEM applies when a new or existing closed loop traffic signal system is to be optimized and a formal Signal Coordination and Timing (SCAT) Report is to be prepared. The purpose of this work is to improve system performance by optimizing traffic signal timings, developing a time of day program and a traffic responsive program.

After the signal improvements are completed, the signal system shall be optimized as specified by an approved Consultant who has previous experience in optimizing Closed Loop Traffic Signal Systems for District One of the Illinois Department of Transportation. The Contractor shall contact the Traffic Signal Engineer at (847) 377-7000 for a listing of approved Consultants. Traffic signal system optimization work, including fine-tuning adjustments of the optimized system, shall follow the requirements stated in the most recent IDOT District 1 SCAT Guidelines, except as note herein.

All work shall be based upon the LCDOT Countywide Synchro model. The Consultant shall contact the LCDOT at 847-377-7000 to acquire the required portion of the countywide model to be updated for the particular project. Upon completion of the project, the Consultant shall provide the LCDOT with the revised and updated files for inclusion into the Countywide Synchro Model.

The Consultant shall confer with the Traffic Signal Engineer prior to optimizing the system to determine if any extraordinary conditions exist that would affect traffic flows in the vicinity of the system, in which case, the Consultant may be instructed to wait until the conditions return to normal or to follow specific instructions regarding the optimization.

(a) The following tasks are associated with OPTIMIZE TRAFFIC SIGNAL SYSTEM.

1. Appropriate signal timings and offsets shall be developed for each intersection and appropriate cycle lengths shall be developed for the closed loop signal system or as identified by Engineer.

2. All patterns associated with Transit Signal Priority and Incident Response Plans are to be developed as required.
  3. Traffic counts shall be taken at all intersections after the permanent traffic signals are approved for operation by the Area Traffic Signal Operations Engineer. Manual turning movement counts shall be conducted from 6:30 a.m. to 9:30 a.m., 11:00 a.m. to 1:00 p.m., and 3:30 p.m. to 6:30 p.m. on a typical weekday from midday Monday to midday Friday. The turning movement counts shall identify cars, and single-unit and multi-unit heavy vehicles.
  4. A traffic responsive program shall be developed, which considers both volume and occupancy. A time-of-day program shall be developed for used as a back-up system.
  5. Proposed signal timing plan for the new or modified intersection shall be forwarded to the County for review prior to implementation.
  6. Consultant shall conduct on-site implementation of the timings and make fine-tuning adjustments to the timings in the field to alleviate observed adverse operating conditions and to enhance operations.
  7. Speed and delay studies shall be conducted during each of the count periods along the system corridor in the field before and after implementation of the proposed timing plans for comparative evaluations. These studies should utilize specialized electronic timing and measuring devices.
- (b) The following deliverables shall be provided for OPTIMIZE TRAFFIC SIGNAL SYSTEM.
1. Consultant shall furnish to the County one (1) copy of a SCAT Report for the optimized system. The SCAT Report shall include the following elements:

<b>Cover Page in color showing a System Map</b>
<b>Figures</b> <ol style="list-style-type: none"> <li>1. System overview map – showing system number, system schematic map with numbered system detectors, oversaturated movements, master location, system phone number, cycle lengths, and date of completion.</li> <li>2. General location map in color – showing signal system location in the metropolitan area.</li> <li>3. Detail system location map in color – showing cross street names and local controller addresses.</li> <li>4. Controller sequence – showing controller phase sequence diagrams.</li> </ol>
<b>Table of Contents</b>
<b>Tab 1: Final Report</b> <ol style="list-style-type: none"> <li>1. Project Overview</li> <li>2. System and Location Description (Project specific)</li> <li>3. Methodology</li> <li>4. Data Collection</li> <li>5. Data Analysis and Timing Plan Development</li> <li>6. Implementation           <ol style="list-style-type: none"> <li>a. Traffic Responsive Programming (Table of TRP vs. TOD Operation)</li> </ol> </li> <li>7. Evaluation           <ol style="list-style-type: none"> <li>a. Speed and Delay runs</li> </ol> </li> </ol>
<b>Tab 2. Turning Movement Counts</b> <ol style="list-style-type: none"> <li>1. Turning Movement Counts (Showing turning movement counts in the intersection diagram for each period, including truck percentage)</li> </ol>
<b>Tab 3. Synchro Analysis</b> <ol style="list-style-type: none"> <li>1. AM: Time-Space diagram in color, followed by intersection Synchro report (Timing report) summarizing the implemented timings.</li> <li>2. Midday: same as AM</li> <li>3. PM: same as AM</li> </ol>
<b>Tab 4: Speed, Delay Studies</b> <ol style="list-style-type: none"> <li>1. Summary of before and after runs results in two (2) tables showing travel time and delay time.</li> <li>2. Plot of the before and after runs diagram for each direction and time period.</li> </ol>
<b>Tab 5: Environmental Report</b> <ol style="list-style-type: none"> <li>1. Environmental impact report including gas consumption, NO2, HCCO, improvements.</li> </ol>
<b>Tab 6: Electronic Files</b> <ol style="list-style-type: none"> <li>1. Two (2) CDs for the optimized system. The CDs shall include the following elements:           <ol style="list-style-type: none"> <li>a. Electronic copy of the SCAT Report in PDF format</li> <li>b. Copies of the Synchro files for the optimized system</li> <li>c. Traffic counts for the optimized system</li> <li>d. New or updated intersection graphic display files for each of the system intersections and the system graphic display file including system detector locations and addresses.</li> </ol> </li> </ol>

Basis of Payment. The work shall be paid for at the contract unit each for OPTIMIZE TRAFFIC SIGNAL SYSTEM, which price shall be payment in full for performing all work described herein for the entire traffic signal system. Following the completion of traffic counts, 25 percent of the bid price will be paid. Following the completion of the Synchro analysis, 25 percent of the bid price will be paid. Following the setup and fine tuning of the timings, the speed-delay study, and the TRP programming, 25 percent of the bid price will be paid. The remaining 25 percent will be paid when the system is working to the satisfaction of the engineer and the report and CD have been submitted.

### **General Electrical Requirements**

Effective: January 1, 2012

Add the following to Article 801 of the Standard Specifications:

“Maintenance transfer and Preconstruction Inspection:

General. Before performing any excavation, removal, or installation work (electrical or otherwise) at the site, the Contractor shall request a maintenance transfer and preconstruction site inspection, to be held in the presence of the Engineer and a representative of the party or parties responsible for maintenance of any lighting and/or traffic control systems which may be affected by the work. The request for the maintenance transfer and preconstruction inspection shall be made no less than seven (7) calendar days prior to the desired inspection date. The maintenance transfer and preconstruction inspection shall:

Establish the procedures for formal transfer of maintenance responsibility required for the construction period.

Establish the approximate location and operating condition of lighting and/or traffic control systems which may be affected by the work

Marking of Existing Cable Systems. The party responsible for maintenance of any existing lighting and/or traffic control systems at the project site will, at the Contractor's request, mark and/or stake, once per location, all underground cable routes owned or maintained by the State. A project may involve multiple "locations" where separated electrical systems are involved (i.e. different controllers). The markings shall be taken to have a horizontal tolerance of at least 304.8 mm (one (1) foot) to either side.. The request for the cable locations and marking shall be made at the same time the request for the maintenance transfer and preconstruction inspection is made. The Contractor shall exercise extreme caution where existing buried cable runs are involved. The markings of existing systems are made strictly for assistance to the Contractor and this does not relieve the Contractor of responsibility for the repair or replacement of any cable run damaged in the course of his work, as specified elsewhere herein. Note that the contractor shall be entitled to only one request for location marking of existing systems and that multiple requests may only be honored at the contractor's expense. No locates will be made after maintenance is transferred, unless it is at the contractor's expense.

Condition of Existing Systems. The Contractor shall conduct an inventory of all existing electrical system equipment within the project limits, which may be affected by the work, making note of any parts which are found broken or missing, defective or malfunctioning. Megger and load readings shall be taken for all existing circuits which will remain in place or be modified. If a circuit is to be taken out in its entirety, then readings do not have to be taken. The inventory and test data shall be reviewed with and approved by the Engineer and a record of the inventory shall be submitted to the Engineer for the record. Without such a record, all systems transferred to the Contractor for maintenance during construction shall be returned at the end of construction in complete, fully operating condition.”

Add the following to the 1<sup>st</sup> paragraph of Article 801.05(a) of the Standard Specifications:

“Items from multiple disciplines shall not be combined on a single submittal and transmittal. Items for lighting, signals, surveillance and CCTV must be in separate submittals since they may be reviewed by various personnel in various locations.”

Revise the second sentence of the 5<sup>th</sup> paragraph of Article 801.05(a) of the Standard Specifications to read:

“The Engineer will stamp the submittals indicating their status as ‘Approved’, ‘Approved as Noted’, ‘Disapproved’, or ‘Information Only’.

Revise the 6<sup>th</sup> paragraph of Article 801.05(a) of the Standard Specifications to read:

Resubmittals. All submitted items reviewed and marked ‘Approved as Noted’, or ‘Disapproved’ are to be resubmitted in their entirety with a disposition of previous comments to verify contract compliance at no additional cost to the state unless otherwise indicated within the submittal comments.”

Revise Article 801.11(a) of the Standard Specifications to read:

Lighting Operation and Maintenance Responsibility. The scope of work shall include the assumption of responsibility for the continuing operation and maintenance the of existing, proposed, temporary, sign and navigation lighting, or other lighting systems and all appurtenances affected by the work as specified elsewhere herein. Maintenance of lighting systems is specified elsewhere and will be paid for separately

Energy and Demand Charges. The payment of basic energy and demand charges by the electric utility for existing lighting which remains in service will continue as a responsibility of the Owner, unless otherwise indicated. Unless otherwise indicated or required by the Engineer duplicate lighting systems (such as temporary lighting and proposed new lighting) shall not be operated simultaneously at the Owner's expense and lighting systems shall not be kept in operation during long daytime periods at the Owner's expense. Upon written authorization from the Engineer to place a proposed new lighting system in service, whether the system has passed final acceptance or not, (such as to allow temporary lighting to be removed), the Owner will accept responsibility for energy and demand charges for such lighting, effective the date of authorization. All other energy and demand payments to the utility shall be the responsibility of the Contractor until final acceptance.”

Add the following to Section 801 of the Standard Specifications:

Lighting Cable Identification. Each wire installed shall be identified with its complete circuit number at each termination, splice, junction box or other location where the wire is accessible.”

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

Revise the 2<sup>nd</sup> paragraph of Article 801.16 of the Standard Specifications to read:

“When the work is complete, and seven days before the request for a final inspection, the full-size set of contract drawings. Stamped “RECORD DRAWINGS”, shall be submitted to the Engineer for review and approval and shall be stamped with the date and the signature of the Contractor’s supervising Engineer or electrician. The record drawings shall be submitted in PDF format on CDROM as well as hardcopy for review and approval. In addition to the record drawings, copies of the final catalog cuts which have been Approved or Approved as Noted shall be submitted in PDF format along with the record drawings. The PDF files shall clearly indicate either by filename or PDF table of contents the respective pay item number. Specific part or model numbers of items which have been selected shall be clearly visible.”

Add the following to Article 801.16 of the Standard Specifications:

“In addition to the specified record drawings, the Contactor shall record GPS coordinates of the following electrical components being installed, modified or being affected in other ways by this contract:

- Last light pole on each circuit
- Handholes
- Conduit roadway crossings
- Controllers
- Control Buildings
- Structures with electrical connections, i.e. DMS, lighted signs.
- Electric Service locations
- CCTV Camera installations
- Fiber Optic Splice Locations

Datum to be used shall be North American 1983.

Data shall be provided electronically and in print form. The electronic format shall be compatible with MS Excel. Latitude and Longitude shall be in decimal degrees with a minimum of 6 decimal places. Each coordinate shall have the following information:

- I. Description of item

2. Designation or approximate station if the item is undesignated
3. Latitude
4. Longitude

Examples:

Equipment Description	Equipment Designation	Latitude	Longitude
CCTV Camera pole	ST42	41.580493	-87.793378
FO mainline splice handhole	HHL-ST31	41.558532	-87.792571
Handhole	HH at STA 234+35	41.765532	-87.543571
Electric Service	Elec Srv	41.602248	-87.794053
Conduit crossing	SB IL83 to EB I290 ramp SIDE A	41.584593	-87.793378
Conduit crossing	SB IL83 to EB I290 ramp SIDE B	41.584600	-87.793432
Light Pole	DA03	41.558532	-87.792571
Lighting Controller	X	41.651848	-87.762053
Sign Structure	FGD	41.580493	-87.793378
Video Collection Point	VCP-IK	41.558532	-87.789771
Fiber splice connection	Toll Plaza34	41.606928	-87.794053

Prior to the collection of data, the contractor shall provide a sample data collection of at least six data points of known locations to be reviewed and verified by the Engineer to be accurate within 100 feet. Upon verification, data collection can begin. Data collection can be made as construction progresses, or can be collected after all items are installed. If the data is unacceptable the contractor shall make corrections to the data collection equipment and or process and submit the data for review and approval as specified.

Accuracy. Data collected is to be mapping grade. A handheld mapping grade GPS device shall be used for the data collection. The receiver shall support differential correction and data shall have a minimum 5 meter accuracy after post processing.

GPS receivers integrated into cellular communication devices, recreational and automotive GPS devices are not acceptable.

The GPS shall be the product of an established major GPS manufacturer having been in the business for a minimum of 6 years.”

**LIGHTING CONTROLLER BASE MOUNTED, 480 VOLT, 100 AMP**



**Description:** The work shall consist of furnishing an electrical controller as identified herein and on the plans.

**General:** The work shall be performed according to Sections 825 and 1068 of the Standard Specifications and the following;

Provide a 20A, 120VAC, single-pole circuit breaker wired to a control power transformer connected to the line side of the lighting controller. The circuit shall provide 120VAC power to the Closed Circuit Television Cabinet. Provide a separate 1.5kVA control power transformer or increase the standard control power transformer size by 1.5 kVA. Provide identification on the controller drawings and in the panel as "Closed Circuit Television Cabinet Power". This circuit breaker shall be in addition to the circuit breakers specified herein or identified on the IDOT standard drawing for lighting controllers.

**Basis of Payment:** This work will be paid for at the contract unit price per each **LIGHTING CONTROLLER, BASE MOUNTED, 480 VOLT, 100AMP**

#### **LIGHT POLE FOUNDATION, 30" DIAMETER**

**General:** This work shall be performed according to Section 836 of the "Standard Specifications" and the following:

*5/8" diameter X 10' long ground rods shall be installed at each light pole foundation as detailed on the plans.*

**Basis of Payment:** This work will be paid for at the contract unit price per foot for LIGHT POLE FOUNDATION, 30" DIAMETER. *The unit price shall include the cost of materials, equipment, and labor required to furnish and install the light pole foundation. Ground rods shall not be paid for separately but shall be included in the contract unit price per foot for LIGHT POLE FOUNDATION, 30" DIAMETER.*

#### **LIGHT POLE, GALVANIZED STEEL, 30 FT. M.H., 8 FT. MAST ARM**

**Description:** This work shall consist of furnishing and installing light poles at locations shown on the plans.

**General:** The work shall be performed according to Section 830 of the "Standard Specifications".

**Materials:** The materials shall be according to Article 1069.01 (c) of the "Standard Specifications" and the following:

*Luminaire arms shall be steel, and eight (8) feet in length.*

*Luminaires shall be "cobra head" style, painted black by the supplier/manufacturer and shall be paid for separately.*

*The pole and mast arm shall be Sternberg Cat. No. 1-CSS8/64\_SRTF-16SF/BCC/BK or approved equal. The pole, base and mast arm shall be such as to accommodate a mast arm mounting height of 30'.*

**Basis of Payment:** This work will be paid for at the contract unit price per LIGHT POLE, GALVANIZED STEEL, 30 FT. M.H., 8 FT. MAST ARM. *The unit price shall include the cost of all materials, equipment, and labor required to furnish and install the light pole.*

**LIGHT POLE, GALVANIZED STEEL, 30 FT. M.H., 15 FT. MAST ARM**

**Description:** This work shall consist of furnishing and installing light poles at locations shown on the plans.

**General:** The work shall be performed according to Section 830 of the "Standard Specifications".

**Materials:** The materials shall be according to Article 1069.01 (c) of the "Standard Specifications" and the following:

*Luminaire arms shall be steel, and fifteen (15) feet in length.*

*Luminaires shall be "cobra head" style, painted black by the supplier/manufacturer and shall be paid for separately.*

*The pole and mast arm shall be Sternberg Cat. No. 1-CSS8/64\_SRTF-16SF/BCC/BK or approved equal. The pole, base and mast arm shall be such as to accommodate a mast arm mounting height of 30'.*

**Basis of Payment:** This work will be paid for at the contract unit price per each LIGHT POLE, GALVANIZED STEEL, 30 FT. M.H., 15 FT. MAST ARM. *The unit price shall include the cost of all materials, equipment, and labor required to furnish and install the light pole.*

**Underground Raceways**

Effective: January 1, 2012

Revise Article 810.04 of the Standard Specifications to read:

"Installation. All underground conduit shall have a minimum depth of 30-inches (700 mm) below the finished grade."

Add the following to Article 810.04 of the Standard Specifications:

"All metal conduit installed underground shall be Rigid Steel Conduit unless otherwise indicated on the plans."

Add the following to Article 810.04 of the Standard Specifications:

“All raceways which extend outside of a structure or duct bank but are not terminated in a cabinet, junction box, pull box, handhole, post, pole, or pedestal shall extend a minimum of 300 mm (12”) or the length shown on the plans beyond the structure or duct bank. The end of this extension shall be capped and sealed with a cap designed for the conduit to be capped. The ends of rigid metal conduit to be capped shall be threaded, the threads protected with full galvanizing, and capped with a threaded galvanized steel cap. The ends of rigid nonmetallic conduit and coilable nonmetallic conduit shall be capped with a rigid PVC cap of not less than 3 mm (0.125”) thick. The cap shall be sealed to the conduit using a room-temperature-vulcanizing (RTV) sealant compatible with the material of both the cap and the conduit. A washer or similar metal ring shall be glued to the inside center of the cap with epoxy, and the pull cord shall be tied to this ring.”

Add the following to Article 810.04(c) of the Standard Specifications:

“Coilable non-metallic conduit shall be machine straightened to remove the longitudinal curvature caused by coiling the conduit onto reels prior to installing in trench, encasing in concrete or embedding in structure. The straightening shall not deform the cross-section of the conduit such that any two measured outside diameters, each from any location and at any orientation around the longitudinal axis along the conduit differ by more than 6 mm (0.25”).” The longitudinal axis of the straightened conduit shall not deviate by more than 20 mm per meter (0.25” per foot” from a straight line. The HDPE and straightening mechanism manufacturer operating temperatures shall be followed.

#### **ELECTRIC UTILITY SERVICE CONNECTION (COMED)**

Effective: January 1, 2012

**Description.** This item shall consist of payment for work performed by ComEd in providing or modifying electric service as indicated. THIS MAY INVOLVE WORK AT MORE THAN ONE ELECTRIC SERVICE. For summary of the Electrical Service Drop Locations see the schedule contained elsewhere herein.

#### **CONSTRUCTION REQUIREMENTS**

**General.** It shall be the Contractor's responsibility to contact ComEd. The Contractor shall coordinate his work fully with the ComEd both as to the work required and the timing of the installation. No additional compensation will be granted under this or any other item for extra work caused by failure to meet this requirement. **Please contact ComEd, New Business Center Call Center, at 866 NEW ELECTRIC (1-866-639-3532) to begin the service connection process. The Call Center Representatives will create a work order for the service connection. The representative will ask the requestor for information specific to the request. The representative will assign the request based upon the location of project.**

The Contractor should make particular note of the need for the earliest attention to arrangements with ComEd for service. In the event of delay by ComEd, no extension of time will be considered applicable for the delay unless the Contractor can produce written evidence of a request for electric service within 30 days of execution.

**Method Of Payment.** The Contractor will be reimbursed to the exact amount of money as billed by ComEd for its services. Work provided by the Contractor for electric service will be paid separately as described under ELECTRIC SERVICE INSTALLATION. No extra compensation shall be paid to the Contractor for any incidental materials and labor required to fulfill the requirements as shown on the plans and specified herein.

For bidding purposes, this item shall be estimated as **\$1,200.**

**Basis Of Payment.** This work will be paid for at the contract lump sum price for **ELECTRIC UTILITY SERVICE CONNECTION** which shall be reimbursement in full for electric utility service charges.

**Designers Note:** The estimate of cost of service connections for bidding purposes shall be provided by the Designer or Design Consultant.

### **ELECTRIC SERVICE INSTALLATION**

Effective: January 1, 2012

**Description.** This item shall consist of all material and labor required to extend, connect or modify the electric services, as indicated or specified, which is over and above the work performed by the utility. Unless otherwise indicated, the cost for the utility work, if any, will be reimbursed to the Contractor separately under ELECTRIC UTILITY SERVICE CONNECTION. This item may apply to the work at more than one service location and each will be paid separately.

**Materials.** Materials shall be in accordance with the Standard Specifications.

### **CONSTRUCTION REQUIREMENTS**

**General.** The Contractor shall ascertain the work being provided by the electric utility and shall provide all additional material and work not included by other contract pay items required to complete the electric service work in complete compliance with the requirements of the utility.

No additional compensation will be allowed for work required for the electric service, even though not explicitly shown on the Drawings or specified herein

**Method Of Measurement.** Electric Service Installation shall be counted, each.

**Basis Of Payment.** This work will be paid for at the contract unit price each for **ELECTRIC SERVICE INSTALLATION** which shall be payment in full for the work specified herein.

**Unit Duct**

Effective: January 1, 2012

Revise the first paragraph of Article 810.04 to read:

“The unit duct shall be installed at a minimum depth of 30-inches (760 mm) unless otherwise directed by the Engineer.”

Revise Article 1088.01(c) to read:

“(c) Coilable Nonmetallic Conduit.

General:

The duct shall be a plastic duct which is intended for underground use and which can be manufactured and coiled or reeled in continuous transportable lengths and uncoiled for further processing and/or installation without adversely affecting its properties of performance. The duct shall be a plastic duct which is intended for underground use and can be manufactured and coiled or reeled in continuous transportable lengths and uncoiled for further processing and/or installation without adversely affecting its properties of performance.

The duct shall be made of high density polyethylene which shall meet the requirements of ASTM D 2447, for schedule 40. The duct shall be composed of black high density polyethylene meeting the requirements of ASTM D 3350, Class C, Grade P33. The wall thickness shall be in accordance with Table 2 for ASTM D 2447.

The duct shall be UL Listed per 651-B for continuous length HDPE coiled conduit. The duct shall also comply with NEC Article 354.100 and 354.120.

Submittal information shall demonstrate compliance with the details of these requirements.

Dimensions:

Duct dimensions shall conform to the standards listed in ASTM D2447. Submittal information shall demonstrate compliance with these requirements.

Nominal Size		Nominal I.D.		Nominal O.D.		Minimum Wall	
mm	in	mm	in	mm	in	mm	in
31.75	1.2	35.05	1.380	42.16	1.66	3.556	0.140
	5				0	+0.51	+0.020
38.1	1.5	40.89	1.610	48.26	1.90	3.683	0.145
	0				0	+0.51	+0.020

Nominal Size	Pulled Tensile
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mm	in	N	lbs
31.75	1.25	3322	747
38.1	1.50	3972	893

**Marking:**

As specified in NEMA Standard Publication No. TC-7, the duct shall be clearly and durably marked at least every 3.05 meters (10 feet) with the material designation (HDPE for high density polyethylene), nominal size of the duct and the name and/or trademark of the manufacturer.

**Performance Tests:**

Polyethylene Duct testing procedures and test results shall meet the requirements of UL 651. Certified copies of the test report shall be submitted to the Engineer prior to the installation of the duct. Duct crush test results shall meet or exceed the following requirements:

Duct Diameter		Min. force required to deform sample 50%	
mm	in	N	lbs
35	1.25	4937	1110
41	1.5	4559	1025

**Closed Circuit Television Cabinet**

The Contractor shall provide a single door, NEMA 4X aluminum cabinet complete with mounting panel, patch panel, terminal block, and hardware for pole mounting as indicated on the plans and/or as directed by the engineer. The walls, sides, top and bottom shall be a minimum of 0.08 inches thick. The door shall be a minimum of 0.1-inch thick. The nominal dimensions of the cabinet shall be 24 inches high by 20 inches wide and 8 inches deep. All seams shall be continuously welded and ground smooth with no holes or knockouts. The cabinet shall be fabricated with a rolled lip around three sides of the door and on all sides of the enclosure openings to exclude liquids and contaminants. The door clamp assembly shall assure a watertight seal. A seamless gasket shall be included to assure a watertight and dust tight seal. The cabinet shall be powder coated black, as shown on the plans. All fasteners shall be stainless steel. The Closed Circuit Television Cabinet shall include a grounding system. Connection to ground shall be a bare, solid AWG #6, copper wire or an equivalent bonding strap. The cabinet shall be wired for single-phase 120volt AC service. The Contractor shall provide a lightning arrester designed to protect 120 VAC single-phase breaker panels. The lightning arrester shall use metal oxide varistors as the protective elements. The response time shall be under five nanoseconds and the maximum surge current shall be at least 40,000 amps. The clamping voltage shall not exceed 400 volts. The device shall protect line-to-line and line-to-neutral. Contractor shall provide an additional surge protector just for the circuits powering the communication and traffic management equipment. This surge protector shall be a filtering two-stage surge protector. The Contractor shall install it on the load side of the appropriate breaker. The protector shall provide radio frequency noise filtering and be capable of protecting equipment drawing a total of at least 10 amps. If the load on the circuit exceeds 10 amps, the Contractor shall split the load among multiple circuits, each with its own surge protector. The protector shall clamp both the main line and the main neutral at 250 volts, both

relative to each other and relative to the cabinet ground. The response time shall be such that the voltage never exceeds 250 volts. The surge protector shall suppress surges of up to 20,000 amps. All circuit breakers shall be molded case units with a quick-make, quick-break, trip-free mechanism and with a minimum interrupting capacity of 10,000A (RMS Symmetrical). The circuit breakers shall be of fixed trip type and UL listed. Circuit breakers shall be listed on the latest Qualified Products List QPL-W-C-375 maintained by the Defense Supply Center, unless no suitable breakers are listed. Each cabinet shall be equipped with one fluorescent lighting fixture mounted to the inside top front portion of the cabinet. The fixture shall have an F-15-T-8 cool white lamp; operated from a normal power factor, UL listed cold weather ballast. A door-activated switch shall be installed to turn the cabinet light on when the door is opened.

**General:** The Contractor shall install the Closed Circuit Television Cabinet as shown on the plans. The Contractor shall verify the mounting criteria and dimensions based upon the pole being provided. Any adjustments in the dimensions for the mounting brackets shall be approved by the Engineer.

**Documentation:** One copy of all operations and maintenance manuals and four copies of the cabinet wiring diagram for each Closed Circuit Television Cabinet shall be delivered for each assembly installed.

**Basis of Payment:** This work will be paid for at the contract unit price for each **CLOSED CIRCUIT TELEVISION CABINET**. The unit price shall include all labor, equipment, materials and testing required to furnish and install the Closed Circuit Television Cabinet. The unit price shall also include the documentation detailed above.

### **OUTDOOR RATED NETWORK CABLE**

This work shall consist of furnishing and installing a network cable from the traffic signal cabinet to the associated field device shown on the plans.

The outdoor rated network cable shall be a black Category 5e cable, meeting the TIA/EIA 568-B.2 telecommunication standards. The cable shall be composed of 24 AWG solid bare copper conductors, twisted pairs, polyolefin insulation, inner LLPE jacket, overall shield (100% coverage), 24 AWG stranded TC drain wire, industrial grade sunlight- and oil-resistant LLPE jacket. The cable shall be capable of performing from -40 °C to 70 °C.

Each end of the cable shall be terminated with an RJ-45 connector installed according to the TIA/EIA 568B standard. The drain wire at each end shall be terminated with a ring lug and attached to a suitable ground point.

The work shall be performed according to the applicable portions of Section 873 of the "Standard Specifications", and details as shown on the plans.

Basis of payment. This work will be paid for at the contract unit price per foot for **OUTDOOR RATED NETWORK CABLE**. The unit price shall include furnishing and installing the cable, and making all connections necessary for proper operation. Furnishing and installing the RJ-45 connectors, ring terminals and grounding the **OUTDOOR RATED NETWORK CABLE** shall be included in the cost of this pay item.

**REMOTE-CONTROLLED VIDEO SYSTEM**

This pay item shall include providing and installing a remote-controlled video system at a location designated by the Engineer and shall require a shop drawing submittal prior to approval. This pay item shall include a color camera (minimum 35x optical zoom), dome assembly, all mounting hardware, connectors, cables, and related equipment necessary to complete the installation in accordance with the manufacturer's specifications.

The PTZ control, power, and coax cables from the traffic signal cabinet shall be paid for separately.

The camera shall be installed as shown on the plans, on the luminaire arm near the luminaire, angled toward the center of the intersection. When installed on the pole, the camera shall be mounted with a 14-inch pendant arm with integral transformer / power supply (to be approved by the Engineer). When installed on the luminaire arm, the camera shall be installed with a 30-degree tilt-adjustable bracket, and the external power supply (to be approved by the Engineer) shall be installed on the pole. Cameras and external power supplies shall be installed with stainless steel straps.

The contractor shall contact the Traffic Engineer prior to installing the camera and associated wiring, to receive final approval on the camera location.

In order for the Traffic Engineer to control the camera remotely and view the video signal over a high-speed connection, the REMOTE-CONTROLLED VIDEO SYSTEM must be connected to either the LCDOT Gigabit Ethernet network.

A VIDEO ENCODER and a LAYER II (DATALINK) SWITCH will be required. Video encoders and layer 2 switch shall be installed with the CLOSED CIRCUIT TELEVISION CABINET and shall be wired to the camera and the wireless transmission system as directed by the Engineer. All Wiring will be at the lighting pole. The VIDEO ENCODER and LAYER II (DATALINK) SWITCH shall be paid for separately.

A REMOTE CONTROLLED VIDEO SYSTEM is being connected to a new wireless transmission system. Connection to the wireless transmission system shall be included in the cost of this item. The WIRELESS VIDEO DISTRIBUTION SYSTEM shall be installed according to the drawings and shall be paid for separately.

Basis of Payment. This item will be paid for at the contract unit price each for REMOTE-CONTROLLED VIDEO SYSTEM, which price shall be payment in full for furnishing all associated equipment required, installing the system complete and in place, and placing the system in operation to the satisfaction of the Engineer.

**LAYER II.(DATA LINK) SWITCH**

This specification sets forth the minimum requirements for a layer II Ethernet switch that will transmit data from one traffic signal cabinet to another traffic signal cabinet containing a layer II switch or a layer III (Network) switch.

The Layer II (Data Link) Switch shall be procured from the County's Passage engineering consultant



and shall program this equipment for the appropriate location in the County's communication network.

The layer II switch and its power supply shall be mounted to either a standard DIN rail or an equipment mounting channel in the cabinet. The power supply shall be hard-wired to the cabinet power, not plugged into one of the traffic signal cabinet power outlets.

Basis of Payment. This item will be paid for at the contract unit price each for LAYER II (DATA LINK) SWITCH, which price shall be payment in full for furnishing and installing the switch, and all necessary connectors, cables, fiber optic jumpers, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer. The VIDEO ENCODER shall be paid for separately.

### **VIDEO ENCODER**

This specification sets forth the minimum requirements for a video encoder that will transmit video data from one traffic signal cabinet to another traffic signal cabinet or to another location having a layer three switch.

Video encoder/decoders submitted for approval must be compatible with the Lake County Passage Advanced Traffic Management System (ATMS) software and VideoLAN VLC Media Player Release 0.8.6D or later.

The VIDEO ENCODER shall be procured from the County's Passage engineering consultant and shall program this equipment for the appropriate location in the County's communication network.

The video encoder shall be mounted on a 16 gauge (min.) aluminum plate, and the plate shall be mounted to the cabinet side rails.

The power supply shall be mounted to either a standard DIN rail or an equipment mounting channel in the cabinet. The power supply shall be hard-wired to the cabinet power, not plugged into one of the traffic signal cabinet power outlets.

Basis of payment. This item will be paid for at the contract unit price each for VIDEO ENCODER, which price shall be payment in full for furnishing and installing the encoder, and all necessary connectors, cables, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

### **Wire and Cable**

Effective: January 1, 2012

Add the following to the first paragraph of Article 1066.02(a):

“The cable shall be rated at a minimum of 90°C dry and 75°C wet and shall be suitable for installation in wet and dry locations, and shall be resistant to oils and chemicals.”

Revise the Aerial Electric Cable Properties table of Article 1066.03(a)(3) to read:

Aerial Electric Cable Properties

Phase Conductor		Messenger wire			
Size AWG	Stranding	Average Insulation Thickness		Minimum Size AWG	Stranding
		mm	mils		
6	7	1.1	(45)	6	6/1
4	7	1.1	(45)	4	6/1
2	7	1.1	(45)	2	6/1
1/0	19	1.5	(60)	1/0	6/1
2/0	19	1.5	(60)	2/0	6/1
3/0	19	1.5	(60)	3/0	6/1
4/0	19	1.5	(60)	4/0	6/1

Add the following to Article 1066.03(b) of the Standard Specifications:

“Cable sized No. 2 AWG and smaller shall be U.L. listed Type RHH/RHW and may be Type RHH/RHW/USE. Cable sized larger than No. 2 AWG shall be U.L. listed Type RHH/RHW/USE.”

Revise Article 1066.04 to read:

“Aerial Cable Assembly. The aerial cable shall be an assembly of insulated aluminum conductors according to Section 1066.02 and 1066.03. Unless otherwise indicated, the cable assembly shall be composed of three insulated conductors and a steel reinforced bare aluminum conductor (ACSR) to be used as the ground conductor. Unless otherwise indicated, the code word designation of this cable assembly is “Palomino”. The steel reinforced aluminum conductor shall conform to ASTM B-232. The cable shall be assembled according to ANSI/ICEA S-76-474.”

Revise the second paragraph of Article 1066.05 to read:

“The tape shall have reinforced metallic detection capabilities consisting of a woven reinforced polyethylene tape with a metallic core or backing.”

**Luminaire**

Effective: January 1, 2012

Add the following to first paragraph of Article 1067(c) of the Standard Specifications:

“The reflector shall not be altered by paint or other opaque coatings which would cover or coat the reflecting surface. Control of the light distribution by any method other than the reflecting material and the aforementioned clear protective coating that will alter the reflective properties of the reflecting surface is unacceptable”

Add the following to Article 1067(f) of the Standard Specifications:

“The ballast shall be a High Pressure Sodium, high power factor, constant wattage auto-regulator, lead type (CWA) for operation on a nominal 240 volt system.”

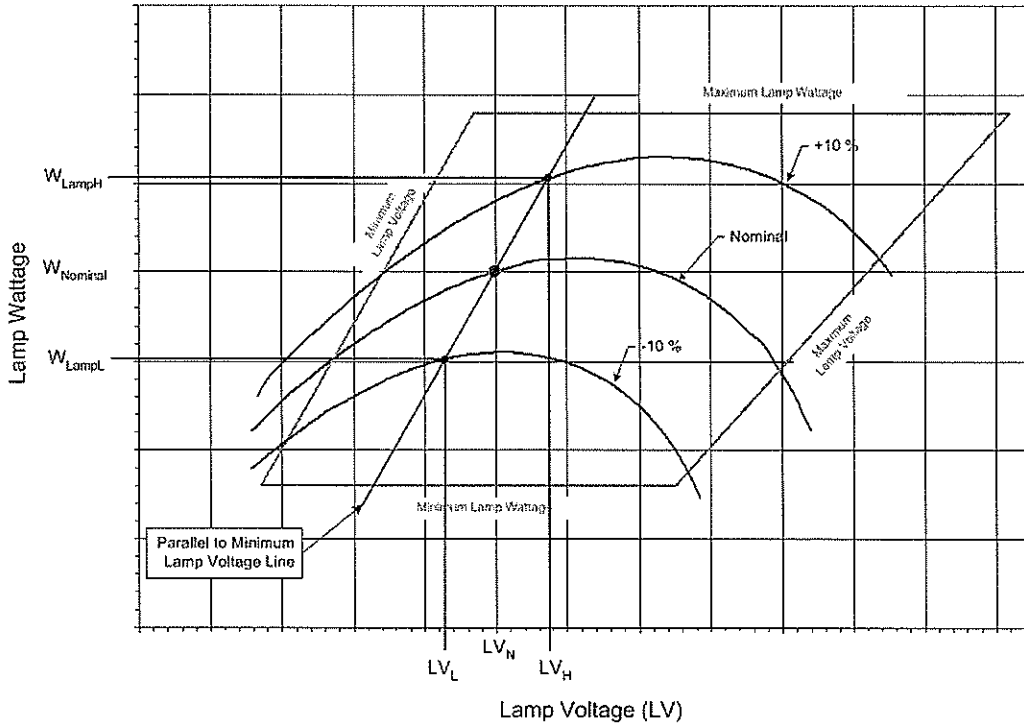
Revise Article 1067(f)(1) of the Standard Specifications to read:

“The high pressure sodium, auto-regulator, lead type (CWA) ballast shall be designed to ANSI Standards and shall be designed and rated for operation on a nominal 240 volt system. The ballast shall provide positive lamp ignition at the input voltage of 216 volts. It shall operate the lamp over a range of input voltages from 216 to 264 volts without damage to the ballast. It shall provide lamp operation within lamp specifications for rated lamp life at input design voltage range. Operating characteristics shall produce output regulation not exceeding the following values:

Nominal Ballast Wattage	Maximum Ballast Regulation
750	25%
400	26%
310	26%
250	26%
150	24%
70	18%

For this measure, regulation shall be defined as the ratio of the lamp watt difference between the upper and lower operating curves to the nominal lamp

watts; with the lamp watt difference taken within the ANSI trapezoid at the nominal lamp operating voltage point parallel to the minimum lamp volt line:



$$\text{Ballast Regulation} = \frac{W_{LampH} - W_{LampL}}{W_{LampN}} \times 100$$

where:

$W_{LampH}$  = lamp watts at +10% line voltage when Lamp voltage =  $LV_H$

$W_{LampL}$  = lamp watts at -10% line voltage when lamp voltage =  $LV_L$

$W_{LampN}$  = lamp watts at nominal lamp operating voltage =  $LV_N$

Wattage	Nominal Lamp Voltage, $LV_N$	$LV_L$	$LV_H$
750	120v	115v	125v
400	100v	95v	105v
310	100v	95v	105v
250	100v	95v	105v
150	55v	50v	60v
70	52v	47v	57v

Ballast losses, based on cold bench tests, shall not exceed the following values:

Nominal Ballast Wattage	Maximum Ballast Losses
750	15%
400	20%
310	21%
250	24%
150	26%
70	34%

Ballast losses shall be calculated based on input watts and lamp watts at nominal system voltage as indicated in the following equation:

$$\text{Ballast Losses} = \frac{W_{Line} - W_{Lamp}}{W_{Lamp}} \times 100$$

where:

$W_{line}$  = line watts at nominal system voltage

$W_{lamp}$  = lamp watts at nominal system voltage

Ballast output to lamp. At nominal system voltage and nominal lamp voltage, the ballast shall deliver lamp wattage with the variation specified in the following table.

Nominal Ballast Wattage	Output to lamp variation
750	± 7.5%
400	± 7.5%
310	± 7.5%
250	± 7.5%
150	± 7.5%
70	± 7.5%

Example: For a 400w luminaire, the ballast shall deliver 400 watts ±7.5% at a lamp voltage of 100v for the nominal system voltage of 240v which is the range of 370w to 430w.

Ballast output over lamp life. Over the life of the lamp the ballast shall produce average output wattage of the nominal lamp rating as specified in the following table. Lamp wattage readings shall be taken at 5-volt increments throughout the ballast trapezoid. Reading shall begin at the lamp voltage (LV) specified in the table and continue at 5 volt increments until the right side of the trapezoid is reached. The lamp wattage values shall then be averaged and shall be within the specified value of the nominal ballast rating. Submittal documents shall include a tabulation of the lamp wattage vs. lamp voltage readings.

Nominal Ballast Wattage	LV Readings begin at	Maximum Wattage Variation
750	110v	± 7.5%
400	90v	± 7.5%
310	90v	± 7.5%
250	90v	± 7.5%
150	50v	± 7.5%
70	45v	± 7.5%

Example: *For a 400w luminaire, the averaged lamp wattage reading shall not exceed the range of ±7.5% which is 370w to 430w”*

Add the following to Article 1067(h) of the Standard Specifications:

“Independent Testing. Independent testing of luminaires shall be required whenever the pay item quantity of luminaires of a given pay item, as indicated on the plans, is 50 or more. For each luminaire type to be so tested, one luminaire plus one luminaire for each 50 luminaires shall be tested. Example: *A plan pay item quantity of 75 luminaires for a specific pay item would dictate that 2 be tested; 135 luminaires would dictate that three be tested.*” If the luminaire performance table is missing from the contract documents, the luminaire(s) shall be tested and the test results shall be evaluated against the manufacturer’s data as provided in the approved material submittal. The test luminaire(s) results shall be equal to or better than the published data. If the test results indicated performance not meeting the published data, the test luminaire will be designated as failed and corrective action as described herein shall be performed.

The Contractor shall be responsible for all costs associated with the specified testing, including but not limited to shipping, travel and lodging costs as well as the costs of the tests themselves, all as part of the bid unit price for this item. Travel, lodging and other associated costs for travel by the Engineer shall be

direct-billed to or shall be pre-paid by the Contractor, requiring no direct reimbursement to the Engineer or the independent witness, as applicable”

The Contractor shall select one of the following options for the required testing with the Engineer's approval:

- a. **Engineer Factory Selection for Independent Lab:** The Contractor may select this option if the luminaire manufacturing facility is within the state of Illinois. The Contractor shall propose an independent test laboratory for approval by the Engineer. The selected luminaires shall be marked by the Engineer and shipped to the independent laboratory for tests.
- b. **Engineer Witness of Independent Lab Test:** The Contractor may select this option if the independent testing laboratory is within the state of Illinois. The Engineer shall select, from the project luminaires at the manufacturer's facility or at the Contractor's storage facility, luminaires for testing by the independent laboratory.
- c. **Independent Witness of Manufacturer Testing:** The independent witness shall select from the project luminaires at the manufacturer's facility or at the Contractor's storage facility, the luminaires for testing. The Contractor shall propose a qualified independent agent, familiar with the luminaire requirements and test procedures, for approval by the Engineer, to witness the required tests as performed by the luminaire manufacturer.

The independent witness shall as a minimum meet the following requirements:

- ▶ Have been involved with roadway lighting design for at least 15 years.
- ▶ Not have been the employee of a luminaire or ballast manufacturer within the last 5 years.
- ▶ Not associated in any way (plan preparation, construction or supply) with the particular project being tested.
- ▶ Be a member of IESNA in good standing.
- ▶ Provide a list of professional references.

This list is not an all inclusive list and the Engineer will make the final determination as to the acceptability of the proposed independent witness.

- d. **Engineer Factory Selection and Witness of Manufacturer Testing:** The Contractor may select this option if the luminaire manufacturing facility is within the state of Illinois. At the Manufacturer's facility, the Engineer shall select the luminaires to be tested and shall be present during the

testing process. The Contractor shall schedule travel by the Engineer to and from the Manufacturer's laboratory to witness the performance of the required tests.

Should any of the tested luminaires fail to satisfy the specifications and perform according to approved submittal information, the luminaire shall be unacceptable and be replaced by alternate equipment meeting the specifications with the submittal and testing process repeated in their entirety; or corrections made to achieve required performance. In the case of corrections, the Contractor shall advise the Engineer of corrections made and shall request a repeat of the specified testing and, if the corrections are deemed reasonable by the Engineer, the testing process shall be repeated. The number of luminaires to be tested shall be the same quantity as originally tested; i.e. if three luminaires were tested originally, one, two or three failed, another three must be tested after corrective action is taken.

Revise Article 1067.06(a)(1) of the Standard Specifications to read:

“The lamps shall be of the clear type and shall have a color of 1900° to 2200° Kelvin.”



Add the following table(s) to Article 1067 of the Standard Specifications:

**IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE**

GIVEN CONDITIONS		
<b>ROADWAY DATA</b>	Pavement Width	24 (ft)
	Number of Lanes	2
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
<b>LIGHT POLE DATA</b>	Mounting Height	30 (ft)
	Mast Arm Length	8 (ft)
	Pole Set-Back From Edge of Pavement	8 (ft)
<b>LUMINAIRE DATA</b>	Lamp Type	HPS
	Lamp Lumens	27,500-29,000
	I.E.S. Vertical Distribution	Medium
	I.E.S. Control Of Distribution	Cutoff
	I.E.S. Lateral Distribution	Type II
	Total Light Loss Factor	.7
<b>LAYOUT DATA</b>	Spacing	160 (ft)
	Configuration	Single Sided
	Luminaire Overhang over edge of pavement	0 (ft)

**NOTE:** Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

PERFORMANCE REQUIREMENTS		
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**NOTE:** These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

<b>LUMINANCE</b>	Average Luminance, $L_{AVE}$	.8 Cd/m <sup>2</sup>
	Uniformity Ratio, $L_{AVE}/L_{MIN}$	4 (Max)
	Uniformity Ratio, $L_{MAX}/L_{MIN}$	8 (Max)
	Veiling Luminance Ratio, $L_V/L_{AVE}$	.4 (Max)

Luminaires shall be painted black by the supplier/manufacturer. Shop drawings for the luminaire must be submitted for review and approval by the Engineer.

**IDOT TRAINING PROGRAM GRADUATE ON-THE-JOB TRAINING SPECIAL PROVISION  
(TPG)**

Effective: August 1, 2012

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's community college pre-apprenticeship programs outlined by this Special Provision.

It is the policy of IDOT to fund IDOT pre-apprenticeship training programs based at Illinois Community Colleges throughout Illinois, by Intergovernmental Agreement with the Illinois Community College Board, 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 state funded construction contracts shall include "Training Program Graduate (TPG) Special Provisions." To benefit from the incentives to encourage the participation in the additional on-the-job training under this Training Program Graduate (TPG) Special Provision, the Contractor shall make every reasonable effort to employ certified graduates of the IDOT funded Pre-apprenticeship Training Program 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 \$10.00 per hour for training given a certified graduate trainee 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 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 .ne 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 \$10.00 per hour for 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 3 . 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 by Intergovernmental Agreement with the Illinois Community College Board 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 Illinois Community College Program 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 TPG Special Provision \$10.00 an hour incentive.

The Contractor or subcontractor shall provide each TPG with a certification showing the type and length of training satisfactorily completed.



**Illinois Department  
of Transportation**

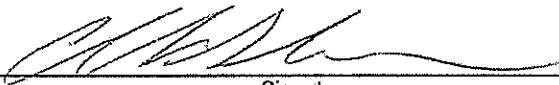
**Storm Water Pollution Prevention Plan**

Route	<u>FAU 3704 &amp; 3705</u>	Marked Rte.	<u>River Road and Roberts Road</u>
Section	<u>07-00086-08-CH</u>	Project No.	<u>CMM-9003 (064)</u>
County	<u>LAKE</u>	Contract No.	<u>63875</u>

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.

Chuck Gleason  
Print Name  
Project Manager  
Title  
Lake County Division of Transportation  
Agency

  
Signature  
SEPTEMBER 24, 2013  
Date

**I. Site Description:**

A. Provide a description of the project location (include latitude and longitude):

The project is located in Lake County, Illinois, in the Village of Lake Barrington, in the north half of the Section 3 in Township 43 North, Range 9 East of the Third Principal Meridian in Cuba Township. The proposed intersection improvement is located at the intersection of River Road (FAU 3704) and Roberts Road (FAU 3705) and is under the jurisdiction of the Lake County Division of Transportation. Relative to major arterials, the project is located approximately 1.1 miles west of IL. Rte 59 and 1.5 miles southwest of US Rte. 12. (42° 14' 18.82" N, 88° 10' 8.74" W)

B. Provide a description of the construction activity which is the subject of this plan:

The project consists of completely reconstructing the intersection of River Road and Roberts Road. The existing signalized intersection will be replaced by a multi-lane roundabout. The proposed alignment of Roberts Road will be shifted approximately 40' to the south. The ground underneath the proposed roadway will be stabilized using geotechnical methods to provide a solid roadway foundation. A 7 foot tall retaining wall will be installed at the north side of the roundabout across from River Road. Additional work will consist of replacing the 42" culvert under River Road, installing storm sewer, shoulder improvements, pavement widening, pavement markings and resurfacing of 500' of River Road and 300' of Roberts Road and all incidental and collateral work necessary to complete the project.

C. Provide the estimated duration of this project:

02/01/2014-11/15/15

D. The total area of the construction site is estimated to be 11.65 acres.

The total area of the site estimated to be disturbed by excavation, grading or other activities is 8.71 acres.

E. The following is a weighted average of the runoff coefficient for this project after construction activities are completed:

0.61

- F. List all soils found within project boundaries. Include map unit name, slope information, and erosivity:

Six soil types are located in the project site of River Road and Roberts Road Intersection Improvement.  
1. Houghton muck ponded (4103A), 2. Houghton muck undrained (1103A), 3. Pella silty clay loam (153),  
4. Ozaukee silt loam (530F), 5. Zurich silty clay (696B) and 6. Zurich silty clay (696D2).

- G. Provide an aerial extent of wetland acreage at the site:

See attached Exhibit

- H. Provide a description of potentially erosive areas associated with this project:

The following soil types are potentially erosive areas associated with the project:

1. Ozaukee silt loam (530F),
2. Zurich silty clay (696B)
3. Zurich silty clay (696D2).

- 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):

The following soil would be disturbed by cut and fill activities to meet the approved grading plan, most of the activities would be taken place in the proposed multi-lane roundabout. The proposed alignment of Roberts Road will be shifted approximately 40' to the south. The ground underneath the proposed roadway will be stabilized using geotechnical methods to provide a solid roadway foundation. A 7 foot tall retaining wall will be installed at the north side of the roundabout across from River Road. Additional work will consist of replacing the 42" culvert under River Road, installing storm sewer, shoulder improvements, pavement widening, pavement markings and resurfacing of 500' of River Road and 300' of Roberts Road and all incidental and collateral work necessary to complete the project.

1. Houghton muck ponded (4103A), 0 to 2 percent slopes, surface runoff class is negligible, erosive factor is low.
2. Houghton muck undrained (1103A), 0 to 2 percent slopes, surface runoff class is negligible, erosive factor is low.
3. Pella silty clay loam (153), 0 to 2 percent slopes, surface runoff class is negligible, erosive factor is low.
4. Ozaukee silt loam (530F), 20 to 30 percent slopes, surface runoff class is very high, erosive factor is high.
5. Zurich silty clay (696B), 2 to 4 percent slopes, surface runoff class is low, erosive factor is moderate.
6. Zurich silty clay (696D2), 6 to 12 percent slopes, surface runoff class is medium, erosive factor is high.

- 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:

LCDOT storm sewer drains into ditches which drain into backwater of Fox River.

- L. 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:

Fox River

- M. 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.

Backwater of Fox River

- N. The following sensitive environmental resources are associated with this project, and may have the potential to be impacted by the proposed development:

- Floodplain
- Wetland Riparian
- Threatened and Endangered Species
- Historic Preservation
- 303(d) Listed receiving waters for suspended solids, turbidity, or siltation

- Receiving waters with Total Maximum Daily Load (TMDL) for sediment, total suspended solids, turbidity or siltation
- Applicable Federal, Tribal, State or Local Programs
- Other

1. 303(d) Listed receiving waters (fill out this section if checked above):

- a. The name(s) of the listed water body, and identification of all pollutants causing impairment:
- b. Provide a description of how erosion and sediment control practices will prevent a discharge of sediment resulting from a storm event equal to or greater than a twenty-five (25) year, twenty-four (24) hour rainfall event:
- c. Provide a description of the location(s) of direct discharge from the project site to the 303(d) water body:
- d. Provide a description of the location(s) of any dewatering discharges to the MS4 and/or water body:

2. TMDL (fill out this section if checked above)

- a. The name(s) of the listed water body:
- b. Provide a description of the erosion and sediment control strategy that will be incorporated into the site design that is consistent with the assumptions and requirements of the TMDL:
- c. If a specific numeric waste load allocation has been established that would apply to the project's discharges, provide a description of the necessary steps to meet that allocation:

O. The following pollutants of concern will be associated with this construction project:

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Soil Sediment             | <input checked="" type="checkbox"/> Petroleum (gas, diesel, oil, kerosene, hydraulic oil / fluids) |
| <input checked="" type="checkbox"/> Concrete                  | <input type="checkbox"/> Antifreeze / Coolants   |
| <input checked="" type="checkbox"/> Concrete Truck Waste      | <input checked="" type="checkbox"/> Waste water from cleaning construction equipment               |
| <input checked="" type="checkbox"/> Concrete Curing Compounds | <input type="checkbox"/> Other (specify)   |
| <input type="checkbox"/> Solid Waste Debris                   | <input type="checkbox"/> Other (specify)   |
| <input type="checkbox"/> Paints                               | <input type="checkbox"/> Other (specify)   |
| <input type="checkbox"/> Solvents                             | <input type="checkbox"/> Other (specify)   |
| <input checked="" type="checkbox"/> Fertilizers / Pesticides  | <input type="checkbox"/> 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**

- 1. **Stabilized 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(A)(1)(a) and II(A)(3), stabilization measures shall be

initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than seven (7) days 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.

Where the initiation of stabilization measures by the seventh day after construction activity temporarily or permanently ceases is precluded by snow cover, stabilization measures shall be initiated as soon as practicable thereafter.

The following stabilization practices will be used for this project:

- |   |   |
|---|---|
| <input type="checkbox"/> Preservation of Mature Vegetation            | <input checked="" type="checkbox"/> Erosion Control Blanket / Mulching                    |
| <input checked="" type="checkbox"/> Vegetated Buffer Strips           | <input checked="" type="checkbox"/> Sodding   |
| <input checked="" type="checkbox"/> Protection of Trees               | <input type="checkbox"/> Geotextiles  |
| <input checked="" type="checkbox"/> Temporary Erosion Control Seeding | <input checked="" type="checkbox"/> Other (specify) Inlet Filters/Inlet & Pipe Protection |
| <input type="checkbox"/> Temporary Turf (Seeding, Class 7)            | <input type="checkbox"/> Other (specify)  |
| <input type="checkbox"/> Temporary Mulching                           | <input type="checkbox"/> Other (specify)  |
| <input checked="" type="checkbox"/> Permanent Seeding                 | <input type="checkbox"/> Other (specify)  |

Describe how the stabilization practices listed above will be utilized during construction:

1) Protection of Trees/Temporary Fence: All trees designated to be saved, or outside the limits of construction, shall be protected prior to beginning any clearing or removal work and shall remain protected during subsequent construction work. Protection of trees shall be as shown on the plans or directed by the Engineer and in accordance with Article 201.05 of the Illinois Department of Transportation's Standard Specifications for Road and Bridge, adopted January 1, 2012.

2) Temporary Erosion Control Seeding: This item will be applied to all bare areas every seven days to minimize the amount of exposed surface areas. Temporary Erosion Control Seeding shall consist of areas as shown on the plans, areas disturbed during the removal of Soil and Erosion measures, or directed by the Engineer and in accordance with the Illinois Department of Transportation's Standard Specifications for Road and Bridge, adopted January 1, 2012.

3) Permanent Seeding: This item will be utilized in small areas where sodding has failed as an interim remedy until sod can be replaced or as designated in rural areas where sod is not a prudent alternative. All disturbed areas, identified to receive seeding, will be stabilized via seeding immediately following final grading.

4) Erosion Control Blanket: This item will be used within 24 hours after seeding operations have been completed, in ditches/swales and sloped areas that require protection from erosion. Erosion control blankets shall be installed over fill slopes, high velocity areas and slopes steeper than 3:1 that have been brought to final grade. Erosion Control Blanket will be installed in accordance to IDOT Specification 251.04.

5) Sodding (Salt Tolerant): Sodding will be provided within urban sections. All urban section areas disturbed by construction will be stabilized with sod immediately following final grading. It will be installed in accordance to IDOT Specification Article 252 throughout the project limits shown on the landscaping plan.

6) Inlet Filters/Inlet and Pipe Protection - This item will be provided for the existing and proposed storm sewers, sediment filters will be placed in all catch basins during construction and will be cleaned on a regular basis.

Describe how the stabilization practices listed above will be utilized after construction activities have been completed:

All areas disturbed by construction will be stabilized with permanent seeding/sodding immediately following the finished grading. Erosion Control blankets will be installed over fill slopes, which have been brought to final grade and have been seeded to protect the slopes from erosion and allow seed to germinate properly.

2. **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:

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Perimeter Erosion Barrier     | <input checked="" type="checkbox"/> Rock Outlet Protection |
| <input checked="" type="checkbox"/> Temporary Ditch Check         | <input checked="" type="checkbox"/> Riprap                 |
| <input checked="" type="checkbox"/> Storm Drain Inlet Protection  | <input type="checkbox"/> Gabions                           |
| <input checked="" type="checkbox"/> Sediment Trap                 | <input type="checkbox"/> Slope Mattress                    |
| <input type="checkbox"/> Temporary Pipe Slope Drain               | <input checked="" type="checkbox"/> Retaining Walls        |
| <input type="checkbox"/> Temporary Sediment Basin                 | <input type="checkbox"/> Slope Walls                       |
| <input type="checkbox"/> Temporary Stream Crossing                | <input type="checkbox"/> Concrete Revetment Mats           |
| <input checked="" type="checkbox"/> Stabilized Construction Exits | <input type="checkbox"/> Level Spreaders                   |
| <input type="checkbox"/> Turf Reinforcement Mats                  | <input type="checkbox"/> Other (specify)                   |
| <input type="checkbox"/> Permanent Check Dams                     | <input type="checkbox"/> Other (specify)                   |
| <input checked="" type="checkbox"/> Permanent Sediment Basin      | <input type="checkbox"/> Other (specify)                   |
| <input type="checkbox"/> Aggregate Ditch                          | <input type="checkbox"/> Other (specify)                   |
| <input type="checkbox"/> Paved Ditch                              | <input type="checkbox"/> Other (specify)                   |

Describe how the structural practices listed above will be utilized during construction:

1) Perimeter Erosion Barrier: This item will be used to demarcate the perimeter of the project location and for the prevention of silt/sediment from leaving the site. Perimeter erosion barrier will be modified as necessary to accommodate the construction and repaired/replaced as necessary. This item will remain in place until all remaining items of the project have been completed.

2) Temporary Ditch Checks - These items will be used throughout the project limit as shown on the plans to reduce the runoff velocity and to trap silt before drains outside the project limit.

3) Storm Drain Inlet Protection: This item will be utilized at all manholes, catch basins and inlets with open grates. Inlet filters will be installed directly on the drainage structure or under the grate of the drainage structure resting on the lip of the frame. Inlet filters will be checked on a regular basis and any sediment/debris will be removed to maintain inlet protection. Storm Drain Inlet Protection will be done in accordance with Article 280.04 of the IDOT Specifications.

4) Stabilized Construction entrance/exist: This item will provide erosion protection during construction of the piers and it will be provided on both sides of the bridge for access.

5) Permanent Sediment Basin: This item will be installed to allow muddy runoff to pond and sediments to settle out.

6) Rock Outlet Protection: This item will be used to prevent erosion by slowing the velocity of concentrated flows.

7) Stone Riprap Class A5: This item will be placed at the culvert/storm sewer outfalls as shown on the plans and maintained as directed by the engineer.

8) Retaining Wall: This item will be placed on the north side of the Roundabout Intersection as shown on the plans.

Describe how the structural practices listed above will be utilized after construction activities have been completed:

All areas disturbed by construction will be stabilized with permanent seeding/sodding immediately following the finished grading. Erosion Control blankets will be installed over fill slopes, which have been brought to final grade and have been seeded to protect the slopes from erosion and allow seed to germinate properly.

3. **Storm Water Management:** Provided below is a description of measures that will be installed during the construction process to control 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.

- a. 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.

- b. 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 storm water management controls:

4. **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:

Management practices, controls and other provisions provided in this plans are in accordance with IDOT Standard Specifications for Road and Bridge Construction and the Illinois Urban Manual, SWCD Permit, MWRD Permit, 404 Permit, Floodway Permit and all other applicable permits.

5. **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.
  - a. 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
  - b. 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 – 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.
- 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.

### 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 that is 0.5 inch or greater or equivalent snowfall.

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](mailto: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

### 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.



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.5 of the Storm Water Pollution Prevention Plan (SWPPP) which will be handled by the Contractor/subcontractor completing this form.

Route	<u>FAU 3704 &amp; 3705</u>	Marked Rte.	<u>River Road and Roberts Road</u>
Section	<u>07-00086-08-CH</u>	Project No.	<u>CMM-9003 (064)</u>
County	<u>LAKE</u>	Contract No.	<u>63875</u>

This certification statement is a part of the 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 the 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

<hr/> Print Name	<hr/> Signature
<hr/> Title	<hr/> Date
<hr/> Name of Firm	<hr/> Telephone
<hr/> Street Address	<hr/> City/State/ZIP

Items which this Contractor/subcontractor will be responsible for as required in Section II.5. of the SWPPP:  

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Bureau of Land • 1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276

Source Site Certification
by Owner or Operator
for Use of Uncontaminated Soil as Fill in a
CCDD or Uncontaminated Soil Fill Operation
LPC-662

Revised in accordance with 35 Ill. Adm. Code 1100, as
amended by PCB R2012-009 (eff. Aug. 27, 2012)

This certification form is to be used by source site owners and operators to certify, pursuant to 35 Ill. Adm. Code 1100.205(a)(1)
(A), that soil (i) was removed from a site that is not potentially impacted property and is presumed to be uncontaminated soil and
(ii) is within a pH range of 6.25 to 9.0. If you have questions about this form, please telephone the Bureau of Land Permit Section
at 217/524-3300.

This form may be completed online, saved locally, printed and signed, and submitted to prospective clean construction or
demolition debris fill operations or uncontaminated soil fill operations.

I. Source Location Information

(Describe the location of the source of the uncontaminated soil)

Project Name: River and Roberts Improvements Office Phone Number, if available:

Physical Site Location (Street, Road): River and Roberts Roads

City: Lake Barrington State: IL Zip Code: 60008

County: Lake Township: Cuba

Lat/Long of approximate center of site in decimal degrees (DD.ddddd) to five decimal places (e.g., 40.67890, -90.12345):

Latitude: 42.238603 Longitude: -88.169189
(Decimal Degrees) (-Decimal Degrees)

Identify how the lat/long data were determined:

GPS Map Interpolation Photo Interpolation Survey Other

IEPA Site Number(s), if assigned: BOL: BOW: BOA:

II. Owner/Operator Information for Source Site

Site Owner Site Operator
Name: Lake County Division of Transportation Name: Lake County Division of Transportation
Street Address: 600 W. Winchester Road Street Address: 600 W. Winchester Road
PO Box: PO Box:
City: Libertyville State: IL City: Libertyville State: IL
Zip Code: 60048 Phone: 847-377-7400 Zip Code: 60048 Phone: 847-377-7400
Contact: Paula Trigg-Director Contact: Paula Trigg-Director
Email, if available: Email, if available:

This Agency is authorized to require this information under Section 4 and Title X of the Environmental Protection Act (415 ILCS 5/4, 5/39).
Failure to disclose this information may result in: a civil penalty of not to exceed \$50,000 for the violation and an additional civil penalty of
not to exceed \$10,000 for each day during which the violation continues (415 ILCS 5/42). This form has been approved by the Forms
Management Center.

Project Name: River and Roberts Improvements

Latitude: 42.238603 Longitude: -88.169189  
(Decimal Degrees) (-Decimal Degrees)

**Source Site Certification**

**III. Descriptions of Current and Past Uses of Source Site**

Describe the current and past uses of the site and nearby properties.\* Attach additional information as needed. The description must take into account, at a minimum, the following for the source site and for nearby property: (1) use of the properties for commercial or industrial purposes; (2) the use, storage or disposal of chemical or petroleum products in individual containers greater than 5 gallons or collectively more than 50 gallons; (3) the current or past presence of any storage tanks (above ground or underground); (4) any waste storage, treatment or disposal at the properties; (5) any reported releases or any environmental cleanup or removal of contaminants; (6) any environmental liens or governmental notification of environmental violations; (7) any contamination in a well that exceeds the Board's groundwater quality standards; (8) the use, storage, or disposal of transformers or capacitors manufactured before 1979; and (9) any fill dirt brought to the properties from an unknown source or site.

Number of pages attached: 18

The site is in a rural area & adjacent properties are rural, forest preserve or residential. No known chemical storage, waste storage, environmental liens, contaminated wells or any potentially impacted properties are present on or adjacent to construction area. Data review of IEPA databases did not indicate site contains PIPs. Soil borings performed did not indicate contamination issues. Materials certified herewith as CCDD material must be free of rebar, garbage, etc. and any said materials must be segregated from CCDD materials and disposed of in other legal means.

\*The description must be sufficient to demonstrate that the source site is not potentially impacted property, thereby allowing the source site owner or operator to provide this certification.

**IV. Soil pH Testing Results**

Describe the results of soil pH testing showing that the soil pH is within the range of 6.25 to 9.0 and attach any supporting documentation.

Number of pages attached: 1

See attached. Results of soil pH testing are between 6.25 and 9.0.

**V. Source Site Owner or Operator's Certification Statement and Signature**

In accordance with the Illinois Environmental Protection Act [415 ILCS 5/22.51 or 22.51a] and 35 Ill. Adm. Code 1100.205(a), I Don Cassier-Agent (owner or operator of source site) certify that this site is not a potentially impacted property and the soil is presumed to be uncontaminated soil. I also certify that the soil pH is within the range of 6.25 to 9.0. I further certify that the soil has not been removed from the site as part of a cleanup or removal of contaminants. Additionally, I certify that I am either the site owner or operator or a duly authorized representative of the site owner or site operator and am authorized to sign this form. Furthermore, I certify that all information submitted, including but not limited to, all attachments and other information, is to the best of my knowledge and belief, true, accurate and complete.

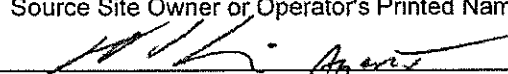
**Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44(h))**

Don Cassier

Agent

Source Site Owner or Operator's Printed Name

Source Site Owner or Operator's Title

  
Source Site Owner or Operator's Signature

7/12/13  
Date

# Soil pH Content

Standard Test Method for pH of Soils ASTM D4972 (Reapproved 2007)

9337G1

Sample ID	pH
B3A-11/5/12	7.09
B6A-10/31/12	6.65
B11A-10/26/12	6.98
B15A-10/29/12	6.75

Test Date

11/10/2012

Sample Dates

10/26-11/5/12

Sampled By

VM

Sample Location

River and Roberts Lake  
Barrington, IL

V. McDuffee, PE

Project Engineer

ILLINOIS DEPARTMENT OF TRANSPORTATION

SOIL BORING LOG

Page 1 Of 1  
Date 9/8/09

ROUTE FAU 3704 and 3705 DESCRIPTION Proposed Improvements

Logged By GG

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method AASHTO T 206-03

Hammer Type Automatic Hammer

Boring No. B-1  
Station 59+02.64  
Offset 47.28' R  
Ground Surface El. +741.94 +/- M.S.L.

ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					When Drilling	at Completion					
740.4	1.0	12				728.4	14.0	2			16.5
							727.4	1			
	2.0	8	4.25 P	13.4			15.0	2	1.50 P		
	3.0	7					16.0				
738.4								1			
	4.0	3	1.25 P	9.4			17.0	4	1.75 P	16.4	
737.4		3						5			
	5.0	2	0.25 P	30.3			18.0				
736.9											
	6.0						19.0	5			
		2	0.25 P	19.6				7	2.25 P	16.9	16.5
735.2		2					20.0	13			
	7.0		0.50 P	40.0							
733.4							21.0				
	8.0							6			
	9.0	1					22.0	10	2.70 B	16.1	
		2		84.0				10			
	10.0	2		106.1			23.0				
730.9							24.0	7			
	11.0										
		2		27.1				9	3.10 B	14.8	
729.9		3					25.0	14			
	12.0										
		3		50.6			716.9				
	13.0										

18" BITUMINOUS CONCRETE PAVEMENT

SANDY LOAM, Gray, Loose, Saturated (A-2-6)

FILL: CLAY, Brown, Little Sand and Gravel, Hard, Moist (A-6)  
(Organic Content = 1.7%)

CLAY, Gray, With Sand and Silt, Stiff to Very Stiff, Moist (A-6)

FILL: CLAY, Brown, Gray and Black, Trace Sand and Gravel, Stiff, Moist (A-6)

FILL: CLAY TOPSOIL, Black, Soft, Wet (A-7-5)  
(Organic Content = 6.5%)

FILL: CLAY, Brown, Gray and Black, Trace Sand and Gravel, Soft, Moist (A-6)

(Dry Unit Weight = 120.4 pcf)  
(Gravel at 19.5' - 20')

PEAT, Black, Medium, Wet (A-8)

CLAY, Brownish Gray, Trace Sand, Very Stiff, Moist (A-6)

PEAT, Dark Brown, Fibrous, Soft, Wet (A-8)

(Dry Unit Weight = 37.2 pcf)

PEAT and ORGANIC SILT, Dark Brown and Gray, Loose, Moist (A-7-5)

ORGANIC SILT, Gray, Trace Sand, Loose, Wet (A-7-5)

End of Boring @ 25 Feet  
Note: Boring was offset approximately 20' south of original boring location due to existing underground utilities (Driller's Observation).

N=Standard Penetration Test-Blows per six inches to drive 2" O.D.

(QU)B=Bulge S=Shear P=Penetrometer Test

Split Spoon Sampler 24" with 140lb hammer falling 30"

4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.



ILLINOIS DEPARTMENT OF TRANSPORTATION

SOIL BORING LOG

Page 1 Of 1  
Date 9/8/09

ROUTE FAU 3704 and 3705 DESCRIPTION Proposed Improvements

Logged By GG

SECTION 07-00086-08-CH LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake STRUCTURE NO. (Exist.) (Prop.)

Drilling Method AASHTO T 206-03 Hammer Type Automatic Hammer

Boring No. B-2  
Station 55+33.77  
Offset 14.12' R  
Ground Surface El. +744.24 +/- M.S.L.

ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					Groundwater Elev.:	at Completion					
743.8							730.7				
	1.0			5.2				14.0	7		
742.9		6							7		21.7
	2.0	6	2.10 S	15.4				15.0	7		
	3.0	5		15.3				16.0			
	4.0	2							10		
	5.0	2	1.10 S	17.2				17.0	11		20.2
	6.0	3						18.0			
737.7		2						19.0	6		
	7.0	3	0.75 P	52.4			724.3	20.0	10		18.9
	8.0	4		33.3					16	3.25 P	15.0
736.2								21.0			
	9.0	1		79.8					10	1.30 B	16.5
	10.0	1					722.2	22.0	17		16.8
	11.0	2					721.7		26		15.9
	12.0										
732.5		3		114.9							
	13.0	3	0.10 P	29.9				25.0			
								26.0			

5" BITUMINOUS CONCRETE PAVEMENT

11" SAND AND GRAVEL BASE COURSE, Brown

FILL: CLAY, Brown, Trace Sand and Gravel, Hard, Moist (A-6(8))  
(Atterberg Limits Test)  
(Combined Analysis)  
(Dry Unit Weight = 119.1 pcf)

ORGANIC CLAY, Dark Gray to Black, Medium, Wet (A-7-5)  
(Dry Unit Weight = 84.9 pcf)

FIBROUS PEAT to CLAYEY PEAT, Dark Brown to Black, Trace Shells, Soft, Wet (A-8)

(Organic Content = 20.2%)

ORGANIC CLAY, Gray, Trace Roots and Shells, Soft, Moist (A-7-5)

POORLY GRADED SAND, Fine, Medium Dense, Moist to Saturated (A-3)

(Saturated Below 16.5 feet)

CLAY, Gray, Trace Sand and Gravel, With Gray Fine Sand Seams, Very Stiff to Stiff, Moist (A-6)

(Dry Unit Weight = 119.3 pcf)

SILT, Gray, Very Dense, Moist (A-4)

End of Boring @ 22.5 Feet

Note: Boring was offset approximately 10' north of original boring location due to existing underground cable and electric utilities (Driller's Observation).

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
Split Spoon Sampler 24" with 140lb hammer falling 30"  
4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

ILLINOIS DEPARTMENT OF TRANSPORTATION

SOIL BORING LOG

ROUTE FAU 3704 and 3705 DESCRIPTION Proposed Improvements

Logged By GG

SECTION 07-00086-08-CH LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake STRUCTURE NO. (Exist.) (Prop.)

Drilling Method AASHTO T 206-09 Hammer Type Automatic Hammer

Boring No. B-3  
 Station 93+42.66  
 Offset 16.57' R  
 Ground Surface El. +739.91 +/- M.S.L.

ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					When Drilling	at Completion					
739.5							721.4				
738.9	1.0			6.4				19.0	3		
		4						20.0	4	1.80 B	26.6
	2.0	4	3.40 S	26.0				21.0	6		
737.4		4		12.5				22.0	3		
	3.0							23.0	5	1.80 B	21.2
	4.0	5		21.1				24.0	6		
	5.0	4						25.0	4		
	6.0			29.9				26.0	6	1.50 B	15.3
732.7		3	1.20 B/S					27.0	8		
	7.0	3		142.5				28.0	5		
731.4								29.0	5	1.25 B	18.8
	8.0							30.0	8		18.5
	9.0	1						31.0			
	10.0	1						32.0	5		
729.9		2		104.8				33.0	9	1.60 B	15.1
	11.0			19.2				34.0	10		14.2
	12.0	1						35.0			
	13.0	2						36.0			
726.4							708.9				
	14.0	3						31.0	5		
	15.0	5	2.00 B/S	17.9				32.0	8		18.3
	16.0	5		18.0				33.0	8		
	17.0	3	1.80 B	18.7			706.4	34.0	7		
	18.0	5						35.0	9	4.90 B/S	24.4
							704.9	36.0	12		

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
 Split Spoon Sampler 24" with 140lb hammer falling 30"  
 4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

ILLINOIS DEPARTMENT  
OF TRANSPORTATION

SOIL BORING LOG

Page 1 of 1

Date 10/9/12

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged by VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP. 43N RING. 9E PM 3rd

COUNTY Lake

STRUCTURE NO. \_\_\_\_\_ (Exist.)

(Prop.)

Drilling Method AASHTO T 206-09

Hammer Type Automatic Hammer

Boring No. B-1A  
Station 62+68.27  
Offset 10.68' R  
Ground Surface El. +745.74 +/- M.S.L.

ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.	Groundwater Elev.:	ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
745.1											
744.7	1.0										
		5						3			
		5	2.50 P	16.9			24.0	6	1.50 P	15.5	
	2.0	3					25.0	7			
742.2	3.0						26.0				
		3					27.0	5			
		4	2.25 P	20.6			28.0	7	1.75 P		
	4.0	4	2.50 B/S				29.0	8			
	5.0						30.0				
739.7	6.0						31.0	3			
		5					32.0	5	1.25 P	20.6	
	7.0	8	2.50 P	9.4			33.0	5			
	8.0	9					34.0				
737.2	9.0						35.0	5			
		5	3.50 P	18.3			36.0	8	0.70 B	22.0	
	10.0	6	2.10 S				37.0	8			
	11.0						38.0				
734.7	12.0						39.0	4			
		3	1.50 P	18.1			40.0	6	1.50 P	15.9	
	13.0	4	1.60 B				41.0	6			
	14.0	5					42.0	5			
	15.0	5	2.00 P	20.9			43.0	6	2.00 P	24.4	
	16.0	7					44.0	5			
731.2	17.0						45.0				
		3					46.0				
	18.0										
		3						4			
	19.0	5						6	1.75 P	19.3	
	20.0	5						7			
	21.0	5									
727.2	22.0										
		4									
	23.0	3									
		3		18.6							
	24.0	3									
725.2	25.0										
		3	2.50 P	16.4							
	26.0	6	1.00 P	20.1							
	27.0	6									
	28.0	6									
	29.0										
	30.0										
	31.0										
	32.0										
	33.0										
	34.0										
	35.0										
	36.0										
	37.0										
	38.0										
	39.0										
	40.0										
	41.0										
	42.0										
	43.0										
	44.0										
	45.0										
	46.0										

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test

Split Spoon Sampler 24" with 140lb hammer falling 30"

4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

SEECO Job No. 9337G-1

SOIL BORING LOG

ROUTE FAU 3704 and 3705 DESCRIPTION Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method AASHTO T 206-09

Hammer Type Automatic Hammer

Boring No. B-2A  
 Station 60+99.74  
 Offset 31.62' L  
 Ground Surface El. +736.75+/- M.S.L.

ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					When Drilling	at Completion					
735.8	1.0					713.25	713.3				
	2.0	3		14.9		715.75		24.0	5		
	3.0	4						25.0	6		
733.3	4.0	3		19.4				26.0			
	5.0	3						27.0	4		
	6.0							28.0	5		
730.8	7.0	1	1.51 B/S	15.2			706.8	29.0	6		
	8.0	3						30.0	7		
	9.0	3	2.82 B/S	16.8	End of Boring @ 30 Feet						
727.3	10.0	3		17.6				31.0			
	11.0	3						32.0			
	12.0	4		20.7				33.0			
	13.0	3						34.0			
	14.0	4		15.5				35.0			
	15.0	5						36.0			
720.8	16.0	4						37.0			
	17.0	4	1.55 B	17.3				38.0			
	18.0	5						39.0			
718.3	19.0	4	1.45 B	20.0				40.0			
	20.0	6						41.0			
	21.0							42.0			
	22.0	4	1.04 B	17.0				43.0			
	23.0	5						44.0			
		5						45.0			
								46.0			

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penctrometer Test  
 Split Spoon Sampler 24" with 140lb hammer falling 30"  
 4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

ILLINOIS DEPARTMENT OF TRANSPORTATION

SOIL BORING LOG

Page 1 Of 1  
Date 11/5/12

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP.43N RRG.9E PM 3rd

COUNTY Lake

STRUCTURE NO. \_\_\_\_\_

(Exist.)

(Prop.)

Drilling Method AASHTO T 206-09

Hammer Type Automatic Hammer

Boring No. B-3A  
Station 59+87.29  
Offset 0.95' R  
Ground Surface El. +735.37+- M.S.L.

ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					Groundwater Elev.:						
					When Drilling	<u>724.37</u>					
					at Completion	<u>726.37</u>					
					After	Hrs					
							<u>711.9</u>				
	1.0			73.2	SILTY CLAY, Gray, Stiff to Very Stiff, Moist			24.0	4		
	2.0	1		100.6	(A-6)			7	1.82 B	16.2	
	3.0							10			
	4.0	0		75.1				26.0	5		
	5.0	0						27.0	8	2.04 B	16.9
	6.0							28.0	12		
	7.0	0		170.9				29.0	4		
	8.0	0						30.0	8	2.18 B	15.1
	9.0	0		88.2	(Dry Unit Weight = 122.5 pcf)			31.0	8		
	10.0	0						32.0	4	2.32 B	15.4
	11.0				(Combined Analysis)			33.0	9	1.48 B	
	12.0	1						34.0	10		
	13.0	0						35.0	4	3.78 B	15.1
	14.0	0		21.6				36.0	7		
	15.0	1						37.0	11		
	16.0						<u>696.9</u>	38.0	5		
	17.0	0		20.8	SANDY LOAM, Gray, Medium Dense, Saturated			39.0	8		
	18.0	1			(A-2-4)			40.0	5		
	19.0	1		19.7				41.0	7		
	20.0	2					<u>694.4</u>	42.0	8		
	21.0				SAND, Gray, Trace Gravel, Medium Dense, Saturated			43.0	10		
	22.0	1		20.7	(A-3)			44.0	6		
	23.0	2					<u>690.4</u>	45.0	8		
		2			End of Boring @ 45 Feet			46.0			

N=Standard Penetration Test-Blows per six inches to drive 2" O.D.

(QU)B=Bulge S=Shear P=Penetrometer Test

Split Spoon Sampler 24" with 140lb hammer falling 30"

4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

SEECO Job No. 9337G-1

ILLINOIS DEPARTMENT OF TRANSPORTATION

SOIL BORING LOG

Page 1 Of 1  
Date 11/1/12

ROUTE FAU 3704 and 3705 DESCRIPTION Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake

STRUCTURE NO.

(Exist.)

(Prop.)

Drilling Method AASHTO T 206-09

Hammer Type Automatic Hammer

Boring No. B-4A  
Station 59+59.95  
Offset 69.41' L  
Ground Surface El. +734.44 +/- M.S.L.

E L E V. (ft.)	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)	Surf. Wat. El.		E L E V. (ft.)	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)
					Groundwater Elev.:						
					When Drilling	713.44					
					at Completion	716.44					
					After	Hrs					

FIBROUS PEAT, Black, Very Soft, Wet (A-8)							710.9				
	1.0										
	2.0	1		397.4				24.0	3		
	3.0	0						25.0	7		
	4.0	0		159.4				26.0	10		
	5.0	0						27.0	4		
	6.0	0						28.0	7		
	7.0	0		152.9				29.0	11		
	8.0	0						30.0	5		
	9.0	0		161.8				31.0	7		
	10.0	0						32.0	9		
	11.0	0						33.0	4		
	12.0	0		149.4				34.0	8		
	13.0	0						35.0	10		
	14.0	0		275.4				36.0	5		
	15.0	0						37.0	5		
	16.0	0						38.0	7		
	17.0	0		38.6				39.0	5		
	18.0	0						40.0	7		
	19.0	0		56.9				41.0	5		
	20.0	0						42.0	6		
	21.0	3						43.0	8		
	22.0	6						44.0	6		
	23.0	7						45.0	8		
								46.0	12		

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
Split Spoon Sampler 24" with 140lb hammer falling 30"  
4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

ILLINOIS DEPARTMENT OF TRANSPORTATION

SOIL BORING LOG

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method AASHTO T 206-09 Hammer Type Automatic Hammer

Boring No. **B-5A**  
 Station **59+06.79**  
 Offset **2.5' R**  
 Ground Surface El. **+735.51 +/- M.S.L.**

ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					When Drilling	at Completion					
733.5	1.0			83.5		712.01	24.0	3			17.3
	2.0	1		62.4		713.51	25.0	5			
	3.0	1					26.0				
	4.0	0		138.2			27.0	4	2.15 B		16.7
	5.0	1					28.0				
	6.0	1					29.0	4	1.70 B		17.4
	7.0	0		163.6			30.0	5			
	8.0	0					31.0	7			
	9.0	0		147.2			32.0	6	2.34 B		15.8
	10.0	0					33.0	10			
	11.0	0					34.0	5			
	12.0	1		112.7			35.0	7	1.64 B		16.9
	13.0	1					36.0	8			
	14.0	0		50.8			37.0	6			
	15.0	0					38.0	10	3.42 B		14.7
	16.0	1					39.0	7			
	17.0	1		37.7			40.0	12	2.69 B		14.9
	18.0	1		25.9			41.0	14			
	19.0	1					42.0	6			
	20.0	2	0.00 P	31.6			43.0	12	2.82 B		14.6
	21.0	1					44.0	12			
	22.0	3	0.00 P	32.7			45.0	7	3.03 B		15.1
	23.0	4		16.3			46.0	15			

TOPSOIL with FIBROUS PEAT, Black, Wet (A-8)

ORGANIC SILT, Gray, With Shells, Very Loose, Wet (A-8)

CLAY, Gray, Very Stiff to Stiff to Very Stiff, Moist (A-6)

CLAY LOAM, Gray, Trace Organics, Very Soft, Wet (A-7-6)

SILTY LOAM, Gray, Very Loose, Moist (A-4)

CLAY, Gray, Very Soft, Wet (A-6)

SILTY LOAM, Gray, Very Loose, Moist (A-4)

(Dry Density = 121.1 pcf)

N=Standard Penetration Test-Blows per six inches to drive 2" O.D.

(QU)B=Bulge S=Shear P=Penetrometer Test

Split Spoon Sampler 24" with 140lb hammer falling 30"

4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

SOIL BORING LOG

ROUTE **FAU 3704 and 3705** DESCRIPTION

Proposed Improvements

Logged By **VM**

SECTION **07-00086-08-CH**

LOCATION **Roberts Rd. & River Rd. Intersection, Lake County, IL**

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY **Lake**

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method **AASHTO T 206-09** Hammer Type **Automatic Hammer**

Boring No. **B-6A**  
Station **66+12.13**  
Offset **293.31' L**  
Ground Surface El. **+739.59 +/- M.S.L.**

ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					When Drilling	at Completion					
738.6	1.0							24.0	3		
	2.0	3						25.0	6		
	3.0	5	3.00 P	15.4				26.0	7		
736.1	4.0	7						27.0	4		
	5.0	3	2.50 P	14.4				28.0	5		
	6.0	6					711.1	29.0	7		
733.6	7.0	6						30.0	4		
	8.0	1						31.0	5		
	9.0	2	0.10 P	50.5				32.0	8		
	10.0	2					708.6	33.0	10		
	11.0	1						34.0	4		
	12.0	2	0.10 P	31.1				35.0	7	2.40 B	
	13.0	1						36.0	13		
	14.0	1						37.0	6		
727.6	15.0	2		44.9				38.0	9	2.00 P	
	16.0	1	0.25 P	36.9				39.0	12		
	17.0						704.6	40.0			
	18.0							41.0			
	19.0							42.0			
	20.0							43.0			
	21.0							44.0			
	22.0							45.0			
	23.0							46.0			

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
Split Spoon Sampler 24" with 140lb hammer falling 30"  
4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.



ILLINOIS DEPARTMENT  
OF TRANSPORTATION

SOIL BORING LOG

Page 1 of 1

Date 11/2/12

ROUTE **FAU 3704 and 3705** DESCRIPTION

**Proposed Improvements**

Logged By **VM**

SECTION **07-00086-08-CH**

LOCATION **Roberts Rd. & River Rd. Intersection, Lake County, IL**

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY **Lake**

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method **AASHTO T 206-09**

Hammer Type **Automatic Hammer**

Boring No. **B-7A**  
Station **58+00.41**  
Offset **104.92' L**  
Ground Surface El. **+735.66+/- M.S.L.**

E L E V. V.	D E P T H (ft.)	S P T (blows)	U C S Qu (TSP)	M O I S T. (%)	Surf. Wat. El.	E L E V.	D E P T H (ft.)	S P T (blows)	U C S Qu (TSP)	M O I S T. (%)
					Groundwater Elev.:					
					When Drilling					
					at Completion	<b>717.16</b>				
					After	<b>719.66</b>				
					Hrs					

FIBEROUS PEAT, Black, Very Soft, Wet (A-8)	732.2	1.0				712.2				
		2.0	1		94.0		24.0	3		16.6
		3.0	0				25.0	6		
		4.0	0				26.0	7		
		5.0					27.0	4		
SILTY LOAM, Brownish Gray, Loose, Moist (A-4)	729.7	6.0	2		21.9	707.2	28.0	6		21.8
		7.0	4				29.0	8		
		8.0	5				30.0	4		
SILTY CLAY LOAM, Brownish Gray, Medium, Moist (A-6)	727.7	9.0	2		18.4	705.7	31.0	7		
		10.0	4	0.75 P			32.0	9		
		11.0	4				33.0			
SILTY LOAM, Brown, Loose, Moist (A-4)	726.7	12.0	3		19.2		34.0			
CLAY, Brown, Very Stiff, Moist (A-6)	724.7	13.0	4		19.0		35.0			
		14.0	5	2.55 B			36.0			
		15.0					37.0			
SILTY LOAM, Gray, Medium Dense, Moist (A-4)	719.7	16.0	4		19.7		38.0			
		17.0	5				39.0			
		18.0	6				40.0			
		19.0	4				41.0			
(Combined Analysis)		20.0	4		16.1		42.0			
		21.0	5				43.0			
SILTY CLAY LOAM, Gray, Very Stiff, Moist (A-6)	717.2	22.0	4		17.8		44.0			
		23.0	5	2.00 P			45.0			
		24.0	5				46.0			
CLAY, Gray, Stiff to Very Stiff, Moist (A-6)		25.0	4		21.6					
		26.0	4	1.53 B						
		27.0	5							
		28.0								
		29.0	4							
		30.0	5	3.22 B	19.8					
		31.0	7							
		32.0								
		33.0								
		34.0								
		35.0								
		36.0								
		37.0								
		38.0								
		39.0								
		40.0								
		41.0								
		42.0								
		43.0								
		44.0								
		45.0								
		46.0								

N=Standard Penetration Test-Blows per six inches to drive 2" O.D.

(QU)B=Bulge S=Shear P=Penetrometer Test

Split Spoon Sampler 24" with 140lb hammer falling 30"

4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

SEECO Job No. 9337G-1

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake

STRUCTURE NO.

(Exist.)

(Prop.)

Drilling Method AASHTO T 206-09

Hammer Type Automatic Hammer

Boring No. **B-8A**  
 Station **94+83.28**  
 Offset **18.66' L**  
 Ground Surface El. **+741.52+- M.S.L.**

ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					Groundwater Elev.:	When Drilling					
741.1											
740.5	1.0	5						24.0	7		
									9		
	2.0	4	4.25 P	12.3				25.0	11		
738.3	3.0	3						26.0			
									9		
	4.0	1	0.13 P	228.6				27.0	12		
									10		
	5.0	1						28.0			
	6.0	0					713.0	29.0	7		
									7		
	7.0	0	0.13 P	102.9				30.0	7		
	8.0							31.0			
	9.0	0					710.5	32.0	6		
									6		
	10.0	1	0.25 P	45.1				33.0	7		
731.8	11.0							34.0	5		
									8		
	12.0	0		29.8				35.0	9		
	13.0							36.0			
728.0	14.0	3		25.6				37.0			
	15.0	6						38.0			
725.5	16.0							39.0			
	17.0	4						40.0			
	18.0	5	1.50 P	25.1				41.0			
723.0	19.0	3						42.0			
	20.0	6	1.00 P	21.6				43.0			
	21.0	8						44.0			
720.5	22.0							45.0			
	23.0	11						46.0			

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
 Split Spoon Sampler 24" with 140lb hammer falling 30"  
 4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

ILLINOIS DEPARTMENT OF TRANSPORTATION

SOIL BORING LOG

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method AASHTO T 206-09

Hammer Type Automatic Hammer

Boring No. **B-9A**  
 Station **57+29.46**  
 Offset **74.92' R**  
 Ground Surface El. **+744.79+- M.S.L.**

ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					Groundwater Elev.:	After					
744.3	0.0										
	1.0							24.0	5		
	2.0	5						25.0	6		
	3.0	8	3.75	8.2				26.0	5		
741.3	4.0	16	P					27.0	3		
	5.0							28.0	6		
738.8	6.0						716.3	29.0	5		
	7.0	3		18.9				30.0	6		
737.8	8.0	4	3.00	22.6				31.0			
736.3	9.0							32.0	5		
	10.0	2						33.0	5		
	11.0	3	2.50	24.1				34.0	6		
733.8	12.0							35.0	5		
	13.0	2						36.0			
	14.0	3						37.0	5		
731.3	15.0							38.0	6		
	16.0	2					707.3	39.0			
728.8	17.0	7		22.9				40.0			
	18.0	9						41.0			
	19.0	9						42.0			
726.3	20.0							43.0			
	21.0	3						44.0			
	22.0	7						45.0			
	23.0	9						46.0			

6" FILL: SANDY CLAY TOPSOIL, Dark Brown (A-7-5)

SANDY CLAY LOAM, Brown and Dark Brown, Trace Roots, Very Stiff, Dry (A-6)

SILT, Brown, Little Sand, Loose, Moist (A-4)

SANDY SILT, Brown, Loose, Moist (A-4)

CLAY, Brown, Very Stiff, Moist (A-6)

CLAY, Gray, Very Stiff, Moist (A-6)

SILT, Gray, Loose, Moist (A-4)

CLAYEY SILT, Gray, Loose, Moist (A-4)

SILTY CLAY LOAM, Gray, Very Stiff, Moist (A-6)

(Atterberg Limits Test) (Combined Analysis)

SAND AND GRAVEL, Brown and Light Gray, With Cobbles, Medium Dense, Saturated (A-1-b)

SAND, Brown and Gray, Medium Dense, Saturated (A-3)

SAND, Gray, Medium Dense, Saturated (A-3) (Little Gravel 28.5' -30')

End of Boring @ 37.5 Feet

N=Standard Penetration Test-Blows per six inches to drive 2" O.D.

(QU)B=Bulge S=Shear P=Penctrometer Test

Split Spoon Sampler 24" with 140lb hammer falling 30"

4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

ILLINOIS DEPARTMENT OF TRANSPORTATION

SOIL BORING LOG

Page 1 Of 1  
Date 10/4/12

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP.43N RNG.9E PH 3rd

COUNTY Lake

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method AASHTO T 206-09

Hammer Type Automatic Hammer

Boring No. **B-10A**  
Station **56+53.84**  
Offset **63.97' R**  
Ground Surface El. **+745.15+/- M.S.L.**

ELEV. V.	DEPTH TH	SPT N	UCS Qu	MOIST. T. (%)	Surf. Wat. El. Groundwater Elev.: When Drilling at Completion After	ELEV. V.	DEPTH TH	SPT N	UCS Qu	MOIST. T. (%)
744.7	0.0					744.7	0.0			
	1.0					741.7	1.0	5		
	2.0	12	3.00 P	7.9		739.2	2.0	7		
	3.0	13				738.2	3.0	11		
	4.0	15				732.7	4.0			
	5.0		2.00 P	15.4		731.2	5.0			
	6.0					705.2	6.0			
	7.0	2		18.0			7.0	7		
	8.0	3					8.0	11		
	9.0	3					9.0	3		
	10.0	3	1.50 P	25.1			10.0	6		
	11.0	5					11.0	5		
	12.0	4	2.00 P	22.0			12.0	9		
	13.0	5					13.0	9		
	14.0	3	1.50 P	20.5			14.0	4		
	15.0	5					15.0	5		
	16.0	6					16.0	8		
	17.0	5					17.0	8		
	18.0	6					18.0	7		
	19.0	7					19.0	9		
	20.0	1					20.0	10		
	21.0	2					21.0			
	22.0	4					22.0			
	23.0	10					23.0			
	24.0	7					24.0			
	25.0	5					25.0			
	26.0						26.0			
	27.0						27.0			
	28.0						28.0			
	29.0						29.0			
	30.0						30.0			
	31.0						31.0			
	32.0						32.0			
	33.0						33.0			
	34.0						34.0			
	35.0						35.0			
	36.0						36.0			
	37.0						37.0			
	38.0						38.0			
	39.0						39.0			
	40.0						40.0			
	41.0						41.0			
	42.0						42.0			
	43.0						43.0			
	44.0						44.0			
	45.0						45.0			
	46.0						46.0			

5" FILL: CLAY TOPSOIL, Dark Brown, Trace Sand (A-7-5)

FILL: SANDY CLAY LOAM, Brown, Very Stiff, Dry (A-6)

SILTY CLAY LOAM, Brown, Trace Gravel, Very Stiff, Moist (A-6)

CLAYEY SILT, Brown, Loose, Moist (A-4)

SILTY CLAY LOAM, Brown and Gray, Stiff to Very Stiff, Moist (A-6)

SILTY CLAY, Brown and Gray, Stiff, Moist (A-6)

SAND, Brown, Trace Gravel, Medium Dense, Saturated (A-3)

SAND, Gray, Medium Dense, Saturated (Some Brown 26' -27.5') (A-3)

End of Boring @ 40 Feet

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
Split Spoon Sampler 24" with 140lb hammer falling 30"  
4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

ILLINOIS DEPARTMENT  
OF TRANSPORTATION

SOIL BORING LOG

Page 1 Of 1

Date 10/26/12

ROUTE **FAU 3704 and 3705** DESCRIPTION

**Proposed Improvements**

Logged By **VM**

SECTION **07-00086-08-CH**

LOCATION **Roberts Rd. & River Rd. Intersection, Lake County, IL**

SEC 3 TWP.43N RRG.9E PM 3rd

COUNTY **Lake**

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method **AASHTO T 206-09**

Hammer Type **Automatic Hammer**

Boring No. **B-11A**  
Station **56+60.38**  
Offset **75.64' L**  
Ground Surface El. **+737.08± M.S.L.**

E L E V. -	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)	Surf. Wat. El. _____	E L E V. -	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)
					Groundwater Elev.: When Drilling <b>720.08</b>					

12" SANDY LOAM (TOPSOIL), Black	736.1	1.0				713.6				
PEAT, Black, Trace Shells, Very Soft, Wet (A-8)	731.1	2.0	0		47.4	711.1	24.0	4		
		2.0	1				25.0	5		
		3.0	1				26.0	7		
		4.0	0				27.0	5	2.22	15.9
ORGANIC SILT AND PEAT, Gray, with Shells, Very Loose, Wet (A-8)	731.1	5.0	0		385.0	703.6	28.0	7	B	
		6.0	0				29.0	4	2.10	18.7
		7.0	0		98.5		30.0	6	B	
		8.0	0				31.0	3		
		9.0	0				32.0	5	2.78	B
		10.0	1				33.0	7	B	
ORGANIC SILT, Greenish Gray, with Shells, Very Loose to Loose, Wet (A-7-5)	724.1	11.0	0		73.4	697.1	34.0	4		
		12.0	0				35.0	7		
		13.0	1				36.0	5		
		14.0	0		72.3		37.0	7		
SILTY CLAY LOAM, Gray, Soft, Saturated (A-6)	719.8	15.0	1		46.3	697.1	38.0	8		
		16.0	2				39.0	4		
		17.0	3				40.0	8		
CLAY, Gray, Stiff, Moist (A-6)	718.6	18.0	2			716.1	41.0	9		
		19.0	3				42.0			
SAND, Gray, Medium Dense, Saturated (A-3)	716.1	20.0	4		1.91	716.1	43.0			
		21.0	4		B		44.0			
		22.0	3				45.0			
		23.0	5				46.0			

N=Standard Penetration Test-Blows per six inches to drive 2" O.D.

(QU)B=Bulge S=Shear P=Penetrometer Test

Split Spoon Sampler 24" with 140lb hammer falling 30"

4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

SEECO Job No. 9337G-1

SOIL BORING LOG

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method AASHTO T 206-09

Hammer Type Automatic Hammer

Boring No. **B-12A**  
 Station **56+19.27**  
 Offset **87.19' L**  
 Ground Surface El. **+736.26+- M.S.L.**

E L E V. (ft.)	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)	Surf. Wat. El.	E L E V. (ft.)	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)
					Groundwater Elev.:					
					When Drilling					
					at Completion	<b>725.26</b>				
					After	<b>726.26</b>				
					Hrs					

12" SANDY LOAM (TOPSOIL), Black	735.3	1.0								
FIBROUS PEAT, Black, Trace Shells, Very Soft, Wet (A-8)		2.0	0	103.1	(Dry Unit Weight = 114.5 pcf)		24.0	4		17.7
Weight of Hammer pushed split spoon sampler 18 inches		3.0	0				25.0	6	1.70 B	
		4.0	0	127.4			26.0	7		
		5.0	1				27.0	4		
		6.0	1				28.0	5	2.00 P	15.8
		7.0	0	158.4	SANDY LOAM, Brownish Gray, Medium Dense, Saturated (A-2-4)	707.8	29.0	5		
Weight of Hammer pushed split spoon sampler 18 inches		8.0	0				30.0	6		
	727.8	9.0	0	145.8	SANDY LOAM, Gray, Medium Dense, Saturated (A-2-4)	705.3	31.0	4		
ORGANIC SILT, Gray, with Shells, Very Loose, Wet (A-8)	726.8	10.0	1	25.1	LOAM, Gray, Medium Dense, Saturated (A-4)	703.8	32.0	6		
Organic Content = 17.86%		11.0	3				33.0	7		
SILT, Gray, Very Loose, Moist (A-4)	725.8	12.0	2				34.0	5		
SAND, Brownish Gray, Loose to Medium Dense, Saturated (A-3)		13.0	2				35.0	7		
		14.0	3		(Combined Analysis Test)		36.0	8		
		15.0	7				37.0	5		19.2
		16.0	9				38.0	8		16.9
		17.0	4		SILTY LOAM, Gray, Medium Dense, Saturated (A-4)	697.8	39.0	4		
		18.0	8				40.0	6		
		19.0	11		End of Boring @ 40.0 Feet	696.3	41.0	8		
	717.8	20.0					42.0			
CLAY, Brownish Gray, Stiff to Very Stiff, Moist (A-6)		21.0	2	1.25 B	16.0		43.0			
(Dry Unit Weight = 124.6 pcf)		22.0	4				44.0			
		23.0	3	2.10 B	16.9		45.0			
			6				46.0			

N=Standard Penetration Test-Blows per six inches to drive 2" O.D.

(QU)B=Bulge S=Shear P=Penetrometer Test

Split Spoon Sampler 24" with 140lb hammer falling 30"

4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL SEC 3 TWP.43N RNG.9E RM 3rd

COUNTY Lake

STRUCTURE NO. (Exist.) (Prop.)

Drilling Method AASHTO T 206-09 Hammer Type Automatic Hammer

Boring No. B-13A  
Station 54+74.21  
Offset 42.09' L  
Ground Surface El. +737.34+- M.S.L.

E L E V. (ft.)	D E P T H (ft.)	S P T N (blows)	U C S Q u (TSP)	M O I S T. (%)	Surf. Wat. El.		E L E V. (ft.)	D E P T H (ft.)	S P T N (blows)	U C S Q u (TSP)	M O I S T. (%)
					Groundwater Elev.:	When Drilling					
						727.84					
						729.34					

12" SANDY LOAM (TOPSOIL), Black	736.3	1.0									
PEAT, Black, Trace Shells, Very Soft, Wet (A-8)		2.0	0		77.1				24.0	5	
			0						25.0	6	2.00 P
			1						26.0		
	733.8	3.0							27.0	4	
PT, Dark Gray, with Shells, Very Loose, Wet (A-8)		4.0	0		136.8				28.0	6	1.75 P
Organic Content = 17.19%			1						29.0	5	
			1						30.0	6	
	731.3	6.0							31.0	4	
SILTY LOAM, Gray, Trace Shells, Trace Gravel, Very Loose, Moist (A-2-4)		7.0	0		23.2				32.0	1	2.00 P
Trace Shells in Sample 3			1						33.0	7	
			2						34.0		
	728.8	8.0							35.0	5	
SILTY LOAM, Gray, Trace Black, Loose, Moist (A-2-4)		9.0	2		24.9				36.0	6	3.00 P
			3						37.0	12	
			3						38.0		
									39.0	6	
			2						40.0	8	2.50 P
			2		21.4				41.0	11	
			3						42.0		
	723.8	13.0							43.0		
SANDY LOAM, Gray, Trace Gravel, Loose, Saturated (A-2-6)		14.0	3						44.0	6	
			4						45.0	7	
			4						46.0	9	
	721.3	16.0							47.0		
CLAY, Gray, Stiff to Very Stiff, Moist (A-6)		17.0	3						48.0	5	
(Dry Unit Weight = 122.4 pcf)			5	1.13 B	23.4				49.0	8	
			6		15.5				50.0	10	
									51.0		
			4						52.0		
			6	1.50 P	16.3				53.0		
			6		19.8				54.0		
									55.0		
			4						56.0		
(Dry Unit Weight = 120.2 pcf)			5	1.64 B	18.1				57.0		
			5						58.0		
									59.0		
									60.0		
									61.0		
									62.0		
									63.0		
									64.0		
									65.0		
									66.0		
									67.0		
									68.0		
									69.0		
									70.0		
									71.0		
									72.0		
									73.0		
									74.0		
									75.0		
									76.0		
									77.0		
									78.0		
									79.0		
									80.0		
									81.0		
									82.0		
									83.0		
									84.0		
									85.0		
									86.0		
									87.0		
									88.0		
									89.0		
									90.0		
									91.0		
									92.0		
									93.0		
									94.0		
									95.0		
									96.0		
									97.0		
									98.0		
									99.0		
									100.0		

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
Split Spoon Sampler 24" with 140lb hammer falling 30"  
4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

249

SOIL BORING LOG

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake

STRUCTURE NO.

(Exist.)

(Prop.)

Drilling Method AASHTO T 206-09

Hammer Type Automatic Hammer

Boring No. **B-14A**  
 Station **53+58.65**  
 Offset **0.97' L**  
 Ground Surface El. **+746.46± M.S.L.**

ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					Groundwater Elev.:						
					When Drilling	<b>735.46</b>					
					at Completion	<b>731.46</b>					
					After	Hrs					
					9" FILL: CRUSHED STONE						
745.7											
745.5	1.0							24.0	5		
		3							7	2.75 P	15.7
	2.0	4		11.9				25.0	10		
		6									
743.0	3.0						720.5	26.0			
					SILTY CLAY, Gray, Very Stiff to Stiff, Moist (A-6)						
	4.0	3						27.0	6	2.50 P	18.0
		3	2.00 P	15.0					6		
	5.0	3						28.0			
740.5	6.0							29.0	3	2.75 P	
		1			(Dry Unit Weight = 121.7 pcf) (Atterberg Limits Test) (Combined Analysis)						
	7.0	2		64.1					6	3.10 B	15.0
		2						30.0	7		
738.0	8.0							31.0			
									4		
	9.0	0						32.0	5	2.50 P	16.3
		1		76.4					6		
	10.0	1						33.0			
735.5	11.0							34.0	5		
		4							5	2.25 P	15.2
	12.0	3		24.6				35.0	7		
		2									
	13.0							36.0			
									4	2.25 P	
	14.0	0			(Dry Unit Weight = 118.4 pcf)						
		1		24.1				37.0	6	1.50 B	15.8
		1					709.0		6		
	15.0				End of Boring @ 37.5 Feet						
730.5	16.0							38.0			
	17.0	3						39.0			
		4	1.00 S	17.1							
		5						40.0			
	18.0							41.0			
727.5	19.0	4						42.0			
		7	3.25 P	16.0							
	20.0	8						43.0			
725.5	21.0							44.0			
		4	2.00 P	16.1							
	22.0	6	2.00 B/S					45.0			
		6									
	23.0							46.0			

N=Standard Penetration Test-Blows per six inches to drive 2" O.D.

(QU)B=Bulge S=Shear P=Penetrometer Test

Split Spoon Sampler 24" with 140lb hammer falling 30"

4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.



ILLINOIS DEPARTMENT OF TRANSPORTATION

SOIL BORING LOG

Page 1 Of 1  
Date 10/29/12

ROUTE FAU 3704 and 3705 DESCRIPTION Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake STRUCTURE NO. (Exist.) (Prop.)

Drilling Method AASHTO T 206-09 Hammer Type Automatic Hammer

Boring No. B-15A  
Station 52+65.85  
Offset 52.22' L  
Ground Surface El. +739.39 +/- M.S.L.

ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					When Drilling	at Completion					
						723.39					
						724.89					
					After	Hrs					

SANDY LOAM (TOPSOIL), Black	738.4	1.0									
FILL: SILTY LOAM, Black, Very Loose, Moist (Contains Ash) (A-7-5)	737.0	2.0	2		19.1		714.4	25.0	8	2.25 P	15.6
ORGANIC CLAY, Dark Gray, Soft, Wet (A-8)		3.0					713.4	26.0			
(Dry Unit Weight = 93.9 pcf)		4.0	1	0.43 B	28.2			27.0	5		
		5.0	1					28.0	7		
	733.4	6.0						29.0	6		
CLAY, Brown and Gray, Stiff to Very Stiff, Wet (A-6)		7.0	2	1.70 B	16.3			30.0	8		
(Dry Unit Weight = 113.8 pcf)		8.0	4					31.0	10		
		9.0	5					32.0	6		
(Dry Unit Weight = 123.9 pcf)		10.0	4	3.60 B	14.3			33.0	9		
		11.0	7					34.0	15		
(Dry Unit Weight = 118.6 pcf)		12.0	8					35.0	7		
		13.0	4	2.40 B	16.4		704.4	36.0	11		
	725.9	14.0	6			End of Boring @ 35.0 Feet		37.0	18		
		15.0	7					38.0			
CLAY, Gray, Stiff, Wet (A-6)		16.0	3		16.1			39.0			
(Dry Unit Weight = 115.2 pcf) Organic Content = 0.41%		17.0	5					40.0			
Occasional Sand Seams		18.0	5	1.00 P	18.1			41.0			
	720.9	19.0	5					42.0			
SILTY LOAM, Gray, Trace Gravel, Medium Dense, Saturated (A-4)		20.0	4		20.0			43.0			
		21.0	6					44.0			
	718.4	22.0	6					45.0			
CLAY, Gray, Trace Sand and Gravel, Very Stiff, Moist (A-6)		23.0	5					46.0			
(Dry Unit Weight = 119 pcf)			7	2.91 B	15.2						

N=Standard Penetration Test-Blows per six inches to drive 2" O.D.

(QU)B=Bulge S=Shear P=Penetrometer Test

Split Spoon Sampler 24" with 140lb hammer falling 30"

4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

July 30, 2013  
SEECO JOB NO. 9337G-1

FINAL ROADWAY GEOTECHNICAL REPORT  
PROPOSED IMPROVEMENTS FOR ROBERTS ROAD AND RIVER ROAD INTERSECTION  
LAKE COUNTY, ILLINOIS

ROUTE FAU 3704 and 3705  
SECTION 07-00086-08-CH

PREPARED FOR:

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PROJECT ENGINEER

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## REPORT SUMMARY

The following is the Final Roadway Geotechnical Report (RGR) for the proposed improvements of the intersection of Roberts Road (FAU 3705) and River Road (FAU 3704), Lake County, Illinois. A total of eighteen (18) soil borings were drilled and sampled for this project by SEECO Consultants Inc. On September 8, 2009, three (3) soil borings (B-1 to B-3) were drilled and sampled in the right-of-way of both Roberts Road and River Road in Lake County. From October 4, 2012 to November 6, 2012, fifteen (15) additional soil borings (B-1A to B-15A) were drilled in the Roberts Road R.O.W for the proposed improvements consisting of a roundabout and a north side retaining wall structure. This project includes the realignment of the intersection by shifting Roberts Road south.

Eighteen (18) soil borings (B-1A and B-15A, and B-1 to B-3) were drilled and sampled in the proposed 80 to 200 feet wide right-of-way (R.O.W.) of Roberts Road (an east-west street) which is to begin improvements at Station 49+28.77 and end at Station 65+44.44 (approximately 1,615.67 lineal feet). Also, the remaining soil boring (B-3) was drilled and sampled in the proposed 80 to 200 feet wide R.O.W. of River Road Street (a north-south street) which is to begin improvements at Station 92+50 and end at Station 95+70 (320 feet).

Based on the findings of SEECO Consultants, Inc. subsurface investigation and the geotech laboratory testing of soils, this project site is not a candidate for typical soils preparation (proofroll, fill with possible selective undercut) for pavement construction because the existence of highly compressible organic soils (peat, organic clay and organic silt) with moistures as high as 397% and/or unsuitable loose and soft soils in 14 of 18 borings located in the area of improvement would yield an estimated maximum 54 inches of total primary and secondary consolidation settlement over time once the new embankment and roadway are constructed.

This would severely violate the IDOT maximum settlement requirement the tolerable total settlement limit after the roadway is paved. These soils are not suitable to build on in their current in-situ state.

Approximately a 110,845 ft<sup>2</sup> area is affected with unsuitable soils to an approximate average depth of 16.1 feet as shown in Map of Estimated Area of Unsuitable Soils in Appendix 11. Approximately 66,096 yd<sup>3</sup> of unsuitable soils that would have to be removed using conventional excavate-refill methods. This is not a viable cost alternative. Also, a land bridge constructed on pipe piles a cellular cofferdam structure (with excavation-refill inside the installed structure) are steel sheet piling with ground anchors were investigated by BLA for this project and they were eliminated because of the prohibitive cost.

Alternative methods for roadway construction at this project site were examined by SEECO Consultants, Inc. in collaboration with BLA to ascertain possible viable economical and buildable solutions. In the body of this RGR, the following five (5) potential roadway foundation support alternatives for the Roberts Road River Road improvements are discussed in detail in the Roadway Foundation Support Alternatives paragraph in the ENGINEERING ANALYSIS AND RECOMMENDATIONS subsection of this report and are listed as follows:

- 1.) Cantilever Steel Sheet Piling One South Side Roberts Road, Both Sides River Road
- 2.) Double Rows of Steel Sheet Piling with Tie-Rods
- 3.) Rigid Inclusions
- 4.) Dry Soil Mixing (35% replacement ratio and 100% replacement ratio alternatives)
- 5.) Aggregate Columns with perforated plastic sleeve

The north side of the proposed Roundabout is to have an approximate 95 feet long earth retention structure consisting of one of these following three (3) types of structures as discussed

in detail in the Earth Retention Structure Alternatives paragraph in the ENGINEERING ANALYSIS AND RECOMMENDATIONS subsection of this report:

- 1.) Soldier Pile with Timber Lagging Retaining Wall with Cast-In-Place Concrete Facing
- 2.) Cantilevered Steel Sheet Pile Wall with Cast-in-Place Concrete Facing
- 3.) Cast-in-Place Concrete Retaining Wall

Proposed concrete storm sewers are proposed to be constructed for this project and will need to be built with one of the following four (4) potential alternatives because of the unsuitable organic soils present at the site. These four (4) alternatives are described in detail in the Storm Sewer Construction paragraph in the ENGINEERING ANALYSIS AND RECOMMENDATIONS SECTION given in this report. All sewer construction should be done in accordance with the ISPE "Standard Specification For Water And Sewer Main Construction In Illinois," 6th Edition, 2009.

- 1.) Partial Undercut Excavate-Refill Alternative with Compacted Granular Fill
- 2.) Aggregate Columns with perforated plastic sleeve
- 3.) Helical Piers with Concrete Cradle
- 4.) Driven Steel Pipe Piles with Concrete Cradle

In addition, detailed geotechnical recommendations regarding the soils present at the site, site preparation, settlement, construction sequencing (3 stage construction) and potential construction problems are also given in the body of this Final report.

## PROJECT OVERVIEW

### Introduction

This project consists of the total reconstruction and realignment of the intersection of Roberts Road and River Road in Lake County, Illinois.

The purpose of this report is to describe the subsurface soil condition and pavement conditions encountered at the site, to evaluate the physical characteristics of the soil by means of a

geotech laboratory testing program, and based on the aforementioned information, recommend the adequacy of the subsurface soil conditions to support the proposed new pavement for Roberts Road and River Road roundabout. Recommendations regarding the installation and support of new laterals and manholes and catch basins for the new storm sewers are also provided in this report. This report also includes detailed soil boring logs for each test boring and geotech laboratory testing data.

The scope of services did not include any environmental assessment for the presence or absence of hazardous or toxic materials in the soil, groundwater, or air, on or below or around this site. Any statements in this report or on the boring logs regarding odors, colors, or unusual or suspicious items or conditions are strictly for the information of the client. This report was prepared at the request of Mr. Dan Bruckelmeyer, P.E. of Bollinger Lach and Associates through SEECO Consultants, Inc.'s Professional Services Agreement dated August 8, 2012 and signed by Mr. Joel Ihde, P.E., S.E. of Bollinger Lach and Associates. The IDOT required "Subsurface Data Profiles" can be found in the Appendix 2B of this report.

### Project Description

This project consists of the reconstruction and realignment of the intersection of Roberts Road and River Road in Lake County, Illinois. The project site is approximately located in the north half of the Section 3 in Township 43 North, Range 9 East of the Third Principal Meridian in Cuba Township, Lake County, Illinois in the 10<sup>th</sup> Edition of Lake County, Illinois Land Atlas and Plat Book published by Rockford Map Publishers, Inc.

Based on continual telephone and email conversations and transmittals between the principal author of this report and Mr. Dan Bruckelmeyer, P.E. Project Manager of Bollinger Lach and Associates (BLA) and based on the project Plan and Profile sheets (Sheets 1, 2 and 3 of 3) for



Roberts Road and River Road, Lake County, Illinois undated and prepared by BLA (emailed from BLA to SEECO on 11/18/2012) and based on the existing Typical Sections for Roberts and River Road undated and prepared by BLA (emailed from BLA to SEECO on 11/8/2012) the following regarding this project are known to the principal author of this report:

The intersection of Roberts Road and River Road is proposed to be reconstructed (complete removal of existing pavement) and replaced with new pavement for a roundabout at the intersection of River Road and Roberts Road. Mr. Dan Bruckelmeyer stated that this project is Federally funded. The Route Numbers are FAU 3705 (Roberts Road) And FAU 3704 (River Road). The Project Section Number is 07-00086-08-CH.

#### Roadway Improvements

Currently, Roberts Road is a two-lane road (11 feet wide lane each way) with right hand turn lanes (one onto Oak Hill Drive to the north and one onto River Road to the South). Roberts Road has approximately 2 to 4 feet wide, 6 inch thick HMA shoulders and 4 feet wide, 6 inch thick aggregate shoulders. B-6.12 curb and gutter exists on the north side of Roberts Road, from Station 50+25 to Station 55+13 and from Station 55+37 to Station 57+80. The typical existing pavement on Roberts Road per BLA's Typical Section plans consists of 1.5 inches of Hot Mix Asphalt (HMA) surface course overlying 5.5 inches of HMA Binder course overlying 7 inches of aggregate base course. The existing River Road is a two-lane road (12 feet wide per lane each way). The typical existing pavement on River Road per BLA's Typical Section plans consists of 7 to 7.5 inches HMA surface course overlying 7 inches of aggregate base course. River Road has approximately 4 feet 6 inch wide HMA shoulders from Station 92+50 to 95+02.20. The current existing Roberts Road and River Road R.O.W. is 80 feet. Existing wetlands are to the south of Roberts Road and to the east and west of River Road. The 100 year Base Flood Elevation is 737 M.S.L.

The improvements for River Road and Robert Road include reconstruction from their current T-intersection to a roundabout. Roberts Road is a fully improved 2 lane highway (one lane both ways-east and west until it approaches the proposed roundabout). This roundabout will have a single lane becoming double lanes approaching and within the roundabout with a right hand turn lane from Roberts Road to River Road. With these improvements Roberts Road will shift its alignment south of its current location and towards the wetlands.

The pavement reconstruction for Roberts Road (an east/west street) is to begin at Station 49+28.77 and end at Station 65+44.44 (1,615.67 feet) in the proposed 80 feet to 200 feet wide ROW. Each lane width will be typically 12 feet wide bituminous concrete pavement lanes with new concrete curb and gutter (Type B-6.24 and Type B-6.12). The pavement reconstruction for River Road (a north/south street) is to begin at Station 92+50 and end at Station 95+70 (320 feet) in the proposed 80 feet to 200 feet wide ROW. Each lane width will be typically 12 feet wide bituminous concrete pavement lanes with new concrete curb and gutter (Type B-6.24 and Type B-6.12).

Per BLA's Typical Section plans the proposed River Road and Roberts Road preliminary pavement cross section will consist of 2 inches of HMA surface course, Mix D, N70 overlying 5 inches of HMA binder course, IL-19, N70 overlying 12 inches of aggregate subbase course. Proposed Type B-6.24 and Type B-6.12 concrete curb and gutter are proposed alongside Roberts Road and River Road.

#### Proposed Preliminary Pavement Cross Section

The proposed pavement for Roberts Road and River Road improvements is to be a flexible pavement using "Mechanistic Pavement Design" per BLA Typical Sections. This proposed

preliminary pavement design as described previously has a total new pavement thickness of 19 inches (or 1.58 feet). This pavement design is strictly preliminary at this time.

#### Proposed Embankment Fill

Raised medians of variable width will have 6 inches of topsoil furnished and placed. The proposed roadway embankment which shifts south towards the lower level wetlands will have to be built up to get out of the edge of the wetlands and above the 100 year base flood elevation of 737 M.S.L. The proposed embankment (south of Roberts Road) was shown as 4H:1V in the Phase I R.O.W. acquisition per BLA but will now be pulled back to 3H:1V to save on stabilization and fill costs. The proposed finished top of pavement elevations for the north side of the roundabout and from Station 49+28.77 to Station 53+25 and Station 63+50 to Station 65+44.44 on Roberts Road are approximately within 1 foot of existing elevations. However the south portions of the Roundabout and the Roberts Road right hand turn lane (RTL) and embankment to the south will be raised. The maximum height raise is approximately 8 feet in the general area located southwest of the proposed roundabout.

#### Proposed Centerline Grades

Proposed centerline grades along Roberts Road range from 743.27 M.S.L. to 749.57 M.S.L. and are approximately 0 to 8.0 feet above the existing elevations at these locations with longitudinal slopes along the proposed centerline ranging from -0.68% to +1.41%.

Proposed centerline grades along River Road range from 739.09 M.S.L. to 745.0 M.S.L. and will be approximately 0 to 2.5 feet above the existing River Road top of pavement centerline profile grade with longitudinal slopes along the proposed centerline ranging from +1.00% to +3.01%.

#### Proposed Retaining Structure

A proposed retaining structure is to be located along the north side of the roundabout. This proposed retaining structure is to be approximately 95 feet long and be 8 feet maximum height. There is a proposed temporary easement to the north (located on the Durr Parcel) so the proposed retaining wall can be constructed. Preliminarily, the excavation influence line behind the proposed retaining wall shown on the BLA Typical Section plans is a 1H:1V slope with an existing slope to be restored to a 1H:1V or 2H:1V slope behind the wall. Engineered fill consisting of compacted stone or clay backfill will be placed behind said wall is a proposed cast in place concrete cantilever retaining wall option is selected. This proposed retaining wall type is preliminary at this time.

#### Proposed Sidewalk & Multi-Use Paths

A six feet wide, 5 inches thick Portland Cement Concrete (P.C.C.) sidewalk is proposed to be constructed from the back of the concrete curb to the face of the proposed retaining wall.

A bituminous multi-use path located south along Roberts Road on the new roadway embankment is to preliminarily consist of 3 inches of HMA overlying 6 inches of aggregate base course, IDOT Type A.

#### Proposed Embankment Side Slopes

The embankment on the south side of Roberts Road (shown on BLA plans at 4H:1V side slope) is better suited a 3H:1V if the reinforcement measures allow because it should result in less new material being brought to the site as well as lessened impacts to the existing wetlands and fill in the floodplain (located to the south). The side slopes on River Road will remain at 4H:1V in order to provide a traversable grate over a relocated 42" culvert per BLA.

Proposed Storm Sewers

For storm drainage, proposed storm sewers will be used with new laterals and 17 associated proposed inlets, catch basins and manholes. Also 8 Flared End sections located on the northwest and southwest section of the project are also to be utilized. Proposed concrete storm sewer pipe is to be installed along the south side of Roberts Road with a minimum depth of 3.5 feet. Diameter and lengths are preliminary at this time and have not been determined exactly. The preliminary proposed depth of the pipe is approximately 3.5 to 6.5 feet below proposed grade with proposed inverts ranging from 738.35 M.S.L. to 743.11 M.S.L and slopes of 0.40% to 1.00%.

An existing 60 feet long, 42 inch diameter culvert underneath River Road at Station 93+23 is to be removed and replaced with a proposed 100 feet long, 42 inch diameter culvert with inlet box grate at Station 93+33.

Climatic Conditions

The atmospheric condition at the time of drilling and sampling the boreholes (September 8, 2009 and between October 4 to November 6, 2012) for this investigation is presented below. See below for daily climate data at nearby Chicago-O'Hare Airport for the dates when drilling at the Lake County, Illinois site had occurred.

**Table No. 1: Actual Conditions for September 2009 & October and November 2012 (Reports from ORD)**

Date	Temperature (°F)			Precip.
	High	Low	Avg.	
9/08/09	78	60	69	0.00
10/04/12	77	48	63	0.12
10/07/12	51	36	44	0.00
10/09/12	65	42	54	0.17

Date	Temperature (°F)			Precip.
	High	Low	Avg.	
10/24/12	78	58	68	0.00
10/26/12	51	37	44	0.00
10/29/12	51	36	44	0.00
10/31/12	50	34	42	0.00
11/01/12	54	34	44	0.00
11/02/12	48	34	41	0.00
11/05/12	44	32	38	0.00

**Legend**

Avg.: Average (The formula is High Temperature+  
Low Temperature / 2)

Refer to Local Climatological Data in Appendix 10 for the climatic conditions as recorded at nearby O'Hare Airport in Chicago (NOAA weather reporting station records) for the climatological data for the month which drilling occurred at the site as well as the weather for three (3) months prior to drilling at the site.

The climatic conditions prevalent at Barrington, Lake County, Illinois presented in the following chart, Table No. 2, show the average high and low temperatures along with the average precipitation. Also presented in the following chart are the record high and low temperatures as recorded at Barrington, Lake County. The average high temperatures at Barrington, Lake County range from 28°F in January to 82.0°F in July and the average lows range from 13°F in January to 63°F in July. The average monthly precipitation at Barrington, Lake County ranges from 1.90 inches in January to 4.86 inches in August – See the following Table No. 2.

**Table No. 2: Records and Averages – Barrington, Lake County, Illinois**

<u>Month</u>	<u>Avg. High</u>	<u>Avg. Low</u>	<u>Record High</u>	<u>Record Low</u>	<u>Avg. Monthly Precip.</u>
January	28°F	13°F	62.0°F	-26.0°F	1.90 in
February	33°F	17°F	69.0°F	-21.0°F	1.97 in
March	44°F	26°F	83.0°F	-9.0°F	2.29 in
April	57°F	38°F	89.0°F	5.0°F	3.56 in
May	68°F	48°F	93.0°F	22.0°F	4.24 in
June	78°F	58°F	102.0°F	35.0°F	3.85 in
July	82°F	63°F	103.0°F	38.0°F	3.78 in
August	79°F	61°F	100.0°F	38.0°F	4.86 in
September	72°F	52°F	96.0°F	25.0°F	3.40 in
October	60°F	41°F	88.0°F	14.0°F	3.10 in
November	47°F	30°F	75.0°F	-10.0°F	3.04 in
December	33°F	18°F	66.0°F	-20.0°F	2.26 in

## ANALYSIS AND RESULTS

### Subsurface Site Exploration Procedures

#### Past Subsurface Investigation

From September 8, 2009 to March 25, 2010, seven (7) soil borings (B-1 to B-7) were drilled and sampled in the right-of-way of both River Road and Roberts Road in Lake County by SEECO Consultants, Inc. at the approximate boring locations provided by Bollinger Lach & Associates Inc. These seven (7) borings were drilled for a project associated with River Road and only three (3) borings (B-1, B-2 and B-3) are still associated with this project because of their location on the project site. These borings were originally drilled for the pile analysis summary letter dated April 13, 2010, "Pile Analysis for the Proposed Improvement Roberts Road and River Road Intersection, Lake County, Illinois" SEECO Job 9337G, which included a driven pipe pile study which included analyses and foundation recommendations for a proposed land bridge on River Road.

#### Current Subsurface Investigation

From October 4, 2012 to November 6, 2012, fifteen (15) soil borings (B-1A to B-15A) were drilled and sampled by SEECO Consultants, Inc. at this site. The approximate boring locations provided by Mr. Dan Bruckelmeyer, P.E., from Bollinger Lach & Associates Inc. on the project

Plan Sheet titled "Ultimate Condition Roundabout Roberts and River Road" (Sheet 1 of 1) (Section # 07-00086-08-CH), were provided to SEECO. The borings were laid out in the field by SEECO Consultants, Inc.'s personnel and offset if there were accessibility issues.

Eight (8) borings (B-2A, B-3A, B-5A, B-7A, B-11A, B-12A, B-13A, and B-15A) were located within wooded areas located immediately south of the existing Roberts Road and required clearing of trees and brush for ATV drill rig access before SEECO Consultants field personnel could utilize a CME 750 ATV drill rig which advances the boreholes by the hollow stem auger method was used to drill and sample these boreholes.

One (1) boring (B-6A) was located within an open pasture located south of the wooded area south of the existing Roberts Road. Clearing of trees and brush was required for ATV drill rig access through the wooded area to B-6A.

One (1) boring (B-4A) was located within a wetlands area surrounded by cattails and located south of the wooded area south of Roberts Road. Clearing of trees and brush was required for ATV drill rig access through the wooded area to the location of boring B-4A.

Five (5) borings (B-1A, B-8A, B-9A, B-10A, and B-14A) were located on the south shoulder of the existing Roberts Road, the north shoulder of the existing Roberts Road, and the shoulder of the southwest corner of the existing intersection of Roberts Road and River Road. No clearing of brush and trees was required and a truck-mounted rotary-type Diedrich D-50 drill rig which advances the boreholes by the hollow stem auger method was used to drill these borings.

All fifteen (15) borings were drilled and sampled in the approximate area of the proposed realignment of Roberts Road to approximate depths ranging from 30 feet to 45 feet below the top of existing surface grades at the respective boring locations.



Approximate roadway stations and offsets from the proposed centerline and approximate (1929 Adjustment) Mean Sea Level (MSL) surface elevations of the borings are provided on the Boring Logs given in Appendix 2A of this report and were obtained from November 13, 2012 and November 19, 2012 e-mails to SEECO Consultants, Inc. from Mr. Dan Bruckelmeyer, P.E., of Bollinger Lach & Associates Inc. (BLA).

Representative soil samples were obtained at these boring locations by means of a split barrel sampling procedures in accordance with AASHTO T 206-09, "Penetration Test and Split Barrel Sampling of Soils." In the split barrel sampling procedure, a split spoon sampler having a two-inch outside diameter, an inside diameter of 1-3/8 inches and a length of two feet is driven into the soil. This sampler is advanced by driving a 140-pound weight falling freely from a height of 30 inches with each Standard Penetration Resistance being recorded as a number of blows required to advance the sampling spoon for six-inch intervals for a total distance of 18 inches along the length of the split spoon sampler.

Representative portions of the split spoon samples were placed in glass containers with screw-type lids and taken to our geotechnical laboratory for further examination and testing.

The "N" value or SPT values are related to the consistency of cohesive soils and relative density of primarily cohesionless to semi-cohesive soil types. Refer to Appendix 2A of this report for the Boring Logs.

#### Future Subsurface Investigation

An additional three (3) to five (5) borings are recommended for the area of the proposed realignment of Roberts Road due to the various depths of organic material encountered in the as-drilled borings of the current and past subsurface investigations to delineate the areal extent of these organic based on total cost budgeted for this geotech engineering study for 3" Shelby tubes sampling of the organic soils for consolidation testing to determine the compressibility

(Compression Index), and the coefficient of consolidation ( $C_v$ ) for studying the time rate of consolidation of the organic subsoils under various loads.

Consolidation is a process where soil experiences a decrease in its volume over time under an increased sustained load. The organic problematic soils at the project site will experience consolidation settlement under applied sustained loading caused by the construction of the new embankment and roadway.

The typical soil matrix is comprised of 3 components-water, air voids and soil particles. If the soil matrix is 100% saturated then all the air voids are filled with water. During primary consolidation when the soil structure is subjected to an increase sustained load it, the water in the soil matrix will be squeezed out over time resulting in a reduction of soil volume (which results in downward movement--settlement). After the majority of this sustained load has been transferred from the pore water (as it is squeezed out of the soil matrix) to the soil particles from this primary consolidation process (which can occur up to 10 years), secondary consolidation then occurs (and can occur over long periods of time such as 10 to 20 years). Secondary consolidation is the reduction in soil mass volume caused by the adjustment of the internal structure of the soil mass particles from the applied sustained load.

#### **Geotech Laboratory Testing Program**

The geotech laboratory testing program consisted of performing the natural moisture content on all soil samples, unconfined compressive strength tests for all the cohesive soil samples. In-situ moisture content or natural water content is determined in the laboratory as follows (AASHTO T 265-93(2008)). A portion of each sample, consisting of a one-inch piece is weighed, oven dried at  $105^{\circ}\pm 5^{\circ}\text{C}$ , and reweighed to obtain the weight of water of the sample. The natural moisture

content is the ratio of the weight of water to the weight of the dry soil expressed as a percentage. The unconfined compressive strength tests were performed on representative cohesive soil samples in accordance with AASHTO T 208-10 in SEECO Consultants, Inc.'s soil laboratory and are shown on the boring logs.

Liquid limit and plastic limit tests were performed in the pavement improvement area in accordance with AASHTO T 90-00 (2008) on eight (8) representative soil samples. Thirteen (13) particle size analyses, including sieve analysis and hydrometer analysis tests were performed in accordance with AASHTO T 88-10 on representative soil subgrade samples. Fifteen (15) organic content tests were performed in accordance with AASHTO T267-86(2008) Loss of Ignition test on representative soils to determine the organic content of these soils.

Visual classification was performed on all soil samples. After completion of the testing program, each soil sample was visually classified on the basis of texture and plasticity/compressibility in accordance with the AASHTO Classification System (M-145-91) 2000 and IDOT Textural Classification Chart. See Appendix 4 of this report. The estimated group symbol according to this system is included following the description of the soil on the boring logs.

Specific geotech laboratory test data is noted on either the Boring Logs found in Appendix 2A or the appropriate test results sheet found in Appendixes 5 and 6 of this report.

### Local Site Geology

The project site is located in an area indicated on the *Illinois State Geological Survey No. 460, Plate One (Surficial Geology of the Chicago Region)* compiled by H.B. Willman and Jerry A. Lineback dated 1970. Virgin soils in the vicinity of the project site located at the intersection of

Roberts Road and River Road primarily consist of Grayslake Peat which was deposited during the Woodfordian, Two Creekan, Valderan, and younger Substage of Holocene continental glaciation during the Pleistocene Epoch. These soils that are assigned as Grayslake Peat consists of peat, muck, and local marl and have dominant organic deposits with interbedded silt and clay in places and are found mostly in glacial lake basins; locally in lake basins on floodplains of major rivers. Refer to the Surficial Geology-Chicago Region Map given in Appendix 1 of this report.

### Site Soil Conditions

Eighteen (18) soil borings B-1A to B-15A and B-1 to B-3 were drilled and sampled by a SEECO Consultants, Inc.'s drill crew utilizing a drill rig on September 8, 2009 (B-1 to B-3) and between October 4, 2012 to November 6, 2012 (B-1A to B-15A) in the area of the River Road and Roberts Road proposed roadway improvements.

In four (4) borings B-1, B-2, B-3, B-8A, pavement consisting approximately 5 inches to 18 inches of bituminous concrete pavement overlying 6.5 inches to 11 inches of brown sand and gravel base course was encountered. In ten (10) borings B-2A, B-3A, B-5A, B-6A, B-9A, B-10A, B-11A, B-12A, B-13A, B-15A, generally approximately 5 inches to 24 inches of wet black clay topsoil or sandy loam topsoil or topsoil with fibrous peat or dark brown clay topsoil fill was encountered at the surface. In borings B-1A and B-14A, approximately 8 inches to 9 inches of crushed stone or tan sand and gravel fill was encountered at the surface. Borings B-4A and B-7A encountered wet (moisture content 94% to 397.4%) very soft black fibrous peat (A-8) at the surface.

In eight (8) of the borings B-1, B-2, B-3, B-1A, B-6A, B-8A, B-14A and B-15A, fill encountered in the upper layers generally consisting of very soft to hard brown/gray/black dark brown clay fill to

silty clay fill to silty clay loam (A-6) to wet soft black clay topsoil fill (A-7-5) to brown sand fill (A-3) to medium dense brown and dark brown sandy loam (A-2-6) to black very loose silty loam fill (containing ash) was encountered to approximate depths of 2.5 to 7.25 feet below the existing ground surface.

Fourteen (14) of the eighteen (18) total soil borings made in the area of the proposed improvements encountered highly compressible organic soils (peat, organic clay and organic silt) with moistures as high as 397%. These organic soils are not suitable to build on in their current in-situ state since the proposed roadway improvements would experience detrimental settlement.

In borings B-1 to B-3, B-3A, B-4A, B-5A, B-6A, B-7A, B-8A, B-11A, B-12A, B-13A, B-14A and B-15A (starting at elevations of 732.7 M.S.L. to 740.5 M.S.L. and ending as deep as 713.4 M.S.L.) approximately 2.75 to 21 feet of wet soft topsoil, peat and fibrous peat (A-8) and wet very loose to loose dark gray to greenish gray to gray organic silt with shells (A-7-5) and wet soft to medium dark gray to black organic clay (A-7-5) was encountered. These organic soils had organic contents ranging from 1.98% to 20.2% in comparison to inorganic soils encountered which had organic contents as low as 0.41%. In borings B-3A, B-4A, B-5A, B-7A, B-8A, B-11A, B-12A and B-13A organic soils were very soft with 1 SPT blow per 18 inches or Weight of Hammer (0 SPT blows per 18 inches) indicating very poor strength.

Underlying the organics, fill or topsoil, virgin soils generally consist of soft to very stiff brown to gray to brownish gray clay to silty clay to clay loam (A-6) to saturated very loose to medium dense brown to gray sand (A-3) and sandy loam (A-2-4) to saturated medium dense gray sandy gravel and sand and gravel (A-1-b) to loose to medium dense brown to gray silt to silty clay loam to silty loam (A-4).

Other than the upper 5 to 12 inches of topsoil or topsoil fill, no fill or organic soils were encountered in Boring B-2A, B-9A and B-10A. No organic soils were encountered in boring B-1A. These four soil borings (B-1A, B-2A, B-9A and B-10A) out of the eighteen total drilled in the project area generally had suitable soils encountered throughout the depth of the borehole. The remaining 14 borings encountered unsuitable organic soils in the project area.

No bedrock was encountered within the termination depths of 22.5 to 45 feet drilled in each of the eighteen soil borings made within the limits of the proposed project site roadway improvements. It is recommended that the soil Boring Logs given in Appendix 2A of this report should be studied for exact soil conditions at each boring location.

#### Site Groundwater Conditions

Groundwater was encountered all of the eighteen (18) soil borings (B-1 to B-3 and B-1A to B-15A) drilled and sampled in the proposed improvement areas at River Road and Roberts Road intersection for the explorations from September 8, 2009 and between October 4, 2012 to November 6, 2012. Groundwater was encountered approximately 9.5 feet to 23.5 feet below the existing grade at the boring locations while drilling or sampling (approximate elevations of 712.01 M.S.L. to 735.46 M.S.L.) at the time of drilling. Groundwater was encountered in all locations at the completion of drilling (approximate elevations of 713.51 M.S.L. to 734.24 M.S.L.).

The boreholes have been extended primarily through cohesive clay soils, organic soils, cohesionless soils, sand, and sandy loam soils. Typically clay soils were encountered over a saturated cohesionless sand and gravel layer. These cohesionless soils need only a short period of time for the groundwater level to attain equilibrium conditions in the boreholes in order

to approximate the true hydrostatic water level. However, yearly and seasonal fluctuations in the groundwater levels are possible due to changes in hydrogeological conditions at this site over time. The groundwater level observations and times of recording are indicated on the Boring Logs included in Appendix 2A of this report.

## ENGINEERING ANALYSIS AND RECOMMENDATIONS

### Discussion of Soils Present For The Proposed Pavement Subgrade

The new pavement on Roberts Road and River Road will be reconstructed with a new roundabout at their intersection. Roberts Road will be realigned to the south towards the existing wetlands. In doing so, the roadway embankment will need to be built up approximately with 3.2 to 8.6 feet of structural granular fill. The general soil conditions present underneath the proposed new road subgrade level generally consist of unsuitable wet highly compressible soft organic clay, loose organics silt and peat in fourteen of the eighteen borings as shown on the Map of Estimated Area of Unsuitable Soils in Appendix 11. These soils are unsuitable to leave in the roadway unmodified because they will yield settlements up to approximately 54 inches over time once the new embankment and roadway are constructed.

Fifteen (15) Organic Content (O.C.) tests by wet combustion method AASHTO T194-97 (2008) performed on representative soil samples are given below in Table No. 3. Not all are organic and not all tests were performed on soil samples taken near the existing ground surface at the respective boring locations.

**Table No. 3: Organic Content Test Results Summary**

Boring No.	Depth (ft.)	Soil Type	Organic Content (%)
B-1	1.5 – 2.5	FILL: Brown Clay (A-6)	1.7
B-1	4.5 – 5.0	FILL: Wet Black Clay Topsoil (A-7-5)	6.5

Boring No.	Depth (ft.)	Soil Type	Organic Content (%)
B-2	11-11.75	Wet Dark Brown to Black Fibrous Peat to Clayey Peat (A-8)	20.2
B-3	7.25-7.5	Wet Black Peat With Shells (A-8)	15.3
B-3	8.5-10	Wet Greenish Gray Organic Silt With Shells (A-7-5)	11.0
B-3A	1.5-2.5	Wet Gray Organic Silt With Shells (A-8)	9.47
B-4A	13.5-15	Wet Gray Organic Silt With Shells (A-8)	13.92
B-5A	16-17	Wet Gray Clay Loam (A-7-6)	1.06
B-6A	8.5-10	Wet Gray Organic Silty Clay (A-7-5)	4.06
B-8A	11-12.5	Dark Gray Organic Silt With Shells (A-7-5)	3.35
B-11A	13.5-15	Wet Greenish Gray Organic Silt With Shells (A-7-5)	1.98
B-12A	8.5-9.5	Wet Gray Organic Silt With Shells (A-8)	17.86
B-13A	3.5-5	Wet Dark Gray Peat With Shells (A-8)	17.19
B-14A	13.5-15	Gray, Trace Dark Gray Organic Silt (A-7-5)	2.08
B-15A	13.5-15	Gray Clay (A-6)	0.41%

According to the IDOT criteria, undercutting or treatment of the subgrade soils is not required if the organic content of subgrade soils is less than 10% and liquid limit of the soils is less than 50%. In actuality for this project, the issue is not the organic content of the soils at subgrade level but the existences of low shear strength and highly compressible peat, organic clay and organics silt encountered up to depths of 21 feet below the existing ground level that dictates the need for another alternative than standard proofrolling and fill options for the construction of the new roadway embankment. Six (6) soil samples (B-2 (11'-11.75'), B-3 (7.25'-7.5'), B-3 (8.5'-10'), B-4A (13.5'-15'), B-12A (8.5'-9.5') and B-13A (3.5'-5')) in the table above exhibited LOI organic contents > 10% and ranged from 11% to 20.2%. The remaining 9 samples had organic contents <10% as shown in the table.

The current IDOT frost susceptibility criteria for subgrade soils are shown below. Two (2) of the following three (3) criteria must be met to be considered frost susceptible subgrade. However it



should be noted that the majority of the project site will have its existing grade raised on average from approximately 3.2 feet (at Station 65+00 ) to 8.6 feet (at Station 59+50) and thus the criteria will not apply to the in-place soils tested but rather to the new granular PGE stone fill that will be the subgrade for the new embankment.

- (a) The level of capillary rise must be within 3.5 feet depth of frost penetration at this project site.
- (b) The subgrade soils contain at least 65% silt and fine sand according to AASHTO T-88.
- (c) The plasticity indices of the subgrade soils are less than 12%.

Thirteen (13) grain-size analysis tests were performed on representative soils in borings B-1A (at 19.25'), B-1A (at 29.25'), B-2A (at 11.75'), B-3A (at 34.25), B-4A (at 34.75'), B-6A (at 14.25'), B-7A (at 14.25'), B-9A (at 16.50'), B-11A (at 24.25'), B-12A (at 36.75), B-14A (at 29.25'), B-2 (at 1.75') and B-3 (at 1.75'). Three of these tests were strictly sieves because of the high sand content for B-4A (34.75'), B-6A (14.25'), B-11A (24.25').

One test (1) consisting of brown clay fill (A-6(11)) in B-3 sampled from 1 to 2.5 feet indicates that the percentage of silt and fine sand is approximately 60% and is less than 65% and will be in the frost zone of 3.5 feet because it will only have approximately 1 foot of granular fill placed on top of it. The other soils tested are either too deep (>3.5 feet frost depth) or as in the case of Boring B-2 (at 1.75 feet) will have approximately 8 feet of granular soil lying above this material and will not be in the frost zone of the finished subgrade.

Atterberg Limit Tests were performed on clayey soils consisting of very stiff brown and gray clay to silty clay (A-6 soil in B-13A, B-14A, B-1A (at 29.25ft) and loose gray silty loam (A-4 soil in B-2A) to very stiff to hard brown and gray clay fill (A-6(8)) to silty clay fill (A-6(11)) in B-2 and B-3 to loose gray silty clay loam (A-4 soil in B-1A at 19.25 feet) to very stiff gray silty clay loam (A-6 soil in B-9A) and yield Plasticity Indices (PI) of 1% to 14% with only two PI greater than 12% in B-2 (1.75 feet) and B-3 (1.75 feet). Boring B-2 is located at Oak Hill Drive and Roberts Road. Boring B-3 is located near River Road.

The Liquidity Index (LI) of potential clay and silty clay subgrade soils was computed to determine the general stability of the cohesive soils (clay loam or silty clay). Liquidity index is defined as the difference between the moisture content of soil and its plastic limit which is then divided by its plasticity index. Typically, a liquidity index less than +0.35 for clays and silty clays indicates a generally stable subgrade. Two (2) Atterberg limit tests were performed on hard brown clay fill (A-6(8)) in B-2 at 1.25 to 2.5 feet depth (located on Roberts Road to be under Approximately 8 feet of PGE granular fill) and on B-3 on the very stiff brown and gray silty clay fill (A-6(11)) subgrade material (located on River Road) and corresponding liquidity indices are given in Appendix 5 of this report under Atterberg Limit Test Results. the remaining six (6) Atterberg Limit tests were performed but not on representative subgrade samples because their depths ranged from 11.75 feet to 34.25 feet depths. They were performed to aid in soil classification.

Groundwater was not encountered in the upper 3.5 feet of the eighteen soil borings drilled and sampled in the area of the Roberts Road and River Road reconstruction and realignment on October 15, 2012 (the time of drilling at the site) thus groundwater was not encountered in the upper 3.5 feet (frost zone) and still will not be encountered once the roadway embankment is raise to heights of 3.2 feet to 8.6 feet with PGE granular fill

As stated previously in this section the subgrade elevations will be changes 3.2 to 8.6 feet with compacted PGE granular fill. This changes the type of soils at subgrade. The majority of the project site will be on granular subgrade are generally non-frost susceptible since at least 2 of the 3 aforementioned criteria will not be met.

Based on this "Subgrade Support Rating" is determined to be "Granular" for the PGE granular fill to be placed 3.2 to 8.6 feet in the embankment area.

The plot of the existing **Subgrade Support Rating** is given in **Appendix 9** of this report. Based on the above-mentioned IDOT criteria and the test results given above, it is concluded that the unsuitable soil consisting of peat, organic silt, organic clay, and inorganic soft clay and very loose sandy soils cannot be left in the ground without either undercutting these soils or utilizing another roadway stabilization option such as permanent steel sheet cantilevered sheet pile wall, a double steel sheet pile wall tied back with anchor rods or some applicable ground improvement method.

#### **General Subgrade Comments**

A settlement analysis was done to see how the in-situ soils as is would respond if the proposed pavement was constructed on these soils "as is" when the 8.4 feet of compacted granular fill is placed on top of these soils to bring the embankment up to grade. The soil profile at Boring B-4A (located at the southwest portion of the site near the wetlands) was considered with three layers consisting of 2 feet of peat (moisture content average of approximately 180%, wet unit weight of 80 pcf) overlying 5 feet of organic silty clay loam (moisture content average of approximately 48%, wet unit weight of 85 pcf). The underling sand was not considered in this analysis. The Compression Index (Cc) for the organic soils is estimated at 0.0115 X the natural

moisture content. The blanket surcharge load is 8.4 feet of compacted granular fill estimated at 130 pcf for a surcharge of 1092 psf acting on top of the original soils at Boring B-4A location.

The primary consolidation settlement is approximately 44 inches. The secondary consolidation settlement is 10 inches. The total estimated settlement is therefore 54 inches at B-4A if no ground improvement is done. This is unacceptable because this roadway may only settle a maximum of 6 inches after construction per good engineering practice. This estimated settlement is not acceptable, thus this alternative is not acceptable.

Conversely, the embankment at borings B-9A and B-10A (located near the north side of the proposed roundabout) will not have fill, but instead be cut slightly for the proposed 19 inch pavement. B-9A and B-10A did not encounter unsuitable or organics soil. Settlement in this area by B-9A and B-10A is to be negligible. This small area is acceptable but is a minority of the total embankment area at this site.

The total differential settlement between the B-4A location and the B-9A and B-10A location is 54 inches. This is not acceptable either for the roadway embankment and new pavement to be able to survive without an inordinate amount of maintenance and rehabilitation.

Previously BLA had considered a land bridge option with 10 3/4" pipe piles on a 6 foot X6 foot grid to bridge over these in-situ unsuitable soils but this option is very uneconomical for River Road.

For this reason alone the land bridge is no longer considered an option for Roberts Road. A steel sheet piling alternative on the south side of Roberts Road with ground anchors was considered. However, due to the widespread presence of unsuitable soils at the site soil

anchors would be approximately 60 – 80 feet below the existing grade which excludes this as a viable cost effective alternative.

Another option considered by BLA was a cellular cofferdam structure with excavation-refill inside the installed structure on the south side of the site with open cut excavate refill methods on the north side of the project site. This cellular cofferdam alternative is not considered because of cost.

An Excavate–Refill option of the entire unsuitable areas has also been considered by BLA for this project. Fourteen of the eighteen soil boring locations would require undercut to approximate depths as shown in the following table:

**Table No. 4: Undercut Depth Summary**

<b>Boring</b>	<b>Existing Boring Elevation (M.S.L.)</b>	<b>Undercut Depth/ Elevation to Suitable Soils (ft/M.S.L.)</b>	<b>Soils at a Suitable Depth</b>
B-1	741.94	15.5/726.44	Stiff to Very Stiff Gray Clay (A-6)
B-2	744.24	14.5/729.74	Medium Dense Gray Poorly Graded Sand (A-3)
B-3	739.91	14.5/725.41	Vet Stiff gray Silty Clay (A-6)
B-1A	745.74	N/A	Very Stiff Brown, Gray, Black Silty Clay Fill (A-6) at 1' depth
B-2A	736.75	N/A	Loose Gray Silt (A-4) at 1' depth
B-3A	735.37	24.5/710.87	Stiff Gray Silty Clay (A-6)
B-4A	734.44	22/712.44	Medium dense Gray Sandy Loam (A-2-4)
B-5A	735.51	23/712.51	Loose Gray Silty Loam (A-4)
B-6A	739.59	14.5/725.09	Medium Dense Gray Sandy Loam (A-2-4)
B-7A	735.66	9/726.66	Very Stiff Brown Clay (A-6)
B-8A	741.52	14.5/727.02	Medium Dense Brown Sand (A-3)
B-9A	744.79	N/A	Very Stiff Brown and Dark Brown Sandy Clay Loam (A-6) at 1' depth
B-10A	745.15	N/A	Very Stiff Brown Sandy Clay Loam Fill (A-6) at 1' depth
B-11A	737.08	19.5/717.58	Stiff Gray Clay (A-6)
B-12A	736.26	13.5/722.76	Medium Dense Brownish Gray Sand (A-3)
B-13A	737.34	17/720.34	Stiff Gray Clay (A-6)
B-14A	746.46	17/729.46	Medium Brown & Gray Sandy Clay Loam (A-6)
B-15A	739.39	7/732.39	Stiff Brown and Gray Clay (A-6)

N/A means Not Applicable as no Undercut depth was needed in this boring location.

The average excavation depth to suitable soils for the proposed roadway embankment would be 16.1 feet over an area of 110,845 ft<sup>2</sup> from the **Map of Estimated Area of Unsuitable Soils** in **Appendix 11**. This is approximately 66,096 yds<sup>3</sup> of in-situ unsuitable soils to be removed and replaced with compacted PGE Granular Embankment. The unsuitable soils in-situ are great in extent and in depth at this project site. This excavation and replacement (refill) is not economical as well and may cause construction sequencing problems with the existing T-intersection.

The limits area of the unsuitable soils are currently rough estimates based on available data from the 18 borings made at the site. This areal extent can be fine tuned with additional soil information from approximately 3 to 5 additional soil borings by SEECO in the area of the proposed roadway.

Other potential roadway construction alternatives mentioned later in this report are considered to limit the total excavation of unsuitable soils or treat unsuitable soils in-situ (Ground Improvement methods) in order to explore a more relatively inexpensive alternative than complete Excavate/Refill.

### **Site Preparation**

The existing Roberts Road and River Road T-intersection is proposed to be reconstructed into a roundabout. Realignment of is to occur because the proposed Roberts Road will be shifted to the south towards the existing wetlands. In order to prepare this project site, the following is recommended:

It is recommended that the existing bituminous concrete from the existing pavement of Roberts Road and River Road should be cold-milled off and trucked back to an asphalt batch plant for

recycling. The existing sand and gravel base course (such as encountered in B-2, B-3 and B-8A) should also be removed and may be salvaged for use as sub-base granular material if it meets the gradation requirements per **Article 1004.04** of the IDOT "Standard Specifications for Road and Bridge Construction," January 1, 2012 Edition. If so, it can stockpiled at a suitable location offsite for reuse as sub-base material.

It is recommended that all the vegetation and topsoil should be completely removed from the proposed roadway area before any fill material is placed for the Roberts Road and River Road intersection reconstruction and realignment project. It is recommended that in the area of existing ditches, where backfill needs to be placed for the preparation of subgrade, any existing water should be pumped out from the ditches and all the loose organic and inorganic sediment deposits collected in the ditches must be removed before the fill is placed for the construction of embankment. Also, it is recommended that a minimum of 12 inches of topsoil and vegetation in the root zone should be stripped before any structural fill is placed and compacted.

For the ground improvement alternatives, it is recommended to strip a maximum of approximately 1 foot of topsoil in roadway areas and leave the rest-in-place because the ground improvement will improve these in-situ soils. No unsuitable (non-topsoil) stripping is required. Stripped topsoil should be stockpiled for redistribution on the side slopes. Approximately 24 inches of topsoil is desired by BLA on the proposed side slopes because of the PGE backfill in these areas.

After utilizing an earth retention system for lateral confinement of the roadbed or a ground improvement method described in the following section, approximately 3.2 to 8.6 feet of structural embankment fill will be required to raise the elevation to achieve the proposed subgrade elevation in the proposed reconstructed and realigned areas. The PGE granular fill

material for this embankment and subgrade should be placed and compacted per **Section 205. EMBANKMENT** and **Section 301. Subgrade Preparation** of the IDOT "Standard Specifications for Road and Bridge Construction," 2012 Edition. Minimum target density compaction percent (Standard Proctor AASHTO T 99-01) of fill the materials should comply with **Article 205.06. Compaction** in **Section 205. EMBANKMENT** of the IDOT "Standard Specifications for Road and Bridge Construction," 2012 Edition. This requires fill to be placed in loose eight-inch thick lifts and compacted to a minimum of 95% of the maximum dry density in accordance with AASHTO T 99-01 in (fill heights of 1.5 feet or less and upper fill layers on higher embankments) and in some instances as described in Article 205.06 the layers should be compacted not less than 90% of the maximum dry density at the bottom layers of the embankment fill in accordance with AASHTO T 99-01.

Porous Granular Embankment (PGE per the IDOT Specifications) should be utilized as to build the 3.2 inch to 8.6 feet embankment to proposed subgrade level. Imported Porous Granular Embankment Special (PGE per the IDOT Specifications) can be utilized as fill to raise the subgrade in low areas.

The subgrade should be adequately prepared to the design elevation and the PGE should be adequately compacted in the field using equipment given in **Article 301.02 Equipment** of the IDOT "Standard Specifications for Road and Bridge Construction," 2012 Edition (Steel Wheel Roller, Tamping roller, etc.) in order to achieve granular particle interlocking friction to the satisfaction of the Engineer on each eight-inch loose lift placed. The moisture content of the structural fill should be at least 2% of the optimum moisture content of the structural fill material for proposed pavement structural fill areas.



Once the compacted PGE granular fill is brought up to subgrade level, the subgrade should be adequately rolled with a steel drum roller. After rolling, the entire subgrade should be proof rolled with a dump truck or semi-tractor trailer loaded with a minimum 20 tons of payload before placing the crushed stone sub-base course for the proposed Roberts Road and River Road intersection reconstruction and realignment areas.

After filling to subgrade, the majority of the subgrade soils at the project site from Station 53+50 to Station 65+00 will be comprised of compacted PGE granular fill.

It is possible that the subgrade soils may become unstable upon proofrolling. The unstable material may be made stable by processing (air drying by discing/scarifying), liming, drying to within  $\pm 2\%$  of the optimum moisture content followed by recompaction if the construction is to be performed in hot and dry weather per methods given in **Section 301.04. Subgrade Compaction and Stability** of the IDOT "Standard Specifications for Road and Bridge Construction," 2012 Edition.

A bid schedule line item for unsuitable material removal (undercut excavation) and refill should be put in the bid cost estimate tabulation. The removal and disposal of unsuitable material should be paid for at the contract unit price per cubic yard ( $\$/\text{yd}^3$ ) for **REMOVAL AND DISPOSAL OF UNSUITABLE MATERIAL** per **Subsection 202.08. "Basis of Payment"** for **Section 202. EARTH AND ROCK EXCAVATION SECTION** of the IDOT "Standard Specifications for Road and Bridge Construction," 2012 Edition. If PGE is to be used to fill the undercut excavations, this material should be bid on a tonnage basis ( $\$/\text{ton}$ ) for the stone refill verified by stone tickets in the field during construction.

Upon proofrolling, if any top of inorganic subgrade areas are found to be rutting, pumping and/or excessively deflecting during the proofroll these unstable inorganic subgrade areas should be

disced to dry back the moisture contents and recompact to 95% in accordance with AASHTO T 99-00-01 within  $\pm 2\%$  of optimum moisture content. If these reworked subgrade areas then fail a subsequent proofroll then actual undercut depths in these inorganic cut areas failing a proofroll inspection in the presence of a Field Geotechnical Engineer from SEECO Construction, Inc. are to be determined in the field with the use of a Dynamic Cone Penetrometer (DCP) per IDOT's Subgrade Stability Manual, 2005 Edition.

Also, in the field if the DCP has to be utilized to determine possible depths of undercut then the area should be examined to determine if geogrid could be used to reduce undercut depth and provide reinforcement as well as separation barrier of materials at the bottom of the undercut.

A slope stability of the 3H:1V to 4H:1V side slope roadway embankment will need to be performed by the Design Geotechnical Engineer once a Roadway Foundation Support Alternative is chosen and the side slopes are finalized.

### **Roadway Foundation Support Alternatives**

Since the typical roadway embankment construction is not feasible at this project site, this Roadway Geotechnical Report (RGR) will discuss five (5) possible alternatives being explored for the Roberts Road and River Road intersection improvements.

#### **Alternative #1: Cantilever Steel Sheet Piling - One South Side Roberts Road Both Sides River Road**

SEECO Consultants, Inc. examined the alternative of utilizing cantilever steel sheet piling in the area of the poor soils along the south side of Roberts Road (approximately 2 feet from the south edge of the Bituminous multi-use path) and the east and west sides of River Road leading up to the intersection for lateral soil confinement in the roadbed area to prevent lateral spreading.

Drawings of the approximate preliminary concept location of this cantilever steel sheet piling plan and profiles are provided in the **Cantilever Steel Sheet Piling Concept – Plan View and Profile View** are given in **Appendix 20**. Prior to construction of the permanent driven cantilever steel pile, a staging temporary steel sheet piling will be installed along the south side of the existing Roberts Road as described in the **Construction Sequencing with Temporary Steel Sheet Piling** subsection of this report. The preliminary horizontal length of the permanent driven cantilever sheet pile wall along the south side of the proposed new Roberts Road would approximately be from Station 60+75 to Station 51+25 and from Station 92+40 to Station 94+00 (along River Road approaching the intersection with Roberts Road).

The permanent cantilever steel sheet piling is to be driven typically through the existing primarily wet soft organic silt and peat and soft inorganic soils as predominantly encountered in the upper 21 to 19 feet in borings B-4A and B-11A between the approximate average top of existing grade of 734.44 M.S.L. and 747.08 M.S.L respectively to the approximate average bottom of layers of saturated medium dense sandy loam to sand.

The bottom of the proposed cantilevered steel sheet piling must be determined by the Project Structural Engineer from BLA. A surcharge of 300 psf is assumed for live load traffic surcharge effects.

The soils underlying the clay layer in B-4A and B-11A typically consist of medium dense brown to gray saturated sand to sand and gravel at approximately 713.44 M.S.L. to 716.08 M.S.L. The organic silt and peat will be retained behind the sheet piling. Nine (9) feet of granular PGE fill is to be place on top of the existing soils to bring the proposed top of embankment grade. Therefore, the lateral or horizontal deflection calculation of the chosen cantilever steel sheet piling section with or without cover plates will be needed to be done once a section is chosen by BLA.

The design of this permanent cantilevered steel sheet piling is based on the Free Earth Support Method. The Free Earth Support Method assumes that steel sheet piling is supported at its bottom by the soil in front of the steel sheet piling (the depth of embedment into the medium dense sandy loam to sand that will be present below the top of subgrade level). The steel sheet piling is driven to a depth such that stability is achieved provided that the maximum passive pressures are fully mobilized. This can result in deeper embedment depths for steel sheet piling which will yield a higher section modulus (higher stiffness) needed for the steel sheet piling. In this alternative, steel cover plates may have to be welded to increase the Section Modulus to counteract bending or increase the yield strength of the steel sheet piling,  $F_y$  to either 50 to 60 ksi if this piling is available. This option is still being explored to determine its feasibility.

The recommended average lateral design soil parameters for steel sheet pile design are provided in the APPARENT EARTH PRESSURE DESIGN FOR CANTILEVERED SHEET PILE (at B-4A and B-11A)—NO EXCAVATION OF ORGANICS in Appendix 13 Figures 13A (B-4A) and 13B (B-11A) which shows the apparent earth pressure diagram for permanent steel sheet pile design in the vicinity of Boring B-4A and B-11A. The values of  $K_A$  and  $K_P$  are obtained from the chart derived from Coloumb's Equation for active and passive coefficients with wall friction for a sloping backfill as given in the Chart of Coloumb's Active and Passive Coefficients With the Wall Friction For Sloping Backfill provided in Appendix 19.

Granular fill (PGE) should be considered behind the wall during design. For B-4A, a 21 foot replacement of the existing organic soils with PGE granular fill plus an additional of 9 feet of granular embankment is considered. The recommended average lateral design soil parameters for steel sheet pile design are provided in the APPARENT EARTH PRESSURE DESIGN FOR CANTILEVER SHEET PILE (at B-4A) WITH EXCAVATION OF ORGANICS given in Appendix

**15.** Figure 15 which shows the apparent earth pressure diagram for permanent steel sheet pile design in the vicinity of Boring B-4A.

It is recommended to provide drainage holes in the steel sheet piling to drain the seepage water and prevent hydrostatic buildup from behind the steel sheet piling. The drainage holes can be located such that the water is free draining.

SEECO Consultants ran preliminary calculations for the necessary depths of the cantilever sheet piling without the removal of the organic soils. Without removing the organic soils, the piles would have to be approximately 45 feet deep on the west side of River Road (near boring B-4A) and approximately 53 feet on the east side of River Road (near B-11A) and have an approximate embedment depth of 12 feet into the saturated medium dense sandy loam to sand material at B-4A and approximately 25 feet into the stiff to very stiff clay to medium dense sandy loam and sand in B-11A. These are approximate preliminary estimates.

Alternative #2: Double Rows of Steel Sheet Piling with Tie-Rods

SEECO Consultants, Inc. examined a second alternative using utilizing double rows of driven cantilevered steel sheet piling from Station 60+75 to Station 51+25 for complete lateral confinement for the roadbed. Drawings of the approximate preliminary concept location of this double row of steel sheet piling with tie-rods and typical wale and tie-rod details are given in **The Double Rows of Steel Sheet Piling Concept with Tie-Rod Concept Plan and Profile View in Appendix 21.** Prior to placement of the first row of permanent cantilever steel sheet piling, a staging temporary sheet piling will be installed along the south side of the existing Roberts Road as described in the **Construction Sequencing with Temporary Steel Sheet Piling** subsection of this report. The first row of permanent steel sheet piling would be located approximately 2 feet from the outside of the bituminous multi-use path (located south of the proposed Roberts Road and along the River Road approach of the intersection—Station 92+40 to 94+00). The

second permanent steel sheet pile row would be located approximately 2 feet north of the north side of the exterior of the proposed curb/P.C.C sidewalk in the area of the unsuitable soils (see [Appendix 11](#)) along the south side of Robert Road and the east and west sides of River Road leading up to the intersection. The second row of permanent steel sheet piling would be located north of the first row of steel sheet piling placed south of Roberts Road. At the very west end of Roberts Road, a portion of the temporary steel sheet piling as shown in [Appendix 21](#) will be converted to the second permanent steel sheet piling.

For this alternative, an anchored tie rod system is recommended to anchor each steel sheet piling wall at approximately 1/4 depth down from its top to provide support and to help limit the steel sheet piling from (deflecting) bending outward at its top. Steel wales bolted to the steel sheet piling transfer the earth pressure and surcharge loads from this earth retention system to the tie rods. It is recommended that the proposed tie-rods for the proposed steel sheet pile wall on the south side of Roberts Road be connected temporary steel sheet piling with a bearing plate and nuts. The tie rods from the permanent steel sheet piling wall (which is the northernmost sheet piling) can then be connected to the tie rods installed in Stage 1 and adjusted with a turnbuckle so that equal and opposite forces (from the granular backfill (approximate 8.6 feet or 9 feet maximum fill height) and traffic surcharge loads) that act laterally to pull each sheet pile wall toward each other to result in an equilibrium condition at the location where the depth of the two (2) steel sheet piling walls are tied back. The approach at Rivers Road would most likely have its east steel sheet pile wall tied back to its west steel sheet pile wall.

The Free Earth Support Method should be used for design of the anchored steel sheet piling wall. Since no very dense cohesionless soils or very hard silty clay till (hardpan) exist at this site to depths of 40 feet of the soil borings, the sheet pile design should be based on the Free

Earth Support Method as per the pressure diagram given in Figures 12A, 12B and 14 in the Appendices 12 and 14 of this report.

For this analysis, the net pressures for anchored sheet pile walls consist of (1) net active pressure from the anchored tie-rods at the top of the steel sheet piling and the (2) net active earth pressure due to the soil behind the embedded steel sheet piling (below the bottom of the embankment of structural fill). The active earth pressures for this method are taken to be the active earth pressures caused by (1) vehicular (during construction and automobile) traffic surcharge and (2) compacted cohesionless granular PGE backfill behind the steel sheet piling above the bottom of embankment structural fill and the in place existing soil lateral active earth pressure (see the APPARENT EARTH PRESSURE DESIGN FOR ANCHORED SHEET PILE (at B-4A and B-11A)—NO EXCAVATION OF ORGANICS in Appendix 12A (B-4A) and 12B (B-11A)).

Granular fill (PGE) should also be considered behind the wall to counter the effects of depth of piling embedment and reduction in sheet piling maximum bending moment as well. For B-4A, a 21 foot replacement of the existing organic soils with PGE granular fill and an additional 9 feet of granular embankment fill is considered. The recommended average lateral design soil parameters for steel sheet pile design are provided in the APPARENT EARTH PRESSURE DESIGN FOR ANCHORED SHEET PILE (at B-4A) WITH EXCAVATION OF ORGANICS in Appendix 14.

SEECO Consultants, Inc. recommended providing drainage holes in the steel sheet piling to drain the seepage water from behind the steel sheet piling to prevent. The drainage holes should be located in order to allow for free drainage of the water.

### Alternative #3 Rigid Inclusions

Rigid Inclusions is ground improvement method consisting of low mobility grout columns constructed through compressible soils to reduce settlement and increase bearing capacity. Rigid Inclusions can stabilize poor soils in-situ to make them suitable for roadway embankment construction. In this alternative, 16" diameter stiff aggregate sand and grout columns (unreinforced) would be augered into the ground through the unsuitable organic soils to an approximate depth of 30 to 35 feet, spaced on a 5 feet by 5 feet grid (across the entire estimated area (110,845 ft<sup>2</sup>) of unsuitable soils. The bottom of the unsuitable organic soils and unsuitable very soft clay or very loose sand and silt (encountered in 14 of the 18 borings) ranges from approximately 9 feet to 24.5 feet below the existing ground level at current boring elevations. The average depth to suitable soils is approximately 16.1 feet below the existing ground level. The sand and grout columns (rigid inclusions) need to be drilled a sufficient depth (through the organic and unsuitable soils) into suitable virgin soils to result in a suitable net allowable bearing capacity to counteract effects of negative skin friction caused by the presence of the highly compressible organic soils above. Hayward Baker estimated that the bottom depth of the rigid inclusions would be approximately 10 feet below the bottom of unsuitable soils.

Compacted granular fill (PGE) comprised of a PGE load transfer platform plus compacted PGE embankment fill will be utilized to raise the final embankment grade a total of approximately 6 inches (on the north) to approximately 8 feet (on the south towards the existing wetlands).

A load transfer platform is recommended by Hayward Baker to be constructed over the rigid inclusions. A minimum 2.5 feet thick compacted PGE load transfer platform should be constructed on top of the rigid inclusions (unless restricted by proposed grade such areas of 6 inches of fill only). It is the responsibility of the Ground Improvement Geotechnical Contractor's Engineer to determine if reinforcement (such as geogrid) is needed in this load transfer platform.



This 2.5 feet thick compacted PGE load transfer platform is shown on the project plans and is included in the base bid for the Rigid Inclusions alternative.

The total settlement for the proposed pavement construction per IDOT should not exceed a tolerable limit. If the 5 feet X 5 feet spacing is not adequate to achieve this then the spacing would have to be decreased until said maximum requirement is met.

This Rigid Inclusions alternative has not been used on similar projects in the State of Illinois. This method would need to be introduced as an Experimental Feature but only if the cost savings were significant enough to warrant consideration of this alternative over other alternatives.

#### Alternative #4: Dry Soil Mixing

Dry soil mixing is an in-situ ground improvement method where the mechanical blending of wet soil with dry cementitious material is performed to improve the engineering properties of the soil (such as strength and stiffness). Approximate 800 millimeter (approximately 5.4ft<sup>2</sup> end area) shafts will be drilled across 35% of the delineated area of unsuitable soils (110,845 ft<sup>2</sup>)—a 35% replacement ratio. For 35% replacement on a square grid the dry soil mixing columns would be spaced at approximately 3.93 ft on center per Mr. Ray Franz of Hayward Baker Inc.

These columns would be injected with dry cement then mixed with the unsuitable in-situ organic and soft soils. This in-situ dry soil mixing ground improvement method is preferred over the wet soil mixing method because of the existing moisture presence in the organic soils. The depth of the 800 mm columns would be approximately 25 feet deep. This ground improvement method

increases the shear strength of the soft insitu soils when the dry cement gets wetted and intermixed with the soft soils and then sets up.

Compacted granular fill (PGE) will be needed to raise the embankment approximately 3 feet to 9 feet (on the south towards the existing wetlands).

It is recommended after building up the granular embankment to allow for pre-compression settlement of this improved area prior to paving the roadway. Any settlement of the embankment that occurs in this time before paving can be filled to the appropriate level with compacted granular fill to the proposed design elevation, then proofrolling and the paving can occur after monitoring and observing the settlement of the granular embankment after it is constructed on the rigid inclusions.

The total settlement for the proposed pavement construction per IDOT should not exceed tolerable limits. If the 3.93 feet X 3.93 feet spacing is not adequate to achieve this then the spacing would have to be decreased (i.e. a higher soils replacement ratio) until said maximum requirement is met.

A second method of this "Dry Soil Mixing" alternative called mass mixing or 100% mass stabilization is a potential alternative. This is similar to the dry soil mixing method except it has a 100% replacement ratio of in-situ unsuitable soils. The soil mixing is uniform across the entire area of unsuitable soils (110,845 ft<sup>2</sup>). However, the depth of improved soils is limited to approximately 18 feet maximum depth according to Mr. Ray Franz of Hayward Baker because this ground improvement is facilitated with a backhoe with only a boom which reaches only 18 feet with a high speed portable rototiller mounted on the end of its boom. The caveat is that in the areas of borings B-3A, B-4A, B-5A and B-11A unsuitable soils would still be present in-situ

under the improved soils above. The issue would be that approximately 8 feet of compacted granular fill embankment (with geogrid installed in its multi-layers) is to be built up and would surcharge the improved in-situ soils and its underlying soils and could result in settlement. It may be possible to get a longer boom on the backhoe to mount the portable rototiller to mass dry soil mixing to deeper depths.

The left in place (non-improved) in-situ soils (below the 18 feet limit) that are organic, soft, wet and highly compressible would most likely experience settlement. There would be approximately 6.5 feet of very loose to loose gray silty loam below the improved ground in the area of boring B-3A using the 100% dry soil mixing replacement method. There would be approximately 3 feet of soils consisting of wet very loose gray organic silty loam to wet very soft gray organic clay loam below the improved ground in the area of boring B-4A. There would be approximately 4 feet of soils consisting of very loose gray silty loam to wet very soft gray clay below the improved ground in the area of boring B-5A. There would be approximately 0.5 feet of soft gray silty clay loam below the improved ground in the area of boring B-11A.

The improved ground would experience relatively more settlement in those areas of B-3A, B-4A, B-5A and B-11A compared to other ground improved areas resulting in differential settlement. If the area is surcharged and allowed to settle out this would reduce any potential settlement of these underlying pockets of unsuitable soils. However, it is not known at this time if this alternative would meet settlement requirement of tolerable maximum total settlement after pavement construction. This alternative should be examined more closely to determine its overall viability.

This Dry Soil Mixing alternative has not been used on similar projects in the State of Illinois. This method would need to be introduced as an Experimental Feature but only if the cost

savings were significant enough to warrant consideration of this alternative over other alternatives

Alternative #5: Aggregate Columns with Perforated Plastic Sleeve

Another in-situ improvement alternative is an Aggregate Column Ground Improvement method with perforated plastic sleeves. The purpose of the perforated plastic sleeve is to help prevent sacrificial lateral migration of the rammed crushed stone aggregate into the soil formation while still allowing drainage into the Aggregate Columns (to help facilitate settlement). This method consists of installing 20 inch to 30 inch diameter rammed aggregate columns spaced approximately 5 feet to 6 feet on center and encased in a perforated plastic sleeve that is approximately 20 feet maximum length. These stiff elements will act as springs in the soft unsuitable soils to support the roadway embankment. The aggregate utilized in the columns shall be Class A crushed stone or crushed concrete satisfying the requirements of Section 1004 of the 2012 IDOT "Standard Specifications for Road and Bridge Construction."

The depth of the rammed Aggregate Columns with perforated plastic sleeves should be founded in competent inorganic virgin soils with suitable bearing. Additionally, sufficient depth of these Aggregate columns into competent inorganic soils is needed to counteract the negative skin friction from the organics above. The plastic sleeve will have to extend throughout the poor soils at depths deeper than 20 feet at borings B-3A, B-4A and B-5A located at the southwest portion of the site south of Roberts Road.

Compacted granular fill (PGE) comprised of a PGE load transfer platform plus PGE embankment fill will be utilized to raise the final embankment grade a total of approximately 6 inches (on the north) to approximately 8 feet (on the south towards the existing wetlands).

A minimum 2.5 feet thick compacted PGE load transfer platform should be constructed on top of the Aggregate Columns (unless restricted by proposed grade such areas of 6 inches of fill only). It is the responsibility of the Ground Improvement Geotechnical Contractor's Engineer to determine if reinforcement (such as geogrid) is needed in this load transfer platform. This 2.5 feet thick compacted PGE load transfer platform is shown on the project plans and is included in the base bid for the Aggregate Columns with perforated plastic sleeves alternative.

The use of the plastic sleeve is desirable for this project. Otherwise the aggregate will be pushed laterally into the wet very soft organics soil when installed by ramming. Without the casing, this aggregate will unintentionally be lost into the sides of the drilled hole. The cost of this wasted aggregate would not be economical. The plastic shafts are perforated with ¼ inch holes along the sides and a 1 inch hole at the tip to allow moisture in the soils to drain into the matrix of the aggregate column placed inside. This radial drainage will help facilitate settlement of the unsuitable wet organic soils especially if the proposed crushed stone embankment is placed. Surcharging the embankment over the Aggregate Columns for 6 to 8 weeks would help to facilitate the time rate of primary consolidation because the stone columns acts as drainage wicks that will allow for faster drainage of the surcharged soft subsoils.

This Aggregate Columns with perforated plastic sleeve alternative has not been used in the State of Illinois by IDOT as of 7/30/2013. This method would result in the need to introduce this as an Experimental Feature but only if the cost savings were significant enough to warrant consideration of this alternative over others.

The global slope stability, bearing capacity, settlement determination and location number and spacing and details for the three (3) ground improvement alternatives consisting of 1.) Rigid

Inclusions, 2.) Dry Soil Mixing and 3.) Aggregate Columns with Perforated Plastic Sleeves are strictly the responsibility of the Ground Improvement Geotechnical Contractor's Engineer. An appropriate design should take ensure that permissible tolerable settlement is met after the Roadway is built and completely paved.

#### **Global Stability Analysis**

A global stability analysis study should be performed by the Ground Improvement Geotechnical Contractor's Engineer who must be a Registered Professional Geotechnical licensed in the State of Illinois for the design build Rigid inclusions, Dry Soil Mixing or Aggregate Columns with perforated plastic sleeve alternative selected.

#### **Settlement, Surcharge and Settlement Plates**

To facilitate settlement of the in-situ organic soils still left in the ground with the above alternatives, SEECO Consultants, Inc. recommends to put up to a maximum 10 feet high temporary surcharge or not higher than the top of temporary steel sheet piling consisting of stone fill on top of the 3 to 9 feet high PGE embankment needed to raise the site to embankment grade to preload the soft foundation subsoil with Aggregate column with perforated sleeve Alternative. This surcharge would be contained by a temporary earth retention system comprised of driven steel sheet piling to be located in the approximate median of the proposed new Roberts Road for two stage construction. Refer to the **Construction Sequencing** subsection in this report for further details.

Wicks which allow free drainage will help facilitate faster consolidation settlement in conjunction with this temporary surcharge. In the case of the Aggregate Columns with perforated plastic sleeve alternative, these Aggregate Columns act doubly as stiffened elements (springs) and as radial drainage paths which allow free drainage and therefore consolidation and settlement of

the wet highly compressible organic soils.

During construction, settlement plates should be installed on the existing soils prior to the placement of the first layer of PGE granular embankment needed to raise the existing ground to proposed embankment height to monitor the settlement. The plates should typically be installed approximately every 200 feet (in mutually perpendicular directions) throughout the area containing unsuitable soils. However, it is the Ground Improvement Geotechnical Contractor's Engineer responsibility for number and location of the settlement plates.

The settlement plates consist of 3 foot by 3 foot square steel plates with the bottom section of a segmental pipe (2" diameter) welded to the top of the settlement plate. Then a 4 inch to 6 inch outside diameter steel casing is placed over the 2 inch diameter pipes to insure that the pipe is not in contact with any of the soil so no skin friction from the surcharge fill or PGE embankment fill effects the settlement of the plates. As construction continues additional pieces of pipe should be added to the original thread and couple pipe so the pipe sticks above the top of the PGE embankment fill layer or surcharge fill layer. This settlement plate monitoring should be done no matter if the surcharge with rammed aggregate columns with perforated plastic sleeves, rigid inclusions, individual dry soil mixed columns or mass soil mixing or confined steel sheet piling with embankment is used for the ground improvement scheme to be adapted. After analyzation of the time settlement data obtained it will be possible to predict when construction of the pavement can be completed on top.

In addition, it is recommended to install piezometers and inclinometers along the embankment to monitor the both the water levels in the embankment as well as the lateral movement of the embankment with location and spacing being the responsibility of the Ground Improvement Geotechnical Contractor's Engineer.

For the settlement plates, each week a survey crew should shoot the elevations of the top of the settlement inner pipes to determine how much the unsuitable soil is settling under the loading and when the unsuitable soil has settled enough to remove the surcharge load. The Ground Improvement Geotechnical Contractor's Engineer should monitor the installation of the settlement plates and determine the time at which the surcharge load can be removed after analyzing the settlement plate reading data. Weekly measurements of the inclinometers are recommended to be obtained by the Ground Improvement Geotechnical Contractor's Engineer to monitor any lateral movement in the embankment. Weekly piezometer readings are also recommended to be taken so that the rate of dissipation of excess porewater pressure in the virgin organic subsoils is monitored.

The Stage I and Stage II roadway construction needs settlement monitoring documentation from the Ground Improvement Geotechnical Contractor's Engineer demonstrating that the embankments have settled out sufficiently to acceptable standards prior to roadway pavement construction (so that permissible tolerable roadway settlement results less than 1 inch after full pavement construction). This documentation then needs to be reviewed and approved by the Bollinger Lach and Associates Design Civil Engineer. Also settlement plate monitoring in Phase II is required for BLA Design Civil Engineer in order to inform the Ground Improvement Geotechnical Contractor's Engineer if a surcharge will be needed or not and whether Stage II roadway Construction can proceed with or without it.

It may take considerable time to facilitate consolidation settlement of these organic layers to tolerable limits. In the SEECO's preliminary RGR report for this project dated February 28, 2013, SEECO Consultants, Inc. had recommended to obtain 3 inch diameter Shelby tubes of the organics soils to be able to run several consolidation tests (per ASTM D 2435-11) to obtain



the e-log p consolidation curve and to be able to plot the time settlement curves to estimate the time rate of consolidation of these soils for various temporary surcharge loads so that the amount of time needed for settlement can be estimated as well as an accurate measure of the predicted settlement. Without the consolidation test and analysis, a reasonable prediction of how long it will take to facilitate consolidation settlement of these organic layers to tolerable limits cannot be accurately determined.

**Number & Locations of Settlement Plates, Inclinometers and Piezometers**

The Ground Improvement Geotechnical Contractor's Engineer is responsible for the number and exact location of piezometers, inclinometers and settlement plates for this project. The general location of these items are just typically is as follows are only for reference:

-Settlement plates should generally be located near the middle of embankment, highest depth of PGE fill (Phase I).

-Settlement Plates are needed in the Phase II fill area to check settlement of the ground improvement alternative put in this Phase II.

-Inclinometers should generally be located near the toe of slope-south side (Phase I)

-Piezometers should generally be located near the top of side slope and near the middle of embankment where the PGE Fill is deepest (Phase I)

The global slope stability, bearing capacity, settlement determination, and location number and spacing of ground improvement elements for each bid alternatives are strictly the responsibility of the Ground Improvement Geotechnical Contractor's Engineer.

**Ground Improvement Design Criteria**

The Ground Improvement Geotechnical Contractor's Engineer (should be a Professional Engineer licensed in the State of Illinois) shall provide a ground improvement plan with shop drawings and design calculations utilizing an Allowable Stress Design that meets the

performance requirements shown on the contract Plans. These requirements given in under the design criteria subparagraph Guide Bridge Special Provision (GBSP) 71 for Aggregate Column Ground Improvement, most recent revision October 15, 2011 include demonstrating the proposed ground improvement plan satisfies the minimum global stability factor of safety, demonstrating that tolerable settlement is met at various times, and the case of walls or structure footings, demonstrating that the equivalent uniform service bearing pressure applied at various locations is met and the minimum factor of safety required is met. This GBSP 71 should be modified for Rigid Inclusions in the project specifications to meet the same design, monitoring and quality control requirements in GBSP 71. In the absence of performance requirements shown on plans (for both Aggregate Column with Perforated Plastic Sleeve and Rigid Inclusion alternatives), the following Allowable Stress minimum performance requirements shall be used:

- 1.) A Factor of Safety of 1.5 against global slope stability failure.
- 2.) A Factory of Safety of 2.5 against uniform service bearing pressure failure.
- 3.) Total settlement not to exceed 4 inches and settlement after completing pavement construction not to exceed 1 inch.

The design shall use short term strength parameters for the soil, obtained from the soil boring logs and any geotechnical laboratory testing data provided in the Contract Plans and specifications for stability and bearing capacity analyses. Settlement shall be assessed using the appropriate soil parameters. Any additional; subsurface information needed to design the ground improvement scheme shall be the responsibility of the Ground Improvement Geotechnical Contractor.

Seismic loadings are not needed unless required as part of the performance requirements shown on the project plans.

Proposed means and methods for in the field verification that the installed Aggregate Columns with Perforated Plastic Sleeve or Rigid Inclusions meet the strength and/or stiffness criteria required by the design. This may include modulus or load tests on individual elements and or groups, soil borings and other methods.

### **Construction Sequencing with Staging Temporary Steel Sheet Piling**

This project will be constructed in three (3) stages. The 1st two (2) stages will be split parallel along the approximate existing south side of Roberts Road to keep Roberts Road open for traffic. River Road will be closed. A temporary earth retention system will be driven staging temporary steel sheet piling approximately along the existing south side of Roberts Road for all 5 roadway foundations alternatives considered in this report. Staging temporary steel sheet piling will have to be installed to extend above the highest top of proposed surcharge fill that is to be placed upon the improved soils in Stage 1.

The construction sequencing is as follows: Stage 1 will be conducted to the south side of the temporary steel sheet piling installed along the south side of the existing roadway. Roberts Road will be open for traffic. River Road will be closed. Then Stage 2 will be conducted on the north side of the temporary steel sheet piling sometime after Stage 1 is completed and has had sufficient time to settle out due to a surcharge load (as verified by routine monitoring with settlement plates) and then the surcharge can be removed and the roadway can be constructed. Once the roadway on the south side of the installed staging temporary steel sheet piling is constructed, and rerouting of traffic from the existing Roberts Road to the newly constructed Roberts Road has occurred, Stage 2 construction can begin afterwards with the

general sequence of 1.) Remove existing Roberts Road, 2) Install ground improvement method, 3.) Surcharge fill placement (to be determined if needed by the Ground Improvement Geotechnical Contractor's Engineer by monitoring with Settlement plates), 4.) Monitor and wait for the acceptable settlement to occur over time with surcharge (if necessary as noted in Step 3.) 5.) Surcharge removal (if necessary as noted in Step 3.), 6) Staging temporary steel sheet pile removal cut off (approximately 4 to 5 feet below the proposed top of roadway) and 7.) Roadway construction (north side). In Stage 3, the intersection for the splitter island/center island/connection pieces at east and west termini will be fully closed off for construction per BLA. This will be the final stage.

SEECO recommends using AZ Hot Rolled Steel Sheet Piling for the staging temporary steel sheet piling:

- Minimum  $f_y$ , 50 ksi for the steel sheet piling
- Minimum Elastic Section Modulus,  $S$ , 155 in<sup>3</sup> per pile
- Estimated total length of piling, at least 52 feet long (including 14 feet of piling above original ground surface)
- Estimated depth of embedment into very stiff silty clay is 15 feet based on the subsurface information from borings B-3A and B-5A

The contractor will have to use the final RGR along with the soil borings, profiles and boring locations to determine the appropriate depth and section of steel sheet piling. All steel sheet piling designs must be performed by a Structural Engineer Registered in the State of Illinois and must be submitted for approval by the Resident Engineer.

### Pavement Design

The design of this new flexible pavement section shall be performed according to the IDOT Bureau of Design and Environment Manual, Chapter 54, Pavement Design, Current Edition on CD-ROM.

According to Bollinger Lach and Associates, Typical Section Plans, currently mechanistic pavement design is proposed be performed for Roberts Road and River Road intersection reconstruction and realignment. This method is used to determine fatigue life based on actual conditions, including stress, strains and deflection. In this design a minimum 12 inches of improved subgrade layer (aggregate granular sub-base) required by the policy of the Illinois Department of Transportation.

Per BLA's Typical Section plans the proposed River Road and Roberts Road preliminary pavement cross section will consist of 2 inches of HMA surface course, Mix D, N70 overlying 5 inches of HMA binder course, IL-19, N70 overlying 12 inches of aggregate subbase course. This results in a total pavement cross section thickness of 19 inches.

The majority of the pavement for Roberts Road and River Road should be designed for a "Granular" Subgrade Support Rating (SSR) because the existing grade will be altered with approximately 3.2 feet to 8.6 feet (average fill) to be placed to bring the embankment up to grade in addition to a 12-inch improved subgrade layer.

The typical soils anticipated to be present at the proposed new intersection road subgrade level will generally have been improved with one of the 5 Roadway Foundation Support improvement alternatives discussed in the preceding sections. The altered pavement subgrade will consist primarily of Compacted PGE crushed stone.

For the new proposed pavement, the bituminous binder course and bituminous surface course should consist of Superpave bituminous concrete mixtures, as defined in the State of Illinois "Standard Specifications for Road and Bridge Construction," 2012 Edition.

The bituminous concrete surface course and bituminous concrete binder course should be compacted to a minimum 93% and maximum 97% theoretical density as determined by AASHTO T 209. This is the IDOT Big "D" value which is used with nuclear density testing of the asphalt in order to determine the percent of in-place compaction achieved in the field.

In general, the 3.2 feet to 8.6 feet of PGE granular fill needed to achieve the top of Embankment at the majority of the project site would generally be classified as "Good Drainage" from the footnote given in Table 3-11 of the IDOT Geotech Manual "Fill greater than 3 feet are classified as good drainage." Given this and the fact that the embankment will be significantly above the groundwater table, roadway underdrains are not needed for the proposed Roberts Road and River Road intersection reconstruction and realignment based on proposed granular fill and groundwater conditions encountered in roadway borings for this investigation.

### **Earth Retention Structure Alternatives**

The north side of the proposed Roundabout will have an earth retention structure, approximate 95 feet long that will consist of one of the following three (3) earth retention structure alternatives 1.) a Soldier Pile with Timber Lagging Retaining Wall with a Cast-In-Place Facing 2.) A Permanent Cantilevered Steel Sheet Pile Wall with Cast-in-Place Facing and 3.) a Cast-in-Place Concrete Cantilever Retaining Wall Alternative. A preliminary design and cost analysis should be done by BLA to determine which wall should be selected.

### Alternative #1: Soldier Pile with Timber Lagging Retaining Wall with Concrete Facing

A permanent driven soldier pile with timber lagging is an alternative to be constructed north of the proposed roundabout to retain the sloped backfill (either 1H:1V or 2H:1V behind it). For the proposed 95 foot long wall along the north portion of the roundabout, it is recommended that driven soldier piles with timber lagging should be utilized. The wall will have a cast-in-place concrete facing. First, soldier piles (driven H-piles) are advanced downward into the subsurface soils at the required design spacing and depth of embedment. Next, the timber lagging is inserted between the installed soldier piles after excavation between the H soldier piles. Compacted PGE granular fill should be placed in thin lifts between the retained soil behind the wall if voids exist.

If a driven H pile is used, an effective pile diameter ( $d$ ) of 3 times the flange width ( $b_f$ ) should be used in passive earth pressure calculations. This distance shall not be greater than the center-to-center distance between piles.

The design thickness of the timber lagging will be determined by the Project Structural Engineer. The timber lagging takes the pressure caused by the soil mass acting on it and distributes it to the vertical soldier piles. This distribution of the pressure of the soil mass "arches" between the soldier piles thus the soldier piles resist more of the pressure than the horizontal timber lagging.

The active and passive lateral earth pressures for the soldier piles are provided in the APPARENT EARTH PRESSURE DESIGN FOR PERMANENT SOLDIER PILE WALL DESIGN WITH LAGGING (AT (B-9A and B-10A)) given in Appendix 16. All active earth pressures should be computed based wall friction with sloping backfill based on Coloumb's theory. Anchored tie backs could be utilized to secure the soldier piles at the top and prevent

them from moving at the top, however due to the timber lagging and steel H soldier pile and relatively small height (approximately 6 feet of exposed face) of this retention system above ground it is not believed to be needed by the Structural Engineer from BLA and SEECO Consultants Inc. Registered Structural Engineer.

The lateral passive earth pressure should be computed based on the 1964 Bengt Broms equation for clay lateral earth pressure ultimate passive loading with arching condition taken into effect. This ultimate passive earth resistance acting on individual soldier piles in cohesive clay soils as generally encountered in the two soils borings made (B-9A and B-10A) at the site is considered to be a uniform resistance of nine (9) times the soil cohesion (shear strength-c) times the pile diameter/effective pile diameter 3 (d) from the bottom of the excavation (in this case the original ground level which is approximately the same as the proposed ground level). This passive earth resistance does not include the soils resistance from a depth of 1.5 times the soldier pile diameter (d) or depth of HP pile web if driven pile from the original ground line. The active earth pressure of the compacted clay backfill acts on the back side of the soldier pile and timber lagging retention system.

A factor of safety of 2.0 for permanent H soldier piles and timber lagging should be used for the restoring moments divided by the overturning moments. The moments can be summed about a point located (Call it point A) at the very bottom of the soldier pile to get the effective depth of embedment D. Using moment equilibrium and a factor of safety of 2.0, the equation is the following:

$$M_A = \Sigma M_{\text{restoring}} - 2 \Sigma M_{\text{overturning}} = 0$$

The appropriate active and passive lateral earth forces as shown on the **APPARENT EARTH PRESSURE DESIGN FOR PERMANENT SOLDIER PILE WALL DESIGN WITH LAGGING (AT (B-9A and B-10A))** diagram given in **Appendix 16** of this report should be summed about



point A and placed into the moment equilibrium equation to solved for the effective depth of soldier pile embedment ( $L=D-1.5B$  which excludes a length of  $1.5 \times B$  at the top of embedment depth) by iteration. Once this is determined, D, the total depth of embedment below the original ground level line can be computed.

A geocomposite wall drain should be placed behind the timber lagging and against the granular backfill (PGE placed behind the lagging in thin lifts) to prevent hydrostatic pressure along the interior of the wall and the treated timber lagging to drain the water behind the wall.

The design of the soldier pile with timber lagging should be performed by a Registered Structural Engineer of Illinois from BLA on the basis of passive and active soils parameters given in the APPARENT EARTH PRESSURE DESIGN FOR PERMANENT SOLDIER PILE WALL DESIGN WITH LAGGING (AT (B-9A and B-10A) diagram in Appendix 16.

These parameters include averaged values of cohesion (c) and angle of internal friction values ( $\phi$ ) for the clay soils in each boring profile encountered are provided for computation of the active and passive lateral earth pressure conditions for the permanent soldier pile wall with wood lagging and concrete facing.

#### Alternative #2: Cantilevered Steel Sheet Pile Wall w/Cast-In-Place Facing

A 95 foot long permanent cantilevered steel sheet pile wall with cast-in-place facing is an alternative for the proposed earth retention structure to be located along the proposed north side of the roundabout.

The permanent steel sheet piling retaining wall is to be driven typically through the existing primarily very stiff brown to gray clay loam to clay soils as predominantly encountered in the upper 14 to 17 feet in borings B-9A and B-10A between the approximate average top of existing grade of 744.97 M.S.L. to the approximate average bottom of clay layer at 729.5 M.S.L.

The soils underlying the clay layer in B-9A and B-10A consist of medium dense brown to gray saturated sand to sand and gravel from 729.5 M.S.L. to 706.9 M.S.L.

Existing clay soils will also be retained behind the wall. Once the steel sheet piling is installed to the proper depth of embedment, clay can then be excavated from the front face of the cantilever steel sheet piling wall (making care not to damage the steel sheet pile wall while excavating) approximately 5.5 to 7.0 feet the existing grade to get to the bottom of subgrade elevation for the proposed Roberts Road Roundabout. The steel sheet pile wall will be approximately 0.5 foot from the edge of the north right-of-way.

The Free Earth Support Method should be used for design of this permanent cantilevered steel sheet piling wall. The Free Earth Support Method assumes that steel sheet piling is supported at its bottom by the soil in front of the steel sheet piling (the depth of embedment that will be present below the top of subgrade level). The steel sheet piling is driven to a depth such that stability is achieved provided that the maximum passive pressures are fully mobilized. This is unlike the Fixed Earth Support Method in which the bottom of the steel sheet piling is considered to be fixed into the ground into a sufficient type of subsurface soil (such as a cohesive clay hard pan) such that the lateral movement (deflection of the steel sheet pile wall) at the bottom of its embedment depth is zero. This can result in deeper embedment depths for steel sheet piling. The flipside is that in the Free Earth Support Method the steel sheet piling will have a greater section modulus (higher stiffness). Therefore, given the typically very stiff clay

soils encountered in the average upper 14 to 17 feet of four borings along the proposed wall, the Free Earth Support Method is recommended.

The recommended average lateral design soil parameters for steel sheet pile design are provided in the **Apparent Earth Pressure Design For Steel Sheet Pile Wall (B-9A and B-10A)** given in **Appendix 17** which shows the apparent earth pressure diagram for permanent steel sheet pile design in the vicinity of Boring B-9A and B-10A. The values of  $K_A$  and  $K_P$  are obtained from the chart derived from Coloumb's Equation for active and passive coefficients with wall friction for a sloping backfill as given in the **Chart of Coloumb's Active and Passive Coefficients With the Wall Friction For Sloping Backfill** provided in **Appendix 19**.

It recommended to provide drainage holes in the steel sheet piling to drain the seepage water (so water does not build up) from behind the steel sheet piling. The drainage holes can be located such that the water is free draining.

The roundabout retaining wall design utilizing permanent steel sheet piling should be performed on the basis of passive and active soil parameters provided in the **Apparent Earth Pressure Design For Steel Sheet Pile Wall (B-9A and B-10A)** given in **Appendix 17**. These parameters include averaged values of cohesion ( $c$ ) and angle of internal friction values ( $\phi$ ) for the clay soils in each boring profile B-9A and B-10A and are provided for computation of the active and passive lateral earth pressure conditions that exist at the permanent steel sheet piling earth retention alternative.

An appropriate cast in place concrete for facing with form liner on the installed steel sheet piling for this retaining wall. This will add a decorative facing to the steel sheet piling. Care should be administered to not seal up weep holes in steel sheet piling exposed facing so that if surface

water migrates between the steel sheet piling and the retained soil it will drain out behind the wall.

For the purposes of the roundabout cantilevered steel sheet piling retaining wall design, active lateral earth pressure parameters will be produced by the existing primarily clay soils located behind the 95 feet long sheet pile retaining wall. No traffic loads are applied and it is assumed that soils are encountered in dry conditions based on the typical average profile encountered in B-9A and B-10A. The slope behind the retaining wall is inclined.

Also, for the purposes of the roundabout steel sheet pile retaining wall design, the soil layers, their depths and corresponding soils parameters for the two (2) borings (B-9A and B-10A) were averaged give a general composite soil profile for use in analysis; however; more gradual changes in soil layers may in fact be present between borings.

#### Alternative #3: Cast-in- Place Concrete Retaining Wall

The following geotechnical recommendations are for the proposed concrete cantilever retaining wall alternative. The retaining wall is to be a short retaining wall no more than a maximum six (6) feet total length from finished ground line in front to finished ground line in back. The concrete footings for the concrete retaining wall will be approximately 3.5 feet below the proposed grade for frost protection. This yields approximately 4.5 feet of exposed wall height for the retaining wall. Currently, the existing slope behind the proposed wall is at 1H:1V to 1H:2V. Beginning at the top of wall at an approximate elevation of 749.11 M.S.L. and rising to an approximate elevation of 759 M.S.L. to the top of the slope.

Granular drainage fill should be placed behind the proposed retaining wall and the retaining wall should have weep holes to drain any potential buildup of hydrostatic pressure from behind the

wall. Currently, this is the preliminary stage so either granular fill or clay fill may be utilized and restore the inclined slope behind the wall during construction.

During construction the proposed excavation influence line will start approximately 2 feet from the retaining wall footer and then be cut back on a 1H:1V slope as shown on the BLA plans.

Based on the results from the field and laboratory testing of nearby borings B-9A and B-10A along the north side of the proposed roundabout, it is recommended that the proposed cast-in-place concrete cantilever retaining wall (if chosen for design) should be designed for a maximum net allowable bearing capacity of 3,000 psf on very stiff brown sandy clay loam fill to silty clay loam to loose brown silt at an approximate depth of 3.5 feet from the existing ground elevation at each boring. The net allowable bearing capacity is the allowable service load per unit area of the foundation in excess of the existing vertical effective stress at the level of the proposed foundation. The footings for the proposed retaining wall must be founded at a minimum 3.5 feet below the finished design exterior grade for frost protection.

The soil design parameters (adhesion, cohesion and friction angle) for the concrete cantilever retaining wall backfill which consists generally of existing very stiff brown silty to sandy clay loam as encountered in nearby borings B-9A and B-10A as given in the **Design Loads for Short Retaining Wall** in **Appendix 18** and the **Chart of Coloumb's Active and Passive Coefficients with Wall Friction for Sloping Backfill and Level Backfill** in **Appendix 19**.

If PGE granular fill is used behind the retaining wall as backfill value of  $K_v$  and  $K_h$  can be obtained from Figure 18-2. Design loads for low retaining walls, straight slope backfill found in **Design Loads for Short Retaining Wall** in **Appendix 18**.

Prior to backfilling behind the proposed retaining wall, all topsoil and vegetation should be stripped and removed. Granular fill or clay fill material may be utilized behind the concrete

cantilever wall as backfill; however, a crushed stone drainage material should be placed against the interior side of the stem of the wall to facilitate drainage of any hydrostatic forces from building up behind the wall. The crushed stone drainage fill should be placed in maximum eight-inch lifts with each lift tamped in place behind the wall using a portable hand held Wacker tamper or vibrating plate to achieve particle interlocking friction. For the design of the proposed retaining wall, in-situ clay soil parameters given above should be utilized in conjunction with the designated backfill material (including placement and compaction) and the appropriate design lateral earth pressure parameters found in the charts in the Design Loads for Short Retaining Wall given in Appendix 18. The case of sloping backfill should be used.

Both local and global stability analysis with a minimum Global Stability Factor of Safety of 1.5 should be utilized by the Engineer who checks the proposed retaining wall global stability.

### **Storm Sewer Construction**

Proposed concrete storm sewer pipe is to be constructed on the along the south portion of the proposed Roberts Road and north of existing wetlands from approximately Station 52+00 to 63+00.

Since the previous SEECO preliminary geotechnical RGR report for this project dated February 28, the current direction for the Roadway construction is a ground improvement method which will improve the poor in-situ soils. Also the grade will be raised in areas with PGE such that the proposed bottom of inverts will typically rest on PGE which is bearing on the improved in-situ method.

The following sections are left in this report because the earlier non-ground improvement methods (steel sheet piling, etc) have been also been left in only for completeness sake.

Approximately ten (10) soil borings consisting of B-3, B-3A, B-4A, B-5A, B-7A, B-11, B-12A, B-13A, B-14A and B-15A are located in the proposed route of the new storm sewer and consist of unsuitable wet organic soils (peat organic clay and organic silt) and unsuitable very soft clay and very loose silts to approximate depths of 9 feet to 24.5 feet below the existing grade (elevations ranging from 710.87 M.S.L to 732.39 M.S.L.). See **Table 5** for summary. These poor soils are present below the proposed pipe inverts preliminarily ranging from 738.35 M.S.L. to 743.11 M.S.L. There are four (4) alternatives given in the following pages to construct the said RCCP gravity storm sewer to minimize potential settlement.

Table No. 5: Undercut Depth Summary for Proposed Storm Sewer

Boring	Station	Boring Elevation (M.S.L.)	Depth/ Elevation to Suitable Soils (ft/M.S.L.)	Proposed Pipe Diameter (inches)	Proposed Pipe Invert	Depth of Unsuitable Soils Below Pipe	Soils at a Suitable Depth
B-3	93+42.66	739.91	10/729.91	42" Culvert, 12"	735.37, 740.42	5.46, 10*	Loose Brown Poorly Graded Sand (A-3)
B-3A	59+87.29	735.37	11/724.37	18"	739.1	11*	Very Loose Gray Sand (A-3)
B-4A	59+59.95	734.44	21/713.44	18"	739.4	21*	Medium Dense Gray Sandy Loam (A-2-4)
B-5A	59+06.79	735.51	17/718.51	18"	739.5	17*	Loose Gray Silty Loam (A-4)
B-7A	58+00.41	735.66	3.50/732.16	18"	740.0	3.5	Loose Brownish Gray Silty Loam (A-4)
B-11A	56+60.38	737.08	17.25/719.83	15"	740.8	17.25*	Soft Gray Silty Clay Loam (A-6)
B-12A	56+19.27	736.26	9.5/726.76	15"	741.0	9.5*	Very Loose Gray Silt (A-4)
B-13A	54+74.21	737.34	6.0/731.34	15"	741.6	6	Very Loose Gray Silty Loam (A-2-4)
B-14A	53+58.65	746.46	16/730.46	12"	742.3	11.84*	Medium Brown & Gray Sandy Clay Loam (A-6)
B-15A	52+65.85	739.39	6/733.39	12"	742.8	6	Stiff Brown and Gray Clay (A-6)

\*Actual undercut depths should be restricted 7-8 feet below the 4" of granular bedding below the pipe invert to bridge over insitu unsuitable soils left in place.



### Alternative #1: Partial Undercut Excavate-Refill Alternative with Compacted Granular Fill

The first alternative is a Partial Excavate-Refill alternative where the unsuitable organic soils would first be undercut from below the proposed pipe invert elevation to the inorganic clay, sand and loam soils below and replaced with PGE granular fill placed and compacted in maximum 8 inch lift to depths of 7-8 feet below the pipes 4 inches of pipe bedding. The pipe does not weigh much; however the organic soils should be removed because of their high moisture compressibility additionally approximately 7 to 8 feet of fill will be placed in these areas too. The total undercut depths range from 6 to 21 feet from existing grade with an average undercut depth of 10.77 feet whereas it is recommended to undercut at least 7 to 8 feet below the bottom of the pipe bottom of invert bedding elevation. Once brought up to the top of undercut, the pipes should be placed after the 4 inches of pipe bedding and where needed the granular trench backfill can be placed and compacted in thin lifts as specified in this report to achieve top of embankment elevation. While feasible in most areas it is not feasible to excavate a narrow trench from 17 feet to 21 feet below the existing ground level (and below the pipe) in the area of Borings B-4A, B-5A and B-11A.

The presence of the Field Geotechnical Engineer from SEECO Construction during undercutting is recommended for observation of the removal of the soils within the undercut depths as well as to verify undercut quantities.

### Alternative #2: Aggregate Columns with Perforated Plastic Sleeve

Another alternative is to use an Aggregate Column Ground Improvement method with a perforated plastic sleeve to help prevent sacrificial lateral migration of the crushed stone into the soil formation while allowing drainage into the Aggregate Columns. If the Aggregate Columns with perforated plastic sleeve are utilized in the Ground improvement method this would have to

be coordinated to place and space Aggregate columns in along the center of the storm sewer pipe in the route of the storm sewer. This method specifically consists of installing 20 inch to 30 inch diameter rammed aggregate columns spaced approximately 5 feet center to center (or tighter if necessary) and encased in a perforated plastic sleeve that is approximately 20 feet maximum length.

The use of the perforated plastic sleeve is desired for this project because otherwise the aggregate will be pushed into the wet very soft organics soil when installed by ramming. The aggregate utilized in the columns shall be Class A crushed stone or crushed concrete satisfying the requirements of Section 1004 of the IDOT "Standard Specifications for Road and Bridge Construction," 2012.

The depth of the aggregate columns with perforated plastic sleeve should be founded in competent inorganic virgin soils with suitable bearing. Additionally, the sufficient depth to counteract the negative skin friction from the organics above. The plastic sleeve will have to extended throughout the poor soils at depths deeper than 20 feet in the area of boring B-4A located at the southwest portion of the site south of Roberts Road.

Sequencing is important for this because if Aggregate Columns with plastic sleeve is used to improve the embankment you do not want to lose the confining pressure and damage the installed aggregate piers by digging for the utilities. It was suggested by Fran Miller of Geopier Foundation Company to consider possibly cement grout in the aggregate columns to help counteract this.

This Aggregate Columns with perforated plastic sleeve alternative would need to be introduced as an Experimental Feature for this project.

#### Alternative #3: Helical Piers With Concrete Cradle

The proposed storm sewer can be supported on concrete cradles supported by helical piers. Helical triple augers should be installed at an approximate depth greater than the unsuitable organic silt, organic clay and peat and below the soft clay and very loose silt and sand and into the suitable virgin soils to suitable depths to counteract the negative skin friction above.

#### Alternative #4: Driven Steel Pipe Piles With Concrete Cradle

The proposed storm sewer can be supported on concrete cradles supported by driven pipe piles. The driven pipe piles should be installed at sufficient depth greater than the unsuitable organic silt, organic clay and peat and below the soft clay and very loose silt and sand and into the suitable virgin soils to suitable depths to counteract the negative skin friction above. The pipe piles work on skin friction as there end bearing is negligible.

For the installation of the proposed storm sewers, it is recommended to place a minimum four inches of bedding material below the proposed pipe and trench backfill should be placed over the any proposed storm sewers installed underneath new pavement. All sewer construction should be done in accordance with the ISPE "Standard Specification for Water and Sewer Main Construction in Illinois," May 2005, Sixth Edition. Detailed recommendations are given in the body of this report. The recommendations regarding the pipe bedding and trench backfill are given in the following sections.

#### Pipe Bedding

Bedding material for the storm sewer pipes should comply with **Article 1003.04** of the IDOT "Standard Specifications for Road and Bridge Construction," 2012 Edition. The fine aggregate

bedding material shall consist of sand or stone sand and should have a gradation of equivalent to IDOT materials FA-1 or FA-2, FA-6 or FA-21. The bedding material must be placed in maximum four inch thick loose lifts and compacted by mechanical means (by ramming or tamping with tools/equipment approved by the Engineer) to the satisfaction of the Engineer. The placement of bedding material must comply with **Article 550.07** of the IDOT "Standard Specifications for Road and Bridge Construction," adopted January 1, 2012.

#### Trench Backfill

As given in the IDOT "Standard Specifications for Road and Bridge Construction," 2012 Edition, the backfill designated as trench backfill should be placed and compacted to ensure development of a positive support system in all trenches beneath the pavements and all trenches outside of the subgrade where the inner edge of the trench is closer than two feet to the edge of the pavement, curb and gutter, stabilized shoulder, back of curb or sidewalk.

Trench backfill should be a fine aggregate material equivalent to IDOT materials FA-1 or FA-2, FA-6 or FA-21 and must comply with **Article 1003.04** of IDOT "Standard Specifications for Road and Bridge Construction" adopted January 1, 2012.

Granular trench backfill should be placed in eight-inch maximum loose lifts and compacted to 95% of the maximum density according to AASHTO T 99-01 from the springline to 1.0 foot below the finished grade. The top 1.0 foot in the pavement areas should be compacted to 100% of the maximum dry density according to AASHTO T 99-01. The trench backfill placement and compaction must comply with **Article 550.07** of the IDOT "Standard Specifications for Road and Bridge Construction."

### **Review Of Construction Plans And Specifications**

SEECO Consultants, Inc. must review the completed BLA project plans cross-sections and profiles and specifications (final plan and profiles, proposed pavement cross sections, new storm sewer pipe locations with profile invert elevations and depths) for this Roberts Road and River Road intersection reconstruction and realignment project once they are completed to ensure they comply with this report.

### **Potential Construction Problems**

#### **Groundwater**

Groundwater was encountered in all borings at approximately 11 feet to 23.5 feet below the existing grade at the boring locations while drilling or sampling (approximate elevations of 712.01 M.S.L. to 735.46 M.S.L.) at the times of drilling. Based on the groundwater conditions encountered in the soil borings at the project site, it is concluded that groundwater problems will be encountered in the saturated sand layers below the organic soils and clay layers in B-3A, B-4A B-6A, B-8A B-12A and B-13A during the roadway reconstruction and installation of storm sewers based on the eighteen (18) soil borings drilled and sampled in the project area.

If seepage water, rainwater and/or surface run-off enter into the trench excavation after it is made, it should be removed by the sewer and excavation subcontractors utilizing sump and pump techniques or possibly wellpoints or intermediate depth wells with electric submersible pumps.

#### **Surface Water**

The proposed embankment is to be constructed south of Roberts Road towards the existing wetlands. Care should be taken to build a stable platform above the 100 year flood elevation of 737 M.S.L. using compacted granular PGE for equipment to safely operate in the dry near the

embankment near the water's edge. Surface runoff water may be directed by ditches and swales and sumps and pumps to the ponds on the east and west sides of River Road, respectively.

### Excavations

Any excavations that extend greater than five feet in depth should be designed in accordance with U.S. Department of Labor, Occupational Safety and Health Administration 1989 (OSHA) "Occupational Safety and Health Standards - Excavations; Final Rule" 29 CFR, Part 1926, Subpart P. Excavations with properly sloped or braced excavation earth retention systems (such as trench boxes) to prevent excavation instability and provide safety is the responsibility of the utilities contractor. Also, the means and methods of excavating into the soils are at the discretion of the utilities and excavation subcontractors and are the responsibility of the utilities and excavating subcontractors.

It is recommended that in the area of ditches, where backfill may need to be placed for the preparation of subgrade, all vegetation should be removed and all the water should be pumped out from the ditches and all the loose organic and inorganic sediment deposits collected in the ditches must be removed before the fill is placed for the construction of embankment.

### Existing Utilities

It is imperative to locate any existing gas, water main, storm sewer, and electric utilities that are in use and in the path of the proposed new storm sewer pipes. If any utilities are to remain in the path of the proposed new storm sewer pipe, than the new storm sewer pipe location should be changed or the invert of the new storm sewer water main pipe be raised or lowered so that its clear of the pre-existing utility or the existing utility should be moved or relocated.

### Erosion Control Recommendations

It is recommended that adequate erosion control measures should be taken to prevent the excessive erosion of the soils which are not adequately covered. All erosion control measures, as mentioned in **Section 280** of Illinois Department of Transportation, "Standard Specifications for Road and Bridge Construction," 2012 Edition, should be followed.

### Construction Consultation Engineering

A representative of SEECO Consultants should be consulted during the construction operations to ensure compliance with the specifications. Based on alternatives presented in this report and potential variations between soil borings, it is recommended that a Field Geotechnical engineer from SEECO Consultants Inc. be present to inspect that the suitable soils at suitable depths are met .

In addition to the area subgrade conditions, the adequacy of the bottom of trench excavation soil conditions for the proposed storm sewer pipe must be inspected in the field by a Field Geotechnical Engineer as well.

Field density tests to determine the degree of compaction of subgrade, granular subbase course, bituminous concrete base, bituminous concrete binder and bituminous surface courses should be performed by a Field Engineering Technician or Field Geotechnical Engineer. Also, field density tests to determine the degree of trench backfill and bedding compaction should be performed by a Field Engineering Technician or Field Geotechnical Engineer.

Closing Remarks

We trust this report and the information contained herein is sufficient for your present requirements.

We have welcomed the opportunity to be of service to you on this project. If there are any questions regarding this report, please contact us at your convenience.



Respectfully submitted,  
SEECO Consultants, Inc.



*Garrett W. Gray*  
Garrett Gray, P.E.  
Project Engineer  
*Collin W. Gray*  
Collin W. Gray, S.E., P.E.  
President

GWG:arm

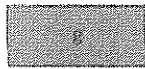
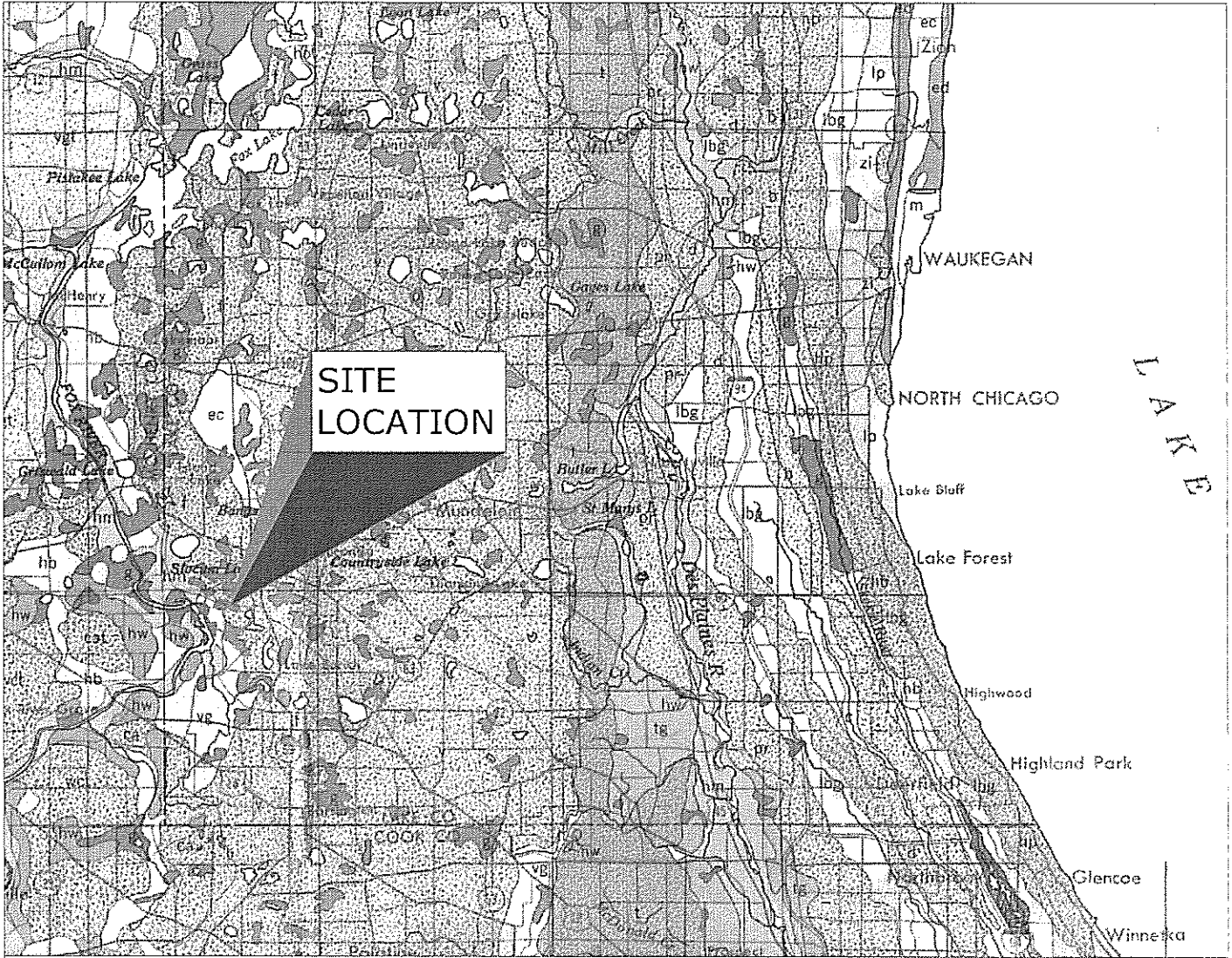


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# APPENDIX 1




**Grayslake Peat**

Peat, muck, and locally silt, commonly organic deposits with interbedded silt and clay in places; mostly in glacial lake basins; locally in lake basins on floodplains of major rivers.

SCALE 1:250,000

1 inch equals approximately 4 miles



DRAWN BY SFO	APPROVED GG	DATE 01/24/13	SURFICIAL GEOLOGY-CHICAGO REGION
SCALE 1:250,000	FIGURE 1	JOB NO. 9337G-1	CLIENT Bollinger Lach & Associates-Lake County Highway Dept.
 <b>SEECO Consultants, Inc.</b> 7350 Duwan Drive, Tinley Park, Illinois 60477			<b>PROJECT NAME &amp; LOCATION</b> Proposed Improvements Roberts Road and River Road Intersection Lake County, IL (07-00086-08-CH)

# **APPENDIX 2A**

SOIL BORING LOG

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By GG

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method AASHTO T 206-03

Hammer Type Automatic Hammer

Boring No. **B-1**  
 Station **59+02.64**  
 Offset **47.28' R**  
 Ground Surface El. **+741.94 +/- M.S.L.**

ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.	Groundwater Elev.:	ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
							728.4				
	1.0					SANDY LOAM, Gray, Loose, Saturated (A-2-6)		14.0	2		
740.4		12					727.4		1		16.5
	2.0	8	4.25 P	13.4		CLAY, Gray, With Sand and Silt, Stiff to Very Stiff, Moist (A-6)		15.0	2	1.50 P	
		7									
	3.0							16.0			
738.4									1		
	4.0	3	1.25 P	9.4				17.0	4	1.75 P	16.4
737.4		3							5		
	5.0	2	0.25 P	30.3				18.0			
736.9											
	6.0							19.0	5		
		2	0.25 P	19.6		(Dry Unit Weight =120.4 pcf) (Gravel at 19.5' -20')			7	2.25 P	16.9
735.2		2						20.0	13		16.5
	7.0										
		2	0.50 P	40.0							
	8.0						720.9	21.0			
733.4						CLAY, Brownish Gray, Trace Sand, Very Stiff, Moist (A-6)			6		
	9.0	1						22.0	10	2.70 B	16.1
		2		84.0					10		
	10.0	2		106.1				23.0			
730.9	11.0							24.0	7		
		2		27.1					9	3.10 B	14.8
		3							14		
729.9	12.0						716.9	25.0			
		3		50.6		End of Boring @ 25 Feet Note: Boring was offset approximately 20' south of original boring location due to existing underground utilities (Driller's Observation).					
	13.0							26.0			

N=Standard Penetration Test-Blows per six inches to drive 2" O.D.

(QU)B=Bulge S=Shear P=Penetrometer Test

Split Spoon Sampler 24" with 140lb hammer falling 30"

4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

# SOIL BORING LOG

ROUTE **FAU 3704 and 3705** DESCRIPTION

**Proposed Improvements**

Logged By **GG**

SECTION **07-00086-08-CH**

LOCATION **Roberts Rd. & River Rd. Intersection, Lake County, IL**

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY **Lake**

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method **AASHTO T 206-03**

Hammer Type **Automatic Hammer**

Boring No. **B-2**  
Station **55+33.77**  
Offset **14.12' R**  
Ground Surface El. **+744.24+/- M.S.L.**

E L E V. -	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)	Surf. Wat. El.	E L E V. -	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)
					Groundwater Elev.:					
					When Drilling					
					at Completion	<b>727.74</b>				
					After	<b>734.24</b>				
					Hrs					

5" BITUMINOUS CONCRETE PAVEMENT	743.8					730.7				
11" SAND AND GRAVEL BASE COURSE, Brown	742.9	1.0		5.2	POORLY GRADED SAND, Fine, Medium Dense, Moist to Saturated (A-3)	14.0	7			21.7
FILL: CLAY, Brown, Trace Sand and Gravel, Hard, Moist (A-6(8)) (Atterberg Limits Test) (Combined Analysis) (Dry Unit Weight = 119.1 pcf)	737.7	2.0	6	2.10 S 15.4 15.3		15.0	7			
		3.0			(Saturated Below 16.5 feet)	16.0	10			
		4.0	2	1.10 S 17.2		17.0	11			20.2
		5.0	3			18.0				
		6.0	2			19.0	6			18.9
ORGANIC CLAY, Dark Gray to Black, Medium, Wet (A-7-5) (Dry Unit Weight = 84.9 pcf)	736.2	7.0	3	0.75 P 52.4 33.3		20.0	16	3.25 P		15.0
		8.0	4		CLAY, Gray, Trace Sand and Gravel, With Gray Fine Sand Seams, Very Stiff to Stiff, Moist (A-6)	21.0				
FIBROUS PEAT to CLAYEY PEAT, Dark Brown to Black, Trace Shells, Soft, Wet (A-8)  (Organic Content = 20.2%)	732.5	9.0	1	79.8	(Dry Unit Weight = 119.3 pcf)	22.0	10	1.30 B		16.5 16.8
		10.0	1		SILT, Gray, Very Dense, Moist (A-4)	22.2	17			
		11.0	2		End of Boring @ 22.5 Feet	22.7	26			15.9
		12.0	3	114.9	Note: Boring was offset approximately 10' north of original boring location due to existing underground cable and electric utilities (Driller's Observation).	23.0				
ORGANIC CLAY, Gray, Trace Roots and Shells, Soft, Moist (A-7-5)	732.5	13.0	3	0.10 P 29.9		24.0				
			3			25.0				
						26.0				

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
Split Spoon Sampler 24" with 140lb hammer falling 30"  
4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

ROUTE FAU 3704 and 3705 DESCRIPTION Proposed Improvements

Logged By GG

SECTION 07-00086-08-CH LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake STRUCTURE NO. (Exist.) (Prop.)

Drilling Method AASHTO T 206-09 Hammer Type Automatic Hammer

Boring No. B-3  
 Station 93+42.66  
 Offset 16.57' R  
 Ground Surface El. +739.91 +/- M.S.L.

ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Groundwater Elev.:		ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					When Drilling	at Completion					
						728.91					
						729.91					

Soil Description	ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Soil Description	ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
5.5" BITUMINOUS CONCRETE PAVEMENT	739.5						721.4				
6.5" SAND AND GRAVEL BASE COURSE, Brown, Some Clay, Dry (A-1-b)	738.9	1.0			6.4	CLAY, Gray, Trace Sand, Stiff to Very Stiff, Moist (A-6)		19.0	3		
FILL: SILTY CLAY, Gray and Brown, Trace Sand and Gravel, Very Stiff, Moist (A-6(11))			4						4	1.80 B	26.6
(Atterberg Limits Test) (Combined Analysis) (Dry Unit Weight = 121.8 pcf)	737.4	2.0	4	3.40 S	26.0			20.0	6		
FILL: CLAY, Gray, Trace Brown, Little Black to Gray, Trace Sand and Gravel, Stiff, Moist (A-6)			4					21.0			
		3.0							3		
		4.0	5		21.1			22.0	5	1.80 B	21.2
			4	1.40 B/S					6		
		5.0	4					23.0			
		6.0			29.9			24.0	4		
			4						6	1.50 B	15.3
	732.7	7.0	3	1.20 B/S				25.0	8		
PEAT, Black, With Shells, Soft, Wet (A-8) (Organic Content = 15.3%)			3		142.5			26.0			
	731.4	8.0							5		
ORGANIC SILT, Greenish Gray, With Shells, Loose, Wet (A-7-5) (Organic Content = 11.0%)			1			(Dry Unit Weight = 114.3 pcf)		27.0	5	1.25 B	18.8
			1						8		18.5
	729.9	10.0	2		104.8			28.0			
POORLY GRADED SAND, Gray, Fine, Loose, Moist to Saturated (A-3) (Saturated below 11 feet)					19.2	(Dry Unit Weight = 125.3 pcf)		29.0	5		
			1		28.3				9	1.60 B	15.1
		12.0	1					30.0	10		14.2
			2								
		13.0					708.9	31.0			
	726.4	14.0	3			SILT, Gray, Medium Dense, Moist (A-4)			5		
SILTY CLAY, Gray, Trace Sand, Very Stiff to Stiff, Moist (A-6) (Dry Unit Weight = 118.4 pcf)			5	2.00 B/S	17.9			32.0	8		18.3
			5		18.0				8		
		15.0					706.4	33.0			
		16.0	3			CLAY, Gray, Trace Sand, Hard, Moist (A-6)			7		
			3	1.80 B	18.7			34.0	9	4.90 B/S	24.4
		17.0	3						12		
			5				704.9	35.0			
		18.0				End of Boring @ 35.0 Feet					

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test

Split Spoon Sampler 24" with 140lb hammer falling 30"

4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.



SOIL BORING LOG

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP. 43N RNG. 9E PM 3rd

COUNTY Lake

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method AASHTO T 206-09 Hammer Type Automatic Hammer

Boring No. **B-1A**  
 Station **62+68.27**  
 Offset **10.68' R**  
 Ground Surface El. **+745.74+/- M.S.L.**

ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.	Groundwater Elev.:	ELEV. (ft.)	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
745.1											
744.7	1.0								3		
		5			(with Fine Sand Layers at 23.5'-25')				6	1.50	15.5
	2.0	5	2.50	16.9			720.7		7	P	
		3			CLAY, Gray, Trace Sand and Gravel, Stiff, Moist						
742.2	3.0				(A-6)						
									5		
	4.0	3	2.25	20.6					7	1.75	
		4							8	P	
	5.0	4	2.50								
			B/S				717.2				
739.7	6.0				SILTY CLAY, Gray, Trace Gravel, Stiff, Moist				3		
		5			(Atterberg Limits Test)				5	1.25	20.6
	7.0	8	2.50	9.4	(Combined Analysis)				5	P	
		9									
737.2	8.0						714.7				
					SILTY CLAY, Gray, Some Sand, Trace Gravel, Medium, Moist				5		
	9.0	5	3.50	18.3	(Dry Unit Weight = 105.0 pcf)	(A-6)			8	0.70	22.0
		6							8	B	
	10.0	6	2.10								
			S				712.2				
734.7	11.0				CLAY, Gray, Trace Sand and Gravel, Stiff to Very Stiff, Moist				4		
		3	1.50	18.1	(A-6)				6	1.50	15.9
	12.0	4	1.60						6	P	
		5									
	13.0										
									5		
	14.0	3	2.00	20.9					6	2.00	24.4
		5							5	P	
731.2	15.0	7					707.2				
	16.0				CLAYEY SILT, Gray, Medium Dense, Moist				4		
		3			(A-4)				6	1.75	19.3
	17.0	5							7	P	
		5					705.7				
	18.0				End of Boring @ 40.0 Feet						
727.2	19.0										
		4		18.6							
		3									
	20.0	3									
725.2	21.0										
	22.0	3	2.50	16.4							
		6									
	23.0	6	1.00	20.1							
		6									

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
 Split Spoon Sampler 24" with 140lb hammer falling 30"  
 4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

SOIL BORING LOG

ROUTE FAU 3704 and 3705 DESCRIPTION Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake STRUCTURE NO. (Exist.) (Prop.)

Drilling Method AASHTO T 206-09 Hammer Type Automatic Hammer

Boring No. B-2A  
 Station 60+99.74  
 Offset 31.62' L  
 Ground Surface El. +736.75+/- M.S.L.

ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Groundwater Elev.:		ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					When Drilling	at Completion					
					Surf. Wat. El.						
					Groundwater Elev.:						
					When Drilling	713.25					
					at Completion	715.75					
					After	Hrs					
735.8	1.0				SAND, Gray, Medium Dense, Saturated (A-3)		713.3	24.0	5		
	2.0	3		14.9				25.0	6		
	3.0	4						26.0			
733.3	4.0	3						27.0	4		
	5.0	3		19.4				28.0	5		
	6.0	3						29.0	6		
730.8	7.0	1						30.0	5		
	8.0	3	1.51 B/S	15.2	End of Boring @ 30 Feet		706.8		6		
	9.0	3						31.0	7		
	10.0	3	2.82 B/S	16.8				32.0			
727.3	11.0	3						33.0			
	12.0	4		20.7				34.0			
	13.0	3						35.0			
	14.0	4		15.5				36.0			
	15.0	5						37.0			
720.8	16.0							38.0			
	17.0	4						39.0			
	18.0	4	1.55 B	17.3				40.0			
	19.0	5						41.0			
718.3	20.0	6	1.45 B	20.0				42.0			
	21.0							43.0			
	22.0	4						44.0			
	23.0	5	1.04 B	17.0				45.0			
		5						46.0			

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
 Split Spoon Sampler 24" with 140lb hammer falling 30"  
 4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP. 43N RNG. 9E PM 3rd

COUNTY Lake

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method AASHTO T 206-09 Hammer Type Automatic Hammer

Boring No. **B-3A**  
 Station **59+87.29**  
 Offset **0.95' R**  
 Ground Surface El. **+735.37+- M.S.L.**

ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					Groundwater Elev.:	After Hrs					
							711.9				
	1.0							24.0	4		
	733.9	1		73.2				25.0	7	1.82 B	16.2
	2.0	1		100.6				26.0	10		
	731.9	0						27.0	5		
	3.0							28.0	8	2.04 B	16.9
	4.0	0		75.1				29.0	12		
	729.4	0						30.0	4		
	5.0	0						31.0	8	2.18 B	15.1
	6.0	0		170.9				32.0	8		
	7.0	0						33.0	4	2.32 B	15.4
	8.0	0		88.2				34.0	9	1.48 B	
	9.0	0						35.0	10		
	724.4	0						36.0	4	3.78 B	15.1
	10.0	0						37.0	7		
	11.0	1						38.0	11		
	722.4	0		21.6				39.0	5	2.53 B	15.1
	12.0	0						40.0	8		
	13.0	1						41.0	6		
	14.0	0						42.0	8		
	15.0	1						43.0	10		
	16.0	0		20.8			696.9	44.0	5		
	17.0	0						45.0	8		
	18.0	1						46.0	8		
	19.0	1		19.7			694.4				
	20.0	2									
	21.0										
	22.0	1		20.7			690.4				
	23.0	2									
		2									

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
 Split Spoon Sampler 24" with 140lb hammer falling 30"  
 4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

SOIL BORING LOG

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method AASHTO T 206-09

Hammer Type Automatic Hammer

Boring No. **B-4A**  
 Station **59+59.95**  
 Offset **69.41' L**  
 Ground Surface El. **+734.44+/- M.S.L.**

E L E V.	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)	Surf. Wat. El.	E L E V.	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)
					Groundwater Elev.:					
					When Drilling <b>713.44</b>					
					at Completion <b>716.44</b>					
					After Hrs					

FIBROUS PEAT, Black, Very Soft, Wet (A-8)						710.9				
	1.0				SAND, Gray, Medium Dense, Saturated (A-3)		24.0	3		
	2.0	0		397.4			25.0	7		
ORGANIC SILT, Gray, with Shells, Very Loose, Wet (A-8)		1					26.0	10		
	3.0	0					27.0	4		
	4.0	0		159.4			28.0	7		
	5.0	0					29.0	11		
	6.0	1					30.0	5		
Weight of Hammer pushed split spoon sampler 18 inches	7.0	0		152.9			31.0	7		
	8.0	0					32.0	9		
Weight of Hammer pushed split spoon sampler 18 inches	9.0	0		161.8			33.0	4		
	10.0	0					34.0	8		
Weight of Hammer pushed split spoon sampler 18 inches	11.0	0		149.4	(Sieve Analysis)		35.0	10		
	12.0	0					36.0	5		
Weight of Hammer pushed split spoon sampler 18 inches	13.0	0		275.4			37.0	5		
	14.0	0					38.0	7		
Weight of Hammer pushed split spoon sampler 18 inches	15.0	0					39.0	6		
Organic Content = 13.92%	16.0	0		38.6		694.4	40.0	9		
ORGANIC SILTY LOAM, Gray, Very Loose, Wet (A-7-5)		0			End of Boring @ 40.0 Feet		41.0	12		
Weight of Hammer pushed split spoon sampler 18 inches	17.0	0					42.0			
	18.0	0		56.9			43.0			
ORGANIC CLAY LOAM, Gray, Very Soft, Wet (A-7-5)		0					44.0			
Weight of Hammer	19.0	0					45.0			
	20.0	0					46.0			
SANDY LOAM, Gray, Medium Dense, Saturated (A-2-4)	21.0	3								
	22.0	6								
	23.0	7								

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
 Split Spoon Sampler 24" with 140lb hammer falling 30"  
 4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method AASHTO T 206-09

Hammer Type Automatic Hammer

Boring No. **B-5A**  
 Station **59+06.79**  
 Offset **2.5' R**  
 Ground Surface El. **+735.51+/- M.S.L.**

ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					When Drilling	at Completion					
-	-	-	-	-	712.01	713.51	-	-	-	-	-
	1.0							24.0	3		
	2.0	1		83.5				25.0	4		17.3
733.5	2.0	1		62.4				26.0	5		
	3.0						709.5	27.0	4		
	4.0	0		138.2				28.0	4	2.15 B	16.7
	5.0	1						29.0	7		
	6.0							30.0	4		
	7.0	0		163.6				31.0	5	1.70 B	17.4
	8.0	0						32.0	7		
	9.0	0		147.2				33.0	6	2.34 B	15.8
	10.0	0						34.0	10		
	11.0							35.0	5		
	12.0	0		112.7				36.0	7	1.64 B	16.9
	13.0	1						37.0	8		
722.0	13.0							38.0	6		
	14.0	1		50.8				39.0	10	3.42 B	14.7
	15.0	0						40.0	12		
	16.0							41.0	7		
	17.0	1		37.7				42.0	12	2.69 B	14.9
718.5	17.0	1		25.9				43.0	14		
	18.0							44.0	6		
717.0	18.0							45.0	12	2.82 B	14.6
	19.0	1		31.6				46.0	12		
	20.0	2	0.00 P						7		
	21.0	1							11	3.03 B	15.1
	22.0	3	0.00 P	32.7					15		
713.5	22.0	4		16.3			690.5	45.0			
	23.0							46.0			

TOPSOIL with FIBROUS PEAT, Black, Wet (A-8)

ORGANIC SILT, Gray, With Shells, Very Loose, Wet (A-8)

Weight of Hammer pushed split spoon sampler 18 inches

CLAY LOAM, Gray, Trace Organics, Very Soft, Wet (A-7-6)

Organic Content = 1.06%

SILTY LOAM, Gray, Very Loose, Moist (A-4)

CLAY, Gray, Very Soft, Wet (A-6)

SILTY LOAM, Gray, Very Loose, Moist (A-4)

CLAY, Gray, Very Stiff to Stiff to Very Stiff, Moist (A-6)

(Dry Density = 121.1 pcf)

End of Boring @ 45 Feet

N=Standard Penetration Test-Blows per six inches to drive 2" O.D.

(QU)B=Bulge S=Shear P=Penetrometer Test

Split Spoon Sampler 24" with 140lb hammer falling 30"

4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

# SOIL BORING LOG

ROUTE **FAU 3704 and 3705** DESCRIPTION

**Proposed Improvements**

Logged By **VM**

SECTION **07-00086-08-CH**

LOCATION **Roberts Rd. & River Rd. Intersection, Lake County, IL**

SEC 3 TWP 43N RNG 9E PM 3rd

COUNTY **Lake**

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method **AASHTO T 206-09** Hammer Type **Automatic Hammer**

Boring No. **B-6A**  
Station **66+12.13**  
Offset **293.31' L**  
Ground Surface El. **+739.59 +/- M.S.L.**

ELEV. V.	DEPTH H (ft.)	SPT N (blows)	UCS Qu (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. V.	DEPTH H (ft.)	SPT N (blows)	UCS Qu (TSF)	MOIST. (%)
					When Drilling	at Completion					
	738.6	1.0						24.0	3		
		2.0	3					25.0	6		
		7	3.00 P	15.4				26.0	7		
	736.1	3.0						27.0	4		
		4.0	3	2.50 P	14.4			28.0	5		
		6						29.0	7		
	733.6	5.0	6				711.1	30.0			
		6.0						31.0	5		
		7.0	1					32.0	8		
		2	0.10 P	50.5				33.0	10		
		2					708.6	34.0			
	727.6	8.0						35.0	4		
		9.0	1					36.0	7		
		2	0.10 P	31.1			707.6	37.0	13	2.40 B	
		10.0	1					38.0			
		11.0						39.0			
	726.1	12.0	1					40.0	6		
		13.0						41.0	9	2.00 P	
		14.0	1	0.25 P	36.9		704.6	42.0	12		
		15.0						43.0			
		16.0						44.0			
		17.0	4					45.0			
		7		33.1				46.0			
		8									
		16.0	3								
		17.0	5								
		5									
		18.0									
		19.0	5								
		5									
		20.0	6								
		21.0									
		22.0	4								
		4									
		23.0	5								

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
Split Spoon Sampler 24" with 140lb hammer falling 30"  
4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

SOIL BORING LOG

ROUTE **FAU 3704 and 3705** DESCRIPTION

**Proposed Improvements**

Logged By **VM**

SECTION **07-00086-08-CH**

LOCATION **Roberts Rd. & River Rd. Intersection, Lake County, IL**

SEC **3** TWP. **43N** RNG. **9E** PM **3rd**

COUNTY **Lake**

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method **AASHTO T 206-09** Hammer Type **Automatic Hammer**

Boring No. **B-7A**  
 Station **58+00.41**  
 Offset **104.92' L**  
 Ground Surface El. **+735.66+/- M.S.L.**

ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.	Groundwater Elev.:	ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
							712.2				
	1.0							24.0	3		16.6
	2.0	1		94.0				25.0	6		
	3.0	0							7		
	4.0	2						26.0	4		
	5.0	4		21.9				27.0	6		21.8
	6.0	5						28.0	8		
	7.0						707.2				
	8.0	2						29.0	4		
	9.0	4						30.0	7		
	10.0	4	0.75 P	18.4					9		
	11.0						705.7				
	12.0										
	13.0										
	14.0										
	15.0										
	16.0										
	17.0	3		19.2							
	18.0	4									
	19.0	4									
	20.0	5	2.55 B	19.0							
	21.0										
	22.0	4									
	23.0	5									
	24.0	5									
	25.0	7	3.22 B	19.8							
	26.0										
	27.0										
	28.0										
	29.0										
	30.0										
	31.0										
	32.0										
	33.0										
	34.0										
	35.0										
	36.0										
	37.0										
	38.0										
	39.0										
	40.0										
	41.0										
	42.0										
	43.0										
	44.0										
	45.0										
	46.0										

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
 Split Spoon Sampler 24" with 140lb hammer falling 30"  
 4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

ROUTE **FAU 3704 and 3705** DESCRIPTION

**Proposed Improvements**

Logged By **VM**

SECTION **07-00086-08-CH**

LOCATION **Roberts Rd. & River Rd. Intersection, Lake County, IL**

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY **Lake**

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method **AASHTO T 206-09**

Hammer Type **Automatic Hammer**

Boring No. **B-8A**  
 Station **94+83.28**  
 Offset **18.66' L**  
 Ground Surface El. **+741.52+/- M.S.L.**

ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					Groundwater Elev.:	When Drilling					
-	-	-	-	-	After	Hrs	-	-	-	-	-
741.1	0.0										
740.5	1.0							24.0	7		
		5							9		
	2.0	4	4.25	12.3				25.0	11		
		3	P								
738.3	3.0							26.0			
									9		
	4.0	1	0.13	228.6				27.0	12		
		1	P						10		
	5.0							28.0			
							713.0				
	6.0	0						29.0	7		
		0	0.13	102.9					7		
	7.0	1	P					30.0	7		
	8.0							31.0			
							710.5				
	9.0	0						32.0	6		
		1	0.25	45.1					6		
	10.0	2	P					33.0	7		
	11.0							34.0	5		
		0							8		
	12.0	0		29.8				35.0	9		
		1					706.5				
	13.0							36.0			
	14.0	3						37.0			
		6		25.6							
	15.0	6						38.0			
	16.0							39.0			
	17.0	4						40.0			
		5	1.50	25.1							
		5	P								
	18.0							41.0			
	19.0	3						42.0			
		6	1.00	21.6							
		8	P								
	20.0							43.0			
	21.0							44.0			
	22.0	11						45.0			
		13									
		18									
	23.0							46.0			

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
 Split Spoon Sampler 24" with 140lb hammer falling 30"  
 4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.



SOIL BORING LOG

ROUTE **FAU 3704 and 3705** DESCRIPTION

**Proposed Improvements**

Logged By **VM**

SECTION **07-00086-08-CH**

LOCATION **Roberts Rd. & River Rd. Intersection, Lake County, IL**

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY **Lake**

STRUCTURE NO.

(Exist.)

(Prop.)

Drilling Method **AASHTO T 206-09**

Hammer Type **Automatic Hammer**

Boring No. **B-9A**  
 Station **57+29.46**  
 Offset **74.92' R**  
 Ground Surface El. **+744.79+/- M.S.L.**

ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)	Surf. Wat. El.		ELEV. V.	DEPTH (ft.)	SPT (blows)	UCS (TSF)	MOIST. (%)
					When Drilling	at Completion					
-	-	-	-	-	728.79	727.79	-	-	-	-	-
744.3	0.0							24.0	5		
	1.0	5						25.0	6		
	2.0	8	3.75 P	8.2				26.0	5		
	3.0	16						27.0	3		
741.3	4.0	6						28.0	6		
	5.0	4		21.4				29.0	5		
	6.0	4					716.3	30.0	4		
738.8	7.0	3		18.9				31.0	6		
	8.0	4	3.00 P	22.6				32.0	5		
737.8	9.0	2						33.0	5		
	10.0	3	2.50 P	24.1				34.0	5		
	11.0	3						35.0	5		
733.8	12.0	2		17.3				36.0	5		
	13.0	3						37.0	5		
	14.0	2						38.0	6		
731.3	15.0	4		16.9				39.0			
	16.0	4					707.3	40.0			
728.8	17.0	7		22.9				41.0			
	18.0	9						42.0			
727.8	19.0	9						43.0			
	20.0	3						44.0			
726.3	21.0	7						45.0			
	22.0	5						46.0			
	23.0	7									
	24.0	9									
	25.0	8									
	26.0										
	27.0										
	28.0										
	29.0										
	30.0										
	31.0										
	32.0										
	33.0										
	34.0										
	35.0										
	36.0										
	37.0										
	38.0										
	39.0										
	40.0										
	41.0										
	42.0										
	43.0										
	44.0										
	45.0										
	46.0										

6" FILL: SANDY CLAY TOPSOIL, Dark Brown (A-7-5)  
 SANDY CLAY LOAM, Brown and Dark Brown, Trace Roots, Very Stiff, Dry (A-6)  
 SILT, Brown, Little Sand, Loose, Moist (A-4)  
 SANDY SILT, Brown, Loose, Moist (A-4)  
 CLAY, Brown, Very Stiff, Moist (A-6)  
 CLAY, Gray, Very Stiff, Moist (A-6)  
 SILT, Gray, Loose, Moist (A-4)  
 CLAYEY SILT, Gray, Loose, Moist (A-4)  
 SILTY CLAY LOAM, Gray, Very Stiff, Moist (A-6)  
 (Atterberg Limits Test) (Combined Analysis)  
 SAND AND GRAVEL, Brown and Light Gray, With Cobbles, Medium Dense, Saturated (A-1-b)  
 SAND, Brown and Gray, Medium Dense, Saturated (A-3)

SAND, Gray, Medium Dense, Saturated (A-3) (Little Gravel 28.5' -30')  
 End of Boring @ 37.5 Feet

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
 Split Spoon Sampler 24" with 140lb hammer falling 30"  
 4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

SOIL BORING LOG

ROUTE **FAU 3704 and 3705** DESCRIPTION

**Proposed Improvements**

Logged By **VM**

SECTION **07-00086-08-CH**

LOCATION **Roberts Rd. & River Rd. Intersection, Lake County, IL**

SEC 3 TWP 43N RNG.9E PM 3rd

COUNTY **Lake**

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method **AASHTO T 206-09** Hammer Type **Automatic Hammer**

Boring No. **B-10A**  
 Station **56+53.84**  
 Offset **63.97' R**  
 Ground Surface El. **+745.15+- M.S.L.**

E L E V. -	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)	Surf. Wat. El.		E L E V. -	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)
					Groundwater Elev.:						
					When Drilling	<b>731.5</b>					
					at Completion						
					After	Hrs					
744.7	0.0				5" FILL: CLAY TOPSOIL, Dark Brown, Trace Sand (A-7-5)						
	1.0				FILL: SANDY CLAY LOAM, Brown, Very Stiff, Dry (A-6)			24.0	5		
	2.0	12	3.00	7.9				25.0	7		
		13	P						11		
	3.0	15						26.0			
741.7	4.0				SAND, Gray, Medium Dense, Saturated (Some Brown 26' -27.5') (A-3)		719.2		7		
	5.0	4	2.00	15.4				27.0	11		
		5	P						11		
	6.0							28.0			
739.2	7.0	2						29.0	3		
738.2		3		18.0				30.0	6		
	8.0	3							5		
	9.0							31.0			
		3	1.50	25.1					11		
	10.0	3	P					32.0	9		
		5							9		
	11.0							33.0			
	12.0	3						34.0	4		
732.7		4	2.00	22.0					5		
	13.0	5	P					35.0	6		
	14.0							36.0			
731.2		3	1.50	20.5					6		
	15.0	5	P					37.0	8		
		6							8		
	16.0							38.0			
		5						39.0	7		
	17.0	6							9		
		7					705.2	40.0	10		
	18.0				End of Boring @ 40 Feet						
	19.0	1						41.0			
		2						42.0			
	20.0	4									
								43.0			
	21.0										
		10						44.0			
	22.0	7									
		5						45.0			
	23.0										
								46.0			

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
 Split Spoon Sampler 24" with 140lb hammer falling 30"  
 4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH

LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake

STRUCTURE NO. \_\_\_\_\_ (Exist.)

(Prop.)

Drilling Method AASHTO T 206-09 Hammer Type Automatic Hammer

Boring No. B-11A  
Station 56+60.38  
Offset 75.64' L  
Ground Surface El. +737.08+- M.S.L.

E L E V.	D E P T H (ft.)	S P T (blows)	U C S Qu (TSF)	M O I S T. (%)	Surf. Wat. El.	E L E V.	D E P T H (ft.)	S P T (blows)	U C S Qu (TSF)	M O I S T. (%)	
					Groundwater Elev.:						
					When Drilling						<u>720.08</u>
					at Completion						<u>725.08</u>
					After	Hrs					

12" SANDY LOAM (TOPSOIL), Black	736.1	1.0				713.6				
PEAT, Black, Trace Shells, Very Soft, Wet (A-8)		0				24.0	4			
		1		47.4	SANDY LOAM, Gray, Medium Dense, Saturated (A-4)	25.0	5			
		1			Sieve Analysis	26.0	7			
						711.1				
Weight of Hammer pushed split spoon sampler 18 inches		0		385.0	CLAY, Gray, Very Stiff, Moist (Dry Unit Weight = 119.6 pcf) (A-6)	27.0	5	2.22 B	15.9	
		0				28.0	7			
		0				29.0	4			
		0				30.0	6	2.10 B	18.7	
ORGANIC SILT AND PEAT, Gray, with Shells, Very Loose, Wet (A-8)	731.1									
		1		98.5						
		0								
		0								
		0		137.4						
		0								
		1								
		0								
		0		73.4	SANDY LOAM, Gray, Medium Dense, Saturated (A-2-4)	34.0	4			
		1				35.0	7			
ORGANIC SILT, Greenish Gray, with Shells, Very Loose to Loose, Wet (A-7-5)	724.1									
		0		72.3						
		1								
		1								
		2								
		3		46.3						
		2	0.25							
SILTY CLAY LOAM, Gray, Soft, Saturated (A-6)	719.8				End of Boring @ 40.0 Feet	697.1				
			P							
CLAY, Gray, Stiff, Moist (A-6)	718.6									
		3		18.7						
		4	1.91 B							
		4								
SAND, Gray, Medium Dense, Saturated (A-3)	716.1									
		3								
		5								
		5								

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test

Split Spoon Sampler 24" with 140lb hammer falling 30"

4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

SOIL BORING LOG

ROUTE **FAU 3704 and 3705** DESCRIPTION

Proposed Improvements

Logged By **VM**

SECTION **07-00086-08-CH**

LOCATION **Roberts Rd. & River Rd. Intersection, Lake County, IL**

SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY **Lake**

STRUCTURE NO. (Exist.)

(Prop.)

Drilling Method **AASHTO T 206-09** Hammer Type **Automatic Hammer**

Boring No. **B-12A**  
 Station **56+19.27**  
 Offset **87.19' L**  
 Ground Surface El. **+736.26+/- M.S.L.**

E L E V. -	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)	Surf. Wat. El.	E L E V. -	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)
					Groundwater Elev.:					
					When Drilling <b>725.26</b>					
					at Completion <b>726.26</b>					
					After Hrs					
735.3	1.0						24.0	4		
	2.0	0		103.1	(Dry Unit Weight = 114.5 pcf)		25.0	6	1.70 B	17.7
	3.0	0					26.0	7		
	4.0	0					27.0	4		
	5.0	1		127.4			28.0	5	2.00 P	15.8
	6.0	1				707.8	29.0	5		
	7.0	0		158.4	SANDY LOAM, Brownish Gray, Medium Dense, Saturated (A-2-4)		30.0	3		
	8.0	0				705.3	31.0	5		
727.8	9.0	0		145.8	SANDY LOAM, Gray, Medium Dense, Saturated (A-2-4)		32.0	4		
726.8	10.0	1				703.8	33.0	6		
	11.0	3		25.1	LOAM, Gray, Medium Dense, Saturated (A-4)		34.0	7		
725.8	12.0	2					35.0	5		
	13.0	2					36.0	7		
	14.0	3			(Combined Analysis Test)		37.0	8		19.2
	15.0	7					38.0	8		16.9
	16.0	9				697.8	39.0	5		
	17.0	4			SILTY LOAM, Gray, Medium Dense, Saturated (A-4)		40.0	4		
	18.0	8				696.3	41.0	6		
	19.0	11			End of Boring @ 40.0 Feet		42.0	8		
717.8	20.0						43.0			
	21.0	2					44.0			
	22.0	4	1.25 B	16.0			45.0			
	23.0	4					46.0			
		3								
		5	2.10 B	16.9						
		6								

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
 Split Spoon Sampler 24" with 140lb hammer falling 30"  
 4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

SOIL BORING LOG

ROUTE FAU 3704 and 3705 DESCRIPTION Proposed Improvements Logged By VM

SECTION 07-00086-08-CH LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake STRUCTURE NO. (Exist.) (Prop.)

Drilling Method AASHTO T 206-09 Hammer Type Automatic Hammer

Boring No. B-13A  
Station 54+74.21  
Offset 42.09' L  
Ground Surface El. +737.34+- M.S.L.

EL E V.	D E P T H (ft.)	S P T (blows)	U C S Qu (TSF)	M O I S T. (%)	Surf. Wat. El. _____	EL E V.	D E P T H (ft.)	S P T (blows)	U C S Qu (TSF)	M O I S T. (%)
					Groundwater Elev.: When Drilling 727.84 at Completion 729.34 After Hrs _____					

12" SANDY LOAM (TOPSOIL), Black	736.3	1.0						5		
PEAT, Black, Trace Shells, Very Soft, Wet (A-8)	733.8	2.0	0	77.1	(Dry Unit Weight = 121.6 pcf)			6	2.00 P	16.3
			1					6		
PT, Dark Gray, with Shells, Very Loose, Wet (A-8)	731.3	4.0	0	136.8				4	1.75 P	16.4
Organic Content = 17.19%			1					5		
			1							
SILTY LOAM, Gray, Trace Shells, Trace Gravel, Very Loose, Moist (A-2-4)	728.8	6.0	0	23.2				4	2.00 P	16.2
Trace Shells in Sample 3			1					7		
			2							
SILTY LOAM, Gray, Trace Black, Loose, Moist (A-2-4)	723.8	9.0	2	24.9				5	3.00 P	
			3					12		
			3							
			2	21.4	(Atterberg Limit Test)			6	2.50 P	17.0
			2					8		
			3					11		
SANDY LOAM, Gray, Trace Gravel, Loose, Saturated (A-2-6)	721.3	14.0	3		SAND, Gray, Medium Dense, Trace Gravel, Saturated (A-3)	701.3		6		
			4					7		
			4					9		
CLAY, Gray, Stiff to Very Stiff, Moist (A-6)		17.0	3	23.4	(Dry Unit Weight = 122.4 pcf)	697.3		5		
			5	1.13 B				8		
			6	15.5	End of Boring @ 40.0 Feet			10		
			4	16.3						
			6	1.50 P						
			6	19.8						
			4	18.1						
			5	1.64 B						
			5							

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
Split Spoon Sampler 24" with 140lb hammer falling 30"  
4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

ROUTE FAU 3704 and 3705 DESCRIPTION

Proposed Improvements

Logged By VM

SECTION 07-00086-08-CH LOCATION Roberts Rd. & River Rd. Intersection, Lake County, IL SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY Lake STRUCTURE NO. (Exist.) (Prop.)

Drilling Method AASHTO T 206-09 Hammer Type Automatic Hammer

Boring No. **B-14A**  
 Station **53+58.65**  
 Offset **0.97' L**  
 Ground Surface El. **+746.46+/- M.S.L.**

E L E V.	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)	Surf. Wat. El.		E L E V.	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)
					Groundwater Elev.:	After Hrs					
					When Drilling	735.46					
					at Completion	731.46					

Soil Description	Elev. (ft.)	SPT (blows)	UCS (TSF)	Moist. (%)	Soil Description	Elev. (ft.)	SPT (blows)	UCS (TSF)	Moist. (%)
9" FILL: CRUSHED STONE	745.7				SILTY CLAY, Gray, Very Stiff to Stiff, Moist  (Dry Unit Weight = 121.7 pcf) (Atterberg Limits Test) (Combined Analysis)	720.5			
FILL: SAND, Brown (A-3)	745.5	1.0				24.0	5		
FILL: SANDY LOAM, Brown and Dark Brown, Medium Dense, Moist (A-2-6)		3		11.9		25.0	7	2.75 P	15.7
		4				26.0	10		
	743.0	6				27.0	4		
FILL: SANDY CLAY, Brown, Gray, Trace Dark Brown, Little Sand, Trace Gravel, Very Stiff, Moist (A-6)		3	2.00 P	15.0		28.0	6	2.50 P	18.0
		3				29.0	6		
	740.5	3				30.0	3	2.75 P	15.0
FIBROUS PEAT, Black, Trace Shells, Soft, Wet (A-8)		1		64.1		31.0	6	3.10 B	
		2				32.0	7		
	738.0	2				33.0			
PEAT, Gray, Very Soft, Wet (A-8)		0		76.4		34.0	4	2.25 P	15.2
		1				35.0	5	2.25 P	15.8
	735.5	1				36.0	6	1.50 B	
ORGANIC SILT, Gray, Trace Dark Gray, Loose, Moist (A-7-5)		4		24.6		37.0	6		
		3				38.0			
		2				39.0			
	730.5				40.0				
ORGANIC CONTENT = 2.08%		0		24.1	41.0	4	2.25 P	15.8	
		1			42.0	6	1.50 B		
	727.5	1			43.0	6			
SANDY CLAY LOAM, Brown and Gray, Medium, Moist (A-6)		3	1.00 S	17.1	44.0				
(Dry Unit Weight = 109.3 pcf)		4			45.0				
		5			46.0				
	725.5	4							
SANDY CLAY, Brown, Very Stiff, Moist (A-6)		7	3.25 P	16.0					
		8							
	725.5								
CLAY, Brown, Very Stiff, Moist (A-6)		4	2.00 P	16.1					
(Dry Unit Weight = 118.8 pcf)		6	2.00 B/S						
		6							
	723.0								

N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
 Split Spoon Sampler 24" with 140lb hammer falling 30"  
 4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

SOIL BORING LOG

ROUTE **FAU 3704 and 3705** DESCRIPTION **Proposed Improvements** Logged By **VM**

SECTION **07-00086-08-CH** LOCATION **Roberts Rd. & River Rd. Intersection, Lake County, IL** SEC 3 TWP.43N RNG.9E PM 3rd

COUNTY **Lake** STRUCTURE NO. (Exist.) (Prop.)

Drilling Method **AASHTO T 206-09** Hammer Type **Automatic Hammer**

Boring No. **B-15A**  
Station **52+65.85**  
Offset **52.22' L**  
Ground Surface El. **+739.39+/- M.S.L.**

E L E V. V.	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)	Surf. Wat. El.		E L E V. V.	D E P T H (ft.)	S P T N (blows)	U C S Qu (TSF)	M O I S T. (%)
					Groundwater Elev.:						
					When Drilling	<b>723.39</b>					
					at Completion	<b>724.89</b>					
					After	Hrs					

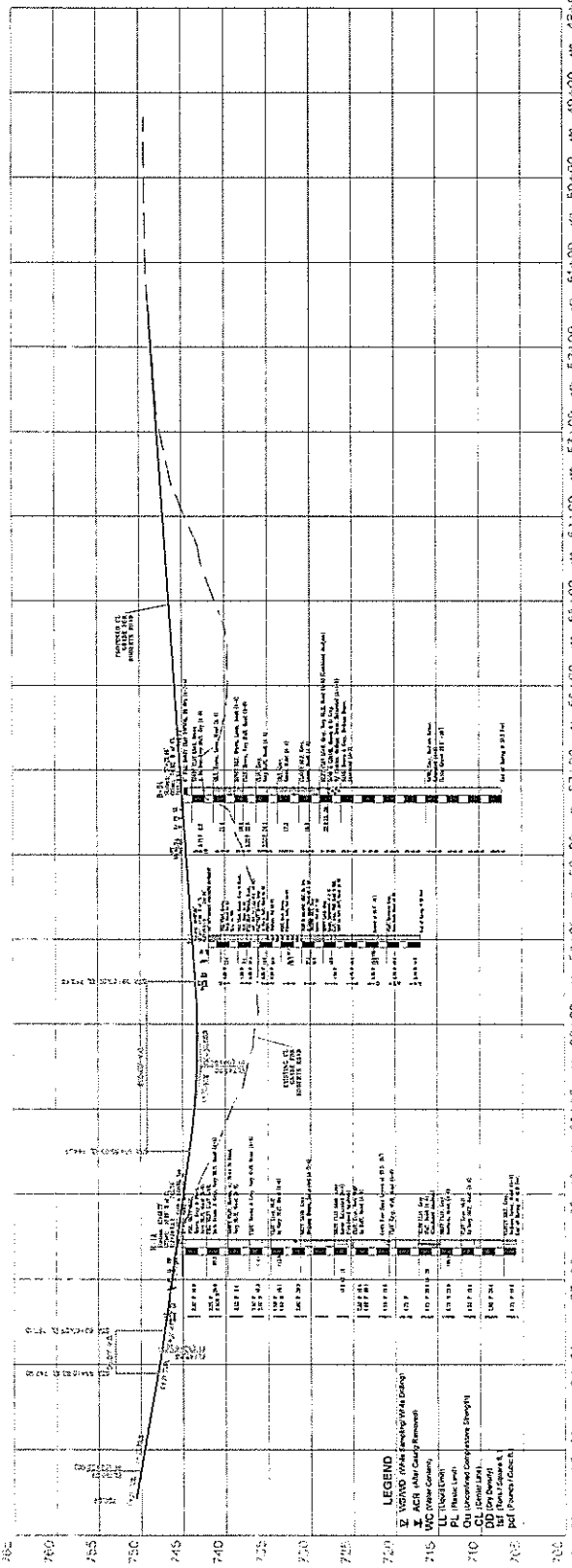
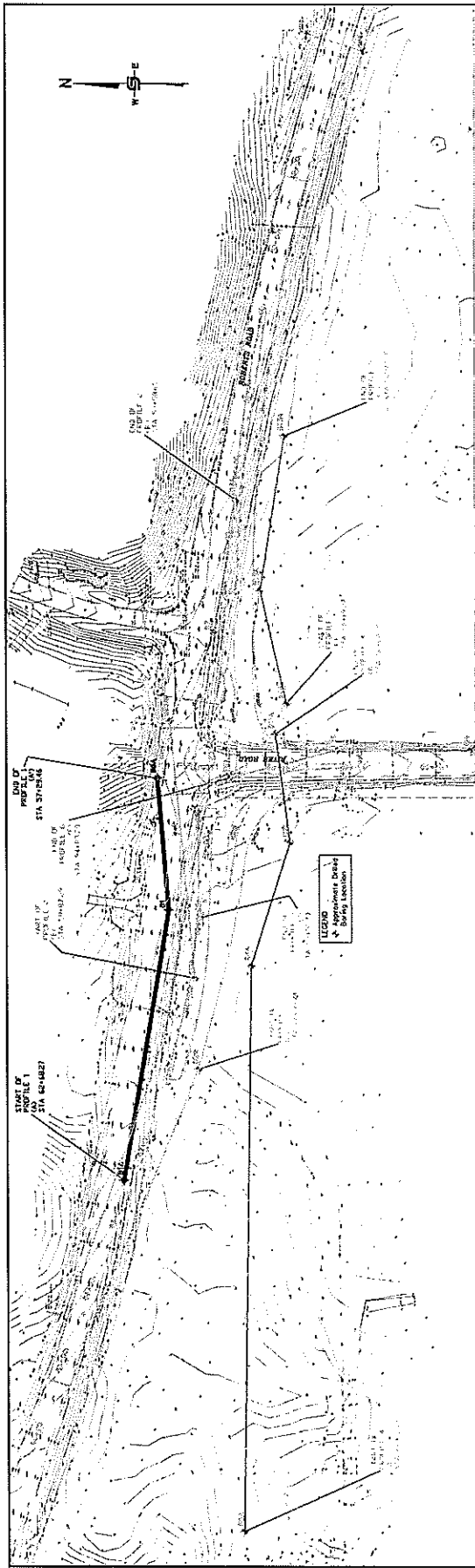
SANDY LOAM (TOPSOIL), Black	738.4	1.0									
FILL: SILTY LOAM, Black, Very Loose, Moist (Contains Ash) (A-7-5)	737.0	2.0	2		19.1		714.4	25.0	8	2.25 P	15.6
ORGANIC CLAY, Dark Gray, Soft, Wet (A-8)	733.4	3.0					713.4	26.0			
(Dry Unit Weight = 93.9 pcf)	733.4	4.0	1		28.2			27.0	7	11	
		5.0	1	0.43 B				28.0			
CLAY, Brown and Gray, Stiff to Very Stiff, Wet (A-6)	725.9	6.0	2					29.0	6	8	
(Dry Unit Weight = 113.8 pcf)		7.0	4	1.70 B	16.3			30.0	10		
		8.0	5					31.0		6	
(Dry Unit Weight = 123.9 pcf)		9.0	4	7	3.60 B	14.3		32.0	9	15	
(Dry Unit Weight = 118.6 pcf)	725.9	10.0	8					33.0			
		11.0	4					34.0	7	11	
		12.0	6	2.40 B	16.4			704.4	35.0	18	
CLAY, Gray, Stiff, Wet (A-6)	720.9	13.0									
(Dry Unit Weight = 115.2 pcf) Organic Content = 0.41%		14.0	3			16.1			36.0		
		15.0	5						37.0		
Occasional Sand Seams		16.0	4						38.0		
SILTY LOAM, Gray, Trace Gravel, Medium Dense, Saturated (A-4)	718.4	17.0	5	1.00 P	18.1			39.0			
		18.0	5						40.0		
CLAY, Gray, Trace Sand and Gravel, Very Stiff, Moist (A-6)	718.4	19.0	4			20.0			41.0		
		20.0	6						42.0		
(Dry Unit Weight = 119 pcf)	718.4	21.0	6						43.0		
		22.0	5						44.0		
	718.4	23.0	7	2.91 B	15.2				45.0		
		24.0	7						46.0		

End of Boring @ 35.0 Feet

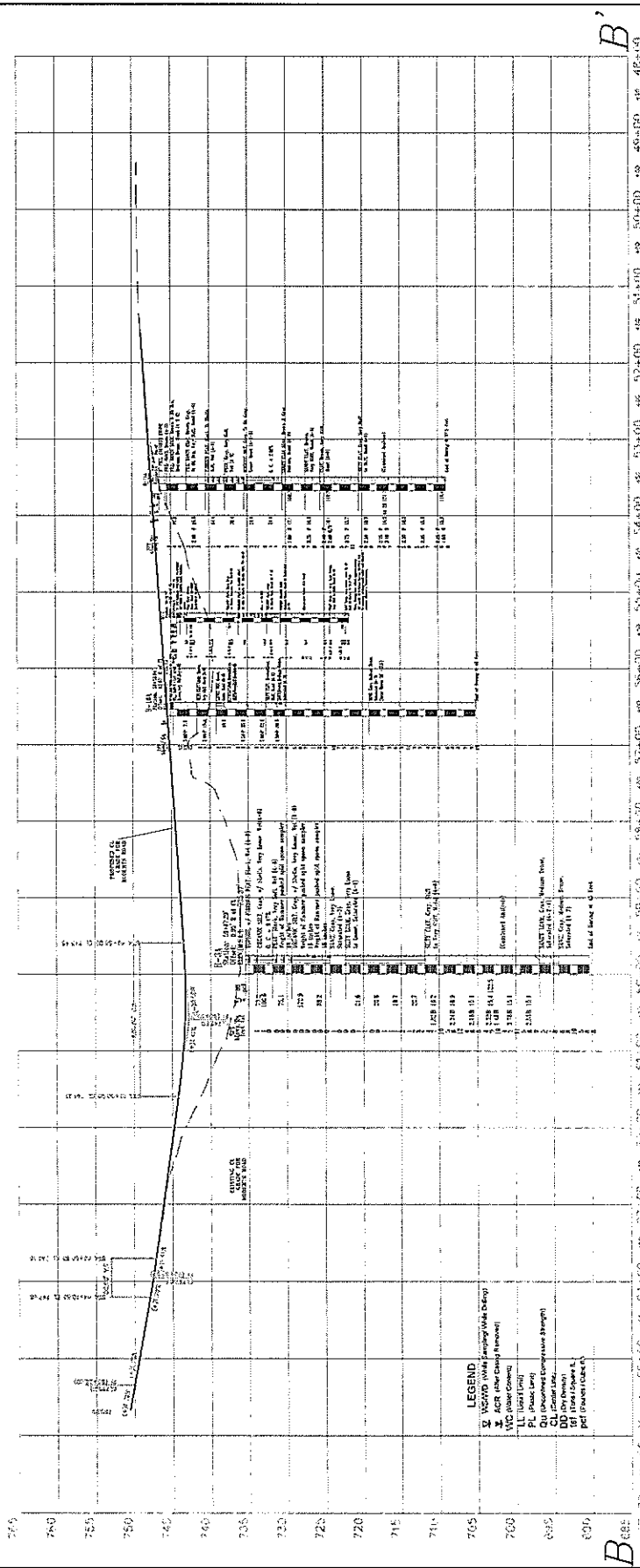
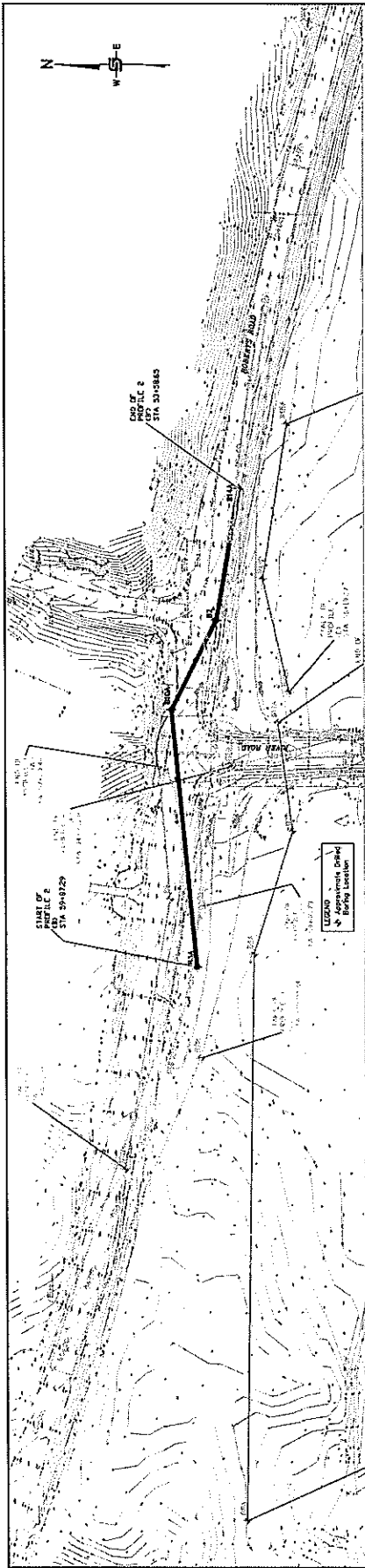
N=Standard Penetration Test-Blows per six inches to drive 2" O.D. (QU)B=Bulge S=Shear P=Penetrometer Test  
Split Spoon Sampler 24" with 140lb hammer falling 30"  
4.25" Diameter Hollow Stem Augers used between Split Spoon Sample intervals unless noted otherwise.

# **APPENDIX 2B**





DATE	11/29/12	SCALE (AS SHOWN)	Horizontal 1"=60'	Vertical 1"=6'
PROJECT NO.	93370-1	DATE	11/29/12	SCALE
PROJECT NAME	PROPOSED IMPROVEMENTS	STATION	62+68.27 to 57+29.48	
CLIENT	ROBERTS ROAD AND RIVER ROAD INTERSECTION	DRAWN BY	BIA, BT, BSA	
DESIGNER	ROBERTS ROAD AND RIVER ROAD INTERSECTION	CHECKED BY		
CONTRACT NO.	07-00088-08-CH	DATE	11/29/12	SCALE
PROJECT LOCATION	ROBERTS ROAD AND RIVER ROAD INTERSECTION	DATE	11/29/12	SCALE
PROJECT NO.	93370-1	DATE	11/29/12	SCALE
PROJECT NAME	PROPOSED IMPROVEMENTS	DATE	11/29/12	SCALE
CLIENT	ROBERTS ROAD AND RIVER ROAD INTERSECTION	DATE	11/29/12	SCALE
DESIGNER	ROBERTS ROAD AND RIVER ROAD INTERSECTION	DATE	11/29/12	SCALE
CONTRACT NO.	07-00088-08-CH	DATE	11/29/12	SCALE
PROJECT LOCATION	ROBERTS ROAD AND RIVER ROAD INTERSECTION	DATE	11/29/12	SCALE

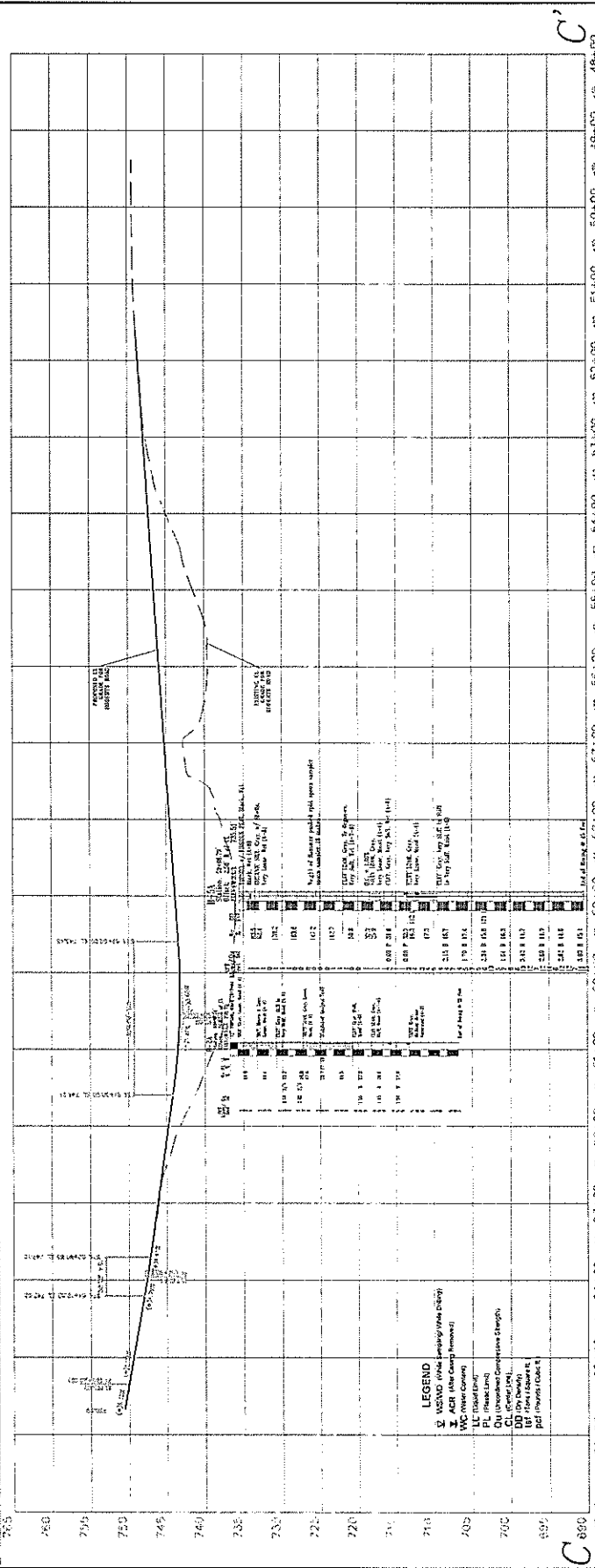
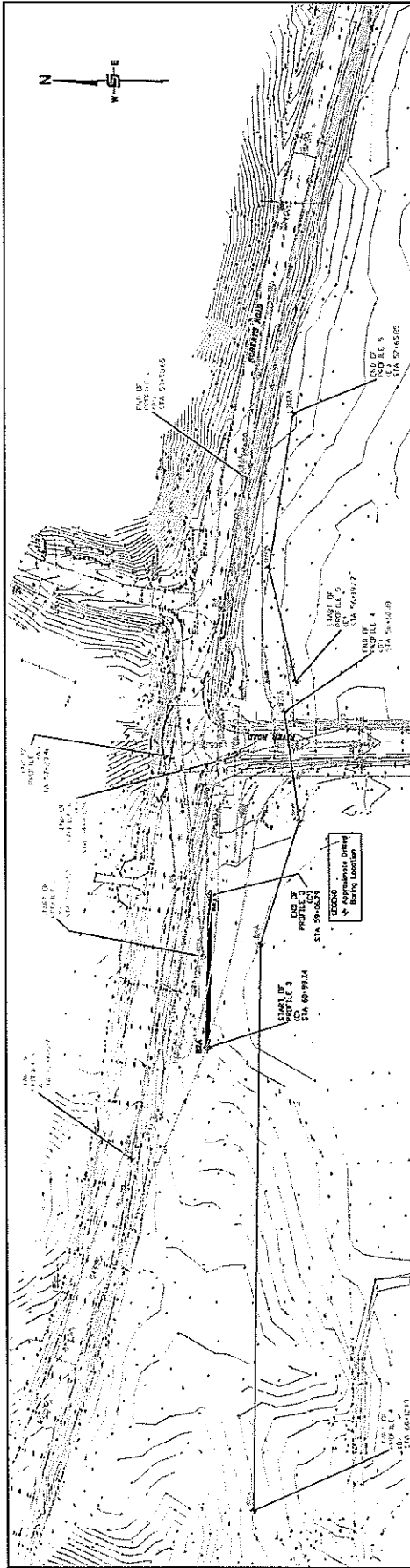


DATE	11/29/12	PROJECT NO.	07-000BB-08-C1
DRAWN BY	W. J. LACH	CHECKED BY	W. J. LACH
SCALE	Horizontal 1"=80' Vertical 1"=6'	PROJECT NAME	PROPOSED IMPROVEMENTS Roberts Road and River Road Intersection Lake County, Illinois (07-000BB-08-C1)
DATE	11/29/12	PROJECT NO.	07-000BB-08-C1
DRAWN BY	W. J. LACH	CHECKED BY	W. J. LACH
SCALE	Horizontal 1"=80' Vertical 1"=6'	PROJECT NAME	PROPOSED IMPROVEMENTS Roberts Road and River Road Intersection Lake County, Illinois (07-000BB-08-C1)
DATE	11/29/12	PROJECT NO.	07-000BB-08-C1
DRAWN BY	W. J. LACH	CHECKED BY	W. J. LACH
SCALE	Horizontal 1"=80' Vertical 1"=6'	PROJECT NAME	PROPOSED IMPROVEMENTS Roberts Road and River Road Intersection Lake County, Illinois (07-000BB-08-C1)

**SEECO Consultants, Inc.**  
 7350 Jason Drive, Tinley Park, Illinois 60477  
 Office: (708) 231-1668 Fax: (708) 418-1889



W. J. LACH, P.E.  
 PROJECT ENGINEER  
 APPROVED C.V.G.



**LEGEND**

- MS (Mileage Stationing)
- AC (Asphalt Concrete)
- WC (Water Course)
- PL (Paved Line)
- CU (Unimproved Construction)
- DD (Ditch)
- BF (Flow Square)
- pl (Proposed Profile)

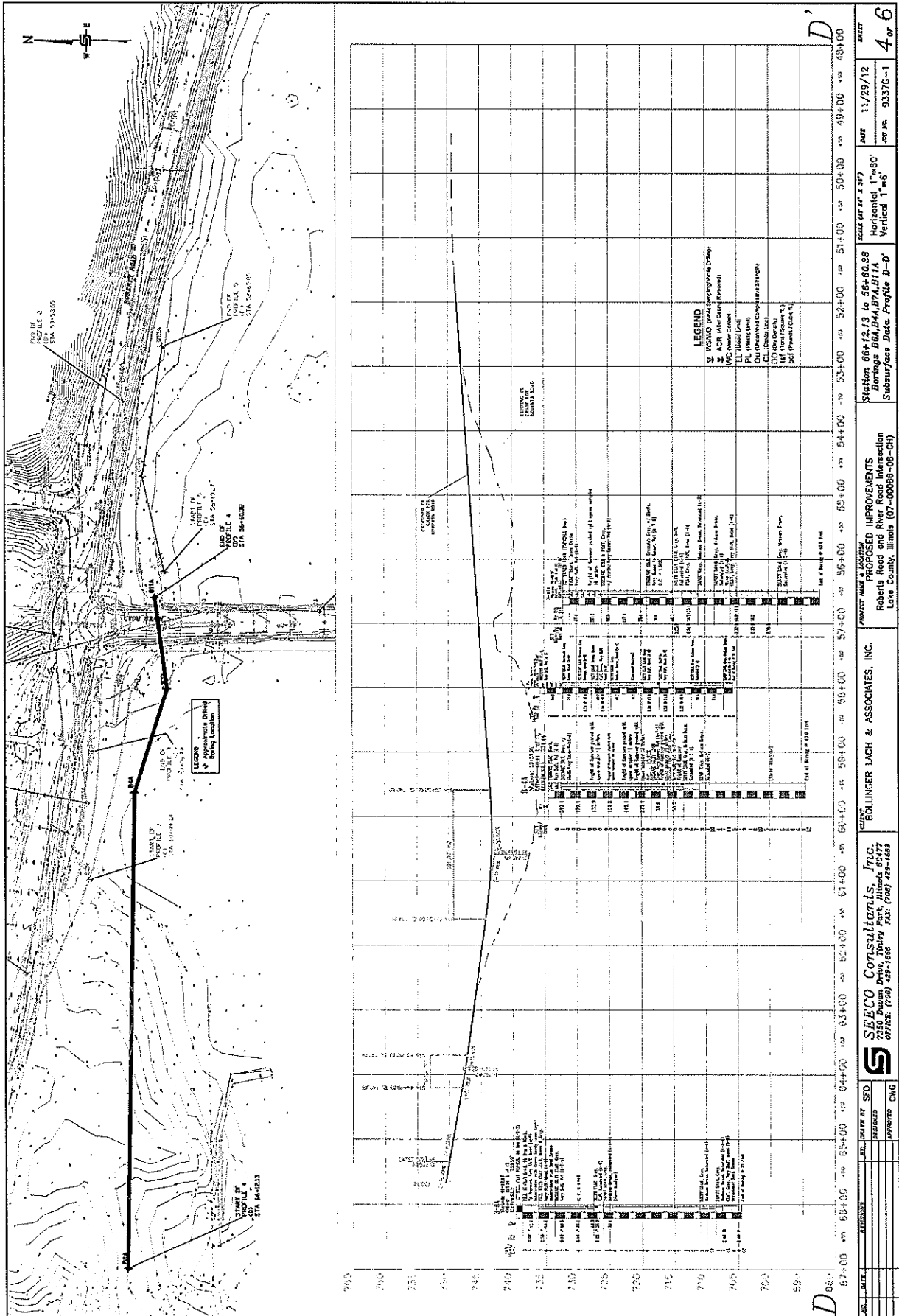
**SECO Consultants, Inc.**  
 2350 Duane Drive, Suite 200, Lincoln, NE 68502  
 OFFICE: (781) 428-1688 FAX: (781) 428-1689

**BOLLINGER LACH & ASSOCIATES, INC.**  
 Roberta Road and River Road Intersection  
 Lake County, Illinois (07-000988-08-CH)

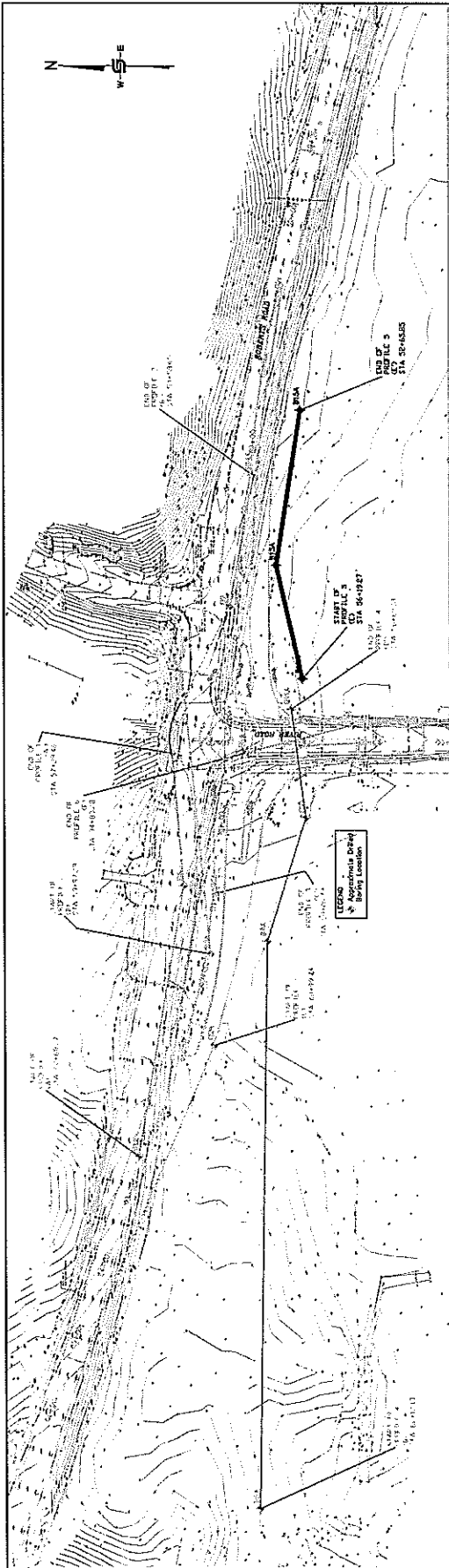
Station: 60+98.74 to 68+08.79  
 Borings: B21, B64  
 Substructure Data Profile C-C

DATE: 11/28/12  
 DRAWN BY: [Name]  
 CHECKED BY: [Name]  
 APPROVED BY: [Name]

3 of 6



DATE	11/29/12	SCALE (H' x V')	1" = 60'
PROJECT NO.	07-00088-08-CH	PROJECT NAME & LOCATION	PROPOSED IMPROVEMENTS Roberts Road and River Road Intersection Loba County, Illinois (07-00088-08-CH)
DATE	11/29/12	SCALE (H' x V')	1" = 60'
PROJECT NO.	07-00088-08-CH	PROJECT NAME & LOCATION	PROPOSED IMPROVEMENTS Roberts Road and River Road Intersection Loba County, Illinois (07-00088-08-CH)
DATE	11/29/12	SCALE (H' x V')	1" = 60'
PROJECT NO.	07-00088-08-CH	PROJECT NAME & LOCATION	PROPOSED IMPROVEMENTS Roberts Road and River Road Intersection Loba County, Illinois (07-00088-08-CH)



Station	Proposed	Existing	Remarks
50+00	50+00	50+00	50+00
51+00	51+00	51+00	51+00
52+00	52+00	52+00	52+00
53+00	53+00	53+00	53+00
54+00	54+00	54+00	54+00
55+00	55+00	55+00	55+00
56+00	56+00	56+00	56+00
57+00	57+00	57+00	57+00
58+00	58+00	58+00	58+00
59+00	59+00	59+00	59+00
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76+00	76+00	76+00	76+00
77+00	77+00	77+00	77+00
78+00	78+00	78+00	78+00
79+00	79+00	79+00	79+00
80+00	80+00	80+00	80+00

**LEGEND**

- PROPOSED IMPROVEMENTS
- EXISTING IMPROVEMENTS
- PROPOSED RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED ROAD
- EXISTING ROAD
- PROPOSED DRIVE
- EXISTING DRIVE
- PROPOSED SIDEWALK
- EXISTING SIDEWALK
- PROPOSED BIKEWAY
- EXISTING BIKEWAY
- PROPOSED TRAIL
- EXISTING TRAIL
- PROPOSED UTILITY
- EXISTING UTILITY
- PROPOSED FENCE
- EXISTING FENCE
- PROPOSED SIGN
- EXISTING SIGN
- PROPOSED LIGHTING
- EXISTING LIGHTING
- PROPOSED LANDSCAPE
- EXISTING LANDSCAPE
- PROPOSED EROSION CONTROL
- EXISTING EROSION CONTROL
- PROPOSED DRAINAGE
- EXISTING DRAINAGE
- PROPOSED RETAINMENT
- EXISTING RETAINMENT
- PROPOSED CURB
- EXISTING CURB
- PROPOSED PAVEMENT
- EXISTING PAVEMENT
- PROPOSED GRADE
- EXISTING GRADE
- PROPOSED ELEVATION
- EXISTING ELEVATION
- PROPOSED DISTANCE
- EXISTING DISTANCE
- PROPOSED AREA
- EXISTING AREA
- PROPOSED VOLUME
- EXISTING VOLUME
- PROPOSED WEIGHT
- EXISTING WEIGHT
- PROPOSED LENGTH
- EXISTING LENGTH
- PROPOSED WIDTH
- EXISTING WIDTH
- PROPOSED HEIGHT
- EXISTING HEIGHT
- PROPOSED DIAMETER
- EXISTING DIAMETER
- PROPOSED RADIUS
- EXISTING RADIUS
- PROPOSED ANGLE
- EXISTING ANGLE
- PROPOSED CURVATURE
- EXISTING CURVATURE
- PROPOSED SLOPE
- EXISTING SLOPE
- PROPOSED GRADIENT
- EXISTING GRADIENT
- PROPOSED PERCENTAGE
- EXISTING PERCENTAGE
- PROPOSED DEGREE
- EXISTING DEGREE
- PROPOSED MINUTE
- EXISTING MINUTE
- PROPOSED SECOND
- EXISTING SECOND
- PROPOSED FOOT
- EXISTING FOOT
- PROPOSED INCH
- EXISTING INCH
- PROPOSED YARD
- EXISTING YARD
- PROPOSED MILE
- EXISTING MILE
- PROPOSED KILOMETER
- EXISTING KILOMETER
- PROPOSED METER
- EXISTING METER
- PROPOSED CENTIMETER
- EXISTING CENTIMETER
- PROPOSED MILLIMETER
- EXISTING MILLIMETER
- PROPOSED MICROMETER
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- PROPOSED NANOMETER
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- EXISTING FEMTO METER
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- PROPOSED OCTAMETER
- EXISTING OCTAMETER
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- EXISTING NONAMETER
- PROPOSED DECAMETER
- EXISTING DECAMETER
- PROPOSED HECTAMETER
- EXISTING HECTAMETER
- PROPOSED KILOMETER
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- EXISTING MEGAMETER
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- EXISTING PETAMETER
- PROPOSED EXA METER
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- PROPOSED YOTTA METER
- EXISTING YOTTA METER

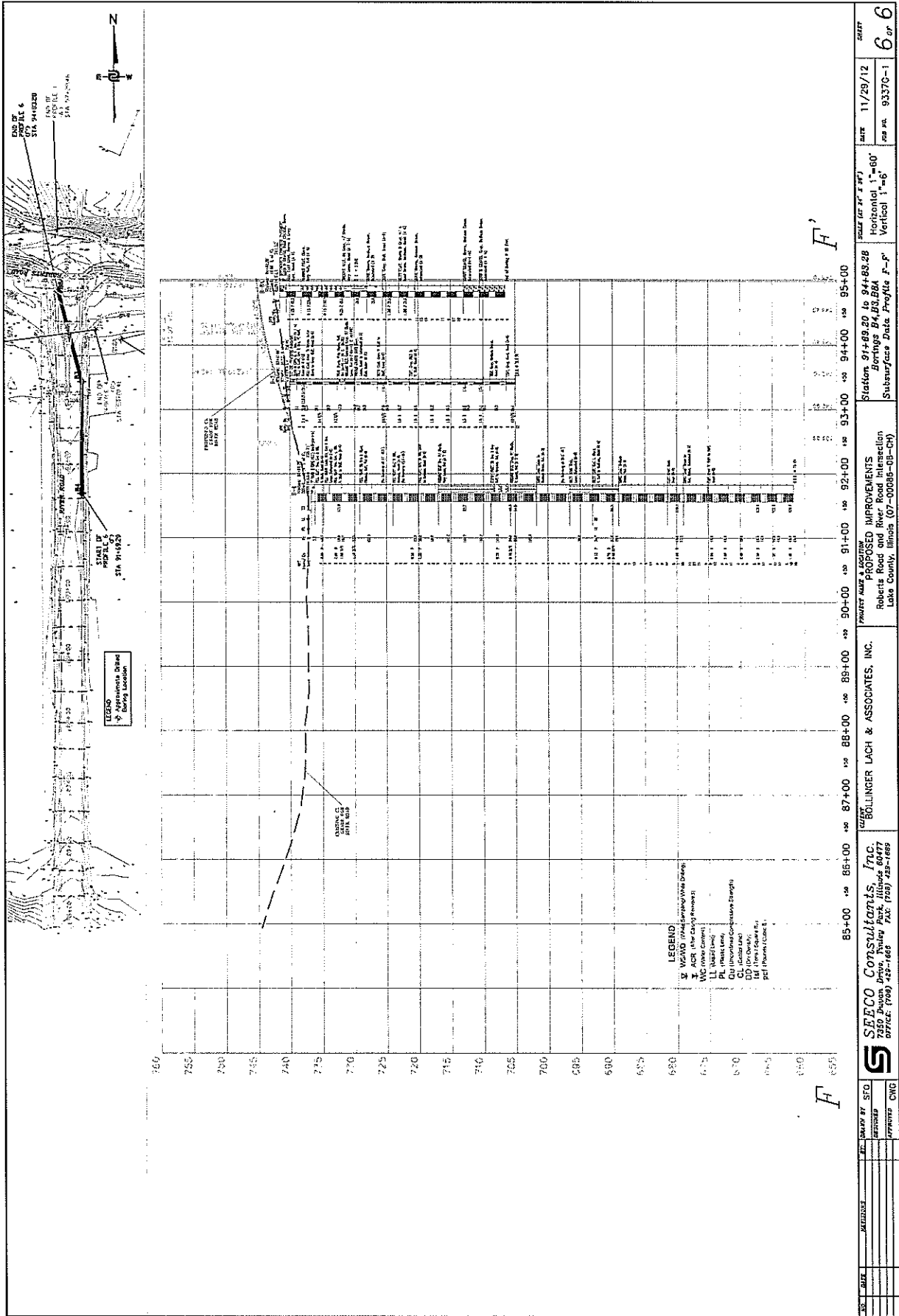
**SEECO Consultants, Inc.**  
 2350 Dawson Drive, Niles Park, Illinois 60477  
 OFFICE: (708) 427-1888

**BÖHLINGER UACH & ASSOCIATES, INC.**  
 Robert Road and River Road Intersection  
 Lake County, Illinois (07-00088-08-CH)

Station: 56+19.27 to 62+65.86  
 Bearings: B124, B134, B164  
 Subcurve/curve Data: Profile E-F

Scale: 1" = 40'  
 Horizontal: 1" = 60'  
 Vertical: 1" = 6'

Date: 11/28/12  
 Drawn: 9337G-1  
 Sheet: 5 of 6



# **APPENDIX 3**

DRILLING AND SAMPLING SYMBOLS

SS	SPLIT SPOON	1-3/8" I.D. x 2" O.D. (EXCEPT WHERE NOTED)
2T	THINWALL TUBE SAMPLER	2" O.D. x 1-7/8" I.D.
3T	THINWALL TUBE SAMPLER	3" O.D. x 2-7/8" I.D.
3P	PISTON SAMPLER	3" O.D. THINWALL TUBE
FA	CONTINUOUS FLIGHT AUGER	4" O.D.
HS	HOLLOW STEM AUGER	6-3/4" O.D. x 3-1/4" I.D.
HA	HAND AUGER	
RB	ROLLER ROCK BIT	
FT	FISHTAIL BIT	
DB	DIAMOND BIT	
AX	ROCK CORE	1-3/16" DIAMETER
BX	ROCK CORE	1-5/8" DIAMETER
NX	ROCK CORE	2-1/8" DIAMETER
AS	AUGER SAMPLE	
WS	WASH SAMPLE	

Standard "N" Penetration: Blows per foot of a 140 pound hammer falling 30 inches on a two inch O.D. split spoon, except where noted.

WATER LEVEL MEASUREMENT SYMBOLS

	WATER LEVEL OBSERVATION	WD	WHILE DRILLING
WCI	WET CAVE-IN	BCR	BEFORE CASING REMOVAL
DCI	DRY CAVE-IN	ACR	AFTER CASING REMOVAL
WS	WHILE SAMPLING	AB	AFTER BORING

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable groundwater levels. In impervious soils, the accurate determination of groundwater elevations are not possible in even several days observation, and additional evidence on groundwater elevations must be sought.

SOIL IDENTIFICATION TERMINOLOGY

COHESIONLESS SOILS

<u>COMPONENT</u>	<u>SIZE RANGE</u>	<u>DESCRIPTIVE TERM</u>	<u>PERCENT OF WEIGHT</u>
BOULDERS	OVER 8"	TRACE	0 - 10
COBBLES	8" TO 3"	LITTLE	10 - 20
GRAVEL	3" TO #4 SIEVE (4.75 mm)	SOME	20 - 35
SAND	#4 TO #200 SIEVE (0.074 mm)	AND	35 - 50
SILT	PASSING #200 SIEVE (0.074 mm)		



SOIL IDENTIFICATION TERMINOLOGY (Cont'd)

COHESIVE SOILS

<u>DESCRIPTIVE TERM</u>	<u>PLASTICITY INDEX</u>
CLAYEY SILT OR ORGANIC CLAYEY SILT	4 - 7
SILTY CLAY OR ORGANIC SILTY CLAY	8 - 30
CLAY OR ORGANIC CLAY	> 30

INTERMEDIATE SOILS

<u>DESCRIPTIVE TERM</u>	<u>PLASTICITY INDEX</u>
SILT	0 - 3

Unconfined compression tests are generally not applicable for intermediate soils.

CONSISTENCY OF COHESIVE SOILS

RELATIVE DENSITY OF GRANULAR SOILS

1-3/8" I.D. x 2" O.D. with 140 pound hammer falling 30"

UNCONFINED COMP. STRENGTH, Qu, TSF

CONSISTENCY

N - BLOWS/FT.

RELATIVE DENSITY

<0.25	VERY SOFT	0 - 3	VERY LOOSE
0.25 - 0.49	SOFT	4 - 9	LOOSE
0.50 - 1.00	MEDIUM	10 - 29	MEDIUM DENSE
1.01 - 1.99	STIFF	30 - 49	DENSE
2.00 - 3.99	VERY STIFF	50 - 80	VERY DENSE
4.00 - 8.00	HARD	>80	EXTREMELY DENSE
>8.00	VERY HARD		

CONSISTENCY OF COHESIVE SOILS

N - BLOWS/FT.

RELATIVE DENSITY

0 - 2	VERY SOFT
2 - 4	SOFT
4 - 8	MEDIUM
8 - 15	STIFF
15 - 30	VERY STIFF
>30	HARD

# **APPENDIX 4**

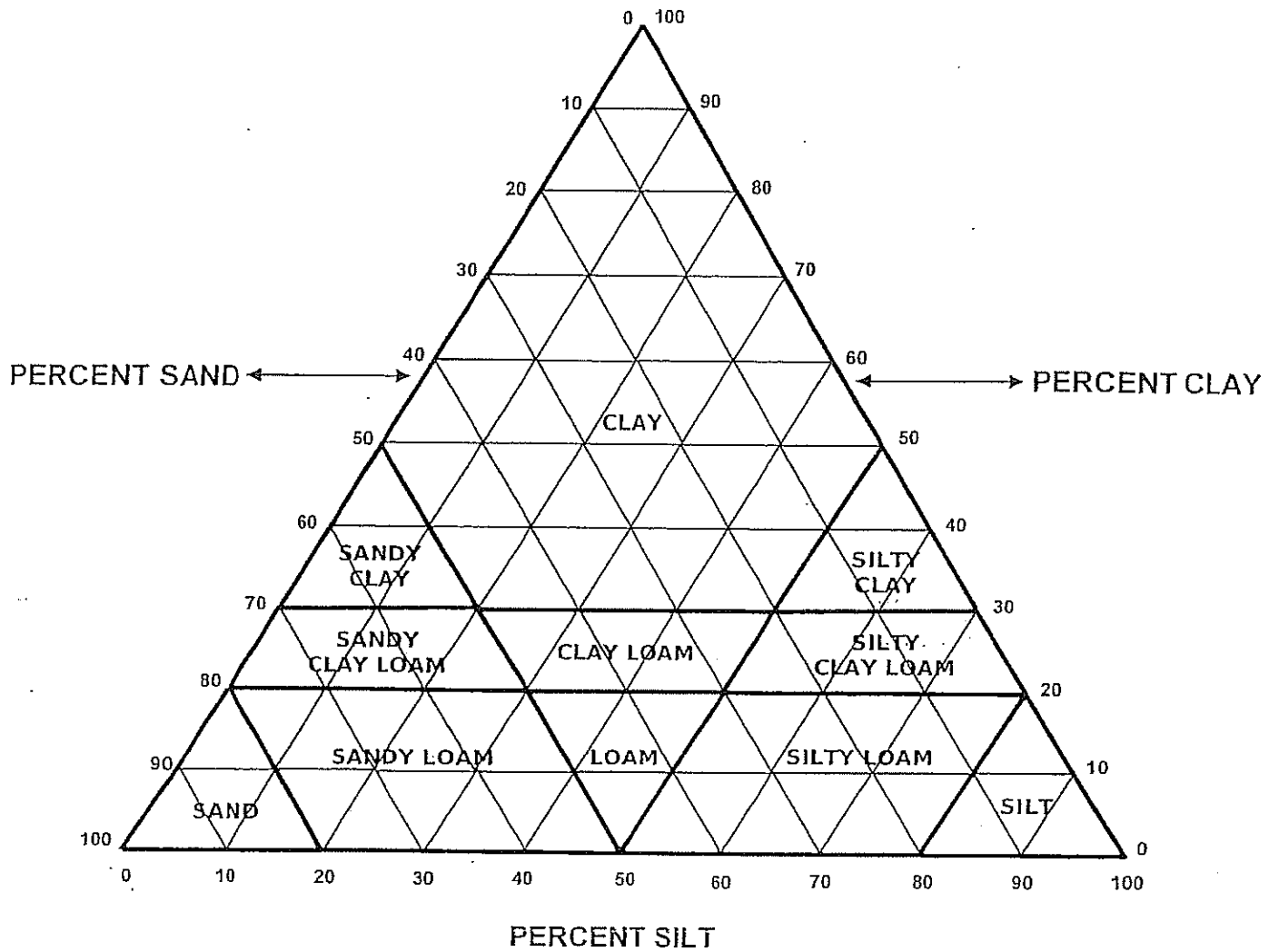
## IDOT SOIL CLASSIFICATION SYSTEM

<u>GRAIN SIZE CLASSIFICATION</u>	<u>PERCENT BY WEIGHT</u>		
	<u>SAND</u>	<u>SILT</u>	<u>CLAY</u>
SAND	80-100	0-20	0-20
SANDY LOAM	50-80	0-50	0-20
LOAM	30-50	30-50	0-20
SILTY LOAM	0-50	50-80	0-20
SILT	0-20	80-100	0-20
SANDY CLAY LOAM	50-80	0-30	20-30
CLAY LOAM	20-50	20-50	20-30
SILTY CLAY LOAM	0-30	50-80	20-30
SANDY CLAY	50-70	0-20	30-50
SILTY CLAY	0-20	50-70	30-50
CLAY	0-50	0-50	30-100

## AASHTO SOIL CLASSIFICATION SYSTEM

General Classification	Granular Materials (35% or Less Passing No. 200)							Silt-Clay Materials (More than 35% Passing No. 200)			
	A-1		A-3	A-2				A-4	A-5	A-6	A-7
Group Classification	A-1-a	A-1-b	A-3	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7-5, A-7-6
Sieve analysis, percent passing:											
No. 10	50 max.	—	—	—	—	—	—	—	—	—	—
No. 40	30 max.	50 max.	51 min.	—	—	—	—	—	—	—	—
No. 200	15 max.	25 max.	10 max.	35 max.	35 max.	35 max.	35 max.	36 min.	36 min.	36 min.	36 min.
Characteristics of fraction passing No. 40:											
Liquid Limit	—	—	—	40 max.	41 min.	40 max.	41 min.	40 max.	41 min.	40 max.	41 min.
Plasticity Index	6 max.	N.P.	—	10 max.	10 max.	11 min.	11 min.	10 max.	10 max.	11 min.	11 min.
Usual types of significant constituent materials	Stone fragments, gravel and sand		Fine sand	Silty or clayey gravel and sand				Silty soils		Clayey soils	
General rating as subgrade	Excellent to good							Fair to poor			

\*Plasticity index of A-7-5 subgroup is equal to or less than L.L. minus 30. Plasticity index of A-7-6 subgroup is greater than L.L. minus 30.



**SIZE LIMITS**

SAND: 2.0 to 0.074 mm

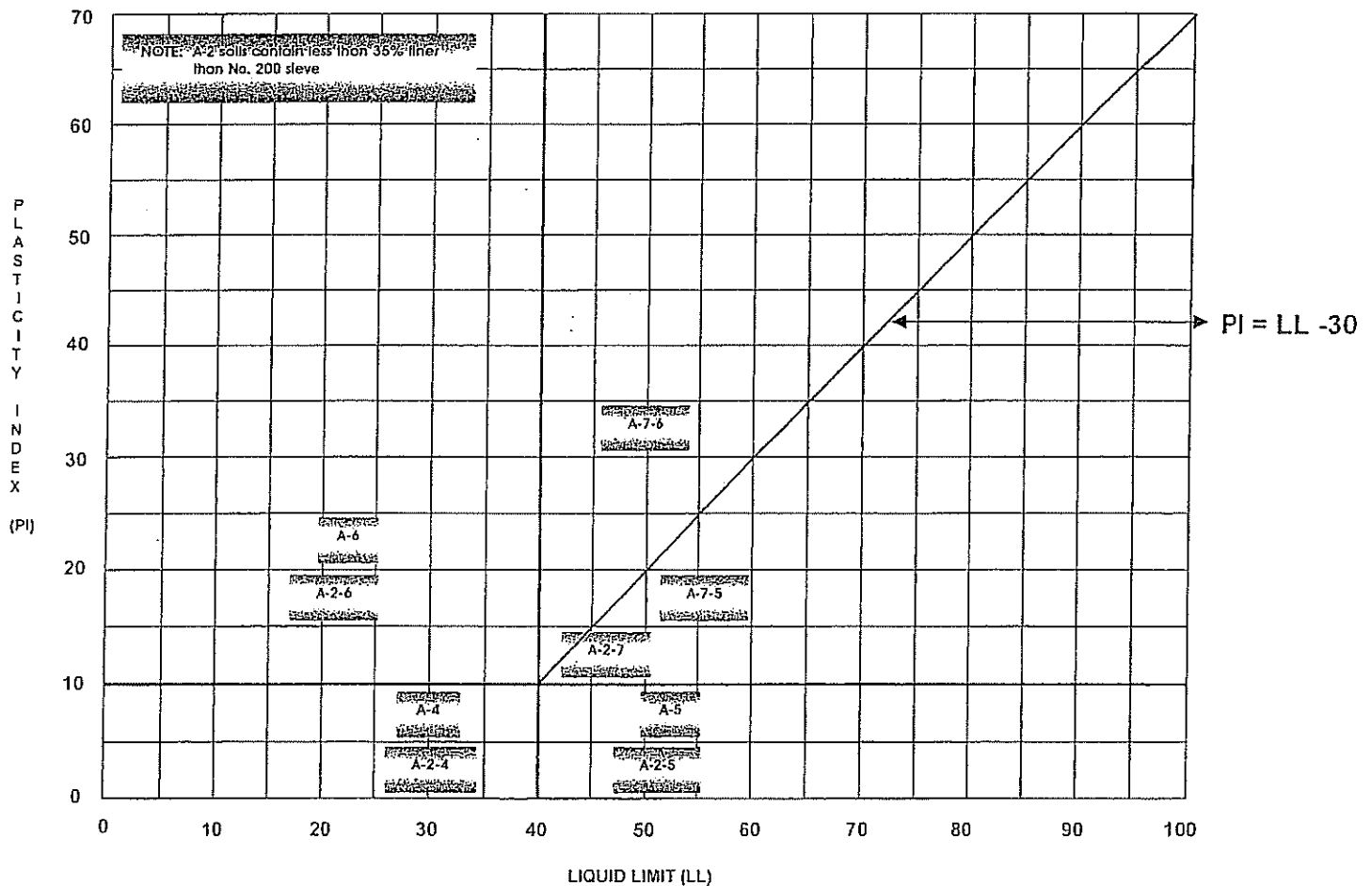
SILT: 0.074 to 0.002 mm

CLAY: Below 0.002 mm

Figure 2.3 IDH Textural Classification Chart

General Classification	Granular Materials (35% or Less of Total Sample Passing No. 200)						Silt-Clay Materials (More than 35% of Total Sample Passing No. 200)			
	A-1		A-3	A-2			A-4	A-5	A-6	A-7
Group Classification	A-1-a	A-1-b	A-2-4	A-2-5	A-2-6	A-2-7				A-7-5* A-7-6
Sieve analysis percent passing:										
No. 10	50 max.									
No. 40	30 max.	50 max.	51 min.							
No. 200	15 max.	25 max.	10 max.	35 max.	35 max.	35 max.	35 max.	36 min.	36 min.	36 min.
Characteristics of fraction passing No. 40:										
Liquid limit	—	—	40 max.	41 min.	40 max.	41 min.	40 max.	41 min.	40 max.	41 min.
Plastic index	6 max.	NP	10 max.	10 max.	11 min.	11 min.	10 max.	10 max.	11 min.	11 min.
Significant constituent materials	Gravel and sand		Fine sand	Silty and clayey gravel and sand			Silty soils		Clayey soils	

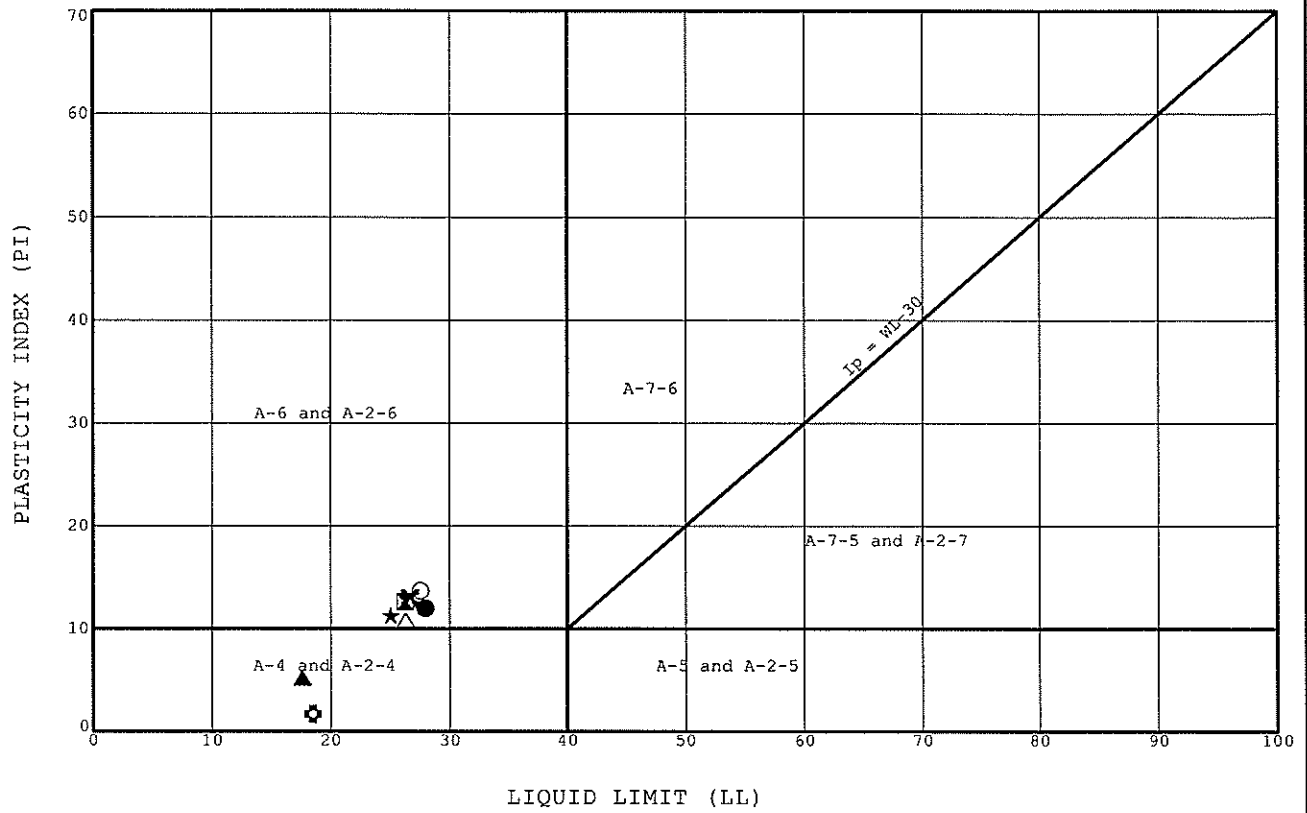
(a) AASHTO Soil Classification System soil groups. A-8 (not shown) is peat or muck classified visually.



(b) Liquid Limit and plasticity index ranges for group classification of silt-clay materials. (*Standard Specifications for Transportation Materials and Methods of Sampling and Testing*, 27th ed., Washington, DC, American Association of State Highway and Transportation Officials, Copyright 2007. Used by permission.

Charts for use in AASHTO Soil Classification System.

# **APPENDIX 5**

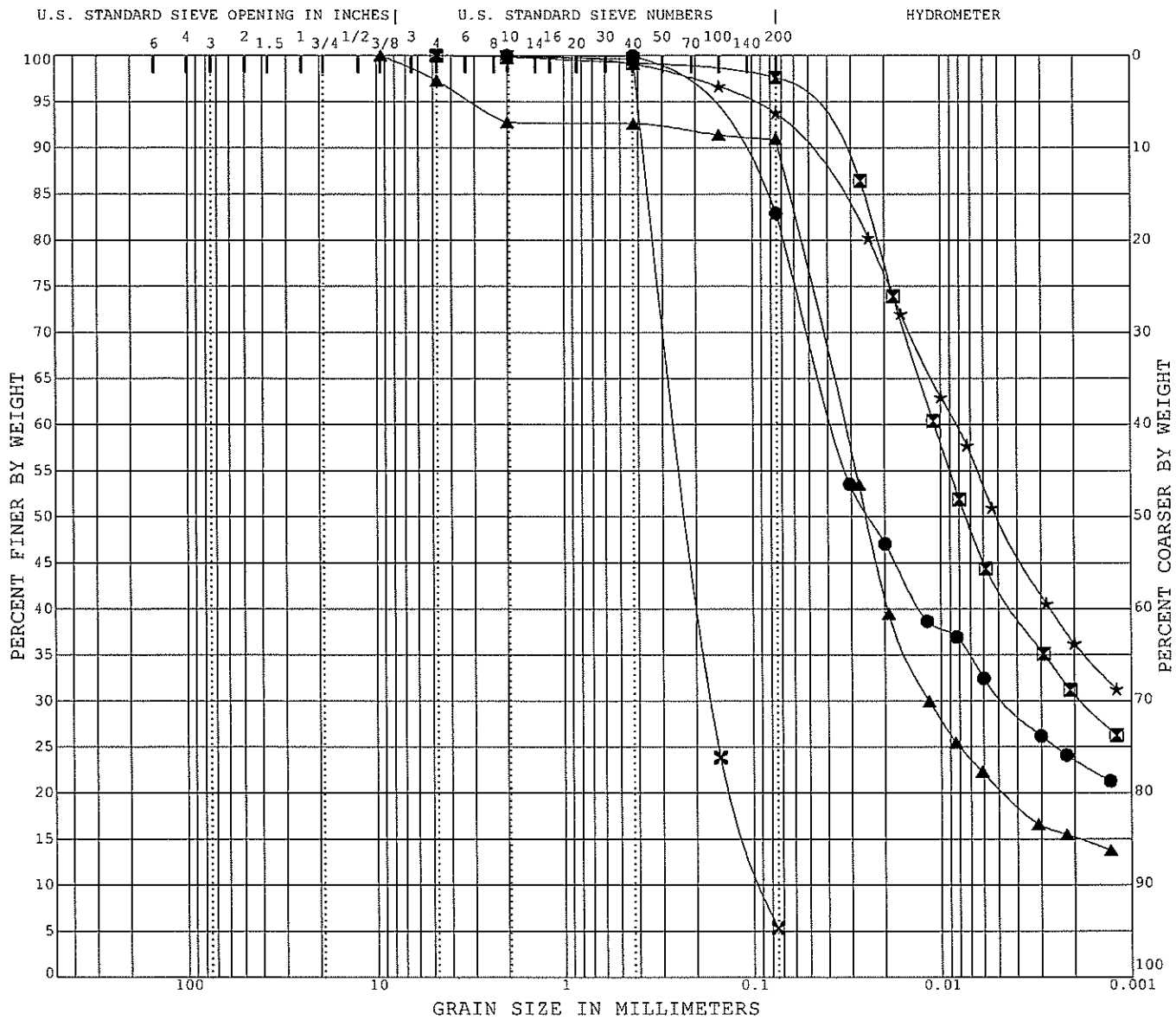


	Boring No.	Depth	MC	LL	PL	PI	LI	Classification
●	B-13A	34.25	17.0	28	16	12	0.1	CLAY, Gray (A-6)
☒	B-14A	29.25	15.0	26	14	12	0.1	SILTY CLAY, Gray (A-6)
▲	B-1A	19.25	18.6	18	12	6	1.1	SILTY CLAY LOAM, Gray (A-4)
★	B-1A	29.25	20.6	25	14	11	0.6	SILTY CLAY, Gray (A-6)
✕	B-2	1.75	15.4	27	14	13	0.1	FILL: CLAY, Brown, A-6(8)
⊕	B-2A	11.75	20.7	18	17	1	3.7	SILTY LOAM, Gray (A-4)
○	B-3	1.75	26.0	28	14	14	0.9	FILL: Si CLAY, Gray & Brown, A-6(11)
△	B-9A	16.50	22.9	26	15	11	0.7	SILTY CLAY LOAM, Gray (A-6)

Client	Bollinger Lach & Associates, Inc. - Lake County Highway Department							
Project	Proposed Improvements FAU 3704 and 3705							
Location	Roberts Rd. & River Rd. Intersection, Lake County, IL							
SEECO Consultants, Inc.	Boring No.		Date	2/26/13	Job No.	9337G-1	Drawn By	GG
	<b>AASHTO ATTERBERG LIMITS RESULTS</b>							

# APPENDIX 6



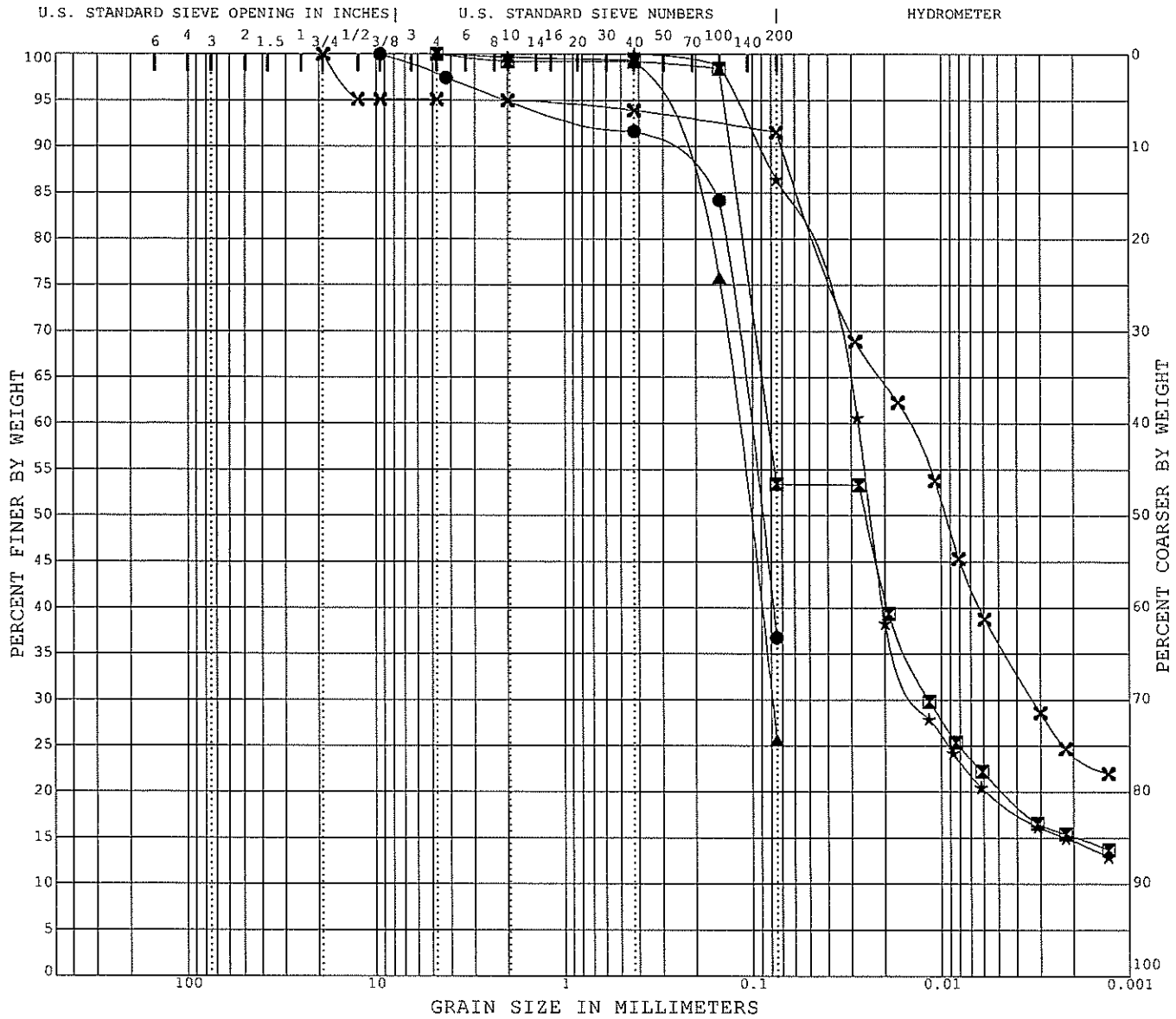


Boulders	Gravel	Sand		Silt	Clay
		coarse	fine		

Boring No.	Depth	Lab. No.	AASHTO Soil Classification (Textural)	MC%	LL	PL	PI
● B-1A	19.25'		SILTY CLAY LOAM, Gray (A-4)	18.6	18	12	6
☒ B-1A	29.25'		SILTY CLAY, Gray (A-6)	20.6	25	14	11
▲ B-2A	11.75'		SILTY LOAM, Gray (A-4)	20.7	18	17	1
★ B-3A	34.25'		SILTY CLAY, Gray (A-6)	15.1			
☒ B-4A	34.75'		SAND, Gray (A-3)				

	% < 3"	% Pass #10	% Pass #40	% Pass #200	% < 0.075mm	% Gravel	% Sand	% Silt	% Clay	% Colloids
●	100.0	100.0	82.9	23.6	0.0	17.1	59.3	23.6		
☒	99.8	99.2	97.6	30.8	0.2	2.2	66.9	30.8		
▲	92.7	92.6	90.9	15.2	7.3	1.8	75.8	15.2		
★	100.0	99.1	93.8	36.2	0.0	6.2	57.5	36.2		
☒	99.9	99.6	5.3		0.1	94.5				

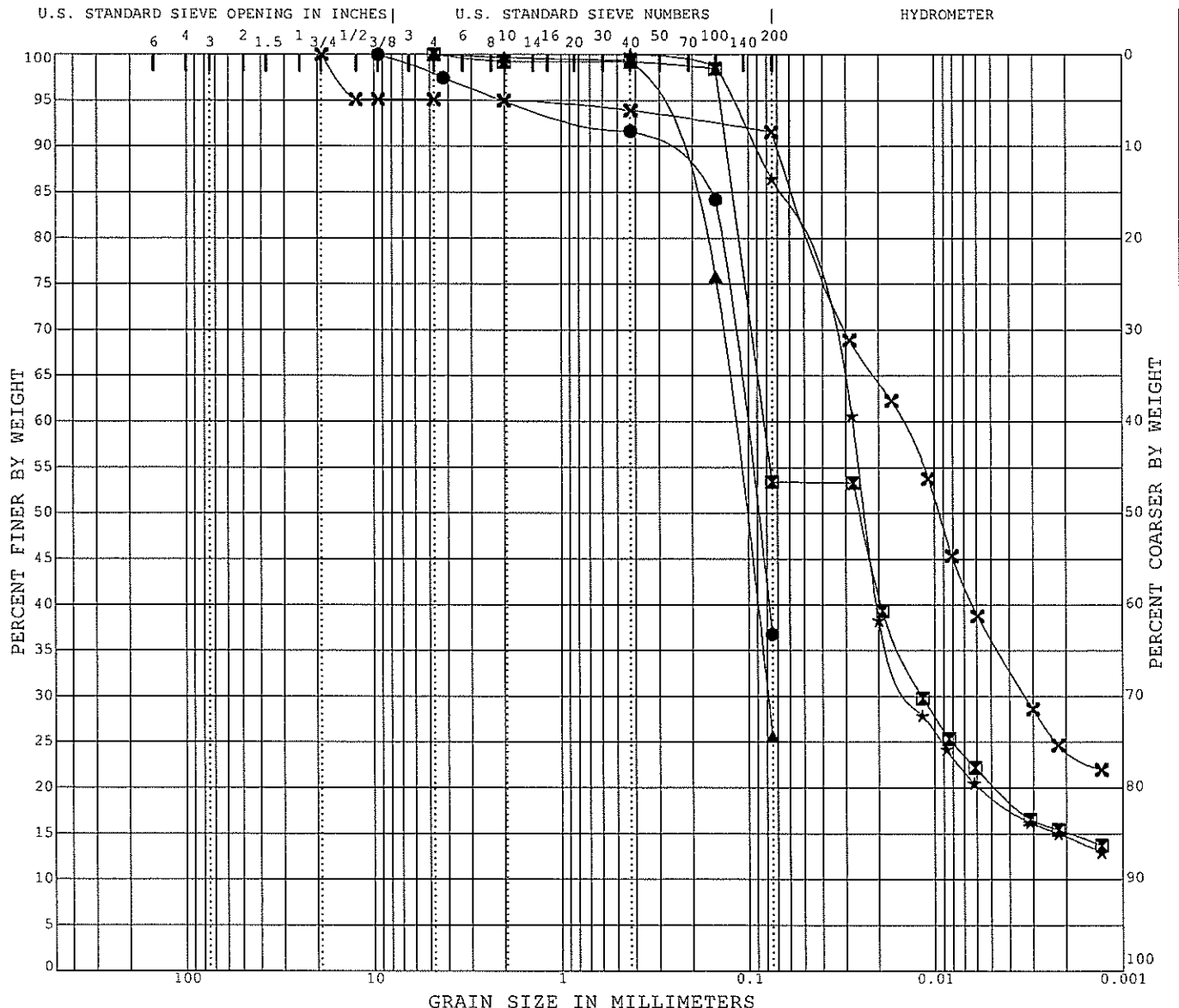
<b>SEECO</b> Consultants, Inc. Tinley Park, Illinois 60477	Project	Proposed Improvements			
	Location	Roberts Rd. & River Rd. Intersection, Lake County, IL			
	Date	12/20/12	Job No.	9337G-1	<b>GRADATION CURVES</b>



Boulders	Gravel	Sand		Silt	Clay
		coarse	fine		

Boring No.	Depth	Lab. No.	AASHTO Soil Classification (Textural)				MC%	LL	PL	PI
● B-11A	24.25'		SANDY LOAM, Gray (A-4)							
⊠ B-12A	36.75'		LOAM, Gray (A-4)				16.9			
▲ B-6A	14.25'		SANDY LOAM, Gray (A-2-4)							
★ B-7A	14.25'		SILTY LOAM, Gray (A-4)				16.1			
⊠ B-9A	16.50'		SILTY CLAY LOAM, Gray (A-6)				22.9	26	15	11
	% < 3"	% Pass #10	% Pass #40	% Pass #200	% < 0.02mm	% Gravel	% Sand	% Silt	% Clay	% Colloids
●		95.5	91.7	36.8		4.5	58.8			
⊠		99.2	99.2	53.5	15.1	0.8	45.8	38.3	15.1	
▲		99.7	99.3	25.6		0.3	74.0			
★			100.0	86.5	14.6	0.0	13.5	71.8	14.6	
⊠		95.0	93.9	91.6	24.2	5.0	3.4	67.4	24.2	

<b>SEECO</b> Consultants, Inc. Tinley Park, Illinois 60477	Project	Proposed Improvements			
	Location	Roberts Rd. & River Rd. Intersection, Lake County, IL			
	Date	12/20/12	Job No.	9337G-1	<b>GRADATION CURVES</b>



Boulders	Gravel	Sand		Silt	Clay
		coarse	fine		

Boring No.	Depth	Lab. No.	AASHTO Soil Classification (Textural)				MC%	LL	PL	PI
● B-11A	24.25'		SANDY LOAM, Gray (A-4)							
⊠ B-12A	36.75'		LOAM, Gray (A-4)				16.9			
▲ B-6A	14.25'		SANDY LOAM, Gray (A-2-4)							
★ B-7A	14.25'		SILTY LOAM, Gray (A-4)				16.1			
⊗ B-9A	16.50'		SILTY CLAY LOAM, Gray (A-6)				22.9	26	15	11
	%< 3"	%Pass#10	%Pass#40	%Pass#200	%<.002mm	%Gravel	%Sand	%Silt	%Clay	%Colloids
●		95.5	91.7	36.8		4.5	58.8			
⊠		99.2	99.2	53.5	15.1	0.8	45.8	38.3	15.1	
▲		99.7	99.3	25.6		0.3	74.0			
★			100.0	86.5	14.6	0.0	13.5	71.8	14.6	
⊗		95.0	93.9	91.6	24.2	5.0	3.4	67.4	24.2	

<b>SEECO</b> Consultants, Inc. Tinley Park, Illinois 60477	Project	Proposed Improvements			
	Location	Roberts Rd. & River Rd. Intersection, Lake County, IL			
	Date	12/20/12	Job No.	9337G-1	<b>GRADATION CURVES</b>

# APPENDIX 7

**ILLINOIS DEPARTMENT  
OF TRANSPORTATION**

**Summary Report on Pavement  
Base and Sub-Base Design**

State Job Number: \_\_\_\_\_ Project: Roundabout Route: FAU 3704 & FAU 3705  
Lake County, IL

Section: 07-00086-08-CH City or County: Lake Date: 2/26/13

ADT: \_\_\_\_\_ Year: \_\_\_\_\_ Design Period: \_\_\_\_\_ Class Highway: \_\_\_\_\_

Passenger Cars Per Day: \_\_\_\_\_ Trucks S.U. Per Day: \_\_\_\_\_ Trucks M.U. Per Day: \_\_\_\_\_

Pavement Structure: \_\_\_\_\_

Type Surface Course: HMA Surface Course, Mix "D", N70 Thickness: 2 inch

Type Levelling Course: \_\_\_\_\_ Thickness: \_\_\_\_\_

Type Base Course: HMA Binder Course, IL-19.0, N70 Thickness: 5 inches

Type Sub-Base Material: Aggregate Subgrade, 12" Thickness: 12 inches

Sta. to Sta.	49+28.77 to 65+44.44 (Roberts Road)	92+50 to 95+70 (River Road)		
*Sta. Of Test		-		
*Drainage Class	Good	Good		
*Ave. of Frost Penetration	42 inches	42 inches		
Grain Size Classification	Granular Fill	Granular Fill		
HRB Classification and Group Index				
*Percent Silt (AASHTO T 88)				
Std. Dry Density (AASHTO T 99)				
Bearing Ratio				
Optimum Moisture % (AASHTO T 99)				

\*Indicates worst condition within the above station limits.

REMARKS: Approximately 3.2 to 8.6 feet of Granular Fill will be utilized to construct the embankment above existing ground level.

**BBS 2630  
(formerly BD 507A)**

# APPENDIX 8

**ILLINOIS DEPARTMENT  
OF TRANSPORTATION**

**Soil Test Data**

ROUTE FAU ROUTE 3704 & FAU ROUTE 3705  
 SECTION 07-00086-08-CH  
 COUNTY Lake  
 LOCATION Roundabout, River & Roberts, Lake County, IL

Lab No.	B1A-S8	B1A-S12	B2A-S5	B3A-S14
Station	62+68.27	62+68.27	60+99.74	59+87.29
Offset	10.68' R of CL	10.68' R of CL	31.62' L of CL	0.95' R of CL
Depth	19.25'	29.25'	11.75'	34.25'
AASHTO M 145 Classification and Group Index	A-4	A-6	A-4	A-6
Illinois Textural Classification (Illinois Method)	SI CLAY LOAM	SI CLAY	SI LOAM	SI CLAY
Gradation-Passing 1" Sieve %	100	100	100	100
Gradation-Passing 3/4" Sieve %	100	100	100	100
Gradation-Passing 1/2" Sieve %	100	100	100	100
Gradation-Passing No. 4 Sieve %	100	100	97.3	100
Gradation-Passing No. 10 Sieve %	100	99.8	92.7	100
Gradation-Passing No. 40 Sieve %	100	99.2	92.6	99.1
Gradation-Passing No. 100 Sieve %	94.0	98.5	91.4	96.7
Gradation-Passing No. 200 Sieve %	82.9	97.6	90.9	93.8
Sand % (AASHTO T 88)	17.1	2.2	1.8	6.2
Silt % (AASHTO T 88)	59.3	66.9	75.8	57.5
Clay % (AASHTO T 88)	23.6	30.8	15.2	36.2
Liquid Limit % (AASHTO T 89)	18	25	18	
Plasticity Index % (AASHTO T90)	6	11	1	
Standard Dry Density pcf (AASHTO T 99)				
Optimum Moisture % (AASHTO T 99)				
Subgrade Support Rating	Poor	Fair	Poor	Fair
In-situ Moisture (%)	18.6	20.6	20.7	15.1

BBS 2640  
(formerly BD 508A)

**ILLINOIS DEPARTMENT  
OF TRANSPORTATION**

**Soil Test Data**

ROUTE FAU ROUTE 3704 & FAU ROUTE 3705  
 SECTION 07-00086-08-CH  
 COUNTY Lake  
 LOCATION Roundabout, River & Roberts, Lake County, IL

Lab No.	B4A-S14	B11A-S10	B12A-S15	B6A-S6
Station	59+59.95	56+60.38	56+19.27	66+12.13
Offset	69.41' L of CL	75.64' L of CL	87.19' L of CL	293.31' L of CL
Depth	34.75'	24.25'	36.75'	14.25'
AASHTO M 145 Classification and Group Index	A-3	A-4	A-4	A-2-4
Illinois Textural Classification (Illinois Method)	SAND	SANDY LOAM	LOAM	SANDY LOAM
Gradation-Passing 1" Sieve %	100	100	100	100
Gradation-Passing 3/4" Sieve %	100	100	100	100
Gradation-Passing 1/2" Sieve %	100	100	100	100
Gradation-Passing No. 4 Sieve %	100	97.4	100	100
Gradation-Passing No. 10 Sieve %	99.9	95.5	99.2	99.7
Gradation-Passing No. 40 Sieve %	99.6	91.7	99.2	99.3
Gradation-Passing No. 100 Sieve %	23.9	84.2	98.4	74.0
Gradation-Passing No. 200 Sieve %	5.3	36.8	53.5	25.6
Sand % (AASHTO T 88)	94.5	58.8	45.8	74
Silt % (AASHTO T 88)			38.3	
Clay % (AASHTO T 88)	5.4	36.7	15.1	25.7
Liquid Limit % (AASHTO T 89)				
Plasticity Index % (AASHTO T90)				
Standard Dry Density pcf (AASHTO T 99)				
Optimum Moisture % (AASHTO T 99)				
Subgrade Support Rating	Granular		Poor	Granular
In-situ Moisture (%)			16.9	

**BBS 2640  
(formerly BD 508A)**



ILLINOIS DEPARTMENT  
OF TRANSPORTATION

Soil Test Data

ROUTE FAU ROUTE 3704 & FAU ROUTE 3705  
SECTION 07-00086-08-CH  
COUNTY Lake  
LOCATION Roundabout, River & Roberts, Lake County, IL

Lab No.	B7A-S6	B9A-S7	B14A-S12	B2-S1
Station	58+00.41	57+29.46	53+58.65	55+33.77
Offset	104.92' L of CL	74.92' R of CL	0.97' L of CL	14.12' R of CL
Depth	14.25'	16.50'	29.25'	1.75'
AASHTO M 145 Classification and Group Index	A-4	A-6	A-6	A-6(8)
Illinois Textural Classification (Illinois Method)	SILTY LOAM	SI CLAY LOAM	SILTY CLAY	FILL:CLAY
Gradation-Passing 1" Sieve %	100	100	100	100
Gradation-Passing 3/4" Sieve %	100	100	100	100
Gradation-Passing 1/2" Sieve %	100	95.1	100	100
Gradation-Passing No. 4 Sieve %	100	95.1	99.9	100
Gradation-Passing No. 10 Sieve %	100	95.0	99.9	98.5
Gradation-Passing No. 40 Sieve %	100	93.9	99.4	95.8
Gradation-Passing No. 100 Sieve %	98.8	92.5	96.0	87.0
Gradation-Passing No. 200 Sieve %	86.5	91.6	91.3	79.9
Sand % (AASHTO T 88)	13.5	3.4	8.6	18.6
Silt % (AASHTO T 88)	71.8	67.4	57.6	47.3
Clay % (AASHTO T 88)	14.6	24.2	33.7	32.6
Liquid Limit % (AASHTO T 89)		26	26	27
Plasticity Index % (AASHTO T90)		11	12	13
Standard Dry Density pcf (AASHTO T 99)				
Optimum Moisture % (AASHTO T 99)				
Subgrade Support Rating	Poor	Poor	Fair	Fair
In-situ Moisture (%)	16.1	22.9	15.0	15.4

BBS 2640  
(formerly BD 508A)

ILLINOIS DEPARTMENT  
OF TRANSPORTATION

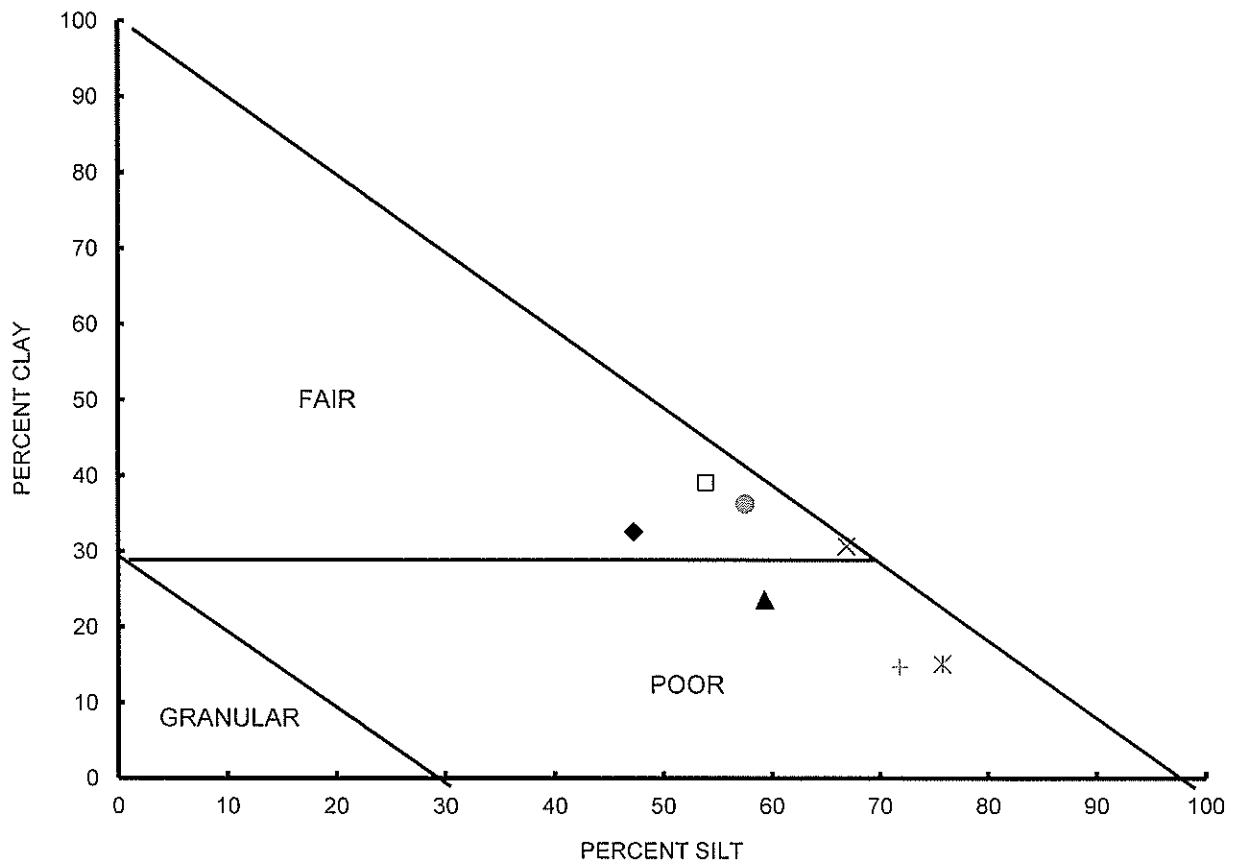
Soil Test Data

ROUTE FAU ROUTE 3704 & FAU ROUTE 3705  
SECTION 07-00086-08-CH  
COUNTY Lake  
LOCATION Roundabout, River & Roberts, Lake County, IL

Lab No.	B3-S1			
Station	93+42.66			
Offset	16.57' R			
Depth	1.75'			
AASHTO M 145 Classification and Group Index	A-6(11)			
Illinois Textural Classification (Illinois Method)	SILTY CLAY			
Gradation-Passing 1" Sieve %	100			
Gradation-Passing 3/4" Sieve %	100			
Gradation-Passing 1/2" Sieve %	100			
Gradation-Passing No. 4 Sieve %	100			
Gradation-Passing No. 10 Sieve %	99.9			
Gradation-Passing No. 40 Sieve %	99.2			
Gradation-Passing No. 100 Sieve %	95.0			
Gradation-Passing No. 200 Sieve %	92.9			
Sand % (AASHTO T 88)	7.0			
Silt % (AASHTO T 88)	53.9			
Clay % (AASHTO T 88)	39.1			
Liquid Limit % (AASHTO T 89)	28			
Plasticity Index % (AASHTO T90)	14			
Standard Dry Density pcf (AASHTO T 99)				
Optimum Moisture % (AASHTO T 99)				
Subgrade Support Rating	Fair			
In-situ Moisture (%)	26			

BBS 2640  
(formerly BD 508A)

# **APPENDIX 9**



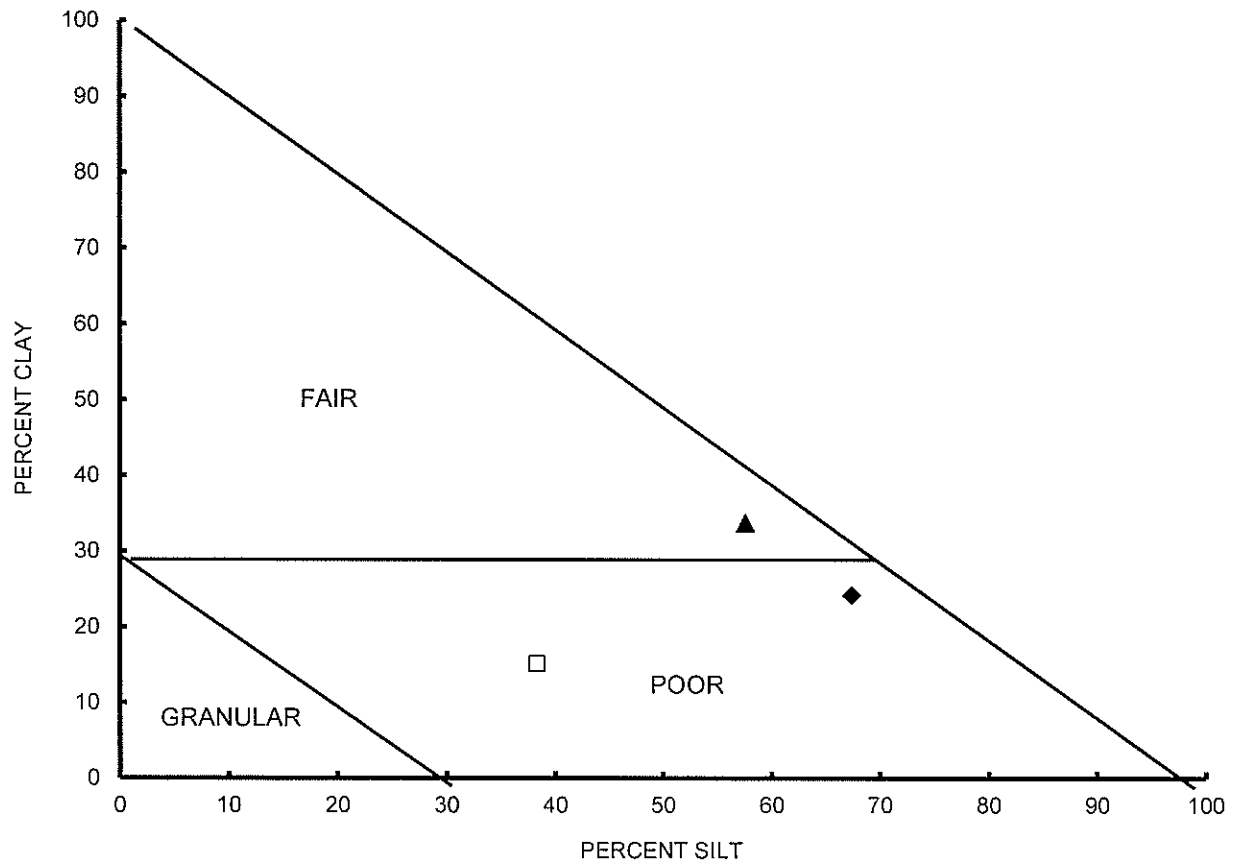
◆ B-2, S-1    □ B-3, S-1    ▲ B-1A, S-8    × B-1A, S-12    \* B-2A, S-5    ● B-3A, S-14    + B-7A, S-6

Boring No	Depth, ft	AASHTO Soil Classification		Gravel, %	Sand, %	Silt, %	Clay, %	SSR
B-2, S-1	1.75	Fill: Clay	A-6(8)	1.5	18.6	47.3	32.6	FAIR
B-3, S-1	1.75	Fill: Silty Clay	A-6(11)	0.1	6.9	53.9	39.1	FAIR
B-1A, S-8	19.25	Si Clay Loam	A-4	0.0	17.1	59.3	23.6	POOR
B-1A, S-12	29.25	Silty Clay	A-6	0.2	2.2	66.9	30.7	FAIR
B-2A, S-5	11.75	Silty Loam	A-4	7.3	1.8	75.8	15.1	POOR
B-3A, S-14	34.25	Silty Clay	A-6	0.0	6.2	57.5	36.3	FAIR
B-7A, S-6	14.25	Silty Loam	A-4	0.0	13.5	71.8	14.7	POOR

Client	Bollinger Lach and Associates - Lake County Highway Department			
Project	Proposed Improvements, Roberts Road & River Road	Job No	Date	Drawn by
Location	Lake County, IL	9337G-1	2/25/2013	VM

**SEECO** Consultants, Inc.

**SUBGRADE SUPPORT RATING (SSR)**



◆ B-9A, S-7                      □ B-12A, S-15                      ▲ B-14A, S-12

Boring No	Depth, ft	AASHTO Soil Classification		Gravel, %	Sand, %	Silt, %	Clay, %	SSR
B-9A, S-7	16.50	Si Clay Loam	A-6	5.0	3.4	67.4	24.2	POOR
B-12A, S-15	36.75	Loam	A-4	0.8	45.8	38.3	15.1	POOR
B-14A, S-12	29.25	Silty Clay	A-6	0.1	8.6	57.6	33.7	FAIR
B-4A, S-14	34.75	Sand	A-3	0.1	94.5			GRANULAR
B-6A, S-6	14.25	Sandy Loam	A-2-4	0.3	74.0			GRANULAR
B-11A, S-10	24.25	Sandy Loam	A-4	4.5	58.8			GRANULAR

Client	Bollinger Lach and Associates - Lake County Highway Department			
Project	Proposed Improvements, Roberts Road & River Road	Job No	Date	Drawn by
Location	Lake County, IL	9337G-1	2/26/2013	VM

**SEECO** Consultants, Inc.

**SUBGRADE SUPPORT RATING (SSR)**

# **APPENDIX 10**



# QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA

(final)

NOAA, National Climatic Data Center

Month: 07/2009

Station Location: CHICAGO O'HARE INTERNATIONAL AIRPORT (94846)

CHICAGO, IL

Lat. 41.995 Lon. -87.933

Elevation(Ground): 658 ft. above sea level

Date	Temperature (Fahrenheit)			Degree Days Base 65 Degrees			Sun		Significant Weather	Snow/Ice on Ground(In)			Precipitation (In)		Pressure(inches of Hg)		Wind: Speed-mph		Residual		Dir	Dir									
	Max.	Min.	Avg.	Wet Bulb	Dew pt.	From Normal	Avg.	Heating		Cooling	Sunrise LST	Sunset LST	1200 UTC	1800 UTC	2400 UTC	Water Equiv	Snow	Water	LST	LST			LST	Avg. Station	Avg. Sea Level	Residual Speed	Dir	Speed	Dir	Speed	Dir
1	2	3	4	6	7	8	9	10	11			13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
01	65	57	61*	52	56	4	0	0420	1931		0	M	0.0	T	29.07	29.77	8.2	32	8.7	35	050	15	330	01	15	330	01	15	330	01	
02	73	59	66	54	60	0	1	0420	1931		0	M	0.0	0.00	29.26	29.95	8.4	31	8.8	18	300	15	310	02	15	310	02	15	310	02	
03	79	63	71	56	62	0	6	0421	1931		0	M	0.0	0.00	29.36	30.06	1.2	34	5.8	26	070	17	060	03	17	060	03	17	060	03	
04	69	59	64	58	61	1	1	0422	1930		0	M	0.0	0.20	29.26	29.99	1.8	13	3.8	22	060	9	110	04	9	110	04	9	110	04	
05	81	57	69	58	63	0	4	0422	1930		0	M	0.0	0.05	29.20	29.92	0.7	34	2.4	21	050	14	330	05	14	330	05	14	330	05	
06	86*	60	73	54	62	0	8	0423	1930		0	M	0.0	0.00	29.14	29.86	7.5	31	7.8	23	320	17	320	06	17	320	06	17	320	06	
07	77	59	68	54	60	0	3	0423	1930		0	M	0.0	T	29.18	29.89	5.9	07	7.0	30	060	13	090	07	13	090	07	13	090	07	
08	65	61	63	56	59	2	0	0424	1929		0	M	0.0	0.06	29.28	29.99	6.8	06	7.0	25	060	10	050	08	10	050	08	10	050	08	
09	79	59	69	57	63	0	4	0425	1929		0	M	0.0	0.00	29.35	30.07	5.8	11	6.9	21	130	15	110	09	15	110	09	15	110	09	
10	82	63	73	64	67	0	8	0425	1929		0	M	0.0	0.08	29.34	30.06	4.4	21	4.9	20	240	14	210	10	14	210	10	14	210	10	
11	85	63	74	59	65	0	9	0426	1928		0	M	0.0	0.25	29.34	30.04	4.8	31	7.0	24	280	18	290	11	18	290	11	18	290	11	
12	82	58	70	51	60	0	5	0427	1928		0	M	0.0	0.00	29.35	30.07	2.9	29	5.7	20	030	12	350	12	12	350	12	12	350	12	
13	79	61	70	46	57	0	5	0428	1927		0	M	0.0	0.00	29.36	30.07	4.8	07	5.8	24	070	16	070	13	16	070	13	16	070	13	
14	80	55	68	51	59	0	3	0428	1927		0	M	0.0	0.00	29.34	30.07	6.7	16	7.5	20	150	15	140	14	15	140	14	15	140	14	
15	85	65	75	62	67	0	10	0429	1926		0	M	0.0	0.68	29.18	29.90	10.0	24	12.4	35	270	24	260	15	24	260	15	24	260	15	
16	80	64	72	56	62	0	7	0430	1925		0	M	0.0	T	29.17	29.89	9.9	28	10.8	29	240	21	260	16	21	260	16	21	260	16	
17	70	57	64	51	56	1	0	0431	1925		0	M	0.0	0.00	29.15	29.87	10.6	30	10.8	28	310	23	310	17	23	310	17	23	310	17	
18	72	57	65	52	57	0	0	0432	1924		0	M	0.0	0.00	29.31	30.01	8.1	31	8.2	25	280	15	320	18	15	320	18	15	320	18	
19	71	57	64	52	58	1	0	0433	1923		0	M	0.0	0.00	29.39	30.11	1.3	36	4.0	23	060	12	070	19	12	070	19	12	070	19	
20	76	55*	66	55	60	0	1	0433	1923		0	M	0.0	0.04	29.36	30.09	5.1	09	5.5	25	100	16	100	20	16	100	20	16	100	20	
21	80	58	69	57	62	0	4	0434	1922		0	M	0.0	0.00	29.28	30.01	3.1	13	5.8	22	060	15	110	21	15	110	21	15	110	21	
22	78	63	71	61	64	0	6	0435	1921		0	M	0.0	T	29.23	29.95	3.5	03	5.0	29	060	17	020	22	17	020	22	17	020	22	
23	82	62	72	58	63	0	7	0436	1920		0	M	0.0	0.00	29.21	29.93	2.6	32	5.0	28	010	18	360	23	18	360	23	18	360	23	
24	83	61	72	59	64	0	7	0437	1919		0	M	0.0	0.14	29.08	29.83	8.9	23	9.8	43	190	33	190	24	33	190	24	33	190	24	
25	81	66	74	58	64	0	8	0438	1918		0	M	0.0	0.00	29.02	29.73	10.6	28	11.1	29	270	21	270	25	21	270	25	21	270	25	
26	82	63	73	58	64	0	8	0439	1918		0	M	0.0	T	29.13	29.82	8.0	29	8.6	22	320	17	310	26	17	310	26	17	310	26	
27	84	64	74	61	66	0	9	0440	1917		0	M	0.0	0.02	29.13	29.86	9.3	23	10.1	48	210	38	200	27	38	200	27	38	200	27	
28	84	66	75*	61	66	0	10	0441	1916		0	M	0.0	0.01	29.08	29.78	6.4	28	8.0	44	220	35	210	28	35	210	28	35	210	28	
29	81	62	72	51	59	0	7	0442	1915		0	M	0.0	0.00	29.13	29.84	4.2	35	7.1	22	010	15	340	29	15	340	29	15	340	29	
30	79	59	69	57	62	0	4	0443	1914		0	M	0.0	T	29.15	29.85	4.4	23	5.5	28	330	24	330	30	24	330	30	24	330	30	
31	81	58	70	54	61	0	5	0444	1913		0	M	0.0	0.00	29.23	29.94	6.2	26	7.3	22	250	16	260	31	16	260	31	16	260	31	
78.4	60.4	69.4	55.9	61.6	61.6	0.3	4.8	<-----Monthly Averages   Totals----->		M	0.0	1.53	-2.17		29.23	29.94	2.6	29	7.2	29	7.2	<Monthly Average									
-5.7	-3.5	-4.6						<-----Departure From Normal----->																							

Degree Days	Monthly	Season to Date	
Total Departure	9	5	9
Total Departure	150	-133	327
Heating:	9	5	9
Cooling:	150	-133	327
Greatest 24-hr Precipitation: 0.68 Date: 15			
Greatest 24-hr Snowfall: 0.0 Date: M			
Greatest Snow Depth: 0 Date: M			
Number of Days with ----->			
Max Temp >=90: 0 Min Temp <=32: 0			
Max Temp <=32: 0 Min Temp <=0: 0			
Thunderstorms : 3 Heavy Fog : 0			

\* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.

Data Version: VER3



# QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA

(final)  
 NOAA, National Climatic Data Center  
 Month: 08/2009

Station Location: CHICAGO O'HARE INTERNATIONAL AIRPORT (94846)  
 CHICAGO, IL  
 Lat. 41.995 Lon. -87.933  
 Elevation(Ground): 658 ft. above sea level

Date	Temperature (Fahrenheit)		Avg. Dew pt.	Avg. Wet Bulb	Degree Days Base 65 Degrees		Sun		Significant Weather	Snowfall on Ground (in)				Precipitation (in)		Pressure (inches of Hg)		Wind: Speed=mph Dir=degrees		Resultant Speed Dir	max 2-minute		max 5-minute	max 1-minute			
	Max.	Min.			Avg.	From Normal	Dep	Heating		Cooling	Sunrise LST	Sunset LST	1200 UTC	1800 UTC	2400 UTC	2400 LST	Water Equiv	Water	Avg. Station		Avg. Sea Level	Res			Dir	Avg. Speed	Dir
01	75	61	68	59	7	8	9	10	11	RA	0	0	0	0	0	17	18	19	20	21	22	23	24	25	26		
02	78	57	68	51	5	0	3	0445	1910		0	0	0	0	0	29.18	29.91	11.6	22	11.4	33	220	25	230	01		
03	74	67	76	60	3	0	11	0447	1909		0	0	0	0	0	29.20	29.93	6.8	25	9.6	37	250	17	200	02		
04	85	67	76	61	3	0	11	0448	1908	BR	0	0	0	0	0	29.10	29.82	12.2	21	12.4	31	220	23	210	03		
05	79	61	70	54	3	0	5	0449	1907		0	0	0	0	0	29.17	29.87	2.5	02	5.8	26	050	20	040	04		
06	82	60	71	51	2	0	6	0450	1906		0	0	0	0	0	29.34	30.05	2.9	06	4.2	25	060	13	090	05		
07	74	64	69	59	6	0	4	0451	1904	RA BR	0	0	0	0	0	29.39	30.09	1.4	06	5.4	24	020	13	100	06		
08	89	68	79	70	7	0	14	0452	1903	RA BR	0	0	0	0	0	29.36	30.09	7.3	15	7.8	20	160	15	130	07		
09	91*	77	84*	71	11	0	19	0453	1902		0	0	0	0	0	29.20	29.92	12.9	21	13.6	29	210	22	220	08		
10	85	70	78	65	5	0	13	0454	1900		0	0	0	0	0	29.23	29.94	11.6	23	12.9	31	260	24	250	09		
11	82	62	72	61	6	0	7	0455	1859		0	0	0	0	0	29.24	29.95	6.9	26	7.2	21	280	15	260	10		
12	83	60	72	55	2	0	7	0456	1858		0	0	0	0	0	29.30	30.00	6.3	02	8.0	25	040	16	040	11		
13	86	60	73	55	0	0	8	0457	1856		0	0	0	0	0	29.39	30.09	3.7	04	5.9	24	050	14	040	12		
14	88	63	76	59	6	0	11	0458	1855		0	0	0	0	0	29.38	30.10	1.5	14	3.8	22	100	15	110	13		
15	89	67	78	61	6	0	13	0459	1854		0	0	0	0	0	29.32	30.04	5.4	21	5.7	21	200	14	180	14		
16	88	70	79	67	7	0	14	0500	1852	TSRA	0	0	0	0	0	29.27	29.99	8.7	19	8.9	23	170	20	180	15		
17	83	70	77	68	5	0	12	0501	1851	TSRA RA BR	0	0	0	0	0	29.28	30.00	9.5	20	10.2	38	250	26	250	16		
18	83	65	74	59	5	0	9	0502	1849		0	0	0	0	0	29.28	30.00	4.6	22	5.8	20	160	14	210	17		
19	83	59	71	60	6	0	6	0503	1848		0	0	0	0	0	29.28	29.99	7.5	27	8.1	24	330	18	300	18		
20	78	64	71	61	0	0	6	0504	1846	RA	0	0	0	0	0	29.08	29.83	5.7	16	8.7	26	210	20	210	19		
21	73	59	66	58	0	0	1	0505	1845	RA	0	0	0	0	0	28.93	29.66	12.1	23	12.5	33	260	24	250	20		
22	68	57	63	52	8	0	0	0506	1843	RA	0	0	0	0	0	29.07	29.75	7.7	27	10.7	28	250	20	280	21		
23	74	56	65	58	6	0	0	0508	1842		0	0	0	0	0	29.31	30.00	7.8	01	9.4	28	040	17	350	22		
24	79	54	67	56	6	0	2	0509	1840		0	0	0	0	0	29.38	30.09	2.7	02	6.4	21	040	10	140	23		
25	83	59	71	61	6	0	6	0510	1839	RA BR	0	0	0	0	0	29.33	30.05	9.1	21	9.2	23	190	20	200	25		
26	73	62	68	62	6	0	3	0511	1837	RA BR	0	0	0	0	0	29.36	30.08	5.2	02	7.8	28	050	14	040	26		
27	67	61	64	60	6	1	0	0512	1835	RA BR	0	0	0	0	0	29.36	30.08	9.1	07	9.7	31	050	18	100	27		
28	68	60	64	61	6	1	0	0513	1834	RA BR	0	0	0	0	0	29.18	29.93	3.4	02	5.7	24	030	13	030	28		
29	69	56	63	51	7	0	0	0514	1832	RA DZ BR	0	0	0	0	0	29.18	29.89	11.4	31	11.8	26	310	22	320	29		
30	66	51	59	47	11	0	0	0515	1831		0	0	0	0	0	29.44	30.14	8.2	01	9.3	26	060	17	050	30		
31	68	49*	59*	44	10	0	0	0516	1829		0	0	0	0	0	29.55	30.27	4.8	03	6.0	14	040	14	040	31		
79.1		61.8	70.5	58.5	63.3	0.6	6.3	<-----Monthly Averages   Totals----->			M	0	0	0	4.26	29.28	29.99	2.4	23	8.4	<-----Monthly Average	M	M	M	M		
-2.8		-1.1	-1.9																								

Degree Days	Monthly	Season to Date	Sea Level	Pressure	Date (LST)	Time
Greatest 24-hr	1.25	1.25	Maximum	30.32	31	1041
Greatest 24-hr Snowfall	0.0	0.0	Minimum	29.60	20	0551
Greatest Snow Depth	0	0	Max Temp >=90:	0	Min Temp <=32:	0
			Max Temp <=32:	0	Min Temp <=0:	0
			Thunderstorms:	2	Heavy Fog:	0
Heating:	18	9	Precipitation >= .01 inch: 13			
Cooling:	194	-44	Precipitation >= .10 inch:			
	521	-208	Snowfall >= 1.0 inch: 0			
* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.						Data Version: VER3

# QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA

(final)  
 NOAA, National Climatic Data Center  
 Month: 09/2009

Station Location: CHICAGO O'HARE INTERNATIONAL AIRPORT (94846)  
 CHICAGO, IL  
 Lat. 41.995 Lon. -87.933  
 Elevation(Ground): 658 ft. above sea level

Date	Temperature (Fahrenheit)			Degree Days Base 65 Degrees			Sun			Significant Weather	Snow/ice on Ground (in)			Pressure (inches of Hg)			Wind: Speed=mph Dir=degrees			Precipitation (in)			Avg. Sea Level	Avg. Station	Avg. Sea Level	Resultant Speed Dir	Res. Speed Dir	Avg. Speed Dir	max 5-second Speed Dir	max 2-minute Speed Dir	max 1-minute Speed Dir							
	Max.	Min.	Avg.	Dep From Normal	Avg. Dew pt.	Avg. Wet Bulb	Heating	Cooling	Sunrise LST		Sunset LST	1200 UTC	1800 UTC	2400 UTC	1200 UTC	1800 UTC	2400 UTC	1200 UTC	1800 UTC	2400 UTC	1200 UTC	1800 UTC										2400 UTC	1200 UTC	1800 UTC	2400 UTC	1200 UTC	1800 UTC	2400 UTC
	2	3	4	5	6	7	8	9	10		11	13	14	15	16	17	18	19	20	21	22	23										24	25	26	27	28	29	30
01	72	47	60	-8	47	53	5	0	0517	1827	0	M	0.0	29.57	30.31	04	19	3.3	04	24	22	23	24	25	26	27	28	29	30									
02	73	50	62	-6	50	56	3	0	0518	1826	0	M	0.0	29.51	30.25	06	3.4	4.1	06	21	21	22	23	24	25	26	27	28	29	30								
03	75	56	66	-2	54	59	0	1	0519	1824	0	M	0.0	29.42	30.16	07	3.5	4.7	05	24	24	24	24	24	24	24	24	24	24	24								
04	75	54	65	-3	54	59	0	0	0520	1822	0	M	0.0	29.44	30.15	04	3.6	3.6	04	24	24	24	24	24	24	24	24	24	24	24								
05	78	54	66	-1	57	61	0	1	0521	1821	0	M	0.0	29.49	30.21	04	4.3	04	04	24	24	24	24	24	24	24	24	24	24	24								
06	77	61	69	2	59	63	0	4	0522	1819	0	M	0.0	29.47	30.19	05	4.2	4.2	05	26	26	26	26	26	26	26	26	26	26	26								
07	77	59	68	1	59	62	0	3	0523	1817	0	M	0.0	29.39	30.11	03	5.8	5.8	03	23	23	23	23	23	23	23	23	23	23	23								
08	78	60	69	3	60	63	0	4	0524	1815	0	M	0.0	29.36	30.07	06	6.6	6.6	06	23	23	23	23	23	23	23	23	23	23	23								
09	78	65	72	6	63	65	0	7	0525	1814	0	M	0.0	29.42	30.14	06	6.1	6.1	06	33	33	33	33	33	33	33	33	33	33	33								
10	81	64	73	7	62	65	0	8	0526	1812	0	M	0.0	29.48	30.20	06	6.0	6.0	06	15	15	15	15	15	15	15	15	15	15	15								
11	80	61	71	6	59	63	0	6	0527	1810	0	M	0.0	29.44	30.17	05	5.1	5.1	07	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6								
12	79	58	69	4	60	63	0	4	0528	1809	0	M	0.0	29.41	30.14	03	3.7	3.7	03	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8								
13	80	58	69	4	54	60	0	4	0529	1807	0	M	0.0	29.39	30.12	05	0.7	0.7	03	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8								
14	84*	58	71	7	55	61	0	6	0530	1805	0	M	0.0	29.34	30.07	01	1.5	1.5	07	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0								
15	82	59	73*	9	59	64	0	8	0531	1803	0	M	0.0	29.36	30.07	02	2.2	2.2	02	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8								
16	71	59	65	1	54	59	0	0	0532	1803	0	M	0.0	29.49	30.20	05	11.0	11.0	05	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4								
17	72	50	61	-3	52	56	4	0	0533	1758	0	M	0.0	29.45	30.18	04	3.4	3.4	05	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2								
18	79	50	65	3	55	59	0	0	0535	1756	0	M	0.0	29.46	30.18	01	5.1	5.1	02	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4								
19	76	55	66	3	55	59	0	1	0536	1755	0	M	0.0	29.48	30.21	03	3.2	3.2	10	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9								
20	73	54	64	2	56	60	1	0	0537	1753	0	M	0.0	29.28	30.04	04	6.4	6.4	07	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9								
21	67	60	64	2	59	61	1	0	0538	1751	0	M	0.0	29.26	30.04	03	3.5	3.5	23	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6								
22	77	59	68	6	65	67	0	3	0539	1749	0	M	0.0	29.28	30.16	06	6.2	6.2	02	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8								
23	76	62	69	8	62	64	0	4	0540	1748	0	M	0.0	29.42	30.12	06	3.2	3.2	04	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0								
24	73	64	69	8	63	65	0	4	0541	1746	0	M	0.0	29.44	30.16	03	3.4	3.4	06	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7								
25	70	60	65	4	57	60	0	0	0542	1744	0	M	0.0	29.39	30.12	04	5.4	5.4	11	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3								
26	69	55	62	2	56	59	3	0	0543	1742	0	M	0.0	29.15	29.91	04	2.7	2.7	10	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2								
27	74	50	62	2	53	57	3	0	0544	1741	0	M	0.0	28.84	29.59	08	8.2	8.2	22	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2								
28	62	49	56	-3	42	49	9	0	0545	1739	0	M	0.0	28.91	29.61	03	20.3	20.3	29	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7	20.7								
29	60	48	54*	-5	42	48	11	0	0546	1737	0	M	0.0	29.28	29.96	09	9.0	9.0	33	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3								
30	62	47*	55	-4	40	47	10	0	0547	1735	0	M	0.0	29.39	30.11	03	6.8	6.8	03	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8								
											Monthly Averages   Totals----->																											
											M 0.0 1.03 -2.18																											
											Sea Level Pressure Date (LST)																											
											Maximum 30.36 01 1033																											
											Minimum 29.38 27 2051																											
											Max Temp >=90: 0																											
											Max Temp <=32: 0																											
											Min Temp <=0: 0																											
											Heavy Fog >=1.0 inch: 0																											
											Snowfall >=1.0 inch: 0																											
											Precipitation >=0.1 inch: 5																											
											Precipitation >=1.0 inch: 0																											
											Snowfall >=1.0 inch: 0																											

Degree Days	Monthly	Season to Date	Total Departure	Month	Season to Date	Total Departure
Heating:	50	-55	77	-50		
Cooling:	68	-24	589	-231		
* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.						
Data Version: VER3						

# QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA

(final)  
NOAA, National Climatic Data Center  
Month: 07/2012

Station Location: CHICAGO O'HARE INTERNATIONAL AIRPORT (94846)  
CHICAGO, IL  
Lat. 41.995 Lon. -87.933  
Elevation(Ground): 658 ft. above sea level

Date	Temperature (Fahrenheit)			Degree Days Base 65 Degrees			Sun		Significant Weather	Snow/ice on Ground(In)			Precipitation		Pressure(Inches of Hg)		Wind: Speed=mph Dir=degrees of degrees		max 2-minute		Dir
	Max.	Min.	Avg.	Heating	Cooling	Sunrise LST	Sunset LST	1200 UTC		1800 UTC	2400 UTC	Water Equiv	Snow	Ice	Avg. Station	Avg. Sea Level	Resultant Speed	Residual Dir	Speed	Dir	
01	91	68	80	8	15	0420	1931	0	M	0.0	T	29.23	19	20	21	22	23	24	25	26	27
02	98	71	85	0	20	0420	1931	0	M	0.0	0.00	29.21	19	20	21	22	23	24	25	26	27
03	96	77	87	0	22	0421	1931	0	M	0.0	0.00	29.13	19	20	21	22	23	24	25	26	27
04	102	79	91	0	26	0422	1930	0	M	0.0	0.00	29.15	19	20	21	22	23	24	25	26	27
05	103	79	91	0	26	0422	1930	0	M	0.0	0.28	29.20	19	20	21	22	23	24	25	26	27
06	103*	82	93*	0	28	0423	1930	0	M	0.0	0.00	29.21	19	20	21	22	23	24	25	26	27
07	98	73	86	0	21	0423	1930	0	M	0.0	0.00	29.26	19	20	21	22	23	24	25	26	27
08	85	68	77	0	12	0424	1929	0	M	0.0	0.00	29.34	19	20	21	22	23	24	25	26	27
09	91	66	79	0	14	0425	1929	0	M	0.0	0.00	29.33	19	20	21	22	23	24	25	26	27
10	83	67	75	0	10	0425	1929	0	M	0.0	0.00	29.39	19	20	21	22	23	24	25	26	27
11	87	64	76	0	11	0426	1928	0	M	0.0	0.00	29.39	19	20	21	22	23	24	25	26	27
12	91	66	79	0	14	0427	1928	0	M	0.0	0.00	29.35	19	20	21	22	23	24	25	26	27
13	93	70	82	0	17	0428	1927	0	M	0.0	0.28	29.31	19	20	21	22	23	24	25	26	27
14	90	70	80	0	15	0428	1927	0	M	0.0	T	29.30	19	20	21	22	23	24	25	26	27
15	95	71	83	0	18	0429	1926	0	M	0.0	0.00	29.29	19	20	21	22	23	24	25	26	27
16	97	72	85	0	20	0430	1925	0	M	0.0	0.00	29.19	19	20	21	22	23	24	25	26	27
17	99	79	89	0	24	0431	1925	0	M	0.0	0.00	29.13	19	20	21	22	23	24	25	26	27
18	94	72	83	0	18	0432	1924	0	M	0.0	0.85	29.18	19	20	21	22	23	24	25	26	27
19	83	71	77	0	12	0433	1923	0	M	0.0	0.80	29.30	19	20	21	22	23	24	25	26	27
20	81	68	75	0	10	0433	1923	0	M	0.0	0.00	29.34	19	20	21	22	23	24	25	26	27
21	87	65	76	0	11	0434	1922	0	M	0.0	0.00	29.31	19	20	21	22	23	24	25	26	27
22	89	68	79	0	14	0435	1921	0	M	0.0	T	29.20	19	20	21	22	23	24	25	26	27
23	97	81	89	0	24	0436	1920	0	M	0.0	T	29.20	19	20	21	22	23	24	25	26	27
24	84	69	77	0	12	0437	1919	0	M	0.0	0.34	29.24	19	20	21	22	23	24	25	26	27
25	99	70	85	0	20	0438	1918	0	M	0.0	0.01	28.99	19	20	21	22	23	24	25	26	27
26	89	69	79	0	14	0439	1918	0	M	0.0	0.71	29.00	19	20	21	22	23	24	25	26	27
27	86	66	76	0	11	0440	1917	0	M	0.0	0.03	29.17	19	20	21	22	23	24	25	26	27
28	82	67	75	0	10	0441	1916	0	M	0.0	0.00	29.38	19	20	21	22	23	24	25	26	27
29	85	63*	74*	0	9	0442	1915	0	M	0.0	T	29.31	19	20	21	22	23	24	25	26	27
30	92	69	81	0	16	0443	1914	0	M	0.0	0.00	29.19	19	20	21	22	23	24	25	26	27
31	85	68	77	0	12	0444	1913	0	M	0.0	0.16	29.21	19	20	21	22	23	24	25	26	27
Monthly Averages   Totals----->										M	0.0	3.66	29.24	29.95	0.6	27	8.2	<Monthly Average			
Departure From Normal----->												-0.04									

Degree Days	Monthly	Season to Date	Time
Greatest 24-hr Precipitation:	1.65	Date: 18-19	Sea Level Pressure Date (LST)
Greatest 24-hr Snowfall:	0.0	Date: M	Maximum 30.14 11 0817
Greatest Snow Depth:	0	Date: M	Minimum 29.56 26 0051
Heating: 0	-4	M M	Min Temp <=32: 0
Cooling: 506	223	M M	Min Temp >=10 inch: 9
Number of Days with ----->			Heavy Fog >=1.0 inch : 0
Max Temp >=90: 18			
Max Temp <=32: 0			
Thunderstorms : 8			
* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.			Data Version: VER3

# QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA

(final)

NOAA, National Climatic Data Center

Month: 08/2012

Station Location: CHICAGO O'HARE INTERNATIONAL AIRPORT (94846)

CHICAGO, IL

Lat. 41.995 Lon. -87.933

Elevation(Ground): 658 ft. above sea level

Date	Temperature (Fahrenheit)			Dew Point			Wind			Pressure			Precipitation			Snow/Ice on Ground			Significant Weather	Wind: Speed=mph			Dir		
	Max.	Mfn.	Avg.	Dep From Normal	Avg. Dew pt.	AVB Wet Bulb	Heating	Cooling	Sunrise LST	Sunset LST	1200 UTC	1800 UTC	2400 UTC	LST	LST	LST	Water Equiv	Water		Water	Res Speed	Dir		Avg. Speed	max 5-second Speed
1	2	3	4	5	6	7	8	9	10	11	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
01	90	68	79	6	64	69	0	14	0445	1911	0	M	0.0	0.00	29.19	29.91	1.7	19	3.6	20	21	22	23	24	
02	93	66	80	7	63	69	0	15	0446	1910	0	M	0.0	0.00	29.13	29.85	1.5	11	6.5	19	3.6	24	300	9	
03	95*	71	83*	10	67	72	0	18	0447	1909	0	M	0.0	0.00	29.16	29.86	4.9	07	6.3	20	6.0	23	080	16	
04	93	71	82	9	69	72	0	17	0448	1908	0	M	0.0	0.37	29.15	29.85	3.8	20	6.0	53	290	41	280	04	
05	84	66	75	2	59	66	0	10	0449	1907	0	M	0.0	0.00	29.35	30.04	7.0	31	9.1	25	310	17	300	05	
06	85	62	74	1	56	64	0	9	0450	1906	0	M	0.0	0.00	29.35	30.07	3.2	24	4.3	17	230	13	280	06	
07	92	62	77	4	60	68	0	12	0451	1904	0	M	0.0	0.00	29.21	29.94	7.0	25	8.3	22	290	17	250	07	
08	84	72	78	5	62	68	0	13	0452	1903	0	M	0.0	0.00	29.24	29.96	8.3	05	8.6	26	060	14	060	08	
09	75	63	69	-4	63	65	0	4	0453	1902	0	M	0.0	0.05	29.16	29.88	7.3	04	9.6	24	060	20	020	09	
10	76	61	69	-4	55	60	0	4	0454	1900	0	M	0.0	0.18	29.20	29.91	13.2	36	14.2	41	020	25	360	10	
11	78	56	67	-6	53	59	0	2	0455	1859	0	M	0.0	0.00	29.26	29.97	6.5	35	8.5	24	040	18	340	11	
12	76	55	66	-7	54	60	0	1	0456	1858	0	M	0.0	0.00	29.27	29.99	3.4	22	3.8	15	220	10	220	12	
13	69	60	65	-8	61	63	0	0	0457	1856	0	M	0.0	0.40	29.20	29.96	0.3	02	3.4	16	200	14	210	13	
14	84	56	64	-2	60	64	0	5	0458	1855	0	M	0.0	0.00	29.27	29.99	0.6	06	4.8	18	060	14	070	14	
15	85	65	75	3	60	66	0	10	0459	1854	0	M	0.0	0.00	29.19	29.91	5.7	23	6.3	18	200	14	200	15	
16	76	62	69	-3	61	65	0	4	0500	1852	0	M	0.0	0.39	29.13	29.84	7.0	25	10.7	29	240	23	250	16	
17	76	58	67	-5	51	58	0	2	0501	1851	0	M	0.0	0.00	29.27	29.98	4.9	33	7.4	26	040	14	330	17	
18	77	53	65*	-7	51	58	0	0	0502	1849	0	M	0.0	0.00	29.27	29.98	2.6	14	4.5	25	080	14	090	18	
19	79	60	70	-1	50	58	0	5	0503	1848	0	M	0.0	0.00	29.26	29.98	1.5	07	3.6	21	060	14	050	19	
20	74	58	66	-5	56	60	0	0	0504	1846	0	M	0.0	0.00	29.22	29.94	3.5	05	6.2	17	120	20	120	21	
21	79	53*	66	-5	50	58	0	1	0505	1845	0	M	0.0	0.00	29.35	30.06	2.6	13	4.6	17	100	12	100	21	
22	85	54	70	-1	52	60	0	5	0506	1843	0	M	0.0	0.00	29.35	30.06	5.5	19	5.8	23	160	15	170	22	
23	92	64	78	7	56	64	0	13	0508	1842	0	M	0.0	0.00	29.33	30.04	7.6	18	8.1	21	170	16	170	23	
24	94	64	79	8	57	66	0	14	0509	1840	0	M	0.0	0.00	29.28	29.99	8.2	19	8.8	21	170	16	170	24	
25	93	66	80	10	57	66	0	15	0510	1839	0	M	0.0	0.00	29.29	29.99	7.4	18	7.9	28	170	25	170	25	
26	79	66	73	3	67	68	0	8	0511	1837	0	M	0.0	0.00	29.29	30.01	6.1	18	7.1	26	160	22	170	26	
27	88	66	77	7	61	67	0	12	0512	1835	0	M	0.0	0.00	29.33	30.03	4.6	01	6.0	24	060	20	320	27	
28	86	63	75	5	61	65	0	10	0513	1834	0	M	0.0	0.00	29.37	30.08	3.6	07	5.2	30	060	15	070	28	
29	84	65	75	5	59	65	0	10	0514	1832	0	M	0.0	0.00	29.33	30.05	4.8	13	5.8	17	070	13	090	29	
30	90	64	77	7	59	66	0	12	0515	1831	0	M	0.0	0.00	29.28	29.99	10.2	20	10.5	23	300	20	180	30	
31	92	71	82	13	64	70	0	17	0516	1829	0	M	0.0	0.00	29.32	30.02	4.9	34	10.4	25	050	18	240	31	
											Monthly Averages			Total											
											M	0.0	0.0	2.07	29.26	29.97	0.8	20	7.0	<	Monthly Average				
											Departure From Normal			-2.83											

Degree Days	Monthly	Season to Date	Total Departure	Total Departure
Heating:	0	-9	M	M
Cooling:	263	25	M	M
Greatest 24-hr Precipitation: 0.57 Date: 26 Greatest 24-hr Snowfall: 0.0 Date: M Greatest Snow Depth: 0 Date: M				
Max Temp >=90: 10 Min Temp <=32: 0 Heavy Fog >=1.0 inch: 0 Thunderstorms: 5				

Sea Level Pressure Date (LST)		Time	
Maximum	30.16 06 0754		
Minimum	29.75 04 1428		
Precipitation >=0.1 inch: 8 Precipitation >=1.0 inch: 0 Snowfall >=1.0 inch: 0			
Data Version:			VER3

# QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA

(final)  
 NOAA, National Climatic Data Center  
 Month: 09/2012

Station Location: CHICAGO O'HARE INTERNATIONAL AIRPORT (94846)  
 CHICAGO, IL  
 Lat. 41.995 Lon. -87.933  
 Elevation(Ground): 658 ft. above sea level

Date	Temperature (Fahrenheit)		Avg. Dew pt.	Avg. Wet Bulb	Degree Days Base 65 Degrees		Sun		Significant Weather	Snow/ice on Ground (in) (In)			Precipitation (in) (In)			Pressure (inches of Hg)		Wind: Speed=mph Dir=degrees of degrees			max 2-minute Speed Dir	max 5-second Speed Dir	max 2-minute Speed Dir	
	Max.	Min.			Avg.	From Normal	Heating	Cooling		Sunrise LST	Sunset LST	1200 UTC	1800 UTC	2400 UTC	2400 LST	2400 LST	Avg. Station	Avg. Sea Level	Resultant Speed	Res Dir				Avg. Speed
1	2	3	4	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
01	75	71	73	66	69	0	8	0517	1827	RA	0	M	0.0	T	29.29	30.01	12.1	05	11.9	35	050	20	040	01
02	82	73	78	69	71	0	13	0518	1826		0	M	0.0	T	29.19	29.91	10.4	06	10.7	29	040	17	040	02
03	88	71	80*	70	73	0	15	0519	1824	BR	0	M	0.0	0.00	29.17	M	4.6	06	4.4	20	050	12	060	03
04	90*	66	78	69	72	0	13	0520	1822	TSRA RA BR	0	M	0.0	0.64	29.13	29.86	2.8	07	8.6	47	340	36	320	04
05	86	63	75	64	68	0	10	0521	1821	RA	0	M	0.0	0.16	29.11	29.80	3.3	23	7.1	29	300	20	300	05
06	86	68	77	61	67	0	12	0522	1819	RA	0	M	0.0	0.00	29.18	29.89	3.2	34	6.6	32	260	15	310	06
07	78	59	69	60	64	0	4	0523	1817	RA BR	0	M	0.0	0.06	29.11	29.82	4.7	34	9.6	32	360	26	350	07
08	73	54	64	50	56	1	0	0524	1815	RA	0	M	0.0	0.28	29.14	29.86	9.5	31	11.6	25	290	18	290	08
09	72	55	64	51	56	1	0	0525	1814		0	M	0.0	0.00	29.35	30.04	8.1	35	9.4	30	050	21	340	09
10	75	52	64	50	56	1	0	0526	1812		0	M	0.0	0.00	29.42	30.14	5.9	19	6.5	20	160	14	180	10
11	83	52	68	53	60	0	3	0527	1810		0	M	0.0	0.00	29.38	30.10	11.1	20	11.5	29	200	23	200	11
12	86	63	75	56	63	0	10	0528	1809		0	M	0.0	0.00	29.40	30.11	10.0	21	10.3	25	190	20	200	12
13	71	54	63	53	57	2	0	0529	1807	RA	0	M	0.0	0.19	29.54	30.25	8.7	36	10.0	31	050	17	360	13
14	76	51	64	46	54	1	0	0530	1805		0	M	0.0	0.00	29.57	30.29	6.6	30	7.7	24	260	15	310	14
15	79	50	65	46	55	0	0	0531	1803		0	M	0.0	0.00	29.47	30.21	1.7	17	4.0	14	130	12	140	15
16	77	49	63	47	55	2	0	0532	1760		0	M	0.0	0.00	29.30	30.04	4.7	22	5.0	22	210	16	190	16
17	78	55	67	56	59	0	2	0533	1758	TSRA RA BR	0	M	0.0	0.26	29.10	29.84	4.8	26	9.0	28	010	24	320	17
18	63	47	55	39	47	10	0	0535	1756		0	M	0.0	T	29.21	29.92	11.8	33	12.2	26	340	22	340	18
19	73	41	57	40	50	8	0	0536	1755		0	M	0.0	0.00	29.19	29.93	15.9	20	16.1	39	200	30	200	19
20	72	51	62	39	50	3	0	0537	1753		0	M	0.0	0.00	29.16	29.89	8.4	28	8.9	31	310	22	290	20
21	60	48	54	46	50	11	0	0538	1751	RA	0	M	0.0	0.15	29.13	29.86	1.9	29	6.6	24	030	15	280	21
22	59	44	52	41	46	13	0	0539	1749	RA	0	M	0.0	0.02	29.29	29.99	10.3	29	11.0	33	310	26	300	22
23	61	40	51*	35	40	14	0	0540	1748		0	M	0.0	0.00	29.49	30.21	6.2	20	6.6	21	320	16	320	23
24	70	37*	54	34	46	11	0	0541	1746		0	M	0.0	0.00	29.28	30.05	11.3	23	11.5	26	210	21	210	24
25	77	49	63	52	57	2	0	0542	1744		0	M	0.0	0.00	29.13	29.86	8.6	21	9.1	21	190	17	200	25
26	68	53	61	50	54	4	0	0543	1742		0	M	0.0	0.00	29.34	30.03	9.4	03	9.8	31	050	18	020	26
27	65	46	56	46	51	9	0	0544	1741		0	M	0.0	0.00	29.40	30.16	8.3	36	9.0	28	050	17	030	27
28	67	50	59	48	52	6	0	0545	1739	RA	0	M	0.0	T	29.40	30.13	7.5	01	8.9	29	050	20	020	28
29	79	48	64	46	53	1	0	0546	1737		0	M	0.0	0.00	29.29	30.03	2.4	34	5.9	30	070	16	070	29
30	66	50	58	46	51	7	0	0547	1735		0	M	0.0	0.00	29.23	29.96	7.2	03	8.1	30	060	16	060	30
74.5	53.7	64.1	51.0	56.8	56.8	3.6	3.0	<-----Monthly Averages   Totals----->	<-----Monthly Averages   Totals----->		M	0.0	1.76	1.45	29.28	30.01	2.2	31	8.9	<Monthly Average				
-0.3	-0.6	-0.5						<-----Departure From Normal----->	<-----Departure From Normal----->															

Degree Days	Monthly	Season to Date	Time
Greatest 24-hr Precipitation:	0.64	Date: 04	Sea Level Pressure
Greatest 24-hr Snowfall:	0.0	Date: M	Maximum 30.35
Greatest Snow Depth:	0	Date: M	Minimum 29.72
Heating:	107	M	Min Temp >=01 inch: 8
Cooling:	90	M	Min Temp <=32: 0
	2	M	Min Temp <=0 : 0
	-2	M	Heavy Fog : 0
		M	Thunderstorms : 0
		M	Number of Days with ----->
		M	Max Temp >=90: 1
		M	Max Temp <=32: 0
		M	Thunderstorms : 2

Data Version: VER3

\* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.

# QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA

(final)  
 NOAA, National Climatic Data Center  
 Month: 10/2012

Station Location: CHICAGO O'HARE INTERNATIONAL AIRPORT (94846)  
 CHICAGO, IL  
 Lat. 41.995 Lon. -87.933  
 Elevation(Ground): 658 ft. above sea level

Day	Temperature (Fahrenheit)				Degree Days Base 65 Degrees		Sun		Significant Weather	Snow/Ice on Ground (in)				Pressure (inches of Hg)			Wind: Speed-mph			Dir					
	Max.	Min.	Avg.	Dep From Normal	Avg. Dew pt.	Avg. Wet Bulb	Heating	Cooling		Sunrise LST	Sunset LST	1200 UTC		2400 UTC		Avg. Station	Avg. Sea Level	Residual Speed	Dir		Avg. Speed				
												Depth	Water Equiv	Snow	Ice							Dir	Speed	Dir	Speed
01	66	47	57	-1	46	52	8	0	0548	1734	0	0	0	0	29.13	29.87	19	20	21	22	23	24	25	26	
02	69	53	61	4	50	55	4	0	0549	1732	0	0	0	0	29.15	29.86	3	06	4.8	16	050	13	060	01	
03	63	59	61	4	59	60	4	0	0550	1730	0	0	0	0	29.23	29.94	2	03	4.8	30	050	18	050	02	
04	77	48	63	6	52	56	2	0	0552	1729	0	0	0	0	29.31	29.94	0	02	4.8	13	070	10	220	03	
05	50	39	45	-12	31	40	20	0	0553	1727	0	0	0	0	29.36	30.09	10	01	10.1	24	11.7	30	230	04	
06	50	34	42	-14	28	37	23	0	0554	1725	0	0	0	0	29.41	30.13	8	04	28	26	280	22	280	05	
07	51	36	44	-12	34	36	21	0	0555	1724	0	0	0	0	29.41	30.14	9	05	30	9	M	M	M	18	
08	60	32*	46	-10	29	40	19	0	0556	1722	0	0	0	0	29.32	30.07	6	1	28	29	290	16	310	06	
09	65	42	54	-1	38	45	11	0	0557	1720	0	0	0	0	29.15	29.90	13	1	22	16.7	36	200	27	220	09
10	51	35	43	-12	31	38	22	0	0558	1719	0	0	0	0	29.36	30.08	12	1	28	12.7	28	280	21	300	10
11	67	35	51	-3	35	44	14	0	0559	1717	0	0	0	0	29.40	30.11	9	0	23	15.0	32	230	26	230	11
12	53	37	45	-9	32	42	20	0	0600	1715	0	0	0	0	29.61	30.35	6	1	07	10.6	20	060	17	360	12
13	67	44	56	3	52	54	9	0	0602	1714	0	0	0	0	29.18	29.95	11	9	20	12.6	28	200	20	210	13
14	71	48	60	7	55	57	5	0	0603	1712	0	0	0	0	29.89	29.62	10	8	20	15.6	45	210	32	320	14
15	60	41	51	-2	41	46	14	0	0604	1711	0	0	0	0	29.21	29.89	5	4	32	9.0	24	330	17	330	15
16	70	40	55	3	45	51	10	0	0605	1709	0	0	0	0	28.97	29.72	14	0	18	14.4	35	170	30	180	16
17	68	54	61	9	52	56	4	0	0606	1707	0	0	0	0	28.71	29.45	15	6	19	17.7	36	150	29	160	17
18	54	45	50	-1	41	45	15	0	0607	1706	0	0	0	0	28.71	29.43	13	7	22	15.1	35	200	25	200	18
19	52	43	48	-3	43	45	17	0	0608	1704	0	0	0	0	28.81	29.51	4	2	26	7.0	17	170	14	170	19
20	59	39	49	-1	40	44	16	0	0610	1703	0	0	0	0	29.10	29.80	6	9	27	7.2	20	290	14	260	20
21	68	37	53	3	45	49	12	0	0611	1701	0	0	0	0	29.25	29.97	6	2	16	6.5	17	150	13	160	21
22	65	49	57	7	56	57	8	0	0612	1660	0	0	0	0	29.18	29.92	4	0	20	6.5	24	120	21	110	22
23	70	57	64	15	60	61	1	0	0613	1658	0	0	0	0	29.18	29.90	4	4	16	7.0	18	190	14	190	23
24	78*	58	68*	19	62	65	0	3	0614	1657	0	0	0	0	29.15	29.88	11	5	19	11.2	28	200	21	200	24
25	75	45	60	12	56	59	5	0	0616	1656	0	0	0	0	29.11	29.81	11	8	22	17.6	39	210	24	320	25
26	51	37	44	-4	30	39	21	0	0617	1654	0	0	0	0	29.54	30.25	8	9	34	9.7	31	320	24	320	26
27	48	34	41*	-7	27	36	24	0	0618	1653	0	0	0	0	29.54	30.28	9	6	36	10.5	29	040	17	340	27
28	49	38	44	-3	30	38	21	0	0619	1651	0	0	0	0	29.52	30.27	12	8	01	13.6	31	050	25	020	28
29	51	36	44	-3	30	38	21	0	0620	1650	0	0	0	0	29.43	30.20	14	3	36	15.0	40	030	24	010	29
30	48	39	44	-2	26	36	21	0	0622	1649	0	0	0	0	29.08	29.85	19	4	35	18.5	45	360	29	350	30
31	50	34	42	-4	26	35	23	0	0623	1647	0	0	0	0	29.09	29.83	13	5	33	13.8	26	330	21	340	31
										Monthly Averages   Totals															
										M. 0.0 3.15 29.21 29.94 3.6 26 11.4 <Monthly Average															
										-1.8 -0.4 -1.0															

Degree Days	Monthly	Season to Date	Total Departure	Season to Date	Total Departure
Heating:	415	18	M	M	M
Cooling:	3	-8	M	M	M
Greatest 24-hr Precipitation: 0.81 Date: 22					
Greatest 24-hr Snowfall: 0.0 Date: M					
Greatest Snow Depth: 0 Date: M					
Number of Days with ----->					
Max Temp >=90: 0 Min Temp <=32: 1					
Max Temp <=32: 0 Min Temp <=0 : 0					
Thunderstorms : 2 Heavy Fog : 0					
Precipitation >= .01 inch: 12					
Precipitation >= .10 inch: 1					
Snowfall >= 1.0 inch : 0					

\* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.

Sea Level Pressure Date (LST)  
 Maximum 30.44 12 1051  
 Minimum 29.25 17 2053

Data Version: VER3

# QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA

(final)  
NOAA, National Climatic Data Center  
Month: 11/2012

Station Location: CHICAGO O'HARE INTERNATIONAL AIRPORT (94846)  
CHICAGO, IL  
Lat. 41.995 Lon. -87.933  
Elevation(Ground): 658 ft. above sea level

Day of Month	Temperature (Fahrenheit)			Degree Days Base 65 Degrees		Sun		Significant Weather	Snow/ice on Ground (In)			Precipitation (In)		Pressure (inches of Hg)		Wind: Speed (mph) Direction of degrees		Day of Year																													
	Max.	Min.	Avg.	Dep From Normal	Avg. Dew pt.	Avg. Wet Bulb	Heating		Cooling	Sunrise LST	Sunset LST	1200 UTC	1800 UTC	2400 UTC	LST	LST	Avg. Station		Avg. Sea Level	Resultant Speed	Res. Dir																										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26																						
01	34	34	44	-1	24	36	21	0	0624	1646		0	M	0.0	0.00	29.13	29.86	8.4	32	9.2	21	360	17	360	01																						
02	48	34	41	-4	29	36	24	0	0625	1645		0	M	0.0	0.00	29.36	30.06	6.4	01	8.1	22	030	16	360	02																						
03	45	36	41	-4	33	38	24	0	0626	1644	RA	0	M	0.0	T	29.45	30.18	5.7	03	6.9	25	060	14	020	03																						
04	48	32	40	-4	30	36	25	0	0628	1642		0	M	0.0	0.00	29.46	30.21	4.6	36	6.0	23	050	13	050	04																						
05	44	32	38	-6	30	36	27	0	0629	1641		0	M	0.0	0.00	29.42	30.17	3.1	06	5.6	21	060	13	100	05																						
06	42	29	36	-7	33	36	29	0	0630	1640		0	M	0.0	0.13	29.21	29.98	6.5	18	6.8	15	180	13	170	06																						
07	47	40	44	1	38	41	21	0	0631	1639	RA BR HZ	0	M	0.0	0.03	29.34	30.06	3.0	06	3.8	17	220	8	060	07																						
08	45	35	40	-2	36	39	25	0	0633	1638	BR HZ	0	M	0.0	0.00	29.41	30.14	5.8	21	6.7	20	220	15	200	08																						
09	56	33	45	3	40	43	20	0	0634	1637	BR HZ	0	M	0.0	0.00	29.29	30.04	3.4	14	5.1	12	150	9	150	09																						
10	66	50	58*	16	50	53	7	0	0635	1636	TSRA HZ	0	M	0.0	0.22	29.19	29.93	11.7	18	11.8	36	200	28	190	10																						
11	70*	40	55	14	50	53	10	0	0636	1635	RA BR	0	M	0.0	0.29	29.14	29.85	18.0	20	19.9	58	180	40	190	11																						
12	40	29	35	-6	24	30	30	0	0638	1634	RA SN	0	M	T		29.44	30.13	18.8	26	19.2	32	260	24	270	12																						
13	41	24	33	-7	21	28	32	0	0639	1633		0	M	0.0	0.00	29.72	30.44	6.0	25	7.7	17	300	17	300	13																						
14	45	29	37	-3	24	32	28	0	0640	1632		0	M	0.0	0.00	29.69	30.45	9.5	19	9.7	13	180	13	180	14																						
15	48	30	39	-1	27	33	26	0	0641	1631		0	M	0.0	0.00	29.61	30.37	5.1	20	5.3	10	200	9	200	15																						
16	54	27	41	2	31	37	24	0	0642	1630		0	M	0.0	0.00	29.70	30.44	0.7	07	1.4	16	040	10	040	16																						
17	55	26	41	2	31	37	24	0	0644	1629	BR HZ	0	M	0.0	0.00	29.73	30.49	4.0	16	4.2	14	140	12	140	17																						
18	57	31	44	6	32	38	21	0	0645	1629	BR HZ	0	M	0.0	0.00	29.62	30.39	4.9	15	5.0	12	130	10	130	18																						
19	59	36	48	10	37	43	17	0	0646	1628		0	M	0.0	0.01	29.44	30.21	6.7	18	7.0	18	200	15	190	19																						
20	58	40	49	12	43	46	16	0	0647	1627	BR HZ	0	M	0.0	0.00	29.39	30.11	1.2	33	3.5	23	060	12	340	20																						
21	54	34	44	7	42	44	21	0	0648	1626	FG+FG BR HZ	0	M	0.0	0.00	29.41	30.16	6.0	21	6.1	22	210	15	210	21																						
22	63	42	53	16	45	49	12	0	0650	1625	RA BR	0	M	0.0	0.27	29.16	29.90	15.3	21	17.2	38	190	31	270	22																						
23	42	28	35	-1	22	29	30	0	0651	1625	SN	0	M	T		29.34	30.06	19.0	29	19.6	38	290	30	270	23																						
24	32	24	28	-8	18	26	37	0	0652	1625		0	M	0.0	0.00	29.39	30.15	4.6	27	9.9	20	340	15	210	24																						
25	43	29	36	1	23	31	29	0	0653	1624		0	M	0.0	0.00	29.20	29.94	6.1	26	8.9	17	210	17	210	25																						
26	36	23	30	-5	17	26	35	0	0654	1623		0	M	0.0	0.00	29.52	30.24	9.0	35	9.1	18	350	15	340	26																						
27	33	17*	25*	-9	11	22	40	0	0655	1623		0	M	0.0	0.00	29.56	30.32	5.6	26	7.5	20	230	14	250	27																						
28	44	27	36	2	20	29	29	0	0657	1623		0	M	0.0	0.00	29.56	30.32	7.1	25	8.1	17	260	14	250	28																						
29	51	33	42	8	29	37	23	0	0658	1622		0	M	0.0	0.00	29.41	30.17	8.6	19	9.1	18	180	14	170	29																						
30	51	36	44	11	34	39	21	0	0659	1622	BR HZ	0	M	0.0	0.00	29.36	30.10	2.8	07	4.9	21	030	13	040	30																						
																		Monthly Averages		Totals		----->																									
																		M	T	0.95													29.42	30.16	3.4	23	8.4									<Monthly Average	
																		Departure From Normal		----->																											

Degree Days	Monthly	Season to Date	Total Departure	Total Departure
Heating:	728	-13	M	M
Cooling:	0	0	M	M
Number of Days with ----->				
Max Temp >=90: 0				
Max Temp <=32: 16				
Min Temp <=0: 0				
Heavy Fog : 1				
Thunderstorms : 1				
Precipitation >=0.1 inch: 6				
Precipitation >=1.0 inch: 0				
Snowfall >=1.0 inch : 0				
Data Version: VER3				

\* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.

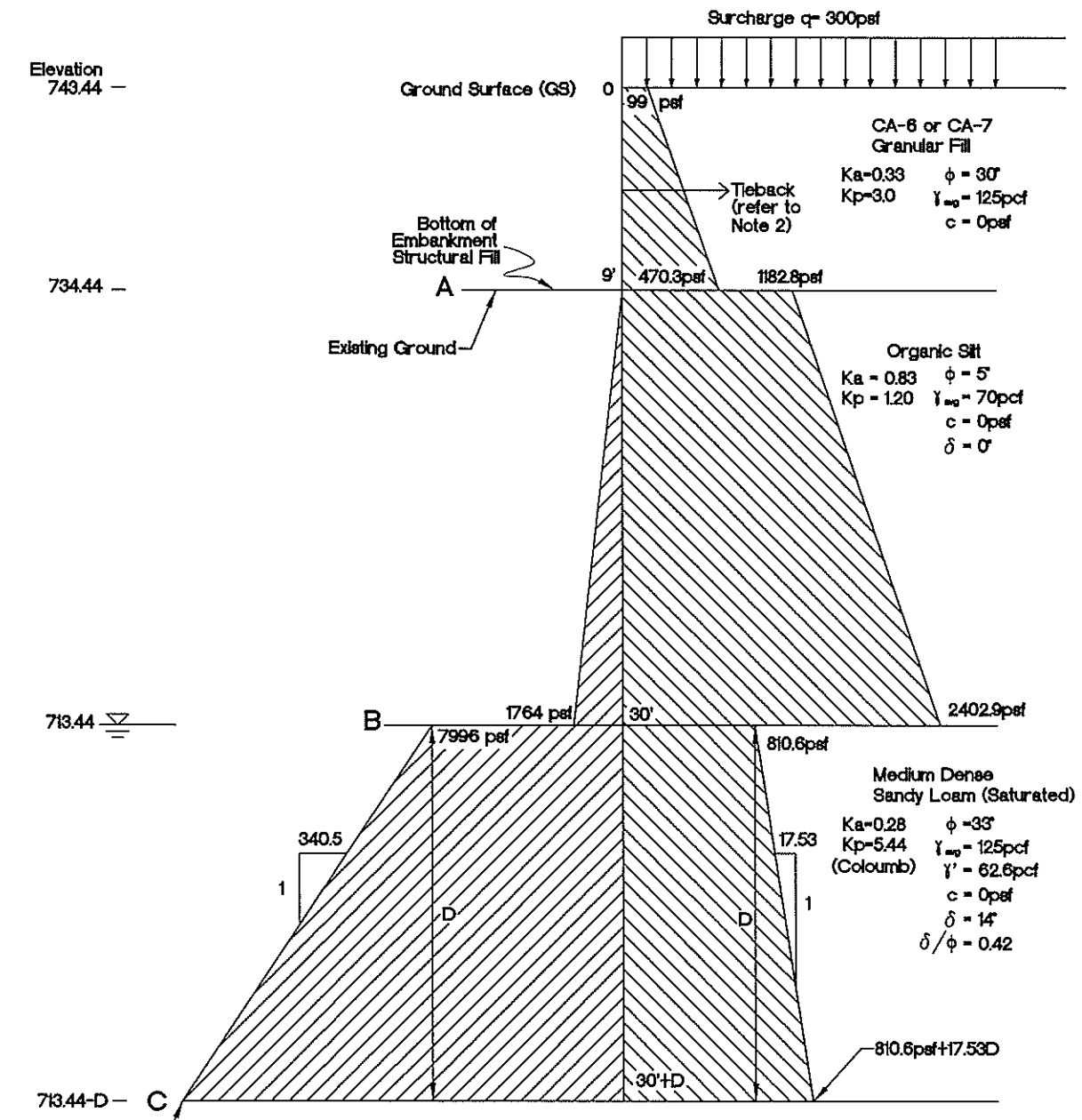
# APPENDIX 11






# APPENDIX 12

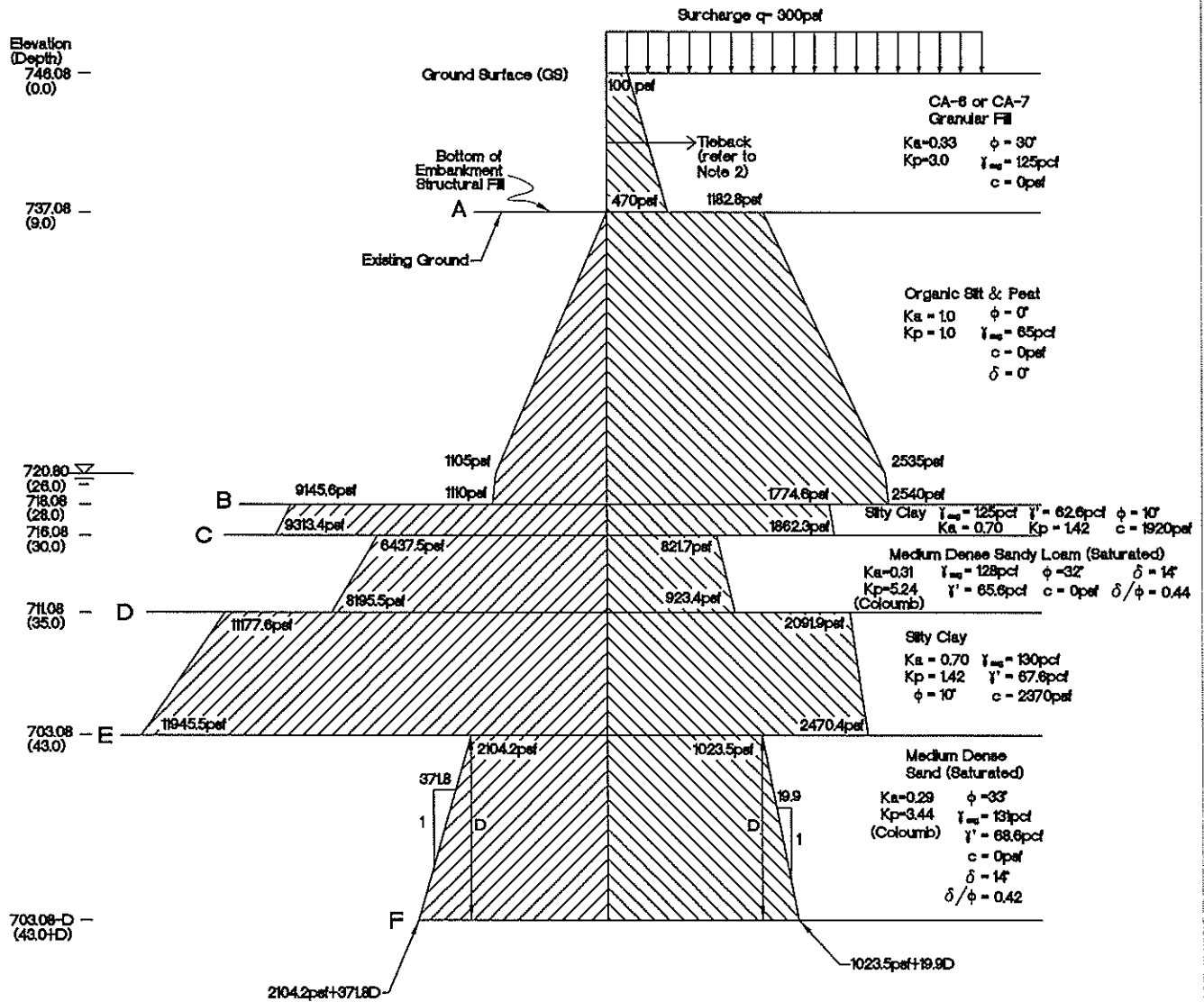
Section Through Boring B-4A End of Construction Case (Anchored Sheet Pile Wall)




- Note:
- 1) Pressures are in psf/ft of sheetpile wall.
  - 2) Depth, Length, Spacing and Total number of proposed tiebacks in granular embankment fill will be determined in final design by the Project Structural Engineer
  - 3) Depth of sheet piling will be determined in final design by the Project Structural Engineer
  - 4) Depth of Embedment D (ft), into medium dense sandy loam (Saturated) will be determined in final design by the Project Structural Engineer
  - 5) Live Load Traffic Surcharge Effects are included in the values of active resistance side of the earth pressure diagram and are not included in the values of passive resistance of the earth pressure diagram

DRAWN BY SFO	APPROVED VM	DATE 01/25/13	APPARENT EARTH PRESSURE DIAGRAM FOR AN ANCHORED SHEET PILE WALL WITH CA-6 OR CA-7 FILL END OF CONSTRUCTION CASE
SCALE N.T.S.	FIGURE 12A	JOB NO. 9337G-1	CLIENT ILLINOIS DEPARTMENT OF TRANSPORTATION
 <b>SEECO Consultants, Inc.</b> 7350 Duwan Drive, Tinley Park, Illinois 60477		PROJECT NAME & LOCATION PROPOSED IMPROVEMENTS ROBERTS ROAD AND RIVER ROAD INTERSECTION LAKE COUNTY, ILLINOIS (07-00086-08-CH)	

Section Through Boring B-11A End of Construction Case (Anchored Sheet Pile Wall)

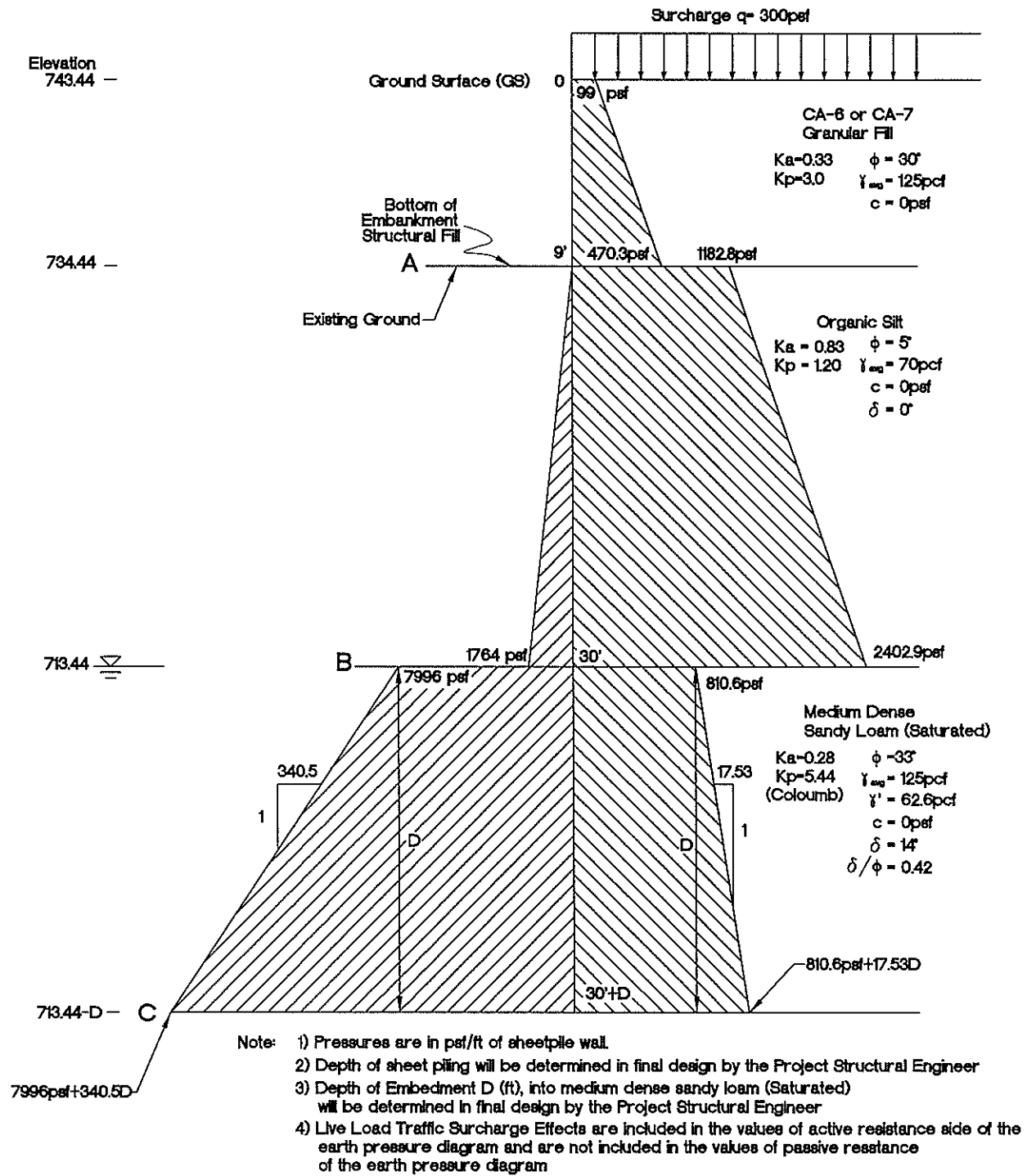


- Note:
- 1) Pressures are in pcf/ft of sheetpile wall.
  - 2) Depth, Length, Spacing and Total number of proposed tiebacks in granular embankment fill will be determined in final design by the Project Structural Engineer
  - 3) Depth of sheet piling will be determined in final design by the Project Structural Engineer
  - 4) Depth of Embedment D (ft), into medium dense sandy loam (Saturated) will be determined in final design by the Project Structural Engineer
  - 5) Live Load Traffic Surcharge Effects are included in the values of active resistance side of the earth pressure diagram and are not included in the values of passive resistance of the earth pressure diagram

DRAWN BY SFO	APPROVED VM	DATE 01/25/13	APPARENT EARTH PRESSURE DIAGRAM FOR AN ANCHORED SHEET PILE WALL WITH CA-6 OR CA-7 FILL END OF CONSTRUCTION CASE
SCALE N.T.S.	FIGURE 12B	JOB NO. 9337G-1	CLIENT BOLLINGER LACH & ASSOCIATES-LAKE COUNTY HIGHWAY DEPT.
 <b>SEECO Consultants, Inc.</b> 7350 Duwan Drive, Tinley Park, Illinois 60477		PROJECT NAME & LOCATION PROPOSED IMPROVEMENTS ROBERTS ROAD AND RIVER ROAD INTERSECTION LAKE COUNTY, ILLINOIS (07-00086-08-CH)	


# **APPENDIX 13**

Section Through Boring B-4A End of Construction Case (Cantilever Sheet Pile Wall)

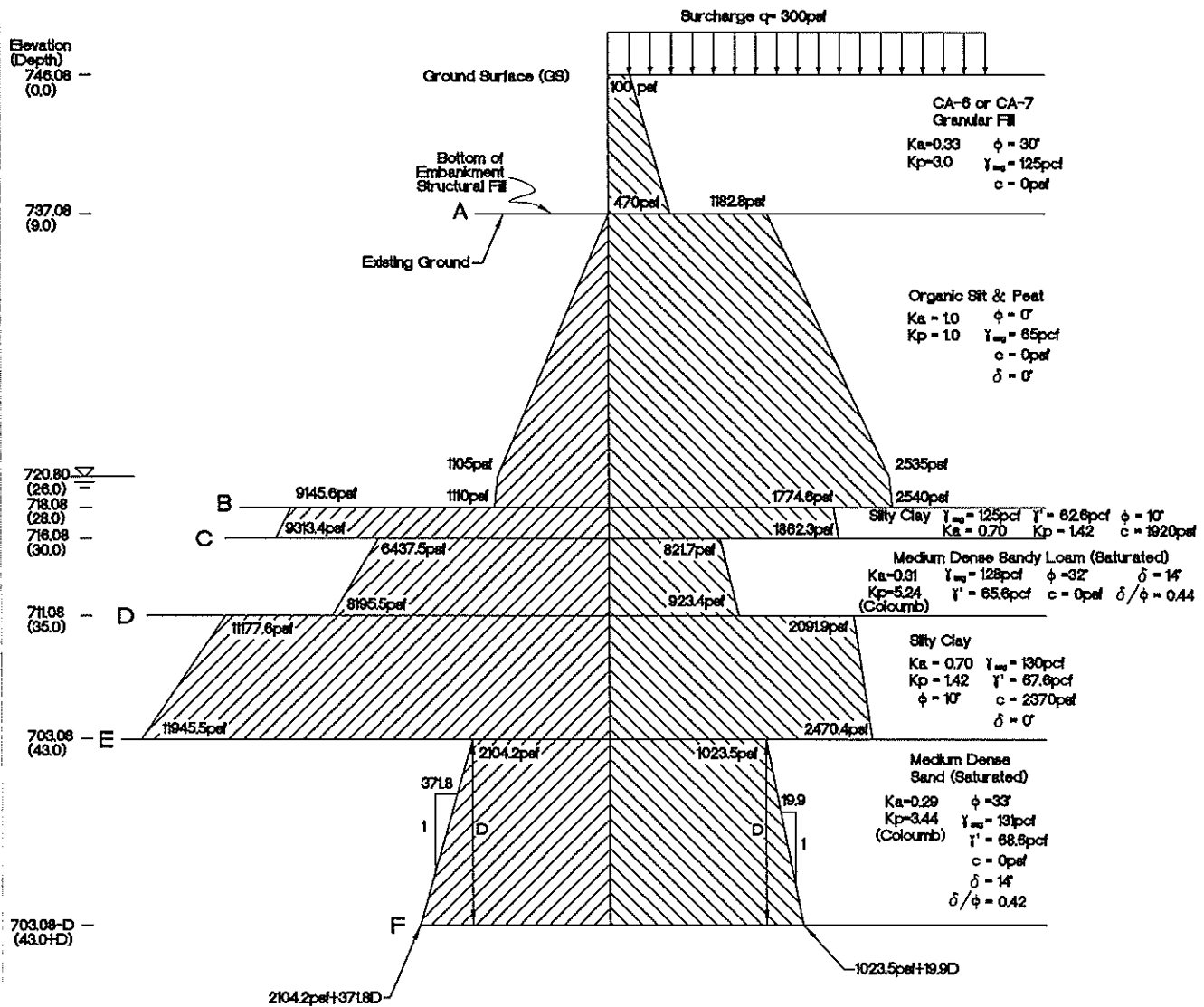


DRAWN BY SFO	APPROVED VM	DATE 01/25/13	APPARENT EARTH PRESSURE DIAGRAM FOR A CANTILEVERED SHEET PILE WALL WITH CA-6 OR CA-7 FILL END OF CONSTRUCTION CASE
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SCALE N.T.S.	FIGURE 13A	JOB NO. 9337G-1	CLIENT BOLLINGER LACH & ASSOCIATES-LAKE COUNTY HIGHWAY DEPT.
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 <b>SEECO Consultants, Inc.</b> 7350 Duwan Drive, Tinley Park, Illinois 60477	PROJECT NAME & LOCATION PROPOSED IMPROVEMENTS ROBERTS ROAD AND RIVER ROAD INTERSECTION LAKE COUNTY, ILLINOIS (07-00086-08-CH)
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Section Through Boring B-11A End of Construction Case (Cantilevered Sheet Pile Wall)



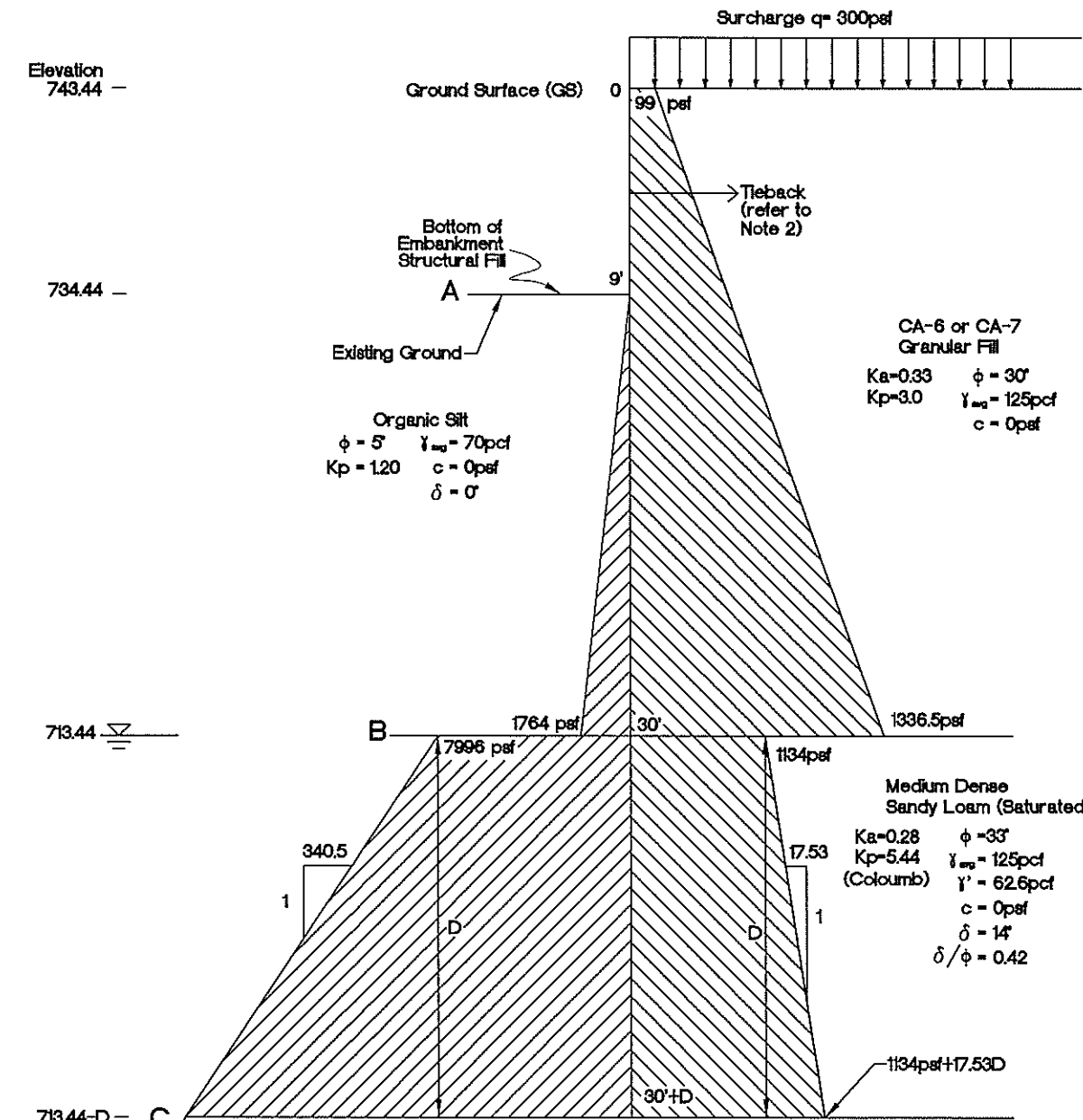
- Note:
- 1) Pressures are in psf/ft of sheetpile wall
  - 2) Depth of sheet piling will be determined in final design by the Project Structural Engineer
  - 3) Depth of Embedment D (ft), into medium dense sandy loam (Saturated) will be determined in final design by the Project Structural Engineer
  - 4) Live Load Traffic Surcharge Effects are included in the values of active resistance side of the earth pressure diagram and are not included in the values of passive resistance of the earth pressure diagram

DRAWN BY SFO	APPROVED VM	DATE 01/25/13	APPARENT EARTH PRESSURE DIAGRAM FOR A CANTILEVERED SHEET PILE WALL WITH CA-6 OR CA-7 FILL END OF CONSTRUCTION CASE
SCALE N.T.S.	FIGURE 13B	JOB NO. 9337G-1	CLIENT BOLLINGER LACH & ASSOCIATES-LAKE COUNTY HIGHWAY DEPT.
 SEECO Consultants, Inc. 7360 Duwan Drive, Tinley Park, Illinois 60477		PROJECT NAME & LOCATION PROPOSED IMPROVEMENTS ROBERTS ROAD AND RIVER ROAD INTERSECTION LAKE COUNTY, ILLINOIS (07-00086-08-CH)	


# APPENDIX 14



Section Through Boring B-4A End of Construction Case (Anchored Sheet Pile Wall)  
 Remove Organics from within Sheet Piling and Replace with CA-6 of CA-7 Granular Fill

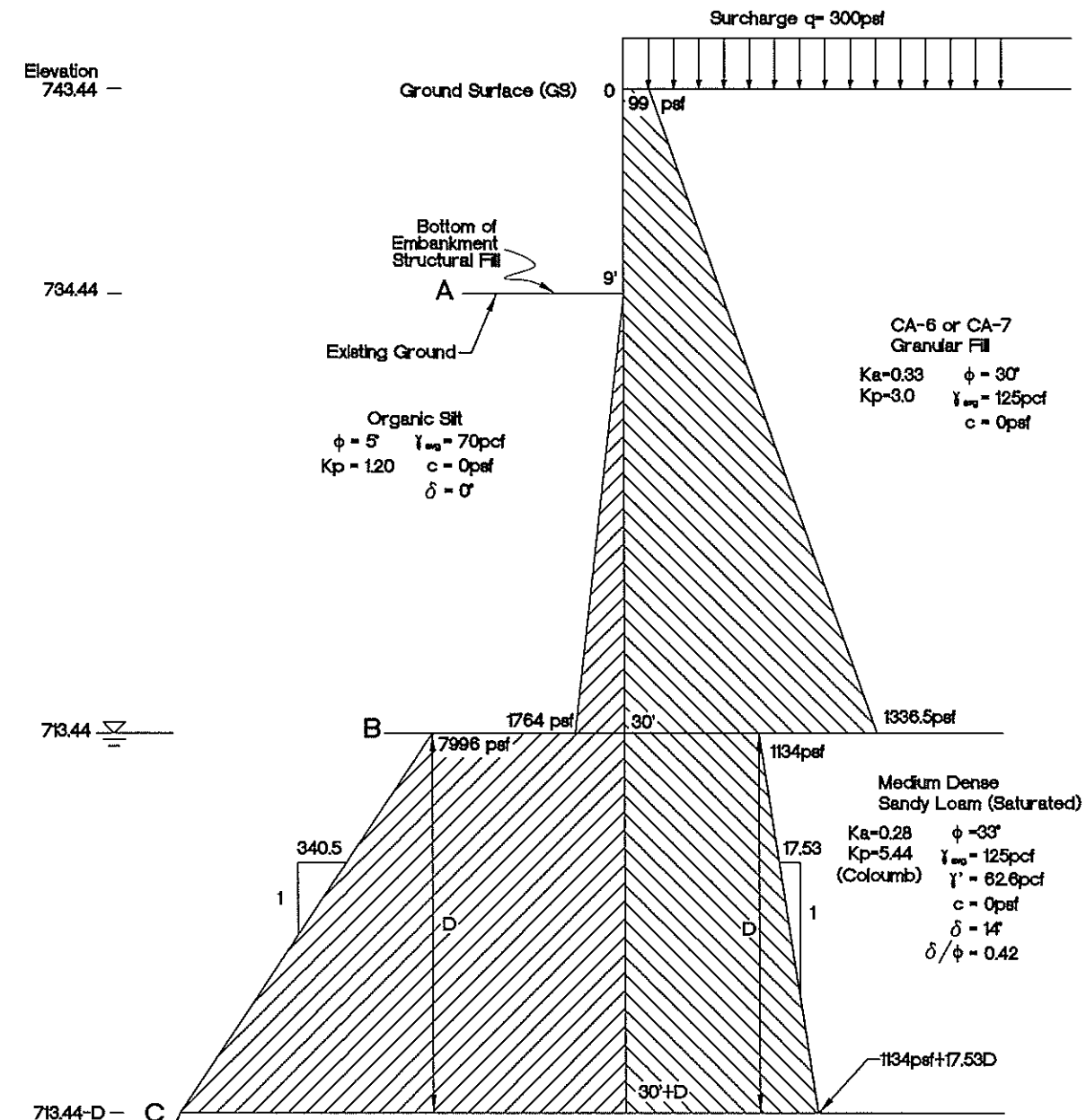


- Note: 1) Pressures are in psf/ft of sheetpile wall.  
 2) Depth, Length, Spacing and Total number of proposed tiebacks in granular embankment fill will be determined in final design by the Project Structural Engineer  
 3) Depth of sheet piling will be determined in final design by the Project Structural Engineer  
 4) Depth of Embedment D (ft), into medium dense sandy loam (Saturated) will be determined in final design by the Project Structural Engineer  
 5) Live Load Traffic Surcharge Effects are included in the values of active resistance side of the earth pressure diagram and are not included in the values of passive resistance of the earth pressure diagram

DRAWN BY SFO	APPROVED VM	DATE 01/25/13	APPARENT EARTH PRESSURE DIAGRAM FOR AN ANCHORED SHEET PILE WALL WITH CA-6 OR CA-7 FILL END OF CONSTRUCTION CASE REMOVE ORGANICS FROM WITHIN SHEET PILING AND REPLACE WITH CA-6 OR CA-7 GRANULAR FILL
SCALE N.T.S.	FIGURE 14	JOB NO. 9337G-1	CLIENT BOLLINGER LACH & ASSOCIATES-LAKE COUNTY HIGHWAY DEPT.
 SEECO Consultants, Inc. 7350 Duwan Drive, Tinley Park, Illinois 60477		PROJECT NAME & LOCATION PROPOSED IMPROVEMENTS ROBERTS ROAD AND RIVER ROAD INTERSECTION LAKE COUNTY, ILLINOIS (07-00086-08-CH)	

# APPENDIX 15

Section Through Boring B-4A End of Construction Case (Cantilevered Sheet Pile Wall)  
 Remove Organics from within Sheet Piling and Replace with CA-6 or CA-7 Granular Fill

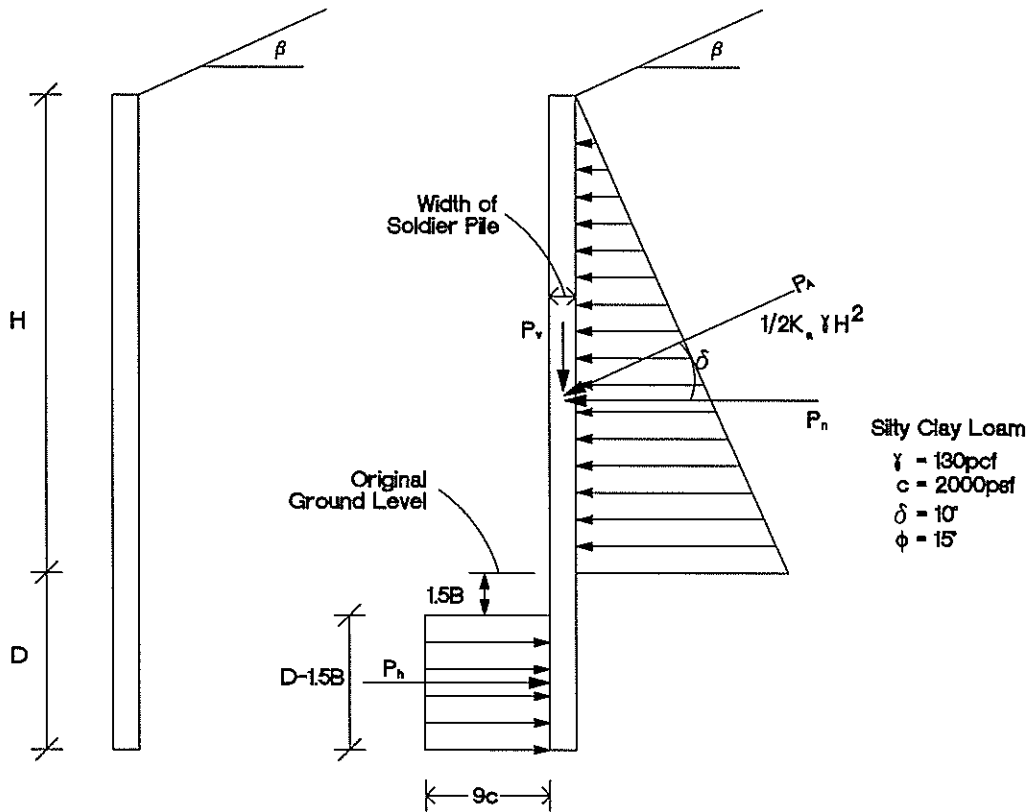


- Note:
- 1) Pressures are in psf/ft of sheetpile wall.
  - 2) Depth of sheet piling will be determined in final design by the Project Structural Engineer
  - 3) Depth of Embedment D (ft), into medium dense sandy loam (Saturated) will be determined in final design by the Project Structural Engineer
  - 4) Live Load Traffic Surcharge Effects are included in the values of active resistance side of the earth pressure diagram and are not included in the values of passive resistance of the earth pressure diagram

DRAWN BY SFO	APPROVED VM	DATE 01/25/13	APPARENT EARTH PRESSURE DIAGRAM FOR AN CANTILEVERED SHEET PILE WALL WITH CA-6 OR CA-7 FILL END OF CONSTRUCTION CASE REMOVE ORGANICS FROM WITHIN SHEET PILING AND REPLACE WITH CA-6 OR CA-7 GRANULAR FILL
SCALE N.T.S.	FIGURE 15	JOB NO. 9337G-1	CLIENT BOLLINGER LACH & ASSOCIATES-LAKE COUNTY HIGHWAY DEPT.
SEECO Consultants, Inc. 7350 Duwan Drive, Tinley Park, Illinois 60477		PROJECT NAME & LOCATION PROPOSED IMPROVEMENTS ROBERTS ROAD AND RIVER ROAD INTERSECTION LAKE COUNTY, ILLINOIS (07-00086-08-CH)	

# APPENDIX 16

## Design of Soldier Pile Wall with Concrete Panels Between Borings B-9A and B-10A



Active Earth pressure on the Soldier Pile =  $\frac{1}{2}K_a \gamma H^2$

$$P_h = 9c(D-1.5B) + 3B$$

$$P_n = P_a \cos \delta$$

$P_h$  = Lateral Passive Resistance

$$P_v = P_a \sin \delta$$

$K_a$  = Earth Pressure Coefficient  $r$

$\gamma = 130\text{pcf}$


$H$  = Height of Wall (feet)

$B$  = Diameter of Concrete Encasement of Soldier Pile (feet) or Depth of HP Pile Web if driven pile

$\delta$  = angle of wall friction between soldier piles and retained soil

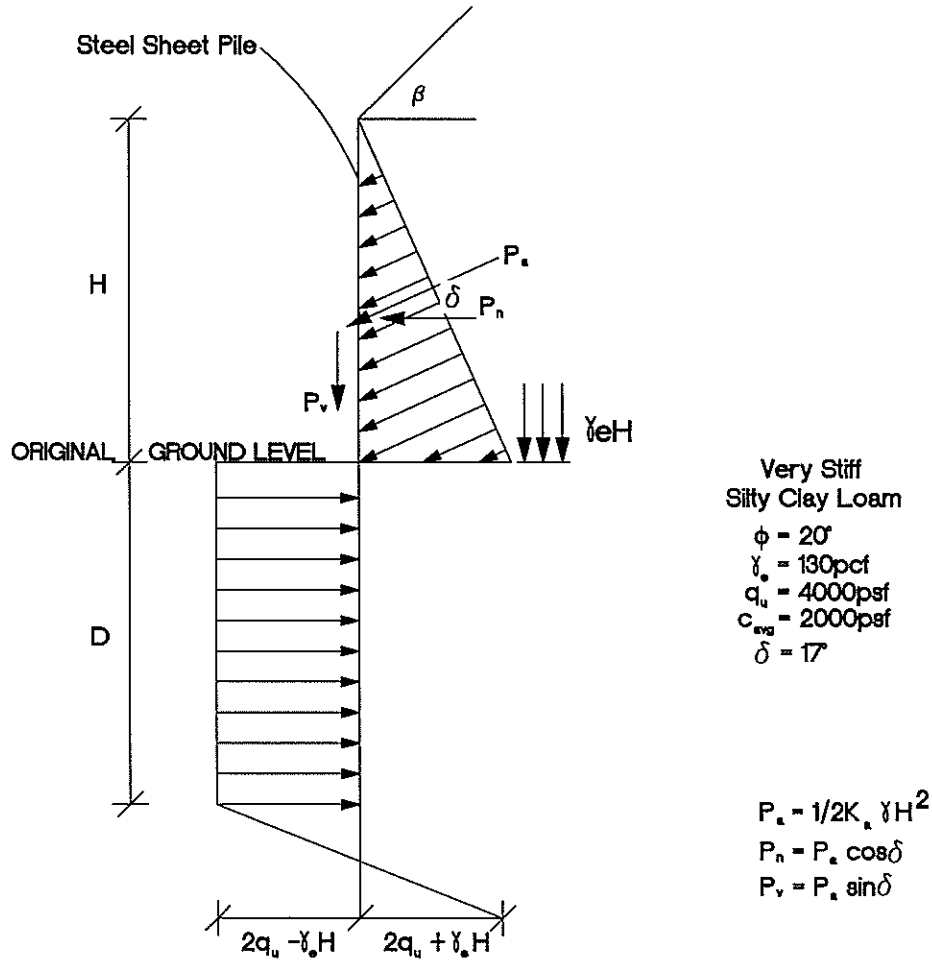
A factor of safety of 2.0 is recommended to determine the depth of soldier piles

Value of  $K_a$  is obtained from the enclosed chart for Active and Passive Coefficients with wall Friction for a Sloping Backfill -Coulomb's Equation

DRAWN BY SFO	APPROVED VM	DATE 01/25/13	DESIGN OF SOLDIER PILE WALL WITH WOOD LAGGING
SCALE N.T.S.	FIGURE 16	JOB NO. 9337G-1	CLIENT BOLLINGER LACH & ASSOCIATES-LAKE COUNTY HIGHWAY DEPT.
 <b>SEECO Consultants, Inc.</b> 7350 Duwan Drive, Tinley Park, Illinois 60477			PROJECT NAME & LOCATION PROPOSED IMPROVEMENTS ROBERTS ROAD AND RIVER ROAD INTERSECTION LAKE COUNTY, ILLINOIS (07-00086-08-CH)

# **APPENDIX 17**

## Apparent Earth Pressure Diagram for Permanent Steel Sheet Pile Design in the Vicinity of Boring B-9A and B-10A



Value of  $K_a$  is obtained from the enclosed chart for Active and Passive Coefficients with wall Friction for a Sloping Backfill - Coloumb's Equation

$\beta$  = slope angle of backfill in degrees

$\phi$  value is assumed to be  $15^\circ$  for long term construction for these permanent steel sheet piles

$\delta$  = angle of wall friction in degrees

The depth of sheet pile embedment is computed based on the ratio of resisting moment to the driving moment utilizing a factor of safety of 1.5.

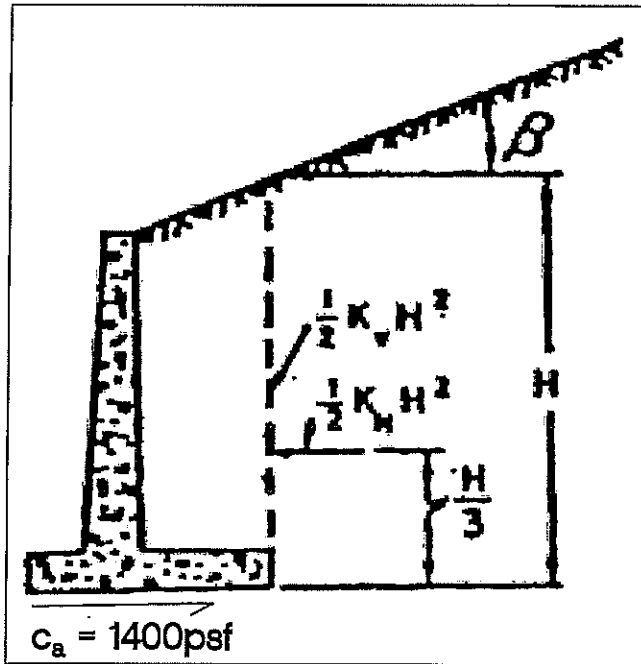
$\gamma_e H$  = vertical total pressure (psf) due to backfill or retained soil

DRAWN BY SFO	APPROVED AR	DATE 01/25/13	APPARENT EARTH PRESSURE DIAGRAM FOR PERMANENT STEEL SHEET PILE DESIGN IN THE VICINITY OF BORING B-9A AND B-10A
SCALE N.T.S.	FIGURE 17	JOB NO. 9337G-1	CLIENT BOLLINGER LACH & ASSOCIATES-LAKE COUNTY HIGHWAY DEPT.
<b>SEECO Consultants, Inc.</b> 7350 Duwan Drive, Tinley Park, Illinois 60477			PROJECT NAME & LOCATION PROPOSED IMPROVEMENTS ROBERTS ROAD AND RIVER ROAD INTERSECTION LAKE COUNTY, ILLINOIS (07-00086-08-CH)

# APPENDIX 18



**Design Loads for Short Retaining Wall  
Between Borings B-9A and B-10A**



Maximum Height of Wall  
 $H = 8$  Feet

Very Stiff Brown and Gray  
Silty Sandy Loam  
Soil Type - 3

Refer to the enclosed drawings  
for Design Loads for  
straight slope backfill and  
broken slope backfill

**Typical Values for Very Stiff Silty Clay Soils**

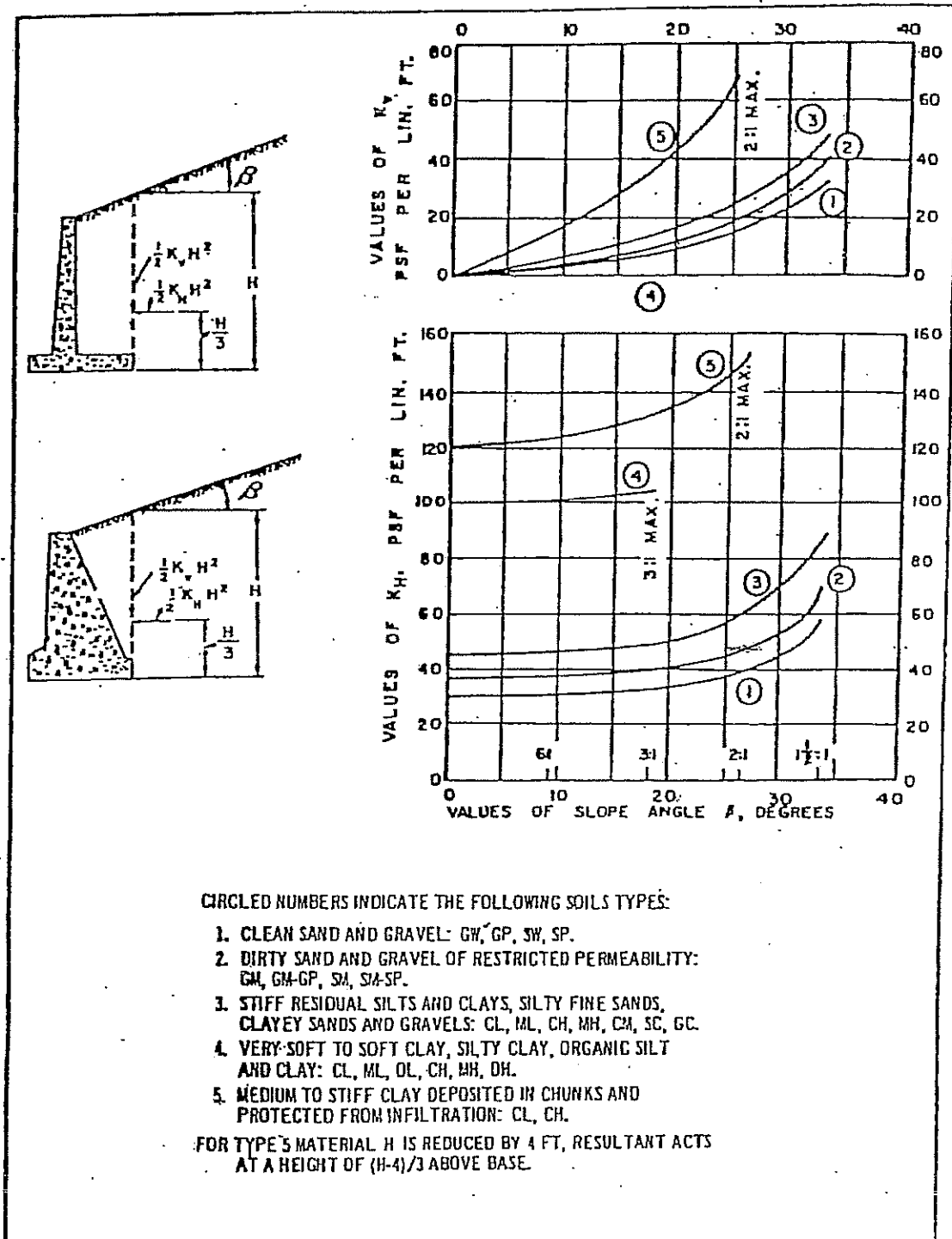
$\beta$ Slope of Backfill	$K_v$	$K_h$
	Psf/L.F.	Psf/L.F.
10°	6	46
15°	10	48
20°	17	50
30°	35	68
35°	55	90

Note:  
 $K_v$  and  $K_h$  values include  
the unit weight of soils

DRAWN BY SFO	APPROVED AR	DATE 01/25/13	DESIGN LOADS FOR SHORT RETAINING WALL
SCALE N.T.S.	FIGURE 18	JOB NO. 9337G-1	CLIENT BOLLINGER LACH & ASSOCIATES-LAKE COUNTY HIGHWAY DEPT.

concrete and soil may be taken as 0.55 for coarse-grained soils without silt, 0.45 for coarse-grained soils with silt, and 0.35 for silt. The soil in a layer beneath the base may be weaker, and the shearing resistance between the base of wall and soil should never be assumed to exceed the soil strength. Consider maximum uplift pressures that may develop beneath the base.

(3) If the factor of safety against sliding is insufficient, increase resistance by either increasing the width of the base or lowering the base elevation. If the wall is founded on clay, the resistance against sliding should be based on  $s_u$  for short-term analysis and  $\phi'$  for long-term analysis.



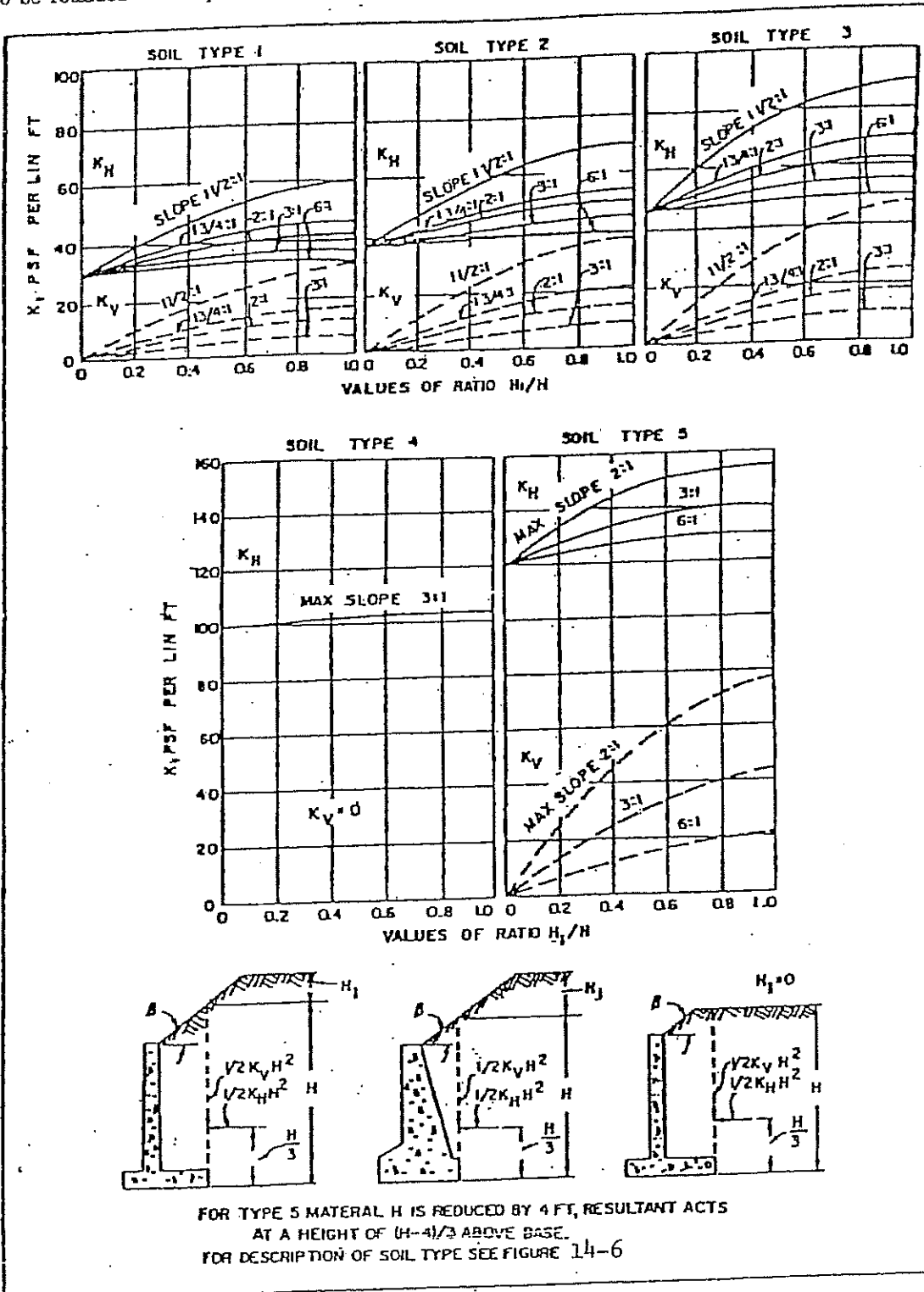
(NAVFAC DM-7)

Figure 14-6. Design loads for low retaining walls, straight slope backfill.

d. *Bearing capacity.* Calculate from the bearing capacity analysis in chapter 6. Consider local building codes or experience where applicable.

e. *Settlement and tilting.* When a high retaining wall is to be founded on compressible soils, estimate

total and differential settlements using procedures outlined in chapter 5. Reduce excessive total settlement by enlarging the base width of the wall or by using lightweight backfill material. Reduce tilting induced by differential settlement by proportioning the size of the base such that the resultant force falls close



(NAVYAC DM-7)

Figure 14-7. Design loads for low retaining walls, broken slope backfill.

# APPENDIX 19

REDUCTION FACTOR (R) OF $K_p$ FOR VARIOUS RATIOS OF $\delta/\phi$										
$\phi \backslash \delta/\phi$	-0.7	-0.6	-0.5	-0.4	-0.3	-0.2	-0.1	0.0		
10	.978	.962	.946	.929	.912	.898	.881	.864		
15	.961	.934	.907	.881	.854	.830	.803	.775		
20	.939	.901	.862	.824	.787	.752	.716	.678		
25	.912	.860	.808	.759	.711	.666	.620	.574		
30	.878	.811	.746	.686	.627	.574	.520	.467		
35	.836	.752	.674	.603	.536	.475	.417	.362		
40	.783	.682	.592	.512	.439	.375	.316	.262		
45	.718	.600	.500	.414	.339	.276	.221	.174		

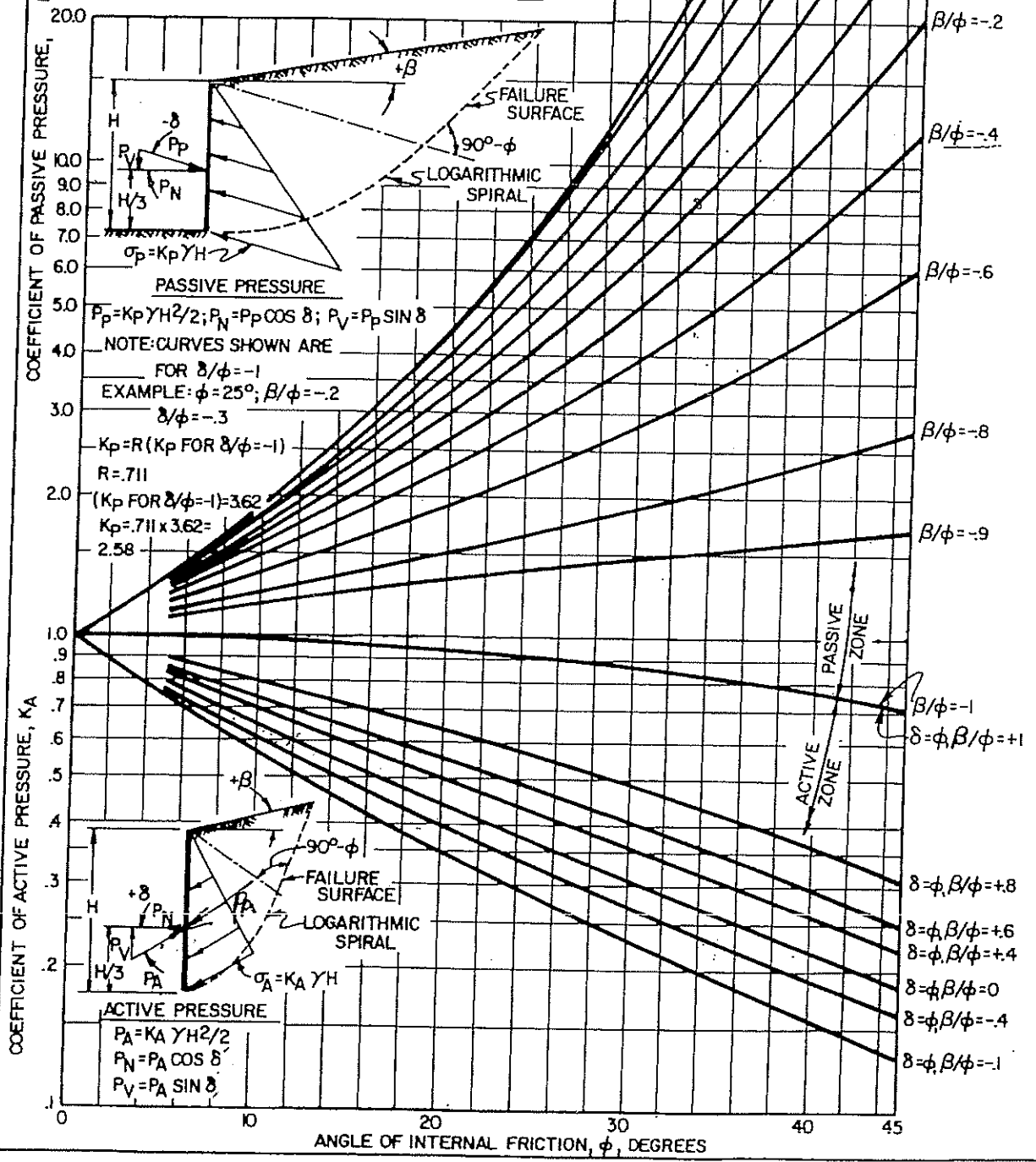


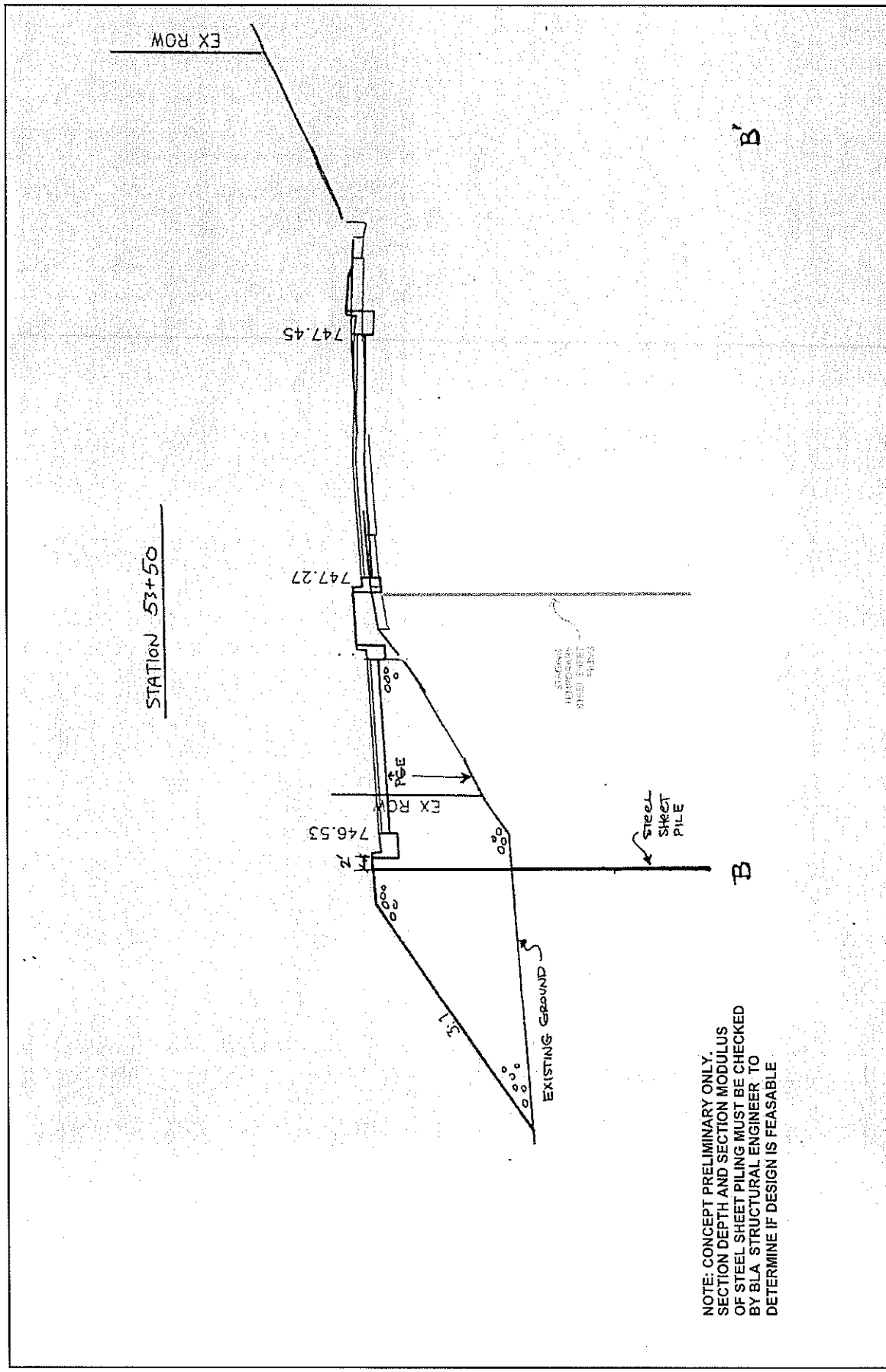
FIGURE 6  
 Active and Passive Coefficients with Wall Friction  
 Sloping Backfill - Coloumb's Equation  
 7.2-67

# **APPENDIX 20**









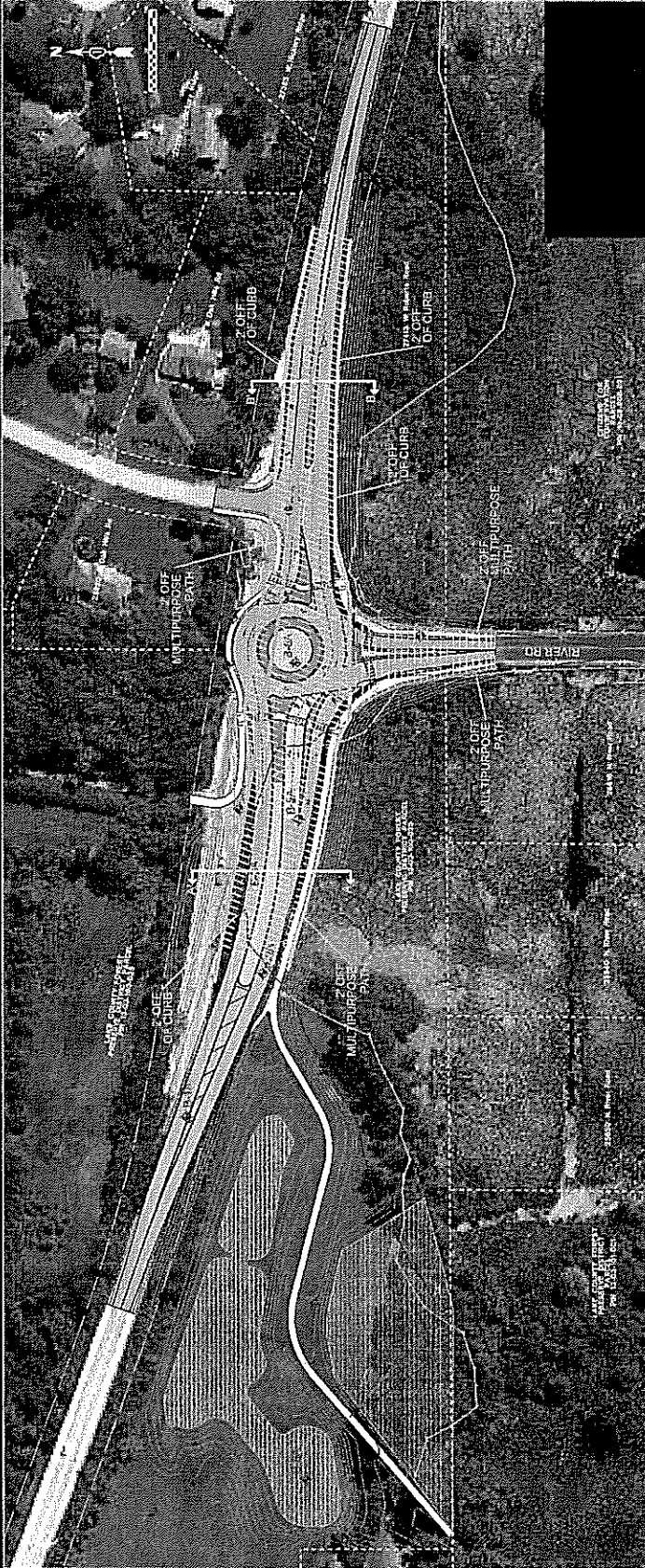
NOTE: CONCEPT PRELIMINARY ONLY.  
 SECTION DEPTH AND SECTION MODULUS  
 OF STEEL SHEET PILING MUST BE CHECKED  
 BY BLA STRUCTURAL ENGINEER TO  
 DETERMINE IF DESIGN IS FEASIBLE

STATION 53+50

DATE	REVISION	BY	GROUP	BY	DATE	SCALE	PROJECT NAME & LOCATION	SHEET NO.
							PROPOSED IMPROVEMENTS Roberts Road and River Road Intersection Lake County, Illinois (07-00095-09-CH)	20C
							CLIENT BOLLINGER LACH & ASSOCIATES, INC. LAKE COUNTY HIGHWAY DEPARTMENT	
							DESIGNER SECO Consultants, Inc. 2350 Duane Drive, Tinley Park, Illinois 60477 Office: (708) 438-1888 Fax: (708) 438-1888	
							CONTRACTOR Cantklear Steel Sheet Piling Concept-Profile View B-B'	





# APPENDIX 21

# ULTIMATE CONDITION ROUNDABOUT



 Lake County  
 BOLLINGER, Assoc. P.A. Association, Inc.  
 07-000066-08-CH 1 1

## LEGEND

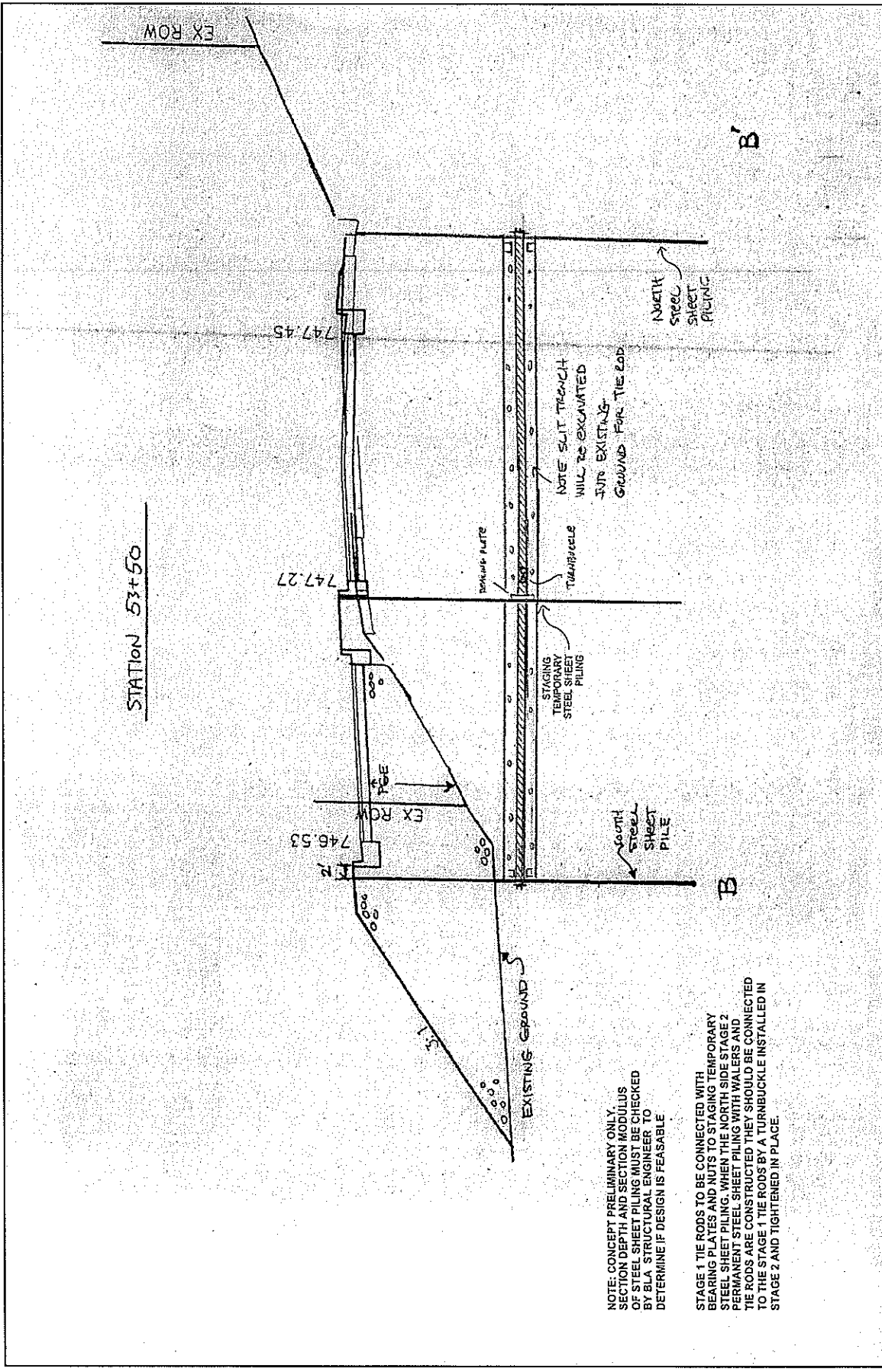
-  B-1A = APPROXIMATE SOIL BORING LOCATION
-  = APPROXIMATE LOCATION OF PROPOSED STEEL SHEET PILING ON ROBERTS ROAD
-  = APPROXIMATE LOCATION OF PROPOSED STEEL SHEET PILING ON RIVER ROAD
-  = STAGING TEMPORARY STEEL SHEET PILING

NOTES:  
 1) TIE RODS SPACED APPROXIMATELY 8 FEET TO 10 FEET O.C.

NO.	DATE	BY	REVISION

<b>SEPCO Consultants, Inc.</b> 7260 Duane Drive, Tinley Park, Illinois 60477 OFFICE: (708) 481-1666 FAX: (708) 481-1668	<b>LAKE COUNTY HIGHWAY DEPARTMENT</b> BOLLINGER LACH & ASSOCIATES, INC. Roberts Road and River Road Intersection Lake County, Illinois (07-00066-08-CH)	PROJECT NAME & LOCATION PROPOSED IMPROVEMENTS Double Rows of Steel Sheet Piling with Tie Rod Concept -Plan View	SHEET 21A
SCALE (AS SHOWN) 1" = 60'	DATE 02/27/13	DRAWN BY 93376-1	CHECKED BY 1





STATION 53+50

NOTE: CONCEPT PRELIMINARY ONLY. SECTION DEPTH AND SECTION MODULUS OF STEEL SHEET PILING MUST BE CHECKED BY A STRUCTURAL ENGINEER TO DETERMINE IF DESIGN IS FEASIBLE.

STAGE 1 TIE RODS TO BE CONNECTED WITH BEARING PLATES AND NUTS TO STAGING TEMPORARY STEEL SHEET PILING. WHEN THE NORTH SIDE STAGE 2 PERMANENT STEEL SHEET PILING WITH WALERS AND TIE RODS ARE CONSTRUCTED THEY SHOULD BE CONNECTED TO THE STAGE 1 TIE RODS BY A TURNBUCKLE INSTALLED IN STAGE 2 AND TIGHTENED IN PLACE.

DATE	REVISION	BY	CHECKED BY	DATE	PROJECT NAME & SECTION	SCALE	DATE	SHEET
					PROPOSED IMPROVEMENTS Roberts Road and River Road Intersection Lake County, Illinois (07-00088-08-CH)	NONE	02/28/13	21C
					CLIENT			
					BOLLINGER LACH & ASSOCIATES, INC. LAKE COUNTY HIGHWAY DEPARTMENT			
					CONSULTANT			
					SECO Consultants, Inc. 7359 Duane Drive, Tinley Park, Illinois 60477 Office: (708) 424-1666 Fax: (708) 424-1688			
					CONTRACT			
					CONTRACT NO.			
					CONTRACT DATE			
					CONTRACT VALUE			
					CONTRACT TYPE			
					CONTRACT STATUS			
					CONTRACT OWNER			
					CONTRACT AGENT			
					CONTRACT ADDRESS			
					CONTRACT PHONE			
					CONTRACT FAX			
					CONTRACT EMAIL			
					CONTRACT WEBSITE			
					CONTRACT TERMS			
					CONTRACT CONDITIONS			
					CONTRACT SPECIFICATIONS			
					CONTRACT DRAWINGS			
					CONTRACT SCHEDULE			
					CONTRACT PAYMENT			
					CONTRACT RISK			
					CONTRACT LEGAL			
					CONTRACT FINANCIAL			
					CONTRACT OPERATIONAL			
					CONTRACT MAINTENANCE			
					CONTRACT DEMOLITION			
					CONTRACT RECONSTRUCTION			
					CONTRACT RENOVATION			
					CONTRACT RESTORATION			
					CONTRACT PRESERVATION			
					CONTRACT PROTECTION			
					CONTRACT SECURITY			
					CONTRACT SAFETY			
					CONTRACT HEALTH			
					CONTRACT ENVIRONMENT			
					CONTRACT COMMUNITY			
					CONTRACT CULTURE			
					CONTRACT HISTORY			
					CONTRACT FUTURE			
					CONTRACT LEGACY			
					CONTRACT IMPACT			
					CONTRACT BENEFIT			
					CONTRACT VALUE			
					CONTRACT QUALITY			
					CONTRACT INTEGRITY			
					CONTRACT ETHICS			
					CONTRACT TRANSPARENCY			
					CONTRACT ACCOUNTABILITY			
					CONTRACT RESPONSIBILITY			
					CONTRACT COMMITMENT			
					CONTRACT DEDICATION			
					CONTRACT PASSION			
					CONTRACT DRIVE			
					CONTRACT ENERGY			
					CONTRACT ENTHUSIASM			
					CONTRACT OPTIMISM			
					CONTRACT POSITIVITY			
					CONTRACT CONFIDENCE			
					CONTRACT TRUST			
					CONTRACT RESPECT			
					CONTRACT KINDNESS			
					CONTRACT PATIENCE			
					CONTRACT HUMILITY			
					CONTRACT GRACE			
					CONTRACT MERCY			
					CONTRACT LOVE			

# APPENDIX 22

## GENERAL REMARKS

This report has been prepared in order to aid in the evaluation of this property and to assist the architect and/or engineer in the design of this project. The scope is limited to the specific project and location described herein, and our description of the project represents our understanding of the significant aspects relevant to soil and foundation characteristics. In the event that any changes in the design or location of the building(s) as outlined in this report are planned, we should be informed so the changes can be reviewed and the conclusions of this report modified as necessary in writing by the geotechnical engineer. As a check, we recommend that we be authorized to review the project plans and specifications to confirm that the recommendations contained in this report have been interpreted in accordance with our intent. Without this review, we will not be responsible for misinterpretation of our data, our analysis, and/or our recommendations, nor how these are incorporated into the final design.

It is recommended that all construction operations dealing with earthwork and foundations be reviewed by an experienced geotechnical engineer to provide information on which to base a decision whether the design requirements are fulfilled in the actual construction. If you wish, we would welcome the opportunity to provide field construction services for you during construction.

The analysis and recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated on the location diagram and from any other information discussed in this report. This report does not reflect any variations which may occur between these borings. In the performance of subsurface explorations, specific information is obtained at specific locations at specific times. However, it is a well-known fact that variations in soil and rock conditions exist on most sites between boring locations and also such situations as groundwater levels vary from time to time. The nature and extent of variations may not become evident until the course of construction. If variations then appear evident, it will be necessary for re-evaluation of the recommendations of this report after performing on-site observations during the construction period and noting the characteristics of any variations.



STORMWATER MANAGEMENT COMMISSION

**WATERSHED DEVELOPMENT PERMIT NUMBER  
Permit #13-83-057  
HAS BEEN SECURED**

**Project: River Road & Roberts Road Intersection Improvement**

**Date Issued: 10/15/2013**

**Lat/Long: 42.2386, -88.1691**

**PIN No.: 1303202005**

**Conditions:** • Install and maintain all SE/SC measures  
• Minimize environmental impacts

**Issued By:** Robert D. Gardiner, PE, CFM  
Permit Engineer

Kurt A. Woolford, PE, CFM, LEED AP  
Chief Engineer

## **Notice to Contractors and Owners**

Post this card at the site, visible from the street and so located as to permit the inspector to record the indicated inspections on the placard. Do not post in the interior of a building.

Inspectors and sheriff's deputies are instructed to stop all work where this permit card is not displayed.

Always mention the Watershed Development Permit number when referring to this project. If this card becomes mislaid or lost please contact Lake County Stormwater Management Commission for a replacement.

Lake County Stormwater Management Commission (847) 377-7705





DEPARTMENT OF THE ARMY  
CHICAGO DISTRICT, CORPS OF ENGINEERS  
231 SOUTH LA SALLE STREET  
CHICAGO, ILLINOIS 60604-1437

REPLY TO  
ATTENTION OF:

November 1, 2013

Technical Services Division  
Regulatory Branch  
LRC-2013-00286

SUBJECT: Proposal for River Road and Roberts Road Intersection Improvement, Cuba Township, Lake Barrington, Lake County, Illinois, Lake Barrington, Lake County, Illinois

Helena Sullivan  
Lake County Department of Transportation  
600 West Winchester Road  
Libertyville, Illinois 60048

Dear Ms. Sullivan:

This office has verified that your proposed activity complies with the terms and conditions of Regional Permit 3 and the overall RPP under Category II of the Regional Permit Program.

This verification expires three (3) years from the date of this letter and covers only your activity as described in your notification and as shown on the plans entitled "FAU RTE 3705 (ROBERTS RD) & 3704 (RIVER RD), SECTION 07-0086-08-CH, PROJECT CMM-9003(063) INTERSECTION RECONSTRUCTION, LAKE COUNTY, C-91-513-08" dated 08/23/2013, prepared by Bollinger, Lach & Associates, Inc. Caution must be taken to prevent construction materials and activities from impacting waters of the United States beyond the scope of this authorization. If you anticipate changing the design or location of the activity, you should contact this office to determine the need for further authorization.

Please be aware that the activity may not be completed until you submit the following information to our office:

1. Prior to the commencement of any work, you shall receive a determination by Lake County Stormwater Management Commission (SMC) that the Soil Erosion and Sediment Control (SESC) plans meet technical standards.

Upon receipt of the above information, the activity may be completed without further authorization from this office provided the activity is conducted in compliance with the terms and conditions of the RPP, including conditions of water quality certification issued under Section 401 of the Clean Water Act by the Illinois Environmental Protection Agency (IEPA). If the design, location, or purpose of the project is changed, you should contact this office to determine the need for further authorization

The following special conditions are a requirement of your authorization:

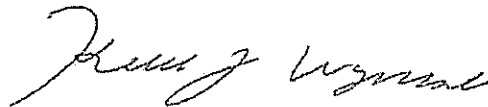
1. This authorization is contingent upon implementing and maintaining soil erosion and sediment controls in a serviceable condition throughout the duration of the project. You shall comply with the Lake County Stormwater Management Commission (LCSMC)'s written and verbal recommendations regarding the soil erosion and sediment control (SESC) plan and the installation and maintenance requirements of the SESC practices on-site.
  - a. You shall schedule a preconstruction meeting with LCSMC to discuss the SESC plan and the installation and maintenance requirements of the SESC practices on the site.
  - b. You shall notify the LCSMC or the LCSMC's designated agent of any changes or modifications to the approved plan set. Field conditions during project construction may require the implementation of additional SESC measures. If you fail to implement corrective measures, this office may require more frequent site inspections to ensure the installed SESC measures are acceptable.
  - c. Prior to commencement of any in-stream work, you shall submit construction plans and a detailed narrative disclosing the contractor's preferred method of cofferdam and dewatering method to the LCSMC or the LCSMC's designated agent. Work in the waterway shall NOT commence until the LCSMC notifies you, in writing, that the plans have been approved.
2. You shall fully implement the practices identified in the Best Management Practices (BMP) Maintenance and Monitoring (M&M) Plan within the first year of project construction. All BMP's shall meet performance criteria in accordance with the approved document. Your responsibility to complete the plan will not be considered fulfilled until you have demonstrated BMP success and have received written verification of that success from the U.S. Army Corps of Engineers.
3. You are responsible for all work authorized herein and for ensuring that all contractors are aware of the terms and conditions of this authorization.
4. A copy of this authorization must be present at the project site during all phases of construction.
5. You shall notify this office of any proposed modifications to the project, including revisions to any of the plans or documents cited in this authorization. You must receive approval from this office before work affected by the proposed modification is performed.
6. You shall notify this office prior to the transfer of this authorization and liabilities associated with compliance with its terms and conditions. The transferee must sign the authorization in the space provided and forward a copy of the authorization to this office.

7. This office acknowledges that 2.64 acres of uncertified mitigation credits has been purchased from the Corps approved Squaw Creek Wetland Mitigation Bank.

The authorization is without force and effect until all other permits or authorizations from local, state, or other Federal agencies are secured. Please note that IEPA has issued Section 401 Water Quality Certification for this RP. These conditions are included in the enclosed fact sheet. If you have any questions regarding Section 401 certification, please contact Mr. Dan Heacock at IEPA's Division of Water Pollution Control, Permit Section #15, by telephone at (217) 782-3362.

Once you have completed the authorized activity, please sign and return the enclosed compliance certification. If you have any questions, please contact the undersigned of my staff by telephone at 312-846-5535, or email at [Keith.L.Wozniak@usace.army.mil](mailto:Keith.L.Wozniak@usace.army.mil).

Sincerely,



Keith L. Wozniak  
Chief, West Section  
Regulatory Branch

Enclosures

Copy Furnished:

Lake County Stormwater Management Commission (Kurt Woolford)  
Bollinger, Lach & Associates, Inc. (Edmond Lebos)



PERMIT COMPLIANCE  
CERTIFICATION

Permit Number: LRC-2013-00286  
Permittee: Helena Sullivan  
Lake County Department of Transportation  
Date: November 1, 2013

I hereby certify that the work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of said permit and if applicable, compensatory wetland mitigation was completed in accordance with the approved mitigation plan.<sup>1</sup>

\_\_\_\_\_  
PERMITTEE

\_\_\_\_\_  
DATE

Upon completion of the activity authorized by this permit and any mitigation required by the permit, this certification must be signed and returned to the following address:

U.S. Army Corps of Engineers  
Chicago District, Regulatory Branch  
231 South LaSalle Street, Suite 1500  
Chicago, Illinois 60604-1437

Please note that your permitted activity is subject to compliance inspections by Corps of Engineers representatives. If you fail to comply with this permit, you may be subject to permit suspension, modification, or revocation.

<sup>1</sup> If compensatory mitigation was required as part of your authorization, you are certifying that the mitigation area has been graded and planted in accordance with the approved plan. You are acknowledging that the maintenance and monitoring period will begin after a site inspection by a Corps of Engineers representative or after thirty days of the Corps' receipt of this certification. You agree to comply with all permit terms and conditions, including additional reporting requirements, for the duration of the maintenance and monitoring period.



US Army Corps of Engineers®  
Chicago District

**GENERAL CONDITIONS  
APPLICABLE TO THE 2012  
REGIONAL PERMIT PROGRAM**

The permittee shall comply with the terms and conditions of the Regional Permits and the following general conditions for all activities authorized under the RPP:

1. State 401 Water Quality Certification - Water quality certification under Section 401 of the Clean Water Act may be required from the Illinois Environmental Protection Agency (IEPA). The District may consider water quality, among other factors, in determining whether to exercise discretionary authority and require an Individual Permit. Please note that Section 401 Water Quality Certification is a requirement for projects carried out in accordance with Section 404 of the Clean Water Act. Projects carried out in accordance with Section 10 of the Rivers and Harbors Act of 1899 do not require Section 401 Water Quality Certification

On March 2, 2012, the IEPA granted Section 401 certification, with conditions, for all Regional Permits, except for activities in certain waterways noted under RPs 4 and 8. The following conditions of the certification are hereby made conditions of the RPP:

1. The applicant shall not cause:
  - a) a violation of applicable water quality standards of the Illinois Pollution Control Board Title 35, Subtitle C: Water Pollution Rules and Regulations;
  - b) water pollution defined and prohibited by the Illinois Environmental Protection Act;
  - c) interference with water use practices near public recreation areas or water supply intakes;
  - d) a violation of applicable provisions of the Illinois Environmental Protection Act.
2. The applicant shall provide adequate planning and supervision during the project construction period for implementing construction methods, processes and cleanup procedures necessary to prevent water pollution and control erosion.
3. Except as allowed under condition 9, any spoil material excavated, dredged or otherwise produced must not be returned to the waterway but must be deposited in a self-contained area in compliance with all State statutes, regulations and permit requirements with no discharge to waters of the State unless a permit has been issued by the Illinois EPA. Any backfilling must be done with clean material placed in a manner to prevent violation of applicable water quality standards.
4. All areas affected by construction shall be mulched and seeded as soon after construction as possible. The applicant shall undertake necessary measures and procedures to reduce erosion during construction. Interim measures to prevent soil erosion during construction shall be taken and may include the installation of sedimentation basins and temporary mulching. All construction within the waterway shall be conducted during zero or low flow conditions. The applicant shall be responsible for obtaining a NPDES Stormwater Permit prior to initiating construction if the construction activity associated with the project will result in the disturbance of (1) one or more acres, total land area. A NPDES Stormwater Permit may be obtained by submitting a properly completed Notice of Intent (NOI) form by certified mail to the Illinois EPA's Division of Water Pollution Control, Permit Section.
5. The applicant shall implement erosion control measures consistent with the Illinois Urban Manual (IEPA/USDA, NRCS; 2011, <http://aiswcd.org/IUM/index.html>).
6. The applicant is advised that the following permits(s) must be obtained from the Illinois EPA: The applicant must obtain permits to construct sanitary sewers, water mains, and related facilities prior to construction.
7. Backfill used in the stream-crossing trench shall be predominantly sand or larger size material, with less than 20% passing a #230 U.S. sieve.
8. Any channel relocation shall be constructed under dry conditions and stabilized to prevent erosion prior to the diversion of flow.
9. Backfill used within trenches passing through surface waters of the State, except wetland areas, shall be clean course aggregate, gravel or other material which will not cause siltation, pipe damage during placement, or chemical corrosion in place. Excavated material may be used only if:
  - a) particle size analysis is conducted and demonstrates the material to be at least 80% sand or larger size material, using #230 U.S. sieve; or
  - b) excavation and backfilling are done under dry conditions.
10. Backfill used within trenches passing through wetland areas shall consist of clean material which will not cause siltation, pipe damage during placement, or chemical corrosion in place. Excavated material shall be used to the extent practicable, with the upper six (6) to twelve (12) inches backfilled with the topsoil obtained during trench excavation.
11. Any applicant proposing activities in a mined area or previously mined area shall provide to the IEPA a written determination regarding the sediment and materials used which are considered "acid-producing material" as defined in 35 Il. Adm. Code,

Subtitle D. If considered "acid-producing material," the applicant shall obtain a permit to construct pursuant to 35 Il. Adm. Code 404.101.

12. Asphalt, bituminous material and concrete with protruding material such as reinforcing bar or mesh shall not be 1) used for backfill, 2) placed on shorelines/stream banks, or 3) placed in waters of the State.
13. Applicants that use site dewatering techniques in order to perform work in waterways for construction activities approved under Regional Permits 1 (Residential, Commercial and Institutional Developments), 2 (Recreation Projects), 3 (Transportation Projects), 7 (Temporary Construction Activities), 9 (Maintenance) or 12 (Bridge Scour Protection) shall maintain flow in the stream during such construction activity by utilizing dam and pumping, fluming, culverts or other such techniques.
14. In addition to any action required of the Regional Permit 13 (Cleanup of Toxic and Hazardous Materials Projects) applicant with respect to the "Notification" General Condition 22, the applicant shall notify the Illinois EPA Bureau of Water, of the specific activity. This notification shall include information concerning the orders and approvals that have been or will be obtained from the Illinois EPA Bureau of Land (BOL) for all cleanup activities under BOL jurisdiction, or for which authorization or approval is sought from BOL for no further remediation. This Regional Permit is not valid for activities that do not require or will not receive authorization or approval from the BOL.

2. Threatened and Endangered Species - If the District determines that the activity may affect Federally listed species or critical habitat, the District will initiate section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) in accordance with the Endangered Species Act of 1973, as amended (Act). Applicants shall provide additional information that would enable the District to conclude that the proposed action will have no effect on federally listed species.

The application packet shall indicate whether resources (species, their suitable habitats, or critical habitat) listed or designated under the Act, may be present within areas affected (directly or indirectly) by the proposed project. Applicants shall provide a section 7 species list for the action area using the on-line process at the USFWS website. You can access "U.S. Fish and Wildlife Service Endangered Species Program of the Upper Midwest" website at [www.fws.gov/midwest/Endangered](http://www.fws.gov/midwest/Endangered). Click on the section 7 Technical Assistance green shaded box in the lower right portion of the screen and follow the instructions to completion. Review all documentation pertaining to the species list, provide the rationale for your effects determination for each species, and send the information to this office for review.

If no species, their suitable habitats, or critical habitat are listed, then a "no effect" determination can be made, and section 7 consultation is not warranted. If species or critical habitat appear on the list or suitable habitat is present within the action area, then a biological assessment or biological evaluation will need to be completed to determine if the proposed action will have "no effect" or "may effect" the species or suitable habitat. The District will request initiation of section 7 consultation with the USFWS upon agreement with the applicant on the effect determinations in the biological assessment or biological evaluation. If the issues are not resolved, the analysis of the situation is complicated, or impacts to listed species or critical habitat are found to be greater than minimal, the District will consider reviewing the project under the Individual Permit process.

Projects in Will, DuPage, or Cook Counties that are located in the recharge zones for Hine's emerald dragonfly critical habitat units may be reviewed under the RPP, with careful consideration due to the potential impacts to the species. All projects reviewed that are located within 3.25 miles of a critical habitat unit will be reviewed under Category II of the RPP. Please visit the following website for the locations of the Hine's emerald dragonfly critical habitat units in Illinois.  
<http://www.fws.gov/midwest/endangered/insects/hed/FRHinesFinalRevisedCHL.html>

3. Historic Properties - In cases where the District determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity may require an Individual Permit. A determination of whether the activity may be authorized under the RPP instead of an Individual Permit will not be made until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the District with the appropriate documentation to demonstrate compliance with those requirements.

Non-Federal permittees must include notification to the District if the authorized activity may have the potential to cause effects to any historic properties listed, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the permit application must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing permit submittals, the District will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. Based on the information submitted and these efforts, the District shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties which the activity may have the potential to cause effects and so notified the District, the non-Federal applicant shall not begin the activity until notified by the District either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

The District will take into account the effects on such properties in accordance with 33 CFR Part 325, Appendix C, and 36 CFR 800. If all issues pertaining to historic properties have been resolved through the consultation process to the satisfaction of the District, Illinois Historic Preservation Agency (IHPA) and Advisory Council on Historic Preservation, the District may, at its discretion, authorize the activity under the RPP instead of an Individual Permit.

Applicants are encouraged to obtain information on historic properties from the IHPA and the National Register of Historic Places at the earliest stages of project planning. For information, contact:

Illinois Historic Preservation Agency  
1 Old State Capitol Plaza  
Springfield, IL 62701-1507  
(217) 782-4836  
[www.illinoishistory.gov](http://www.illinoishistory.gov)

If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity, you must immediately notify this office of what you have found, and to the maximum extent practicable, stop activities that would adversely affect those remains and artifacts until the required coordination has been completed. We will initiate the Federal, Tribal and State coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. Soil Erosion and Sediment Control - Measures shall be taken to control soil erosion and sedimentation at the project site to ensure that sediment is not transported to waters of the U.S. during construction. Soil erosion and sediment control measures shall be implemented before initiating any clearing, grading, excavating or filling activities. All temporary and permanent soil erosion and sediment control measures shall be maintained throughout the construction period and until the site is stabilized. All exposed soil and other fills, and any work below the ordinary high water mark shall be permanently stabilized at the earliest practicable date.

Applicants are required to prepare a soil erosion and sediment control (SESC) plan including temporary BMPs. The plan shall be designed in accordance with the Illinois Urban Manual, 2011 (<http://aiswcd.org/TUM/index.html>). Practice standards and specifications for measures outlined in the soil erosion and sediment control plans will follow the latest edition of the "Illinois Urban Manual: A Technical Manual Designed for Urban Ecosystem Protection and Enhancement." Additional Soil Erosion and Sediment Control (SESC) measures not identified in the Illinois Urban Manual may also be utilized upon District approval.

At the District's discretion, an applicant may be required to submit the SESC plan to the local Soil and Water Conservation District (SWCD), or the Lake County Stormwater Management Commission (SMC) for review. When the District requires submission of an SESC plan, the following applies: An activity may not commence until the SESC plan for the project site has been approved; The SWCD/SMC will review the plan and provide a written evaluation of its adequacy; A SESC plan is considered acceptable when the SWCD/SMC has found that it meets technical standards. Once a determination has been made, the authorized work may commence unless the SWCD/SMC has requested that they be notified prior to commencement of the approved plans. The SWCD/SMC may attend pre-construction meetings with the permittee and conduct inspections during construction to determine compliance with the plans. Applicants are encouraged to begin coordinating with the appropriate SWCD/SMC office at the earliest stages of project planning. For information, contact:

Kane-DuPage SWCD  
2315 Dean Street, Suite 100  
St. Charles, IL 60174  
(630) 584-7961 ext.3  
[www.kanedupageswcd.org](http://www.kanedupageswcd.org)

McHenry-Lake County SWCD  
1648 South Eastwood Dr.  
Woodstock, IL 60098  
(815) 338-0099 ext.3  
[www.mchenryswcd.org](http://www.mchenryswcd.org)

North Cook SWCD  
899 Jay Street  
Elgin, IL 60120  
(847) 468-0071  
[www.northcookswcd.org](http://www.northcookswcd.org)

Lake County SMC  
500 W. Winchester Rd, Suite 201  
Libertyville, IL 60048  
(847) 377-7700  
[www.lakecountyil.gov/stormwater](http://www.lakecountyil.gov/stormwater)

5. Total Maximum Daily Load - For projects that include a discharge of pollutant(s) to waters for which there is an approved Total Maximum Daily Load (TMDL) allocation for any parameter, the applicant shall develop plans and BMPs that are consistent with the assumptions and requirements in the approved TMDL. The applicant must incorporate into their plans and BMPs any conditions applicable to their discharges necessary for consistency with the assumptions and requirements of the TMDL within any timeframes established in the TMDL. The applicant must carefully document the justifications for all BMPs and plans, and install, implement and maintain practices and BMPs that are consistent with all relevant TMDL allocations and with all relevant conditions in an implementation plan. Information regarding the TMDL program, including approved TMDL allocations, can be found at the following website: [www.epa.state.il.us/water/tmdl/](http://www.epa.state.il.us/water/tmdl/)

6. Floodplain - Discharges of dredged or fill material into waters of the United States within the 100-year floodplain (as defined by the Federal Emergency Management Agency) resulting in permanent above-grade fills shall be avoided and minimized to the maximum extent practicable. When such an above-grade fill would occur, the applicant may need to obtain approval from the Illinois

Department of Natural Resources, Office of Water Resources, (IDNR-OWR) which regulates activities affecting the floodway and the local governing agency (e.g., Village or County) with jurisdiction over activities in the floodplain. Compensatory storage may be required for fill within the floodplain. Applicants are encouraged to obtain information from the IDNR-OWR and the local governing agency with jurisdiction at the earliest stages of project planning. For information on floodway construction, contact:

IDNR/OWR  
2050 Stearns Road  
Bartlett, IL 60103  
(847) 608-3100  
<http://dnr.state.il.us/owr/>

For information on floodplain construction, please contact the local government and/or the Federal Emergency Management Agency. Pursuant to 33 CFR 320.4(j), the District will consider the likelihood of the applicant obtaining approval for above-ground permanent fills in floodplains in determining whether to issue authorization under the RPP.

7. Navigation - No activity may cause more than a minimal adverse effect on navigation. Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.
8. Proper Maintenance - Any authorized structure or fill shall be properly maintained, including that necessary to ensure public safety.
9. Aquatic Life Movements - No activity may substantially disrupt the movement of those species of aquatic life indigenous to the waterbody, including species that normally migrate through the area, unless the activity's primary purpose is to impound water.
10. Equipment - Soil disturbance and compaction shall be minimized through the use of matting for heavy equipment, low ground pressure equipment, or other measures as approved by the District.
11. Wild and Scenic Rivers - No activity may occur in a component of the National Wild and Scenic River System or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status. Information on Wild and Scenic Rivers may be obtained from the appropriate land management agency in the area, such as the National Park Service and the U.S. Forest Service.
12. Tribal Rights - No activity or its operation may impair reserved tribal rights, such as reserved water rights, treaty fishing and hunting rights.
13. Water Supply Intakes - No discharge of dredged or fill material may occur in the proximity of a public water supply intake except where the discharge is for repair of the public water supply intake structures or adjacent bank stabilization.
14. Shellfish Production - No discharge of dredged or fill material may occur in areas of concentrated shellfish production.
15. Suitable Material - No discharge of dredged or fill material may consist of unsuitable material and material discharged shall be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act). Unsuitable material includes trash, debris, car bodies, asphalt, and creosote treated wood.
16. Spawning Areas - Discharges in spawning areas during spawning seasons shall be avoided to the maximum extent practicable.
17. Obstruction of High Flows - Discharges shall not permanently restrict or impede the passage of normal or expected high flows. All crossings shall be culverted, bridged or otherwise designed to prevent the restriction of expected high water flows, and shall be designed so as not to impede low water flows or the movement of aquatic organisms.
18. Impacts From Impoundments - If the discharge creates an impoundment of water, adverse impacts on aquatic resources caused by the accelerated passage of water and/or the restriction of its flow shall be avoided to the maximum extent practicable.
19. Waterfowl Breeding Areas - Discharges into breeding areas for migratory waterfowl shall be avoided to the maximum extent practicable.
20. Removal of Temporary Fills - Any temporary fill material shall be removed in its entirety and the affected area returned to its pre-existing condition.
21. Mitigation - All appropriate and practicable steps must first be taken to avoid and minimize impacts to aquatic resources. For unavoidable impacts, compensatory mitigation is required to replace the loss of wetland, stream, and/or other aquatic resource functions (33 CFR 332). The proposed compensatory mitigation shall utilize a watershed approach and fully consider the ecological needs of the watershed. Where an appropriate watershed plan is available, mitigation site selection should consider recommendations in the plan. The applicant shall describe in detail how the mitigation site was chosen and will be developed, based on the specific



resource need of the impacted watershed. Permit applicants are responsible for proposing an appropriate compensatory mitigation option to offset unavoidable impacts. However, the District is responsible for determining the appropriate form and amount of compensatory mitigation required when evaluating compensatory mitigation options, and determining the type of mitigation that would be environmentally preferable. In making this determination, the District will assess the likelihood for ecological success and sustainability, the location of the compensation site relative to the impact site and their significance within the watershed. Methods of providing compensatory mitigation include aquatic resource restoration, establishment, enhancement, and in certain circumstances, preservation. Compensatory mitigation will be accomplished by establishing a minimum ratio of 1.5 acres of mitigation for every 1.0 acre of impact to waters of the U.S. Furthermore, the District has the discretion to require additional mitigation to ensure that the impacts are no more than minimal. Further information is available at [www.lrc.usace.army.mil/Missions/Regulatory/Illinois/Mitigation.aspx](http://www.lrc.usace.army.mil/Missions/Regulatory/Illinois/Mitigation.aspx)

22. Notification - The applicant shall provide written notification (i.e., a complete application) for a proposed activity to be authorized under the RPP prior to commencing a proposed activity. The District's receipt of the complete application is the date when the District receives all required notification information from the applicant (see below). If the District informs the applicant within 60 calendar days that the notification is incomplete (i.e., not a complete application), the applicant shall submit to the District, in writing, the requested information to be considered for review under the Regional Permit Program. A new 60 day review period will commence when the District receives the requested information. Applications that involve unauthorized activities that are completed or partially completed by the applicant are not subject to the 60-day review period.

For all activities, notification shall include:

- a. A cover letter providing a detailed narrative of the proposed activity describing all work to be performed, a clear project purpose and need statement, the Regional Permit(s) to be used for the activity, the area (in acres) of waters of the U.S. to be impacted (be sure to specify if the impact is permanent or temporary, and identify which area it affects), and a statement that the terms and conditions of the RPP will be followed.
- b. A completed joint application form for Illinois signed by the applicant or agent. The application form is available at [www.lrc.usace.army.mil/Portals/36/docs/regulatory/forms/appform.pdf](http://www.lrc.usace.army.mil/Portals/36/docs/regulatory/forms/appform.pdf). If the applicant does not sign the joint application form, notification shall include a signed, written statement from the applicant designating the agent as their representative.
- c. A delineation of waters of the U.S., including wetlands, for the project area, and for areas adjacent to the project site (off-site wetlands shall be identified through the use of reference materials including review of local wetland inventories, soil surveys and the most recent available aerial photography), shall be prepared in accordance with the current U.S. Army Corps of Engineers methodology ([www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/reg\\_supp.aspx](http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/reg_supp.aspx)) and generally conducted during the growing season.\* Our wetland delineation standards are available at [www.lrc.usace.army.mil/Portals/36/docs/regulatory/pdf/Delineations.pdf](http://www.lrc.usace.army.mil/Portals/36/docs/regulatory/pdf/Delineations.pdf). For sites supporting wetlands, the delineation shall include a Floristic Quality Assessment (Swink and Wilhelm. 1994, latest edition, Plants of the Chicago Region). The delineation shall also include information on the occurrence of any high-quality aquatic resources (see Appendix A), and a listing of waterfowl, reptile and amphibian species observed while at the project area. The District reserves the right to exercise judgment when reviewing submitted wetland delineations. Flexibility of the requirements may be determined by the District on a case-by-case basis only.
- d. A street map showing the location of the project area.
- e. Latitude and longitude for the project in decimal degrees format (i.e. 41.88377N, -87.63960W).
- f. Preliminary engineering drawings sized 11" by 17" (full-sized may be requested by the project manager and you may also submit plans in PDF format on a disc) showing all aspects of the proposed activity and the location of waters of the U.S. to be impacted and not impacted. The plans shall include grading contours, proposed and existing structures such as buildings footprints, roadways, road crossings, stormwater management facilities, utilities, construction access areas and details of water conveyance structures. The plans shall also depict buffer areas, outlots or open space designations, best management practices, deed restricted areas and restoration areas, if required under the specific RP.
- g. Submittal of soil erosion and sediment control (SESC) plans that identify all SESC measures to be utilized during construction of the project.
- h. The application packet shall indicate whether resources (species, their suitable habitats, or critical habitat) listed or designated under the Endangered Species Act of 1973, as amended, may be present within areas affected (directly or indirectly) by the proposed project. Applicants shall provide a section 7 species list for the action area using the on-line process at the USFWS website. You can access "U.S. Fish and Wildlife Service Endangered Species Program of the Upper Midwest" website at [www.fws.gov/midwest/Endangered](http://www.fws.gov/midwest/Endangered). Click on the section 7 Technical Assistance green shaded box in the lower right portion of the screen and follow the instructions to completion. Print all documentation pertaining to the species list, include the rationale for your effects determination for each species, and forward the information to this office for review.

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\* If a wetland delineation is conducted outside of the growing season, the District will determine on a case-by-case basis whether sufficient evidence is available to make an accurate determination. If the District finds that the delineation lacks sufficient evidence, the application will not be considered complete until the information is provided. This may involve re-delineating the project site during the growing season.

In the event there are no species, their suitable habitats, or critical habitat, then a "no effect" determination can be made and section 7 consultation is not warranted. If species or critical habitat appear on the list, or suitable habitat is present within the action area, then a biological assessment or biological evaluation will need to be completed to determine if the proposed action will have "no effect" or "may effect" on the species or suitable habitat. The District will request initiation of section 7 consultation with the USFWS upon agreement with the applicant on the effect determinations in the biological assessment or biological evaluation. If the issues are not resolved, the analysis of the situation is complicated, or impacts to listed species or critical habitat are found to be greater than minimal, the District will consider reviewing the project under the Individual Permit process.

- i. A determination of the presence or absence of any State threatened or endangered species. Please contact the Illinois Department of Natural Resources (IDNR) to determine if any State threatened and endangered species could be in the project area. You can access the IDNR's Ecological Compliance Assessment Tool (EcoCAT) at the following website: <http://dnrecocat.state.il.us/ecopublic/>. Once you complete the EcoCAT and consultation process, forward all resulting information to this office for consideration. The report shall also include recommended methods as required by the IDNR for minimizing potential adverse effects of the project.
- j. A statement about the knowledge of the presence or absence of Historic Properties, which includes properties listed, or properties eligible to be listed in the National Register of Historic Places. A letter from the Illinois Historic Preservation Agency (IHPA) can be obtained indicating whether your project is in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended. The permittee shall provide all pertinent correspondence with the IHPA documenting compliance. The IHPA has a checklist of documentation required for their review located here: [www.illinoishistory.gov/PS/rcdocument.htm](http://www.illinoishistory.gov/PS/rcdocument.htm).
- k. Where an appropriate watershed plan is available, the applicant shall address in writing how the proposed activity is aligned with the relevant water quality, hydrologic, and aquatic resource protection recommendations in the watershed plan.
- l. A discussion of measures taken to avoid and/or minimize impacts to aquatic resources on the project site.
- m. A compensatory mitigation plan for all impacts to waters of the U.S. (if compensatory mitigation is required under the specific RP).
- n. A written narrative addressing all items listed under the specific RP.

For Category II activities, the District will provide an Agency Request for Comments (ARC) which describes the proposed activity. The ARC will be sent to the following agencies: United States Fish & Wildlife Service (USFWS), United States Environmental Protection Agency (USEPA), Illinois Department of Natural Resources (IDNR), Illinois Department of Natural Resources/Office of Water Resources (IDNR/OWR), Illinois Environmental Protection Agency (IEPA), Illinois Historic Preservation Agency (IHPA), Illinois Nature Preserves Commission (INPC) and U.S. Coast Guard (Section 10 activities only). Additional entities may also be notified as needed. These agencies have ten (10) calendar days from the date of the ARC to contact the District and either provide comments or request an extension not to exceed fifteen (15) calendar days. The District will fully consider agency comments received within the specified time frame. If the District determines the activity complies with the terms and conditions of the RPP and impacts on aquatic resources are minimal, the District will notify the applicant in writing and include special conditions if deemed necessary. If the District determines that the impacts of the proposed activity are more than minimal, the District will notify the applicant that the project does not qualify for authorization under the RPP and instruct the applicant on the procedures to seek authorization under an Individual Permit.

23. Compliance Certification - Any permittee who has received authorization under the RPP from the District shall submit a signed certification regarding the completed work and any required mitigation. The certification will be forwarded by the District with the authorization letter and will include: a) a statement that the authorized work was done in accordance with the District's authorization, including any general or specific conditions; b) a statement that any required mitigation was completed in accordance with the permit conditions and; c) the signature of the permittee certifying the completion of the work and mitigation.

24. Multiple use of Regional Permits - In any case where a Regional Permit is combined with any other Regional Permit to cover a single and complete project (except where prohibited under specific Regional Permits), the applicant shall notify the District in accordance with General Condition 22. If multiple Regional Permits are used, the total impact may not exceed the maximum allowed by the Regional Permit with the greatest impact threshold.

25. Other Restrictions - Authorization under the RPP does not obviate the need to obtain other Federal, State or local permits, approvals, or authorizations required by law nor does it grant any property rights or exclusive privileges, authorize any injury to the property or rights of others or authorize interference with any existing or proposed Federal project.

Approved by:

//ORIGINAL SIGNED//  
Frederic A. Drummond, Jr.  
Colonel, U.S. Army  
District Commander

February 24, 2012  
Date

State of Illinois  
Department of Transportation  
Bureau of Local Roads and Streets

SPECIAL PROVISION  
FOR  
COOPERATION WITH UTILITIES

Effective: January 1, 1999  
Revised: January 1, 2007

All references to Sections or Articles in this specification shall be construed to mean specific Section or Article of the Standard Specifications for Road and Bridge Construction, adopted by the Department of Transportation.

Replace Article 105.07 of the Standard Specifications with the following:

**“105.07 Cooperation with Utilities.** The adjustment of utilities consists of the relocation, removal, replacement, rearrangements, reconstruction, improvement, disconnection, connection, shifting, new installation or altering of an existing utility facility in any manner.

When the plans or special provisions include information pertaining to the location of underground utility facilities, such information represents only the opinion of the Department as to the location of such utilities and is only included for the convenience of the bidder. The Department assumes no responsibility in respect to the sufficiency or the accuracy of the information shown on the plans relative to the location of the underground utility facilities.

Utilities which are to be adjusted shall be adjusted by the utility owner or the owner's representative or by the Contractor as a contract item. Generally, arrangements for adjusting existing utilities will be made by the Department prior to project construction; however, utilities will not necessarily be adjusted in advance of project construction and, in some cases, utilities will not be removed from the proposed construction limits. When utility adjustments must be performed in conjunction with construction, the utility adjustment work will be shown on the plans and/or covered by Special Provisions.

When the Contractor discovers a utility has not been adjusted by the owner or the owner's representative as indicated in the contract documents, or the utility is not shown on the plans or described in the Special Provisions as to be adjusted in conjunction with construction, the Contractor shall not interfere with said utility, and shall take proper precautions to prevent damage or interruption of the utility and shall promptly notify the Engineer of the nature and location of said utility.

All necessary adjustments, as determined by the Engineer, of utilities not shown on the plans or not identified by markers, will be made at no cost to the Contractor except traffic structures, light poles, etc., that are normally located within the proposed construction limits as hereinafter defined will not be adjusted unless required by the proposed improvement.

(a) Limits of Proposed Construction for Utilities Paralleling the Roadway. For the purpose of this Article, limits of proposed construction for utilities extending in the same longitudinal direction as the roadway, shall be defined as follows:

(1) The horizontal limits shall be a vertical plane, outside of, parallel to, and 600 mm (2 ft) distant at right angles from the plan or revised slope limits.

In cases where the limits of excavation for structures are not shown on the plans, the horizontal limits shall be a vertical plane 1.2 m (4 ft) outside the edges of structure footings or the structure where no footings are required.

(2) The upper vertical limits shall be the regulations governing the roadbed clearance for the specific utility involved.

(3) The lower vertical limits shall be the top of the utility at the depth below the proposed grade as prescribed by the governing agency or the limits of excavation, whichever is less.

(b) Limits of Proposed Construction for Utilities Crossing the Roadway. For the purpose of this Article, limits of proposed construction for utilities crossing the roadway in a generally transverse direction shall be defined as follows:

(1) Utilities crossing excavations for structures that are normally made by trenching such as sewers, underdrains, etc. and all minor structures such as manholes, inlets, foundations for signs, foundations for traffic signals, etc., the limits shall be the space to be occupied by the proposed permanent construction unless otherwise required by the regulations governing the specific utility involved.

(2) For utilities crossing the proposed site of major structures such as bridges, sign trusses, etc., the limits shall be as defined above for utilities extending in the same general direction as the roadway.

The Contractor may make arrangements for adjustment of utilities outside of the limits of proposed construction provided the Contractor furnishes the Department with a signed agreement with the utility owner covering the adjustments to be made. The cost of any adjustments made outside the limits of proposed construction shall be the responsibility of the Contractor unless otherwise provided.

The Contractor shall request all utility owners to field locate their facilities according to Article 107.31. The Engineer may make the request for location from the utility after receipt of notice from the Contractor. On request, the Engineer will make an inspection to verify that the utility company has field located its facilities, but will not assume responsibility for the accuracy of such work. The Contractor shall be responsible for maintaining the excavations or markers provided by the utility owners. This field location procedure may be waived if the utility owner has stated in writing to the Department it is satisfied the construction plans are sufficiently accurate. If the utility owner does not submit such statement to the Department, and they do not field locate their facilities in both horizontal and vertical alignment, the Engineer will authorize the Contractor in writing to proceed to locate the facilities in the most economical and reasonable manner, subject to the approval of the Engineer, and be paid according to Article 109.04.

The Contractor shall coordinate with any planned utility adjustment or new installation and the Contractor shall take all precautions to prevent disturbance or damage to utility facilities. Any failure on the part of the utility owner, or their representative, to proceed with any planned utility adjustment or new installation shall be reported promptly by the Contractor to the Engineer orally and in writing.

The Contractor shall take all necessary precautions for the protection of the utility facilities. The Contractor shall be responsible for any damage or destruction of utility facilities resulting from neglect, misconduct, or omission in the Contractor's manner or method of execution or nonexecution of the work, or caused by defective work or the use of unsatisfactory materials. Whenever any damage or destruction of a utility facility occurs as a result of work performed by the Contractor, the utility company will be immediately notified. The utility company will make arrangements to restore such facility to a condition equal to that existing before any such damage or destruction was done.

It is understood and agreed that the Contractor has considered in the bid all of the permanent and temporary utilities in their present and/or adjusted positions.

No additional compensation will be allowed for any delays, inconvenience, or damage sustained by the Contractor due to any interference from the said utility facilities or the operation of relocating the said utility facilities.

State of Illinois  
Department of Transportation  
Bureau of Local Roads and Streets

SPECIAL PROVISION  
FOR  
INSURANCE

Effective: February 1, 2007  
Revised: August 1, 2007

All references to Sections or Articles in this specification shall be construed to mean specific Section or Article of the Standard Specifications for Road and Bridge Construction, adopted by the Department of Transportation.

The Contractor shall name the following entities as additional insured under the Contractor's general liability insurance policy in accordance with Article 107.27:

LAKE COUNTY DIVISION OF TRANSPORTATION

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The entities listed above and their officers, employees, and agents shall be indemnified and held harmless in accordance with Article 107.26.

**CONSTRUCTION AIR QUALITY – DIESEL RETROFIT (BDE)**

Effective: June 1, 2010

The reduction of emissions of particulate matter (PM) for off-road equipment shall be accomplished by installing retrofit emission control devices. The term “equipment” refers to diesel fuel powered devices rated at 50 hp and above, to be used on the jobsite in excess of seven calendar days over the course of the construction period on the jobsite (including rental equipment).

Contractor and subcontractor diesel powered off-road equipment assigned to the contract shall be retrofitted using the phased in approach shown below. Equipment that is of a model year older than the year given for that equipment’s respective horsepower range shall be retrofitted:

Effective Dates	Horsepower Range	Model Year
June 1, 2010 <sup>1/</sup>	600-749	2002
	750 and up	2006
June 1, 2011 <sup>2/</sup>	100-299	2003
	300-599	2001
	600-749	2002
	750 and up	2006
June 1, 2012 <sup>2/</sup>	50-99	2004
	100-299	2003
	300-599	2001
	600-749	2002
	750 and up	2006

1/ Effective dates apply to Contractor diesel powered off-road equipment assigned to the contract.

2/ Effective dates apply to Contractor and subcontractor diesel powered off-road equipment assigned to the contract.

The retrofit emission control devices shall achieve a minimum PM emission reduction of 50 percent and shall be:

- a) Included on the U.S. Environmental Protection Agency (USEPA) *Verified Retrofit Technology List* (<http://www.epa.gov/otaq/retrofit/verif-list.htm>), or verified by the California Air Resources Board (CARB) (<http://www.arb.ca.gov/diesel/verde/verdev.htm>); or
- b) Retrofitted with a non-verified diesel retrofit emission control device if verified retrofit emission control devices are not available for equipment proposed to be used on the project, and if the Contractor has obtained a performance certification from the retrofit

device manufacturer that the emission control device provides a minimum PM emission reduction of 50 percent.

Note: Large cranes (Crawler mounted cranes) which are responsible for critical lift operations are exempt from installing retrofit emission control devices if such devices adversely affect equipment operation.

Diesel powered off-road equipment with engine ratings of 50 hp and above, which are unable to be retrofitted with verified emission control devices or if performance certifications are not available which will achieve a minimum 50 percent PM reduction, may be granted a waiver by the Department if documentation is provided showing good faith efforts were made by the Contractor to retrofit the equipment.

Construction shall not proceed until the Contractor submits a certified list of the diesel powered off-road equipment that will be used, and as necessary, retrofitted with emission control devices. The list(s) shall include (1) the equipment number, type, make, Contractor/rental company name; and (2) the emission control devices make, model, USEPA or CARB verification number, or performance certification from the retrofit device manufacturer. Equipment reported as fitted with emissions control devices shall be made available to the Engineer for visual inspection of the device installation, prior to being used on the jobsite.

The Contractor shall submit an updated list of retrofitted off-road construction equipment as retrofitted equipment changes or comes on to the jobsite. The addition or deletion of any diesel powered equipment shall be included on the updated list.

If any diesel powered off-road equipment is found to be in non-compliance with any portion of this special provision, the Engineer will issue the Contractor a diesel retrofit deficiency deduction.

Any costs associated with retrofitting any diesel powered off-road equipment with emission control devices shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed. The Contractor's compliance with this notice and any associated regulations shall not be grounds for a claim.

### **Diesel Retrofit Deficiency Deduction**

When the Engineer determines that a diesel retrofit deficiency exists, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency continues to exist. The calendar day(s) will begin when the time period for correction is exceeded and end with the Engineer's written acceptance of the correction. The daily monetary deduction will be \$1,000.00 for each deficiency identified.

The deficiency will be based on lack of diesel retrofit emissions control.

If a Contractor accumulates three diesel retrofit deficiency deductions for the same piece of equipment in a contract period, the Contractor will be shutdown until the deficiency is corrected.



Such a shutdown will not be grounds for any extension of the contract time, waiver of penalties, or be grounds for any claim.

80261

## **DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (DBE)**

Effective: September 1, 2000

Revised: August 2, 2011

FEDERAL OBLIGATION. The Department of Transportation, as a recipient of federal financial assistance, is required to take all necessary and reasonable steps to ensure nondiscrimination in the award and administration of contracts. Consequently, the federal regulatory provisions of 49 CFR Part 26 apply to this contract concerning the utilization of disadvantaged business enterprises. For the purposes of this Special Provision, a disadvantaged business enterprise (DBE) means a business certified by the Department in accordance with the requirements of 49 CFR Part 26 and listed in the Illinois Unified Certification Program (IL UCP) DBE Directory.

STATE OBLIGATION. This Special Provision will also be used by the Department to satisfy the requirements of the Business Enterprise for Minorities, Females, and Persons with Disabilities Act, 30 ILCS 575. When this Special Provision is used to satisfy state law requirements on 100 percent state-funded contracts, the federal government has no involvement in such contracts (not a federal-aid contract) and no responsibility to oversee the implementation of this Special Provision by the Department on those contracts. DBE participation on 100 percent state-funded contracts will not be credited toward fulfilling the Department's annual overall DBE goal required by the US Department of Transportation to comply with the federal DBE program requirements.

CONTRACTOR ASSURANCE. The Contractor makes the following assurance and agrees to include the assurance in each subcontract that the Contractor signs with a subcontractor.

The Contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of contracts funded in whole or in part with federal or state funds. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

OVERALL GOAL SET FOR THE DEPARTMENT. As a requirement of compliance with 49 CFR Part 26, the Department has set an overall goal for DBE participation in its federally assisted contracts. That goal applies to all federal-aid funds the Department will expend in its federally assisted contracts for the subject reporting fiscal year. The Department is required to make a good faith effort to achieve the overall goal. The dollar amount paid to all approved DBE companies performing work called for in this contract is eligible to be credited toward fulfillment of the Department's overall goal.

CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. This contract includes a specific DBE utilization goal established by the Department. The goal has been included because the Department has determined that the work of this contract has subcontracting opportunities that may be suitable for performance by DBE companies. 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 23.00% of the work. This percentage is set as the DBE participation goal for this contract. Consequently, in addition to the other award criteria established for this contract, the Department will only award this contract to a bidder who makes a good faith effort to meet this goal of DBE participation in the performance of the work. A bidder makes a good faith effort for award consideration if either of the following is done in accordance with the procedures set for in this Special Provision:

- (a) The bidder documents that enough DBE participation has been obtained to meet the goal: or
- (b) The bidder documents that a good faith effort has been made to meet the goal, even though the effort did not succeed in obtaining enough DBE participation to meet the goal.

DBE LOCATOR REFERENCES. Bidders shall consult the IL UCP DBE Directory as a reference source for DBE-certified companies. In addition, the Department maintains a letting and item specific DBE locator information system whereby DBE companies can register their interest in providing quotes on particular bid items advertised for letting. Information concerning DBE companies willing to quote work for particular contracts may be obtained by contacting the Department's Bureau of Small Business Enterprises at telephone number (217)785-4611, or by visiting the Department's website at [www.dot.il.gov](http://www.dot.il.gov).

BIDDING PROCEDURES. Compliance with this Special Provision is a material bidding requirement. The failure of the bidder to comply will render the bid not responsive.

- (a) The bidder shall submit a Disadvantaged Business Utilization Plan on Department forms SBE 2025 and 2026 with the bid.
- (b) The Utilization Plan shall indicate that the bidder either has obtained sufficient DBE participation commitments to meet the contract goal or has not obtained enough DBE participation commitments in spite of a good faith effort to meet the goal. The Utilization Plan shall further provide the name, telephone number, and telefax number of a responsible official of the bidder designated for purposes of notification of plan approval or disapproval under the procedures of this Special Provision.
- (c) The Utilization Plan shall include a DBE Participation Commitment Statement, Department form SBE 2025, for each DBE proposed for the performance of work to achieve the contract goal. For bidding purposes, submission of the completed SBE 2025 forms, signed by the DBEs and faxed to the bidder will be acceptable as long as the original is available and provided upon request. All elements of information indicated on the said form shall be provided, including but not limited to the following:
  - (1) The names and addresses of DBE firms that will participate in the contract;

- (2) A description, including pay item numbers, of the work each DBE will perform;
- (3) The dollar amount of the participation of each DBE firm participating. The dollar amount of participation for identified work shall specifically state the quantity, unit price, and total subcontract price for the work to be completed by the DBE. If partial pay items are to be performed by the DBE, indicate the portion of each item, a unit price where appropriate and the subcontract price amount;
- (4) DBE Participation Commitment Statements, form SBE 2025, signed by the bidder and each participating DBE firm documenting the commitment to use the DBE subcontractors whose participation is submitted to meet the contract goal;
- (5) if the bidder is a joint venture comprised of DBE companies and non-DBE companies, the plan must also include a clear identification of the portion of the work to be performed by the DBE partner(s); and,
- (6) If the contract goal is not met, evidence of good faith efforts.

GOOD FAITH EFFORT PROCEDURES. The contract will not be awarded until the Utilization Plan submitted by the apparent successful bidder is approved. All information submitted by the bidder must be complete, accurate and adequately document that enough DBE participation has been obtained or document that good faith efforts of the bidder, in the event enough DBE participation has not been obtained, before the Department will commit to the performance of the contract by the bidder. The Utilization Plan will be approved by the Department if the Utilization Plan documents sufficient commercially useful DBE work performance to meet the contract goal or the bidder submits sufficient documentation of a good faith effort to meet the contract goal pursuant to 49 CFR Part 26, Appendix A. The Utilization Plan will not be approved by the Department if the Utilization Plan does not document sufficient DBE participation to meet the contract goal unless the apparent successful bidder documented in the Utilization Plan that it made a good faith effort to meet the goal. This means that the bidder must show that all necessary and reasonable steps were taken to achieve the contract goal. Necessary and reasonable steps are those which, by their scope, intensity and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not successful. The Department will consider the quality, quantity, and intensity of the kinds of efforts that the bidder has made. Mere *pro forma* efforts, in other words, efforts done as a matter of form, are not good faith efforts; rather, the bidder is expected to have taken genuine efforts that would be reasonably expected of a bidder actively and aggressively trying to obtain DBE participation sufficient to meet the contract goal.

- (a) The following is a list of types of action that the Department will consider as part of the evaluation of the bidder's good faith efforts to obtain participation. These listed factors are not intended to be a mandatory checklist and are not intended to be exhaustive. Other factors or efforts brought to the attention of the Department may be relevant in appropriate cases, and will be considered by the Department.

- (1) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBE companies that have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBE companies to respond to the solicitation. The bidder must determine with certainty if the DBE companies are interested by taking appropriate steps to follow up initial solicitations.
- (2) Selecting portions of the work to be performed by DBE companies in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime Contractor might otherwise prefer to perform these work items with its own forces.
- (3) Providing interested DBE companies with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.
- (4)
  - a. Negotiating in good faith with interested DBE companies. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBE companies that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBE companies to perform the work.
  - b. A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBE companies is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also the ability or desire of a bidder to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidders are not, however, required to accept higher quotes from DBE companies if the price difference is excessive or unreasonable.
- (5) Not rejecting DBE companies as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.

- (6) Making efforts to assist interested DBE companies in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.
  - (7) Making efforts to assist interested DBE companies in obtaining necessary equipment, supplies, materials, or related assistance or services.
  - (8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBE companies.
- (b) If the Department determines that the apparent successful bidder has made a good faith effort to secure the work commitment of DBE companies to meet the contract goal, the Department will award the contract provided that it is otherwise eligible for award. If the Department determines that the bidder has failed to meet the requirements of this Special Provision or that a good faith effort has not been made, the Department will notify the responsible company official designated in the Utilization Plan that the bid is not responsive. The notification shall include a statement of reasons for the determination.
- (c) The bidder may request administrative reconsideration of a determination adverse to the bidder within the five working days after the receipt of the notification date of the determination by delivering the request to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764 (Telefax: (217)785-1524). Deposit of the request in the United States mail on or before the fifth business day shall not be deemed delivery. The determination shall become final if a request is not made and delivered. A request may provide additional written documentation and/or argument concerning the issues raised in the determination statement of reasons, provided the documentation and arguments address efforts made prior to submitting the bid. The request will be forwarded to the Department's Reconsideration Officer. The Reconsideration Officer will extend an opportunity to the bidder to meet in person in order to consider all issues of documentation and whether the bidder made a good faith effort to meet the goal. After the review by the Reconsideration Officer, the bidder will be sent a written decision within ten working days after receipt of the request for consideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. A final decision by the Reconsideration Officer that a good faith effort was made shall approve the Utilization Plan submitted by the bidder and shall clear the contract for award. A final decision that a good faith effort was not made shall render the bid not responsive.

CALCULATING DBE PARTICIPATION. The Utilization Plan values represent work anticipated to be performed and paid for upon satisfactory completion. The Department is only able to count toward the achievement of the overall goal and the contract goal the value of payments made for the work actually performed by DBE companies. In addition, a DBE must perform a commercially useful function on the contract to be counted. A commercially useful function is

generally performed when the DBE is responsible for the work and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. The Department and Contractor are governed by the provisions of 49 CFR Part 26.55(c) on questions of commercially useful functions as it affects the work. Specific counting guidelines are provided in 49 CFR Part 26.55, the provisions of which govern over the summary contained herein.

- (a) DBE as the Contractor: 100 percent goal credit for that portion of the work performed by the DBE's own forces, including the cost of materials and supplies. Work that a DBE subcontracts to a non-DBE does not count toward the DBE goals.
- (b) DBE as a joint venture Contractor: 100 percent goal credit for that portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work performed by the DBE's own forces.
- (c) DBE as a subcontractor: 100 percent goal credit for the work of the subcontract performed by the DBE's own forces, including the cost of materials and supplies, excluding the purchase of materials and supplies or the lease of equipment by the DBE subcontractor from the prime Contractor or its affiliates. Work that a DBE subcontractor in turn subcontracts to a non-DBE does not count toward the DBE goal.
- (d) DBE as a trucker: 100 percent goal credit for trucking participation provided the DBE is responsible for the management and supervision of the entire trucking operation for which it is responsible. At least one truck owned, operated, licensed, and insured by the DBE must be used on the contract. Credit will be given for the following:
  - (1) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.
  - (2) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission is receives as a result of the lease arrangement.
- (e) DBE as a material supplier:
  - (1) 60 percent goal credit for the cost of the materials or supplies purchased from a DBE regular dealer.
  - (2) 100 percent goal credit for the cost of materials of supplies obtained from a DBE manufacturer.
  - (3) 100 percent credit for the value of reasonable fees and commissions for the procurement of materials and supplies if not a regular dealer or manufacturer.

CONTRACT COMPLIANCE. Compliance with this Special Provision is an essential part of the contract. The Department is prohibited by federal regulations from crediting the participation of a DBE included in the Utilization Plan toward either the contract goal or the Department's overall goal until the amount to be applied toward the goals has been paid to the DBE. The following administrative procedures and remedies govern the compliance by the Contractor with the contractual obligations established by the Utilization Plan. After approval of the Utilization Plan and award of the contract, the Utilization Plan and individual DBE Participation Statements become part of the contract. If the Contractor did not succeed in obtaining enough DBE participation to achieve the advertised contract goal, and the Utilization Plan was approved and contract awarded based upon a determination of good faith, the total dollar value of DBE work calculated in the approved Utilization Plan as a percentage of the awarded contract value shall become the amended contract goal. All work indicated for performance by an approved DBE shall be performed, managed, and supervised by the DBE executing the Participation Statement.

- (a) NO AMENDMENT. No amendment to the Utilization Plan may be made without prior written approval from the Department's Bureau of Small Business Enterprises. All requests for amendment to the Utilization Plan shall be submitted to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764. Telephone number (217)785-4611. Telefax number (217)785-1524.
- (b) TERMINATION OR REPLACEMENT. The Contractor shall not terminate or replace a DBE listed on the approved Utilization Plan, or perform with other forces work designated for a listed DBE except as provided in the Special Provision.
- (c) CHANGES TO WORK. Any deviation from the DBE condition-of-award or contract plans, specifications, or special provisions must be approved, in writing, by the Department as provided elsewhere in the Contract. The Contractor shall notify affected DBEs in writing of any changes in the scope of work which result in a reduction in the dollar amount condition-of-award to the contract. Where the revision includes work committed to a new DBE subcontractor, not previously involved in the project, then a Request for Approval of Subcontractor, Department form BC 260A, must be signed and submitted. If the commitment of work is in the form of additional tasks assigned to an existing subcontract, then a new Request for Approval of Subcontractor shall not be required. However, the Contractor must document efforts to assure that the existing DBE subcontractor is capable of performing the additional work and has agreed in writing to the change.
- (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 subcontractor listed in the approved Utilization Plan without prior written consent. This includes, but is not limited to, instances in which the Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm. Written consent will be granted only if the Bureau of Small Business Enterprises agrees, for reasons stated in its concurrence document, that the Contractor has good cause to terminate or replace the DBE firm. Before transmitting to the Bureau of Small Business Enterprises any request to terminate and/or substitute a DBE subcontractor, the Contractor shall give notice in writing to the DBE subcontractor, with a copy to the Bureau, of its intent to request to terminate and/or substitute, and the reason for the request. The Contractor shall give the DBE five days to respond to the Contractor's notice. The DBE so notified shall advise the Bureau and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Bureau should not approve the Contractor's action. If required in a particular case as a matter of public necessity, the Bureau may provide a response period shorter than five days.

For purposes of this paragraph, good cause includes the following circumstances:

- (1) The listed DBE subcontractor fails or refuses to execute a written contract;
- (2) The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor;
- (3) The listed DBE subcontractor fails or refuses to meet the prime Contractor's reasonable, nondiscriminatory bond requirements;

- (4) The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;
- (5) The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1,200 or applicable state law.
- (6) You have determined that the listed DBE subcontractor is not a responsible contractor;
- (7) The listed DBE subcontractor voluntarily withdraws from the projects and provides to you written notice of its withdrawal;
- (8) The listed DBE is ineligible to receive DBE credit for the type of work required;
- (9) A DBE owner dies or becomes disabled with the result that the listed DBE contractor is unable to complete its work on the contract;
- (10) Other documented good cause that compels the termination of the DBE subcontractor. Provided, that good cause does not exist if the prime Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the prime Contractor can self-perform the work for which the DBE contractor was engaged or so that the prime Contractor can substitute another DBE or non-DBE contractor after contract award.

When a DBE is terminated, or fails to complete its work on the Contract for any reason the Contractor shall make a good faith effort to find another DBE to substitute for the original DBE to perform at least the same amount of work under the contract as the terminated DBE to the extent needed to meet the established Contract goal.

- (f) PAYMENT RECORDS. The Contractor shall maintain a record of payments for work performed to the DBE participants. The records shall be made available to the Department for inspection upon request. After the performance of the final item of work or delivery of material by a DBE and final payment therefore to the DBE by the Contractor, but not later than thirty calendar days after payment has been made by the Department to the Contractor for such work or material, the Contractor shall submit a DBE Payment Agreement on Department form SBE 2115 to the Regional Engineer. If full and final payment has not been made to the DBE, the DBE Payment Agreement shall indicate whether a disagreement as to the payment required exists between the Contractor and the DBE or if the Contractor believes that the work has not been satisfactorily completed. If the Contractor does not have the full amount of work indicated in the Utilization Plan performed by the BDE 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 may request administrative reconsideration of a decision to deduct the amount of the goal not achieved as liquidated damages. A request to reconsider shall be delivered to the Contract Compliance Section and shall be handled and considered in the same manner as set forth in paragraph (c) of "Good Faith Effort Procedures" of this Special Provision, except a final decision that a good faith effort was not made during contract performance to achieve the goal agreed to in the Utilization Plan shall be the final administrative decision of the Department.

80029

## FUEL COST ADJUSTMENT (BDE) (RETURN FORM WITH BID)

Effective: April 1, 2009

Revised: July 1, 2009

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 work added by adjusted unit price will be subject to fuel cost adjustment only when the category representing the added work was subject to the fuel cost adjustment. Added work paid for by time and materials 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<sub>P</sub> = Fuel Price Index, as published by the Department for the month the work is performed, \$/gal (\$/liter)  
FPI<sub>L</sub> = Fuel Price Index, as published by the Department for the month prior to the letting, \$/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.

Progress Payments. 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.

Final Quantities. Upon completion of the work and determination of final pay quantities, an adjustment will be prepared to reconcile any differences between estimated quantities previously paid and the final quantities. The value for the balancing adjustment will be based on a weighted average of FPI<sub>P</sub> and Q only for those months requiring the cost adjustment. The cost adjustment will be applicable to the final measured quantities of all applicable pay items.

Basis of Payment. Fuel cost adjustments may be positive or negative but will only be made when there is a difference between the FPI<sub>L</sub> and FPI<sub>P</sub> in excess of five percent, as calculated by:

$$\text{Percent Difference} = \{(FPI_L - FPI_P) \div FPI_L\} \times 100$$

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 | <input type="checkbox"/> |
| Category B Subbases and Aggregate Base Courses | Yes | <input type="checkbox"/> |
| Category C HMA Bases, Pavements and Shoulders  | Yes | <input type="checkbox"/> |
| Category D PCC Bases, Pavements and Shoulders  | Yes | <input type="checkbox"/> |
| Category E Structures                          | Yes | <input type="checkbox"/> |

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

80229

**GRANULAR MATERIALS (BDE)**

Effective: November 1, 2012

Revise the title of Article 1003.04 of the Standard Specifications to read:

**"1003.04 Fine Aggregate for Bedding, Trench Backfill, Embankment, Porous Granular Backfill, Sand Backfill for Underdrains, and French Drains."**

Revise Article 1003.04(c) of the Standard Specifications to read:

"(c) Gradation. The fine aggregate gradations for granular embankment, granular backfill, bedding, and trench backfill for pipe culverts and storm sewers shall be FA 1, FA 2, or FA 6 through FA 21.

The fine aggregate gradation for porous granular embankment, porous granular backfill, french drains, and sand backfill for underdrains shall be FA 1, FA 2, or FA 20, except the percent passing the No. 200 (75 µm) sieve shall be 2±2."

Revise Article 1004.05(c) of the Standard Specifications to read:

"(c) Gradation. The coarse aggregate gradations shall be as follows.

Application	Gradation
Blotter	CA 15
Granular Embankment, Granular Backfill, Bedding, and Trench Backfill for Pipe Culverts and Storm Sewers	CA 6, CA 9, CA 10, CA 12, CA17, CA18, and CA 19
Porous Granular Embankment, Porous Granular Backfill, and French Drains	CA 7, CA 8, CA 11, CA 15, CA 16 and CA 18"

80303



## 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% <sup>n</sup>

80246

**LRFD PIPE CULVERT BURIAL TABLES (BDE)**

Effective: November 1, 2013

Revise Article 542.02 of the Standard Specifications to read as follows:

"Item	Article/Section
(a) Corrugated Steel Pipe .....	1006.01
(b) Corrugated Steel Pipe Arch .....	1006.01
(c) Bituminous Coated Corrugated Steel Pipe .....	1006.01
(d) Bituminous Coated Corrugated Steel Pipe Arch .....	1006.01
(e) Zinc and Aramid Fiber Composite Coated Corrugated Steel Pipe .....	1006.01
(f) Aluminized Steel Type 2 Corrugated Pipe .....	1006.01
(g) Aluminized Steel Type 2 Corrugated Pipe Arch .....	1006.01
(h) Precoated Galvanized Corrugated Steel Pipe .....	1006.01
(i) Precoated Galvanized Corrugated Steel Pipe Arch .....	1006.01
(j) Corrugated Aluminum Alloy Pipe .....	1006.03
(k) Corrugated Aluminum Alloy Pipe Arch .....	1006.03
(l) Extra Strength Clay Pipe .....	1040.02
(m) Concrete Sewer, Storm Drain, and Culvert Pipe .....	1042
(n) Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe .....	1042
(o) Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe.....	1042
(p) Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe .....	1042
(q) Polyvinyl Chloride (PVC) Pipe .....	1040.03
(r) Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior .....	1040.03
(s) Corrugated Polypropylene (CPP) pipe with smooth Interior .....	1040.07
(t) Corrugated Polyethylene (PE) Pipe with a Smooth Interior .....	1040.04
(u) Polyethylene (PE) Pipe with a Smooth Interior .....	1040.04
(v) Rubber Gaskets and Preformed Flexible Joint Sealants for Concrete Pipe .....	1056
(w) Mastic Joint Sealer for Pipe .....	1055
(x) External Sealing Band .....	1057
(y) Fine Aggregate (Note 1) .....	1003.04
(z) Coarse Aggregate (Note 2) .....	1004.05
(aa) Packaged Rapid Hardening Mortar or Concrete .....	1018
(bb) Nonshrink Grout .....	1024.02
(cc) Reinforcement Bars and Welded Wire Fabric .....	1006.10
(dd) Handling Hole Plugs .....	1042.16

Note 1. The fine aggregate shall be moist.

Note 2. The coarse aggregate shall be wet." .

Revise the table for permitted materials in Article 542.03 of the Standard Specifications as follows:

"Class	Materials
A	Rigid Pipes: Extra Strength Clay Pipe Concrete Sewer Storm Drain and Culvert Pipe, Class 3 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
C	Rigid Pipes: Extra Strength Clay Pipe Concrete Sewer Storm Drain and Culvert Pipe, Class 3 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: Aluminized Steel Type 2 Corrugated Pipe Aluminized Steel Type 2 Corrugated Pipe Arch Precoated Galvanized Corrugated Steel Pipe Precoated Galvanized Corrugated Steel Pipe Arch Corrugated Aluminum Alloy Pipe Corrugated Aluminum Alloy Pipe Arch Polyvinyl Chloride (PVC) Pipe Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior Polyethylene (PE) Pipe with a Smooth Interior Corrugated Polypropylene (CPP) Pipe with Smooth Interior
D	Rigid Pipes: Extra Strength Clay Pipe Concrete Sewer Storm Drain and Culvert Pipe, Class 3 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: Corrugated Steel Pipe Corrugated Steel Pipe Arch Bituminous Coated Corrugated Steel Pipe Bituminous Coated Corrugated Steel Pipe Arch Zinc and Aramid Fiber Composite Coated Corrugated Steel Pipe Aluminized Steel Type 2 Corrugated Pipe Aluminized Steel Type 2 Corrugated Pipe Arch Precoated Galvanized Corrugated Steel Pipe Precoated Galvanized Corrugated Steel Pipe Arch Corrugated Aluminum Alloy Pipe Corrugated Aluminum Alloy Pipe Arch Polyvinyl Chloride (PVC) Pipe Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior Corrugated Polyethylene (PE) Pipe with a Smooth Interior Polyethylene (PE) Pipe with a Smooth Interior Corrugated Polypropylene (CPP) Pipe with Smooth Interior

Revise Articles 542.03(b) and (c) of the Standard Specifications to read:

“(b) Extra strength clay pipe will only be permitted for pipe culverts Type 1, for 10 in., 12 in., 42 in. and 48 in. (250 mm, 300 mm, 1050 mm and 1200 mm), Types 2, up to and including 48 in. (1200 mm), Type 3, up to and including 18 in. (450 mm), Type 4 up to and including 10 in. (250 mm), for all pipe classes.

(c) Concrete sewer, storm drain, and culvert pipe Class 3 will only be permitted for pipe culverts Type 1, up to and including 10 in (250 mm), Type 2, up to and including 30 in. (750 mm), Type 3, up to and including 15 in. (375 mm); Type 4, up to and including 10 in. (250 mm), for all pipe classes.”

Replace the pipe tables in Article 542.03 of the Standard Specifications with the following:

"Table IA: Classes of Reinforced Concrete Pipe for the Respective Diameters of Pipe and Fill Heights over the Top of the Pipe							
Nominal Diameter in.	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
	Fill Height: 3' and less 1' min cover	Fill Height: Greater than 3' not exceeding 10'	Fill Height: Greater than 10' not exceeding 15'	Fill Height: Greater than 15' not exceeding 20'	Fill Height: Greater than 20' not exceeding 25'	Fill Height: Greater than 25' not exceeding 30'	Fill Height: Greater than 30' not exceeding 35'
12	IV	II	III	IV	IV	V	V
15	IV	II	III	IV	IV	V	V
18	IV	II	III	IV	IV	V	V
21	III	II	III	IV	IV	V	V
24	III	II	III	IV	IV	V	V
30	IV	II	III	IV	IV	V	V
36	III	II	III	IV	IV	V	V
42	II	II	III	IV	IV	V	V
48	II	II	III	IV	IV	V	V
54	II	II	III	IV	IV	V	V
60	II	II	III	IV	IV	V	V
66	II	II	III	IV	IV	V	V
72	II	II	III	IV	V	V	V
78	II	II	III	IV	2020	2370	2730
84	II	II	III	IV	2020	2380	2740
90	II	III	III	1680	2030	2390	2750
96	II	III	III	1690	2040	2400	2750
102	II	III	IV	1700	2050	2410	2760
108	II	III	1360	1710	2060	2410	2770

Notes:

A number indicates the D-Load for the diameter and depth of fill and that a special design is required.  
Design assumptions: Water filled pipe, Type 2 bedding and Class C Walls

Table IA: Classes of Reinforced Concrete Pipe for the Respective Diameters of Pipe and Fill Heights over the Top of the Pipe (Metric)							
Nominal Diameter mm	Type 1 Fill Height: 1 m and less 0.3 m min. cover	Type 2 Fill Height: Greater than 1 m not exceeding 3 m	Type 3 Fill Height: Greater than 3 m not exceeding 4.5 m	Type 4 Fill Height: Greater than 4.5 m not exceeding 6 m	Type 5 Fill Height: Greater than 6 m not exceeding 7.5 m	Type 6 Fill Height: Greater than 7.5 m not exceeding 9 m	Type 7 Fill Height: Greater than 9 m not exceeding 10.5 m
300	IV	II	III	IV	IV	V	V
375	IV	II	III	IV	IV	V	V
450	IV	II	III	IV	IV	V	V
525	III	II	III	IV	IV	V	V
600	III	II	III	IV	IV	V	V
750	IV	II	III	IV	IV	V	V
900	III	II	III	IV	IV	V	V
1050	II	II	III	IV	IV	V	V
1200	II	II	III	IV	IV	V	V
1350	II	II	III	IV	IV	V	V
1500	II	II	III	IV	IV	V	V
1650	II	II	III	IV	IV	V	V
1800	II	II	III	IV	V	V	V
1950	II	II	III	IV	100	110	130
2100	II	II	III	IV	100	110	130
2250	II	III	III	80	100	110	130
2400	II	III	III	80	100	110	130
2550	II	III	IV	80	100	120	130
2700	II	III	70	80	100	120	130

Notes:

A number indicates the D-Load for the diameter and depth of fill and that a special design is required.  
Design assumptions: Water filled pipe, Type 2 bedding and Class C Walls

TABLE IB: THICKNESS OF CORRUGATED STEEL PIPE FOR THE RESPECTIVE DIAMETER OF PIPE AND FILL HEIGHTS OVER THE TOP OF THE PIPE FOR 2 2/3"x1/2", 3"x1" AND 5"x1" CORRUGATIONS																	
Nominal Diameter in.	Type 1		Type 2		Type 3		Type 4		Type 5		Type 6		Type 7				
	Fill Height: 3' and less 1' min. cover		Fill Height: Greater than 3' not exceeding 10'		Fill Height: Greater than 10' not exceeding 15'		Fill Height: Greater than 15' not exceeding 20'		Fill Height: Greater than 20' not exceeding 25'		Fill Height: Greater than 25' not exceeding 30'		Fill Height: Greater than 30' not exceeding 35'				
	2 2/3" x 1/2"	5"x1"	2 2/3" x 1/2"	3"x1"	5"x1"	2 2/3" x 1/2"	3"x1"	5"x1"	2 2/3" x 1/2"	3"x1"	5"x1"	2 2/3" x 1/2"	3"x1"	5"x1"	2 2/3" x 1/2"	3"x1"	5"x1"
12*	0.109		0.079			0.079			0.079			0.079			0.079		
15	0.109		0.079			0.079			0.079			0.109			0.109		
18	0.109		0.079			0.079			0.079			0.109			0.109		
21	0.109		0.079			0.079			0.109			0.109			0.109		
24	0.109		0.079			0.079			0.109			0.109			0.109		
30	0.109		0.079			0.109			0.109			0.109			0.109		
36	0.109E		0.079			0.109			0.109			0.109			0.138E		
42	0.109	0.109	0.079	0.079	0.079	0.109	0.079	0.109	0.079	0.109	0.109	0.109	0.109	0.109	0.138E	0.109	0.109
48	0.109	0.109	0.109	0.079	0.079	0.109	0.079	0.109	0.109	0.109	0.109	0.138E	0.109	0.109	0.138E	0.109	0.109
54	0.109	0.109	0.109	0.109	0.079	0.109	0.079	0.109	0.109	0.109	0.109	0.138	0.109	0.109	0.138	0.138	0.138
60	0.109	0.109	0.109	0.109	0.079	0.109	0.079	0.109	0.109	0.109	0.109	0.138	0.109	0.109	0.138	0.138	0.138
66	0.138	0.109	0.138	0.079	0.109	0.138	0.079	0.109	0.138	0.109	0.109	0.138	0.109	0.109	0.138	0.138	0.138
72	0.138	0.109	0.138	0.079	0.109	0.138	0.079	0.109	0.138	0.109	0.109	0.138	0.109	0.109	0.138	0.138	0.138
78	0.168	0.109	0.168	0.079	0.109	0.168	0.079	0.109	0.168	0.109	0.109	0.168	0.109	0.109	0.168	0.168	0.168
84	0.168	0.109	0.168	0.079	0.109	0.168	0.079	0.109	0.168	0.109	0.109	0.168	0.109	0.109	0.168	0.168	0.168
90		0.138		0.079	0.109		0.079	0.109		0.109			0.138		0.168E	0.168E	0.168E
96		0.138		0.109	0.109		0.109	0.109		0.109			0.138		0.168E	0.168E	0.168E
102		0.138Z		0.109	0.109		0.109	0.109		0.109			0.138		0.168E	0.168E	0.168E
108		0.138Z		0.109	0.109		0.109	0.109		0.109			0.138		0.168E	0.168E	0.168E
114		0.138Z		0.109	0.109		0.109	0.109		0.109			0.138		0.168E	0.168E	0.168E
120		0.138Z		0.109	0.109		0.109	0.109		0.109			0.138		0.168E	0.168E	0.168E
126		0.168Z		0.138	0.138		0.138	0.138		0.138			0.138		0.168E	0.168E	0.168E
132		0.168Z		0.138	0.138		0.138	0.138		0.138			0.138		0.168E	0.168E	0.168E
138		0.168Z		0.138	0.138		0.138	0.138		0.138			0.138		0.168E	0.168E	0.168E
144		0.168Z		0.168	0.168		0.168	0.168		0.168			0.168		0.168E	0.168E	0.168E

Notes:  
 \* 1 1/2" x 1/4" corrugations shall be use for 6", 8", and 10" diameters.  
 E Elongation according to Article 542.04(e), the elongation requirement for Type 1 fill heights may be eliminated for fills above 1'-6"  
 Z 1'-6" Minimum fill  
 Longitudinal seams assumed.



Nominal Diameter mm	FOR THE RESPECTIVE DIAMETER OF PIPE AND FILL HEIGHTS OVER THE TOP OF THE PIPE FOR 68 mm x 13 mm, 75 mm x 25 mm AND 125 mm x 25 mm CORRUGATIONS (Metric)						
	Type 1 Fill Height:	Type 2 Fill Height:	Type 3 Fill Height:	Type 4 Fill Height:	Type 5 Fill Height:	Type 6 Fill Height:	Type 7 Fill Height:
	1 m and less 0.3 m min. cover	Greater than 1 m not exceeding 3 m	Greater than 3 m not exceeding 4.5 m	Greater than 4.5 m not exceeding 6 m	Greater than 6 m not exceeding 7.5 m	Greater than 7.5 m not exceeding 9 m	Greater than 9 m not exceeding 10.5 m
	68 x 13 mm	68 x 13 mm	68 x 13 mm	68 x 13 mm	68 x 13 mm	68 x 13 mm	68 x 13 mm
	75 x 25 mm	75 x 25 mm	75 x 25 mm	75 x 25 mm	75 x 25 mm	75 x 25 mm	75 x 25 mm
	125 x 25 mm	125 x 25 mm	125 x 25 mm	125 x 25 mm	125 x 25 mm	125 x 25 mm	125 x 25 mm
300*	2.77	2.01	2.01	2.01	2.01	2.01	2.01
375	2.77	2.01	2.01	2.01	2.01	2.77	2.77
450	2.77	2.01	2.01	2.01	2.77	2.77	2.77
525	2.77	2.01	2.01	2.01	2.77	2.77	2.77
600	2.77	2.01	2.01	2.77	2.77	2.77	2.77
750	2.77	2.01	2.77	2.77	2.77	2.77	2.77
900	2.77E	2.01	2.77	2.77	2.77	2.77	3.51E
1050	2.77	2.01	2.77	2.77	2.77	2.77	3.51E
1200	2.77	2.77	2.77	2.77	2.77	3.51E	3.51E
1350	2.77	2.77	2.77	2.77	2.77	3.51E	3.51E
1500	2.77	2.77	2.77	2.77	2.77	3.51E	3.51E
1650	3.51	2.77	3.51	2.77	3.51	3.51	3.51
1800	3.51	2.77	3.51	2.77	3.51	3.51	3.51
1950	4.27	2.77	4.27	2.77	4.27	4.27	4.27
2100	4.27	2.77	4.27	2.77	4.27	4.27	4.27
2250	3.51	2.01	2.77	2.77	3.51	3.51	4.27E
2400	3.51	2.77	2.77	3.51	3.51	4.27E	4.27E
2550	3.51Z	2.77	2.77	3.51	3.51	4.27E	4.27E
2700	3.51Z	2.77	2.77	3.51	3.51	4.27E	4.27E
2850	3.51Z	2.77	2.77	3.51	4.27	4.27E	4.27E
3000	3.51Z	2.77	2.77	3.51	4.27	4.27E	4.27E
3150	4.27Z	3.51	3.51	3.51	4.27	4.27E	4.27E
3300	4.27Z	3.51	3.51	4.27	4.27	4.27E	4.27E
3450	4.27Z	3.51	3.51	4.27	4.27	4.27E	4.27E
3600	4.27Z	4.27	4.27	4.27	4.27	4.27E	4.27E

Notes:

\* 38 mm x 6.5 mm corrugations shall be use for 150 mm, 200 mm, and 250 mm diameters.

E Elongation according to Article 542.04(e), the elongation requirement for Type 1 fill heights may be eliminated for fills above 450 mm

Z 450 mm Minimum Fill

Longitudinal seams assumed.

TABLE IC: THICKNESS OF CORRUGATED ALUMINUM ALLOY PIPE FOR THE RESPECTIVE DIAMETER OF PIPE AND FILL HEIGHTS OVER THE TOP OF THE PIPE FOR 2 2/3"x1/2" AND 3"x1" CORRUGATIONS							
Nominal Diameter in.	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7
	Fill Height: 3' and less 1' min. cover	Fill Height: Greater than 3' not exceeding 10'	Fill Height: Greater than 10' not exceeding 15'	Fill Height: Greater than 15' not exceeding 20'	Fill Height: Greater than 20' not exceeding 25'	Fill Height: Greater than 25' not exceeding 30'	Fill Height: Greater than 30' not exceeding 35'
	2 2/3"x1/2" 3"x1"	2 2/3"x1/2" 3"x1"	2 2/3"x1/2" 3"x1"	2 2/3"x1/2" 3"x1"	2 2/3"x1/2" 3"x1"	2 2/3"x1/2" 3"x1"	2 2/3"x1/2" 3"x1"
12	0.06	0.06	0.06	0.06	0.06	0.06	0.06
15	0.06	0.06	0.06	0.06	0.06	0.06	0.06
18	0.06	0.06	0.06	0.06	0.06	0.06	0.075
21	0.075E	0.06	0.06	0.06	0.06	0.075	0.075E
24	0.075E	0.06	0.06	0.06	0.06	0.075	0.075E
30	0.105E	0.075	0.075	0.075	0.075	0.105E	0.105E
36	0.105E	0.075	0.075	0.075	0.105	0.105E	0.105E
42	0.105E	0.105	0.105	0.105	0.105	0.105E	0.105E
48	0.105E	0.105	0.105	0.105	0.105	0.105E	0.135E
54	0.105E	0.105	0.105	0.105	0.105	0.105E	0.135E
60	0.135E	0.135	0.135	0.135	0.135	0.135E	0.135E
66	0.164E	0.164	0.164	0.164	0.164	0.164E	0.164E
72	0.164E	0.164	0.164	0.164	0.164	0.164E	0.164E
78	0.135	0.075	0.105	0.135	0.135	0.135E	0.164E
84	0.135	0.105	0.105	0.135	0.135	0.164E	0.164E
90	0.135	0.105	0.105	0.135	0.135	0.164E	0.164E
96	0.135	0.105	0.105	0.135	0.164	0.164E	0.164E
102	0.135Z	0.135	0.135	0.135	0.164	0.164E	0.164E
108	0.135Z	0.135	0.135	0.135	0.164	0.164E	0.164E
114	0.164Z	0.164	0.164	0.164	0.164	0.164E	0.164E
120	0.164Z	0.164	0.164	0.164	0.164	0.164E	0.164E

Notes:

E Elongation according to Article 542.04(e), the elongation requirement for Type 1 fill heights may be eliminated for fills above 1'-6"

TABLE IC: THICKNESS OF CORRUGATED ALUMINUM ALLOY PIPE FOR THE RESPECTIVE DIAMETER OF PIPE AND FILL HEIGHTS OVER THE TOP OF THE PIPE FOR 2 2/3"x1/2" AND 3"x1" CORRUGATIONS (Metric)														
Nominal Diameter in.	Type 1		Type 2		Type 3		Type 4		Type 5		Type 6		Type 7	
	Fill Height: 1 m and less 0.3 m min. cover		Fill Height: Greater than 1 m not exceeding 3 m		Fill Height: Greater than 3 m not exceeding 4.5 m		Fill Height: Greater than 4.5 m not exceeding 6 m		Fill Height: Greater than 6 m not exceeding 7.5 m		Fill Height: Greater than 7.5 m not exceeding 9 m		Fill Height: Greater than 9 m not exceeding 10.5 m	
	68 x 13 mm	75 x 25 mm	68 x 13 mm	75 x 25 mm	68 x 13 mm	75 x 25 mm	68 x 13 mm	75 x 25 mm	68 x 13 mm	75 x 25 mm	68 x 13 mm	75 x 25 mm	68 x 13 mm	75 x 25 mm
300	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
375	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
450	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
525	1.91E	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.91E	1.91E
600	1.91E	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.91E	1.91E
750	2.67E	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	2.67E	2.67E
900	2.67E	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	2.67E	2.67E
1050	2.67E	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	2.67E	2.67E
1200	2.67E	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67E	2.67E
1350	2.67E	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67E	2.67E
1500	3.43E	2.67	3.43	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	3.43E	3.43E
1650	4.17E	2.67	4.17	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	4.17E	4.17E
1800	4.17E	3.43	4.17	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	4.17E	4.17E
1950		3.43	1.91	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	3.43E	3.43E
2100		3.43	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	3.43E	3.43E
2250		3.43	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	3.43E	3.43E
2400		3.43	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	3.43E	3.43E
2550		3.43Z	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43E	3.43E
2700		3.43Z	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43E	3.43E
2850		4.17Z	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17E	4.17E
3000		4.17Z	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17E	4.17E

Notes:

E Elongation according to Article 542.04(e), the elongation requirement for Type 1 fill heights may be eliminated for fills above 450 mm.

Table 11A: THICKNESS FOR CORRUGATED STEEL PIPE ARCHES AND CORRUGATED ALUMINUM ALLOY PIPE ARCHES FOR THE RESPECTIVE EQUIVALENT ROUND SIZE OF PIPE AND FILL HEIGHTS OVER THE TOP OF PIPE																													
Equivalent Round Size In.	Corrugated Steel & Aluminum Pipe Arch 2 2/3" x 1/2"			Corrugated Steel & Aluminum Pipe Arch 3" x 1"			Corrugated Steel Pipe Arch 5" x 1"			Min. Cover	Type 1 Fill Height: 3' and less						Type 2 Fill Height: Greater than 3' not exceeding 10'						Type 3 Fill Height: Greater than 10' not exceeding 15'						
	Span (in.)		Rise (in.)	Span (in.)		Rise (in.)	Span (in.)		Rise (in.)		Steel 3"x1" 1/2"		Aluminum 2 2/3" x 1/2" 3"x1"		Steel 3"x1" 1/2"		Aluminum 2 2/3" x 1/2" 3"x1"		Steel 3"x1" 1/2"		Aluminum 2 2/3" x 1/2" 3"x1"		Steel 3"x1" 1/2"		Aluminum 2 2/3" x 1/2" 3"x1"				
	17	13		17	13		17	13			0.079		0.060		0.079		0.060		0.079		0.060		0.079		0.060		0.079		0.060
15	17	13		17	13		17	13		0.079		0.060		0.079		0.060		0.079		0.060		0.079		0.060		0.079		0.060	
18	21	15		21	15		21	15		0.109		0.060		0.079		0.060		0.079		0.060		0.079		0.060		0.079		0.060	
21	24	18		24	18		24	18		0.109		0.060		0.079		0.060		0.079		0.060		0.079		0.060		0.079		0.060	
24	28	20		28	20		28	20		0.109		0.075		0.079		0.075		0.079		0.075		0.079		0.075		0.079		0.075	
30	35	24		35	24		35	24		0.109		0.075		0.079		0.075		0.079		0.075		0.109		0.075		0.109		0.075	
36	42	29		42	29		42	29		0.109		0.105		0.079		0.105		0.079		0.105		0.109		0.105		0.109		0.105	
42	49	33		49	33		49	33		0.109		0.105		0.109		0.105		0.109		0.105		0.109		0.105		0.109		0.105	
48	57	38		57	38		57	38		0.109		0.135		0.079		0.135		0.079		0.135		0.109		0.135		0.109		0.135	
54	64	43		64	43		64	43		0.109		0.135		0.109		0.135		0.109		0.135		0.109		0.135		0.109		0.135	
60	71	47		71	47		71	47		0.138		0.164		0.109		0.164		0.109		0.164		0.138		0.164		0.138		0.164	
66	77	52		77	52		77	52		0.168		0.105		0.168		0.105		0.168		0.105		0.168		0.105		0.168		0.105	
72	83	57		83	57		83	57		0.168		0.105		0.168		0.105		0.168		0.105		0.168		0.105		0.168		0.105	
78												0.105		0.109		0.105		0.109		0.105		0.109		0.105		0.109		0.105	
84												0.105		0.109		0.105		0.109		0.105		0.109		0.105		0.109		0.105	
90												0.105		0.109		0.135		0.109		0.135		0.109		0.135		0.109		0.135	
96												0.109		0.109		0.164		0.109		0.164		0.109		0.164		0.109		0.164	
102												0.109		0.109		0.164		0.109		0.164		0.109		0.164		0.109		0.164	
108												0.138		0.138		0.138		0.138		0.138		0.138		0.138		0.138		0.138	
114												0.138		0.138		0.138		0.138		0.138		0.138		0.138		0.138		0.138	
120												0.168		0.168		0.168		0.168		0.168		0.168		0.168		0.168		0.168	

Notes:

The Type 1 corrugated steel or aluminum pipe arches shall be placed on soil having a minimum bearing capacity of 3 tons per square foot.  
The Type 2 and 3 corrugated steel or aluminum pipe arches shall be placed on soil having a minimum bearing capacity of 2 tons per square foot.  
This minimum bearing capacity will be determined by the Engineer in the field.

Table 11A: THICKNESS FOR CORRUGATED STEEL PIPE ARCHES AND CORRUGATED ALUMINUM ALLOY PIPE ARCHES FOR THE RESPECTIVE EQUIVALENT ROUND SIZE OF PIPE AND FILL HEIGHTS OVER THE TOP OF PIPE (Metric)													
Equivalent Round Size (mm)	Corrugated Steel & Aluminum Pipe Arch 68 x 13 mm			Corrugated Steel & Aluminum Pipe Arch 75 x 25 mm			Corrugated Steel Pipe Arch 125 x 25 mm			Min. Cover			
	Type 1 Fill Height: 1 m and less			Type 2 Fill Height: Greater than 1 m not exceeding 3 m			Type 3 Fill Height: Greater than 3 m not exceeding 4.5 m						
	Span (mm)	Rise (mm)	Span Rise (mm)	Span (mm)	Rise (mm)	Span Rise (mm)	Span (mm)	Rise (mm)	Span Rise (mm)	Steel mm	Aluminum mm	Steel mm	Aluminum mm
375	430	330							2.01	1.52	2.01	1.52	2.01
450	530	380						2.01	1.52	2.01	1.52	2.01	
525	610	460						2.01	1.52	2.01	1.52	2.01	
600	710	510						2.01	1.91	2.01	1.91	2.01	
750	870	630						2.01	1.91	2.01	1.91	2.01	
900	1060	740						2.01	2.67	2.01	2.67	2.01	
1050	1240	840						2.77	2.67	2.77	2.67	2.77	
1200	1440	970	1340	1050				2.77	3.43	2.77	3.43	2.77	
1350	1620	1100	1520	1170	1520	1170		2.77	3.43	2.77	3.43	2.77	
1500	1800	1200	1670	1300	1670	1300		3.51	4.17	3.51	4.17	3.51	
1650	1950	1320	1850	1400	1850	1400		4.27	4.27	4.27	4.27	4.27	
1800	2100	1450	2050	1500	2050	1500		4.27	2.67	4.27	2.67	4.27	
1950			2200	1620	2200	1620		2.77	2.67	2.77	2.67	2.77	
2100			2400	1720	2400	1720		2.77	2.67	2.77	2.67	2.77	
2250			2600	1820	2600	1820		2.77	3.43	2.77	3.43	2.77	
2400			2840	1920	2840	1920		2.77	4.17	2.77	4.17	2.77	
2550			2970	2020	2970	2020		2.77	4.17	2.77	4.17	2.77	
2700			3240	2120	3240	2120		3.51	3.51	3.51	3.51	3.51	
2850			3470	2220	3470	2220		3.51	3.51	3.51	3.51	3.51	
3000			3600	2320	3600	2320		4.27	4.27	4.27	4.27	4.27	

Notes:

The Type 1 corrugated steel or aluminum pipe arches shall be placed on soil having a minimum bearing capacity of 290 kN per square meter.  
The Type 2 and 3 corrugated steel or aluminum pipe arches shall be placed on soil having a minimum bearing capacity of 192 kN per square meter.  
This minimum bearing capacity will be determined by the Engineer in the field.

Table IIB: CLASSES OF REINFORCED CONCRETE ELLIPTICAL AND REINFORCED CONCRETE ARCH PIPE FOR THE RESPECTIVE EQUIVALENT ROUND SIZE OF PIPE AND FILL HEIGHTS OVER THE TOP OF PIPE												
Equivalent Round Size (in.)	Reinforced Concrete Elliptical pipe (in.)		Reinforced Concrete Arch pipe (in.)	Minimum Cover	Type 1		Type 2		Type 3			
	Span	Rise			Span	Rise	HE	Arch	HE	Arch	HE	Arch
15	23	14	18	11	RCCP	HE & A	HE	Arch	HE	Arch	HE	Arch
18	23	14	22	13 1/2	1'-0"	1'-0"	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
21	30	19	26	15 1/2	1'-0"	1'-0"	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
24	30	19	28 1/2	18	1'-0"	1'-0"	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
27	34	22	36 1/4	22 1/2	1'-0"	1'-0"	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
30	38	24	36 1/4	22 1/2	1'-0"	1'-0"	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
36	45	29	43 3/4	26 5/8	1'-0"	1'-0"	HE-II	A-II	HE-III	A-III	HE-IV	A-IV
42	53	34	51 1/8	31 5/16	1'-0"	1'-0"	HE-I	A-I	HE-III	A-III	HE-IV	A-IV
48	60	38	58 1/2	36	1'-0"	1'-0"	HE-I	A-I	HE-III	A-III	1460	1450
54	68	43	65	40	1'-0"	1'-0"	HE-I	A-I	HE-III	A-III	1460	1460
60	76	48	73	45	1'-0"	1'-0"	HE-I	A-I	HE-III	A-III	1460	1470
66	83	53	88	54	1'-0"	1'-0"	HE-I	A-I	HE-III	A-III	1470	1480
72	91	58	88	54	1'-0"	1'-0"	HE-I	A-I	HE-III	A-III	1470	1480

Notes:

A number indicates the D-Load for the diameter and depth of fill and that a special design is required. Design assumptions; Water filled pipe, AASHTO Type 2 installation per AASHTO LRFD Table 12.10.2.1-1

Table 11B: CLASSES OF REINFORCED CONCRETE ELLIPTICAL AND REINFORCED CONCRETE ARCH PIPE FOR THE RESPECTIVE EQUIVALENT ROUND SIZE OF PIPE AND FILL HEIGHTS OVER THE TOP OF PIPE (Metric)											
Equivalent Round Size (mm)	Reinforced Concrete Elliptical pipe (mm)		Reinforced Concrete Arch pipe (mm)		Minimum Cover	Type 1		Type 2		Type 3	
	Span	Rise	Span	Rise		Fill Height: 1 m and less		Fill Height: Greater than 1 m not exceeding 3 m		Fill Height: Greater than 3 m not exceeding 4.5 m	
						HE	Arch	HE	Arch	HE	Arch
375	584	356	457	279	0.3 m	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
450	584	356	559	343	0.3 m	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
525	762	483	660	394	0.3 m	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
600	762	483	724	457	0.3 m	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
686	864	559	921	572	0.3 m	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
750	965	610	921	572	0.3 m	HE-III	A-III	HE-III	A-III	HE-IV	A-IV
900	1143	737	1111	676	0.3 m	HE-II	A-II	HE-III	A-III	HE-IV	A-IV
1050	1346	864	1299	795	0.3 m	HE-I	A-II	HE-III	A-III	HE-IV	A-IV
1200	1524	965	1486	914	0.3 m	HE-I	A-II	HE-III	A-III	70	70
1350	1727	1092	1651	1016	0.3 m	HE-I	A-II	HE-III	A-III	70	70
1500	1930	1219	1854	1143	0.3 m	HE-I	A-II	HE-III	A-III	70	70
1676	2108	1346	2235	1372	0.3 m	HE-I	A-II	HE-III	A-III	70	70
1800	2311	1473	2235	1372	0.3 m	HE-I	A-II	HE-III	A-III	70	70

Notes:

A number indicates the D-Load for the diameter and depth of fill and that a special design is required.

Design assumptions: Water filled pipe, AASHTO Type 2 installation per AASHTO LRFD Table 12.10.2.1-1

Nominal Diameter (in.)		TABLE IIIA: PLASTIC PIPE PERMITTED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE																			
		Type 1 Fill Height: 3' and less, with 1' min				Type 2 Fill Height: Greater than 3', not exceeding 10'				Type 3 Fill Height: Greater than 10', not exceeding 15'				Type 4 Fill Height: Greater than 15', not exceeding 20'							
		PVC	CPVC	PE	CPE	CPP	PVC	CPVC	PE	CPE	CPP	PVC	CPVC	PE	CPE	CPP	PVC	CPVC	PE	CPE	CPP
10	X	X	X	X	NA	X	X	X	X	NA	X	X	X	X	NA	X	X	X	X	NA	NA
12	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NA
15	X	X	NA	X	X	X	X	NA	X	X	X	X	NA	NA	NA	X	X	X	X	NA	X
18	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NA
21	X	X	NA	NA	NA	X	X	NA	NA	NA	X	X	NA	NA	NA	X	X	X	X	NA	NA
24	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NA
30	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NA
36	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	NA
42	X	NA	X	X	NA	X	NA	X	NA	NA	X	NA	X	NA	NA	X	NA	NA	NA	NA	NA
48	X	NA	X	X	X	X	NA	X	NA	NA	X	NA	X	NA	NA	X	NA	NA	NA	NA	NA

Notes:

- PVC Polyvinyl Chloride (PVC) pipe with a smooth interior
- CPVC Corrugated Polyvinyl Chloride (CPVC) pipe with a smooth interior
- PE Polyethylene (PE) pipe with a smooth interior
- CPE Corrugated Polyethylene (PE) pipe with a smooth interior
- CPP Corrugated Polypropylene (CPP) pipe with a smooth interior
- X This material may be used for the given pipe diameter and fill height
- NA Not Available



TABLE IIIA: PLASTIC PIPE PERMITTED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE (Metric)																				
Nominal Diameter (mm)	Type 1 Fill Height: 1 m and less, with 0.3 m min. cover					Type 2 Fill Height: Greater than 1 m, not exceeding 3 m					Type 3 Fill Height: Greater than 3 m, not exceeding 4.5 m					Type 4 Fill Height: Greater than 4.5 m, not exceeding 6 m				
	PVC	CPVC	PE	CPE	CPP	PVC	CPVC	PE	CPE	CPP	PVC	CPVC	PE	CPE	CPP	PVC	CPVC	PE	CPP	
	250	X	X	X	X	NA	X	X	X	X	NA	X	X	X	X	NA	X	X	X	NA
300	X	X	X	X	X	X	X	X	X	X	X	X	X	NA	X	X	X	X	NA	
375	X	X	NA	X	X	X	X	NA	X	X	X	X	NA	NA	X	X	X	NA	X	
450	X	X	X	X	X	X	X	X	X	X	X	X	X	NA	X	X	X	X	NA	
525	X	X	NA	NA	NA	X	X	NA	NA	NA	X	X	NA	NA	NA	X	X	NA	NA	
600	X	X	X	X	X	X	X	X	X	X	X	X	NA	NA	NA	X	X	X	NA	
750	X	X	X	X	X	X	X	X	X	X	X	X	X	NA	X	X	X	X	NA	
900	X	X	X	X	X	X	X	X	NA	X	X	X	X	NA	NA	X	X	X	NA	
1000	X	NA	X	X	NA	X	NA	X	NA	NA	X	NA	X	NA	NA	X	NA	X	NA	
1200	X	NA	X	X	X	X	NA	X	NA	NA	X	NA	X	NA	NA	X	NA	X	NA	

Notes:

- PVC Polyvinyl Chloride (PVC) pipe with a smooth interior
- CPVC Corrugated Polyvinyl Chloride (CPVC) pipe with a smooth interior
- PE Polyethylene (PE) pipe with a smooth interior
- CPE Corrugated Polyethylene (PE) pipe with a smooth interior
- CPP Corrugated Polypropylene (CPP) pipe with a smooth interior
- X This material may be used for the given pipe diameter and fill height
- NA Not Available

TABLE IIIB: PLASTIC PIPE PERMITTED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT 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'		
	PVC	CPVC		PVC	CPVC		PVC	CPVC	
10	X	X		X	X		X	X	
12	X	X		X	X		X	X	
15	X	X		X	X		X	X	
18	X	X		X	X		X	X	
21	X	X		X	X		X	X	
24	X	X		X	X		X	X	
30	X	X		X	X		X	X	
36	X	X		X	X		X	X	
42	X	NA		X	NA		X	NA	
48	X	NA		X	NA		X	NA	

Notes:

PVC Polyvinyl Chloride (PVC) pipe with a smooth interior

CPVC Corrugated Polyvinyl Chloride (CPVC) pipe with a smooth interior

X This material may be used for the given pipe diameter and fill height

NA Not Available

TABLE IIIB: PLASTIC PIPE PERMITTED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE (metric)						
Nominal Diameter (mm)	Type 5			Type 6		Type 7
	Fill Height: Greater than 6 m, not exceeding 7.5 m			Fill Height: Greater than 7.5 m, not exceeding 9 m		Fill Height: Greater than 9 m, not exceeding 10.5 m
	PVC	CPVC		PVC	CPVC	CPVC
250	X	X		X	X	X
300	X	X		X	X	X
375	X	X		X	X	X
450	X	X		X	X	X
525	X	X		X	X	X
600	X	X		X	X	X
750	X	X		X	X	X
900	X	X		X	X	X
1000	X	NA		X	NA	NA
1200	X	NA		X	NA	NA

Notes:

- PVC Polyvinyl Chloride (PVC) pipe with a smooth interior
- CPVC Corrugated Polyvinyl Chloride (CPVC) pipe with a smooth interior
- PE Polyethylene (PE) pipe with a smooth interior
- X This material may be used for the given pipe diameter and fill height
- NA Not Available

Revise the first sentence of the first paragraph of Article 542.04(c) of the Standard Specifications to read:

“Compacted aggregate, at least 4 in. (100 mm) in depth below the pipe culvert, shall be placed the entire width of the trench and for the length of the pipe culvert, except compacted impervious material shall be used for the outer 3 ft (1 m) at each end of the pipe culvert.”

Revise the seventh paragraph of Article 542.04(d) of the Standard Specifications to read:

“PVC, PE and CPP pipes shall be joined according to the manufacturer’s specifications.”

Replace the third sentence of the first paragraph of Article 542.04(h) of the Standard Specifications with the following:

“The total cover required for various construction loadings shall be as recommended by the manufacturer of the pipe to be loaded. The manufacturer’s recommendations shall be provided in writing.”

Delete “Table IV : Wheel Loads and Total Cover” in Article 542.04(h) of the Standard Specifications.

Revise the first and second paragraphs of Article 542.04(i) of the Standard Specifications to read:

“(i) Deflection Testing for Pipe Culverts. All PE, PVC and CPP pipe culverts 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 pipe culverts with diameters 24 in. (600 mm) or smaller, a mandrel drag shall be used for deflection testing. For PVC, PE, and CPP pipe culverts with diameters over 24 in. (600 mm), deflection measurements other than by a mandrel shall be used.”

Revise Articles 542.04(i)(1) and (2) of the Standard Specifications to read:

“(1) For all PVC pipe: as defined using ASTM D 3034 methodology.

(2) For all PE and CPP pipe: the average inside diameter based on the minimum and maximum tolerances specified in the corresponding ASTM or AASHTO material specifications.”

Revise the second sentence of the second paragraph of Article 542.07 of the Standard Specifications to read:

“When a prefabricated end section is used, it shall be of the same material as the pipe culvert, except for polyethylene (PE), polyvinylchloride (PVC), and polypropylene (PP) pipes which shall have metal end sections.”

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."

80324

**LRFD STORM SEWER BURIAL TABLES (BDE)**

Effective: November 1, 2013

Revise Article 550.02 of the Standard Specifications to read as follows:

"Item	Article Section
(a) Clay Sewer Pipe .....	1040.02
(b) Extra Strength Clay Pipe .....	1040.02
(c) Concrete Sewer, Storm Drain, and Culvert Pipe .....	1042
(d) Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe .....	1042
(e) Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe (Note 1) .....	1042
(f) Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe (Note 1) .....	1042
(g) Polyvinyl Chloride (PVC) Pipe .....	1040.03
(h) Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior .....	1040.03
(i) Corrugated Polypropylene (CPP) Pipe with Smooth Interior .....	1040.07
(j) Rubber Gaskets and Preformed Flexible Joint Sealants for Concrete Pipe .....	1056
(k) Mastic Joint Sealer for Pipe .....	1055
(l) External Sealing Band .....	1057
(m) Fine Aggregate (Note 2) .....	1003.04
(n) Coarse Aggregate (Note 3) .....	1004.05
(o) Reinforcement Bars and Welded Wire Fabric .....	1006.10
(p) Handling Hole Plugs .....	1042.16
(q) Polyethylene (PE) Pipe with a Smooth Interior .....	1040.04
(r) Corrugated Polyethylene (PE) Pipe with a Smooth Interior .....	1040.04

Note 1. The class of elliptical and arch pipe used for various storm sewer sizes and heights of fill shall conform to the requirements for circular pipe.

Note 2. The fine aggregate shall be moist.

Note 3. The coarse aggregate shall be wet."

Revise the table for permitted materials in Article 550.03 of the Standard Specifications as follows:

"Class	Materials
A	Rigid Pipes: Clay Sewer Pipe Extra Strength Clay Pipe Concrete Sewer, Storm Drain, and Culvert Pipe Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
B	Rigid Pipes: Clay Sewer Pipe Extra Strength Clay Pipe Concrete Sewer, Storm Drain, and Culvert Pipe Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe Flexible Pipes: Polyvinyl Chloride (PVC) Pipe Corrugated Polyvinyl Chloride Pipe (PVC) with a Smooth Interior Polyethylene (PE) Pipe with a Smooth Interior Corrugated Polyethylene (PE) Pipe with a Smooth Interior Corrugated Polypropylene (CPP) Pipe with a Smooth Interior"

Replace the storm sewers tables in Article 550.03 of the Standard Specifications with the following:



STORM SEWERS																
KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE																
Nominal Diameter in.	Type 1							Type 2								
	Fill Height: 3' and less With 1' minimum cover							Fill Height: Greater than 3' not exceeding 10'								
	RCCP	CSP	ESCP	PVC	CPVC	PE	CPE	CPP	RCCP	CSP	ESCP	PVC	CPVC	PE	CPE	CPP
10	NA	3	X	X	X	X	X	NA	1	*X	X	X	X	X	X	NA
12	IV	NA	X	X	X	X	X	X	1	*X	X	X	X	X	X	X
15	IV	NA	NA	X	X	NA	X	X	1	*X	X	X	X	NA	X	X
18	IV	NA	NA	X	X	X	X	X	2	X	X	X	X	X	X	X
21	III	NA	NA	X	X	NA	NA	NA	2	X	X	X	X	NA	NA	NA
24	III	NA	NA	X	X	X	X	X	2	X	X	X	X	X	X	X
27	III	NA	NA	NA	NA	NA	NA	NA	3	X	NA	NA	NA	NA	NA	NA
30	IV	NA	NA	X	X	X	X	X	3	X	X	X	X	X	X	X
33	III	NA	NA	NA	NA	NA	NA	NA	NA	X	NA	NA	NA	NA	NA	NA
36	III	NA	NA	NA	X	X	X	X	NA	X	X	X	X	X	NA	X
42	II	NA	X	X	NA	X	X	NA	NA	X	X	NA	NA	X	NA	NA
48	II	NA	X	X	NA	X	X	NA	NA	X	X	NA	NA	X	NA	NA
54	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
60	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	X
66	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
72	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
78	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
84	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
90	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
96	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
102	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
108	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe  
CSP Concrete Sewer, Storm drain, and Culvert Pipe  
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	1	*X	X	X	X	X	NA	NA
300	IV	NA	X	X	X	NA	X	X	1	*X	X	X	X	X	X	X
375	IV	NA	NA	X	X	NA	X	X	1	*X	X	X	X	NA	X	X
450	IV	NA	NA	X	X	X	X	X	2	X	X	X	X	X	X	X
525	III	NA	NA	X	X	NA	NA	NA	2	X	X	X	X	NA	NA	NA
600	III	NA	NA	NA	X	X	X	X	2	X	X	X	X	X	X	X
675	III	NA	NA	NA	NA	NA	NA	NA	3	X	NA	NA	NA	NA	NA	NA
750	IV	NA	NA	X	X	X	X	X	3	X	X	X	X	X	X	X
825	III	NA	NA	NA	NA	NA	NA	NA	NA	X	NA	NA	NA	NA	NA	NA
900	III	NA	NA	NA	X	X	X	X	NA	X	X	X	X	X	NA	X
1050	II	NA	X	X	NA	X	X	NA	NA	X	X	NA	NA	X	NA	NA
1200	II	NA	X	X	NA	X	X	NA	NA	X	X	NA	NA	X	NA	NA
1350	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1500	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	X
1650	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1800	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1950	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2100	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2250	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2400	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2550	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2700	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe  
CSP Concrete Sewer, Storm drain, and Culvert Pipe  
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	NA	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	NA	X	X	NA	NA	IV	NA	NA	X	X	X	NA
42	III	NA	NA	NA	X	X	NA	NA	IV	NA	NA	X	NA	X	NA
48	III	NA	NA	NA	X	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	IV	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 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 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	NA	NA	3	X	X	X	X	NA	NA
300	III	2	X	X	X	NA	X	IV	NA	NA	X	X	X	X	NA
375	III	3	X	X	NA	NA	X	IV	NA	NA	X	X	X	NA	X
450	III	NA	X	X	X	NA	X	IV	NA	NA	X	X	X	NA	NA
525	III	NA	NA	X	NA	NA	NA	IV	NA	NA	X	X	X	NA	NA
600	III	NA	NA	X	X	NA	NA	IV	NA	NA	X	X	X	NA	NA
675	III	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA	NA
750	III	NA	NA	X	X	NA	X	IV	NA	NA	NA	X	X	NA	NA
825	III	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA	NA
900	III	NA	NA	X	X	X	NA	IV	NA	NA	X	X	X	NA	NA
1050	III	NA	NA	X	NA	X	NA	IV	NA	NA	X	NA	X	NA	NA
1200	III	NA	NA	NA	NA	X	NA	IV	NA	NA	X	NA	X	NA	NA
1350	III	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA	NA
1500	III	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA	NA
1650	III	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA	NA
1800	III	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA	NA
1950	III	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA	NA
2100	III	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA	NA
2250	III	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA	NA
2400	III	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA	NA
2550	IV	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA	NA
2700	70	NA	NA	NA	NA	NA	NA	80	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 is Not Acceptable for the given pipe diameter and fill height.

\* This material may be used for the given pipe diameter and fill height.

NA 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	CPVC
10	NA	X	X	NA	X	X	NA	X	X
12	IV	X	X	V	X	X	V	X	X
15	IV	X	X	V	X	X	V	X	X
18	IV	X	X	V	X	X	V	X	X
21	IV	X	X	V	X	X	V	X	X
24	IV	X	X	V	X	X	V	X	X
27	IV	NA	NA	V	NA	NA	V	NA	NA
30	IV	X	X	V	X	X	V	X	X
33	IV	NA	NA	V	NA	NA	V	NA	NA
36	IV	X	X	V	X	X	V	X	X
42	IV	X	X	V	X	X	V	X	X
48	IV	X	X	V	X	X	V	X	X
54	IV	NA	NA	V	NA	NA	V	NA	NA
60	IV	NA	NA	V	NA	NA	V	NA	NA
66	IV	NA	NA	V	NA	NA	V	NA	NA
72	V	NA	NA	V	NA	NA	V	NA	NA
78	2020	NA	NA	2370	NA	NA	2730	NA	NA
84	2020	NA	NA	2380	NA	NA	2740	NA	NA
90	2030	NA	NA	2390	NA	NA	2750	NA	NA
96	2040	NA	NA	2400	NA	NA	2750	NA	NA
102	2050	NA	NA	2410	NA	NA	2760	NA	NA
108	2060	NA	NA	2410	NA	NA	2770	NA	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	CPVC
250	NA	X	X	NA	X	X	NA	NA	X
300	IV	X	X	V	X	X	V	V	X
375	IV	X	X	V	X	X	V	V	X
450	IV	X	X	V	X	X	V	V	X
525	IV	X	X	V	X	X	V	V	X
600	IV	X	X	V	X	X	V	V	X
675	IV	NA	NA	V	NA	NA	V	V	NA
750	IV	X	X	V	X	X	V	V	X
825	IV	NA	NA	V	NA	NA	V	V	NA
900	IV	X	X	V	X	X	V	V	X
1050	IV	X	NA	V	X	NA	V	V	NA
1200	IV	X	NA	V	X	NA	V	V	NA
1350	IV	NA	NA	V	NA	NA	V	V	NA
1500	IV	NA	NA	V	NA	NA	V	V	NA
1650	IV	NA	NA	V	NA	NA	V	V	NA
1800	V	NA	NA	V	NA	NA	V	V	NA
1950	100	NA	NA	110	NA	NA	130	130	NA
2100	100	NA	NA	110	NA	NA	130	130	NA
2250	100	NA	NA	110	NA	NA	130	130	NA
2400	100	NA	NA	120	NA	NA	130	130	NA
2550	100	NA	NA	120	NA	NA	130	130	NA
2700	100	NA	NA	120	NA	NA	130	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



## **PAYROLLS AND PAYROLL RECORDS (BDE)**

Effective: January 1, 2014

FEDERAL AID CONTRACTS. Revise the following section of Check Sheet #1 of the Recurring Special Provisions to read:

### **"STATEMENTS AND PAYROLLS**

The payroll records shall include the worker's name, the worker's address, the worker's telephone number when available, the worker's social security number, the worker's classification or classifications, the worker's gross and net wages paid in each pay period, the worker's number of hours worked each day, the worker's starting and ending times of work each day. However, any Contractor or subcontractor who remits contributions to a fringe benefit fund that is not jointly maintained and jointly governed by one or more employers and one or more labor organization must additionally submit the worker's hourly wage rate, the worker's hourly overtime wage rate, the worker's hourly fringe benefit rates, the name and address of each fringe benefit fund, the plan sponsor of each fringe benefit, if applicable, and the plan administrator of each fringe benefit, if applicable.

The Contractor and each subcontractor shall submit payroll records to the Engineer each week from the start to the completion of their respective work, except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead, the payrolls shall include an identification number for each employee (e.g., the last four digits of the employee's social security number). In addition, starting and ending times of work each day may be omitted from the payroll records submitted to the Engineer. The submittals shall be on the Department's form SBE 48, or an approved facsimile. When there has been no activity during a work week, a payroll record shall still be submitted with the appropriate box ("No Work", "Suspended", or "Complete") checked on the form."

STATE CONTRACTS. Revise Section IV of Check Sheet #5 of the Recurring Special Provisions to read:

### **"IV. COMPLIANCE WITH THE PREVAILING WAGE ACT**

1. **Prevailing Wages.** All wages paid by the Contractor and each subcontractor shall be in compliance with The Prevailing Wage Act (820 ILCS 130), as amended, except where a prevailing wage violates a federal law, order, or ruling, the rate conforming to the federal law, order, or ruling shall govern. The Contractor shall be responsible to notify each subcontractor of the wage rates set forth in this contract and any revisions thereto. If the Department of Labor revises the wage rates, the Contractor will not be allowed additional compensation on account of said revisions.
2. **Payroll Records.** The Contractor and each subcontractor shall make and keep, for a period of five years from the later of the date of final payment under the contract or completion of the contract, records of the wages paid to his/her workers. The payroll

records shall include the worker's name, the worker's address, the worker's telephone number when available, the worker's social security number, the worker's classification or classifications, the worker's gross and net wages paid in each pay period, the worker's number of hours worked each day, the worker's starting and ending times of work each day. However, any contractor or subcontractor who remits contributions to a fringe benefit fund that is not jointly maintained and jointly governed by one or more employers and one or more labor organization must additionally submit the worker's hourly wage rate, the worker's hourly overtime wage rate, the worker's hourly fringe benefit rates, the name and address of each fringe benefit fund, the plan sponsor of each fringe benefit, if applicable, and the plan administrator of each fringe benefit, if applicable. Upon seven business days' notice, these records shall be available at a location within the State, during reasonable hours, for inspection by the Department or the Department of Labor; and Federal, State, or local law enforcement agencies and prosecutors.

3. Submission of Payroll Records. The Contractor and each subcontractor shall submit payroll records to the Engineer each week from the start to the completion of their respective work, except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall include an identification number for each employee (e.g., the last four digits of the employee's social security number). In addition, starting and ending times of work each day may be omitted from the payroll records submitted to the Engineer. The submittals shall be on the Department's form SBE 48, or an approved facsimile. When there has been no activity during a work week, a payroll record shall still be submitted with the appropriate box ("No Work", "Suspended", or "Complete") checked on the form.

Each submittal shall be accompanied by a statement signed by the Contractor or subcontractor, or an officer, employee, or officer thereof, which avers that: (i) he or she has examined the records and such records are true and accurate; (ii) the hourly rate paid to each worker is not less than the general prevailing rate of hourly wages required by the Act; and (iii) the Contractor or subcontractor is aware that filing a payroll record that he/she knows to be false is a Class A misdemeanor.

4. Employee Interviews. The Contractor and each subcontractor shall permit his/her employees to be interviewed on the job, during working hours, by compliance investigators of the Department or the Department of Labor."

80331

**PORTLAND CEMENT CONCRETE EQUIPMENT (BDE)**

Effective: November 1, 2013

Add the following to the first paragraph of Article 1103.03(a)(5) of the Standard Specifications to read:

“As an alternative to a locking key, the start and finish time for mixing may be automatically printed on the batch ticket. The start and finish time shall be reported to the nearest second.”

80326

## **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

## QUALITY CONTROL/QUALITY ASSURANCE OF CONCRETE MIXTURES (BDE)

Effective: January 1, 2012

Revised: November 1, 2013

Add the following to Section 1020 of the Standard Specifications:

**"1020.16 Quality Control/Quality Assurance of Concrete Mixtures.** This Article specifies the quality control responsibilities of the Contractor for concrete mixtures (except Class PC and PS concrete), cement aggregate mixture II, and controlled low-strength material incorporated in the project, and defines the quality assurance and acceptance responsibilities of the Engineer.

A list of quality control/quality assurance (QC/QA) documents is provided in Article 1020.16(g), Schedule D.

A Level I Portland Cement Concrete (PCC) Technician shall be defined as an individual who has successfully completed the Department's training for concrete testing.

A Level II Portland Cement Concrete (PCC) Technician shall be defined as an individual who has successfully completed the Department's training for concrete proportioning.

A Level III Portland Cement Concrete (PCC) Technician shall be defined as an individual who has successfully completed the Department's training for concrete mix design.

A Concrete Tester shall be defined as an individual who has successfully completed the Department's training to assist with concrete testing and is monitored on a daily basis.

Aggregate Technician shall be defined as an individual who has successfully completed the Department's training for gradation testing involving aggregate production and mixtures.

Mixture Aggregate Technician shall be defined as an individual who has successfully completed the Department's training for gradation testing involving mixtures.

Gradation Technician shall be defined as an individual who has successfully completed the Department's training to assist with gradation testing and is monitored on a daily basis.

- (a) Equipment/Laboratory. The Contractor shall provide a laboratory and test equipment to perform their quality control testing.

The laboratory shall be of sufficient size and be furnished with the necessary equipment, supplies, and current published test methods for adequately and safely performing all required tests. The laboratory will be approved by the Engineer according to the current Bureau of Materials and Physical Research Policy Memorandum "Minimum Private Laboratory Requirements for Construction Materials Testing or Mix Design". Production of a mixture shall not begin until the Engineer provides written approval of the laboratory.

The Contractor shall refer to the Department's "Required Sampling and Testing Equipment for Concrete" for equipment requirements.

Test equipment shall be maintained and calibrated as required by the appropriate test method, and when required by the Engineer. This information shall be documented on the Department's "Calibration of Concrete Testing Equipment" form.

Test equipment used to determine compressive or flexural strength shall be calibrated each 12 month period by an independent agency, using calibration equipment traceable to the National Institute of Standards and Technology (NIST). The Contractor shall have the calibration documentation available at the test equipment location.

The Engineer will have unrestricted access to the plant and laboratory at any time to inspect measuring and testing equipment, and will notify the Contractor of any deficiencies. Defective equipment shall be immediately repaired or replaced by the Contractor.

- (b) Quality Control Plan. The Contractor shall submit, in writing, a proposed Quality Control (QC) Plan to the Engineer. The QC Plan shall be submitted a minimum of 45 calendar days prior to the production of a mixture. The QC Plan shall address the quality control of the concrete, cement aggregate mixture II, and controlled low-strength material incorporated in the project. The Contractor shall refer to the Department's "Model Quality Control Plan for Concrete Production" to prepare a QC Plan. The Engineer will respond in writing to the Contractor's proposed QC Plan within 15 calendar days of receipt.

Production of a mixture shall not begin until the Engineer provides written approval of the QC Plan. The approved QC Plan shall become a part of the contract between the Department and the Contractor, but shall not be construed as acceptance of any mixture produced.

The QC Plan may be amended during the progress of the work, by either party, subject to mutual agreement. The Engineer will respond in writing to a Contractor's proposed QC Plan amendment within 15 calendar days of receipt. The response will indicate the approval or denial of the Contractor's proposed QC Plan amendment.

- (c) Quality Control by Contractor. The Contractor shall perform quality control inspection, sampling, testing, and documentation to meet contract requirements. Quality control includes the recognition of obvious defects and their immediate correction. Quality control also includes appropriate action when passing test results are near specification limits, or to resolve test result differences with the Engineer. Quality control may require increased testing, communication of test results to the plant or the jobsite, modification of operations, suspension of mixture production, rejection of material, or other actions as appropriate. The Engineer shall be immediately notified of any failing tests and subsequent remedial action. Passing tests shall be reported no later than the start of the next work day.

When a mixture does not comply with specifications, the Contractor shall reject the material; unless the Engineer accepts the material for incorporation in the work, according to Article 105.03.

- (1) Personnel Requirements. The Contractor shall provide a Quality Control (QC) Manager who will have overall responsibility and authority for quality control. The jobsite and plant personnel shall be able to contact the QC Manager by cellular phone, two-way radio or other methods approved by the Engineer.

The QC Manager shall visit the jobsite a minimum of once a week. A visit shall be performed the day of a bridge deck pour, the day a non-routine mixture is placed as determined by the Engineer, or the day a plant is anticipated to produce more than 1000 cu yd (765 cu m). Any of the three required visits may be used to meet the once per week minimum requirement.

The Contractor shall provide personnel to perform the required inspections, sampling, testing and documentation in a timely manner. The Contractor shall refer to the Department's "Qualifications and Duties of Concrete Quality Control Personnel" document.

A Level I PCC Technician shall be provided at the jobsite during mixture production and placement, and may supervise concurrent pours on the project. For concurrent pours, a minimum of one Concrete Tester shall be required at each pour location. If the Level I PCC Technician is at one of the pour locations, a Concrete Tester is still required at the same location. Each Concrete Tester shall be able to contact the Level I PCC Technician by cellular phone, two-way radio or other methods approved by the Engineer. A single Level I PCC Technician shall not supervise concurrent pours for multiple contracts.

A Level II PCC Technician shall be provided at the plant, or shall be available, during mixture production and placement. A Level II PCC Technician may supervise a maximum of three plants. Whenever the Level II PCC Technician is not at the plant during mixture production and placement, a Concrete Tester or Level I PCC Technician shall be present at the plant to perform any necessary concrete tests. The Concrete Tester, Level I PCC Technician, or other individual shall also be trained to perform any necessary aggregate moisture tests, if the Level II PCC Technician is not at the plant during mixture production and placement. The Concrete Tester, Level I PCC Technician, plant personnel, and jobsite personnel shall have the ability to contact the Level II PCC Technician by cellular phone, two-way radio, or other methods approved by the Engineer.

For a mixture which is produced and placed with a mobile portland cement concrete plant as defined in Article 1103.04, a Level II PCC Technician shall be provided. The Level II PCC Technician shall be present at all times during mixture production and placement. However, the Level II PCC Technician may request to be available if

operations are satisfactory. Approval shall be obtained from the Engineer, and jobsite personnel shall have the ability to contact the Level II PCC Technician by cellular phone, two-way radio, or other methods approved by the Engineer.

A Concrete Tester, Mixture Aggregate Technician, and Aggregate Technician may provide assistance with sampling and testing. A Gradation Technician may provide assistance with testing. A Concrete Tester shall be supervised by a Level I or Level II PCC Technician. A Gradation Technician shall be supervised by a Level II PCC Technician, Mixture Aggregate Technician, or Aggregate Technician.

- (2) Required Plant Tests. Sampling and testing shall be performed at the plant, or at a location approved by the Engineer, to control the production of a mixture. The required minimum Contractor plant sampling and testing is indicated in Article 1020.16(g) Schedule A.
- (3) Required Field Tests. Sampling and testing shall be performed at the jobsite to control the production of a mixture, and to comply with specifications for placement. For standard curing, after initial curing, and for strength testing; the location shall be approved by the Engineer. The required minimum Contractor jobsite sampling and testing is indicated in Article 1020.16(g), Schedule B.
- (d) Quality Assurance by Engineer. The Engineer will perform quality assurance tests on independent samples and split samples. An independent sample is a field sample obtained and tested by only one party. A split sample is one of two equal portions of a field sample, where two parties each receive one portion for testing. The Engineer may request the Contractor to obtain a split sample. Aggregate split samples and any failing strength specimen shall be retained until permission is given by the Engineer for disposal. The results of all quality assurance tests by the Engineer will be made available to the Contractor. However, Contractor split sample test results shall be provided to the Engineer before Department test results are revealed. The Engineer's quality assurance independent sample and split sample testing is indicated in Article 1020.16(g), Schedule C.
  - (1) Strength Testing. For strength testing, Article 1020.09 shall apply, except the Contractor and Engineer strength specimens may be placed in the same field curing box for initial curing and may be cured in the same water storage tank for final curing.
  - (2) Comparing Test Results. Differences between the Engineer's and the Contractor's split sample test results will be considered reasonable if within the following limits:

Test Parameter	Acceptable Limits of Precision
Slump	0.75 in. (20 mm)
Air Content	0.9%
Compressive Strength	900 psi (6200 kPa)



Flexural Strength	90 psi (620 kPa)
Slump Flow (Self-Consolidating Concrete (SCC))	1.5 in. (40 mm)
Visual Stability Index (SCC)	Not Applicable
J-Ring (SCC)	1.5 in. (40 mm)
L-Box (SCC)	10 %
Hardened Visual Stability Index (SCC)	Not Applicable
Dynamic Segregation Index (SCC)	1.0 %
Flow (Controlled Low-Strength Material (CLSM))	1.5 in. (40 mm)
Strength (Controlled Low-Strength Material (CLSM))	40 psi (275 kPa)
Aggregate Gradation	See "Guideline for Sample Comparison" in Appendix "A" of the Manual of Test Procedures for Materials.

When acceptable limits of precision have been met, but only one party is within specification limits, the failing test shall be resolved before the material may be considered for acceptance.

### (3) Test Results and Specification Limits.

a. Split Sample Testing. If either the Engineer's or the Contractor's split sample test result is not within specification limits, and the other party is within specification limits; immediate retests on a split sample shall be performed for slump, air content, slump flow, visual stability index, J-Ring, L-Box, dynamic segregation index, flow (CLSM), or aggregate gradation. A passing retest result by each party will require no further action. If either the Engineer's or Contractor's slump, air content, slump flow, visual stability index, J-Ring, L-Box, dynamic segregation index, flow (CLSM), or aggregate gradation split sample retest result is a failure; or if either the Engineer's or Contractor's strength or hardened visual stability index test result is a failure, and the other party is within specification limits; the following actions shall be initiated to investigate the test failure:

1. The Engineer and the Contractor shall investigate the sampling method, test procedure, equipment condition, equipment calibration, and other factors.
2. The Engineer or the Contractor shall replace test equipment, as determined by the Engineer.
3. The Engineer and the Contractor shall perform additional testing on split samples, as determined by the Engineer.

For aggregate gradation, jobsite slump, jobsite air content, jobsite slump flow, jobsite visual stability index, jobsite J-Ring, jobsite L-Box, jobsite dynamic segregation index, and jobsite flow (CLSM); if the failing split sample test result is not resolved according to 1., 2., or 3., and the mixture has not been placed, the Contractor shall reject the material; unless the Engineer accepts the material for

incorporation in the work according to Article 105.03. If the mixture has already been placed, or if a failing strength or hardened visual stability index test result is not resolved according to 1., 2., or 3., the material will be considered unacceptable.

If a continued trend of difference exists between the Engineer's and the Contractor's split sample test results, or if split sample test results exceed the acceptable limits of precision, the Engineer and the Contractor shall investigate according to items 1., 2., and 3.

b. Independent Sample Testing. For aggregate gradation, jobsite slump, jobsite air content jobsite slump flow, jobsite visual stability index, jobsite J-Ring, jobsite L-Box, jobsite dynamic segregation index, jobsite flow (CLSM); if the result of a quality assurance test on a sample independently obtained by the Engineer is not within specification limits, and the mixture has not been placed, the Contractor shall reject the material, unless the Engineer accepts the material for incorporation in the work according to Article 105.03. If the mixture has already been placed or the Engineer obtains a failing strength or hardened visual stability index test result, the material will be considered unacceptable.

(e) Acceptance by the Engineer. Final acceptance will be based on the Standard Specifications and the following:

- (1) The Contractor's compliance with all contract documents for quality control.
- (2) Validation of Contractor quality control test results by comparison with the Engineer's quality assurance test results using split samples. Any quality control or quality assurance test determined to be flawed may be declared invalid only when reviewed and approved by the Engineer. The Engineer will declare a test result invalid only if it is proven that improper sampling or testing occurred. The test result is to be recorded and the reason for declaring the test invalid will be provided by the Engineer.
- (3) Comparison of the Engineer's quality assurance test results with specification limits using samples independently obtained by the Engineer.

The Engineer may suspend mixture production, reject materials, or take other appropriate action if the Contractor does not control the quality of concrete, cement aggregate mixture II, or controlled low-strength material for acceptance. The decision will be determined according to (1), (2), or (3).

(f) Documentation.

- (1) Records. The Contractor shall be responsible for documenting all observations, inspections, adjustments to the mix design, test results, retest results, and corrective actions in a bound hardback field book, bound hardback diary, or appropriate

Department form, which shall become the property of the Department. The documentation shall include a method to compare the Engineer's test results with the Contractor's results. The Contractor shall be responsible for the maintenance of all permanent records whether obtained by the Contractor, the consultants, the subcontractors, or the producer of the mixture. The Contractor shall provide the Engineer full access to all documentation throughout the progress of the work.

The Department's form MI 504M, form BMPR MI654, and form BMPR MI655 shall be completed by the Contractor, and shall be submitted to the Engineer weekly or as required by the Engineer. A correctly completed form MI 504M, form BMPR MI654, and form BMPR MI655 are required to authorize payment by the Engineer, for applicable pay items.

- (2) Delivery Truck Ticket. The following information shall be recorded on each delivery ticket or in a bound hardback field book: initial revolution counter reading (final reading optional) at the jobsite, if the mixture is truck-mixed; time discharged at the jobsite; total amount of each admixture added at the jobsite; and total amount of water added at the jobsite.
- (g) Basis of Payment and Schedules. Quality Control/Quality Assurance of portland cement concrete mixtures will not be paid for separately, but shall be considered as included in the cost of the various concrete contract items.

## SCHEDULE A

CONTRACTOR PLANT SAMPLING AND TESTING			
Item	Test	Frequency	IL Modified AASHTO or Department Test Method <sup>1/</sup>
Aggregates (Arriving at Plant)	Gradation <sup>2/</sup>	As needed to check source for each gradation number	2, 11, 27, and 248
Aggregates (Stored at Plant in Stockpiles or Bins)	Gradation <sup>2/</sup>	2,500 cu yd (1,900 cu m) for each gradation number <sup>3/</sup>	2, 11, 27, and 248
Aggregates (Stored at Plant in Stockpiles or Bins)	Moisture <sup>4/</sup> : Fine Aggregate	Once per week for moisture sensor, otherwise daily for each gradation number	Flask, Dunagan, Pychnometer Jar, or 255
	Moisture <sup>4/</sup> : Coarse Aggregate	As needed to control production for each gradation number	Dunagan, Pychnometer Jar, or 255
Mixture <sup>5/</sup>	Slump Air Content Unit Weight / Yield Slump Flow (SCC) Visual Stability Index (SCC) J-Ring (SCC) <sup>6/</sup> L-Box (SCC) <sup>6/</sup> Temperature	As needed to control production	T 141 and T 119 T 141 and T 152 or T 196 T 141 and T 121 SCC-1 and SCC-2 SCC-1 and SCC-2 SCC-1 and SCC-3 SCC-1 and SCC-4 T 141 and T 309
Mixture (CLSM) <sup>7/</sup>	Flow Air Content Temperature	As needed to control production	Illinois Test Procedure 307

1/ Refer to the Department's "Manual of Test Procedures for Materials".

2/ All gradation tests shall be washed. Testing shall be completed no later than 24 hours after the aggregate has been sampled.

3/ One per week (Sunday through Saturday) minimum unless the stockpile has not received additional aggregate material since the previous test.

One per day minimum for a bridge deck pour unless the stockpile has not received additional aggregate material since the previous test. The sample shall be taken and testing completed prior to the pour. The bridge deck aggregate sample may be taken the day before the pour or as approved by the Engineer.

4/ If the moisture test and moisture sensor disagree by more than 0.5 percent, retest. If the difference remains, adjust the moisture sensor to an average of two or more moisture tests. The Department's "Water/Cement Ratio Worksheet" form shall be completed when applicable.

- 5/ The Contractor may also perform strength testing according to Illinois Modified AASHTO T 141, T 23, and T 22 or T 177; or water content testing according to Illinois Modified AASHTO T 318.

The Contractor may also perform other available self-consolidating concrete (SCC) tests at the plant to control mixture production.

- 6/ The Contractor shall select the J-Ring or L-Box test for plant sampling and testing.
- 7/ The Contractor may also perform strength testing according to Illinois Test Procedure 307.

SCHEDULE B

CONTRACTOR JOBSITE SAMPLING & TESTING <sup>1/</sup>			
Item	Measured Property	Random Sample Testing Frequency per Mix Design and per Plant <sup>2/</sup>	IL Modified AASHTO Test Method
Pavement, Shoulder, Base Course, Base Course Widening, Driveway Pavement, Railroad Crossing, Cement Aggregate Mixture II	Slump <sup>3/ 4/</sup>	1 per 500 cu yd (400 cu m) or minimum 1/day	T 141 and T 119
	Air Content <sup>3/ 5/ 6/</sup>	1 per 100 cu yd (80 cu m) or minimum 1/day	T 141 and T 152 or T 196
	Compressive Strength <sup>7/ 8/</sup> or Flexural Strength <sup>7/ 8/</sup>	1 per 1250 cu yd (1000 cu m) or minimum 1/day	T 141, T 22 and T 23 or T 141, T 177 and T 23
Bridge Approach Slab <sup>9/</sup> , Bridge Deck <sup>9/</sup> , Bridge Deck Overlay <sup>9/</sup> , Superstructure <sup>9/</sup> , Substructure, Culvert, Miscellaneous Drainage Structures, Retaining Wall, Building Wall, Drilled Shaft Pile & Encasement Footing, Foundation, Pavement Patching, Structural Repairs	Slump <sup>3/ 4/</sup>	1 per 50 cu yd (40 cu m) or minimum 1/day	T 141 and T 119
	Air Content <sup>3/ 5/ 6/</sup>	1 per 50 cu yd (40 cu m) or minimum 1/day	T 141 and T 152 or T 196
	Compressive Strength <sup>7/ 8/</sup> or Flexural Strength <sup>7/ 8/</sup>	1 per 250 cu yd (200 cu m) or minimum 1/day	T 141, T 22 and T 23 or T 141, T 177 and T 23
Seal Coat	Slump <sup>3/</sup>	1 per 250 cu yd (200 cu m) or minimum 1/day	T 141 and T 119
	Air Content <sup>3/ 5/ 6/</sup>	1 per 250 cu yd (200 cu m) or minimum 1/day when air is entrained	T 141 and T 152 or T 196
	Compressive Strength <sup>7/ 8/</sup> or Flexural Strength <sup>7/ 8/</sup>	1 per 250 cu yd (200 cu m) or minimum 1/day	T 141, T 22 and T 23 or T 141, T 177 and T 23

CONTRACTOR JOBSITE SAMPLING & TESTING <sup>1/</sup>			
Curb, Gutter, Median, Barrier, Sidewalk, Slope Wall, Paved Ditch, Fabric Formed Concrete Revetment Mat <sup>10/</sup> , Miscellaneous Items, Incidental Items	Slump <sup>3/ 4/</sup>	1 per 100 cu yd (80 cu m) or minimum 1/day	T 141 and T 119
	Air Content <sup>3/ 5/ 6/</sup>	1 per 50 cu yd (40 cu m) or minimum 1/day	T 141 and T 152 or T 196
	Compressive Strength <sup>7/ 8/</sup> or Flexural Strength <sup>7/ 8/</sup>	1 per 400 cu yd (300 cu m) or minimum 1/day	T 141, T 22 and T 23 or T 141, T 177 and T 23
The Item will use a Self-Consolidating Concrete Mixture	Slump Flow <sup>3/</sup> VSI <sup>3/</sup> J-Ring <sup>3/ 11/</sup> L-Box <sup>3/ 11/</sup>	Perform at same frequency that is specified for the Item's slump	SCC-1 & SCC-2 SCC-1 & SCC-2 SCC-1 & SCC-3 SCC-1 & SCC-4
The Item will use a Self-Consolidating Concrete Mixture	HVSI <sup>12/</sup>	Minimum 1/day at start of production for that day	SCC-1 and SCC-6
The Item will use a Self-Consolidating Concrete Mixture	Dynamic Segregation Index (DSI)	Minimum 1/week at start of production for that week	SCC-1 and SCC-8 (Option C)
The Item will use a Self-Consolidating Concrete Mixture	Air Content <sup>3/ 5/ 6/</sup>	Perform at same frequency that is specified for the Item's air content	SCC-1 and T 152 or T 196
The Item will use a Self-Consolidating Concrete Mixture	Compressive Strength <sup>7/ 8/</sup> or Flexural Strength <sup>7/ 8/</sup>	Perform at same frequency that is specified for the Item's strength	SCC-1, T 22 and T 23 or SCC-1, T 177 and T 23
All	Temperature <sup>3/</sup>	As needed to control production	T 141 and T 309
Controlled Low-Strength Material (CLSM)	Flow, Air Content, Compressive Strength (28-day) <sup>13/</sup> , and Temperature	First truck load delivered and as needed to control production thereafter	Illinois Test Procedure 307

1/ Sampling and testing of small quantities of curb, gutter, median, barrier, sidewalk, slope wall, paved ditch, miscellaneous items, and incidental items may be waived by the Engineer if requested by the Contractor. However, quality control personnel are still required according to Article 1020.16(c)(1) The Contractor shall also provide recent evidence that similar material has been found to be satisfactory under normal sampling and testing procedures. The total quantity that may be waived for testing shall not exceed 100 cu yd (76 cu m) per contract.

If the Contractor's or Engineer's test result for any jobsite mixture test is not within the specification limits, all subsequent truck loads delivered shall be tested by the Contractor until the problem is corrected.

- 2/ If one mix design is being used for several construction items during a day's production, one testing frequency may be selected to include all items. The construction items shall have the same slump, air content, and water/cement ratio specifications. For self-consolidating concrete, the construction items shall have the same slump flow, visual stability index, J-Ring, L-Box, air content, and water/cement ratio specifications. The frequency selected shall equal or exceed the testing required for the construction item.

One sufficiently sized sample shall be taken to perform the required test(s). Random numbers shall be determined according to the Department's "Method for Obtaining Random Samples for Concrete". The Engineer will provide random sample locations.

- 3/ The temperature, slump, and air content tests shall be performed on the first truck load delivered, for each pour. For self consolidating concrete, the temperature, slump flow, visual stability index, J-Ring or L-Box, and air content tests shall be performed on the first truck load delivered, for each pour. Unless a random sample is required for the first truck load, testing the first truck load does not satisfy random sampling requirements.
- 4/ The slump random sample testing frequency shall be a minimum 1/day for a construction item which is slipformed.
- 5/ If a pump or conveyor is used for placement, a correction factor shall be established to allow for a loss of air content during transport. The first three truck loads delivered shall be tested, before and after transport by the pump or conveyor, to establish the correction factor. Once the correction is determined, it shall be re-checked after an additional 50 cu yd (40 cu m) is pumped, or an additional 100 cu yd (80 cu m) is conveyed. This shall continue throughout the pour. If the re-check indicates the correction factor has changed, a minimum of two truckloads is required to re-establish the correction factor. The correction factor shall also be re-established when significant changes in temperature, distance, pump or conveyor arrangement, and other factors have occurred. If the correction factor is >3.0 percent, the Contractor shall take corrective action to reduce the loss of air content during transport by the pump or conveyor. The Contractor shall record all air content test results, correction factors and corrected air contents. The corrected air content shall be reported on form BMPR MI654.
- 6/ If the Contractor's or Engineer's air content test result is within the specification limits, and 0.2 percent or closer to either limit, the next truck load delivered shall be tested by the Contractor. For example, if the specified air content range is 5.0 to 8.0 percent and the test result is 5.0, 5.1, 5.2, 7.8, 7.9 or 8.0 percent, the next truck shall be tested by the Contractor.
- 7/ The test of record for strength shall be the day indicated in Article 1020.04. For cement aggregate mixture II, a strength requirement is not specified and testing is not required. Additional strength testing to determine early falsework and form removal, early pavement or bridge opening to traffic, or to monitor strengths is at the discretion of the Contractor. Strength shall be defined as the average of two 6 x 12 in. (150 x 300 mm) cylinder breaks, three 4 x 8 in. (100 x 200 mm) cylinder breaks, or two beam breaks for



field tests. Per Illinois Modified AASHTO T 23, cylinders shall be 6 x 12 in. (150 x 300 mm) when the nominal maximum size of the coarse aggregate exceeds 1 in. (25 mm).

- 8/ In addition to the strength test, a slump test, air content test, and temperature test shall be performed on the same sample. For self-consolidating concrete, a slump flow test, visual stability index test, J-Ring or L-Box test, air content test, and temperature test shall be performed on the same sample as the strength test. For mixtures pumped or conveyed, the Contractor shall sample according to Illinois Modified AASHTO T 141.
- 9/ The air content test will be required for each delivered truck load.
- 10/ For fabric formed concrete revetment mat, the slump test is not required and the flexural strength test is not applicable.
- 11/ The Contractor shall select the J-Ring or L-Box test for jobsite sampling and testing.
- 12/ In addition to the hardened visual stability index (HVSI) test, a slump flow test, visual stability index (VSI) test, J-Ring or L-Box test, air content test, and temperature test shall be performed on the same sample. The Contractor shall retain all hardened visual stability index cut cylinder specimens until the Engineer notifies the Contractor that the specimens may be discarded.
- 13/ The test of record for strength shall be the day indicated in Article 1019.04. In addition to the strength test, a flow test, air content test, and temperature test shall be performed on the same sample. The strength test may be waived by the Engineer if future removal of the material is not a concern.

SCHEDULE C

ENGINEER QUALITY ASSURANCE INDEPENDENT SAMPLE TESTING		
Location	Measured Property	Testing Frequency <sup>1/</sup>
Plant	Gradation of aggregates stored in stockpiles or bins, Slump and Air Content	As determined by the Engineer.
Jobsite	Slump, Air Content, Slump Flow, Visual Stability Index, J-Ring, L-Box, Hardened Visual Stability Index, Dynamic Segregation Index and Strength	As determined by the Engineer.
	Flow, Air Content, Strength (28-day), and Dynamic Cone Penetration for Controlled Low-Strength Material (CLSM)	As determined by the Engineer

ENGINEER QUALITY ASSURANCE SPLIT SAMPLE TESTING		
Location	Measured Property	Testing Frequency <sup>1/</sup>
Plant	Gradation of aggregates stored in stockpiles or bins <sup>2/</sup>	At the beginning of the project, the first test performed by the Contractor. Thereafter, a minimum of 10% of total tests required of the Contractor will be performed per aggregate gradation number and per plant.
	Slump and Air Content	As determined by the Engineer.
Jobsite	Slump <sup>2/</sup> , Air Content <sup>2/3/</sup> , Slump Flow <sup>2/</sup> , Visual Stability Index <sup>2/</sup> , J-Ring <sup>2/</sup> and L-box <sup>2/</sup>	At the beginning of the project, the first three tests performed by the Contractor. Thereafter, a minimum of 20% of total tests required of the Contractor will be performed per plant, which will include a minimum of one test per mix design.
	Hardened Visual Stability Index <sup>2/</sup>	As determined by the Engineer.
	Dynamic Segregation Index <sup>2/</sup>	As determined by the Engineer.
	Strength <sup>2/</sup>	At the beginning of the project, the first test performed by the Contractor. Thereafter, a minimum of 20% of total tests required of the Contractor will be performed per plant, which will include a minimum of one test per mix design.
	Flow, Air Content, and Strength (28-day) for Controlled Low-Strength Material (CLSM)	As determined by the Engineer.

- 1/ The Engineer will perform the testing throughout the period of quality control testing by the Contractor.
- 2/ The Engineer will witness and take immediate possession of or otherwise secure the Department's split sample obtained by the Contractor.
- 3/ Before transport by pump or conveyor, a minimum of 20 percent of total tests required of the Contractor will be performed per mix design and per plant. After transport by pump or conveyor, a minimum of 20 percent of total tests required of the Contractor will be performed per mix design and per plant.

## SCHEDULE D

### CONCRETE QUALITY CONTROL AND QUALITY ASSURANCE DOCUMENTS

- (a) Model Quality Control Plan for Concrete Production (\*)
- (b) Qualifications and Duties of Concrete Quality Control Personnel (\*)
- (c) Development of Gradation Bands on Incoming Aggregate at Mix Plants (\*)
- (d) Required Sampling and Testing Equipment for Concrete (\*)
- (e) Method for Obtaining Random Samples for Concrete (\*)
- (f) Calibration of Concrete Testing Equipment (BMPR PCCQ01 through BMPR PCCQ09) (\*)
- (g) Water/Cement Ratio Worksheet (BMPR PCCW01) (\*)
- (h) Field/Lab Gradations (MI 504M) (\*)
- (i) Concrete Air, Slump and Quantity (BMPR MI654) (\*)
- (j) P.C. Concrete Strengths (BMPR MI655) (\*)
- (k) Aggregate Technician Course or Mixture Aggregate Technician Course (\*)
- (l) Portland Cement Concrete Tester Course (\*)
- (m) Portland Cement Concrete Level I Technician Course - Manual of Instructions for Concrete Testing (\*)
- (n) Portland Cement Concrete Level II Technician Course - Manual of Instructions for Concrete Proportioning (\*)
- (o) Portland Cement Concrete Level III Technician Course - Manual of Instructions for Design of Concrete Mixtures (\*)
- (p) Manual of Test Procedures for Materials

\* Refer to Appendix C of the Manual of Test Procedures for Materials for more information."

80281

## 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 on 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  $\pm 1/4$  in. ( $\pm 6$  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

## REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES (BDE)

Effective: January 1, 2012

Revised: November 2, 2012

Revise Article 669.01 of the Standard Specifications to read:

**"669.01 Description.** This work shall consist of the transportation and proper disposal of contaminated soil and water. This work shall also consist of the removal, transportation, and proper disposal of underground storage tanks (UST), their content and associated underground piping to the point where the piping is above the ground, including determining the content types and estimated quantities."

Revise Article 669.08 of the Standard Specifications to read:

**"669.08 Contaminated Soil and/or Groundwater Monitoring.** The Contractor shall hire a qualified environmental firm to monitor the area containing the regulated substances. The affected area shall be monitored with a photoionization detector (PID) utilizing a lamp of 10.6eV or greater or a flame ionization detector (FID). Any field screen reading on the PID or FID in excess of background levels indicates the potential presence of contaminated material requiring handling as a non-special waste, special waste, or hazardous waste. No excavated soils can be taken to a clean construction and demolition debris (CCDD) facility or an uncontaminated soil fill operation with detectable PID or FID meter readings that are above background. The PID or FID meter shall be calibrated on-site and background level readings taken and recorded daily. All testing shall be done by a qualified engineer/technician. Such testing and monitoring shall be included in the work. The Contractor shall identify the exact limits of removal of non-special waste, special waste, or hazardous waste. All limits shall be approved by the Engineer prior to excavation. The Contractor shall take all necessary precautions.

Based upon the land use history of the subject property and/or PID or FID readings indicating contamination, a soil or groundwater sample shall be taken from the same location and submitted to an approved laboratory. Soil or groundwater samples shall be analyzed for the contaminants of concern, including pH, based on the property's land use history or the parameters listed in the maximum allowable concentration (MAC) for chemical constituents in uncontaminated soil established pursuant to Subpart F of 35 Illinois Administrative Code 1100.605. The analytical results shall serve to document the level of soil contamination. Soil and groundwater samples may be required at the discretion of the Engineer to verify the level of soil and groundwater contamination.

Samples shall be grab samples (not combined with other locations). The samples shall be taken with decontaminated or disposable instruments. The samples shall be placed in sealed containers and transported in an insulated container to the laboratory. The container shall maintain a temperature of 39 °F (4 °C). All samples shall be clearly labeled. The labels shall indicate the sample number, date sampled, location and elevation, and any other observations.

The laboratory shall use analytical methods which are able to meet the lowest appropriate practical quantitation limits (PQL) or estimated quantitation limit (EQL) specified in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", EPA Publication No. SW-846 and "Methods for the Determination of Organic Compounds in Drinking Water", EPA, EMSL, EPA-600/4-88/039. For parameters where the specified cleanup objective is below the acceptable detection limit (ADL), the ADL shall serve as the cleanup objective. For other parameters the ADL shall be equal to or below the specified cleanup objective."

Replace the first two paragraphs of Article 669.09 of the Standard Specifications with the following:

**"669.09 Contaminated Soil and/or Groundwater Management and Disposal.** The management and disposal of contaminated soil and/or groundwater shall be according to the following:

- (a) Soil Analytical Results Exceed Most Stringent MAC. When the soil analytical results indicate that detected levels exceed the most stringent maximum allowable concentration (MAC) for chemical constituents in uncontaminated soil established pursuant to Subpart F of 35 Illinois Administrative Code 1100.605, the soil shall be managed as follows:
  - (1) When analytical results indicate inorganic chemical constituents exceed the most stringent MAC but they are still considered within area background levels by the Engineer, the excavated soil can be utilized within the construction limits as fill, when suitable. Such soil excavated for storm sewers can be placed back into the excavated trench as backfill, when suitable, unless trench backfill is specified. If the soils cannot be utilized within the construction limits, they shall be managed and disposed of off-site as a non-special waste, special waste, or hazardous waste as applicable.
  - (2) When analytical results indicate chemical constituents exceed the most stringent MAC but do not exceed the MAC for a Metropolitan Statistical Area (MSA) County, the excavated soil can be utilized within the construction limits as fill, when suitable, or managed and disposed of off-site as "uncontaminated soil" at a CCDD facility or an uncontaminated soil fill operation within an MSA County provided the pH of the soil is within the range of 6.25 - 9.0, inclusive.
  - (3) When analytical results indicate chemical constituents exceed the most stringent MAC but do not exceed the MAC for an MSA County excluding Chicago, or the MAC within the Chicago corporate limits, the excavated soil can be utilized within the construction limits as fill, when suitable, or managed and disposed of off-site as "uncontaminated soil" at a CCDD facility or an uncontaminated soil fill operation within an MSA County excluding Chicago or within the Chicago corporate limits provided the pH of the soil is within the range of 6.25 - 9.0, inclusive.



- (4) When analytical results indicate chemical constituents exceed the most stringent MAC but do not exceed the MAC for an MSA County excluding Chicago, the excavated soil can be utilized within the construction limits as fill, when suitable, or managed and disposed of off-site as "uncontaminated soil" at a CCDD facility or an uncontaminated soil fill operation within an MSA County excluding Chicago provided the pH of the soil is within the range of 6.25 - 9.0, inclusive.
- (5) When the Engineer determines soil cannot be managed according to Articles 669.09(a)(1) through (a)(4) above, the soil shall be managed and disposed of off-site as a non-special waste, special waste, or hazardous waste as applicable.
- (b) Soil Analytical Results Do Not Exceed Most Stringent MAC. When the soil analytical results indicate that detected levels do not exceed the most stringent MAC but the pH of the soil is less than 6.25 or greater than 9.0, the excavated soil can be utilized within the construction limits or managed and disposed of off-site as "uncontaminated soil" according to Article 202.03. However the excavated soil cannot be taken to a CCDD facility or an uncontaminated soil fill operation.
- (c) Groundwater. When groundwater analytical results indicate the detected levels are above Appendix B, Table E of 35 Illinois Administrative Code 742, the most stringent Tier 1 Groundwater Remediation Objectives for Groundwater Component of the Groundwater Ingestion Route for Class 1 groundwater, the groundwater shall be managed off-site as a special waste.

All groundwater encountered within lateral trenches may be managed within the trench and allowed to infiltrate back into the ground. If the groundwater cannot be managed within the trench it must be removed as a special or hazardous waste. The Contractor is prohibited from managing groundwater within the trench by discharging it through any existing or new storm sewer. The Contractor shall install backfill plugs within the area of groundwater contamination.

One backfill plug shall be placed down gradient to the area of groundwater contamination. Backfill plugs shall be installed at intervals not to exceed 50 ft (15 m). Backfill plugs are to be 4 ft (1.2 m) long, measured parallel to the trench, full trench width and depth. Backfill plugs shall not have any fine aggregate bedding or backfill, but shall be entirely cohesive soil or any class of concrete. The Contractor shall provide test data that the material has a permeability of less than  $10^{-7}$  cm/sec according to ASTM D 5084, Method A or per another test method approved by the Engineer."

Revise Article 669.14 of the Standard Specifications to read:

**"669.14 Final Environmental Construction Report.** At the end of the project, the Contractor will prepare and submit three copies of the Environmental Construction Report on the activities conducted during the life of the project, one copy shall be submitted to the Resident Engineer, one copy shall be submitted to the District's Environmental Studies Unit, and one copy shall be submitted with an electronic copy in Adode.pdf format to the Geologic

and Waste Assessment Unit, Bureau of Design and Environment, IDOT, 2300 South Dirksen Parkway, Springfield, Illinois 62764. The technical report shall include all pertinent information regarding the project including, but not limited to:

- (a) Measures taken to identify, monitor, handle, and dispose of soil or groundwater containing regulated substances, to prevent further migration of regulated substances, and to protect workers,
- (b) Cost of identifying, monitoring, handling, and disposing of soil or groundwater containing regulated substances, the cost of preventing further migration of regulated substances, and the cost for worker protection from the regulated substances. All cost should be in the format of the contract pay items listed in the contract plans (identified by the preliminary environmental site investigation (PESA) site number),
- (c) Plan sheets showing the areas containing the regulated substances,
- (d) Field sampling and testing results used to identify the nature and extent of the regulated substances,
- (e) Waste manifests (identified by the preliminary environmental site investigation (PESA) site number) for special or hazardous waste disposal, and
- (f) Landfill tickets (identified by the preliminary environmental site investigation (PESA) site number) for non-special waste disposal."

Revise the second paragraph of Article 669.16 of the Standard Specifications to read:

"The transportation and disposal of soil and other materials from an excavation determined to be contaminated will be paid for at the contract unit price per cubic yard (cubic meter) for NON-SPECIAL WASTE DISPOSAL, SPECIAL WASTE DISPOSAL, or HAZARDOUS WASTE DISPOSAL."

80283

## REMOVAL AND DISPOSAL OF SURPLUS MATERIALS (BDE)

Effective: November 2, 2012

Revise the first four paragraphs of Article 202.03 of the Standard Specifications to read:

**“202.03 Removal and Disposal of Surplus, Unstable, Unsuitable, and Organic Materials.** Suitable excavated materials shall not be wasted without permission of the Engineer. The Contractor shall dispose of all surplus, unstable, unsuitable, and organic materials, in such a manner that public or private property will not be damaged or endangered.

Suitable earth, stones and boulders naturally occurring within the right-of-way may be placed in fills or embankments in lifts and compacted according to Section 205. Broken concrete without protruding metal bars, bricks, rock, stone, reclaimed asphalt pavement with no expansive aggregate, or uncontaminated dirt and sand generated from construction or demolition activities may be used in embankment or in fill. If used in fills or embankments, these materials shall be placed and compacted to the satisfaction of the Engineer; shall be buried under a minimum of 2 ft (600 mm) of earth cover (except when the materials include only uncontaminated dirt); and shall not create an unsightly appearance or detract from the natural topographic features of an area. Broken concrete without protruding metal bars, bricks, rock, or stone may be used as riprap as approved by the Engineer. If the materials are used for fill in locations within the right-of-way but outside project construction limits, the Contractor must specify to the Engineer, in writing, how the landscape restoration of the fill areas will be accomplished. Placement of fill in such areas shall not commence until the Contractor's landscape restoration plan is approved by the Engineer.

Aside from the materials listed above, all other construction and demolition debris or waste shall be disposed of in a licensed landfill, recycled, reused, or otherwise disposed of as allowed by State or Federal laws and regulations. When the Contractor chooses to dispose of uncontaminated soil at a clean construction and demolition debris (CCDD) facility or at an uncontaminated soil fill operation, it shall be the Contractor's responsibility to have the pH of the material tested to ensure the value is between 6.25 and 9.0, inclusive. A copy of the pH test results shall be provided to the Engineer.

A permit shall be obtained from IEPA and made available to the Engineer prior to open burning of organic materials (i.e., plant refuse resulting from pruning or removal of trees or shrubs) or other construction or demolition debris. Organic materials originating within the right-of-way limits may be chipped or shredded and placed as mulch around landscape plantings within the right-of-way when approved by the Engineer. Chipped or shredded material to be placed as mulch shall not exceed a depth of 6 in. (150 mm).”

80319

**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 3 . In the event the contractor subcontracts a portion of the contract work, he shall determine how many, if any, of the trainees are to be trained by the subcontractor, provided however, that the contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The contractor shall also insure that this Training Special Provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within the reasonable area of recruitment. Prior to commencing construction, the contractor shall submit to the Illinois Department of Transportation for approval the number of trainees to be trained in each selected classification and training program to be used. Furthermore, the contractor shall specify the starting time for training in each of the classifications. The contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeyman status is a primary objective of this Training Special Provision. Accordingly, the contractor shall make every effort to enroll minority trainees and women (e.g. by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent such persons are available within a reasonable area of recruitment. The contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the contractor and approved by the Illinois Department of Transportation and the Federal Highway Administration. The Illinois Department of Transportation and the Federal Highway Administration shall approve a program, if it is reasonably calculated to meet the equal employment opportunity obligations of the contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved by not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the Illinois Department of Transportation and the Federal Highway Administration. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Except as otherwise noted below, the contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program. As approved by the Engineer, reimbursement will be made for training of persons in excess of the number specified herein. This reimbursement will be made even though the contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the contractor from receiving other reimbursement. Reimbursement for offsite training indicated above may only be made to the contractor where he does one or more of the following and the trainees are concurrently employed on a Federal-aid project; contributes to the cost of the training, provides the instruction to the trainee or pays the trainee's wages during the offsite training period.

No payment shall be made to the contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyman, is caused by the contractor and evidences a lack of good faith on the part of the contractor in meeting the requirement of this Training Special Provision. It is normally expected that a trainee will begin his training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in his work classification or until he has completed his training program.

It is not required that all trainees be on board for the entire length of the contract. A contractor will have fulfilled his responsibilities under this Training Special Provision if he has provided acceptable training to the number of trainees specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Trainees will be paid at least 60 percent of the appropriate minimum journeyman's rate specified in the contract for the first half of the training period, 75 percent for the third quarter of the training period, and 90 percent for the last quarter of the training period, unless apprentices or trainees in an approved existing program are enrolled as trainees on this project. In that case, the appropriate rates approved by the Departments of Labor or Transportation in connection with the existing program shall apply to all trainees being trained for the same classification who are covered by this Training Special Provision.

The contractor shall furnish the trainee a copy of the program he will follow in providing the training. The contractor shall provide each trainee with a certification showing the type and length of training satisfactorily complete.

The contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.

METHOD OF MEASUREMENT The unit of measurement is in hours.

BASIS OF PAYMENT This work will be paid for at the contract unit price of 80 cents per hour for TRAINEES. The estimated total number of hours, unit price and total price have been included in the schedule of prices.

20338

## WARM MIX ASPHALT (BDE)

Effective: January 1, 2012

Revised: November 1, 2013

Description. This work shall consist of designing, producing and constructing Warm Mix Asphalt (WMA) in lieu of Hot Mix Asphalt (HMA) at the Contractor's option. Work shall be according to Sections 406, 407, 408, 1030, and 1102 of the Standard Specifications, except as modified herein. In addition, any references to HMA in the Standard Specifications, or the special provisions shall be construed to include WMA.

WMA is an asphalt mixture which can be produced at temperatures lower than allowed for HMA utilizing approved WMA technologies. WMA technologies are defined as the use of additives or processes which allow a reduction in the temperatures at which HMA mixes are produced and placed. WMA is produced by the use of additives, a water foaming process, or combination of both. Additives include minerals, chemicals or organics incorporated into the asphalt binder stream in a dedicated delivery system. The process of foaming injects water into the asphalt binder stream, just prior to incorporation of the asphalt binder with the aggregate.

Approved WMA technologies may also be used in HMA provided all the requirements specified herein, with the exception of temperature, are met. However, asphalt mixtures produced at temperatures in excess of 275 °F (135 °C) will not be considered WMA when determining the grade reduction of the virgin asphalt binder grade.

### Materials.

Add the following to Article 1030.02 of the Standard Specifications.

“(h) Warm Mix Asphalt (WMA) Technologies (Note 3)”

Add the following note to Article 1030.02 of the Standard Specifications.

“Note 3. Warm mix additives or foaming processes shall be selected from the current Bureau of Materials and Physical Research Approved List, “Warm-Mix Asphalt Technologies”.”

### Equipment.

Revise the first paragraph of Article 1102.01 of the Standard Specifications to read:

“**1102.01 Hot-Mix Asphalt Plant.** The hot-mix asphalt (HMA) plant shall be the batch-type, continuous-type, or dryer drum plant. The plants shall be evaluated for prequalification rating and approval to produce HMA according to the current Bureau of Materials and Physical Research Policy Memorandum, “Approval of Hot-Mix Asphalt Plants and Equipment”. Once approved, the Contractor shall notify the Bureau of Materials and Physical Research to obtain approval of all plant modifications. The plants shall not be used to produce mixtures concurrently for more than one project or for private work unless permission is granted in writing

by the Engineer. The plant units shall be so designed, coordinated and operated that they will function properly and produce HMA having uniform temperatures and compositions within the tolerances specified. The plant units shall meet the following requirements.”

Add the following to Article 1102.01(a) of the Standard Specifications.

“(13) Equipment for Warm Mix Technologies.

- a. Foaming. Metering equipment for foamed asphalt shall have an accuracy of  $\pm 2$  percent of the actual water metered. The foaming control system shall be electronically interfaced with the asphalt binder meter.
- b. Additives. Additives shall be introduced into the plant according to the supplier’s recommendations and shall be approved by the Engineer. The system for introducing the WMA additive shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes.”

Mix Design Verification.

Add the following to Article 1030.04 of the Standard Specifications.

“(e) Warm Mix Technologies.

- (1) Foaming. WMA mix design verification will not be required when foaming technology is used alone (without WMA additives). However, the foaming technology shall only be used on HMA designs previously approved by the Department.
- (2) Additives. WMA mix designs utilizing additives shall be submitted to the Engineer for mix design verification.

Production.

Revise the second paragraph of Article 1030.06(a) of the Standard Specifications to read:

“At the start of mix production for HMA, WMA, and HMA using WMA technologies, QC/QA mixture start-up will be required for the following situations; at the beginning of production of a new mixture design, at the beginning of each production season, and at every plant utilized to produce mixtures, regardless of the mix.”

Quality Control/Quality Assurance Testing.

Revise the table in Article 1030.05(d)(2)a. of the Standard Specifications to read:



Parameter	Frequency of Tests		Test Method See Manual of Test Procedures for Materials
	High ESAL Mixture Low ESAL Mixture	All Other Mixtures	
Aggregate Gradation  % passing sieves: 1/2 in. (12.5 mm), No. 4 (4.75 mm), No. 8 (2.36 mm), No. 30 (600 μm) No. 200 (75 μm)  Note 1.	1 washed ignition oven test on the mix per half day of production  Note 4.	1 washed ignition oven test on the mix per day of production  Note 4.	Illinois Procedure
Asphalt Binder Content by Ignition Oven  Note 2.	1 per half day of production	1 per day	Illinois-Modified AASHTO T 308
VMA  Note 3.	Day's production ≥ 1200 tons:  1 per half day of production  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)	N/A	Illinois-Modified AASHTO R 35
Air Voids  Bulk Specific Gravity of Gyratory Sample  Note 5.	Day's production ≥ 1200 tons:  1 per half day of production  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)	1 per day	Illinois-Modified AASHTO T 312
Maximum Specific Gravity of Mixture	Day's production ≥ 1200 tons:  1 per half day of production  Day's production < 1200 tons:  1 per half day of production for first 2 days and 1 per	1 per day	Illinois-Modified AASHTO T 209

Parameter	Frequency of Tests	Frequency of Tests	Test Method See Manual of Test Procedures for Materials
	High ESAL Mixture Low ESAL Mixture	All Other Mixtures	
	day thereafter (first sample of the day)		

Note 1. The No. 8 (2.36 mm) and No. 30 (600 µm) sieves are not required for All Other Mixtures.

Note 2. The Engineer may waive the ignition oven requirement for asphalt binder content if the aggregates to be used are known to have ignition asphalt binder content calibration factors which exceed 1.5 percent. If the ignition oven requirement is waived, other Department approved methods shall be used to determine the asphalt binder content.

Note 3. The  $G_{sb}$  used in the voids in the mineral aggregate (VMA) calculation shall be the same average  $G_{sb}$  value listed in the mix design.

Note 4. The Engineer reserves the right to require additional hot bin gradations for batch

Note 5. The WMA compaction temperature for mixture volumetric testing shall be  $270 \pm 5$  °F ( $132 \pm 3$  °C) for quality control testing. The WMA compaction temperature for quality assurance testing will be  $270 \pm 5$  °F ( $132 \pm 3$  °C) if the mixture is not allowed to cool to room temperature. If the mixture is allowed to cool to room temperature it shall be reheated to standard HMA compaction temperatures.”

Construction Requirements.

Revise the second paragraph of Article 406.06(b)(1) of the Standard Specifications to read:

“The HMA shall be delivered at a temperature of 250 to 350 °F (120 to 175 °C). WMA shall be delivered at a minimum temperature of 215 °F (102 °C).”

Basis of Payment.

This work will be paid at the contract unit price bid for the HMA pay items involved. Anti-strip will not be paid for separately, but shall be considered as included in the cost of the work.

80288

## **WEEKLY DBE TRUCKING REPORTS (BDE)**

Effective: June 2, 2012

The Contractor shall provide a weekly report of Disadvantaged Business Enterprise (DBE) trucks hired by the Contractor or subcontractors (i.e. not owned by the Contractor or subcontractors) that are used on the jobsite; or used for the delivery and/or removal of equipment/material to and from the jobsite. The jobsite shall also include offsite locations, such as plant sites or storage sites, when those locations are used solely for this contract.

The report shall be submitted on the form provided by the Department within ten business days following the reporting period. The reporting period shall be Monday through Sunday for each week reportable trucking activities occur. The report shall be submitted to the Engineer and a copy shall be provided to the district EEO Officer.

Any costs associated with providing weekly DBE trucking reports shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed.

80302,

## **DRILLED SOLDIER PILE RETAINING WALL**

Effective: September 20, 2001

Revised: August 17, 2012

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 ( $F_b$ ), 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 drilled and located within the excavation to satisfy the following tolerances:

(1) The center of the soldier pile shall be within 1 1/2 in. (38 mm) of plan station and 1/2 in. (13 mm) offset at the top of the shaft.

(2) The out of vertical plumbness of the soldier pile shall not exceed 0.83 percent.

(3) The top of the soldier pile shall be within  $\pm 1$  in. ( $\pm 25$  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 ( $F_b$ ) 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.

## 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.

**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.

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## REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

### ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

#### I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

#### II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

**1. Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

**2. EEO Officer:** The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

**3. Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

**4. Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

**5. Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If

the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

## **6. Training and Promotion:**

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

**7. Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.



**8. Reasonable Accommodation for Applicants / Employees with Disabilities:** The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

**9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

**10. Assurance Required by 49 CFR 26.13(b):**

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

**11. Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

**III. NONSEGREGATED FACILITIES**

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color,

religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

**IV. Davis-Bacon and Related Act Provisions**

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

**1. Minimum wages**

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program. Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

## 2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such

action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

## 3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

#### 4. Apprentices and trainees

##### a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

##### b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

##### d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

**5. Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

**6. Subcontracts.** The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

**7. Contract termination: debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for

debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

**8. Compliance with Davis-Bacon and Related Act requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

**9. Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

#### **10. Certification of eligibility.**

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

#### **V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT**

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

**1. Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

**2. Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

**3. Withholding for unpaid wages and liquidated damages.** The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such

contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

**4. Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

#### **VI. SUBLETTING OR ASSIGNING THE CONTRACT**

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

## VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

## VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

## IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

## X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

### 1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded,"

as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

\* \* \* \* \*

## **2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:**

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with

commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

### **2. Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the

certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

\* \* \* \* \*

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:**

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\* \* \* \* \*

**XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**MINIMUM WAGES FOR FEDERAL AND FEDERALLY  
ASSISTED CONSTRUCTION CONTRACTS**

This project is funded, in part, with Federal-aid funds and, as such, is subject to the provisions of the Davis-Bacon Act of March 3, 1931, as amended (46 Sta. 1494, as amended, 40 U.S.C. 276a) and of other Federal statutes referred to in a 29 CFR Part 1, Appendix A, as well as such additional statutes as may from time to time be enacted containing provisions for the payment of wages determined to be prevailing by the Secretary of Labor in accordance with the Davis-Bacon Act and pursuant to the provisions of 29 CFR Part 1. The prevailing rates and fringe benefits shown in the General Wage Determination Decisions issued by the U.S. Department of Labor shall, in accordance with the provisions of the foregoing statutes, constitute the minimum wages payable on Federal and federally assisted construction projects to laborers and mechanics of the specified classes engaged on contract work of the character and in the localities described therein.

General Wage Determination Decisions, modifications and supersedes decisions thereto are to be used in accordance with the provisions of 29 CFR Parts 1 and 5. Accordingly, the applicable decision, together with any modifications issued, must be made a part of every contract for performance of the described work within the geographic area indicated as required by an applicable DBRA Federal prevailing wage law and 29 CFR Part 5. The wage rates and fringe benefits contained in the General Wage Determination Decision shall be the minimum paid by contractors and subcontractors to laborers and mechanics.

**NOTICE**

The most current **General Wage Determination Decisions** (wage rates) are available on the IDOT web site. They are located on the Letting and Bidding page at <http://www.dot.state.il.us/desenv/delett.html>.

In addition, ten (10) days prior to the letting, the applicable Federal wage rates will be e-mailed to subscribers. It is recommended that all contractors subscribe to the Federal Wage Rates List or the Contractor's Packet through IDOT's subscription service.

PLEASE NOTE: if you have already subscribed to the Contractor's Packet you will automatically receive the Federal Wage Rates.

The instructions for subscribing are at <http://www.dot.state.il.us/desenv/subsc.html>.

If you have any questions concerning the wage rates, please contact IDOT's Chief Contract Official at 217-782-7806.