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. This does not apply to Small Business Set-Asides.

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. This does not apply to Small Business Set-Asides.

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 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. These documents must be received three days before the letting date.

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 server e-mails are an added courtesy the Department provides. It is suggested that bidders check IDOT's website at http://www.dot.il.gov/desenv/delett.html before submitting final bid information.

IDOT IS NOT RESPONSIBLE FOR ANY E-MAIL FAILURES.

Addenda questions may be directed to the Plans and Contracts Office at (217)782-7806 or D&Econtracts@dot.il.gov

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

BID SUBMITTAL GUIDELINES AND CHECKLIST

In an effort to eliminate confusion and standardize the bid submission process the Contracts Office has created the following guidelines and checklist for submitting bids.

This information has been compiled from questions received from contractors and from inconsistencies noted on submitted bids. If you have additional questions please refer to the contact information listed below.

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

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. This page has the Item number 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 after you are awarded the contract.
- 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.

Use the following checklist to ensure completeness and the correct order in assembling your bid

☐ **Cover page followed by the Pay Items.** If you are using special software or CBID to generate your schedule of prices, do not include the blank schedule of prices.

☐ **Page 4 (Item 9)** – Check "YES" if you will use a subcontractor(s). Include the subcontractor(s) name, address and the dollar amount (if over $25,000). If you will use subcontractor(s) but are uncertain who or the dollar amount; check "YES" but leave the lines blank.

☐ **After page 4, I**nsert your Cost Adjustments for Steel, Bituminous and Fuel (if applicable), and your State Board of Elections certificate of registration.

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

☐ **Page 10 (Paragraph K)** – List the Union Local Name and number or certified training programs that you have in place. Do not include certificates with your bid. Keep the certificates in your office in case they are requested by IDOT.

☐ **Page 11 (Paragraph L)** - Insert a copy of your State Board of Elections certificate of registration after page 4 of the bid proposal. Only include the page that has the date stamp on it. Do not include any other certificates or forms showing that you are an Illinois business.

☐ **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 Form A that is filled out.

☐ **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 financial 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".

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

☐ **Bid Bond –** Submit your bid bond using the current Bid Bond Form provided in the proposal package. The Power of Attorney page should be stapled to the Bid Bond. If you are using an electronic bond, include your bid bond number on the form and attach the Proof of Insurance printed from the Surety 2000 Web Site.

☐ **Disadvantaged Business Utilization Plan and/or Good Faith Effort –** The last item in your bid should be the DBE Utilization Plan (SBE 2026), DBE Participation Statement (SBE 2025) and supporting paperwork. If you have documentation for a Good Faith Effort, it should 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 10:20 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 page of the current letting.

QUESTIONS: pre-letting up to execution of the contract

Contractor/Subcontractor pre-qualification ---------- 217-782-3413
Small Business, Disadvantaged Business Enterprise (DBE) ---------- 217-785-4611
Contracts, Bids, Letting process or Internet downloads ---------- 217-785-0230
Estimates Unit ---------- 217-785-3483

QUESTIONS: following contract execution

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

RETURN WITH BID

202

Proposal Submitted By **Name**
Address
City

Letting June 15, 2012

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. This does not apply to Small Business Set-Asides.
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. 63649
LAKE County
Section 02-00051-08-WR
Route FAP 364 (Quentin Road)
Project M-9003(083)
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

Illinois Department of Transportation

PROPOSAL

TO THE DEPARTMENT OF TRANSPORTATION

1. Proposal of _____

   _____

Taxpayer Identification Number (Mandatory) _____

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

Contract No. 63649
LAKE County
Section 02-00051-08-WR
Project M-9003(083)
Route FAP 364 (Quentin Road)
District 1 Construction Funds

Reconstruction to provide two 12-foot through lanes and an exclusive left turn lane at the intersections of Long Grove Road, Rand Road and White Pines Road. Project begins south of Long Grove Road to Boschome Drive, located in the Village of Kildeer and the Village of Deer Park.

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

3. **ASSURANCE OF EXAMINATION AND INSPECTION/WAIVER.** The undersigned 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 proposal he/she waives all right to plead any misunderstanding regarding the same.

4. **EXECUTION OF CONTRACT AND CONTRACT BOND.** The undersigned 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, guaranteeing the faithful performance of the work in accordance with the terms of the contract.

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

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

Bank cashier's checks or properly certified checks accompanying proposals shall be made payable to the Treasurer, State of Illinois, when the state is awarding authority; the county treasurer, when a county is the awarding authority; or the city, village, or town treasurer, when a city, village, or town is the awarding authority.

If a combination bid is submitted, the proposal guaranties which accompany the individual 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 shall fail to execute a contract bond as required herein, it is hereby agreed that the amount of the proposal guaranty shall 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 shall become void or the proposal guaranty check shall 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 proposals, the amount must be equal to the sum of the proposal guaranties which would be required for each individual proposal. If the guaranty check is placed in another proposal, state below where it may be found.

The proposal guaranty check will be found in the proposal for: Item _____

Section No. _____

County _____

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

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

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

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

Schedule of Combination Bids

Combination No.	Sections Included in Combination	Combination Bid Dollars	Cents

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

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

9. **The services of a subcontractor will or may be used.**

Check box Yes ☐
Check box No ☐

For known subcontractors with subcontracts with an annual value of more than $25,000, the contract shall include their name, address, and the dollar allocation for each subcontractor.

_____

_____

10. **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 or the State Purchasing Officer is for approval of the procurement process and execution of the contract by the Department. Neither the Chief Procurement Officer nor the State Purchasing Officer shall be responsible for administration of the contract or determinations respecting performance or payment there under except as otherwise permitted in the Illinois Procurement Code.

STATE JOB #- C-91-016-09
PPS NBR -

SCHEDULE OF PRICES
CONTRACT NUMBER - 63649

RUN DATE - 05/23/12
RUN TIME - 141227

COUNTY NAME	CODE	DIST	SECTION NUMBER	PROJECT NUMBER	ROUTE
LAKE	097	01	02-00051-08-WR	M-9003/083/000	FAP 364

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
K0012990	P PL ORNAMENT T GAL P	UNIT	30.000	X			=		
K0012993	P PL ORNAMENT T 3G P	UNIT	3.000	X			=		
K0013055	P PL WETLAND EMERGENT	ACRE	1.000	X			=		
XX001249	ORNAMENTAL FENCE	FOOT	67.000	X			=		
XX003668	PRECONSTRUCT VID TAP	L SUM	1.000	X			=		
XX004913	REMOV FOC FR CONDUIT	FOOT	9,535.000	X			=		
XX005845	MODULAR CONC PAVER SP	SQ FT	765.000	X			=		
XX005928	TRAF SIGL P 10FT SPL	EACH	1.000	X			=		
XX005931	TRAF SIGL P 16FT SPL	EACH	7.000	X			=		
XX005937	LED INT IL S-NAME SGN	EACH	8.000	X			=		
XX005940	REMOTE CONTR VIDEO SY	EACH	1.000	X			=		
XX006522	FURNISH WITNESS POST	EACH	61.000	X			=		
XX006570	TREES (SPECIAL)	EACH	107.000	X			=		
XX006655	LYR II DATALINK SWTCH	EACH	2.000	X			=		
XX006657	REL EX VID DET SYS CI	EACH	1.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
XX006658	FLOCCULATION LOGS	EACH	10.000			X =		
XX006659	FLOCCULATION POWDER	POUND	25.000			X =		
XX006698	TREE PROTECT & PRESER	EACH	124.000			X =		
XX006731	LEVEL SPREADER	EACH	3.000			X =		
XX007957	EROS CONT CHANNEL DIV	FOOT	100.000			X =		
XX008131	ELCBL C VIDEO 18 3C	FOOT	1,929.000			X =		
XX008132	REL REM-CON VID SYS	EACH	3.000			X =		
XX008253	VIDEO ENCODER	EACH	2.000			X =		
XX008667	AGG SUBGRADE 12"	SQ YD	43,656.000			X =		
XX008678	RELOC EXIST ENCODER	EACH	4.000			X =		
XX008683	ELCBL C 600VRHW 2-1/C	FOOT	1,943.000			X =		
X0324044	EROS CON TEMP P SL DR	EACH	2.000			X =		
X0324045	SED CON STAB CON EN R	EACH	2.000			X =		
X0324058	OUTLET SPL	EACH	1.000			X =		
X0324085	EM VEH P S LSC 20 3C	FOOT	2,912.000			X =		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
X0324775	SED CON STAB CON EN M	SQ YD	374.000	X			=		
X0326310	RELO EX SWITCH SPL	EACH	3.000	X			=		
X0326337	DRAINAGE CONTROL STR	EACH	1.000	X			=		
X0326358	STORM WATER TRTMT SYS	EACH	1.000	X			=		
X0326885	VIDEO DETECT SYS	EACH	2.000	X			=		
X0840000	SAN SEW REMOV 8	FOOT	148.000	X			=		
X2010350	TREE REMOV ACRES SPL	ACRE	1.500	X			=		
X2130010	EXPLOR TRENCH SPL	FOOT	200.000	X			=		
X2500920	SEEDING CL 1A SPL	ACRE	2.500	X			=		
X2501800	SEEDING CL 4 MOD	ACRE	1.000	X			=		
X2501820	SEEDING CL 5 MOD	ACRE	1.250	X			=		
X2511630	EROS CONT BLANKET SPL	SQ YD	74,997.000	X			=		
X4021000	TEMP ACCESS- PRIV ENT	EACH	12.000	X			=		
X4022000	TEMP ACCESS- COM ENT	EACH	5.000	X			=		
X4023000	TEMP ACCESS- ROAD	EACH	3.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
X4403300	CONC MEDIAN REMOV	SQ FT	1,328.000	X			=		
X6013600	PIPE UNDERDRAIN 4 MOD	FOOT	12,018.000	X			=		
X6020175	DR STR WITH RESTRICT	EACH	1.000	X			=		
X6060200	CONC MED TSB6.24 MOD	SQ FT	6,496.000	X			=		
X6650202	WOV W FENCE REMOV	FOOT	1,400.000	X			=		
X7010216	TRAF CONT & PROT SPL	L SUM	1.000	X			=		
X7310110	BASE TEL SIN SUPP SP	EACH	44.000	X			=		
X7800100	PT PVT MK- RAISED MED	SQ FT	1,768.000	X			=		
X8570226	FAC T4 CAB SPL	EACH	3.000	X			=		
X8620200	UNINTER POWER SUP SPL	EACH	3.000	X			=		
X8710024	FOCC62.5/125 MM12SM24	FOOT	14,769.000	X			=		
X8730800	ELCBL C VIDEO 20 4C	FOOT	336.000	X			=		
X8770135	S C MAA&P 42 SPL	EACH	1.000	X			=		
X8950205	REBLD EX HANDHOLE SPL	EACH	1.000	X			=		
Z0010600	CLEAN DRAINAGE SYSTEM	FOOT	1,293.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
Z0013302	SEGMENT CONC BLK WALL	SQ FT	699.000	X			=		
Z0013796	SED CON STAB CONST EN	SQ YD	374.000	X			=		
Z0013798	CONSTRUCTION LAYOUT	L SUM	1.000	X			=		
Z0018500	DRAINAGE STR CLEANED	EACH	13.000	X			=		
Z0019600	DUST CONTROL WATERING	UNIT	10.000	X			=		
Z0023202	SED CONT DR ST INL CL	EACH	91.000	X			=		
Z0023204	SED CONT SILT FENCE	FOOT	5,243.000	X			=		
Z0023206	SED CONT SILT FN MAIN	FOOT	5,243.000	X			=		
Z0030850	TEMP INFO SIGNING	SQ FT	150.000	X			=		
Z0033046	RE-OPTIMIZE SIG SYS 2	EACH	17.000	X			=		
Z0033050	COAXIAL CABLE IN CON	FOOT	336.000	X			=		
Z0042002	POROUS GRAN EMB SUBGR	CU YD	6,878.000	X			=		
Z0053700	RESET SURVEY MONUMENT	EACH	3.000	X			=		
Z0062456	TEMP PAVEMENT	SQ YD	1,668.000	X			=		
Z0070200	SURVEY MONUMENTS	EACH	18.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
Z0073510	TEMP TR SIGNAL TIMING	EACH	3.000	X			=		
Z0076600	TRAINEES	HOUR	1,500.000	X	0	.80	=	1,200	.00
20100110	TREE REMOV 6-15	UNIT	1,487.000	X			=		
20100210	TREE REMOV OVER 15	UNIT	470.000	X			=		
20101000	TEMPORARY FENCE	FOOT	2,000.000	X			=		
20101200	TREE ROOT PRUNING	EACH	109.000	X			=		
20200100	EARTH EXCAVATION	CU YD	15,012.000	X			=		
20201200	REM & DISP UNS MATL	CU YD	27,840.000	X			=		
20400800	FURNISHED EXCAVATION	CU YD	39,303.000	X			=		
20800150	TRENCH BACKFILL	CU YD	4,110.000	X			=		
21001000	GEOTECH FAB F/GR STAB	SQ YD	52,969.000	X			=		
21101615	TOPSOIL F & P 4	SQ YD	35,879.000	X			=		
21101685	TOPSOIL F & P 24	SQ YD	1,976.000	X			=		
25000210	SEEDING CL 2A	ACRE	3.750	X			=		
25000314	SEEDING CL 4B	ACRE	0.250	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
25000400	NITROGEN FERT NUTR	POUND	735.000	X			=		
25000600	POTASSIUM FERT NUTR	POUND	735.000	X			=		
25100115	MULCH METHOD 2	ACRE	8.250	X			=		
25100635	HD EROS CONTR BLANKET	SQ YD	89.000	X			=		
25200110	SODDING SALT TOLERANT	SQ YD	764.000	X			=		
25200200	SUPPLE WATERING	UNIT	20.000	X			=		
28000200	EARTH EXC - EROS CONT	CU YD	200.000	X			=		
28000250	TEMP EROS CONTR SEED	POUND	810.000	X			=		
28000305	TEMP DITCH CHECKS	FOOT	756.000	X			=		
28000500	INLET & PIPE PROTECT	EACH	13.000	X			=		
28000510	INLET FILTERS	EACH	91.000	X			=		
28100101	STONE RIPRAP CL A1	SQ YD	144.000	X			=		
28100107	STONE RIPRAP CL A4	SQ YD	84.000	X			=		
28200200	FILTER FABRIC	SQ YD	168.000	X			=		
31101180	SUB GRAN MAT B 2	SQ YD	266.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
35100300	AGG BASE CSE A 4	SQ YD	3,504.000			X =		
35100500	AGG BASE CSE A 6	SQ YD	1,542.000			X =		
35100700	AGG BASE CSE A 8	SQ YD	92.000			X =		
35300310	PCC BSE CSE 8 1/2	SQ YD	60.000			X =		
40600100	BIT MATLS PR CT	GALLON	27,202.000			X =		
40600400	MIX CR JTS FLANGEWYS	TON	2.000			X =		
40600635	LEV BIND MM N70	TON	54.000			X =		
40600827	P LB MM IL-4.75 N50	TON	224.000			X =		
40600895	CONSTRUC TEST STRIP	EACH	2.000			X =		
40600982	HMA SURF REM BUTT JT	SQ YD	47.000			X =		
40600990	TEMPORARY RAMP	SQ YD	47.000			X =		
40603080	HMA BC IL-19.0 N50	TON	504.000			X =		
40603085	HMA BC IL-19.0 N70	TON	17,484.000			X =		
40603335	HMA SC "D" N50	TON	541.000			X =		
40603340	HMA SC "D" N70	TON	4,454.000			X =		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
42001300	PROTECTIVE COAT	SQ YD	6,620.000	X			=		
42300400	PCC DRIVEWAY PAVT 8	SQ YD	190.000	X			=		
42400200	PC CONC SIDEWALK 5	SQ FT	2,577.000	X			=		
42400800	DETECTABLE WARNINGS	SQ FT	323.000	X			=		
44000100	PAVEMENT REM	SQ YD	24,407.000	X			=		
44000153	HMA SURF REM 1	SQ YD	1,619.000	X			=		
44000157	HMA SURF REM 2	SQ YD	2,626.000	X			=		
44000200	DRIVE PAVEMENT REM	SQ YD	2,415.000	X			=		
44000300	CURB REM	FOOT	388.000	X			=		
44000500	COMB CURB GUTTER REM	FOOT	4,444.000	X			=		
44004000	PAVED DITCH REMOVAL	FOOT	252.000	X			=		
44004250	PAVED SHLD REMOVAL	SQ YD	566.000	X			=		
44201747	CL D PATCH T4 8	SQ YD	34.000	X			=		
44201769	CL D PATCH T3 10	SQ YD	130.000	X			=		
54213657	PRC FLAR END SEC 12	EACH	1.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
54213660	PRC FLAR END SEC 15	EACH	8.000	X			=		
54213663	PRC FLAR END SEC 18	EACH	1.000	X			=		
54213669	PRC FLAR END SEC 24	EACH	6.000	X			=		
54213681	PRC FLAR END SEC 36	EACH	4.000	X			=		
54213687	PRC FLAR END SEC 42	EACH	1.000	X			=		
54247130	GRATING-C FL END S 24	EACH	6.000	X			=		
54247170	GRATING-C FL END S 36	EACH	4.000	X			=		
54247180	GRATING-C FL END S 42	EACH	1.000	X			=		
550A0050	STORM SEW CL A 1 12	FOOT	3,036.000	X			=		
550A0070	STORM SEW CL A 1 15	FOOT	452.000	X			=		
550A0090	STORM SEW CL A 1 18	FOOT	618.000	X			=		
550A0120	STORM SEW CL A 1 24	FOOT	1,322.000	X			=		
550A0140	STORM SEW CL A 1 30	FOOT	441.000	X			=		
550A0160	STORM SEW CL A 1 36	FOOT	1,648.000	X			=		
550A0180	STORM SEW CL A 1 42	FOOT	4.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
55100100	STORM SEWER REM 4	FOOT	675.000	X			=		
55100300	STORM SEWER REM 8	FOOT	2.000	X			=		
55100400	STORM SEWER REM 10	FOOT	135.000	X			=		
55100500	STORM SEWER REM 12	FOOT	955.000	X			=		
55100700	STORM SEWER REM 15	FOOT	980.000	X			=		
55100900	STORM SEWER REM 18	FOOT	171.000	X			=		
55101200	STORM SEWER REM 24	FOOT	311.000	X			=		
55101600	STORM SEWER REM 36	FOOT	480.000	X			=		
55201300	STORM SEWERS JKD 36	FOOT	112.000	X			=		
56107200	REM RELOC WAT MAIN 8	FOOT	20.000	X			=		
56300100	ADJ SAN SEWER 8 LESS	FOOT	50.000	X			=		
56300300	ADJ WATER SERV LINES	FOOT	50.000	X			=		
59300100	CONTR LOW-STRENG MATL	CU YD	52.000	X			=		
60200805	CB TA 4 DIA T8G	EACH	2.000	X			=		
60201110	CB TA 4 DIA T11V F&G	EACH	10.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
60201340	CB TA 4 DIA T24F&G	EACH	36.000	X			=		
60205040	CB TA 5 DIA T24F&G	EACH	4.000	X			=		
60207605	CB TC T8G	EACH	1.000	X			=		
60208240	CB TC T24F&G	EACH	6.000	X			=		
60218400	MAN TA 4 DIA T1F CL	EACH	9.000	X			=		
60219000	MAN TA 4 DIA T8G	EACH	1.000	X			=		
60221100	MAN TA 5 DIA T1F CL	EACH	26.000	X			=		
60223800	MAN TA 6 DIA T1F CL	EACH	2.000	X			=		
60224039	MAN TA 6 DIA T24F&G	EACH	1.000	X			=		
60236825	INLETS TA T11V F&G	EACH	4.000	X			=		
60237470	INLETS TA T24F&G	EACH	23.000	X			=		
60250200	CB ADJUST	EACH	4.000	X			=		
60252800	CB RECONST	EACH	2.000	X			=		
60255500	MAN ADJUST	EACH	6.000	X			=		
60257900	MAN RECONST	EACH	2.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
60258100	MAN RECON NEW T1F OL	EACH	1.000	X			=		
60260100	INLETS ADJUST	EACH	4.000	X			=		
60262700	INLETS RECONST	EACH	2.000	X			=		
60265700	VV ADJUST	EACH	1.000	X			=		
60500040	REMOV MANHOLES	EACH	16.000	X			=		
60500050	REMOV CATCH BAS	EACH	17.000	X			=		
60500060	REMOV INLETS	EACH	14.000	X			=		
60600605	CONC CURB TB	FOOT	279.000	X			=		
60605000	COMB CC&G TB6.24	FOOT	13,923.000	X			=		
60618300	CONC MEDIAN SURF 4	SQ FT	147.000	X			=		
60624600	CORRUGATED MED	SQ FT	1,290.000	X			=		
61140200	STORM SEWER SPEC 12	FOOT	56.000	X			=		
63000001	SPBGR TY A 6FT POSTS	FOOT	226.000	X			=		
63100167	TR BAR TRM T1 SPL TAN	EACH	1.000	X			=		
63200310	GUARDRAIL REMOV	FOOT	447.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
66900200	NON SPL WASTE DISPOSL	CU YD	79.000	X			=		
66900450	SPL WASTE PLNS/REPORT	L SUM	1.000	X			=		
66900530	SOIL DISPOSAL ANALY	EACH	1.000	X			=		
67000400	ENGR FIELD OFFICE A	CAL MO	15.000	X			=		
67100100	MOBILIZATION	L SUM	1.000	X			=		
67201000	SEAL ABAN WATER WELLS	EACH	1.000	X			=		
67201100	SEAL ABAN MONIT WELLS	EACH	1.000	X			=		
70106800	CHANGEABLE MESSAGE SN	CAL MO	12.000	X			=		
70300100	SHORT TERM PAVT MKING	FOOT	2,831.000	X			=		
70300210	TEMP PVT MK LTR & SYM	SQ FT	1,475.000	X			=		
70300220	TEMP PVT MK LINE 4	FOOT	70,560.000	X			=		
70300240	TEMP PVT MK LINE 6	FOOT	6,919.000	X			=		
70300260	TEMP PVT MK LINE 12	FOOT	643.000	X			=		
70300280	TEMP PVT MK LINE 24	FOOT	842.000	X			=		
70300510	PAVT MARK TAPE T3 L&S	SQ FT	110.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
70300520	PAVT MARK TAPE T3 4	FOOT	13,963.000	X			=		
70300540	PAVT MARK TAPE T3 6	FOOT	415.000	X			=		
70300560	PAVT MARK TAPE T3 12	FOOT	524.000	X			=		
70301000	WORK ZONE PAVT MK REM	SQ FT	37,222.000	X			=		
72000100	SIGN PANEL T1	SQ FT	40.000	X			=		
72000200	SIGN PANEL T2	SQ FT	43.000	X			=		
72000300	SIGN PANEL T3	SQ FT	60.000	X			=		
72400100	REMOV SIN PAN ASSY TA	EACH	54.000	X			=		
72400310	REMOV SIGN PANEL T1	SQ FT	407.000	X			=		
72700100	STR STL SIN SUP BA	POUND	564.000	X			=		
73400100	CONC FOUNDATION	CU YD	1.400	X			=		
78000100	THPL PVT MK LTR & SYM	SQ FT	2,552.000	X			=		
78000200	THPL PVT MK LINE 4	FOOT	28,310.000	X			=		
78000400	THPL PVT MK LINE 6	FOOT	10,090.000	X			=		
78000500	THPL PVT MK LINE 8	FOOT	4,912.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
78000600	THPL PVT MK LINE 12	FOOT	5,282.000	X			=		
78000650	THPL PVT MK LINE 24	FOOT	1,114.000	X			=		
78100100	RAISED REFL PAVT MKR	EACH	194.000	X			=		
78200420	GUARDRAIL MKR TYPE B	EACH	3.000	X			=		
78201000	TERMINAL MARKER - DA	EACH	1.000	X			=		
78300100	PAVT MARKING REMOVAL	SQ FT	9,297.000	X			=		
78300200	RAISED REF PVT MK REM	EACH	150.000	X			=		
80500020	SERV INSTALL POLE MT	EACH	2.000	X			=		
81028200	UNDRGRD C GALVS 2	FOOT	4,330.000	X			=		
81028210	UNDRGRD C GALVS 2 1/2	FOOT	181.000	X			=		
81028230	UNDRGRD C GALVS 3 1/2	FOOT	288.000	X			=		
81028240	UNDRGRD C GALVS 4	FOOT	1,822.000	X			=		
81400100	HANDHOLE	EACH	9.000	X			=		
81400200	HD HANDHOLE	EACH	4.000	X			=		
81400300	DBL HANDHOLE	EACH	6.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
82103250	LUM SV HOR MT PC 250W	EACH	8.000	X			=		
85000200	MAIN EX TR SIG INSTAL	EACH	4.000	X			=		
87300925	ELCBL C TRACER 14 1C	FOOT	14,631.000	X			=		
87301215	ELCBL C SIGNAL 14 2C	FOOT	4,875.000	X			=		
87301225	ELCBL C SIGNAL 14 3C	FOOT	5,873.000	X			=		
87301245	ELCBL C SIGNAL 14 5C	FOOT	11,878.000	X			=		
87301255	ELCBL C SIGNAL 14 7C	FOOT	2,478.000	X			=		
87301305	ELCBL C LEAD 14 1PR	FOOT	3,825.000	X			=		
87301805	ELCBL C SERV 6 2C	FOOT	180.000	X			=		
87301900	ELCBL C EGRDC 6 1C	FOOT	3,144.000	X			=		
87502480	TS POST GALVS 14	EACH	1.000	X			=		
87502520	TS POST GALVS 18	EACH	1.000	X			=		
87700220	S MAA & P 36	EACH	1.000	X			=		
87700240	S MAA & P 40	EACH	1.000	X			=		
87702980	STL COMB MAA&P 50	EACH	1.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
87704060	STL COMB MAA&P 26 SPL	EACH	1.000	X			=		
87704120	STL COMB MAA&P 38 SPL	EACH	2.000	X			=		
87704130	STL COMB MAA&P 40 SPL	EACH	1.000	X			=		
87704150	STL COMB MAA&P 44 SPL	EACH	1.000	X			=		
87704160	STL COMB MAA&P 46 SPL	EACH	1.000	X			=		
87704210	STL COMB MAA&P 58 SPL	EACH	1.000	X			=		
87800100	CONC FDN TY A	FOOT	40.000	X			=		
87800150	CONC FDN TY C	FOOT	12.000	X			=		
87800400	CONC FDN TY E 30D	FOOT	15.000	X			=		
87800415	CONC FDN TY E 36D	FOOT	145.000	X			=		
87800420	CONC FDN TY E 42D	FOOT	21.000	X			=		
87900200	DRILL EX HANDHOLE	EACH	8.000	X			=		
88030020	SH LED 1F 3S MAM	EACH	29.000	X			=		
88030100	SH LED 1F 5S BM	EACH	1.000	X			=		
88030110	SH LED 1F 5S MAM	EACH	4.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
88030210	SH LED 2F 3S BM	EACH	7.000	X			=		
88030240	SH LED 2F 1-3 1-5 BM	EACH	5.000	X			=		
88102717	PED SH LED 1F BM CDT	EACH	12.000	X			=		
88102747	PED SH LED 2F BM CDT	EACH	2.000	X			=		
88200210	TS BACKPLATE LOU ALUM	EACH	34.000	X			=		
88500100	INDUCTIVE LOOP DETECT	EACH	12.000	X			=		
88600100	DET LOOP T1	FOOT	552.000	X			=		
88700200	LIGHT DETECTOR	EACH	10.000	X			=		
88700300	LIGHT DETECTOR AMP	EACH	3.000	X			=		
88800100	PED PUSH-BUTTON	EACH	16.000	X			=		
89000100	TEMP TR SIG INSTALL	EACH	3.000	X			=		
89501150	RELOC EX TS POST	EACH	1.000	X			=		
89502300	REM ELCBL FR CON	FOOT	10,002.000	X			=		
89502375	REMOV EX TS EQUIP	EACH	2.000	X			=		
89502380	REMOV EX HANDHOLE	EACH	27.000	X			=		

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY		UNIT PRICE DOLLARS	UNIT PRICE CENTS		TOTAL PRICE DOLLARS	TOTAL PRICE CTS
89502385	REMOV EX CONC FDN	EACH	15.000	X			=		
89502500	REM TEMP TR SIG INST	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 Illinois Procurement Code establishes the duty of all State chief procurement officers, State purchasing officers, and their designees to maximize the value of the expenditure of public moneys in procuring goods, services, and contracts for the State of Illinois and to act in a manner that maintains the integrity and public trust of State government. In discharging this duty, they are charged by law to use all available information, reasonable efforts, and reasonable actions to protect, safeguard, and maintain the procurement process of the State of Illinois.

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

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

II. ASSURANCES

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

A. Conflicts of Interest

1. The Illinois Procurement Code provides in pertinent part:

Section 50-13. Conflicts of Interest.

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

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

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

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

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

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

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

B. Negotiations

1. The Illinois Procurement Code provides in pertinent part:

Section 50-15. Negotiations.

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

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

C. Inducements

1. The Illinois Procurement Code provides:

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

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

D. Revolving Door Prohibition

1. The Illinois Procurement Code provides:

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

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

E. Reporting Anticompetitive Practices

1. The Illinois Procurement Code provides:

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

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

F. Confidentiality

1. The Illinois Procurement Code provides:

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

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

G. Insider Information

1. The Illinois Procurement Act provides:

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

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

III. CERTIFICATIONS

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

A. Bribery

1. The Illinois Procurement Code provides:

Section 50-5. Bribery.

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

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

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

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

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

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

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

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

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

B. Felons

1. The Illinois Procurement Code provides:

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

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

C. Debt Delinquency

1. The Illinois Procurement Code provides:

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

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

D. Prohibited Bidders, Contractors and Subcontractors

1. The Illinois Procurement Code provides:

Section 50-10.5 and 50-60(c). Prohibited bidders, contractors and subcontractors.
The bidder or contractor or subcontractor, respectively, certifies in accordance with 30 ILCS 500/50-10.5 that no officer, director, partner or other managerial agent of the contracting business has been convicted of a felony under the Sarbanes-Oxley Act of 2002 or a Class 3 or Class 2 felony under the Illinois Securities Law of 1953 or if in violation of Subsection (c) for a period of five years from the date of conviction. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Procurement Code shall contain a certification by the bidder, contractor, or subcontractor, respectively, that the bidder, contractor, or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the chief procurement officer shall declare the related contract void if any of the certifications completed pursuant to this Section are false.

E. Section 42 of the Environmental Protection Act

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

F. Educational Loan

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

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

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

G. Bid-Rigging/Bid Rotating

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

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

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

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

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

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

H. International Anti-Boycott

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

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

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

I. Drug Free Workplace

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

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

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

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

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

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

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

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

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

J. Disclosure of Business Operations in Iran

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

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

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

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

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

Check the appropriate statement:

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

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

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

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

NA-FEDERAL

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

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

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

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

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

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

M. Lobbyist Disclosure

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

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

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

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

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

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

Or

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

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

IV. DISCLOSURES

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

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

B. Financial Interests and Conflicts of Interest

1. Section 50-35 of the Illinois Procurement Code provides that all bids of more than $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 Procurement Code or the existence of a conflict of interest as provided in subsections (b) and (d) of Section 50-35.

The financial interests to be disclosed shall include ownership or distributive income share that is in excess of 5%, or an amount greater than 60% of the annual salary of the Governor, of the bidding entity or its parent entity, whichever is less, unless the contractor or bidder is a publicly traded entity subject to Federal 10K reporting, in which case it may submit its 10K disclosure in place of the prescribed disclosure. If a bidder is a privately held entity that is exempt from Federal 10K reporting, but has more than 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.

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

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

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

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

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

RETURN WITH BID

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form A
Financial Information & Potential Conflicts of Interest Disclosure

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

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

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

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

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

Yes ___No __

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

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

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

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

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

Yes ___ No __

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

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

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

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

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

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

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

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

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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 Procurement 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 Illinois Procurement Act (30 ILCS 500). This information shall become part of the publicly available contract file. This Form B must be completed for bids in excess of $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

Illinois Department of Transportation

Contract No. 63649
LAKE County
Section 02-00051-08-WR
Project M-9003(083)
Route FAP 364 (Quentin 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

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

TABLE C

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

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

FOR DEPARTMENT USE ONLY

BC 1256 (Rev. 12/11/07)

Note: See instructions on page 2

PART II. WORKFORCE PROJECTION - continued

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

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

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

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

PART III. AFFIRMATIVE ACTION PLAN

A. The undersigned bidder understands and agrees that in the event the foregoing minority and female employee utilization projection included under **PART II** is determined to be an underutilization of minority persons or women in any job category, and in the event that the undersigned bidder is awarded this contract, he/she will, prior to commencement of work, develop and submit a written Affirmative Action Plan including a specific timetable (geared to the completion stages of the contract) whereby deficiencies in minority and/or female employee utilization are corrected. Such Affirmative Action Plan will be subject to approval by the contracting agency and the **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. 63649
LAKE County
Section 02-00051-08-WR
Project M-9003(083)
Route FAP 364 (Quentin 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.

Firm Name _____

(IF AN INDIVIDUAL) Signature of Owner _____

Business Address _____

_____

Firm Name _____

By _____

(IF A CO-PARTNERSHIP) Business Address _____

_____
Name and Address of All Members of the Firm:

_____ _____

Corporate Name _____

By _____
Signature of Authorized Representative

(IF A CORPORATION)

_____
Typed or printed name and title of Authorized Representative

Attest _____
Signature

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

Corporate Name _____

By _____
Signature of Authorized Representative

(IF A JOINT VENTURE)

_____
Typed or printed name and title of Authorized Representative

Attest _____
Signature

Business Address _____

_____

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

Illinois Department of Transportation

Return with Bid

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

Item No. _____

Letting Date _____

KNOW ALL MEN BY THESE PRESENTS, That We _____

_____

as PRINCIPAL, and _____

_____ as SURETY, are held jointly, severally and firmly bound unto the STATE OF ILLINOIS in the penal sum of 5 percent of the total bid price, or for the amount specified in 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, submit a DBE Utilization Plan that is accepted and approved by the Department; and if, after award by the Department, the PRINCIPAL shall enter into a contract in accordance with the terms of the bidding and contract documents including evidence of the required insurance coverages and providing such bond as specified with good and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof; or if, in the event of the failure of the PRINCIPAL to make the required DBE submission or to enter into such contract and to give the specified bond, the PRINCIPAL pays to the Department the difference not to exceed the penalty hereof between the amount specified in the bid proposal and such larger amount for which the Department may contract with another party to perform the work covered by said bid proposal, then this obligation shall be null and void, otherwise, it shall remain in full force and effect.

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

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

their respective officers this _____ day of _____ A.D., _____ .

PRINCIPAL	**SURETY**
_____ (Company Name)	_____ (Company Name)
By _____ (Signature & Title)	By: _____ (Signature of Attorney-in-Fact)

Notary Certification for Principal and Surety

STATE OF ILLINOIS,

County of _____

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

_____ and _____

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

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

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

My commission expires _____ _____

Notary Public

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

_____ _____ ☐ _____

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

Illinois Department of Transportation

DBE Utilization Plan

(1) Policy

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

(2) Obligation

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

(3) Project and Bid Identification

Complete the following information concerning the project and bid:

Route _____ Total Bid _____

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

Project _____

County _____

Letting Date _____

Contract No. _____

Letting Item No. _____

(4) Assurance

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

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

Disadvantaged Business Participation _____ percent

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

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

Disadvantaged Business Participation _____ percent

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

_____
Company

By _____

Title _____

Date _____

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

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

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

Local Let Projects
Submit forms to the
Local Agency

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

Illinois Department of Transportation

DBE Participation Statement

Subcontractor Registration _____ 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

Pay Item No.	Description	Quantity	Unit Price	Total
			Total	

(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. The undersigned further understand that no changes to this statement may be made without prior approval from the Department's Bureau of Small Business Enterprises and that complete and accurate information regarding actual work performed on this project and the payment therefore must be provided to the Department.

_____ _____

Signature for Prime Contractor Signature for DBE Firm

Title _____ Title _____

Date _____ Date _____

Contact _____ Contact Person _____

Phone _____ Phone _____

Firm Name _____ Firm Name _____

Address _____ Address _____

City/State/Zip _____ City/State/Zip _____

E _____

WC _____

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

PROPOSAL ENVELOPE

Illinois Department of Transportation

PROPOSALS

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

Item No.	Item No.	Item No.

Submitted By:

Name:
Address:
Phone No.

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

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

NOTICE

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

CONTRACTOR OFFICE COPY OF CONTRACT SPECIFICATIONS

NOTICE

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

Contract No. 63649
LAKE County
Section 02-00051-08-WR
Project M-9003(083)
Route FAP 364 (Quentin Road)
District 1 Construction Funds

Illinois Department of Transportation

SUBCONTRACTOR DOCUMENTATION

Public Acts 96-0795 and 96-0920, enacted substantial changes to the provisions of the Illinois Procurement Code (30 ILCS 500). Among the changes are provisions affecting subcontractors. The Contractor awarded this contract will be required as a material condition of the contract to implement and enforce the contract requirements applicable to subcontractors approved in accordance with article 108.01 of the Standard Specifications for Road and Bridge Construction.

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

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

RETURN WITH SUBCONTRACT

STATE ETHICAL STANDARDS GOVERNING SUBCONTRACTORS

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

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

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

A. Bribery

1. The Illinois Procurement Code provides:

Section 50-5. Bribery.

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

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

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

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

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

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

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

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

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

B. Felons

1. The Illinois Procurement Code provides:

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

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

RETURN WITH SUBCONTRACT

C. Debt Delinquency

1. The Illinois Procurement Code provides:

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

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

D. Prohibited Bidders, Contractors and Subcontractors

1. The Illinois Procurement Code provides:

Section 50-10.5 and 50-60(c). Prohibited bidders, contractors and subcontractors.
The bidder or contractor or subcontractor, respectively, certifies in accordance with 30 ILCS 500/50-10.5 that no officer, director, partner or other managerial agent of the contracting business has been convicted of a felony under the Sarbanes-Oxley Act of 2002 or a Class 3 or Class 2 felony under the Illinois Securities Law of 1953 or if in violation of Subsection (c) for a period of five years from the date of conviction.. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Procurement Code shall contain a certification by the bidder, contractor, or subcontractor, respectively, that the bidder, contractor, or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the chief procurement officer shall declare the related contract void if any of the certifications completed pursuant to this Section are false.

E. Section 42 of the Environmental Protection Act

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

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

_____
Name of Subcontracting Company

_____ _____
Authorized Officer Date

RETURN WITH SUBCONTRACT

SUBCONTRACTOR DISCLOSURES

I. DISCLOSURES

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

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

B. Financial Interests and Conflicts of Interest

1. Section 50-35 of the Illinois Procurement Code provides that all subcontracts with a total value of $25,000 or more, from subcontractors identified in Section 20-120 of the Illinois Procurement 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.

RETURN WITH SUBCONTRACT

ILLINOIS DEPARTMENT OF TRANSPORTATION

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

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

Disclosure of the information contained in this Form is required by the Section 50-35 of the Illinois Procurement Code (30 ILCS 500). Subcontractors desiring to enter into a subcontract of a State of Illinois contract must disclose the financial information and potential conflict of interest information as specified in this Disclosure Form. This information shall become part of the publicly available contract file. This Form A must be completed for subcontracts with a total value of $25,000 or more, from subcontractors identified in Section 20-120 of the Illinois Procurement Code, and for all open-ended contracts. **A publicly traded company may submit a 10K disclosure (or equivalent if applicable) in satisfaction of the requirements set forth in Form A. See Disclosure Form Instructions.**

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

DISCLOSURE OF FINANCIAL INFORMATION

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

FOR INDIVIDUAL (type or print information)

NAME: _____

ADDRESS _____

_____

Type of ownership/distributable income share:

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

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

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

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

Yes ___ No __

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

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

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

_____

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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3 Communication Disclosure.

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

Name and address of person(s): _____

_____

_____

_____

RETURN WITH SUBCONTRACT

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

Name of person(s): _____

Nature of disclosure: _____

_____

_____

_____

APPLICABLE STATEMENT

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

Completed by: ☐ _____ _____

Signature of Individual or Authorized Officer — Date

NOT APPLICABLE STATEMENT

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

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

☐ _____ _____

Signature of Authorized Officer — Date

RETURN WITH SUBCONTRACT

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form B
Subcontractor: Other Contracts & Financial Related Information Disclosure

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

Disclosure of the information contained in this Form is required by the Section 50-35 of the Illinois Procurement Act (30 ILCS 500). This information shall become part of the publicly available contract file. This Form B must be completed for subcontracts with a total value of $25,000 or more, from subcontractors identified in Section 20-120 of the Illinois Procurement 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 of Authorized Officer Date

OWNERSHIP CERTIFICATION

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

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

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

Illinois Department of Transportation

NOTICE TO BIDDERS

1. **TIME AND PLACE OF OPENING BIDS.** Sealed proposals for the improvement described herein will be received by the Department of Transportation at the Harry R. Hanley Building, 2300 South Dirksen Parkway, in Springfield, Illinois until 10:00 o'clock a.m., June 15, 2012. 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. 63649
   LAKE County
   Section 02-00051-08-WR
   Project M-9003(083)
   Route FAP 364 (Quentin Road)
   District 1 Construction Funds

Reconstruction to provide two 12-foot through lanes and an exclusive left turn lane at the intersections of Long Grove Road, Rand Road and White Pines Road. Project begins south of Long Grove Road to Boschome Drive, located in the Village of Kildeer and the Village of Deer Park.

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

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

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

By Order of the
Illinois Department of Transportation

Ann L. Schneider,
Secretary

INDEX
FOR
SUPPLEMENTAL SPECIFICATIONS
AND RECURRING SPECIAL PROVISIONS

Adopted January 1, 2012

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

SUPPLEMENTAL SPECIFICATIONS

CHECK SHEET
RECURRING SPECIAL PROVISIONS

Adopted January 1, 2012

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

RECURRING SPECIAL PROVISIONS

CHECK SHEET
LOCAL ROADS AND STREETS RECURRING SPECIAL PROVISIONS

Adopted January 1, 2012

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

LOCAL ROADS AND STREETS RECURRING SPECIAL PROVISIONS

INDEX

TOPIC **PAGE**

IDOT District One Specifications

Traffic Signal Special Provisions

Environmental Survey Request Forms

Storm Water Pollution Prevention Plan and Permits

Soils Map
Low Erosivity Waiver Certification (EPA 7500-62)
Environmental Protection Agency Erosivity Index
Erosion and Sediment Control Analysis (BDE 2394)
Erosion Control Inspection Report (BC2259)
IL 532 2104 Notice of Intent (NOI)

Permits

U.S. Army Corps of Engineers Permit

Soils Report

Chicago Testing Laboratory, Inc. (Dated July 13, 2005)
Midland Standard Engineering & Testing, Inc. (Dated June 25, 2007)

INDEX LOCAL ROADS AND STREETS SPECIAL PROVISIONS

LR #	Pg #		Special Provision Title	Effective	Revised
LR SD12		☐	Slab Movement Detection Device	Nov. 11, 1984	Jan. 1, 2007
LR SD13		☐	Required Cold Milled Surface Texture	Nov. 1, 1987	Jan. 1, 2007
LR SD406		☐	Safety Edge	April 1, 2011	
LR 102-1		☐	Protests on Local Lettings	Jan. 1, 2007	Jan. 2, 2012
LR 102-2		☐	Bidding Requirements and Conditions for Contract Proposals	Jan. 1, 2001	Jan. 2, 2012
LR 102-3		☐	Bidding Requirements and Conditions for Material Proposals	Jan. 1, 2001	Jan. 2, 2012
LR 105	367	☒	Cooperation with Utilities	Jan. 1, 1999	Jan. 1, 2007
LR 107-2		☐	Railroad Protective Liability Insurance for Local Lettings	Mar. 1, 2005	Jan. 1, 2006
LR 107-4	370	☒	Insurance	Feb. 1, 2007	Aug. 1, 2007
LR 107-7		☐	Wages of Employees on Public Works	Jan. 1, 1999	Jan. 1, 2012
LR 108		☐	Combination Bids	Jan. 1, 1994	Mar. 1, 2005
LR 109		☐	Equipment Rental Rates	Jan. 1, 2012	
LR 212		☐	Shaping Roadway	Aug. 1, 1969	Jan. 1, 2002
LR 355-1		☐	Bituminous Stabilized Base Course, Road Mix or Traveling Plant Mix	Oct. 1, 1973	Jan. 1, 2007
LR 355-2		☐	Bituminous Stabilized Base Course, Plant Mix	Feb. 20, 1963	Jan. 1, 2007
LR 400-1		☐	Bituminous Treated Earth Surface	Jan. 1, 2007	Jan. 1, 2008
LR 400-2		☐	Bituminous Surface Plant Mix (Class B)	Jan. 1, 2008	
LR 400-3		☐	Hot In-Place Recycling (HIR) – Surface Recycling	Jan. 1, 2012	
LR 400-5		☐	Cold In-Place Recycling (CIR) With Emulsified Asphalt	April 1, 2012	
LR 402		☐	Salt Stabilized Surface Course	Feb. 20, 1963	Jan. 1, 2007
LR 403-1		☐	Surface Profile Milling of Existing, Recycled or Reclaimed Flexible Pavement	April 1, 2012	
LR 403-2		☐	Bituminous Hot Mix Sand Seal Coat	Aug. 1, 1969	Jan. 1, 2007
LR 406		☐	Filling HMA Core Holes with Non-shrink Grout	Jan. 1, 2008	
LR 420		☐	PCC Pavement (Special)	May 12, 1964	Jan. 2, 2007
LR 442		☐	Bituminous Patching Mixtures for Maintenance Use	Jan. 1, 2004	Jun. 1, 2007
LR 451		☐	Crack Filling Bituminous Pavement with Fiber-Asphalt	Oct. 1, 1991	Jan. 1, 2007
LR 503-1		☐	Furnishing Class SI Concrete	Oct. 1, 1973	Jan. 1, 2002
LR 503-2		☐	Furnishing Class SI Concrete (Short Load)	Jan. 1, 1989	Jan. 1, 2002
LR 542		☐	Pipe Culverts, Type _____ (Furnished)	Sep. 1, 1964	Jan. 1, 2007
LR 663		☐	Calcium Chloride Applied	Jun. 1, 1958	Jan. 1, 2007
LR 702		☐	Construction and Maintenance Signs	Jan. 1, 2004	Jun. 1, 2007
LR 1000		☐	Cold In-Place Recycling (CIR) and Full Depth Reclamation (FDR) Mix Design Procedures	April 1, 2012	
LR 1004		☐	Coarse Aggregate for Bituminous Surface Treatment	Jan. 1, 2002	Jan. 1, 2007
LR 1030		☐	Growth Curve	Mar. 1, 2008	Jan. 1, 2010
LR 1032-1		☐	Emulsified Asphalts	Jan. 1, 2007	Feb. 7, 2008
LR 1032-2		☐	Multigrade Cold Mix Asphalt	Jan. 1, 2007	Feb. 1, 2007
LR 1102		☐	Road Mix or Traveling Plan Mix Equipment	Jan. 1, 2007	

BDE SPECIAL PROVISIONS
For the April 27 and June 15, 2012 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.

	File Name	Pg #		Special Provision Title	Effective	Revised
	80240			Above Grade Inlet Protection	July 1, 2009	Jan. 1, 2012
	80099			Accessible Pedestrian Signals (APS)	April 1, 2003	Jan. 1, 2007
	80275	371	X	Agreement to Plan Quantity	Jan. 1, 2012	
*	80274			Agreement Subgrade Improvement	April 1, 2012	
	80192			Automated Flagger Assistance Device	Jan. 1, 2008	
	80173	372	X	Bituminous Materials Cost Adjustments	Nov. 2, 2006	Jan. 1, 2012
	80241			Bridge Demolition Debris	July 1, 2009	
	80276			Bridge Relief Joint Sealer (NOTE: This special provision was previously named "Concrete Joint Sealer")	Jan. 1, 2012	
	5026I			Building Removal-Case I (Non-Friable and Friable Asbestos)	Sept. 1, 1990	April 1, 2010
	5048I			Building Removal-Case II (Non-Friable Asbestos)	Sept. 1, 1990	April 1, 2010
	5049I			Building Removal-Case III (Friable Asbestos)	Sept. 1, 1990	April 1, 2010
	5053I			Building Removal-Case IV (No Asbestos)	Sept. 1, 1990	April 1, 2010
*	80291			Calcium Chloride Accelerator for Class PP-2 Concrete	April 1, 2012	
*	80292			Coarse Aggregate in Bridge Approach Slabs/Footings	April 1, 2012	
	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	
	80277			Concrete Mix Design-Department Provided	Jan 1, 2012	
	80261	375	X	Construction Air Quality – Diesel Retrofit	June 1, 2010	
*	80237	378	X	Construction Air Quality – Diesel Vehicle Emissions Control	April 1, 2009	Jan. 2, 2012
	80239	380	X	Construction Air Quality – Idling Restrictions	April 1, 2009	
	80177			Digital Terrain Modeling for Earthwork Calculations	April 1, 2007	
	80029	382	X	Disadvantaged Business Enterprise Participation	Sept. 1, 2000	Aug. 2, 2011
	80272			Drainage and Inlet Protection Under Traffic	April 1, 2011	Jan. 1, 2012
*	80296	392	X	Errata for the 2012 Standard Specifications	April 1, 2012	
	80228	393	X	Flagger at Side Roads and Entrances	April 1, 2009	
	80265	394	X	Friction Aggregate	Jan. 1, 2011	
	80229	398	X	Fuel Cost Adjustment	April 1, 2009	July 1, 2009
	80169			High Tension Cable Median Barrier	Jan. 1, 2007	April 1, 2009
*	80246	402	X	Hot-Mix Asphalt – Density Testing of Longitudinal Joints	Jan. 1, 2010	April 1, 2012
	80109			Impact Attenuators	Nov. 1, 2003	Jan. 1, 2012
	80110			Impact Attenuators, Temporary	Nov. 1, 2003	Jan. 1, 2012
	80045			Material Transfer Device	June 15, 1999	Jan. 1, 2009
	80203	404	X	Metal Hardware Cast into Concrete	April 1, 2008	Jan. 1, 2012
*	80297			Modified Urethane Pavement Marking	April 1, 2012	
	80165			Moisture Cured Urethane Paint System	Nov. 1, 2006	Jan. 1, 2010
	80253			Movable Traffic Barrier	Jan. 1, 2010	Jan. 1, 2012
	80231	405	X	Pavement Marking Removal	April 1, 2009	
*	80298			Pavement Marking Tape Type IV	April 1, 2012	
	80254	406	X	Pavement Patching	Jan. 1, 2010	
	80022	407	X	Payments to Subcontractors	June 1, 2000	Jan. 1, 2006
*	80290			Payrolls and Payroll Records	Jan. 2, 2012	
	80278			Planting Woody Plants	Jan. 1, 2012	
	80279	409	X	Portland Cement Concrete	Jan. 1, 2012	
*	80299			Portland Cement Concrete Inlay or Overlay	April 1, 2012	
	80280	449	X	Portland Cement Concrete Sidewalk	Jan. 1, 2012	
*	80300			Preformed Plastic Pavement Marking Type D - Inlaid	April 1, 2012	
*	80218			Preventive Maintenance – Bituminous Surface Treatment	Jan. 1, 2009	April 1, 2012
*	80219			Preventive Maintenance – Cape Seal	Jan. 1, 2009	April 1, 2012

File Name	Pg #		Special Provision Title	Effective	Revised
80220			Preventive Maintenance – Micro-Surfacing	Jan. 1, 2009	April 1, 2012
80221			Preventive Maintenance – Slurry Seal	Jan. 1, 2009	April 1, 2012
80281	**450**	X	Quality Control/Quality Assurance of Concrete Mixtures	Jan. 1, 2012	
3426I			Railroad Protective Liability Insurance	Dec. 1, 1986	Jan. 1, 2006
80157			Railroad Protective Liability Insurance (5 and 10)	Jan. 1, 2006	
80172			Reclaimed Asphalt Pavement (RAP)	Jan. 1, 2007	Jan. 1, 2012
80282			Reclaimed Asphalt Shingles (RAS)	Jan. 1, 2012	
80283	**463**	X	Removal and Disposal of Regulated Substances	Jan. 1, 2012	
80224			Restoring Bridge Approach Pavements Using High-Density Foam	Jan. 1, 2009	Jan. 1, 2012
80271			Safety Edge	April 1, 2011	
80152			Self-Consolidating Concrete for Cast-In-Place Construction	Nov. 1, 2005	April 1, 2012
80132	**464**	X	Self-Consolidating Concrete for Precast and Precast Prestressed Products	July 1, 2004	April 1, 2012
80284			Shoulder Rumble Strips	Jan. 1, 2012	
80285			Sidewalk, Corner or Crosswalk Closure	Jan. 1, 2012	
80127	**466**	X	Steel Cost Adjustment	April 2, 2004	April 1, 2009
80255			Stone Matrix Asphalt	Jan. 1, 2010	Jan. 1, 2012
80143	**470**	X	Subcontractor Mobilization Payments	April 2, 2005	April 1, 2011
80075			Surface Testing of Pavements	April 1, 2002	Jan. 1, 2007
80286	**471**	X	Temporary Erosion and Sediment Control	Jan. 1, 2012	
80225			Temporary Raised Pavement Marker	Jan. 1, 2009	
80256			Temporary Water Filled Barrier	Jan. 1, 2010	Jan. 1, 2012
80287			Type G Inlet Box	Jan. 1, 2012	
80273	**472**	X	Traffic Control Deficiency Deduction	Aug. 1, 2011	
20338	**473**	X	Training Special Provisions	Oct. 15, 1975	
80270			Utility Coordination and Conflicts	April 1, 2011	Jan. 1, 2012
80288	**476**	X	Warm Mix Asphalt	Jan. 1, 2012	
80289			Wet Reflective Thermoplastic Pavement Marking	Jan. 1, 2012	
80071	**481**	X	Working Days	Jan. 1, 2002	

The following special provisions are either in the 2012 Standard Specification, the 2012 Recurring Special Provisions, or the special provision Portland Cement Concrete:

File Name	Special Provision Title	New Location	Effective	Revised
80186	Alkali-Silica Reaction for Cast-in-Place Concrete	The special provision Portland Cement Concrete	Aug. 1, 2007	Jan.1, 2009
80213	Alkali-Silica Reaction for Precast and Precast Prestressed Concrete	The special provision Portland Cement Concrete	Jan. 1, 2009	
80207	Approval of Proposed Borrow Areas, Use Areas, and/or Waste Areas	Article 107.22	Nov. 1, 2008	Nov., 1, 2010
80166	Cement	Section 1001	Jan. 1, 2007	April 1, 2011
80260	Certification of Metal Fabricator	Article 106.08	July 1, 2010	
80094	Concrete Admixtures	Section 1021 and the special provision Portland Cement Concrete	Jan. 1, 2003	April 1, 2009
80226	Concrete Mix Designs	The special provision Portland Cement Concrete	April 1, 2009	
80227	Determination of Thickness	Articles 353.12, 353.13, 353.14, 354.09, 355.09 356.07, 407.10, 482.06 and 483.07	April 1, 2009	
80179	Engineer's Field Office Type A	Articles 670.02 and 670.07	April 1, 2007	Jan. 1, 2011
80205	Engineer's Field Office Type B	Articles 670.04 and 670.07	Aug. 1, 2008	Jan. 1, 2011
80189	Equipment Rental Rates	Articles 105.07 and 109.04	Aug. 2, 2007	Jan. 2, 2008
80249	Frames and Grates	Articles 609.02 and 609.04	Jan. 1, 2010	
80194	HMA - Hauling on Partially Completed Full-Depth Pavement	Article 407.08	Jan. 1, 2008	
80245	Hot-Mix Asphalt - Anti-Stripping Additive	Article 1030.04	Nov.1, 2009	
80250	Hot-Mix Asphalt - Drop-Offs	Article 701.07	Jan. 1, 2010	

File Name	Special Provision Title	New Location	Effective	Revised
80259	Hot-Mix Asphalt - Fine Aggregate	Articles 1003.01 and 1003.03	April 1, 2010	
80252	Improved Subgrade	Articles 302.04, 302.07 302.08, 302.10, 302.11 310.04, 310.08, 310.10 310.11 and 311.05	Jan. 1, 2010	
80266	Lane Closure, Multilane, Intermittent or Moving Operation, for Speeds ≤ 40 MPH	Article 701.19	Jan.1, 2011	Jan. 2, 2011
80230	Liquidated Damages	Article 108.09	April 1, 2009	April 1, 2011
80267	Long-Span Guardrail over Culvert	Articles 630.07 and 630.08	Jan. 1, 2011	
80262	Mulch and Erosion Control Blankets	Articles 251.03, 251.04, 251.06, 251.07 and 1081.06	Nov. 1, 2010	April 1, 2011
80180	National Pollutant Discharge Elimination System / Erosion and Sediment Control Deficiency Deduction	Article 105.03	April 1, 2007	Nov. 1, 2009
80208	Nighttime Work Zone Lighting	Section 702	Nov.,1, 2008	
80232	Pipe Culverts	Article 542.03, 542.04, 542.11 and 1040.04	April 1, 2009	April 1, 2010
80263	Planting Perennial Plants	Section 254 and Article 1081.02	Jan. 1, 2011	
80210	Portland Cement Concrete Inlay or Overlay	Recurring CS #29	Nov. 1, 2008	
80217	Post Clips for Extruded Aluminum Signs	Article 1090.03	Jan. 1, 2009	
80268	Post Mounting of Signs	Article 701.14	Jan. 1, 2011	
80171	Precast Handling Holes	Articles 540.02, 540.06, 542.02, 542.04, 550.02, 550.06, 602.02, 602.07 and 1042.16	Jan. 1, 2007	
80015	Public Convenience and Safety	Article 107.09	Jan. 1, 2000	
80247	Raised Reflective Pavement Markers	Article 781.03	Nov. 1, 2009	April 1, 2010
80131	Seeding	Articles 250.07 and 1081.04	July 1, 2004	July 1, 2010
80264	Selection of Labor	Recurring CS #5	July 2, 2010	
80234	Storm Sewers	Article 550.02, 550.03, 550.06, 550.07, 550.08 and 1040.04	April 1, 2009	April 1, 2010
80087	Temporary Erosion Control	Articles 280.02, 280.03 280.04, 280.07, 280.08 and 1081.15	Nov.1, 2002	Jan. 1, 2011
80257	Traffic Barrier Terminal, Type 6	Article 631.07	Jan. 1, 2010	
80269	Traffic Control Surveillance	Article 701.10	Jan. 1, 2011	
80258	Truck Mounted/Trailer Mounted Attenuators	Articles 701.03, 701.15 and 1106.02	Jan. 1, 2010	

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

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

STATE OF ILLINOIS
SPECIAL PROVISIONS

The following Special Provisions supplement the specifications listed in the table below, which apply to and govern the proposed improvement designated as Section Number 02-00051-08-WR, Project Number M-9003 (083), Job Number C-91-016-09 and in case of conflict with any part or parts of said specifications, the said Special Provisions shall take precedence and govern.

SPECIFICATION	ADOPTED/DATED
Standard Specifications for Road and Bridge Construction	January 1, 2012
Manual on Uniform Traffic Control Devices for Streets and Highways Illinois Supplement	2009 Edition
Supplemental Specifications , Recurring Special Provisions, and BDE Special Provisions (indicated on the sheets included herein)	Latest Edition
Standard Specifications for Water & Sewer Main Construction In Illinois	July 2009, Sixth Edition

Contract No. 63649

LOCATION OF PROJECT

This improvement includes Quentin Road from approximately 950 feet south of Long Grove Road to Boschome Drive, north of U.S. Route 12 (Rand Road). The improvement is located in the Village Kildeer and Village of Deer Park in Lake County, Illinois. The total length of improvement is 1.09 miles.

DESCRIPTION OF PROJECT

Improvements include the reconstruction of Quentin Road to provide a cross-section consisting of two 12-foot through lanes in each direction with a exclusive left turn lanes at the intersections of Long Grove Road, U.S. Route 12 (Rand Road) and White Pines Road and Type B-6.24 concrete curb and gutter will be provided at the edges of pavement.

The work includes curb and gutter removal, pavement removal, combination concrete curb and gutter, full depth hot-mix asphalt pavement, an enclosed drainage system, and updated water main lateral crossings as well as pavement marking, signing, landscape restoration, and all

incidental and collateral work necessary to complete the project as shown on the plans and as described within the project specifications.

HUBS AND LATH

(GW 4/30/02)
Hubs and lath furnished by the contractor will be in accordance with paragraph 105.09 of the Standard Specifications and the following. Hubs shall be 1 3/8" x 7/8 "x 18" (actual dimension) furnished in securely banded (on each end) bundles of 25 pieces and lath shall be 1 1/8" x ½" x 48" (actual dimension) furnished in securely banded (on each end) bundles of 50 pieces. Material shall be kiln dried Douglas fir, oak or maple and surfaced on the 2 larger sides and without splits, pitch pockets, wane, knots or decayed wood. The tapered end on each hub shall be pencil point tapered. Lath may be saw cut tapered or pencil tapered. The cost 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.

KEEPING ROADS OPEN TO TRAFFIC

All roads shall remain open to traffic unless otherwise shown on the contract plans. The Contractor may close one lane because of construction only between the hours of 9:00 AM and 3:00 PM. The Contractor shall maintain one-way traffic during these restricted hours with the use of signs and flagmen as shown on the Traffic Control Standards. Two lanes of traffic will be maintained between 3:00 PM and 9:00AM and when no construction activities are being carried out. The restricted lane closure time provision may be waived at the Resident Engineer's discretion.

When necessary to close one lane because of construction, the Contractor shall maintain one-way traffic during construction hours with the use of signs and flagmen as shown on the Traffic Control Standards. Two lanes of traffic will be maintained during nights and weekends when no construction activities are being carried on.

STORMWATER TREATMENT: DEWATERING/TREATMENT DITCHES

The Floc Logs are designed for use in flowing conditions for treating turbid water to remove suspended sediment. Stormwater Treatment Ditches are used to introduce site-specific polymers to turbid waters in such a manner to facilitate mixing and reaction between the polymer and the suspended particles. Collection of the flocculated particulate that forms will greatly reduce turbidity in stormwater.

A ditch is created, either by digging out the bed or building up the walls, and lined with plastic or geosynthetic fabric to prevent erosion. Floc Logs are secured along the ditch, allowing the water to mix with the site-specific polymer blend and begin reacting with the suspended sediment. Checks can be placed along the ditch, forcing the water to flow over and around them, to increase turbulence and mixing with the Floc Logs. The ditch is lined with jute or similar matting to provide surface area for the flocculated sediment to adhere to and help remove fine particulate from the water.

i. This application can be used for dewatering applications, recirculation treatment, or continuous flow treatment systems.

ii. Cover the exposed soil with jute matting and apply Silt Stop powder to prevent erosion. With highly erosive soils protection with geotextile or plastic sheeting may be necessary.

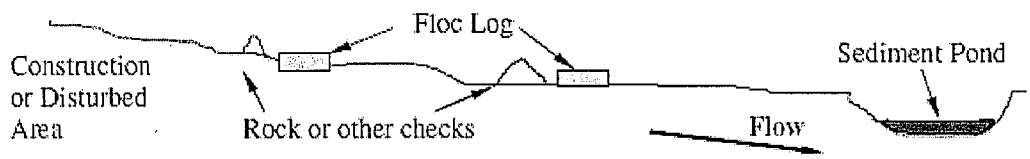
iii. Ensure only turbid water is entering the ditch. The turbidity of the water flowing through the system should not exceed 4% solids. If the sediment load of the water is above this limit, a grit pit or settling tank may need to be installed to encourage primary settling before treatment.

iv. Make sure that the logs are not resting in mud or buried by sediment; drive rebar or wooden "feet" into the logs to raise them slightly if needed.

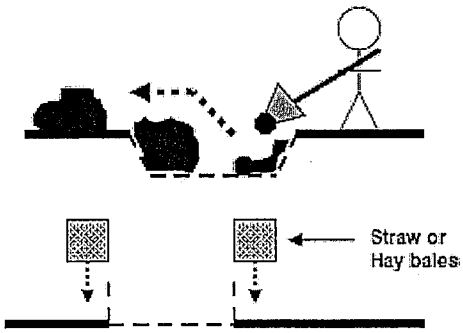
v. Logs should be placed in a series, one after another. The number of logs is determined by the flow rate of the water and the length of the mixing ditch is determined by the reaction time required for the polymer.

vi. Particle collection can be accomplished using jute matting in the ditch, as outlined here, or by using another method of particle collection as outlined in the next section.

Open Ditch Placement

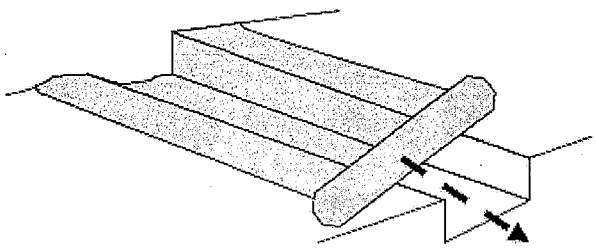


Step-by-Step Dewatering / Treatment Ditch



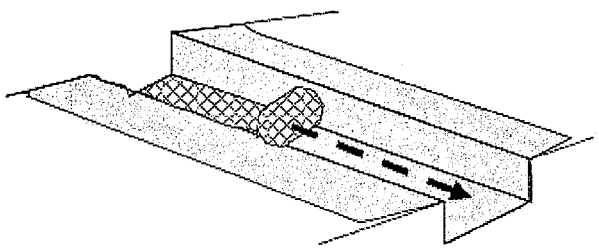
Step 1: Create ditch.

The ditch can be dug into the ground, or created by building up the walls.



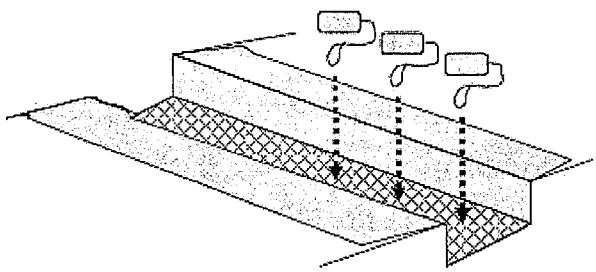
Step 2: Line with Plastic.

The plastic sheeting is used to prevent the water being treated from picking up sediment and causing erosion.



Step 3: Lay Jute Matting.

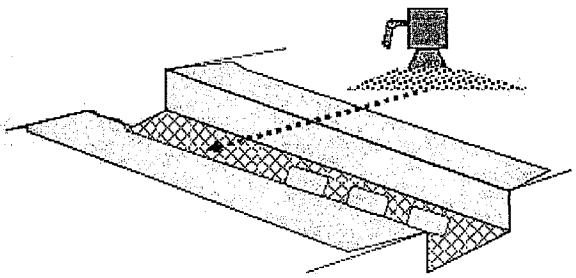
The jute matting provides a surface for the particulate formed during treatment to adhere onto.



Step 4: Place Floc Logs.

The Floc Logs are positioned in a line at the top of the ditch, allowing the water to flow over and around them.

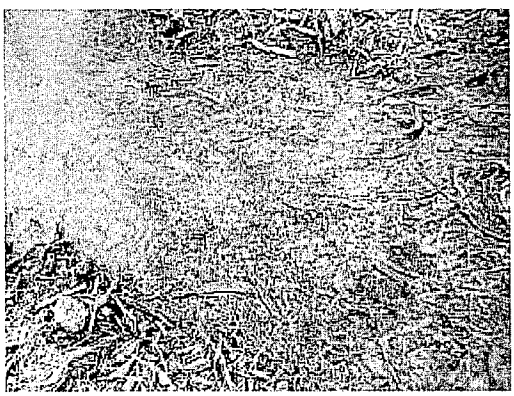
Polymer Enhanced BMP Application Guide



Step 5: Apply Silt Stop powder.

Sprinkling the correct site-specific Silt Stop powder over the jute matting in the bottom portion of the ditch will assist in final water clarification.

Here is the water being pumped into the treatment ditch. Note the light brown color and turbidity.



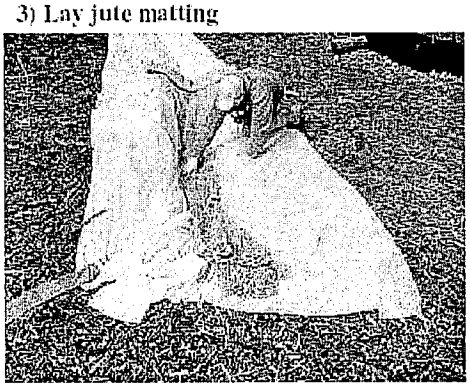
The clarified water as it is leaving the site can be discharged directly to riparian waters.

Application Example: Treatment Ditch Dewatering Operation

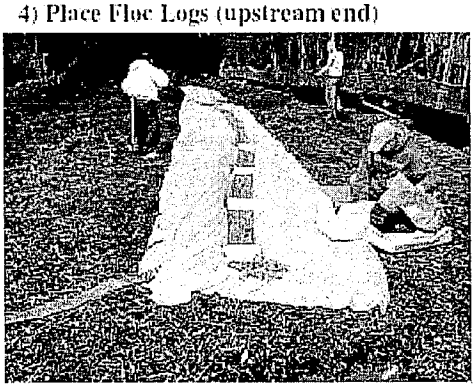
1) Dig ditch

2) Line with plastic

3) Lay jute matting



4) Place Floc Logs (upstream end)



5) Apply Silt Stop (downstream end)

6) Ready for pumping

BASE FOR TELESCOPING SIGN SUPPORT, SPECIAL

Description: This work shall consist of furnishing and installing a permanent underground base for a 2"x2" Telescoping Steel Sign Support Post. This base will be required when the support signs are to be installed on sidewalks, median islands or other concrete locations.

Materials shall be in accordance with the following;

1. STEEL TUBE. The steel tube shall have an outside dimension of 70mm x 70mm (2.756 inches by 2.756 inches). The length of the square tube shall be a minimum of 300mm (11.81 inches). The wall thickness must be 3.2mm (.125 inches). Two 90° flanges are to be welded on opposing sides of the square tube. The flanges will be located on the center line of the width of the tube, 152mm (6 inches) from the end of the tube. The flange will have a wall thickness of 3.2mm (.125 inches) and a total length of 63.5mm (2.50 inches). The entire tube is to be hot dipped galvanized so that the minimum uniform zinc coating is .053mm (.0021 inches).

2. POLYURETHANE SLEEVE. The polyurethane sleeve will consist of two sleeves. The lower sleeve will have a base which measures 78mm x 78mm (3.07 inches x 3.07 inches) with a minimum thickness of 5mm (.19 inches). The lower sleeve will narrow to 63.5mm (2.5 inches) where the sleeve fits inside the steel tube. The sleeve will have a thickness of .12mm (.47 inches). The overall height of the sleeve will measure 70mm (2.75 inches) with 65mm (2.55 inches) fitting inside the tube. A tapered opening will be 60mm (2.36 inches) deep to allow the square post to easily fit inside the sleeve. The beginning of the taper will measure 55mm (2.16 inches) and narrow to 51.1mm (2.03 inches) and at the end of the 12mm (.47 inch) long taper.

The upper sleeve will have a 52mm x 52mm (2.05 inch x 2.05 inch) opening to allow passage of 2"x2" square tube. The top of the upper sleeve will have flange 24mm (.93 inch) thick which measures 65mm x 65mm (2.55 inches x 2.55 inches) on the outside dimension. The flange tapers to a thickness of 5mm (.19 inches) to create an overall outside dimension of 79mm x 79mm (3.11 inches x 3.11 inches). The upper sleeve will measure 65mm x 65mm (2.55 inches x 2.55 inches) where the sleeve fits inside the galvanized steel tube. The thickness of the sleeve inside the tube will be 14mm (.55 inches). The sleeve has a surface of 70mm (2.75 inches) in length.

The polyurethane has the following general properties:

Shore hardness A	65	ASTM D2240
Tensile strength	22.6 Mpa	
Split tear	22 Kn/m	ASTM D470
Compression set	16%	ASTM D395

The base will be measured for payment in individual units complete in place.

This work will be paid for at the contract unit price each BASE FOR TELESCOPING SIGN SUPPORT, SPECIAL.

CONCRETE MEDIAN REMOVAL

This item shall consist of the removal of existing concrete medians, as shown on the plans or as directed by the Engineer, in accordance with Section 440 of the "Standard Specifications" except as described herein.

The Contractor is advised that neither the internal fill material of the existing medians, nor the thickness of the concrete median surface is known.

The material below the surface of the median shall be removed in accordance with Section 202 of the "Standard Specifications."

It is not known if the concrete median is doweled to the curb & gutter, nor if it is reinforced. No additional compensation shall be allowed for doweled or reinforced concrete medians.

Measurement of area for Concrete Median Removal shall include the area of gutter on the adjacent curb & gutter if necessary.

This work shall be paid for at the contract unit price per square foot for CONCRETE MEDIAN REMOVAL, which price shall include all labor, materials, and equipment necessary to complete the work in place.

CONCRETE MEDIAN, TYPE SB-6.24 (MODIFIED)

Description. This work shall consist of constructing concrete medians in accordance with the applicable portions of Section 606 of the Standard Specifications, the applicable portions of Standard 606301, the details shown in the plans and as directed by the Engineer.

Method of Measurement. Concrete medians will be measured for payment in place and the area computed in square feet.

Basis of Payment. This work shall be paid for at the contract unit price per square foot for CONCRETE MEDIAN, TYPE SB-6.24 (MODIFIED), which price shall include all materials, labor and equipment necessary to perform the work as here in specified.

DETECTABLE WARNINGS

Effective: February 13, 2007
Revised: August 1, 2011

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. The coating system shall be Federal Yellow.

The plate shall be supplied from one of the following manufacturers, or an approved equal:

Neenah Foundry
545 Kimberly Drive
Carol Stream, IL 60188
Phone # 630-653-5440
http://www.neenahfoundry.com/

East Jordan Iron Works
310 Garnet Drive

New Lenox, IL 60451-3502
Phone # 1-800-626-4653
Fax # 1-815-740-1633
http://www.ejiw.com/

General: The installation of detectable warnings shall meet the requirements of Article 424.09 of the "Standard Specifications".

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

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

DRAINAGE STRUCTURE WITH RESTRICTOR

This work shall consist of assembling and installing the controlled release structure for

the detention pond, at the location shown in the plans. The structure will consist of a manhole of the diameter and configuration shown in the plans, complete with the frame and grate and restrictor plate illustrated in the plan details. The Contractor shall insure that the elevations of the orifices on the restrictor are installed at the elevations shown in the plans.

Basis of Payment - This work will be paid for at the contract unit price each for DRAINAGE STRUCTURE WITH RESTRICTOR, which includes all labor, material and equipment for completing the work in place.

DRAINAGE STRUCTURES TO BE CLEANED; CLEANING DRAINAGE SYSTEM

Description. This work shall consist of cleaning drainage structures of all types and sizes as designated on the plans or as directed by the Engineer.

Materials. Equipment for cleaning pipe lines includes hoses, rodding machines, balls, hydraulic cleaners, root cutters, small clam shell buckets, steel porcupines, pumps, or other suitable and approved means. Water used for cleaning and flushing pipes shall be fresh and free of oils, acid, salt, alkali, organic matter, or any other deleterious substances. The Contractor shall provide all water for the cleaning operation.

Methods. The Contractor shall be responsible for the proper operation of the drainage system during the cleaning operations. The safe control of flows shall be accomplished by the Contractor such as to preclude an injury to persons or property due to flooding. The Contractor shall clean and flush those drain lines designated on the plans or as designated by the Engineer by use of pressure hoses, suction pumps, and/or any other methods required to perform this work. A suitable weir or dam shall be constructed in the nearest downstream manhole or catch basin in such a manner that debris material will be trapped. Under no circumstances shall such material be passed on from one section to the next.

Each manhole or catch basin shall be cleaned independently of other portions of the drainage system, and shall be cleaned to the satisfaction of the Engineer.

Method of Measurement. DRAINAGE STRUCTURES TO BE CLEANED will be measured per each for such drainages structures actually cleaned, regardless of type or size, in accordance with the plans and/or as directed by the Engineer. CLEANING DRAINAGE SYSTEM will be measured in linear feet from center-to-center of drainage structures for all pipe lines actually cleaned, regardless of the sizes of pipe, in accordance with the plans and/or as directed by the Engineer.

Basis of Payment. DRAINAGE STRUCTURES TO BE CLEANED will be paid for at the contract unit price per each for such drainages structures actually cleaned, regardless of type or size, in accordance with the plans and/or as directed by the Engineer. STORM SEWERS TO BE CLEANED will be paid for at the contract unit price per foot for all pipe lines actually cleaned, regardless of the sizes of pipe, in accordance with the plans and/or as directed by the Engineer.

DUST CONTROL WATERING

This work shall consist of applying a dust retardant to the project roadways at the request of the Engineer.

This work shall be done in accordance with Article 107.36 of the "Standard Specifications" except as modified herein.

The Contractor may use any dust retardant he so chooses as long as the specified dust retardant has been approved by the Engineer. Should the Contractor choose to use dust retardant to aid in the prosecution of his/her work, the product used must be approved by the Engineer. If applied at the discretion of the Contractor, no additional compensation shall be allowed.

The dust retardant shall consist of a non-toxic, non-hazardous, and non-flammable material.

For this pay item, one unit of DUST CONTROL WATERING is considered to be 1000 gallons of the approved dust retardant used. The Contractor shall ensure that any piece of equipment used for the applying of the dust retardant shall be equipped with a metering device to account for the quantity of dust retardant used. For each day that dust retardant is applied, the Contractor and the Engineer shall agree on the volume of dust retardant used.

This work shall be paid for at the contract unit price per unit for DUST CONTROL WATERING, which price shall include all labor, materials, and equipment necessary to perform the work herein.

EROSION CONTROL BLANKET (SPECIAL)

This work shall conform to the applicable portions of Section 251 of the "Standard Specifications" except that the blanket shall be 100% biodegradable coconut fiber erosion control blanket with natural fiber netting. North American Green C125BN meets these specifications, or an equal product (approved by the Engineer) may be used.

This work shall be paid for at the contract unit price per square yard for EROSION CONTROL

BLANKET (SPECIAL)

EXPLORATION TRENCH , SPECIAL

This work shall be done in accordance with Section 213 of the Standard Specifications except as modified herein. This item shall consist of excavating a trench at the locations directed by the Engineer for the purpose of locating existing TILE LINES, GAS LINES, and other UTILITIES within the construction limits of the proposed improvement.

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

The exploration trench shall be backfilled with trench backfill at the direction of the Engineer meeting the requirements of the Standard Specifications. This shall be paid for at the contract unit price for trench backfill.

An estimated length of exploration trench has been shown in the summary of quantities to establish a unit price only, and payment shall be based on the actual length of trench explored without a change in unit price because of adjustment in plan quantities.

This work shall be paid for at the contract unit price per foot (regardless of depth) for EXPLORATION TRENCH, SPECIAL, and no extra compensation will be allowed for any delays, inconveniences or damage sustained by the Contractor in performing the work.

FLOCCULATION LOGS; 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 intestacy 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.*

FURNISH WITNESS POST

Effective: August 1, 2011

Description: This item consists of furnishing witness posts for installation by the Lake County Division of Transportation.

Materials: The markers shall be the either the CBM-250 Boundary/Id Marker manufactured by Carsonite; the Vikimatic Fiberglass Marker manufactured by ACP International; or an approved equal. The posts shall be white in color and six feet long with the specified decal applied.

The Carsonite Markers can be purchased from:

- Berntsen, 800-356-7388, (Ordering data: CBM2507201 with decal 5566-ROWSM applied).
- Traffic Safety Supply Co., 503-235-8531, (Ordering data: 11600100 with decal 5566ROWSM applied).

The Vikimatic 2-sided Fiberglass Markers can be purchased from:

a) TVC Communications, 888-644-6075, (Ordering data: ACP-072 white with LCDOT Decal applied).

The following are the minimum material, mechanical and performance requirements for the Carsonite CBM-250 Composite Marker and reflect the minimum specifications that an equivalent marker shall meet.

The post shall be a single piece marker capable of simple, permanent installation by one person using a manual-driving tool. The marker upon proper installation shall resist displacement from wind and vehicle impact forces. It shall be of a constant "T" cross sectional design which provides a flat surface for sheeting application and a reinforcing rib incorporated longitudinally along the back midsection to provide structural rigidity. The bottom end of the marker shall be pointed for ease of ground penetration.

The post shall be constructed of a durable, UV resistant continuous glass fiber and resin reinforced, thermosetting composite material which is resistant to impact, ozone and hydrocarbons within a service temperature range of –40°F to +140°F.

The post shall exhibit good workmanship and shall be free of burns, discoloration, cracks, bulges or other objectionable marks which would adversely affect the marker's performance or serviceability.

A black line shall be stamped horizontally across the front of the marker near the bottom to indicate proper burial depth. A minimum burial depth of 18" is required.

The post shall conform to the shape and overall configuration shown in the standard detail drawing. The post shall be 2.6" wide in order to accommodate a 2.5" wide decal and provide adequate daytime delineation.

The post shall have the following minimum mechanical properties:

PROPERTY VALUE	ASTM TEST METHOD	MINIMUM
Ultimate Tensile Strength	*D-638*	*50,000 psi*
Ultimate Compressive Strength	*D-638*	*45,000 psi*
Specific Gravity	*D-792*	*1.7*
Weight & Glass Reinforcement	*D-2584*	*50%*
Barcol Hardness	*D-2583*	*47*

The post shall be pigmented throughout the entire cross-section so as to produce a uniform color as an integral part of the material. Ultraviolet resistant materials shall be incorporated in the construction to inhibit fading or cracking of the marker upon field exposure.

The post shall have a maximum free end deflection of 4" when tested as follows:

The Deflection tests shall consist of a two-pound load suspended from one end of the post while the other end is clamped to a support in cantilevered fashion. Horizontally, the distance from the fulcrum to the weight shall be 48 inches. The maximum allowable free end deflection shall be 4".

The post shall not fracture, crack or split when subjected to the following cold impact tests:

The post shall be conditioned a minimum of two hours at –40°F ± 3°F. A minimum two-pound spherical weight shall be dropped a distance of five feet through a virtually frictionless vertical guide to impact the surface of the marker at midsection. The surface of the post being struck by the steel ball shall be in a horizontal position with the marker supported and held in position at both ends. The marker shall be subjected to five impact tests concentrated near the middle of the marker within 10 minutes from the removal from the environmental chamber. Fracturing, cracking, or splitting of the posts shall constitute failure.

A second marker after conditioning shall be struck flush against a flat solid surface three times within two minutes after removal from the conditioning chamber. To strike the delineator it should be manually swung through a 90° arc. The marker shall not fracture or shatter upon impact.

The post shall be self-erecting and remain functional after being subjected to an impact by a typical passenger sedan at 35 mph without substantially damaging the vehicle.

Before delivery the manufacturer shall apply a pressure sensitive vinyl reflective decal to the post.

The applied decal shall meet the following general requirements for the materials of construction; and the mechanical and physical properties for reflective and non-reflective pressure-sensitive decals.

The decal shall consist of either cast vinyl or acrylic/urethane retro-reflective sheeting, which has been printed with UV-stabilized inks for outdoor application. The decal shall have a high tack, aggressive, permanent, pre-applied layer of pressure-sensitive adhesive, protected by a removable release film.

UV protection over-laminating film shall be applied to the decal for long term ultraviolet and abrasion protection. Clear coating shall not be allowed as a substitute for the UV protection.

The decal shall exhibit good workmanship and shall be free of visible cracks, burns, discoloration, foreign inclusions or other objectionable marks that would affect its performance.

The maximum allowable width for decals shall be 5". The minimum total decal thickness with adhesive and UV protection shall not be less than four mils for vinyl decals and six mils for reflective decals. Both decal styles shall consist of a minimum adhesive thickness of one mil.

The clear UV protection over-laminating film shall be a minimum of 0.75 mils in thickness.

Decals shall exhibit negligible color change, legend fading, blistering, or edge curl upon exposure to ultra-violet light. Decal appearance and adhesion shall not be appreciably affected over a temperature range of –40°F to +140°F and shall allow for application at temperatures above 40°F.

The decals shall exhibit no effect when applied to a clean fiberglass composite and immersed in water or SAE 20 motor oil for 24 hours at 73°F.

The decals shall exhibit a minimum of 4.5 lb./in. when tested for adhesion by 180° pullback at 12 in./min. after application and conditioning to a clean aluminum surface of 73°F ± 5°F for 24 hours.

The minimum decal tensile strength shall be 4.5 lb./in. at 73°F when measured at 12-in./min. jaw separation. The minimum decal elongation shall be 40% at 73°F when measured at above condition.

Basis of Payment: This work will be paid for at the contract unit price per each for FURNISH WITNESS POST. *The unit price shall include all equipment, materials and labor required to furnish the witness posts.*

GUARDRAIL MARKERS, TYPE B

The contractor shall furnish and install guard rail reflectors spaced 25 feet on center or as directed by the Engineer. The reflectors shall be "# 567 GUARD RAIL DELINEATOR" as manufactured by AKT Corporation, Wauwatosa, Wisconsin, or approved equal. The bracket shall have a minimum thickness of 12 gauge and shall have **both sides** faced with white, high intensity reflective sheeting. This item will be paid for at the contract unit price each for GUARDRAIL MARKERS, TYPE B furnished and installed as specified herein.

HEAVY DUTY EROSION CONTROL BLANKET

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 mat 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

HEAVY DUTY EROSION CONTROL BLANKET. *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.*

LEVEL SPREADER

Description: This work shall consist of furnishing and installing the LEVEL SPREADER at the sizes and locations shown on the plans. The LEVEL SPREADER shall meet the requirements of the NRCS Standard Detail IL-ENG-62, titled "Rigid Lip with Timber" as shown in the plans.

Materials: See NRCS Standard Detail IL-ENG-62.

Basis of Payment: This work will be paid for at the contract unit price per each for LEVEL SPREADER.

MODULAR CONCRETE PAVERS (SPECIAL)

PART 1 GENERAL

1.01 SECTION INCLUDES
- A. Concrete grid units
- B. Bedding sand
- C. Topsoil and grass.
- - OR -
- C. Open-graded aggregate

1.02 RELATED SECTIONS
- A. Section: Curbs and drains
- B. Section: Dense-graded aggregate base
- C. Section: Open-graded aggregate base
- D. Section: Geotextiles/Soil separation fabrics

1.03 REFERENCES
- A. American Society of Testing Materials (ASTM)
  1. C 1319, Standard Specification for Concrete Grid Paving Units.
  2. C 140, Standard Test Methods of Sampling and Testing Concrete Masonry Units.
  3. C 136, Method for Sieve Analysis for Fine and Coarse Aggregate.

4. C 33, Specification for Concrete Aggregates.
5. D 2940, Standard Specification for Graded Aggregate Material for Bases or Subbases for Highways or Airports.
6. D 5268, Specification for Topsoil Used for Landscaping Purposes.

B. Canadian Standards Association (CSA)
1. CSA A23.1-M94, Concrete Materials and Methods of Concrete Construction.

1.04 QUALITY ASSURANCE

A. Engage an installer who has successfully completed installations similar in type and size to this project. Installer shall provide certification of experience.
B. As applicable by state/provincial and local laws, contractor shall hold a current contractor's and business license in the state/ province and locality where work is performed.

1.05 SUBMITTALS

A. Submit shop or product drawings and product data.
B. Submit samples of concrete grid paving units to indicate shape selections.
C. Submit sieve analysis for grading of bedding sand.
D. Submit test results for compliance of paving units to ASTM C 1319.
E. Verify source and content of topsoil.
F. Verify grass seed mix and sources.
G. Verify source and gradation of aggregate base.

1.06 MOCK UPS

A. Install a 6 ft x 6 ft (2 m x 2 m) paver area as described in Article 3.02. This area will be used to determine surcharge of the sand layer, joint sizes, lines, laying pattern(s), and texture of the job. This area shall be the standard from which the work will be judged.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver concrete grid pavers to the site in steel banded, plastic banded, or plastic wrapped cubes capable of transfer by fork lift or clamp lift. Unload pavers at job site in such a manner that no damage occurs to the product.
B. Cover sand and topsoil shall with waterproof covering to prevent exposure to rainfall or removal by wind. Secure the covering in place.

1.08 ENVIRONMENTAL CONDITIONS

A. Do not install sand or pavers during heavy rain or snowfall.
B. Do not install frozen sand or topsoil.

PART 2 PRODUCTS

2.01 CONCRETE GRID UNITS

A. Supplied by a Belgard manufacturer:

Akron Brick and Block, 3225 Mogadore Rd, Akron, OH 44312, 330-628-2603, fax: 330-628-4467

Amcor Utah Block, 333 S. Redwood Rd, North Salt Lake, UT 85054, 801-936-7628, fax: 801-295-5470

Balcon, 2630 Conway Rd, Crofton, MD 21114, 410-721-1900, fax: 410-793-0657

Big Rock Building Products, 600 Cardiff Valley Rd, Rockwood, TN 37854, 865-354-6660, fax: 865-354-6661

Bosse Concrete Products, 1443 Battle Creek Rd, Jonesboro, GA 30236, 770-478-8817, fax: 770-471-2128

Domine Building Products, 735 Wangum Rd, Fishers, NY 14453, 716-924-2103, fax: 716-924-2141

Eagle-Cordell Concrete Products, 6414 W Hardy St, Houston, TX 77022, 713-691-0022, fax: 713-697-8125

Easton, 800 Uhler Rd, Easton, PA 18040, 610-923-5000, fax: 610-923-5005

Foster- Southeastern, Inc, 46 Spring St, Hollbrook, MA 02343, 781-767-2202, fax: 781-767-2991

Goria Enterprises, 108 Buchanan Church Rd, Greensboro, NC 27405, 336-375-5656, fax: 336-375-8259

Jewell Concrete Products, 400 Jeweel Dr, Waco, TX 76712, 254-772-3440, fax: 254-772-6999

Miller Material Co, 2405 E 85th St, Kansas City, MO 64132, 816-444-2244, fax: 816-444-8736

Schuster's Building Products, 901 E Troy Ave, Indianapolis, IN 46203, 317-787-3201, fax: 317-788-5906

Sierra Building Products, 10714 Poplar Ave, Fontana, CA 92335, 909-355-6422, fax 909-355-
6444

Superlite Block, 4150 W Turney, Phoenix, AZ 85019, 602-352-3500, fax: 602-352-0101

Young Block, 2200 W Garden Ln, Tucson, AZ 85705, 520-887-1234

4D Incorporated, 136 E. Munger Rd, Munger, MI 48747, 800-646-5546, fax: 517-659-2818

B. Turfstone: 24" x 26" x 3 1/8", Apertures 3 9/16" x 3 9/16"

C. Meet the requirements of ASTM C 1319 and test results certified by the manufacturer

2.02 BEDDING SAND

Note: The type of sand used for bedding is often called concrete sand. Sands vary regionally. Contact contractors local to the project and confirm sand(s) successfully used in previous similar applications. Bedding sand is not used in ditch liner applications, slope protection, riparian stabilization, or with boat ramps constructed with concrete grid pavers.

A. Bedding sand shall be clean, non-plastic, free from deleterious or foreign matter. The bedding sand shall be natural or manufactured from crushed rock. Do not use limestone screenings or stone dust. Grading of samples shall be done according to ASTM C 136. The particles shall be sharp and conform to the grading requirements shown in Table 1 below:

Table 1
Grading Requirements for Bedding Sand
ASTM C33 CSA A23.1-M94

Sieve Size	Percent Passing	Sieve Size	Percent Passing
3/8 in. (9.5 mm)	100	10 mm	100
No. 4 (4.75 mm)	95 to 100	5 mm	95 to 100
No. 8 (2.36 mm)	85 to 100	2.5 mm	80 to 100
No. 16 (1.18 mm)	50 to 85	1.25 mm	50 to 90
No. 30 (0.600 mm)	25 to 60	0.63 mm	25 to 65
No. 50 (0.150 mm)	0 to 30	0.315 mm	10 to 35
No. 100 (0.150 mm)	2 to 10	0.16 mm	2 to 10

2.03 TOPSOIL [OPEN-GRADED AGGREGATE]

Note: Consult with local turfgrass specialists for recommendations on grass seed mixture or sod materials.

A. Conform to ASTM D 5268, Specification for Topsoil Used for Landscaping Purposes.

-OR

A. Open-graded aggregated used to fill the openings of the grids and/or for a bedding course shall be washed and conform to ASTM C 33 No. 8 crushed stone, per the gradation requirements below in Table 2. Do not use gravel.

Table 2 ASTM No. 8 Gradation for Fill or Bedding Course

Sieve Size	Percent Passing
1/2 in. (12.5 mm)	100
3/8 in. (9.5 mm)	85 to 100

No. 4 (4.75 mm)	10 to 30
No. 8 (2.36 mm)	0 to 10
No. 16 (1.18 mm)	0 to 5

Note: Local, state or provincial standards for aggregate base materials should be used for the gradation and quality of dense-graded aggregate base materials under concrete grid pavements. If no standards exist, follow ASTM D 2940, Standard Specification for Graded Aggregate Material for Bases or Subbases for Highways or Airports. The gradation for base material from this standard is given in Table 3 below. This material should be compacted to a minimum of 95% standard Proctor density.

Table 3
ASTM D 2940 Gradation for Dense-Graded Base

Sieve Size ~	Percent Passing
2 in. (50 mm)	100
1'/2 in. (37.5 mm)	95 to 100
3/4 in. (19.0 mm)	70 to 92
½ in. (9.5 mm)	50 to 70
No. 4 (4.75 mm)	35 to 55
No. 30 (0.600 mm)	12 to 25
No. 200 (0.075 mm)	0 to 8

Note: For open-graded bases, gradation conforming to ASTM No. 57 crushed stone aggregate is recommended. The material is typically placed in 4 to 6 in. (100 to 150 mm) thick lifts and compacted with at least four passes of a 10 T static roller. The base material should show no visible movement when compaction is complete. It should be kept free from sediment throughout the entire job. The gradation for No. 57 material is given in Table 4 below:

Table 4
ASTM No. 57 Gradation for Open-Graded Base

Sieve Size	Percent Passing
11/2 in. (37.5 mm)	100
1 in. (25 mm)	95 to 100
½ in. (12.5 mm)	25 to 60
No. 4 (4.75 mm)	0 to 10
No. 8 (2.36 mm)	0 to 5

PART 3 EXECUTION

Note: The specifier should be aware that the top surface of the payers after compaction may be 1/8 to '/4 in. (3 to 7 mm) above the final elevations after compaction. This difference in initial and final elevations is to compensate for possible minor settling.

3.01 EXAMINATION

Note: For vehicular areas, specify compaction of the soil subgrade to a minimum of 95% standard Proctor density for dense-graded aggregate bases. Density should be monitored in the field with a nuclear density gauge. Compaction of open-graded bases should be with at least five passes of roller compactor without vibration. Stabilization of the soil and/or base material may be necessary with weak or saturated soils.

A. Verify that base is dry, uniform, even, free of any sediment (if open-graded), and ready to support sand, pavers and imposed loads.
B. Verify gradients and elevations of base are correct.
C. Verify location, type, installation and elevations of edge restraints around the perimeter area to be paved.
D. Beginning of installation means acceptance of base and edge restraints.

3.02 INSTALLATION

A. Spread the sand evenly over the compacted, dense-graded base course and screed uniformly to 1 – 1 ½ ° in. (25 - 40 mm) thickness. The screeded sand should not be disturbed. Place sufficient sand to stay ahead of the laid grid pavers.

-OR

A. Spread the No. 8 material evenly over the compacted, open-graded base course and screed uniformly to 3-in. (75-mm) thickness. Compact with at least four passes of 10 T static roller until there is no visible movement. Place sufficient material to stay ahead of the laid grid pavers. Keep free from sediment during entire job.
B. Ensure that grid pavers are free from foreign materials before installation.
C. Lay the pavers in the pattern(s) as shown on the drawings. Maintain straight pattern lines.
D. Joints between the pavers shall be between 1/16 in. and 1/8 in. (2 to 4 mm) wide.
E. Fill gaps at the edges of the paved area with cut grid pavers or edge units.
F. Cut grid pavers to be placed along the edge with a double-bladed splitter or masonry saw.
G. Compact and seat the grids into the screeded [bedding sand] [aggregate] using a low amplitude, 75-90 Hz plate compactor capable of at least 5,000 lbs. (22 kN) centrifugal compaction force.

Note: A rubber or neoprene pad between the compactor and grids may be necessary to prevent cracking or chipping.

H. Vibrate and compact the pavers again, sweeping [topsoil] [the small fraction of the No. 8 aggregate] into the joints and openings until it is within ½ in. (13 mm) from the

top surface. This will require at least two or three passes with the compactor. Do not compact within 3-ft (1 m) of the unrestrained edges of the paving units.

Note: Choose paragraph H below when designing pavement for storm water runoff control without grass and topsoil. Delete paragraph H above and paragraphs J through L below.

I. Spread ASTM No. 8 aggregate and fill openings in the pavement.

J. All work to within 3-ft (1 m) of the laying face must be left fully compacted at the completion of each day.

K. Broadcast grass seed at the rate recommended by seed source.

L. Remove excess [topsoil] [aggregate] on surface when the job is complete.

Note: Use L below for installation with grass and topsoil.

L. Distribute straw covering to protect germinating grass seed. Do not traffic pavement for [30] days.

M. The final surface elevations shall not deviate more than ± 3/8 in. (±10 mm) under a 10 ft (3 m) long straightedge.

N. The surface elevation of pavers shall be 1/8 to 1/4 in. (3 to 7 mm) above adjacent drainage inlets, concrete collars or channels.

3.03 FIELD QUALITY CONTROL

A. After removal of excess ton soil/aggregate, check final elevations for conformance to the drawings.

Modular Concrete Pavers will be paid for at the contract unit price per SQ FT for MODULAR CONCRETE PAVERS (SPECIAL), which price shall include all labor, materials, and equipment required to complete the work specified.

NATURAL AREAS INSTALLATION

DESCRIPTION OF IMPROVEMENT

This work consists of a Natural Area Installation (NAI) within the project limits. The work includes the natural area construction, site stabilization activities, and native vegetation installation, according to the project plans and special provisions. A 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.

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.

Completion dates for various work activities are as noted on the project plans and as specified in this document. 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 ***Illinois Urban Manual*** and NPDES permits.

ACCEPTABLE SEEDING DATES

Temporary Seeding Species, Rates and Dates

Species	RATE Pounds/Acre	Seeding Dates
Oats	90	Early Spring – July 1
Cereal Rye	90	Early Spring – September 30
Wheat	90	Early Spring – September 30
Perennial Rye	25	Early Spring – September 30

Permanent Seeding Dates
March 1 – June 15 (preferred)
September 1 – October 15

Dormant Seeding
October 15 – March 1

LANDSCAPING CONTRACTOR QUALIFICATIONS

The Landscaping Contractor shall have at least five years experience in natural area installation and native planting management, maintenance and monitoring. The Landscaping Contractor shall have completed comprehensive natural area installation and management activities on at least three large sites, encompassing 20 acres or more. The Landscaping Contractor shall have on staff a senior level biologist, botanist, ecologist or equivalent, to oversee the natural area installation and management activities. The Landscaping Contractor shall also have licensed herbicide applicators and staff proficient in on-site natural area maintenance.

It is the Contractor's/Landscaping Contractor's responsibility to become familiar with all site conditions, instructions, contract documents, site conditions, and conditions pertinent to the work involved. Failure to make a site inspection shall not excuse the Contractor/Landscaping Contractor from performance of the duties and obligations imposed under the terms of these

special provisions and the contract. Failure to have read all the conditions, instructions, and specifications of this contract shall not be cause to alter the original contract or to request additional compensation.

SPECIAL PROJECT REQUIREMENTS

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. LCDOT 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. 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, 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.

Construction Noise: To minimize the effect of construction noise in the area surrounding the work site, the Contractor shall comply, and cause its subcontractors to comply, with the following requirements:

1. All engines and engine-driven equipment used for hauling or construction shall be:

    a. Equipped with an adequate muffler in constant operation.

    b. Properly maintained to prevent excessive or unusual noise.

2. Any machine or device or part thereof, which is regulated by or becomes regulated by government noise standards, shall conform to those standards.

Incidental Site Restoration: Upon completion of the work, the Contractor shall:

1. Remove all debris and excess materials from the Site.

2. 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, 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:

1. Damage, cut, prune, transplant or remove any tree.

2. Attach any rope, wire, nail or other object to any tree.

3. Allow any gaseous, liquid or solid substance or equipment to contact any tree or the soil located within the dripline of any tree.

4. Impair normal surface drainage around any tree.

5. Allow any fire to burn which could injure any tree.

6. 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.

SEEDING

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 Transline® herbicide.

Materials:

1. General:

    a. The classes of seed mixtures and combinations of mixtures are designated on the plans. When IDOT seed mixtures are designated they shall consist of the classes and seeds listed in Article 250.07, Table 1 – Seeding Mixtures, of the "Standard Specifications. The source of seeds shall be from within IEPA Ecoregion 54, preferably within a 150 mile radius of the project site. The Engineer will approve any variations in seed mixture in writing.

    b. 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.

    c. All seeds shall be of straight species. No horticultural varieties shall be acceptable.

    d. Forb seeds shall have undergone a period of appropriate stratification at the source of supply.

    e. Seed containing noxious weeds shall not be accepted, nor shall seed collected from the wild.

    f. 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.

2. Delivery, Handling, and Temporary Storage:

    a. All seed shall be furnished in sealed containers.

b. 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.

c. 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.

d. The seed packaging for all species shall be clearly labeled on the outside with the following information:

   i. The scientific name of species.

   ii. The PLS value, PLS weight, and bulk weight.

   iii. The pure weight and bulk weight if seed is not available as PLS.

   iv. The year of seed production and the date of seed tests.

   v. All Seed tests shall be attached to the packaging for all species at time of delivery.

e. The seed shall be stored in a temperature-controlled environment.

f. 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.

3. Seed Mixes: All native seeding shall be accompanied by a cover crop, as specified within the plans.

4. Accessories:

   a. 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.

b. Fertilizer: No fertilizers shall be used for this work.

c. Erosion Control Blanket: Erosion control blanket will be installed as shown on the plans.

Construction Requirements:

1. Seeding Time:

   a. Seed shall be installed from March 1 through June 15 or as dormant and/or frost seed installation from October 15 through March 1.

   b. 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.

   c. 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.

   d. 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.

   e. 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.

   f. 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 growing season.

2. Methods:

   a. Seed shall be installed via a rangeland-type drill designed to install native grass and wildflower (e.g., Truax No-Till drill) on surfaces where the soil is sufficiently firm to support such equipment. Hydraulic seeding or hand broadcast seeding

shall only be allowed when approved by the Engineer and only in inaccessible areas where using the specified equipment would be physically impossible. The Contractor shall determine the optimal method and equipment for seed installation in each area.

b. 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.

c. The seed shall be mixed with a granular form of endomycorrhizal inoculant at a rate of 40 lbs/acre.

d. The equipment shall be operated in a manner to ensure complete coverage of the entire area to be seeded. Seed shall be drilled in two separate runs, with each application of seed overlapping the previous application by one-half the weight to ensure double coverage of seeded areas (e.g., half of the seed in a north-to-south direction, then overlapping the seed with an application in an east-to-west direction). Each planting run shall overlap by a minimum of one planting row.

e. Prior to starting work, seeders shall be calibrated and adjusted to sow seeds at the required seeding rate and at the proper depth. Grass/sedge seed shall be installed at a depth no greater than 0.25 inches. The machine used to seed shall be reset to drill the forb mixture at the depth recommended by the seed supplier or as specified by the Engineer. If the seeded species require exposure to sunlight for germination, such species shall be planted separately, after drilling, using a broadcast application method.

f. Where soil conditions are too wet or slopes are too steep for drilling, broadcasting the seed is acceptable on exposed soils only. Broadcast seed methods will use 1.5 times the drill-seed rate. Broadcast seed shall be mixed with an equal amount of inert filler (e.g., perlite, ground corn cobs, or vermiculite) to ensure even distribution. Hydraulic application of native upland seed shall not be accepted. A mechanical broadcast seeder (e.g., Cyclone or Seed Slinger) may be used. 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.

g. The last areas to be seeded/re-seeded will be the equipment access points.

h. 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.

i. LCDOT shall be notified 48 hours prior to the commencement of seeding operations.

j. 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. The erosion control blanket shall be according to the special provision for Erosion Control Blanket (Special) included herein.

k. Those areas in which mulch or seed has been disturbed prior to final acceptance by LCDOT shall be re-mulched at no additional cost to LCDOT.

Method of Measurement: Seeding will be measured for payment in acres of surface area seeded. The Erosion Control Blanket 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 acre of SEEDING of the type specified, according to Article 250.10 of the "Standard Specifications". The unit price shall include all labor, equipment and materials necessary to complete the work as specified. The EROSION CONTROL BLANKET (SPECIAL) will be paid for at the contract unit price per square yard.

PERENNIAL PLANTINGS, WETLAND TYPE, SPECIAL

Description: This work shall consist of the installation and maintenance of all native perennials, wetland plugs, tubers and/or rootstock. At a minimum, maintenance shall consist of watering, weeding, and plant replacement when determined necessary by the Engineer.

Materials:

1. General:

    a. Containerized plant materials shall be inoculated with vesicular arbuscular mycorrhizae endomycorrhizal fungi.

    b. All plants shall have a native source within 150 miles of the project site and shall be of straight species; no horticultural varieties shall be acceptable.

    c. The plants shall meet the requirements of Article 1081.02 of the "Standard Specifications" and the applicable section(s) of the following references:

        i. American Association of Nurserymen, Inc. (AAN) Standard; American Standard for Nursery Stock (ANSI Z60.1-1990).

        ii. American Joint Committee on Horticultural Nomenclature "Standardized Plant Names," second edition, 1942.

        iii. F. Swink and G. Wilhelm, ***Plants of the Chicago Region***, 1994.

    d. In the event there is a discrepancy between these reference standards and this special provision, the more restrictive requirement shall govern.

    e. The planting stock shall be nursery propagated according to good horticultural practices. Collected stock or nursery grown wild plants will not be permitted. Planting stocks from which plant propagation is taken may have been wild collected.

    f. All live plugs shall be legibly tagged with the scientific name and shall be true to the species specified in the plans.

2. Delivery, Handling, and Temporary Storage:

    a. Plant materials provided by the Contractor shall be subject to approval by the Engineer at the project site prior to installation.

    b. All planting stock shall be alive, healthy, properly hydrated, and free of all fungi (except arbuscular mycorrhizae endomycorrhizal fungi), bacterial discoloration; and deformities. Containerized materials shall have well-developed root systems.

c. On-site storage of live plugs shall be at the Contractor's own risk. Any damage to plant stock while stored onsite shall not relieve the Contractor of his/her responsibility to furnish and install native herbaceous plant material according to the contract documents, nor will any additional compensation be allowed.

d. Live plugs shall be protected from grazing animals (e.g., geese) and from frost during temporary storage.

e. Live plugs may require regular watering and supplemental nutrition while in temporary storage. The Contractor shall ensure that live plugs are in a healthy, vigorous state upon inspection.

f. All flower buds, seed heads, and dead leaves shall be removed from the transplants to ensure the plant's energies go to producing roots and new leaves.

g. To provide prompt stabilization in areas that will experience more frequent flood events, the containerized plant materials shall be installed at the density shown on the plans in year one of the installation.

3. Plant Lists: The areas to be planted are shown on the plans as Perennial Plantings, Wetland Type, Special I (Mix B Special) and Perennial Plantings, Wetland Type, Special II (Mix C Special). The mixture of plants shall be as follows: plant names, scientific and common, from the USDA website, http://plants.usda.gov/index.html.

a. **Wetland Type Mixes:** For all Wetland Type Mixes, the mix is to be equally distributed among the group. Each species shall be planted in pods of 32, 38 or 49 plants. These pods are to be placed randomly within the locations for each mix, as shown on the Landscape Plan. The plantings shall be placed at average two foot spacing. The plants shall be stored properly upon receipt in a cool, moist location, where exposure to sun is minimized.

b. Perennial Plantings, Wetland Type, Special I
(Mix B Special) – Emergent Zone

Acorus calamus (Calamus)
Alisma subcordatum (American Water Plantain)
Carex comosa (Longhair Sedge)
Carex crinita (Fringed Sedge)
Carex stipata (Awlfruit Sedge)
Cicuta maculata (Spotted Water Hemlock)
Iris virginica shrevei (Shreve's Iris)

Pontederia cordata (Pickerelweed)
Sparganium eurycarpum (Broadfruit Bur-reed)
Scirpus americanus (Chairmaker's Rush)
Scirpus validus (Softstem Bulrush)
Sagittaria latifolia (Broadleaf Arrowhead)

c. **Perennial Plantings, Wetland Type, Special II**
(Mix C Special) – Upper Wetland Zone

Asclepias incarnata (Swamp Milkweed)
Aster novae-angliae (New England Aster)
Calamagrostis canadensis (Bluejoint)
Carex buxbaumii (Buxbaum's Sedge)
Carex lacustris (Hairy Sedge)
Carex stricta (Upright Sedge)
Eupatorium maculatum (Spotted Joe Pye Weed)
Eupatorium perfoliatum (Common Boneset)
Helenium autumnale (Common Sneezeweed)
Lobelia cardinalis (Cardinalflower)
Lobelia siphilitica (Great Blue Lobelia)
Phlox glaberrima (Smooth phlox)
Physostegia virginiana (Obedient Plant)
Pycnanthemum virginianum (Virginia Mountainmint)
Rudbeckia laciniata (Cutleaf Coneflower)
Spartina pectinata (Prairie Cordgrass)
Veronicastrum virginicum (Culver's root)

4. Accessories:

a. Herbivory Protection: Protective Planting Enclosures, described herein and detailed on Lake County Standard LC2102, shall be installed for protection against herbivores.

b. Erosion Control Blanket (Special): The erosion control blanket will be installed as shown on the plans.

Construction Requirements:

1. Planting Time:

    a. Plugs, tubers, and rootstock shall be installed during the last week of March through June 15. With written approval from the Engineer, plug installation may also occur from August 15 through September 30.

    b. Plugs will be installed within one week of seeding, unless an alternate planting time is approved by the Engineer.

    c. Delivery and Storage of Plants:

        i. The Contractor shall provide the Engineer 48 hours notice prior to delivery of the plantings to the site. If, following delivery, delays occur in planting, the Contractor shall be responsible for storing the plants on site. The plants shall be kept appropriately watered and protected from sun, wind and mechanical damage. Dormant materials shall be stored in refrigerated compartments or environmentally controlled structures, approved by the Engineer, until the plants can be installed.

        ii. The plants shall be handled at all times according to best horticultural practices. Plants shall not be bent, stacked or bound in a manner that deforms roots or destroys the natural shape of the plants. Mishandled plants may be subject to rejection by the Engineer. The Contractor shall replace rejected plants at his/her own expense.

        iii. The plants shall be shipped with legible labels stating the scientific name and the size of the plant. The labels shall be securely attached to the individual plants or plant bundles of like variety and size. Containers of plant tubers and rootstock shall be individually labeled, as specified.

        iv. The Contractor shall schedule shipping so as to minimize on site storage of plants. Planting stock shall not be shipped until the planting preparations have been completed. The Engineer shall be notified at least 48 hours prior to shipping.

2. Planting:

   a. Plants will be installed by species in full flats, creating groupings (pods) of 32, 38, or 49 plants of the same species. Plant spacing within each grouping will depend on the species being planted. Plug spacing will average two feet on center.

   b. Plug holes may be drilled with an auger or dug by hand with a trowel, spade, planting bar or other implement approved by the Engineer. Holes shall have the same diameter and depth to accommodate the live plug's root massing without damage (within +0.75"/-0.25").

   c. Plugs will be set such that the final position of the root crown following planting, soil settlement, and initial watering is slightly (⅛" to ¼") below the soil surface. The crown shall be covered with native soil.

   d. The Contractor shall ensure that live plugs are not loose after planting. If frost is a possibility, each plug shall be secured with a biodegradable stake like those used for the installation of the erosion control blanket.

   e. Plant tubers and rootstocks shall be installed by hand. For spring installation, these materials will be planted under one inch of soil or mud. For early fall installation, the materials will be placed three to four inches below the soil surface. Once planted, the holes shall be backfilled with soil.

   f. The planting area shall be watered upon completion if dry conditions exist.

   g. When the planting of an area has been completed, the area shall be cleared of all debris, soil piles, and containers within 24 hours.

Period of Establishment: The period of establishment shall be as defined in Article 254.09 of the "Standard Specifications".

Method of Measurement: This work will be measured for payment in units of 100 perennial plants (1 unit = 100 perennial plants) of the type specified, according to Article 254.10 of the "Standard Specifications".

Basis of Payment: This work will be paid for at the contract unit price per each per unit for PERENNIAL PLANTS, WETLAND EMERGENT regardless of the type of perennial plants being planted. The unit price shall include the cost of handling, storing, preparation, and planting; watering before and after planting; plant care and all labor, tools, and incidentals necessary to complete the work specified.

PROTECTIVE PLANTING ENCLOSURES

Description: This work shall consist of furnishing, and installing Protective Planting Enclosures within the emergent plug planting zones and according to the special provisions, plan details, and the Engineer's recommendation.

General: Protective Planting Enclosures shall consist of four foot long steel "U" posts, 18 gauge chicken wire, and monofilament line (minimum 30 lb test) as detailed on the plans. The Contractor shall not use snow fence.

Protective Planting Enclosures shall be installed around the floating aquatics and emergent & aquatic plugs planted material at the direction of the Engineer.

The Contractor shall monitor the condition of the fence and string monthly, making any repairs or replacements as necessary. Additionally, the Contractor shall make repairs and/or replace the enclosure when notified by the Engineer that such action is necessary. LCDOT will monitor the fencing via LCDOT maintenance patrols.

Method of Measurement and Basis of Payment: PROTECTIVE PLANTING ENCLOSURES shall not be measured separately, but shall be included in the contract unit price for PERENNIAL PLANTS, WETLAND EMERGENT. Repairs/replacement (maintenance) as are necessary shall not be paid for separately, but shall be included in the contract unit price for PERENNIAL PLANTS, WETLAND EMERGENT.

TREE AND SHRUB PLANTING

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 herbiciding, mulching, pruning, watering, fertilizing, inoculating, weeding, 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:

1. Substitutions: Substitutions shall not be permitted unless authorized by the Engineer. If proof is 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.

2. Measurements: All plants shall be measured before pruning, with their branches in their normal position. Height and spread dimensions specified refer to the main body of the plant and not from root tip to top. Tree caliper measurement shall be taken at a point on the trunk ten inches above natural ground line for trees up to four inches in diameter. Plants that meet the measurements specified, but do not possess a normal balance between height and spread, shall be rejected.

3. 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).

   a. 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), or approved equal.

   b. 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), or approved equal.

   c. Container-grown Larger Stock: Trees of one to four inch caliper and larger shrubs. Container-grown stock shall be supplied in RootTrapper® or approved equal soft-sided containers only. Containers shall be RT15, 15 gallon size (i.e. 15 inches tall by 18 inches wide), unless otherwise specified.

d. 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.

4. 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. They shall be free of objectionable disfigurements. Under grown, overgrown, or root-bound plants shall be rejected.

5. 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. Certificates of inspection shall accompanying shipments and shall be furnished as may be required by Federal, State, County or other authorities.

6. Plant Hardiness: All plants shall be grown under climate conditions similar to those in the locality of the project for at least one growing season.

7. 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.

8. 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.

9. Shipping and Delivery:

    a. Plants shall be shipped with legible labels, stating the correct name and size, and securely attached to individual plants.

    b. The Contractor shall coordinate with the Engineer in order to develop a mutually agreeable approximate delivery schedule and delivery locations. The Contractor shall contact the Engineer, via phone, a minimum of 24 hours prior to each delivery with the approximate arrival time. Deliveries will not be accepted on Fridays unless prior approval has been obtained from the Engineer.

    c. The Engineer shall approve the location for plant delivery.

10. 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.

Installation: For this Contract, all tree and shrub materials are to be grown and delivered to the project site in five gallon containers.

1. Layout and Planting:

    a. Plants shall be planted only when the air temperature exceeds 35 degrees Fahrenheit.

b. Trees shall be spaced a minimum of ten feet apart. Trees and shrubs shall be planted in the areas as shown on the plans.

2. Planting Pit:

   a. 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.

   b. 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.

   c. 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.

   d. Unless otherwise specified, all excess excavated clay and soil shall be spread evenly around the planting area.

3. 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.

4. 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.

5. 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.

6. Shrubs will be installed in groupings of three to ten shrubs per group, or as directed by the Engineer.

7. 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.

8. 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.

9. All tags and ropes shall be removed and disposed of from each plant after planting.

Mulching: The Contractor is responsible for the supply, delivery, and installation of the mulch.

1. The mulch material for planting shall consist of shredded tree bark, or other approved organic material. The mulch shall be approved by the Engineer prior to placement.

2. The Contractor shall mulch all newly installed individual plants. Trees and shrubs shall be mulched to a depth of four to six inches from the finished grade.

3. The mulch rings for solitary trees shall be six feet in diameter and the mulch rings for individual shrubs shall be five feet in diameter. For clumped shrubs, the mulch ring shall extend three feet from the outermost shrubs in the clump. The mulch shall not contact the tree trunk and flare.

4. The Contractor shall leave a four-to-six-inch mulch-free gap around the tree/shrub to prevent moist bark conditions and to prevent decay.

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.

1. The Contractor shall protect each individual tree and groupings of shrubs with a circle of fencing with the following minimum dimensions:

    a. 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.

b. Fence openings shall be no larger than two inches by four inches.

2. 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.

3. 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.
4. 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".

5. 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. LCDOT will monitor the fencing via LCDOT maintenance patrols.

6. 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 unless otherwise directed to remain by the Engineer. The fencing shall be removed and disposed of without damage to the protected trees, shrubs or surrounding area. The removed materials shall be disposed of outside the right-of-way, according to Article 202.03 of the "Standard Specifications".

7. The Contractor shall apply a deer and rodent repellent, e.g. Deer Off® or an approved equal, to all tree and shrub materials immediately upon delivery to the project site. The repellent may be applied prior to delivery to the project site. Additional applications may be necessary if there is precipitation prior erecting the fencing.

Watering of Trees and Shrubs:

1. 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.

2. Thorough watering of trees shall follow backfilling and 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.

3. 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:

1. The Contractor shall provide additional watering during the first growing season (June – October) following planting.

2. The watering equipment and method shall be approved by the Engineer in advance. 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. It is the Engineer's responsibility to monitor the site and local weather conditions and to notify the Contractor when watering is necessary. The watering shall be completed within seven days following the Engineer's notification to the Contractor that watering is necessary.

3. 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.

4. 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.

5. 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. The Watering, Additional Watering and 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 TREES (SPECIAL) regardless of the type of trees or shrubs being planted. 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; additional watering; deer protection; mulching; post-planting pruning, weeding and watering; and plant care.

NOTES:

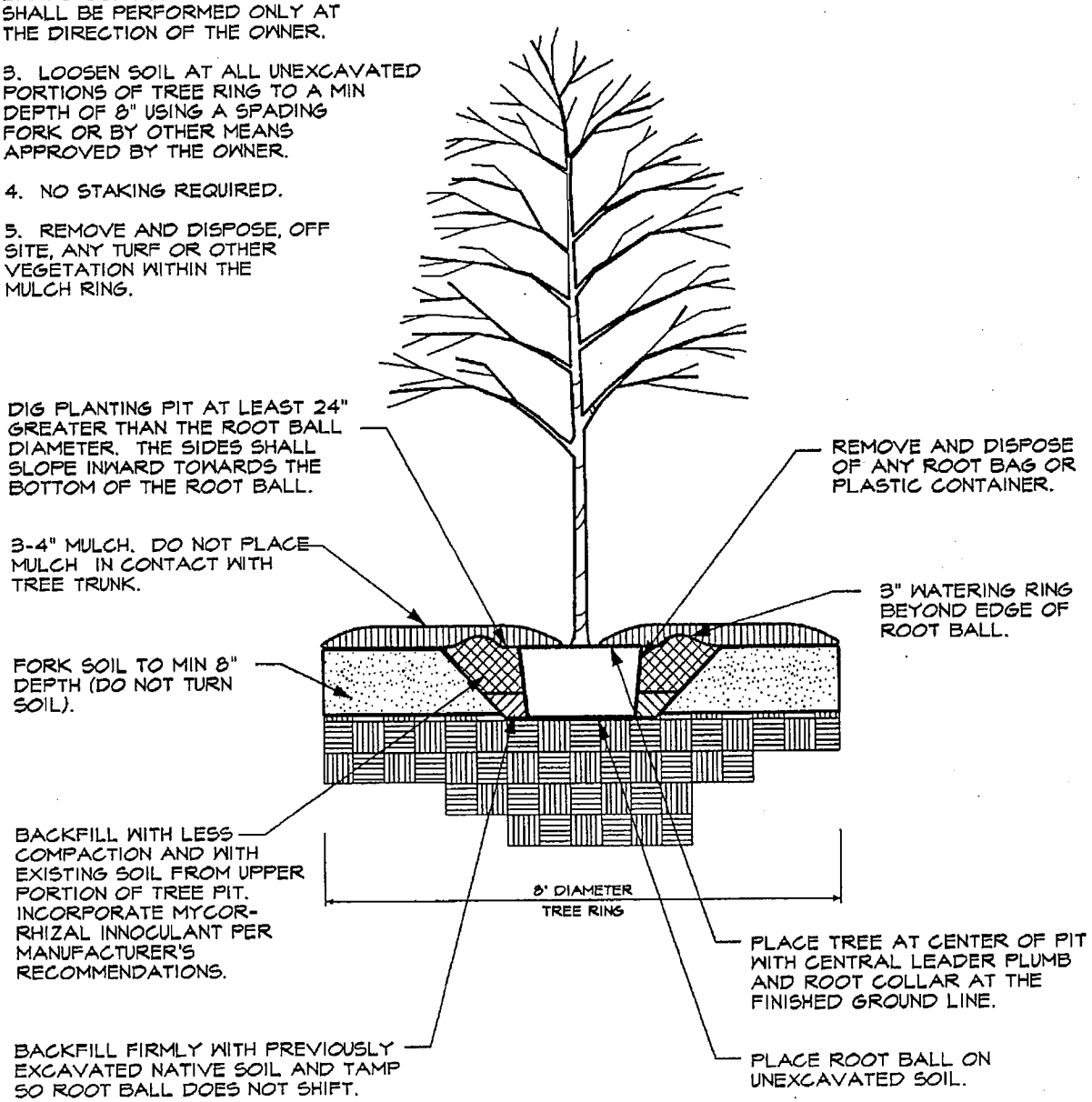
1. PLEASE REFER TO PLANTING PROCEDURE IN THE SPECIFICATIONS PRIOR TO USING THIS DETAIL.

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.



TREE PLANTING DETAIL

ROOT BAG AND CONTAINER TREES

NO SCALE

ORNAMENTAL FENCE

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

Description: This work shall consist of furnishing and installing a steel fence, gates and accessories as shown on the plans.

Materials:

A. The steel material for the fence framework (ie... tubular pickets, rails and posts) shall meet the following:

   a. Galvanized after forming:
      i. Conform to the requirements of ASTM A1011/1011M
      ii. Minimum yield strength of 50,000 psi.
      iii. The exterior shall be hot-dip galvanized with a 0.45 oz/ft^2 minimum zinc weight.
      iv. The interior surface shall be coated with a minimum 81% normal zinc pigmented coating, 0.3 mils minimum thickness.
   b. Galvanized prior forming
      i. Conform to the requirements of ASTM A924/A924M
      ii. Minimum yield strength of 50,000 psi.
      iii. The steel shall be hot-dip galvanized to meet the requirements of ASTM A653/A653M with a minimum zinc coating weight of 0.90 oz/ft^2, Coating Designation G-90.

B. The manufactured galvanized framework shall be subjected to a thermal stratification coating process (high-temperature, in-line, multi-stage, multi-layer) including as a minimum, a six-stage pretreatment/wash (with zinc phosphate), an electrostatic spray application of an epoxy base, and a separate electrostatic spray application of a polyester finish. The base coat shall be a zinc-rich thermosetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils. The topcoat shall be a "no-mar" TGIC polyester powder coat finish with a minimum thickness of 2 mils. The color shall be as specified on the standard drawing included in the plans. The stratification-coated framework shall be capable of meeting the performance requirements for each quality characteristic shown in the following table.

Quality Characteristics	ASTM Test Method	Performance Requirements
Adhesion	*D3359 – Method B*	*Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).*
Corrosion Resistance	*B117 & D1654*	*Corrosion Resistance over 3,500 hours (Scribed per D1654; failure mode is accumulation of ⅛" coating loss from scribe or medium #8 blisters).*
Impact Resistance	*D2794*	*Impact Resistance over 60 inch lb. (Forward impact using 0.625" ball).*
Weathering Resistance	*D822, D2244, D523 (60° Method)*	*Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).*

Table 1 – Coating Performance Requirements

C. The material for the fence pickets shall be 1" square x 16 gauge tubing. The cross-sectional shape of the rails shall conform to the manufacturer's design with outside cross section dimensions of 1.75" square and a minimum thickness of 14 gauge. Picket holes in the horizontal rail shall be spaced 4.98" on center. The picket retaining rods shall be made of 0.125" diameter galvanized steel. The minimum post size shall be 2½" square x 12 gauge. High quality PVC grommets shall be supplied to seal all picket-to-rail intersections.

The manufacturer's literature (or shop drawings and specifications) shall be submitted to the Engineer prior to ordering the fence. The ornamental fence, as shown on LCDOT standards LC6600, LC6601 and LC6602, and as specified herein, is an industrial quality ornamental steel fence system. The drawings and dimensions were furnished by one manufacturer. An equivalent fence system may be proposed for substitution. The Engineer is the sole judge of what is an equivalent substitution.

General: Installation of the fence shall be according to the applicable portions of Section 664 [Chain Link Fence] of the "Standard Specifications", except as follows:

1. Dimensions and design details are as shown on the plans.

2. At some locations, the fencing shall be attached to concrete retaining walls. The allowable attachment methods include coring the concrete to 9" depth and grouting the fence posts in the holes or using mounting brackets and anchors.

3. Fence post installation in soil shall be done using concrete footings as shown on the

plans.

Fence Fabrication:

A. The pickets, rails and posts shall be precut to specified lengths. The horizontal rails shall be pre-punched to accept the pickets.

B. The grommets shall be inserted into the pre-punched holes in the rails and the pickets shall be inserted through the grommets so that the pre-drilled picket holes align with the internal upper raceway of the horizontal rails. (Note: This can best be accomplished by using an alignment template.) Retaining rods shall be inserted into each horizontal rail so that they pass through the predrilled holes in each picket completing the panel assembly.

C. The completed panels shall be capable of supporting a 600lb load (applied at midspan) without any permanent deformation. Panels with rings shall be biasable to a 12.5% change in grade. Panels without rings shall be biasable to a 25% change in grade.

D. Gates shall be fabricated using the same components as the fence system. The panel material and gate ends will have the same outside cross section dimensions as the horizontal rail. All rail and upright intersections shall be joined by welding. Picket and rail intersections shall be joined by welding or the same retaining rod used for the panel assembly.

Installation:

The fence posts shall be set in accordance with the spacing shown in Table 2 ±½", depending on the nominal span specified.

Span	**6' Nominal (67¾" Rail)**				**8' Nominal (92⅝" Rail)**			
Post Size	*2½"*	*3"*	*2½"*	*3"*	*2½"*	*3"*	*2½"*	*3"*
Bracket Type	*Standard (BB301)*		*Angle (BB304)*		*Standard (BB301)*		*Angle (BB304)*	
Post Settings ± ½" o.c.	*71½"*	*72"*	*73"*	*73½"*	*96"*	*96½"*	*97½"*	*98"*

Table 2 – Post Spacing Requirements

Gate posts shall be spaced according to the gate openings specified in the construction plans. The fence panels shall be attached to the posts using mechanically fastened panel brackets supplied by the manufacturer.

Method of Measurement: Ornamental Fence will be measured for payment in feet along the top of the fence from center to center of the end posts.

Basis of Payment: This work will be paid for at the contract unit price per foot for ORNAMENTAL FENCE. *The unit price shall include furnishing and installing the fence, including all fence connections, connection to a retaining wall (where required), concrete foundations, fence openings and gates (where indicated) and electric grounding. The unit price shall also include all equipment, materials and labor required to install the fence.*

OUTLET CONTROL STRUCTURE

Description. This work shall consist of assembling and installing the outlet control structure for the detention pond at the location shown in the plans and in accordance with the detail included in the plans or as directed by the Engineer.

Method of Measurement. Outlet control structure will be measured for payment in place for each outlet control structure installed.

Basis of Payment. This work shall be paid for at the contract unit price per each of DRAINAGE CONTROL STRUCTURE, which price shall include all materials, labor and equipment necessary to perform the work in accordance with the plans, specifications, and/or as directed by the Engineer.

PAINT PAVEMENT MARKING – RASIED MEDIAN

This work shall be done in accordance with Section 780 of the Standard Specifications and the Lake County Standard Pavement Marking Details included in the plans.

This work will be paid for at the contract unit price per square foot for PAINT PAVEMENT MARKING – RAISED MEDIAN.

PIPE UNDERDRAINS 4"(MODIFIED)

Pipe underdrain material shall be limited to:

(l) perforated polyvinyl chloride (PVC) pipe [1040.09], (q) perforated corrugated polyvinyl chloride (PVC) pipe with a smooth interior [1040.15],
(s) perforated corrugated polyethylene (PE) pipe with a smooth interior (1040.17), or
(t) corrugated polyethylene (PE) pipe with a smooth interior (1040.20).

The pipe shall be wrapped with a fabric envelope meeting the requirements of Section 1080.01 in

the "Standard Specifications".

Rodent shields and square concrete collars (where required) as shown on LC6020 in the plans, shall be incidental to PIPE UNDERDRAINS 4" (MODIFIED).

PIPE UNDERDRAINS 4" (MODIFIED) will be measured and paid for at the contract unit price per foot, which price shall include furnishing and placing all pipe, fittings, fabric envelope, connecting pipes, rodent shields, and concrete collars.

PORTLAND CEMENT CONCRETE DRIVEWAY PAVEMENT

This work shall be done in accordance with Section 423 of the Standard Specifications and the Detail provided in the Plans, except as modified herein.

423.01 Description. Add the following sentences to this Article:

"This item shall include the construction of a 4-inch thick Aggregate Base Course, Type A in accordance with Section 351 of the Standard Specifications. Replacement shall be constructed to match the existing pavement removed for thickness, reinforcing, etc. However, the minimum concrete thickness shall be 6-inches for residential driveways (5-inches if 6 x 6 welded wire fabric is used)."

423.03 Basis of Payment. Revise this Article to read:

"423.03 Basis of Payment. This work shall be paid for at the contract unit price per square yard for PORTLAND CEMENT CONCRETE DRIVEWAY PAVEMENT , 8 INCH and as specified in the contract plans.

PRECONSTRUCTION VIDEO TAPING

This work shall be paid for at the Contract lump sum price for PRECONSTRUCTION VIDEO TAPING on streets within the project limits. This Contract unit price shall be payment in full for all materials, labor, and equipment required for: videotaping between right-of-way lines; two passes minimum, narrative to include address information, providing one copy of the videotapes (DVD format) to the Owner, and other related work required. Videotaping shall be performed at a traversing speed not to exceed 50 feet per minute. The videotapes shall include an audio track noting the condition of existing facilities and site objects and be of suitable photographic clarity to serve as a basis for establishing whether visible damage occurred during construction operations.

REMOVE AND RELOCATE WATER MAIN

The work of this pay item consists of new cement lined, Class 52 Ductile Iron water main pipe complete in place, including, but not limited to, excavation; bracing; bedding and covering of pipe; locator wire; detectable tape; trench dewatering, including erosion and siltation control methods and devices to provide protection to environment from all pumping operations; protection, repair or replacement of utilities; trench backfill with excavated material; testing; disinfection; finished grading; all water main pipe fittings; all restrained type joints; thrust blocking; saw cutting existing street and driveway pavement; removal, hauling, and disposal of waste excavated materials; protection, replacement, or repair of utilities; and removal of existing water main.

Water main Pipe Fittings shall be ductile iron fittings in accordance with AWWA C104-80, C110-82, and C151-81 with restrained type mechanical joints complying with ANSI A21.10 or A21.53. Use cement lining complying with ANSI A-21.4, standard thickness. Use A-304 stainless steel bolts with nuts and washers of series 300 stainless steel per ASTM A194. Provide restrained joint type fittings that are compatible with the system utilized, as specified by the manufacturer. Restrained joint type fittings shall be installed on all fittings branch, runs, and at all valves as directed by the Resident Engineer. Acceptable products: Meg-A-Lug system.

Locator Wire shall be No. 12 AWG, single strand, single conductor, insulated copper locator wire on top of the water mains and fittings. The locator wire shall continue through valve vaults and up to the frame and be placed continuously to grade at all fire hydrants. Detectable Tape shall be blue in color and placed 1-foot above the pipe.

Testing and inspection shall conform to the "Standard Specifications for Water and Sanitary Sewer Main Construction in Illinois" and the Lake County Public Works.

Pressure tests shall be witnessed by the Director of the Lake County Public Works or his authorized representative.

Hydrostatic tests shall be performed in accordance with the requirements of the standard. The Contractor shall furnish all gauges and measuring devices and make all taps into the pipe. This work shall not be paid for separately but shall be included in the contract unit price per linear foot of respective size water main.

The Contractor shall give the Lake County Public Works at least 48 hours notice prior to the time that construction will begin and official tests will be made. Depending on public hazard or other reasons, the Lake County Public Works may direct when tests of the completed sections of

water main shall be made and may order such tests to be made in relatively short sections. There shall be no additional compensation given for any work done or material used in order to complete this test.

Before water mains are placed into service, they shall be thoroughly flushed, pressure-tested and disinfected with chlorine gas, witnessed by a representative of the Lake County Public Works. The following procedure shall be followed:

1. Pressure Test
Pressure tests shall be performed after initial flushing to remove any air in the water main and brought to one hundred fifty (150) pounds per square inch (psi) and held at that pressure for two (2) hours, If there is any drop in pressure, the cause shall be determined and any necessary repairs shall be made by the contractor, and the pressure test repeated until a passing test is achieved, as noted in the standard Specifications for Water and sewer Main Construction in Illinois. The pressure gauge shall be an analog types with increments of five (5) psi or less,

2. Flushing
The mains shall be flushed, discharging water through each of the hydrants on the system until the water runs clear.

3. Chlorination
Chlorination of mains shall be performed by an accredited chlorination specialist and at the Contractor's expense,

4. Use of Water
Water shall not be used from the mains until satisfactory results are received by the Lake County Department of Public Works or his representative on bacteriological samples submitted to the laboratory. Bacteriological testing of water mains following disinfection shall be done by the Lake County Public Works' Laboratory or an approved equal.

This work consists of excavation required to expose the existing or 8" diameter water main, cutting the water main, taking the existing or 8" diameter water main out of service, and removal of the existing or 8" water main. After all the services have been satisfactorily connected to the new system, the CONTRACTOR shall remove the existing water main at the locations shown on the Engineering Plans or as directed by the Resident Engineer. This work shall not begin until the proposed water main is in place and operating.

This price shall include all labor, equipment, pipe material, related appurtenances, fittings, bedding material, thrust blocking, testing and chlorination necessary to install the water main as shown in the plans and as herein specified.

Payment for trench backfill beneath proposed pavement and sidewalks, or within two (2') feet of the limits of pavement shall not be measured for payment but shall be considered incidental to REMOVE AND RELOCATE WATER MAIN, 8".

Water main relocation items are contingent, and only to be used if a storm sewer conflicts exist.

This work as described herein shall be paid for at the Contract Unit Price per foot for REMOVE AND RELOCATE WATER MAIN, 8".

RESETTING SURVEY MONUMENTS

This work shall consist of adjusting survey monuments where required as indicated on the plans.

The Contractor shall furnish all materials necessary to adjust monument series number 106, 4" diameter as manufactured by Harrison Marker and Instrument Company, Box 66, Anoka, Minnesota (612) 421-1445 or approved equal.

RESETTING SURVEY MONUMENTS will be paid for at the contract unit price per each, which price shall include all work and materials to complete the adjustment.

SANITARY SEWER REMOVAL

Description. This work shall consist of removing and disposing of the existing sanitary sewer at the locations shown on the plans. This work shall be performed in accordance with the application portions of Section 551 of the Standard Specifications.

Basis of Payment. This work shall be paid for at the contract unit price per foot for SANITARY SEWER REMOVAL, of the size specified, which price shall include all labor, materials and equipment to complete work as described above.

SEDIMENT AND EROSION CONTROLS

This Special Provision revises Section 280 (Temporary Erosion Control) of the Standard Specifications for Road and Bridge Construction.

Include the following as the third paragraph of Article 280.01:

This work shall also include implementation and management of the approved Erosion and Sediment Control Schedules, method of operation weekly co-inspections, inspection following rainfalls, and preparation and adherence to the Erosion and Sediment Control Schedule. Removal of erosion and sediment control items will be by others in the future where shown on the Plans or as directed by the Engineer.

Revise Article 280.02 (f) to read:

(f) Silt Fence ..... .Article 1080.02

Add the following as Article 280.02:

(k) Course Aggregate..... Article 1004.01 gradation CA-3
(I) Geotextile Fabric..... Article 1080.03
(m) Seeding Class 2A ..... Article 250.07 & 1081.04
(n) Excelsior Blanket.....Article 1081.10 (a)
(o) Riprap, Gradation 3..... Article 1005.01
(p) Cellular Confinement Grid ..... Article 1080.06

Delete Article 280.04 (b) and replace with:

(b) Sediment Control, Silt Fence. This silt fence shall consist of a continuous silt fence adjacent to an area of construction to intercept sheet flow of water borne silt and sediment, and prevent it from leaving the area of construction.

The silt fence shall be supported on hardwood posts spaced on a maximum of 2.4 m (8 ft) centers. The bottom of the fabric shall be installed in a backfilled and compacted trench a minimum of 150 mm (6 in) deep, and securely attached to the hardwood post by a method approved by the Engineer. The minimum height above ground for all silt fence shall be 760 mm (30 in).

Add the following as Article 280.04:

(h) Sediment Control, Stabilized Construction Entrance. This work shall consist of the furnishing of all equipment, labor, and materials necessary for the installation of the stabilized construction entrances as shown on the Plans or as directed by the Engineer. Construction entrances shall be used in conjunction with the stabilization of construction roads and other exposed areas to reduce or eliminate the tracking of sediment onto public right-of-ways or streets.

Topsoil shall be removed, geotextile fabric placed, and the cellular confinement grid installed and staked according to the manufacturer's recommendations. Stabilized construction entrances shall be built to the lines and dimensions shown in the details at the locations shown in the Plans, or as directed by the Engineer. The cells shall be filled with aggregate base course using gradation CA-3. The aggregate base course

shall be placed within the cellular confinement grid using the methods and equipment recommended by the manufacturer. The aggregate base course shall be placed by applicable portions for Section 351 of the Standard Specification. All surface water flowing or diverted toward the construction entrance shall be accounted for either by installation of a pipe culvert under the entrance, or if piping is impractical, a mountable berm will be permitted.

Sediment Control, Stabilized Construction Entrance Removal. This work shall consist of the removal of a stabilized construction entrance and all items necessary for the removal of a stabilized construction entrance. This includes the under entrance pipe culvert or excess aggregate for the mountable berm, any aggregate radii abutting temporary pavement, cellular confinement grids, and all unnecessary aggregate within 5 m (16 ft) of the original lines and dimensions of which the entrance was constructed. All methods of removal shall be approved by the Engineer. Material shall be disposed of according to Article 202.03, or as directed by the Engineer.

(i) Erosion Control, Temporary Pipe Slope Drain. This work shall consist of furnishing of the equipment, labor and materials necessary for the installation, maintaining and removal of pipe, anchor devices, filter fabric and flared end sections to convey surface runoff down the face of un-stabilized slopes to minimize erosion on the slope face. Temporary Pipe Slope Drain shall be used in conjunction with temporary berms that direct runoff into the temporary pipe slope drain flared end section located at the top of the embankment, for the length of the embankment.

The temporary pipe slope drain shall be constructed as shown on the plans and shall outlet into a sediment trap or basin, or a stable conveyance system that leads to a sedimentation device, as approved by the Engineer. The temporary pipe slope drain, inlet, and outlet shall be securely anchored to the slope in such a manner to prevent any movement laterally and vertically. All methods of anchoring shall be approved by the Engineer. All connections are to be watertight. A flared end section shall be attached to the inlet end of the pipe and shall be relocated each time the pipe is extended. The height of the temporary berm at the location of the temporary pipe slope drain shall be at least 2 times the diameter of the pipe. To prevent erosion around the flared end section, geotextile fabric will be placed under the flared end section and shall extend 2 meters (6 feet) in front of it and up the front face of the temporary berm. This work shall be installed as shown on the Plans or as approved by the Engineer.

At the end of each construction day, temporary berms at the top edge of the embankment shall be constructed and each temporary pipe slope drain will be extended and the inlet reinstalled. These temporary berms shall be constructed as

shown on the Plans or as directed by the Engineer.

(j) Erosion Control, Temporary Channel Diversion. This system consists of the furnishing of the equipment, labor, and materials required to install, maintain and remove the temporary channel diversion needed to carry the existing stream flow through or around a construction site while the permanent drainage structure is being installed. The temporary channel diversion will be stabilized as shown on the drawings and will be removed/filled once the permanent drainage structure is in place and stabilized.

All surfaces to be protected shall be graded and compacted. Prepared surfaces that become crusted shall be reworked to an acceptable condition prior to placing the geotextile fabric.

Geotextile Fabric Installation In-Stream. Geotextile fabric shall be applied with the length of roll laid parallel to the flow of the water. Start the installation with the initial strip placed in the center of the ditch to avoid an overlap in the center of the ditch. Where more than one width is required, lap joints shall be limited to one every 3 meters of width.

An anchor slot shall be placed at the upslope and downslope ends of the geotextile fabric perpendicular to the flow of water. At least 30 cm (12 in) of the end of the geotextile fabric shall be buried vertically in the anchor slot. The geotextile fabric shall be secured in the anchor slot by pins at 1 meter (3 feet) or less on center prior to burying. The soil shall be firmly compacted against the geotextile fabric in the anchor slot. This shall be accomplished by placing the geotextile fabric into the slot, folding it over to expose the underside, pinning the fabric through both layers, backfilling the anchor slot, and compacting the soil.

Pins shall be a 5 mm diameter x 450 mm (3/16 in x 18 in) long wire with a 40 mm (1.5 in) washer attached and shall be driven flush to geotextile fabric surface.

Successive lengths of geotextile fabric shall be overlapped at least 1 meter (3 feet) with the upstream length on top. Pin the overlap by placing 3 pins evenly spaced across the upslope end, center, and downslope end of the overlap, totaling 9 pins for each overlap. Check slots, oriented perpendicular to the flow of water, shall be constructed by placing a tight fold at least 20 cm (8 in) vertically into the soil spaced no more than 8 meters (27 feet) on center. Pin the geotextile fabric in the check slot at each edge overlap and in the center of the geotextile fabric.

Side edges of temporary diversion channel geotextile fabric shall terminate on horizontal shelves running parallel to the flow of water for the full length of the ditch.

Edges of the geotextile fabric shall be pinned at 1 meter (3 feet) on center and buried in the Sediment Control, Silt Fence trench.

The Contractor shall maintain the temporary diversion channel until all work on the contract has been completed and accepted. Maintenance shall consist of the repair of areas damaged by any cause.

Restoration of the Temporary channel shall include cleaning any sediment from the channel and backfilling it with approved embankment.

The location of the temporary channel diversion shall be as shown on the plans, or as directed by the Engineer. Water shall not be diverted through the diversion channel until it is adequately protected with geotextile fabric.

(k) Same-Day Stabilization. This work is to be implemented after the initial perimeter controls are in place and concurrently placed with the Contractor's daily operations. These critical areas shall be designated for Same-Day Stabilization as shown on the Plans.

Same-Day Stabilization may consist of either temporary erosion control measures or the permanent landscaping as indicated on the Plans. The permanent landscaping shall be implemented for the Same-Day Stabilization whenever possible. The placing of permanent landscaping intended to be removed at a later date shall receive prior approval by the Engineer. The Contractor shall stage his work so that portions of the slopes and ditches can be brought to finish grade, topsoil placed, and landscaped prior to the end of the workday, whenever possible.

In either case, the work zone must be left in such condition that the disturbed areas are stabilized. Temporary erosion control measures consist of tarps sufficiently staked to the ground or other erosion controls approved by the Engineer. Measures shall be taken to control sediment –laden water and on-site runoff into dewatering or sedimentation devices on a daily basis.

The Contractor shall be responsible for coordinating his operations with the work of any subcontractors, to insure that stabilization is performed the same day that the disturbance occurs. The performance of Same-Day Stabilization is also subject to the penalties of the Erosion and Sediment Control Deficiency Deduction described herein.

(l) Erosion Control, Diversion Dike and Temporary Ditch. This work shall consist of the construction and maintenance of a temporary ridge of compacted soil, located to intercept and divert runoff to a stabilized outlet or to intercept sediment-laden water and divert it to a

sediment-trapping device. Diversion Dikes or Temporary Ditches shall be constructed to the lines and dimensions shown on the plans or as directed by the Engineer.

The diversion dike shall be stabilized through the use of Erosion Control Blanket and Temporary Erosion Control Seeding. Diversion dikes intended for use longer than one construction season may be seeded with Seeding Class 2A, or as directed by the Engineer. Excelsior Blanket shall be installed in the manner described for placement in ditches, with the direction of water flow being parallel to the length of the diversion dike.

The embankment used to construct the diversion dike shall be placed along an alignment which all trees, brush, stumps, and other obstructions have been removed that would interfere with the proper functioning of the diversion dike. The embankment shall be constructed by applicable portions for Section 205 of the Standard Specification.

(m) Sediment Control, Dewatering Basins. This work shall consist of the construction, maintenance, and removal or filling and compacting of the dewatering basins. A dewatering basin shall be installed wherever the Contractor is removing and discharging water from excavated areas on the construction site and the water is not being routed through an adequately sized sediment trap or sediment basin, as determined by the Engineer. The purpose of the basin is to temporarily store the discharged water and to release it in a manner that causes the sediment-laden water to be filtered prior to release into a natural drainage way or stabilized conveyance. Dewatering basins shall be located above the water table whenever possible. Whenever possible the excavated material shall be placed in a ring around the dewatering basin. An aggregate spillway consisting of Class 3 riprap, shall be constructed as shown in the plan detail and lined with geotextile fabric.

The volume required to be stored is dependent upon the pumping rate and the amount of sediment in the water. Locations of the dewatering basins are as shown on the Plans or as approved by the Engineer. All methods of placing embankment must be approved by the Engineer.

Dewatering Basins shall be filled in or removed by a method approved by the Engineer. Whenever possible, the material excavated from the dewatering basin shall be the material returned to the dewatering basin. Final dewatering shall not be made directly into a stream or channel All other fill materials shall require the approval of the Engineer. Material shall be disposed of according to Article 202.03, or as directed by the Engineer.

(n) Sediment Control, Stone Outlet Structure Sediment Trap. This work shall consist of the

furnishing all of the equipment, labor and materials required to install, maintain and remove a stone outlet structure sediment trap, as shown on the Details in the Plans, or as directed by the Engineer. Riprap, placed over a geotextile fabric, shall be used to construct the stone outlet structure.

Add the following to Article 280.05:

Sediment Control, Silt Fence Maintenance shall consist of maintaining silt fence that has fallen down or become ineffective as a result of natural forces. This work shall include the removal of sediment buildup from behind the silt fence when the sediment has reached a level of half the above ground height of the fence, or as directed by the Engineer. Silt fence damaged by the Contractor's operations or negligence shall be repaired at the Contractor's expense, or as directed by the Engineer.

Sediment Control, Stabilized Construction Entrance Maintenance shall consist of maintaining stabilized construction entrances that have become ineffective as a result of standard operations and natural forces. This work will include will include the removal and proper disposal of excess materials and the delivery and placing of aggregate in the manner described in Sediment Control, Stabilized Construction Entrance.

Sediment Control, Drainage Structure Inlet Filter Cleaning shall consist of cleaning sediment out of a drainage structure inlet filter when directed by the Engineer. This cleaning work is to be periodically performed as directed by the Engineer, for the duration of the use of each drainage structure inlet filter assembly. The Engineer will be the sole judge of the need for cleaning, based on the rate that debris and silt is collected at each inlet filter location.

Cleaning of the inlet filter shall consist of inspecting, cleaning (includes removal and proper disposal of debris and silt that has accumulated in the filter fabric bag), by vactoring, removing and dumping, or any other method approved by the Engineer.

280.07 Method of Measurement. Revise Article 280.07 (a) to read:

(a) Excavation for Sediment and Dewatering Basins, Temporary Ditches, Diversion Dikes, and Dewatering Basins. The volume of excavation for sediment and dewatering basins, temporary ditches, and diversions dikes will be measured for payment in place and the volume computed in cubic meters (cubic yards).

Revise Article 280.07 (c) to read:

(c) Sediment Control, Silt Fence. This work will be measured for payment in meters (feet) in place and removed. Silt fence designated not to be removed, by the Plans or the Engineer will be measured for payment by this item, as well.

Sediment Control, Silt Fence Maintenance. This work will be measured for payment,

each incident, in meters (feet) of silt fence cleaned, re-erected, or otherwise maintained.

Add the following as Article 280.07:

(h) Sediment Control, Stabilized Construction Entrance. This work will be measured for payment by the outside dimensions of cellular confinement grid and the area calculated in square meters (square yards). All grading, excavation and embankment necessary to construct the entrance shall not be paid for separately, but included in the cost of Sediment Control, Stabilized Construction Entrance. Temporary pavement placement shall be paid for separately. Placement of the Pipe Culvert, of the diameter specified, shall be paid for separately. If additional Trench Backfill should be required for placement of the Pipe Culvert, it shall be paid for separately.

Sediment Control, Stabilized Construction Entrance Maintenance. This work will be measured for payment to the outside dimensions of the material removed and the area calculated in square meters (square yards). All excavation and grading necessary to remove and replace the sediment fill aggregate shall not paid for separately, but shall be included in the cost of Sediment Control, Stabilized Construction Entrance Maintenance.

Sediment Control, Stabilized Construction Entrance Removal. This work will be measured for payment for each stabilized construction entrance removed. Removal of temporary pavement and temporary pipe culverts shall not be paid for separately, but included in the cost of Sediment Control, Stabilized Construction Entrance Removal.

(i) Erosion Control, Temporary Pipe Slope Drains. This work will be measured for payment by each complete system installed and maintained, regardless of pipe diameter and length. This work will be measured only once per location installed. All connections, anchors, extensions, geotextile materials, and temporary berms used to install, reinstall, or operate the temporary pipe slope drains will not be measured for payment.

(j) Erosion Control, Temporary Channel Diversion. This work will be measured for payment along the centerline of the channel in meters (feet) of temporary channel diversion installed, maintained, and removed. Earth Excavation, Earth Plug, Riprap, geotextile materials for channel lining, and backfill will not be measured separately for payment, but be included in cost of temporary channel diversion. Sediment Control, Silt Fence shall be paid for separately.

(k) Same-Day Stabilization. This work will not be measured for payment, but included in the cost of the items utilized shown on the Plans or as directed by the Engineer.

(l) Sediment Control, Stone Outlet Structure Sediment Trap. This work will be measured for payment as each, which price shall include all materials and labor necessary to complete the job as described in the Plans or directed by the Engineer, except for EARTH EXCAVATION FOR EROSION CONTROL which shall be paid for separately.

(m) Sediment Control, Drainage Structure Inlet Filter Cleaning. This work will be measure for payment each time that the cleaning work is performed at each of the drainage structure inlet filter locations.

Revise Article 280.08 (a) to read:

(a) Excavation for Sediment and Dewatering Basins, Temporary Ditches, and Diversion Dikes.

This work will be paid for at the contract unit price per cubic meter (cubic yard) for EARTH EXCAVATION FOR EROSION CONTROL. The various required linings shall not be paid for separately but shall be included in the unit bid prices of the contract.

Revise Article 280.08 (c) to read:

(c) Sediment Control, Silt Fence. This work will be paid for at the contract unit price per meter (feet) for SEDIMENT CONTROL, SILT FENCE.

Sediment Control, Silt Fence Maintenance. This work will be paid for at the contract unit price per meter (feet) for SEDIMENT CONTROL, SILT FENCE MAINTENANCE per each occurrence.

Revise Article 280.08 (h) to read:

(h) Maintenance. Maintenance of temporary erosion and sediment control systems, including repair of the various systems, removal of entrapped sediment and cleaning of any silt filter fabric will be paid for according to Article 109.04, unless otherwise specified. The sediment shall be removed as directed by the Engineer during the contract period and disposed of according to Article 202.03.

Add the following as Article 280.08:

(i) Sediment Control, Stabilized Construction Entrance. This work will be paid for at the contract unit price per square meter (square yard), for SEDIMENT CONTROL, STABILIZED CONSTRUCTION ENTRANCE. Pipe Culverts shall be paid for in accordance to Article 542.11 of the Standard Specifications. Trench Backfill shall be paid for in accordance to Article 208.04.

Sediment Control, Stabilized Construction Entrance Maintenance. This work will be paid for at the contract unit price per square meter (square yard), for SEDIMENT CONTROL, STABILIZED CONSTRUCTION ENTRANCE MAINTENANCE.

Sediment Control, Stabilized Construction Entrance Removal. This work will be paid for at the contract unit price each, for SEDIMENT CONTROL, STABILIZED CONSTRUCTION ENTRANCE REMOVAL.

(j) Erosion Control, Temporary Pipe Slope Drains. This work will be paid for at the contract unit price each, for EROSION CONTROL, TEMPORARY PIPE SLOPE DRAINS.

(k) Erosion Control, Temporary Channel Diversion. This work will be paid for at the contract unit price, per meter (feet), for EROSION CONTROL, TEMPORARY CHANNEL DIVERSION.

(I) Same-Day Stabilization. This work will be paid for at the contract unit price for the various items of work performed and will not be paid for separately.

(m) Sediment Control, Stone Outlet Structure Sediment Trap. This work will be paid for at the contract unit price per each for OUTLET SPECIAL. Earth Excavation for Erosion Control will be paid for according to Article 280.07 (a).

(n) Sediment Control, Drainage Structure Inlet Filter Cleaning. This work will be paid for at the contract unit price per each occurrence for SEDIMENT CONTROL, DRAINAGE STRUCTURE INLET FILTER CLEANING.

SEEDING, CLASS 1A (SPECIAL)

This work shall conform to Sections 250 and 252 of the Standard Specification with the following revisions.

Scientific Name	Common Name	Seeding Rate
Festuca ovina glauca	SR 3200 Blue Fescue	1.50 lbs/acre
Festuca rubra	Dawson Slender Red Fescue	2.00 lbs/acre
Festuca rubra	SR 5200E Creeping Red Fescue	2.00 lbs/acre
Festuca rubra	SR5100 Chewings Fescue	1.50 lbs/acre
Festuca rubra	Sandpiper Chewings Fescue	1.00 lbs/acre
Festuca trachyphylla	Scaldis Hard Fescue	1.00 lbs/acre
Festuca trachyphylla	SR 3100 Hard Fescue	1.00 lbs/acre

This seeding process shall meet the requirements of Section 250 except that the seed mixture shall consist of a Low Growing – Low Maintenance Fescue Blend developed by Taylor Creek Restoration Nurseries in Brodhead, Wisconsin; (608) 897-8641, or FAX (608) 897-2044 or an approved equal. It shall be placed at a rate of 10 lbs/acre with a cover crop of oats to be applied at 50lbs/acre. The cost of furnishing and applying this cover crop of oats will not be paid for separately, but shall be included in the cost of SEEDING, CLASS 1A SPECIAL.

SEEDING, CLASS 1A SPECIAL shall be measured and paid for, in place, at the contract unit price per acre which price shall include all labor, material and equipment necessary to complete the work.

SEEDING, CLASS 4 (MODIFIED); SEEDING, CLASS 5 (MODIFIED)

This work shall consist of the preparation of the area to be seeded and placing the seed and other materials required in seeding operations in the areas indicated on the plans for this Contract or as directed by the Engineer.

This work shall be done in accordance with Section 250 of the "Standard Specifications for Road and Bridge Construction" except as modified by this Special Provision.

The modified seeding classes are as designated in the following tables:

Seeding, Class 4 (Modified)

Scientific Name	Common Name	Seeding Rate
Asclepias incarnata	Swamp Milkweed	0.07 lbs/acre
Aster ericoides	Heath Aster	0.02 lbs/acre
Aster novae-angliae	New England Aster	0.20 lbs/acre
Calamagrostis canadensis	Blue Joint Grass	0.06 lbs/acre
Coreopsis tripteris	Tall Coreopsis	0.07 lbs/acre
Echinochloa crusgalli	Barnyard Grass	2.00 lbs/acre
Elymus canadensis	Canada Wild Rye	2.00 lbs/acre
Elymus virginicus	Virginia Wild Rye	1.00 lbs/acre
Eupatorium altissimum	Tall Boneset	0.50 lbs/acre
Helianthus grosseserratus	Sawtooth Sunflower	0.02 lbs/acre
Monarda fistulosa	Wild Bergamot	1.00 lbs/acre
Rudbeckia hirta	Black-Eyed Susan	0.30 lbs/acre
Silphium terebinthinaceum	Prairie Dock	0.19 lbs/acre

Solidago altissima	Tall Goldenrod	0.50 lbs/acre
Solidago rigida	Stiff Goldenrod	0.30 lbs/acre
Tradescantia ohiensis	Common Spiderwort	1.00 lbs/acre

Seeding, Class 5 (Modified)

Scientific Name	Common Name	Seeding Rate
Asclepias incarnata	Swamp Milkweed	0.07 lbs/acre
Aster novae-angliae	New England Aster	0.20 lbs/acre
Bidens frondosa	Common Beggar's Ticks	0.13 lbs/acre
Calamagrostis canadensis	Blue Joint Grass	0.06 lbs/acre
Carex cristatella	Crested Oval Sedge	0.13 lbs/acre
Carex granularis	Pale Sedge	0.04 lbs/acre
Carex stipata	Common Fox Sedge	0.13 lbs/acre
Cyperus esculentus	Field Nut Sedge	0.38 lbs/acre
Echinochloa crusgalli	Barnyard Grass	2.00 lbs/acre
Elymus virginicus	Virginia Wild Rye	1.00 lbs/acre
Eupatorium perfoliatum	Common Boneset	0.13 lbs/acre
Helenium autumnale	Sneezeweed	0.50 lbs/acre
Helianthus grosseserratus	Sawtooth Sunflower	0.02 lbs/acre
Juncus torreyi	Torrey's Rush	0.13 lbs/acre
Leersia oryzoides	Rice Cut Grass	0.25 lbs/acre
Pycnanthemum virginianum	Common Mountain Mint	0.06 lbs/acre
Verbena hastata	Blue Vervain	0.13 lbs/acre
Vernonia fasciculata	Common Ironweed	0.19 lbs/acre

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 with a maximum height of 7' as measured from the top of block elevation to the finished grade line at the wall face.

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 (48") 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 ½" 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. *The unit price shall include all equipment, materials and labor required to design and construct the segmental block wall.*

STORM SEWERS (SPECIAL)

This work shall conform to the requirements of Sections 603 of the Standard Specifications and the Illinois Environmental Protection Agency, Division of Public Water Supplies "Technical Policy Statements" concerning Illinois Pollution Control Board Rules and Regulations, Chapter 6, Rule 212, E through F.

The following materials are permitted for Storm Sewers, Special:

a) Cement mortar lined ductile cast iron pipe, thickness Class 52 or greater, with push-on joints.

b) Reinforced concrete pipe, steel cylinder type, with rubber and steel joints.

c) Reinforced concrete pressure pipe with rubber and steel joints.

STORM SEWERS (SPECIAL) will be paid for at the contract unit price per foot for the diameter or span and rise specified and type specified.

STORM WATER TREATMENT SYSTEM

PART 1 – GENERAL

1.1 DESCRIPTION
The work covered by this section consists of the construction of a structural underground stormwater oil and sediment separator unit. The Contractor shall furnish all equipment, tools, labor and materials necessary to complete the work in accordance with the plans and specifications. The selected unit shall be able to treat a tributary area of 5.58 acres with 87 percent impervious surface, 2-year design discharge of 13.6 cfs, and 10-year discharge of 19.2 cfs.

1.2 REFERENCE STANDARDS
ASTM D-4097: Contact Molded Glass Fiber Reinforced Chemical Resistant Tanks
ASTM C 478: Standard Specification for Precast Reinforced Concrete Manhole Sections
ASTM C 443: Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets

1.3 SHOP DRAWINGS

1.3.1 Shop drawings consisting of catalog cuts or fabricator drawings showing the structure and frames, grates, or covers shall be submitted by the Contractor to the Engineer for approval.

1.3.2 Where an external bypass is required, the manufacturer must provide calculations and designs for all structures, piping and any other required material applicable to the proper functioning of the system, stamped by a Professional Engineer.

1.4 HANDLING AND STORAGE
Care shall be taken in loading, transporting, and unloading to prevent damage to materials during storage and handling

PART 2 – PRODUCTS

2.1 GENERAL
The separator shall be circular and constructed from pre-cast concrete circular riser and slab

components. The internal fiberglass insert shall be bolted and sealed watertight inside the reinforced concrete component. The separator shall be capable to be used as a bend or junction structure within the stormwater drainage system.

2.2 PRECAST CONCRETE SECTIONS
All precast concrete components shall be designed and manufactured to a minimum live load of AASHTO HS-20 truck loading or greater based on local regulatory specifications.

2.3 JOINTS
The concrete joints shall be water-tight and meet the design criteria according to ASTM C-443. Mastic sealants or butyl tape are not an acceptable alternative.

2.4 FRAME AND COVER
The frame and cover shall include an indented top design with lettering of the unit's name cast into the cover to allow for easy identification in the field.

2.5 CONCRETE
All reinforced concrete components shall be manufactured according to local specifications and shall meet the requirements of ASTM C 478.

2.6 FIBERGLASS
The fiberglass portion of the water treatment device shall be constructed in accordance with the following standard: ASTM D-4097: Contact Molded Glass Fiber Reinforced Chemical Resistant Tanks.

2.7 INSPECTION
All precast concrete sections shall be inspected to ensure that dimensions, appearance and quality of the product meet local specifications and ASTM C 478

PART 3 – PERFORMANCE

3.1 GENERAL
The stormwater quality treatment device shall remove oil and sediment from stormwater. The stormwater separator unit is equipped with an internal high flow bypass that regulates the flow rate into the treatment chamber and conveys high flows directly to the outlet so that scour and/or resuspension of material previously collected in the separator does not occur. Simple substitution by dimensional equivalents shall not be considered equivalent. Substitutions shall include site specific design modeling with supportive test data for any formal review. Any substitution from the specified product requires a new submittal with no additional expense incurred to the owner.

3.3 TOTAL SUSPENDED SOLIDS

The treatment device shall be capable of removing 80 percent of the average annual total suspended solids (TSS) load without scouring previously captured pollutants. Design methodologies shall provide calculations substantiating removal efficiencies and correlation to field monitoring results using both particle size and TSS removal efficiency. The treatment device must remove oil and sediment from stormwater during frequent wet weather events. It should treat a runoff volume of 0.5" with a 70% removal of hydrocarbons (oil & grease) for impervious surface tributary area to the treatment unit. All manufactures shall provide performance data that the stormwater quality treatment system does not scour previously captured pollutants based on the particle size distribution specified in section 3.5. Performance data should be laboratory testing with an initial sediment load of 50 percent of the unit's sediment capacity at an operating rate of 125% or greater. Particle size distribution (PSD) shall conform to table 3.5 and should include site specific calculations for TSS removal of the stormwater quality unit.

3.4 FREE OIL

3.4.1 The first 16 inches (405 mm) of hydrocarbon storage shall be lined with fiberglass to provide a double wall containment of the hydrocarbon materials.

3.5 PARTICLE SIZE

3.5.1 The separator must be capable of trapping fine sand, silt, clay and organic particles in addition to larger sand, gravel particles and small floatables.

3.5.2 The stormwater quality treatment device shall be sized to a specific Particle Size Distribution, PSD (OK-110) as shown in Table 3.5.

Table 3.5 – Particle Size Distribution

Amount	**Diameter**	**Specific Gravity**
0.2%	1 micron	2.65
3%	53 micron	2.65
15%	75 micron	2.65
25%	88 micron	2.65
40.8%	106 micron	2.65
15%	125 micron	2.65
1%	150 micron	2.65

PART 4 – EXECUTION

4.1 INSTALLATION

The installation of the pre-cast concrete stormwater quality treatment device should conform to state highway, municipal or local specifications for the construction of manholes. Selected sections of a general specification that are applicable are summarized below.

4.2 EXCAVATION

4.2.1 Excavation for the installation of the stormwater quality treatment device should conform to state highway, municipal or local specifications.

4.2.2 The stormwater quality treatment device should not be installed on frozen ground. Excavation should allow for adequate compaction around the structure. If the bottom of the excavation provides an unsuitable foundation additional excavation may be required.

4.2.3 In areas with a high water table, continuous dewatering should be provided to ensure that the excavation is stable and free of water.

4.3 BACKFILLING

Backfill material should conform to state highway, municipal or local specifications. Backfill material should be placed in uniform layers not exceeding 12 inches (300 mm) in depth and compacted to state highway, municipal or local specifications.

4.4 WATER QUALITY DEVICE CONSTRUCTION SEQUENCE

4.4.1 The concrete water quality device is installed in sections in the following sequence:

- aggregate base
- base slab
- treatment chamber section(s)
- transition slab (if required)
- bypass section
- connect inlet and outlet pipes
- riser section and/or transition slab (if required)
- maintenance riser section(s) (if required)
- frame and access cover

4.4.2 The precast base should be placed level at the specified grade. The entire base should be in contact with the underlying compacted granular material. Subsequent sections, complete with gasketed joint seals, should be installed in accordance with the

precast concrete manufacturer's recommendations.

4.4.3 Adjustment of the stormwater quality treatment device can be performed by lifting the upper sections free of the excavated area, re-leveling the base, and re-installing the sections. Damaged sections and gaskets should be repaired or replaced as necessary. Once the stormwater quality treatment device has been constructed, any lift holes must be plugged with mortar.

4.5 DROP PIPE AND RISER PIPE
Once the upper chamber has been attached to the lower chamber, the inlet drop tee, and riser pipe must be attached. Pipe installation instructions and required materials shall be provided with the insert.

4.6 INLET AND OUTLET PIPES
Inlet and outlet pipes should be securely set into the upper chamber using non-shrink grout or approved pipe seals (flexible boot connections, where applicable) so that the structure is watertight.

4.7 FRAME AND COVER OR FRAME AND GRATE INSTALLATION
The grade adjustment units should be laid in a full bed of mortar with successive units being joined using sealant recommended by the manufacturer. Frames for the cover should be set in a full bed of mortar at the elevation specified.

Method of Measurement. This work will be measured for payment for each Storm Water Treatment System installed.

Basis of Payment. This work shall be paid for at the contract unit price per each for STORM WATER TREATMENT SYSTEM, which price shall include all materials, labor and equipment necessary to install the complete unit.

SURVEY MONUMENTS

The Contractor shall install survey monuments at the locations indicated on the plans. **LCDOT will supply the monuments.**

The Engineer, after the final surface course has been placed, will install four survey nails for each point to be monumented.

1. At each location there are four nails in the surface. Each nail is one foot (0.3 m) from the center and in direct line with an opposite nail to be used for setting the new monument.

2. By the use of a drilling machine mounted with a 4 or 6 inch (100 or 150 mm) diamond core bit, center the core bit within the four nails.

3. Cut a hole in the pavement 4 or 6 inches (100 or 150 mm) in diameter by 4 inches (100 mm) deep. Remove the core and existing monument (if any) and discard it.

4. Fill the hole with compacted aggregate to within 3½ " of the top of the hole. Fill the remaining portion of the hole to within 3/8" of the top with two-component epoxy adhesive meeting all requirements of the ASTM Specification C881, Type IV, Grade 3 if temperature is at or above 50 degrees F (10 degrees C) or AASHTO Specification M237-90, Table 2 Type III for the two component, epoxy adhesive if the temperature is between 31 degrees F (-0.56 degrees C) and 50 degrees F (10 degrees C) with the approval by the Engineer before installation.

5. Place a new monument in the center of the hole. Set the monument so that the legend top is 3/8 inch (10 mm) below the pavement surface.

6. By using the four nails and a string line or 1/8 inch (3 mm) chalk line, center the monument in the hole to the nearest 0.005 foot (0.002 meters). This can be accomplished by drawing the string across two diagonally opposite nails.

7. Using a line level, check the monument to make sure it is level.

8. When the hole around the monument is filled to capacity, recheck the monument with string and level in accordance with instructions 6 and 7.

9. Each monument shall be protected from traffic for a minimum of 90 minutes.

This work will be paid for at the contract unit price each for SURVEY MONUMENTS; which shall include all work and materials to complete the installation.

TEMPORARY DITCH CHECKS

This work shall conform to Section 280 and Section 1080 of the "Standard Specifications", and the Triangular Silt Dike™ detail included in the plans. Temporary Ditch Checks shall be limited to Triangular Silt Dikes™ or an approved equal.

Manufacturer
Triangular Silt Dike Company, Inc.
608 Greenwood
Midwest City, OK 73110-1632
(405)741-7406

Area Representative/Dealer
GSI Geosynthetics, Inc.
428 N. Pewaukee Road
Waukesha, WI 53188
(800) 444-5523

Each silt dike shall consist of an approximate 7 feet (2.13 meters) long triangular section of urethane foam covered with a geotextile fabric, and installed on a geotextile fabric apron. Triangular Silt Dikes™ shall be installed at the locations specified on the Erosion Control Plan, or as directed by the Engineer, and in accordance with the detail included in 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 ditch checks shall become the property of the Contractor upon their removal.

This work shall be paid for at the contract unit price per each for TEMPORARY DITCH CHECKS, and shall include all labor, equipment and materials necessary for installation and removal.

TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT

This work shall conform to the requirements of Section 631 of the Standard Specifications, and I.D.O.T. Standard Drawing 630301and the following:

The Type 1 Special (Tangent) terminals shall be considered 25' in length and shall consist of the ET-2000, the BEST-350, and the SKT-350. Plan quantities are based on the ET-2000 manufactured by Syro Steel.

This work will be measured and paid for at contract unit price per each for TRAFFIC BARRIER TERMINAL, TYPE 1 SPECIAL (TANGENT) which price shall include all equipment, labor and material required to complete the work.

TRAFFIC CONTROL AND PROTECTION, (SPECIAL)

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

the Special Provisions contained herein.

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

The Contractor shall contact the District One Bureau of Traffic at least 72 hours in advance of beginning work.

STANDARDS

701006-03	OFF-RD OPERATIONS-2L 2W 15FT TO 24FT FROM PAVEMENT EDGE
701301-04	LANE CLOSURE 2L 2W SHORT TIME OPERATIONS
701306-03	LANE CLOSURE 2L 2W SLOW MOVING OPERATIONS DAY ONLY
701326-04	LANE CLOSURE 2L 2W PAVEMENT WIDENING
701701-08	URBAN LANE CLOSURE MULTILANE INTERSECTION
701901-02	TRAFFIC CONTROL DEVICES
780001-03	TYPICAL PAVEMENT MARKINGS
LC7000	MODIFIED STANDARD 701011-01
LC7001	MODIFIED STANDARD 701501-03
LC7004	MODIFIED DISTRICT ONE SIDE ROAD DETAIL
LC7005	TYPICAL LANE CLOSURE 3 LANE ROAD SECTION
LC7201	TEMPORARY CONSTRUCTION INFORMATION SIGNS
LC7800	TYPICAL PAVEMENT MARKINGS FOR COUNTY HIGHWAYS
LC7801	ON STREET BICYCLE LANE PAVEMENT MARKINGS AND SIGNING DETAILS
LC7802	SHORT TERM PAVEMENT MARKINGS

DETAILS

TC-10	TRAFFIC CONTROL AND PROTECTION FOR SIDE ROADS
TC-13	DISTRICT ONE TYPICAL PAVEMENT MARKINGS
TC-16	PAVEMENT MARKING LETTERS AND SYMBOLS FOR TRAFFIC STAGING
TC-18	TC-18, SIGNING FOR FLAGGING OPERATIONS AT WORK ZONE OPENINGS
TC-22	ARTERIAL ROAD INFORMATION SIGN

RECURRING SPECIAL PROVISIONS

CS 20 - Guardrail and Barrier Wall Delineation
LRS 3 - Work Zone Traffic Control
LRS 4 - Flaggers in Work Zones
BDE 80228 - Flagger at Side Roads and Entrances
BDE 80273 - Traffic Control Deficiency Deduction
Keeping Roads Open to Traffic
Maintenance of Roadways
Temporary Information Signing

Basis of Payment. This work shall be paid for at the contract unit price per lump sum for TRAFFIC CONTROL AND PROTECTION, (SPECIAL), which price shall include all labor, materials and equipment to complete work as described above.

TREE PROTECTION AND PRESERVATION

1. The Contractor shall erect a temporary fence around all trees within the construction area to establish a "tree protection zone" before any work begins or any material is delivered to the jobsite. No work is to be performed (other than root pruning), materials stored, or vehicles driven or parked within the "tree protection zone" at any time during the course of construction.

2. The exact location and establishment of the "tree protection zone" fence shall be approved by the County Arborist prior to setting the fence. The fence shall be 48 inches high, plastic poly-type or any other type of highly visible barrier in an open-weave type pattern with large openings. The type, color and pattern of the fence shall be approved by the Engineer prior to erection. This fence shall be properly maintained in an upright manner and shall remain up until final restoration, unless the Engineer directs removal otherwise. Tree fence shall be supported using T-Post style fence posts with a maximum of 8' spacing. T-posts must be at least six feet in length, two feet of which must be set in the ground. The fence shall be attached to posts and secured with a minimum of three nylon locking ties per post. **Utilizing re-bar as a fence post will not be permitted.**

3. The fence shall be installed parallel to the curb and between the curb and sidewalk unless otherwise directed by the Engineer. Fence shall be erected on a minimum of three sides with the fourth sidewalk side being optional. Fence shall be installed at the drip-line of the tree or as listed in the following guidelines:

a. Establish the diameter of the tree at a point four and a half feet above the ground, (referred to as diameter breast height or DBH)
   i.. Trees with diameters 10 inches and under require root zone protection a minimum of five feet in all directions from the center of the tree.
   ii. Trees 10 to 19 inches in diameter shall have a minimum root zone protection of 10 feet in all directions from the center of the tree.
   iii. Trees greater than 19 inches in diameter shall have a minimum root zone protection of 15 feet in all directions from the center of the tree.

4. Parking or maneuvering of machinery, stockpiling of materials or any other use will not be allowed upon unpaved areas within 3 m (10 ft) of the root protection zone of trees or plants designated to be protected.

5. Construction area is defined as all areas within 20 feet each side of water or sewer main location.

6. All work within the "tree protection zone" shall have the Engineer's prior approval. All slopes and other areas not re-graded should be avoided so that unnecessary damage is not done to the existing turf, tree root system or ground cover.

7. The grade within the "tree protection zone" shall not be changed unless approved by the Engineer prior to making said changes or performing the work.

Tree Protection and Preservation will be paid for at the contract unit price per each for TREE PROTECTION AND PRESERVATION, which price shall include furnishing, installing, maintaining, and removal.

TREE REMOVAL, ACRES (SPECIAL)

This work shall conform to Section 201 of the "Standard Specifications" except as follows. This item shall be used by the Contractor for the removing of all trees and brush that by its presence inhibits the removal of items designated for such on the plans for this contract. All brush and trees that are removed shall be chipped and shredded and then stockpiled on the site for future use. The area to be used for stockpiling this material shall be designated by the Engineer. Once the material has been stockpiled, the Contractor shall relinquish control of this material to the resident Engineer. This work shall be considered as incidental to the cost of this pay item.

Contractor shall hire a qualified Arborist and complete the Compliance Agreement from Illinois Department of Agriculture. Licensee will handle any infected material in accordance with the EAB Compliance Agreement and the Applicable to State or Federal Cooperative Domestic Quarantines for the Emerald Ash Borer pursuant to the Insect Pest and Plant Disease Act (505 Illinois compiled Statutes 90/1 et seq.)

Basis of Payment. This work shall be paid for at the contract unit price per acre or fraction thereof for TREE REMOVAL, ACRES (SPECIAL) which work shall include all labor, equipment, and materials for constructing the work complete in place.

Prior to any removal, the Contractor shall discuss the area of trees to be removed with the Engineer. Until the Contractor and the Engineer have agreed upon a quantity for the area to be removed, no work may continue in that particular area. The Contractor shall not be entitled to an additional compensation associated with a delay of this nature.

WOVEN WIRE FENCE REMOVAL

This work consists of complete removal and proper disposal of fencing, regardless of type, and posts where indicated on the plans. Removed fence shall not be reinstalled. This work shall be measured and paid for per lineal foot WOVEN WIRE FENCE REMOVAL, which price shall include all equipment, labor and material required to complete the work regardless of the type of fence being removed.

ADJUSTMENTS AND RECONSTRUCTIONS
Effective: March 15, 2011

Revise the first paragraph of Article 602.04 to read:

"**602.04 Concrete.** Cast-in-place concrete for structures shall be constructed of Class SI concrete according to the applicable portions of Section 503. Cast-in-place concrete for pavement patching around adjustments and reconstructions shall be constructed of Class PP-1 concrete, unless otherwise noted in the plans, according to the applicable portions of Section 1020."

Revise the third, fourth and fifth sentences of the second paragraph of Article 602.11(c) to read:

"Castings shall be set to the finished pavement elevation so that no subsequent adjustment will be necessary, and the space around the casting shall be filled with Class PP-1 concrete, unless otherwise noted in the plans, to the elevation of the surface of the base course or binder course. HMA surface or binder course material shall not be allowed. The pavement may be opened to traffic according to Article 701.17(e)(3)b."

Revise Article 603.05 to read:

"**603.05 Replacement of Existing Flexible Pavement.** After the castings have been adjusted, the surrounding space shall be filled with Class PP-1 concrete, unless otherwise noted in the plans, to the elevation of the surface of the base course or binder course. HMA surface or binder course material shall not be allowed. The pavement may be opened to traffic according to Article 701.17(e)(3)b."

Revise Article 603.06 to read:

"**603.06 Replacement of Existing Rigid Pavement.** After the castings have been adjusted, the pavement and HMA that was removed, shall be replaced with Class PP-1 concrete, unless otherwise noted in the plans, not less than 9 in. (225 mm) thick. The pavement may be opened to traffic according to Article 701.17(e)(3)b.

The surface of the Class PP concrete shall be constructed flush with the adjacent surface."

Revise the first sentence of Article 603.07 to read:

"**603.07 Protection Under Traffic.** After the casting has been adjusted and the Class PP concrete has been placed, the work shall be protected by a barricade and two lights according to Article 701.17(e)(3)b."

AGGREGATE SUBGRADE, 12" (300 mm)
Effective: May 1, 1990
Revised: October 1, 2011

This work shall be done in accordance with the applicable portions of Section 207 of the Standard Specifications. The material shall conform to Article 1004.05 of the Standard Specifications except as follows:

1. Crushed Stone, Crushed Blast Furnace Slag, and Crushed Concrete will be permitted. Steel slag and other expansive materials as determined through testing by the Department will not be permitted.

Sieve Size	Percent Passing
6 in. (150 mm)	97 ± 3
4 in. (100 mm)	90 ± 10
2 in. (50 mm)	45 ± 25
No. 4 (4.75 mm)	20 ± 20
No. 200 (75 μm)	5 ± 5

2. Crushed Gravel

Sieve Size	Percent Passing
6 in. (150 mm)	100
4 in. (100 mm)	90 ± 10
2 in. (50 mm)	55 ± 25
No. 4 (4.75 mm)	30 ± 20
No. 200 (75 μm)	5 ± 5

3. Crushed Concrete with Bituminous Materials *

Sieve Size	Percent Passing
6 in. (150 mm)	97 ± 3
4 in. (100 mm)	90 ± 10
2 in. (50 mm)	45 ± 25
No. 4 (4.75 mm)	20 ± 20
No. 200 (75 μm)	5 ± 5

* The Bituminous material shall be separated and mechanically blended with the crushed concrete so that the bituminous material does not exceed 40 percent of the final products.

The top size of the bituminous material in the final product shall be less than 4 inches (100 mm) and shall not contain more than 10.0 percent steel slag RAP or any material that is considered expansive by the Department.

The Aggregate subgrade shall be placed in two lifts consisting of a 9 inch (225 mm) and variable nominal thickness lower lift and a 3 inch (75 mm) nominal thickness top lift of capping aggregate having a gradation of CA 6. The CA 6 may be blended as follows. The bituminous materials shall be separated and mechanically blended with interlocking feeders with crushed concrete or natural aggregate, in a manner that the bituminous material does not exceed 40 percent of the final product. This process shall be approved by the engineer prior to start of production. The top side of the bituminous material in the final products shall be less than 1 1/2 inches (37.5 mm) and shall not contain any material considered expansive by the department. Reclaimed Asphalt Pavement (RAP) (having a maximum of 10 percent steel slag RAP) meeting the requirements of Section 1031 and having 100 percent passing the 1 1/2 inches (37.5 mm) sieve and well graded down through fines may also be used as capping aggregate. IDOT testing of the RAP material will be used in determining the percent of steel slag RAP or Expansive Material. When the contract specifies that an aggregate subbase is to be placed on the Aggregate Subgrade, the 3 inches (75 mm) of capping aggregate will be eliminated. A vibratory roller meeting the requirements of Article 1101.01(g) of the Standard Specifications 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.

When a recommended remedial treatment for unstable subgrades is included in the contract, the lower lift of Aggregate Subgrade may be placed simultaneously with the material for Porous Granular Embankment, Subgrade when the total thickness to be placed is 2 feet (600 mm) or less.

Method of Measurement.

Contract Quantities. Contract quantities shall be in accordance with Article 202.07 of the Standard Specifications.

Measured Quantities. Aggregate subgrade 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 (square meter) for AGGREGATE SUBGRADE, 12" (AGGREGATE SUBGRADE, 300 mm).

AGGREGATE SURFACE COURSE FOR TEMPORARY ACCESS

Effective: April 1, 2001
Revised: January 2, 2007

Revise Article 402.10 of the Standard Specifications to read:

"**402.10 For Temporary Access.** The contractor shall construct and maintain aggregate surface course for temporary access to private entrances, commercial entrances and roads according to Article 402.07 and as directed by the Engineer.

The aggregate surface course shall be constructed to the dimensions and grades specified below, except as modified by the plans or as directed by the Engineer.

(a) Private Entrance. The minimum width shall be 12 ft (3.6 m). The minimum compacted thickness shall be 6 in. (150 mm). The maximum grade shall be eight percent, except as required to match the existing grade.

(b) Commercial Entrance. The minimum width shall be 24 ft (7.2 m). The minimum compacted thickness shall be 9 in. (230 mm). The maximum grade shall be six percent, except as required to match the existing grade.

(c) Road. The minimum width shall be 24 ft (7.2 m). The minimum compacted thickness shall be 9 in. (230 mm). The grade and elevation shall be the same as the removed pavement, except as required to meet the grade of any new pavement constructed.

Maintaining the temporary access shall include relocating and/or regrading the aggregate surface coarse for any operation that may disturb or remove the temporary access. The same type and gradation of material used to construct the temporary access shall be used to maintain it.

When use of the temporary access is discontinued, the aggregate shall be removed and utilized in the permanent construction or disposed of according to Article 202.03."

Add the following to Article 402.12 of the Standard Specifications:

"Aggregate surface course for temporary access will be measured for payment as each for every private entrance, commercial entrance or road constructed for the purpose of temporary access. If a residential drive, commercial entrance, or road is to be constructed under multiple stages, the aggregate needed to construct the second or subsequent stages will not be measured for payment but shall be included in the cost per each of the type specified."

Revise the second paragraph of Article 402.13 of the Standard Specifications to read:

"Aggregate surface course for temporary access will be paid for at the contract unit price per each for TEMPORARY ACCESS (PRIVATE ENTRANCE), TEMPORARY ACCESS (COMMERCIAL ENTRANCE) or TEMPORARY ACCESS (ROAD).

Partial payment of the each amount bid for temporary access, of the type specified, will be paid according to the following schedule:

(a) Upon construction of the temporary access, sixty percent of the contract unit price per each, of the type constructed, will be paid.

(b) Subject to the approval of the Engineer for the adequate maintenance and removal of the temporary access, the remaining forty percent of the pay item will be paid upon the permanent removal of the temporary access."

DRAINAGE AND INLET PROTECTION UNDER TRAFFIC (DISTRICT 1)

Effective: April 1, 2011
Revised: April 2, 2011

Add the following to Article 603.02 of the Standard Specifications:

" (i)..... Temporary Hot-Mix Asphalt (HMA) Ramp (Note 1) 1030
(j) Temporary Rubber Ramps (Note 2)

Note 1. The HMA shall have maximum aggregate size of 3/8 in. (95 mm).

Note 2. The rubber material shall be according to the following.

Property	Test Method	Requirement
Durometer Hardness, Shore A	ASTM D 2240	75 ±15
Tensile Strength, psi (kPa)	ASTM D 412	300 (2000) min
Elongation, percent	ASTM D 412	90 min
Specific Gravity	ASTM D 792	1.0 - 1.3
Brittleness, °F (°C)	ASTM D 746	-40 (-40)"

Revise Article 603.07 of the Standard Specifications to read:

"**603.07 Protection Under Traffic.** After the casting has been adjusted and the Class PP concrete has been placed, the work shall be protected by a barricade and two lights according to Article 701.17(e)(3)b.

When castings are under traffic before the final surfacing operation has been started, properly sized temporary ramps shall be placed around the drainage and/or utility castings according to the following methods.

(a) Temporary Asphalt Ramps. Temporary hot-mix asphalt ramps shall be placed around the casting, flush with its surface and decreasing to a featheredge in a distance of 2 ft (600 mm) around the entire surface of the casting.

(b) Temporary Rubber Ramps. Temporary rubber ramps shall only be used on roadways with permanent posted speeds of 40 mph or less and when the height of the casting to be protected meets the proper sizing requirements for the rubber ramps as shown below.

Dimension	Requirement
Inside Opening	Outside dimensions of casting + 1 in. (25 mm)
Thickness at inside edge	Height of casting ± 1/4 in. (6 mm)
Thickness at outside edge	1/4 in. (6 mm) max.
Width, measured from inside opening to outside edge	8 1/2 in. (215 mm) min

Placement shall be according to the manufacturer's specifications.

Temporary ramps for castings shall remain in place until surfacing operations are undertaken within the immediate area of the structure. Prior to placing the surface course, the temporary ramp shall be removed. Excess material shall be disposed of according to Article 202.03."

EMBANKMENT I

Effective: March 1, 2011

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.

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 cam 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 described 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.

Stabililty. 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 15, 2010

Add the following to the gradation tables of Article 1003.01(c) of the Standard Specifications:

FINE AGGREGATE GRADATIONS					
Grad No.	Sieve Size and Percent Passing				
	3/8	No. 4	No. 8	No. 16	No. 200
FA 22	100	6/	6/	8±8	2±2

FINE AGGREGATE GRADATIONS (metric)					
	Sieve Size and Percent Passing				
Grad No.	9.5 mm	4.75 mm	2.36 mm	1.16 mm	75 µm
FA 22	100	6/	6/	8±8	2±2

6/ For the fine aggregate gradations FA 22, the aggregate producer shall set the midpoint percent passing, and the Department will apply a range of ± ten percent. The midpoint shall not be changed without Department approval.

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

" (a) Description. Fine aggregate for HMA shall consist of sand, stone sand, chats, slag sand, or steel slag sand. For gradation FA 22, uncrushed material will not be permitted."

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.

Gradation FA 1, FA 2, or FA 3 shall be used when required for prime coat aggregate application for HMA."

HOT MIX ASPHALT MIXTURE IL-4.75 (DIST 1)
Effective: January 1, 2007
Revised: April 1, 2010

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.

Fine Aggregate: Revise Note 2 of Article 1030.02 of the Standard Specifications to read:

(a) Gradation. The fine aggregate gradation for IL-4.75 shall be FA 1, FA 2, FA 20 or FA 22.

When the 4.75 mix is used as leveling binder, steel slag sand will not be permitted.

The fine aggregate quality shall be Class B. The total minus No. 200 (75 μm) material in the mixture shall be free from organic impurities.

(b) Reclaimed Asphalt Pavement (RAP). Only processed RAP over 3/8 in. (9.5 mm) screen will be permitted in the 4.75 mm mix. A maximum of 15 percent RAP will be allowed.

(c) Asphalt Binder (AB). The AB shall be either Elvaloy or SBS/SBR; both shall be either PG 76 -22 or PG 76 -28. 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.

(d) Mineral Filler. Mineral filler shall conform to the requirements of Article 1011.01 of the Standard Specifications.

Mixture Design. Add the following to Article 1030.04(b) of the Standard Specifications

"(4) IL 4.75 Mixture.

Volumetric Parameter	Requirement
Design Air Voids	4.0% at Ndesign 50
Voids in the Mineral Aggregate (VMA)	18.5% minimum
Voids Filled with Asphalt (VFA)	72 - 85%
Dust/AC Ratio	1.0
Density (% of Max Specific Gravity)	93.0 - 97.4
Maximum Drain-down	0.3%

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 is 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 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 ≥ 2.5 percent shall have a silo storage plus haul time of not less than 1.5 hours.

Control Charts/Limits.

Add the following to Control Limits table in Article 1030.04(d)(4) of the Standard Specifications:

Parameter	Individual Test	Moving Average
% Passing		
No. 16 (1.18 mm)	± 4%	± 3%
No. 200 (75 μm)	± 1.5%	± 1.0%
Asphalt Binder Content	± 0.3%	± 0.2%
Air Voids	± 1.2% (of design)	± 1.0% (of design)

CONSTRUCTION REQUIREMENTS

Compaction.

Add the following after the first paragraph of Article 406.07(a) of the Standard Specifications:

"The compaction operation shall start immediately after the mixture has been placed. The Contractor shall provide a minimum of two steel-wheeled tandem rollers for breakdown (T_B) and one finish steel-wheeled roller (T_F) meeting the requirements of Article 1101.01(e), except the minimum compression for all of the rollers shall be 280 lb/in. (49 N/mm) of roller width. Pneumatic-tired and vibratory rollers will not be permitted."

HOT MIX ASPHALT MIXTURES, EGA MODIFIED PERFORMANCE GRADED (PG) ASPHALT BINDER
Effective: March 16, 2009

Description. This work shall consist of constructing Hot Mix Asphalt (HMA) mixtures containing ethylene-glycidyl-acrylate (EGA) Modified Performance Graded (PG) Asphalt Binder. Work shall be according to Sections 406, 1030, and 1032 of the Standard Specifications, except as modified herein.

The asphalt binder shall meet the following requirements:

EGA Modified Performance Graded (PG) Asphalt Binder. The asphalt binder shall meet the requirements of AASHTO M 320, Table 1 "Standard Specification for Performance Graded Asphalt Binder" for the grade shown on the plans. An ethylene-glycidyl-acrylate (EGA) terpolymer with a maximum of 0.3 percent polyphosphoric acid by weight of asphalt binder, shall be added to the base asphalt binder to achieve the specified performance grade. Asphalt modification at hot-mix asphalt plants will not be allowed. The modified asphalt binder shall be smooth, homogeneous, and be according to the requirements shown in the following table for the grade shown on the plans.

Ethylene-Glycidyl-Acrylate (EGA) Modified Asphalt Binders		
Test	Asphalt Grade EGA PG 70-22 EGA PG 70-28	Asphalt Grade EGA PG 76-22 EGA PG 76-28
Separation of Polymer Illinois Test Procedure, "Separation of Polymer from Asphalt Binder" Difference in °F (°C) of the softening point between top and bottom portions.	4 (2) max.	4 (2) max.
TEST ON RESIDUE FROM ROLLING THIN FILM OVEN TEST (AASHTO T 240)		
Elastic Recovery ASTM D 6084, Procedure A, 77 °F (25 °C), 100 mm elongation, %	60 min.	70 min.

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.

POROUS GRANULAR EMBANKMENT, SUBGRADE

Effective: September 30, 1985
Revised: August 1, 2008

This work consists of furnishing, placing, and compacting porous granular material to the lines and grades shown on the plans or as directed by the Engineer in accordance with applicable portions of Section 207 of the Standard Specifications. The material shall be used as a bridging layer over soft, pumpy, loose soil and for placing under water and shall conform with Article 1004.05 of the Standard Specifications except the gradation shall be as follows:

1. Crushed Stone, Crushed Blast Furnace Slag, and Crushed Concrete

Sieve Size	Percent Passing
*6 in. (150 mm)	97 ± 3
*4 in. (100 mm)	90 ± 10
2 in. (50 mm)	45 ± 25
No. 200 (75 μm)	5 ± 5

2. Gravel** and Crushed Gravel

Sieve Size	Percent Passing
*6 in. (150 mm)	97 ± 3
*4 in. (100 mm)	90 ± 10
2 in. (50 mm)	55 ± 25
No. 4 (4.75 mm)	30 ± 20
No. 200 (75 μm)	5 ± 5

* For undercut greater than18 inches (450 mm) the percent passing the 6 inch (150 mm) sieve may be 90 ± 10 and the 4 inch (100 mm) sieve requirements eliminated.

** Not to be used in 30 or 40 year extended life concrete pavement or extended life bituminous concrete pavement (full depth).

The porous granular material shall be placed in one lift when the total thickness to be placed is 2 feet (600 mm) or less or as directed by the Engineer. Each lift of the porous granular material shall be rolled with a vibratory roller meeting the requirements of Article 1101.01(g) of the Standard Specifications to obtain the desired keying or interlock and compaction. The Engineer shall verify that adequate keying has been obtained.

A 3 inch (75 mm) nominal thickness top lift of capping aggregate having a gradation of CA 6 will be required when Aggregate Subgrade is not specified in the contract and Porous Granular Embankment, Subgrade will be used under the pavement and shoulders. Capping aggregate will not be required when embankment meeting the requirements of Section 207 of the Standard Specifications or granular subbase is placed on top of the porous granular material.

Construction equipment not necessary for the completion of the replacement material will not be allowed on the undercut areas until completion of the recommended thickness of the porous granular embankment subgrade.

Full depth subgrade undercut should occur at limits determined by the Engineer. A transition slope to the full depth of undercut shall be made outside of the undercut limits at a taper of 1 foot (300 mm) longitudinal per 1 inch (25 mm) depth below the proposed subgrade or bottom of the proposed aggregate subgrade when included in the contract.

Method of Measurement. This work will be measured for payment in accordance with Article 207.04 of the Standard Specifications. When specified on the contract, the theoretical elevation of the bottom of the aggregate subgrade shall be used to determine the upper limit of Porous Granular Embankment, Subgrade. The volume will be computed by the method of average end areas.

Basis of Payment. This work shall be paid for at the contract unit price per cubic yard (cubic meter) for POROUS GRANULAR EMBANKMENT, SUBGRADE.

The Porous Granular Embankment, Subgrade shall be used as field conditions warrant at the time of construction. No adjustment in unit price will be allowed for an increase or decrease in quantities from the estimated quantities shown on the plans.

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RECLAIMED ASPHALT PAVEMENT (RAP)(D-1)

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

In Article 1030.02(g), delete the last sentence of the first paragraph in (Note 2).

Revise Section 1031 of the Standard Specifications to read:

"SECTION 1031. RECLAIMED ASPHALT PAVEMENT

1031.01 Description. RAP is reclaimed asphalt pavement resulting from cold milling and crushing of an existing dense graded hot-mix asphalt (HMA) pavement. The Contractor shall supply written documentation that the RAP originated from routes or airfields under federal, state, or local agency jurisdiction. RAP will be considered processed FRAP after completion of both crushing and screening to size.

1031.02 Stockpiles. The Contractor shall construct individual, sealed RAP stockpiles meeting one of the following definitions. No additional RAP shall be added to the pile after the pile has been sealed. Stockpiles shall be sufficiently separated to prevent intermingling at the base. All stockpiles (including unprocessed RAP and processed FRAP) shall be identified by signs indicating the type as listed below (i.e. "Conglomerate RAP D qualtiy").

Prior to milling, the Contractor shall identify the quality of the RAP to clarify appropriate stockpile and document the RAP's origin. Stockpile shall be separted by type of material (i.e. crushed natural aggregate, ACBF and steel slag, crystalline structure, etc.).

(a) Fractionated RAP (FRAP). FRAP shall consist of RAP from Class I, Superpave (High ESAL), HMA (High 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 (4.75mm) and ½ in. (12.5mm) 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 RAP will be used in.

(b) 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.

(c) Conglomerate. Conglomerate RAP stockpiles shall consist of RAP from Class I, Superpave (High ESAL), HMA (High 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.

(d) 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 processed (FRAP DQ) 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.

(e) Non-Quality. RAP stockpiles that do not meet the requirements of the stockpile categories listed above shall be classified as "Non-Quality".

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

1031.03 Testing. When used in HMA, the RAP/FRAP shall be sampled and tested after processing and 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).

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 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.

Evaluation of Test Results. All of the extraction results shall be compiled and averaged for asphalt binder content and gradation and, when applicable (for slag) G_{mm}. Individual extraction test results, when compared to the averages, will be accepted if within the tolerances listed below.

Parameter	FRAP	Conglomerate "D" Quality RAP
1 in. (25 mm)		± 5 %
1/2 in. (12.5 mm)	± 8 %	± 15 %
No. 4 (4.75 mm)	± 6 %	± 13 %
No. 8 (2.36 mm)	± 5 %	
No. 16 (1.18 mm)		± 15 %
No. 30 (600 µm)	± 5 %	
No. 200 (75 µm)	± 2.0 %	± 4.0 %
Asphalt Binder	± 0.3 %	± 0.5 %
G_{mm}	± 0.03*	

* For steel and GGBFslag

If more than 20 percent of the individual sieves are out of the gradation tolerances, or if more than 20 percent of the asphalt binder content test results fall outside the appropriate tolerances, the RAP/FRAP shall not be used in HMA unless the RAP/FRAP representing the failing tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

With the approval of the Engineer, the ignition oven may be substituted for extractions according to the Illinois Test Procedure, "Calibration of the Ignition Oven for the Purpose of Characterizing Reclaimed Asphalt Pavement (RAP)".

1031.04 Quality Designation of Aggregate in RAP/FRAP.

(a) The aggregate quality of the RAP for FRAP, 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 (High ESAL)/HMA (High ESAL), or HMA (Low ESAL) IL-9.5L surface mixtures are designated as containing Class B quality coarse aggregate.

(2) RAP from Superpave (Low ESAL)/HMA (Low ESAL) IL-19.0L binder mixture is designated as Class D quality coarse aggregate.

(3) RAP from Class I, Superpave (High ESAL), or 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) The aggregate quality of FRAP shall be determined as follows.

(1) 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 according to the following note (2):.

(2) Fractionated stockpiles containing plus #4 (4.75mm) sieve coarse aggregate shall have a maximum tonnage of 5000 tons (4500 metric tons). The Contractor shall obtain a representative sample witnessed by the Engineer. The sample shall be a minimum of 50 lb (25kg). The sample shall be extracted according to Illinois Modified AASHTO T 164 by a consultant prequalified by the Department for the specified testing. The consultant shall submit the test results along with the recovered aggregate to the District Office. The cost for this testing shall be paid by the Contractor. The District will forward the sample to the BMPR Aggregate Lab for MicroDeval Testing, according to Illinois Modified AASHTO T 327. A maximum loss of 15.0 percent will be applied for all HMA applications."

1031.05 Use of FRAP in HMA. The use of FRAP shall be a Contractor's option when constructing HMA in all contracts. All RAP used in Superpave (High and Low ESAL) or equivalent mixtures will be processed and called FRAP. The use of FRAP in HMA shall be as follows.

(a) Coarse Aggregate Size (after extraction). The coarse aggregate in all FRAP shall be equal to or less than the maximum size requirement for the HMA mixture to be produced.

(b) Steel Slag Stockpiles. RAP 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) surface mixtures only.

(c) Use in HMA Surface Mixtures (High and Low ESAL). FRAP and Restricted FRAP stockpiles for use in HMA surface mixtures (High and Low ESAL) shall be in which the coarse aggregate is Class B quality or better. RAP/FRAP shall be considered equivalent to Limestone for frictional considerations unless produced/screened to minus 3/8 inch.

(d) Use in HMA Binder Mixtures (High and Low ESAL), HMA Base Course, and HMA Base Course Widening. RAP/FRAP stockpiles for use in HMA binder mixtures (High and Low ESAL), HMA base course, and HMA base course widening shall be FRAP in which the coarse aggregate is Class C quality or better.

(e) Use in Shoulders and Subbase. FRAP stockpiles for use in HMA shoulders and stabilized subbase (HMA) shall be FRAP, conglomerate, conglomerate DQ,or FRAP (DQ).

(f) The percentage of FRAP shall not exceed the amounts indicated in the tables below for a given N Design.

(1) Level 1 FRAP Percentage

HMA Mixtures [1/, 2/]	Level 1 - Maximum % FRAP		
Ndesign	Binder/Leveling Binder	Surface	Polymer [3/, 4/] Modified
30	35	25	15
50	35	25	15
70	35	25	15
90	35	25	15
105	35	25	15

(2) Level 2 FRAP Percentage with Hamburg wheel testing

HMA Mixtures [1/, 2/]	Level 2 - Maximum % FRAP		
Ndesign	Binder/Leveling Binder	Surface	Polymer Modified [3/, 4/]
30	40	30	20
50	40	30	20
70	40	30	20
90	40	30	20
105	40	30	20

1/ For HMA "All Other" (shoulder and stabilized subbase) N30, the amount of FRAPor FRAP (DQ) shall not exceed 50 percent of the mixture.

2/ When FRAP 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. 20 percent FRAP would require a virgin asphalt binder grade of PG64-22 to be reduced to a PG58-28). If warm mix asphalt (WMA) technology is utilized, and production temperatures do not exceed 275°F (135 C) the high and low virgin asphalt binder grades shall each be reduced by one grade when FRAP exceeds 25 percent (i.e. 26 percent FRAP would require a virgin asphalt binder grade of PG64-22 to be reduced to a PG58-28).

3/ For SMA the maximum FRAP shall be 20 percent. When the FRAP usage in SMA exceeds 10 percent, the high and low virgin asphalt binder grade shall each be reduced by one grade (i.e. 15 percent asphalt binder replacement would require a virgin asphalt binder grade of PG76-22 to be reduced to a PG70-28).

4/ For IL-4.75 mix the amount of minus #4 fine fraction FRAP shall not exceed 30 percent. When the FRAP usage in IL-4.75 exceeds 10 percent, the high and low virgin asphalt binder grade shall each be reduced by one grade (i.e. 15 percent asphalt binder replacement would require a virgin asphalt binder grade of PG76-22 to be reduced to a PG70-28).

1031.06 HMA Mix Designs. At the Contractor's option, HMA mixtures may be constructed utilizing FRAP material meeting the above detailed requirements.

FRAP mix designs exceeding the Level 1 FRAP percentages shall be tested prior to submittal

for verification, according to Illinois Modified AASHTO T324 (Hamburg Wheel) and shall meet the following requirements:

Asphalt Binder Grade	# Repetitions	Max Rut Depth (mm)
PG76-XX	20,000	12.5
PG70-XX	20,000	12.5
PG64-XX	10,000	12.5
PG58-XX	10,000	12.5

Note: For SMA designs the maximum rut depth is 6.0mm and for IL. 4.75 designs @ 15,000 repetitions the maximum rut depth is 9.0 mm.

FRAP designs shall be submitted for volumetric verification. If additional FRAP stockpiles are tested and found that no more than 20 percent of the results, as defined under "Testing" herein, are outside of the control tolerances set for the original FRAP stockpile and HMA mix design, and meets all of the requirements herein, the additional FRAP stockpiles may be used in the original mix design at the percent previously verified.

1031.07 HMA Production. Mixture production where the FRAP percentage exceeds the Level 1 limits shall be sampled within the first 500 tons on the first day of production with a split reserved for the Department. The mix sample shall be tested according to Illinois Modified AASHTO T324 and shall meet the requirements specified herein. FRAP mix production shall not exceed 1,500 tons or one days production, which ever 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 FRAP mixture conformance is demonstrated prior to start of mix production for the contract.

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

If the RAP/FRAP control tolerances or QC/QA test results require corrective action, the Contractor shall cease production of the mixture containing FRAP and either switch to the virgin aggregate design or submit a new FRAP design.

HMA plants utilizing RAP/FRAP shall be capable of automatically recording and printing the following information.

(a) Dryer Drum Plants.

(1) Date, month, year, and time to the nearest minute for each print.

(2) HMA mix number assigned by the Department.

(3) Accumulated weight of dry aggregate (combined or individual) in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).

(4) Accumulated dry weight of RAP/FRAP in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).

(5) Accumulated mineral filler in revolutions, tons (metric tons), etc. to the nearest 0.1 unit.

(6) Accumulated asphalt binder in gallons (liters), tons (metric tons), etc. to the nearest 0.1 unit.

(7) Residual asphalt binder in the RAP/FRAP material as a percent of the total mix to the nearest 0.1 percent.

(8) Aggregate and RAP/FRAP moisture compensators in percent as set on the control panel. (Required when accumulated or individual aggregate and RAP/FRAP are printed in wet condition.)

(9) Accumulated Mixture Tonnage

(10) Dust removed (accumulated to nearest 0.1 ton)

(b) Batch Plants.

(1) Date, month, year, and time to the nearest minute for each print.

(2) HMA mix number assigned by the Department.

(3) Individual virgin aggregate hot bin batch weights to the nearest pound (kilogram).

(4) Mineral filler weight to the nearest pound (kilogram).

(5) RAP/FRAP weight to the nearest pound (kilogram).

(6) Virgin asphalt binder weight to the nearest pound (kilogram).

(7) Residual asphalt binder in the RAP/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.

1031.08 RAP in Aggregate Surface Course and Aggregate Shoulders. The use of RAP 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.

(b) Gradation. One hundred percent of the RAP material shall pass the 1 ½ 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."

RECLAIMED ASPHALT SHINGLES (RAS)(D-1)
Effective: March 1, 2011
Revised: September 1, 2011

Description. Reclaimed asphalt shingles (RAS) meeting Type I or Type 2 requirements will be permitted in all HMA mixtures as specified herein for overlay applications only. RAS shall not be used in full depth HMA pavement. RAS shall be a clean and uniform material with a maximum of 0.5 percent unacceptable materials, as defined in Bureau of Materials and Physical Research Policy (BMPR) Memorandom *Reclaimed Asphalt Shingle (RAS) Sources*, by weight of RAS. All RAS used shall come from a BMPR approved processing facility where it shall be ground and processed to 100 percent passing the 3/8 in. sieve and 93 percent passing the #4 sieve based on a dry shake gradation. RAS shall be uniform in gradation and asphalt binder content and shall meet the testing requirements specified herein.

Definitions. RAS shall meet either Type I or Type 2 requirements as specified herein.

(a) Type I. Type I RAS shall be processed, preconsumer asphalt shingles salvaged from the manufacture of residential asphalt roofing shingles.

(b) 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).

Stockpiles. Type 1 and Type 2 RAS shall be stockpiled separately and shall not be intermingled or used together in a HMA mix design. Each stockpile shall be signed indicating what type of RAS is present.

Unless otherwise approved by the Engineer, mechanically blending manufactured sand (FM20 or FM 22) up to an equal weight of RAS with the processed RAS will be permitted to improve workability. The sand shall be "B Quality" or better from an approved Aggregate Gradation Control System source. The sand shall be accounted for in the mix design and during HMA production. The plant control system must automatically adjust the combined Recyled AC content for RAS and manufactured sand additions.

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 3 years.

Testing. RAS shall be sampled and tested during stockpiling.

For testing 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 250 tons (225 metric tons) thereafter. A minimum of five tests are required for stockpiles less than 1000 tons (900 metric tons). Once a $\leq$ 1000 ton, five-test stockpile has been established it shall be sealed. Additional incoming RAS shall be stockpiled in a separate working pile as designated in the Quality Control plan and only added to the sealed stockpile when the test results of the working pile are complete and are found to meet the tolerances specified herein for the original sealed RAS stockpile.

Before testing, each field sample shall be split to obtain two samples. 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.

Evaluation of Test Results. All of the test results, with the exception of percent unacceptable materials, shall be compiled and averaged for asphalt binder content, and gradation. Individual test results, when compared to the averages, will be accepted if within the tolerances listed below.

Parameter	RAS
No. 8 (2.36 mm)	± 5 %
No. 16 (1.18 mm)	± 5 %
No. 30 (600 µm)	± 4%
No. 200 (75 µm)	± 2.0 %
Asphalt Binder Content	± 1.5 %

If more than 20 percent of the individual sieves are out of the gradation tolerances, or if more than 20 percent of the asphalt binder content, or if the percent unacceptable materials exceeds 0.5 percent by weight of material retained on the #4 sieve, the RAS shall not be used in Department projects. All test data and acceptance ranges shall be sent to the District for evaluation.

Use of RAS in HMA. Type 1 or Type 2 RAS may be used alone or in conjunction with Reclaimed Asphalt Pavement (RAP) in all HMA mixtures up to a maximum of 5.0 percent by weight of total mix.

Level 1 asphalt binder replacement. The maximum Level 1 RAS or RAS/RAP blend usage will be dictated by the Level 1 - Maximum Asphalt Binder Replacement (MABR) table listed below.

HMA Mixtures [1/, 2/]	**Level 1 - Maximum Asphalt Binder Replacement**		
Ndesign	Binder/Leveling Binder	Surface	Polymer Modified [3/, /4]
30	35	25	15
50	35	25	15
70	35	25	15
90	35	25	15
105	35	25	15

Level 2 asphalt binder replacement (Hamburg Wheel). The maximum Level 2 RAS or RAS/RAP blend usage will be dictated by the Level 2 - MABR table listed below.

HMA Mixtures [1/, 2/]	**Level 2 - Maximum Asphalt Binder Replacement**		
Ndesign	Binder/Leveling Binder	Surface	Polymer Modified [3/, 4/]
30	40	30	20
50	40	30	20
70	40	30	20
90	40	30	20
105	40	30	20

1/ For HMA shoulder and stabilized subbase (HMA "All Other") N-30, the maximum binder replacement shall be 50 percent.

2/ When the asphalt binder replacement exceeds 15 percent for all mixtures, except for SMA and IL-4.75, the high and low virgin asphalt binder grade shall each be reduced by one grade (i.e. 20 percent asphalt binder replacement would require a virgin asphalt binder grade of PG64-22 to be reduced to a PG58-28).

3/ For SMA the maximum asphalt binder replacement shall be 20 percent. When the binder replacement exceeds 10 percent, the high and low virgin asphalt binder grade shall each be reduced by one grade (i.e. 15 percent asphalt binder replacement would require a virgin asphalt binder grade of PG76-22 to be reduced to a PG70-28).

4/ For IL-4.75 mix the maximum asphalt binder replacement shall not exceed 30 percent. When the asphalt binder replacement exceeds 10 percent, the high and low virgin asphalt binder grade shall each be reduced by one grade (i.e. 15 percent asphalt binder replacement would require a virgin asphalt binder grade of PG76-22 to be reduced to a PG70-28).

HMA Mix Designs. RAS and RAS/RAP designs shall be submitted for volumetric verification. 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.

RAS and RAS/RAP mix designs with asphalt binder replacements exceeding the Level 1 – MABR limits specified herein, shall be tested prior to submittal for verification, according to Illinois Modified AASHTO T324 (Hamburg Wheel). RAS and RAS/RAP mixtures exceeding the Level 1 MABR limits shall meet the following requirements:

Asphalt Binder Grade	# Repetitions	Max Rut Depth (mm)
PG76-XX	20,000	12.5
PG70-XX	20,000	12.5
PG64-XX	10,000	12.5
PG58-XX	10,000	12.5

Note: For SMA designs the maximum rut depth is 6.0mm and for IL. 4.75 designs @ 15,000 repetitions the maximum rut depth is 9.0mm.

HMA Production. Mixture production, where the RAS and RAS/RAP asphalt binder replacement exceeds the Level 1 MABR, shall be sampled within the first 500 tons on the first day of production with a split reserved for the Department. The mix sample shall be tested according to Illinois Modified AASHTO T324 and shall meet the requirements specified herein. RAS and RAS/RAP mix production shall not exceed 1,500 tons or one days production, which ever 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 RAS and RAS/RAP plant produced mixture conformance is demonstrated prior to start of mix production for a State contract.

RAS shall be incorporated into the HMA mixture either by a separate weight depletion system or by using the RAP weigh belt. Either feed system shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes. The portion of RAS shall be controlled accurately to within ± 0.5 percent of the amount of RAS utilized. When using the weight depletion system, flow indicators or sensing devices shall be provided and interlocked with the plant controls such that mixture production is halted when RAS flow is interrupted.

When producing HMA containing RAS, a positive dust control system shall be utilized.

HMA plants utilizing RAS shall be capable of automatically recording and printing the following information.

(a) Dryer Drum Plants.

(1) Date, month, year, and time to the nearest minute for each print.

(2) HMA mix number assigned by the Department.

(3) Accumulated weight of dry aggregate (combined or individual) in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).

(4) Accumulated dry weight of RAS in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).

(5) Accumulated mineral filler in revolutions, tons (metric tons), etc. to the nearest 0.1 unit.

(6) Accumulated asphalt binder in gallons (liters), tons (metric tons), etc. to the nearest 0.1 unit.

(7) Residual asphalt binder in the RAS material as a percent of the total mix to the nearest 0.1 percent.

(8) Aggregate and RAS moisture compensators in percent as set on the control panel. (Required when accumulated or individual aggregate and RAS are printed in wet condition.)

(9) Accumulated HMA tonnage

(10) Dust removal (accumulated to nearest 0.1 tons)

(b) Batch Plants.

(1) Date, month, year, and time to the nearest minute for each print.

(2) HMA mix number assigned by the Department.

(3) Individual virgin aggregate hot bin batch weights to the nearest pound (kilogram).

(4) Mineral filler weight to the nearest pound (kilogram).

(5) RAS weight to the nearest pound (kilogram).

(6) Virgin asphalt binder weight to the nearest pound (kilogram).

(7) Residual asphalt binder in the RAS material as a percent of the total mix to the nearest 0.1 percent.

The printouts shall be maintained in a file at the plant for a minimum of one year or as directed

by the Engineer and shall be made available upon request. The printing system will be inspected by the Engineer prior to production and verified at the beginning of each construction season thereafter.

REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES

This work shall be according to Article 669 of the Standard Specifications and the following:

Qualifications. The term environmental firm shall mean an environmental firm with at least five (5) documented leaking underground storage tank (LUST) cleanups or that is pre-qualified in hazardous waste by the Department. Documentation includes but not limited to verifying remediation and special waste operations for sites contaminated with gasoline, diesel, or waste oil in accordance with all Federal, State, or local regulatory requirements and shall be provided to the Engineer for approval. The environmental firm selected shall not be a former or current consultant or have any ties with any of the properties contained within and/or adjacent to this construction project.

General. This Special Provision will likely require the Contractor to subcontract for the execution of certain activities.

All contaminated materials shall be managed as non-special waste. This work shall include monitoring and potential sampling, analytical testing, and management of a material contaminated by regulated substances.

A) The Environmental Firm shall continuously monitor for worker protection and the Contractor shall manage any excavated soils **within the construction limits of this project as fill.** Although the soil concentrations exceed a residential property's Tier 1 soil remediation objective for the ingestion exposure pathway, they can be utilized within the construction limits as fill because the roadway is not considered a residential property. All storm sewer excavated soils can be placed back into the excavated trench as backfill unless trench backfill is specified. If the soils cannot be utilized within the construction limits as fill then they must be managed off-site as a non-special waste. The following areas can be managed within the construction limits as fill.

1. Station 1+65 to Station 2+50 0 to 50 feet LT (Vacant Lot, Site 1543V-2, 20896 North Quentin Road) – non-special waste. Contaminants of concern sampling parameters: Lead.

STATUS OF UTILITIES TO BE ADJUSTED

Effective: January 30, 1987
Revised: July 1, 1994

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

Name of Utility	Type	Location	Estimated Dates for Start and Completion of Relocation or Adjustments
Nicor Gas Constance Lane P.O. Box 190 Aurora, IL 60507-0190 PH: (630) 388-3830	Gas	Throughout	Design is complete. Waiting for ROW acquisition to relocate or adjust. Approximate relocation start is November 30th, 2011 and duration is 3 months.
Village of Kildeer Bob Hamilton 21911 Quentin Road Kildeer, IL 60047 PH: (847) 478-9700	Water/Sanitary	Throughout	No conflicts.
Village of Deer Park Todd Gordon 23680 W. Cuba Road Deer Park, IL 60010 PH: (847) 726-1648	Water/Sanitary	Throughout	No conflicts.
ComEd Terri Bleck 1500 Franklin Boulevard Libertyville, IL 60048 PH: (847) 816-5239	Electric	Throughout	Design is complete. Waiting for ROW acquisition to relocate or adjust. Approximate relocation start is November 30th, 2011 and duration is 3 months.
Comcast Robert Schulter 688 Industrial Drive Elmhurst, IL 60126 PH: (630) 600-6347	Phone/Cable	Throughout	To be relocated per franchise agreement with ComEd. Approximate relocation start is November 30th, 2011 and duration is 3 months.
AT&T Local Hector Garcia 1000 Commerce Drive Floor 2 Oak Brook, IL 60523 PH: (630) 573-5465	Phone/Cable	Throughout	To be relocated per franchise agreement with ComEd. Approximate relocation start is November 30th, 2011 and duration is 3 months.

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.

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.

TEMPERATURE CONTROL FOR CONCRETE PLACEMENT (DISTRICT ONE)

Effective: May 1, 2007

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

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:

	Item	Article/Section
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 5/9 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 0.09 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.

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, 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 Specification.

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 (square meter) for TEMPORARY PAVEMENT and TEMPORARY PAVEMENT (INTERSTATE).

Removal of temporary pavement will be paid for at the contract unit price per square yard (square meter) for PAVEMENT REMOVAL.

FULL-ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL

This work shall consist of furnishing and installing a(n) "Econolite" brand traffic actuated solid state digital controller in the controller cabinet of the type specified, meeting the requirements of the current District One Traffic Signal Special Provisions including conflict monitor, load switches and flasher relays, with all necessary connections for proper operation.

Basis of Payment. This work will be paid for at the contract unit price each for FULL-ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL.

TRAFFIC SIGNAL SPECIAL PROVISIONS

The work at the intersections of Quentin Road at Long Grove Road and Quentin Road at White Pine Road, and the interconnect work along Quentin Road shall be governed by the following Lake County Division of Transportation Traffic Signal Special Provisions (Effective July 1, 2011).

The work at the intersection of U.S. Route 12 (Rand Road) at Quentin Road, and the interconnect work along U.S. Route 12 shall be governed by the following Illinois Department of Transportation District One Traffic Signal Specifications (Revised November 1, 2009). In the event that any items along U.S. Route 12 are not included in the Illinois Department of Transportation District One Traffic Signal Specifications, then the Lake County Division of Transportation Traffic Signal Special Provisions shall govern the work.

LAKE COUNTY DIVISION OF TRANSPORTATION

TRAFFIC SIGNAL SPECIAL PROVISIONS

Effective: July 1, 2011

All work and equipment performed and installed under this Contract:

County Highway Name: Quentin Road
County Highway Number: V62
County Highway Section: 02-00052-08-WR

shall be governed by and shall comply with:

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

Quentin Road at Field Parkway/Rue Royale
Quentin Road at Long Grove Road
Quentin Road at U.S. Route 12 (Rand Road)
Quentin Road at White Pine Road
Quentin Road at West Cuba Road

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 802.04 of the "Standard Specifications" to read:

The Contractor shall provide:

a. Seven (7) copies of material catalog cuts which shall include a letter listing the manufacturer's name and model numbers of the proposed equipment to be supplied are to be provided.

b. The catalog cuts shall include manufacturer's descriptive literature, drawings and specifications of the traffic signal equipment, handholes, cable, conduit and all associated items, as well as complete shop drawings of the mast arm assemblies and poles.

c. The contract number or permit number, project location/limits and corresponding pay code number must be on each sheet of the letter, material catalog cuts and mast arm poles and assemblies drawings.

d. Partial or incomplete submittals will be returned without review.

e. All material approval requests shall be submitted a minimum of seven (7) days prior to the delivery of equipment to the job site, or within thirty (30) calendar days after the contract is awarded, or within fifteen (15) calendar days after the preconstruction meeting, whichever is earliest

f. Exceptions, Deviations and Substitutions. In general, exceptions to and deviations from the requirements of the Contract Documents will not be allowed. It is the Contractor's responsibility to note any deviations from Contract requirements at the time of submittal and to make any requests for deviations in writing to the Engineer. In general, substitutions will not be acceptable. Requests for substitutions must demonstrate that the proposed substitution is superior to the material or equipment

required by the Contract Documents. No exceptions, deviations or substitutions will be permitted without the approval of the Engineer.

INSPECTION OF ELECTRICAL SYSTEMS

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

All cabinets, including temporary traffic signal cabinets, shall be assembled by an approved equipment supplier in 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 802.07 of the "Standard Specifications" to read:

a. Existing traffic signal installations and/or any electrical facilities at locations included in this contract may be altered or reconstructed totally or partially as part of the work on this contract. The Contractor is hereby advised that all traffic control equipment presently installed at these locations may be the property of the State of Illinois, Department of Transportation, Division of Highways, County, Private Developer, or the Municipality in which it is located. Once the Contractor has begun any work on any portion of the project, all traffic signals within the limits of this contract or those which have the pay item MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION, TEMPORARY TRAFFIC SIGNAL INSTALLATION, and/or MAINTENANCE OF EXISTING FLASHING BEACON INSTALLATION, shall become the full responsibility of the Contractor. The Contractor shall supply the Engineer and the County's Traffic Signal Maintenance Contractor a 24-hour emergency contact name and telephone number. The Contractor shall provide sufficient qualified personnel to respond to all notifications of malfunctions on a round-the-clock basis (24 hours a day, 7 days a week). The Contractor is required to keep a time and date log of 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 signalizing 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)

ITEM	RESPONSE TIME	SERVICE RESTORATION	PERMANENT REPAIRS
KNOCKDOWNS/FAILURE/DAMAGE:			
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 802.02 of the "Standard Specifications" to read:

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

TRAFFIC SIGNAL INSPECTION (TURN-ON)

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

It is LCDOT's intent to have all electric work completed and the equipment field-tested by the vendor, prior to LCDOT's "turn-on" field inspection. The Contractor must have all traffic signal work completed and the electrical service installation connected by the utility company prior to requesting an inspection and "turn-on" of the traffic signal installation. In the event the Traffic Engineer determines that the work is not complete and that the inspection will require more than two (2) hours to complete, the inspection shall be canceled and the Contractor will be required to reschedule at another date.

The Contractor may request a "turn-on" and inspection of the completed traffic signal installation at each separate location. This request must be made to the Traffic Engineer at **(847) 377-7000** a minimum of seven (7) working days prior to the time of the requested inspection. LCDOT will not grant a field inspection until the Contractor provides notification that the equipment has been field tested, and the intersection is operating according to contract requirements.

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

Upon demonstration that the signals are operating properly and that all work has been completed in accordance with the contract and to the satisfaction of the Traffic Engineer, the Traffic Engineer will then allow the signals to be placed in continuous operation. The Agency that is responsible for the maintenance of each traffic signal installation will reassume the traffic signal maintenance upon 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.

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 807 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 UNINTERRUPTIBLE 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 ±0.002, or as otherwise required by the Engineer. All labor and material required to install and maintain the Emergency Vehicle Priority system shall be incidental to the item Temporary Traffic Signal Installation.

All temporary traffic signal installations shall have approved vehicular detection and approved pedestrian push buttons installed as shown on the plans or as directed by the Engineer. Vehicular detection shall be provided by video sensors, microwave sensors, or detector loops, and shall be paid for separately. The Contractor shall install, wire, and adjust the alignment of the vehicular detection system in accordance with the manufacturer's recommendations and requirements. When directed by the Engineer, this item shall also include operational items such as: controller database changes, timing changes, activation/deactivation of phases, relocation of signal heads, relocation / reconfiguration of detectors (microwave and/or video), and bagging / unbagging signal heads. A representative of the approved control equipment vendor shall be present and assist the contractor in setting up the vehicular detection system. On temporary traffic signal installations with detector loops, 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. All coilable non-Metallic conduit used for traffic signal loop detector runs shall be included in the cost of to the price of the detector loop.

All existing street name and intersection regulatory signs shall be removed from existing poles and relocated to the temporary signal span wire. If new mast arm assemblies and posts are specified for the permanent signals, the signs shall be relocated to the new equipment at no

extra cost.

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

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

Maintenance shall meet the requirements of the "Standard Specifications" and 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, 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 802 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, uninterruptible power supplies, and any other new equipment being installed and activated.

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

Any costs associated with equipment vendor representation shall not be paid for separately, but shall be 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.

Materials.

a. General. The completed control panel shall be constructed in accordance with UL Std. 508, Industrial Control Panel, and carry the UL label. Wire terminations shall be UL listed.

b. Enclosures. All electrical service enclosures shall be UL 50, single door design, fabricated from Type 5052 H-32 aluminum. All seams shall be continuous welded and ground smooth, and the cabinet shall be sized to adequately house all required components with extra space for arrangement and termination of wiring. Enclosures shall meet the following additional requirements:

1. Pole Mounted Cabinet. The cabinet shall be NEMA Type 4X. Stainless steel screws and clamps shall secure the cover and assure a watertight seal. The cover shall be removable by pulling the continuous stainless steel hinge pin. The cabinet shall have an oil-resistant gasket and a lock kit shall be provided with an internal O-ring in the locking mechanism assuring a watertight and dust-tight seal. A minimum size of 14-inches high, 9-inches wide and 8-inches deep is required. The cabinet shall be channel mounted to a wooden utility pole using assemblies recommended by the manufacturer.

2. Ground Mounted Cabinet. The cabinet shall be NEMA Type 3R with back panel. The cabinet frame and door shall be 0.125-inch thick, the top 0.250-inch thick, and the bottom 0.500-inch thick. The door and door opening shall be double flanged. The door shall be approximately 80% of the front surface, with a full-length tamperproof stainless steel .075-inch thick hinge bolted to the cabinet with stainless steel carriage bolts and nylock nuts. The locking mechanism shall be slam-latch type with a keyhole cover. A minimum size of 40-inches high, 16-inches wide, and 15-inches deep is required. The cabinet shall be mounted upon a square Type A concrete foundation as indicated on the plans. The foundation is paid for separately.

c. Surge Protector. Overvoltage protection, with LED indicator, shall be provided for the 120-volt load circuit by the means MOV and thermal fusing technology. The response time shall be <5n seconds and operate within a range of –40C to +85C. The surge protector shall be UL 1449 Listed.

d. Circuit Breakers. Circuit breakers shall be standard UL listed molded case, thermal-magnetic bolt-on type, with trip-free indicating handles. 120-volt circuit breakers shall have an interrupting rating of not less than 65,000 rms symmetrical amperes. Unless otherwise indicated, the main disconnect circuit breaker for the traffic signal controller shall be rated 60 amperes, 120 V and the auxiliary circuit breakers shall be rated 10 amperes, 120 V.

e. Fuses, Fuseholders and Power Indicating Light. Fuses shall be small-dimensional cylindrical fuses of the dual element time-delay type. The fuses shall be rated for 600 V AC and shall have a UL listed interrupting rating of not less than 10,000 rms symmetrical amperes at rated voltage. The power indicating light shall be

LED type with a green colored lens and shall be energized when electric utility power is present.

f. Ground and Neutral Bus Bars. A single copper ground and neutral bus bar, mounted on the equipment panel shall be provided. Ground and neutral conductors shall be separated on the bus bar. Compression lugs, plus 2 spare lugs, shall be sized to accommodate the cables with the heads of the connector screws painted green for ground connections and white for neutral connections.

g. Utility Services Connection. The Contractor shall notify the Utility Company marketing representative a minimum of 30 working days prior to the anticipated date of hook-up. This 30-day advance notification will begin only after the Utility Company marketing representative has received service charge payments from the Contractor. Prior to contacting the Utility Company for service connection, the service installation controller cabinet and cable must be installed for inspection by the Utility Company.

h. Ground Rod. Ground rods shall be copper-clad steel, a minimum of 10-feet in length, and ¾-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 ¾-inch grounding conduit, ground rod, and pole mount assembly. Any changes by the utility companies shall be approved by the Engineer and paid for as an addition to the contract according to Article 109.05 of the "Standard Specifications".

GROUNDING OF TRAFFIC SIGNAL SYSTEMS

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

General. All traffic signal systems, equipment and appurtenances shall be properly grounded in strict conformance with the NEC. See "IDOT District 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 801.11.

a) The grounded conductor (neutral conductor) shall be white color-coded. This conductor shall be bonded to the equipment-grounding conductor only at the Electric Service Installation. All power cables shall include one neutral conductor of the same size.

b) The equipment-grounding conductor shall be green color-coded. The following is in addition to Article 801.14 of the "Standard Specifications".

   1) Equipment-grounding conductors shall be XLP insulated No. 6, unless otherwise noted on the plans, and bonded to the grounded conductor (neutral conductor) only at the electric service Installation. The Earth shall not be used as the equipment-grounding conductor, and no splices shall be allowed in the cable between ground rods. The equipment-grounding conductor is paid for separately.

   2) Equipment-grounding conductors shall be bonded, using a 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 (Burndy type YGHA or approved equal). The grounding compression terminal shall be secured to the bolts with stainless steel split-lock washers and nylon-insert locknuts.

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

The grounding cable shall be paid for separately.

Basis of Payment: This work shall be paid for at the contract unit price each for GROUNDING EXISTING HANDHOLE FRAME AND COVER, which shall be payment in full for grounding one handhole complete, regardless of the type of handhole or its location.

CONDUIT IN GROUND

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

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

Description. This item shall consist of furnishing and installing galvanized steel conduit, fittings and accessories in the ground, either pushed, trenched, plowed, or directionally bored, with fittings complete as specified herein and as shown on the Contract drawings.

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

Pavement, driveways, and curbs shall not be removed to install electrical conduits. All buried conduits shall be placed at a minimum depth of 30 inches, except under railroad tracks, where the minimum depth shall 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 810.05 of the "Standard Specifications" to read:

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

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

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

Concrete Foundations, Type E for Mast Arm and Combination Mast Arm Poles shall 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 for loop detection shall be included in 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 (Burndy type KC/K2C, as applicable, or approved equal), to all new and existing traffic signal mast arm poles and traffic/pedestrian signal posts, including push button posts. The grounding conductor shall be bonded to all new and existing pull boxes, handhole frames and covers and other metallic enclosures throughout the traffic signal wiring system and noted herein and detailed on the plans. Bonding to existing handhole frames and covers shall be paid for separately.

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

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

RAILROAD INTERCONNECT CABLE

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

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

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

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

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

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.

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 4C, which price shall be payment in full for furnishing the material, making all electrical connections and installing the cable complete, measured as specified herein.

ELECTRIC CABLE, NO. 18 3/C VIDEO

This work shall consist of furnishing and installing a Lake Cable 18AWG 3C 600V cable with black LLDPE jacket (Part # S800183WB(19)T) or approved equal. This cable connects an Autoscope Terra camera (Machine Vision Processor) to the Terra Interface Panel in the traffic signal cabinet.

The insulation of the individual conductors shall be color coded black, green, and white.

A HARTING Han 3 A connector, or approved equal, shall be used to connect the cable to the camera. To minimize maintenance issues, the supplier of the video detection system shall install the connector, in a controlled shop environment, on to an appropriate length of this cable. The HARTING connector shall not be installed on to the cable by the contractor.

Splices in this cable shall only be allowed at the handhole access near the base of the mast arm assembly, according to the following. Each of the three (3) individual conductors shall be butt spliced, soldered, and covered with heat-shrink tubing. Then the entire splice assembly (all three conductors) shall be covered with a minimum 6-inch piece of heavy-wall, adhesive lined, 3:1 shrink ratio shrinkable tubing.

Basis of payment. This work will be paid for at the contract unit price per foot for ELECTRIC CABLE, NO. 18 3/C VIDEO. The unit price shall include furnishing the material, installation, and making all electrical connections necessary for proper operation.

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) GE Tetra PowerGrid LED light assemblies, or approved equivalent.
- Plan & Wiring Diagrams – 12" x 16" moisture sealed container attached to door.
- The cabinet shall be equipped with a pull-out drawer/ shelf assembly.
- Detector Racks –

  Configuration #1, Half-size rack, to be used when few, if any, detector loops are required. Fully wired to support one BIU, eight channels of vehicle detection, and four channels of Emergency Vehicle Preemption (EVP).

  Configuration #2, Full-size rack, to be used when the required detector loops cannot be accommodated by the half-size rack. Fully wired to support one BIU, sixteen channels of vehicle detection, and four channels of EVP.

- Field Wiring Labels – All field wiring shall be labeled.
- Field Wiring Termination – Approved channel lugs required.
- Power Supply – Provide a nonconductive shield.
- Circuit Breaker – The signal circuit breaker shall be sized for the proposed load, but shall not be rated less than thirty (30) amps.
- Police Door – Provide wiring and termination for plug-in manual phase advance switch.
- Railroad Pre-Emption Test Switch – Eaton 8830K13 SHA 1250 or approved equivalent.
- MMU – 16 Channel, LCD display, IP addressable (ethernet) Malfunction Management Unit. The MMU shall be connected to the ethernet switch with a CAT 5 cable, and configured for proper communication.

FULL-ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL

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

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

The controller shall be the latest model available that is compatible with "*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 AND 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":

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

UNINTERRUPTIBLE POWER SUPPLY SPECIAL

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

Revise Article 1074.04(a) (1) of the Standard Specifications to read:

The UPS shall be line interactive and provide voltage regulation and power conditioning when utilizing utility power. The UPS shall be sized appropriately for the intersection's normal traffic signal operating connected load, plus 20 percent (20%). The total connected traffic signal load shall not exceed the published ratings for the UPS. The UPS shall provide a minimum of six (6) hours of normal operation run-time for signalized intersections with LED type signal head optics at 77 °F (25 °C) (minimum 700 W/VA active output capacity, with 90 percent minimum inverter efficiency).

Revise the first paragraph of Article 1074.04(a) (3) of the Standard Specifications to read:

The UPS shall have a minimum of four (4) sets of normally open (NO) and normally closed (NC) single-pole double-throw (SPDT) relay contact closures, available on a panel mounted terminal block or locking circular connectors, rated at a minimum 120 V/1 A, and labeled so as to identify

each contact according to the plans.

Revise Article 1074.04(a) (10) of the Standard Specifications to read:

The UPS shall be compatible with the 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, service receptacles, any lighted street name signs, any automated enforcement equipment and any other devices directed by the Engineer.

Revise Article 1074.04(b) (2)b of the Standard Specifications to read:

Batteries, inverter/charger and power transfer relay shall be housed in a separate NEMA Type 3R cabinet. The cabinet shall be Aluminum alloy, 5052-H32, 0.125-inch thick and have a natural mill finish.

Revise Article 1074.04(b) (2)c of the Standard Specifications to read:

No more than three batteries shall be mounted on individual shelves for a cabinet housing six batteries and no more than four batteries per shelf for a cabinet housing eight batteries.

Revise Article 1074.04(b) (2)e of the Standard Specifications to read:

The battery cabinet housing shall have the following nominal outside dimensions: a width of 25 in. (785 mm), a depth of 16 in. (440 mm), and a height of 41 to 48 in. (1.1 to 1.3 m). Clearance between shelves shall be a minimum of 10 in. (250 mm). 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 shall be male type, twist-lock, rated

as 15A, 125VAC with a NEMA L5-15P configuration and weatherproof lift cover plate (Hubbell model HBL4716C or approved equal). Access to the generator inlet shall be from a secured weatherproof lift cover plate or behind a locked battery cabinet police panel.

Battery System.

Revise Article 1074.04(d) (3) of the Standard Specifications to read:

All batteries supplied in the UPS shall be either gel cell or AGM type, deep cycle, completely sealed, prismatic lead calcium based, silver alloy, valve regulated lead acid (VRLA) requiring no maintenance. All batteries in a UPS installation shall be the same type; mixing of gel cell and AGM types within a UPS installation is not permitted.

Revise Article 1074.04(d) (4) of the Standard Specifications to read:

Batteries shall be certified by the manufacturer to operate over a temperature range of -13 to 160 °F (-25 to + 71 °C) for gel cell batteries and -40 to 140 °F (-40 to + 60 °C) for AGM type batteries.

Add the following to Article 1074.04(d) of the Standard Specifications:

(9) The UPS shall consist of an even number of batteries that are capable of maintaining normal operation of the signalized intersection for a minimum of six hours. Calculations shall be provided showing the number of batteries of the type supplied that are needed to satisfy this requirement. A minimum of four batteries shall be provided.

Add the following to the Article 1074.04 of the Standard Specifications:

(e) Warranty. The warranty for an uninterruptible power supply (UPS) shall cover a minimum of two years from date the equipment is placed in operation; however, the batteries of the UPS shall be warranted for full replacement for a minimum of five years from the date the traffic signal and UPS are placed into service.

Basis of payment. This item shall be paid for at the contract unit price, each, for furnishing and installing the UNINTERRUPTIBLE POWER SUPPLY SPECIAL. The price shall include the UPS/Inverter unit, Bypass Switch, Batteries, Cabinet, wiring harnesses, 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 4K.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 ± 0.002 hz, or as otherwise required by the Traffic Engineer, and provide compatible operation with other light systems currently being operated in the County.

Basis of Payment. The work shall be paid for at the contract unit price each for furnishing and installing LIGHT DETECTOR and LIGHT DETECTOR AMPLIFIER. Furnishing and installing the confirmation beacon shall be included in the cost of the Light Detector. The light detector amplifier shall be paid for on a basis of (1) one each per intersection controller and shall provide operation for all movements required in the pre-emption phase sequence.

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.

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":

Ornamental 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. Cast aluminum base covers shall be powder-coated black by the supplier/manufacturer, as described below.

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

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.

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

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

Pedestrian pushbutton stations shall be mounted to ornamental mast arm bases according to the following: The top and bottom of the station shall be secured by drilling, tapping, and installing a 3/8-inch stainless steel threaded bolt, lock washer, and hex nut. Do not use self-tapping screws. 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 "cobra head" style, powder-coated black by the supplier/manufacturer, minimum mounting height shall be forty-five (45) feet, and shall be paid for separately.

All (Special) steel mast arm assemblies and poles (including combination mast arm assemblies) shall be manufactured and/or supplied by Sternberg Vintage Lighting, 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:

- Lake County AC1 base cover (Valmont)

TRAFFIC SIGNAL POST

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

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

TRAFFIC SIGNAL POST (SPECIAL)

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

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

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

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.

Pedestrian pushbutton stations shall be mounted to ornamental signal posts according to the following: The top and bottom of the station shall be secured by drilling, tapping, and installing a 3/8-inch stainless steel threaded bolt. Do not use self-tapping screws. 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 ornamental 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 ornamental 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) ornamental base (Beacon)
- Hamilton Series (5400D) ornamental 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 BDLL2-Y with Latching Push Button Control Unit (LPBCU), or approved equivalent.

The pedestrian station shall be a Campbell Company 912H Station, or approved equivalent.

The station shall be installed with a 9inch by 12-inch Campbell Company vandal resistant sign, according to the following: Where pedestrian signal heads are used, pedestrian signs shall provide the "Push Button for" legend, with the Walking Man symbol and arrow (R10-3). 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.

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

Basis of Payment. This work shall be paid for at the contract unit price each for PEDESTRIAN

PUSH BUTTON. The unit price shall include furnishing and installing the pedestrian station, push button, sign, and all necessary equipment and connections for proper operations. Electric cable in conduit shall be paid for separately.

ILLUMINATED SIGN, LED

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

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

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

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

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

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

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

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

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

LED INTERNALLY ILLUMINATED STREET NAME SIGN

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

The sign shall be manufactured by Traffic Signs, Inc., standard model, with a Sylvania LED Light Engine, or approved equivalent.

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

Street name signs shall have double-sided message, with the following exception: At locations where one side of a particular sign will not be visible to vehicular traffic, such as a "T" intersection, that sign shall be single-sided. The street name/legend and border shall be as shown on the plans. The font shall be ClearviewHwy 5-W.

Both sides of each sign shall have legend and border made of 3M/Scotchlite Series 4090T translucent white diamond grade sheeting (DG^3T), overlaid by 3M/Scotchlite Series 1177 transparent green, electronically cutable film, or approved equivalent.

The sign shall be mounted on the mast arm three feet to the right of the furthest right signal head, as viewed by the approaching traffic.

Each sign shall be activated by a photocell mounted/installed on the side of the sign frame.

The Manufacturer/Vendor shall supply shop drawings of the fixtures, sign, sign message and mounting hardware for approval. All hardware used to install the sign shall be in accordance with the manufacturer's recommendations.

Basis of Payment. This work will be paid for at the contract unit price each for furnishing and installing LED INTERNALLY ILLUMINATED STREET NAME SIGN, of the size specified, complete in place, including photocell and all related hardware, wiring, and connections required for proper operations. 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^3 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 heads shall be positioned according to the IDOT District 1 "Standard Traffic Signal Design Details".

SIGNAL HEAD, LIGHT EMITTING DIODE (LED)
This work shall consist of furnishing and installing a traffic signal head or pedestrian signal head with light emitting diodes (LED) of the type specified in the plan or retrofitting an existing traffic signal head with a traffic signal module or pedestrian signal module with LEDs as specified in the plans.

LED signal heads (All Face and Section Quantities), (All Mounting Types) shall conform fully to the requirements of Sections 880 and 881 and Articles 1078.01 and 1078.02 of the ""Standard Specifications" for Road and Bridge Construction," and amended herein:

The LED signal modules shall be replaced or repaired if an LED signal module fails to function as intended due to workmanship or material defects within the first 60 months from the date of delivery. LED signal modules which exhibit luminous intensities less than the minimum values specified in Table 1 of the ITE Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Circular Signal Supplement (VTCSH) or show signs of entrance of moisture or contaminants within the first 60 months of the date of delivery shall be replaced or repaired. The manufacturer's written warranty for the LED signal modules shall be dated, signed by an Officer

of the company and included in the product submittal to the County.

The lens of the module shall be tinted with a wavelength-matched color to reduce sun phantom effect and enhance on/off contrast. The tinting shall be uniform across the lens face, and shall not affect chromaticity.

Each module shall have a symbol of the type of module (i.e. circle, arrow, etc.) in the color of the module. The symbol shall be 1 inch in diameter. Additionally, the color shall be written out in ½-inch letters next to the symbol.

The LEDs utilized in the modules shall be AlInGaP technology for red, yellow, Portland orange (pedestrian) and white (pedestrian) indications, and GaN for green indications, and shall be the ultra bright type rated for 100,000 hours of continuous operation from -40°C to +74°C. Maximum power consumption for LED modules is per Table 1.

Retrofit Traffic Signal Module:
All other specifications apply unless specifically superseded in this section.

1. Each Retrofit module (12-inch circular or 12-inch arrow indications) shall be designed to be installed in the doorframe of a standard traffic signal housing. The Retrofit module shall be sealed in the doorframe with a one-piece EPDM (ethylene propylene rubber) gasket.
2. The lens of the Retrofit module shall be integral to the unit, shall be convex with a smooth outer surface and made of plastic or of glass.
3. Each Retrofit module shall be a sealed unit to include all parts necessary for operation (a printed circuit board, power supply, a lens and gasket, etc.), and shall be weatherproof after installation and connection.

12-Inch Arrow Module:
All other specifications apply unless specifically superseded in this section.

1. The arrow module shall meet specifications stated in Section 9.01 of the Equipment and Material Standards of the Institute of Transportation Engineers, Chapter 2 (Vehicle Traffic Control Signal Heads) for arrow indications.
2. The LEDs arrow indication shall be a solid display with a minimum of three (3) outlining rows of LEDs and at least one (1) fill row of LEDs.

12-inch Programmed Visibility (PV) Module:
All other specifications apply unless specifically superseded in this section.

1. The module shall be designed and constructed to be installed in a PV signal housing without modification to the housing.
2. The LEDs shall be spread evenly across the module

12-inch Pedestrian Module:
All other specifications apply unless specifically superseded in this section.

1. Each pedestrian signal LED module shall provide the ability to actuate the solid upraised hand and the solid walking person on one 12-inch section.
2. Two (2) pedestrian sections shall be installed. The top section shall be wired to illuminate only the upraised hand and the bottom section shall be the walking man.
3. "Egg Crate" type sun shields are not permitted. All figures must be a minimum of 9 inches in height and easily identified from a distance of 120-feet.

4. All pedestrian signals at an intersection shall be the same type and have the same display. No mixing of multiple types of pedestrian traffic signals will be permitted.

Basis of Payment. This item shall be paid for at the contract unit price each for SIGNAL HEAD, LED, of the type specified, or PEDESTRIAN SIGNAL HEAD, LED, of the type specified, which price shall be payment in full for furnishing the equipment described above including signal head, LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition.

When installed in an existing signal head, this item shall be paid for at the contract unit price each for SIGNAL HEAD, LED of the type specified, RETROFIT, or PEDESTRIAN SIGNAL HEAD, LED, of the type specified, RETROFIT, which price shall be payment in full for furnishing the equipment described above including LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition.

The type specified will indicate the number of signal faces, the number of signal sections, and the method of mounting.

Table 1 Maximum Power Consumption (in Watts)

	Red		Yellow		Green	
Temperature	25°C	74°C	25°C	74°C	25°C	74°C
12 inch (300 mm) circular	11	17	22	25	15	15
12 inch (300 mm) arrow	9	12	10	12	11	11
	Hand–Portland Orange		Person-White			
Pedestrian Indication	6.2		6.3			

Table 2 Minimum Initial & Maintained Intensities for Arrow and Pedestrian Indications (in cd/m^2)

	Red	Yellow	Green
Arrow Indication	5,500	11,000	11,000

PEDESTRIAN COUNTDOWN SIGNAL HEAD, LIGHT EMITTING DIODE (LED)

This work shall consist of furnishing and installing a pedestrian countdown signal head, with light emitting diodes (LED) of the type specified in the plan or retrofitting an existing pedestrian traffic signal head with a pedestrian countdown signal module with LEDs as specified in the plan.

PEDESTRIAN COUNTDOWN SIGNAL HEAD, LIGHT EMITTING DIODE, shall conform fully to the SIGNAL HEAD, LIGHT EMITTING DIODE specification, with the following modifications:

Pedestrian Countdown Signal Heads, including Retrofit type, shall not be used at signalized intersections where traffic signals and railroad warning devices are interconnected.

Pedestrian Countdown Signal Heads, including Retrofit type, shall measure 12 inches x 12 inches, with 9-inch high countdown numerals, and form the time display utilizing two rows of LEDs.

Pedestrian Countdown Signal Heads shall consist of two (2) 12-inch by 12-inch modules aligned vertically. The top module of the unit shall be an LED message-bearing surface supplied with overlapping full "HAND" and full "MAN" symbols that comply with the ITE Pedestrian Traffic Control Signal Indications (PTCSI) standard for these symbols. The bottom module of the unit shall house a LED countdown traffic signal consisting of a two digit numerical display ("00" to "99") a minimum of nine (9) inches in height. The counter shall begin countdown at the beginning of the pedestrian clearance interval as the pictogram of the hand starts flashing. The counter shall execute a countdown of the time, in seconds, of the pedestrian clearance interval synchronized with the controller and ending at (0) at the expiration of the clearance interval. The counter shall be blank at all other times.

Retrofit Pedestrian Countdown Signal Module:

The Retrofit module shall be applicable where two (2) LED pedestrian signal sections exist, each with the Upraised Hand and Walking Person overlaid with the top section wired to illuminate only the Upraised Hand and the bottom section wired to illuminate only the Walking Person. The top section shall be re-wired to provide illumination of either of the displays, depending on the interval or phase. The contractor shall remove the existing bottom pedestrian overlay module and install a new countdown module.

Basis of Payment. This item shall be paid for at the contract unit price each for PEDESTRIAN COUNTDOWN SIGNAL HEAD, LED, of the type specified, which shall be payment in full for furnishing the equipment described above including LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition. The type specified will indicate the number of faces and the method of mounting.

When installed in an existing signal head, this item shall be paid for at the contract unit price each for PEDESTRAIN COUNTDOWN SIGNAL HEAD, LED, and RETROFIT, which price shall be payment in full for furnishing the equipment described above including LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition.

TRAFFIC SIGNAL BACKPLATE, LOUVERED, ALUMINUM

Replace the first sentence of Article 1078.03 of the "Standard Specifications" with "All backplates shall be aluminum" and louvered".

VIDEO DETECTION SYSTEM

This specification sets forth the minimum requirements for a system that monitors vehicles on a roadway via processing of video images and provides detector outputs to a traffic controller or similar device. This work shall consist of furnishing and installing an Autoscope Terra or approved equal video vehicle detection system at one signalized intersection. This item includes the Machine Vision Processor (MVP) sensors, a Terra Interface Panel (TIP), a Terra

Access Point (TAP), and all necessary hardware, cable and accessories necessary to complete the installation in accordance with the manufacturer's specifications. The system shall also include a LCD monitor with BNC connector for video input.

The Autoscope Machine Vision Processor (MVP) is normally installed on top of the luminaire arm. However, occasionally overhead utility wires obstruct the camera's field of view and prevent proper detector placement. When this occurs, the camera shall be installed on a J-hook below the luminaire arm, instead of the normal mounting bracket. The cost of the J-hook shall be included in the cost of this item.

To protect the video detection cameras from electrical surges, the Terra Interface Panel chassis shall be connected to the cabinet ground rod with a #10 1/C green wire.

In order for the Traffic Engineer to manipulate detection zones and view the video signal over a high- speed connection, the VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION) must be connected to either the LCDOT Gigabit Ethernet network or a VIDEO TRANSMISSION SYSTEM.

If the VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION) is being connected to the Gigabit Ethernet network, then a LAYER II (DATA LINK) SWITCH and/or a LAYER III (NETWORK) SWITCH will be required. Layer II and Layer III switches shall be installed according to the plans, and shall be paid for separately.

If the VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION) is being connected to a new or existing VIDEO TRANSMISSION SYSTEM, then fiber-optic video/data transmitters and receivers may be required. Fiber-optic video/data transmitters and receivers are necessary whenever the VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION) and the VIDEO TRANSMISSION SYSTEM are installed at separate signalized intersections. When required, fiber-optic video/data transmitters and receivers shall be installed according to the plans, and shall be included in the cost of this item. The VIDEO TRANSMISSION SYSTEM shall be paid for separately.

Basis of Payment. This item will be paid for at the contract unit price each for VIDEO DETECTION SYSTEM which price shall be payment in full for furnishing all associated equipment required, installing the system at one signalized intersection, and placing the system in operation to the satisfaction of the Engineer.

REMOTE-CONTROLLED VIDEO SYSTEM

This pay item shall include providing and installing a remote-controlled video system at a location designated by the Engineer. The remote-controlled video system shall be a PELCO Spectra IV SE Series Discreet Dome System or approved equal. This pay item shall include a color camera (minimum 35x optical zoom), dome assembly, all mounting hardware, connectors, cables, and related equipment necessary to complete the installation in accordance with the manufacturer's specifications.

The 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.

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.

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 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

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

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

Both ends of each section of fiber optic cable being installed shall be spliced or terminated with approved mechanical connectors as indicated on the plans. 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 all fiber splices shall be verified by testing and documentation in accordance with

Article 802.08(b) of the "Standard Specifications", to the satisfaction of the Engineer.

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

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

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

Basis of Payment. The work shall be paid for at the contract unit price per foot for FIBER OPTIC CABLE IN CONDUIT, NO. 62.5/125, 24 FIBER (12 MULTIMODE AND 12 SINGLEMODE), (FIBER OPTIC CABLE IN CONDUIT, 24 SINGLEMODE) or as specified in plans for the cable in place, including distribution enclosure(s), all connectors, pigtails, splice trays, connector bulkheads, 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) pigtails fusion spliced to bare fibers. All fusion splices shall be secured on Corning splice trays, Models M67-068, M67-110, or approved equivalent, capable of accommodating the required number of fusion splices. Splice trays and connector bulkheads shall be 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 802.08(b) of the "Standard Specifications", to the satisfaction of the Engineer.

Basis of payment. This work shall be paid for at the contract unit price each for each fiber terminated in a field cabinet or inside a building as TERMINATE FIBER IN CABINET, which will be payment in full for terminating each required multimode or singlemode fiber, including all

connectors, 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 802.08(b) of the "Standard Specifications", to the satisfaction of the Engineer.
All optical fibers shall be spliced to provide continuous runs. Splices shall 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.

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.

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.

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.

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.

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.

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.
Basis of payment. This item will be paid for at the contract unit price each for RELOCATE EXISTING VIDEO DETECTION SYSTEM (COMPLETE INTERSECTION), which price shall be payment in full for disconnecting the existing video detection system, remote-controlled video system, packaging/storing it, transporting it, and relocating it to the new location complete and operating to the satisfaction of the Engineer.

RELOCATE EXISTING REMOTE-CONTROLLED VIDEO SYSTEM

This work shall consist of the removal, storage, and relocation of an existing remote-controlled video system from one traffic signal installation (temporary or permanent) to another traffic signal installation (temporary or permanent). This pay item shall be used when only the remote-controlled video system is being relocated. This pay item shall not be used when the remote-controlled video system is being relocated as part of RELOCATE EXISTING VIDEO DETECTION SYSTEM (COMPLETE INTERSECTION).

The remote-controlled video system shall be removed and relocated as shown in the plans. Any damage sustained to the remote-controlled video system during removal, storage, transport, and/or reinstallation operations shall be repaired or replaced in kind to the satisfaction of the Engineer at the Contractor's expense.

Basis of payment. This item will be paid for at the contract unit price each for RELOCATE EXISTING REMOTE-CONTROLLED VIDEO SYSTEM, which price shall be payment in full for disconnecting the existing remote-controlled video system, packaging/storing it, transporting it, and relocating it to the new location complete and operating to the satisfaction of the Engineer.

RELOCATE EXISTING SWITCH (SPECIAL)

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 (SPECIAL), 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 TIMINGS

Description. This work shall consist of developing and maintaining appropriate traffic signal timings for the specified intersection for the duration of the temporary signalized condition, as well as impact to existing traffic signal timings caused by detours or other temporary conditions.

All timings and adjustments necessary for this work shall be performed by an approved Consultant who has previous experience in optimizing Closed Loop Traffic signal Systems for District 1 of the Illinois Department of Transportation. The Contractor shall contact the Traffic Signal Engineer at (847) 377-7000 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-turning 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 Traffic Signal Engineer.

Basis of Payment. The work shall be paid for at the contract unit price each for TEMPORARY TRAFFIC SIGNAL TIMINGS, which price shall be payment in full for performing all work described herein per intersection. When the temporary traffic signal installation is turned on and/or detour implemented, 50 percent of the bid price will be paid. The remaining 50 percent of the bid price will be paid following the removal of the temporary traffic signal installation and/or detour.

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.

A listing of existing signal equipment, interconnect information, phasing data, and timing patterns may be obtained from the County, if available and as appropriate. 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.

A listing of existing signal equipment, interconnect information, phasing data, and timing patterns may be obtained from the County, if available and as appropriate. 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:

Cover Page in color showing a System Map
Figures 1. System overview map – showing system number, system schematic map with numbered system detectors, oversaturated movements, master location, system phone number, cycle lengths, and date of completion. 2. General location map in color – showing signal system location in the metropolitan area. 3. Detail system location map in color – showing cross street names and local controller addresses. 4. Controller sequence – showing controller phase sequence diagrams.
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Tab 1: Final Report 1. Project Overview 2. System and Location Description (Project specific) 3. Methodology 4. Data Collection 5. Data Analysis and Timing Plan Development 6. Implementation a. Traffic Responsive Programming (Table of TRP vs. TOD Operation) 7. Evaluation a. Speed and Delay runs
Tab 2. Turning Movement Counts 1. Turning Movement Counts (Showing turning movement counts in the intersection diagram for each period, including truck percentage)
Tab 3. Synchro Analysis 1. AM: Time-Space diagram in color, followed by intersection Synchro report (Timing report) summarizing the implemented timings. 2. Midday: same as AM 3. PM: same as AM
Tab 4: Speed and Delay Studies 1. Summary of before and after runs results in two (2) tables showing travel time and delay time. 2. Plot of the before and after runs diagram for each direction and time period.
Tab 5: Electronic Files 1. Two (2) CDs for the optimized system. The CDs shall include the following elements: a. Electronic copy of the SCAT Report in PDF format b. Copies of the Synchro files for the optimized system c. Traffic counts for the optimized system

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.

TRAFFIC SIGNAL SPECIFICATIONS
Effective: May 22, 2002
Revised: January 1, 2012

These Traffic Signal Special Provisions and the "District One Standard Traffic Signal Design Details" supplement the requirements of the State of Illinois "Standard Specifications for Road and Bridge Construction." The intent of these Special Provisions is to prescribe the materials and construction methods commonly used for traffic signal installations. All material furnished shall be new. The locations and the details of all installations shall be as indicated on the Plans or as directed by the Engineer. Traffic signal construction and maintenance work shall be performed by personnel holding IMSA Traffic Signal Technician Level II certification. The work to be done under this contract consists of furnishing and installing all traffic signal work as specified in the Plans and as specified herein in a manner acceptable and approved by the Engineer.

SECTION 720 SIGNING

MAST ARM SIGN PANELS

Add the following to Article 720.02 of the Standard Specifications:

Signs attached to poles or posts (such as mast arm signs) shall have mounting brackets and sign channels which are equal to and completely interchangeable with those used by the District Sign Shops. Signfix Aluminum Channel Framing System is currently recommended, but other brands of mounting hardware are acceptable based upon the Department's approval.

DIVISION 800 ELECTRICAL

SUBMITTALS.

Revise Article 801.05 of the Standard Specifications to read:

All material approval requests shall be submitted in accordance with the District's current Electrical Product Data and Documentation Submittal Guidelines. General requirements include:

1. Material approval requests shall be made at the preconstruction meeting, including major traffic signal items listed in the table in Article 801.05. Material or equipment which is similar or identical shall be the product of the same manufacturer, unless necessary for system continuity. Traffic signal materials and equipment shall bear the U.L. label whenever such labeling is available.
2. Product data and shop drawings shall be assembled by pay item and separated from of other pay item submittals. Only the top sheet of each pay item submittal will be stamped by the Department with the review status,

except shop drawings for mast arm pole assemblies and the like will be stamped with the review status on each sheet.

3. Partial or incomplete submittals will be returned without review.
4. Certain non-standard mast arm poles and structures will require additional review from IDOT's Central Office. Examples include ornamental/decorative and non-standard length mast arm pole assemblies. The Contractor shall account for the additional review time in his schedule.
5. 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.
6. 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.
7. After the Engineer reviews the submittals for conformance with the design concept of the project, the Engineer will stamp the drawings indicating their status as 'Approved', 'Approved-As-Noted', 'Disapproved', or 'Incomplete'. Since the Engineer's review is for conformance with the design concept only, it is the Contractor's responsibility to coordinate the various items into a working system as specified. The Contractor shall not be relieved from responsibility for errors or omissions in the shop, working, layout drawings, or other documents by the Department's approval thereof. The Contractor must still be in full compliance with contract and specification requirements.
8. All submitted items reviewed and marked 'APPROVED AS NOTED', 'DISAPPROVED', or 'INCOMPLETE' are to be resubmitted in their entirety, unless otherwise indicated within the submittal comments, with a disposition of previous comments to verify contract compliance at no additional cost to the contract.
9. Exceptions to and deviations from the requirements of the Contract Documents will not be allowed. It is the Contractor's responsibility to note any deviations from Contract requirements at the time of submittal and to make any requests for deviations in writing to the Engineer. In general, substitutions will not be acceptable. Requests for substitutions must demonstrate that the proposed substitution is superior to the material or equipment required by the Contract Documents. No exceptions, deviations or substitutions will be permitted without the approval of the Engineer.

INSPECTION OF ELECTRICAL SYSTEMS.

Add the following to Article 801.10 of the Standard Specifications:

(c) All cabinets including temporary traffic signal cabinets shall be assembled by an approved equipment supplier in District One. The Department reserves the right to request any controller and cabinet to be tested at the equipment supplier facilities prior to field installation, at no extra cost to this contract.

MAINTENANCE AND RESPONSIBILITY.

Revise Article 801.11 of the Standard Specifications to read:

a. Existing traffic signal installations and/or any electrical facilities at all or various locations may be altered or reconstructed totally or partially as part of the work on this Contract. The Contractor is hereby advised that all traffic control equipment, presently installed at these locations, may be the property of the State of Illinois, Department of Transportation, Division of Highways, County, Private Developer, or the Municipality in which they are located. Once the Contractor has begun any work on any portion of the project, all traffic signals within the limits of this contract or those which have the item "Maintenance of Existing Traffic Signal Installation," "Temporary Traffic Signal Installation(s)" and/or "Maintenance of Existing Flashing Beacon Installation," shall become the full responsibility of the Contractor. Automatic Traffic Enforcement equipment is not owned by the State and the Contractor shall not be responsible for maintaining it during construction. The Contractor shall supply the Engineer, Area Traffic Signal Maintenance and Operations Engineer, IDOT ComCenter and the Department's Electrical Maintenance Contractor with two 24-hour emergency contact names and telephone numbers.

b. When the project has a pay item for "Maintenance of Existing Traffic Signal Installation," "Temporary Traffic Signal Installation(s)" and/or "Maintenance of Existing Flashing Beacon Installation," the Contractor must notify both the Area Traffic Signal Maintenance and Operations Engineer at (847) 705-4424 and the Department's Electrical Maintenance Contractor, of their intent to begin any physical construction work on the Contract or any portion thereof. This notification must be made a minimum of seven (7) working days prior to the start of construction to allow sufficient time for inspection of the existing traffic signal installation(s) and transfer of maintenance to the Contractor. If work is started prior to an inspection, maintenance of the traffic signal installation(s) will be transferred to the Contractor without an inspection. The Contractor will become responsible for repairing or replacing all equipment that is not operating properly or is damaged at no cost to the owner of the traffic signal. Final repairs or replacement of damaged equipment must meet the approval of the Engineer prior to or at the time of final inspection otherwise the traffic signal installation will not be accepted.

c. Contracts such as pavement grinding or patching which result in the destruction of traffic signal loops do not require maintenance transfer, but require a notification of intent to work and an inspection. A minimum of seven (7) working days prior to the loop removal, the Contractor shall notify the Area Traffic Signal Maintenance and Operations Engineer at (847) 705-4424 and the Department's Electrical Maintenance Contractor, at which time arrangements will be made to

adjust the traffic controller timing to compensate for the absence of detection. Damaged Automatic Traffic Enforcement equipment, including cameras, detectors, or other peripheral equipment, shall be replaced by others, per Permit agreement, at no cost to the contract. See additional requirements in these specifications under Inductive Loop Detector.

d. The Contractor is advised that the existing and/or temporary traffic signal installation must remain in operation during all construction stages, except for the most essential down time. Any shutdown of the traffic signal installation, which exceeds fifteen (15) minutes, must have prior approval of the Engineer. Approval to shutdown the traffic signal installation will only be granted during the period extending from 10:00 a.m. to 3:00 p.m. on weekdays. Shutdowns shall not be allowed during inclement weather or holiday periods.

e. The Contractor shall be fully responsible for the safe and efficient operation of the traffic signals. Any inquiry, complaint or request by the Department, the Department's Electrical Maintenance Contractor or the public, shall be investigated and repairs begun within one hour. Failure to provide this service will result in liquidated damages of $500 per day per occurrence. In addition, the Department reserves the right to assign any work not completed within this timeframe to the Electrical Maintenance Contractor. All costs associated to repair this uncompleted work shall be the responsibility of the Contractor. Failure to pay these costs to the Electrical Maintenance Contractor within one month after the incident will result in additional liquidated damages of $500 per month per occurrence. Unpaid bills will be deducted from the cost of the Contract. The District's Electrical Maintenance Contractor may inspect any signalizing device on the Department's highway system at any time without notification.

f. Any proposed activity in the vicinity of a highway-rail grade crossing must adhere to the guidelines set forth in the current edition of the Manual on Uniform Traffic Control Devices (MUTCD) regarding work in temporary traffic control zones in the vicinity of highway-rail grade crossings which states that lane restrictions, flagging, or other operations shall not create conditions where vehicles can be queued across the railroad tracks. If the queuing of vehicles across the tracks cannot be avoided, a uniformed law enforcement officer or flagger shall be provided at the crossing to prevent vehicles from stopping on the tracks, even if automatic warning devices are in place.

DAMAGE TO TRAFFIC SIGNAL SYSTEM.

Add the following to Article 801.12(b) of the Standard Specifications to read:

Any traffic signal control equipment damaged or not operating properly from any cause whatsoever shall be replaced with new equipment meeting current District One traffic signal specifications and provided by the Contractor at no additional cost to the Contract and/or owner

of the traffic signal system, all as approved by the Engineer. Final replacement of damaged equipment must meet the approval of the Engineer prior to or at the time of final inspection otherwise the traffic signal installation will not be accepted. Cable splices outside the controller cabinet shall not be allowed.

Automatic Traffic Enforcement equipment, such as Red Light Enforcement cameras, detectors, and peripheral equipment, damaged or not operating properly from any cause whatsoever, shall be the responsibility of the municipality or the Automatic Traffic Enforcement company per Permit agreement.

TRAFFIC SIGNAL INSPECTION (TURN-ON).

Revise Article 801.15(b) of the Standard Specifications to read:

It is the intent to have all electric work completed and equipment field tested by the vendor prior to the Department's "turn-on" field inspection. If in the event the Engineer determines work is not complete and the inspection will require more than two (2) hours to complete, the inspection shall be canceled and the Contractor will be required to reschedule at another date. The maintenance of the traffic signals will not be accepted until all punch list work is corrected and re-inspected.

When the road is open to traffic, except as otherwise provided in Section 850 of the Standard Specifications, the Contractor may request a turn-on and inspection of the completed traffic signal installation at each separate location. This request must be made to the Area Traffic Signal Maintenance and Operations Engineer at (847) 705-4424 a minimum of seven (7) working days prior to the time of the requested inspection. The Department will not grant a field inspection until notification is provided from the Contractor that the equipment has been field tested and the intersection is operating according to Contract requirements. The Department's facsimile number is (847) 705-4089. The Contractor must invite local fire department personnel to the turn-on when Emergency Vehicle Preemption (EVP) is included in the project. When the contract includes the item RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM, OPTIMIZE TRAFFIC SIGNAL SYSTEM, or TEMPORARY TRAFFIC SIGNAL TIMINGS, the Contractor must notify the SCAT Consultant of the turn-on/detour implementation schedule, as well as stage changes and phase changes during construction.

The Contractor must have all traffic signal work completed and the electrical service installation connected by the utility company prior to requesting an inspection and turn-on of the traffic signal installation. The Contractor shall be responsible to provide a police officer to direct traffic at the time of testing.

The Contractor shall provide a representative from the control equipment vendor's office to attend the traffic signal inspection for both permanent and temporary traffic signal turn-ons. Upon demonstration that the signals are operating and all work is completed in accordance with the Contract and to the satisfaction of the Engineer, the Engineer will then allow the signals to be placed in continuous operation. The Agency that is responsible for the maintenance of each

traffic signal installation will assume the maintenance upon successful completion of this inspection.

The District requires the following from the Contractor at traffic signal turn-ons.

1. One set of signal plans of record with field revisions marked in red ink.
2. Written notification from the Contractor and the equipment vendor of satisfactory field testing.
3. A knowledgeable representative of the controller equipment supplier shall be required at the traffic signal turn-on. The representative shall be knowledgeable of the cabinet design and controller functions.
4. A copy of the approved material letter.
5. One (1) copy of the operation and service manuals of the signal controller and associated control equipment.
6. Five (5) copies 11" x 17" (280 mm X 430 mm) of the cabinet wiring diagrams.
7. The controller manufacturer shall supply a printed form, not to exceed 11" x 17" (280 mm X 430 mm) for recording the traffic signal controller's timings; backup timings; coordination splits, offsets, and cycles; TBC Time of Day, Week and Year Programs; Traffic Responsive Program, Detector Phase Assignment, Type and Detector Switching; and any other functions programmable from the keyboard. The form shall include a location, date, manufacturer's name, controller model and software version. The form shall be approved by the Engineer and a minimum of three (3) copies must be furnished at each turn-on. The manufacturer must provide all programming information used within the controller at the time of turn-on.
8. All manufacturer and contractor warrantees and guarantees required by Article 801.14.

Acceptance of the traffic signal equipment by the Department shall be based upon inspection results at the traffic signal "turn on." If approved, traffic signal acceptance shall be verbal at the "turn on" inspection followed by written correspondence from the Engineer. The Contractor shall be responsible for all traffic signal equipment and associated maintenance thereof until Departmental acceptance is granted.

All equipment and/or parts to keep the traffic signal installation operating shall be furnished by the Contractor. No spare traffic signal equipment is available from the Department.

All punch list work shall be completed within two (2) weeks after the final inspection. The Contractor shall notify the Electrical Maintenance Contractor to inspect all punch list work. Failure to meet these time constraints shall result in liquidated damage charges of $500 per month per incident.

All cost of work and materials required to comply with the above requirements shall be included in the pay item bid prices, under which the subject materials and signal equipment are paid, and no additional compensation will be allowed. Materials and signal equipment not complying with the above requirements shall be subject to removal and disposal at the Contractor's expense.

RECORD DRAWINGS

The requirements listed for Electrical Installation shall apply for Traffic Signal Installations in Article 801.16. Revise the 2nd paragraph of Article 801.16 of the Standard Specifications to read:

a. "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.

b. In addition to the record drawings, copies of the final catalog cuts which have been Approved or Approved as Noted shall be submitted in PDF format along with the record drawings. The PDF files shall clearly indicate the pay item either by filename or PDF Table of Contents referencing the respective pay item number for multi-item PDF files. Specific part or model numbers of items which have been selected shall be clearly visible."

c. Additional requirements are listed in the District's Electrical Product Data and Documentation Guidelines.

Add the following to Article 801.16 of the Standard Specifications:

"In addition to the specified record drawings, the Contactor shall record GPS coordinates of the following traffic signal components being installed, modified or being affected in other ways by this contract:

- All Mast Arm Poles and Posts
- Handholes
- Conduit roadway crossings
- Controller Cabinets
- Communication Cabinets
- Electric Service Disconnect locations
- CCTV Camera installations
- Fiber Optic Splice Locations

Datum to be used shall be North American 1983.

Data shall be provided electronically and in print form. The electronic format shall be compatible with MS Excel. Latitude and Longitude shall be in decimal

degrees with a minimum of 6 decimal places. Each coordinate shall have the following information:

1. Description of item
2. Designation or approximate station if the item is undesignated
3. Latitude
4. Longitude

Examples:

Description	Designation	Latitude	Longitude
Mast Arm Pole Assembly (dual, combo, etc)	MP (SW, NW, SE or NE corner)	41.580493	-87.793378
FO mainline splice handhole	HHL-ST31	41.558532	-87.792571
Handhole	HH	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
PTZ Camera	PTZ	41.584600	-87.793432
Signal Post	Post	41.558532	-87.792571
Controller Cabinet	CC	41.651848	-87.762053
Master Controller Cabinet	MCC	41.580493	-87.793378
Communication Cabinet	ComC	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."

Delete the last sentence of the 3rd paragraph of Article 801.16.

LOCATING UNDERGROUND FACILITIES.

Revise Section 803 to the Standard Specifications to read:

If this Contract requires the services of an Electrical Contractor, the Contractor shall be responsible at his/her own expense for locating existing IDOT electrical facilities prior to performing any work. If this Contract does not require the services of an Electrical Contractor, the Contractor may request one free locate for existing IDOT electrical facilities from the District One Electrical Maintenance Contractor prior to the start of any work. Additional requests may be at the expense of the Contractor. The location of underground traffic facilities does not relieve the Contractor of their responsibility to repair any facilities damaged during construction at their expense.

The exact location of all utilities shall be field verified by the Contractor before the installation of any components of the traffic signal system. For locations of utilities, locally owned equipment, and leased enforcement camera system facilities, the local Counties or Municipalities may need to be contacted: in the City of Chicago contact Digger at (312) 744-7000 and for all other locations contact J.U.L.I.E. at 1-800-892-0123 or 811.

RESTORATION OF WORK AREA.

Add the following article to Section 801 of the Standard Specifications:

801.17 Restoration of work area. Restoration of the traffic signal work area shall be included in the related pay items such as foundation, conduit, handhole, trench and backfill, underground raceways, etc. All roadway surfaces such as shoulders, medians, sidewalks, pavement, etc. shall be replaced in kind. All damage to mowed lawns shall be replaced with an approved sod, and all damage to unmowed fields shall be seeded. All brick pavers disturbed in the work area shall be restored to their original configuration as directed by the Engineer. All damaged brick pavers shall be replaced with a comparable material approved by the Engineer. Restoration of the work area shall be included in the contract without any extra compensation allowed to the Contractor.

ELECTRIC SERVICE INSTALLATION.

Revise Section 805 of the Standard Specifications to read:

Description.

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

General.

The electric service installation shall be the electric service disconnecting means and it shall be identified as suitable for use as service equipment.

The electric utility contact information is noted on the plans and represents the current information at the time of contract preparation. The Contractor must request in writing for service and/or service modification within 10 days of contract award and must follow-up with the

electric utility to assure all necessary documents and payment are received by the utility. The Contractor shall forward copies of all correspondence between the contractor and utility company to the Engineer and Area Traffic Signal Maintenance and Operations Engineer. The service agreement and sketch shall be submitted for signature to the IDOT's Traffic Operations Programs Engineer.

Materials.

a. General. The completed control panel shall be constructed in accordance with UL Std. 508A, Industrial Control Panel, and carry the UL label. Wire terminations shall be UL listed.

b. Enclosures.

1. Pole Mounted Cabinet. The cabinet shall be UL 50, NEMA Type 4X, unfinished single door design, fabricated from minimum 0.080-inch (2.03 mm) thick Type 5052 H-32 aluminum. Seams shall be continuous welded and ground smooth. Stainless steel screws and clamps shall secure the cover and assure a watertight seal. The cover shall be removable by pulling the continuous stainless steel hinge pin. The cabinet shall have an oil-resistant gasket and a lock kit shall be provided with an internal O-ring in the locking mechanism assuring a watertight and dust-tight seal. The cabinet shall be sized to adequately house all required components with extra space for arrangement and termination of wiring. A minimum size of 14-inches (350 mm) high, 9-inches (225 mm) wide and 8-inches (200 mm) in depth is required. The cabinet shall be channel mounted to a wooden utility pole using assemblies recommended by the manufacturer.

2. Ground Mounted Cabinet. The cabinet shall be UL 50, NEMA Type 3R unfinished single door design with back panel. The cabinet shall be fabricated from Type 5052 H-32 aluminum with the frame and door 0.125-inch (3.175 mm) thick, the top 0.250-inch (6.350 mm) thick and the bottom 0.500-inch (12.70 mm) thick. Seams shall be continuous welded and ground smooth. The door and door opening shall be double flanged. The door shall be approximately 80% of the front surface, with a full length tamperproof stainless steel .075-inch (1.91 mm) thick hinge bolted to the cabinet with stainless steel carriage bolts and nylocks nuts. The locking mechanism shall be slam-latch type with a keyhole cover. The cabinet shall be sized to adequately house all required components with extra space for arrangement and termination of wiring. A minimum size of 40-inches (1000 mm) high, 16-inches (400 mm) wide and 15-inches (375 mm) in depth is required. The cabinet shall be mounted upon a square Type A concrete foundation as indicated on the plans. The foundation is paid for separately.

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 circuit breakers with trip free indicating handles. 120 volt circuit breakers shall have an interrupting rating of not less than 65,000 rms symmetrical amperes. Unless otherwise indicated, the main disconnect circuit breaker for the traffic signal controller shall be rated 60 amperes, 120 V and the auxiliary circuit breakers shall be rated 10 amperes, 120 V.

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 marketing representative 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 (3.0m) in length, and 3/4 inch (20mm) in diameter. Ground rod resistance measurements to ground shall be 25 ohms or less. If necessary additional rods shall be installed to meet resistance requirements at no additional cost to the contract.

Installation.

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

b. Pole Mounted. Brackets designed for pole mounting shall be used. All mounting hardware shall be stainless steel. Mounting height shall be as noted on the plans or as directed by the Engineer.

c. Ground Mounted. The service installation shall be mounted plumb and level on the foundation and fastened to the anchor bolts with hot-dipped galvanized or stainless

steel nuts and washers. The space between the bottom of the enclosure and the top of the foundation shall be caulked at the base with silicone.

Basis of Payment.
The service installation shall be paid for at the contract unit price each for SERVICE INSTALLATION of the type specified which shall be payment in full for furnishing and installing the service installation complete. The CONCRETE FOUNDATION, TYPE A, which includes the ground rod, shall be paid for separately. SERVICE INSTALLATION, POLE MOUNTED shall include the 3/4 inch (20mm) grounding conduit, ground rod, and pole mount assembly. Any charges by the utility companies shall be approved by the engineer and paid for as an addition to the contract according to Article 109.05 of the Standard Specifications.

GROUNDING OF TRAFFIC SIGNAL SYSTEMS.

Revise Section 806 of the Standard Specifications to read:

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

The grounding electrode system shall include a ground rod installed with each traffic signal controller concrete foundation and all mast arm and post concrete foundations. An additional ground rod will be required at locations were measured resistance exceeds 25 ohms. Ground rods are included in the applicable concrete foundation or service installation pay item and will not be paid for separately.

Testing shall be according to Article 801.13 (a) (4) and (5).

(a) The grounded conductor (neutral conductor) shall be white color coded. This conductor shall be bonded to the equipment grounding conductor only at the Electric Service Installation. All power cables shall include one neutral conductor of the same size.

(b) The equipment grounding conductor shall be green color coded. The following is in addition to Article 801.04 of the Standard Specifications.

1. Equipment grounding conductors shall be bonded to the grounded conductor (neutral conductor) only at the Electric Service Installation. The equipment grounding conductor is paid for separately and shall be continuous. The Earth shall not be used as the equipment grounding conductor.

2. Equipment grounding conductor*s* shall be bonded, using a Listed grounding connector, to all traffic signal mast arm poles, traffic signal posts, pedestrian posts, pull boxes, handhole frames and covers, conduits, and other metallic enclosures throughout the traffic signal wiring system, except where noted herein. Bonding shall be made with a splice and pigtail

connection, using a sized compression type copper sleeve, sealant tape, and heat-shrinkable cap. A Listed electrical joint compound shall be applied to all conductors' terminations, connector threads and contact points. Conduit grounding bushings shall be installed at all conduit terminations.

3. All metallic and non-metallic raceways containing traffic signal circuit runs shall have a continuous equipment grounding conductor, except raceways containing only detector loop lead-in circuits, circuits under 50 volts and/or fiber optic cable will not be required to include an equipment grounding conductor.

4. Individual conductor splices in handholes shall be soldered and sealed with heat shrink. When necessary to maintain effective equipment grounding, a full cable heat shrink shall be provided over individual conductor heat shrinks.

(c) The grounding electrode conductor shall be similar to the equipment grounding conductor in color coding (green) and size. The grounding electrode conductor is used to connect the ground rod to the equipment grounding conductor and is bonded to ground rods via exothermic welding, listed pressure connectors, listed clamps or other approved listed means.

GROUNDING EXISTING HANDHOLE FRAME AND COVER.

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

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

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

The grounding cable shall be paid for separately.

Method of Measurement.
Units measured for payment will be counted on a per handhole basis, regardless of the type of handhole and its location.

Basis of Payment.
This work shall be paid for at the contract unit price each for GROUNDING EXISTING HANDHOLE FRAME AND COVER which shall be payment in full for grounding the handhole complete.

COILABLE NON-METALLIC CONDUIT.

Description.
This work shall consist of furnishing and installing empty coilable non-metallic conduit (CNC) for detector loop raceways.

General.
The CNC installation shall be in accordance with Sections 810 and 811 of the Standard Specifications except for the following:

Add the following to Article 810.03 of the Standard Specifications:

CNC meeting the requirements of NEC Article 353 shall be used for detector loop raceways to the handholes.

Add the following to Article 811.03 of the Standard Specifications:

On temporary traffic signal installations with detector loops, CNC meeting the requirements of NEC Article 353 shall be used for detector loop raceways from the saw-cut to 10 feet (3m) up the wood pole, unless otherwise shown on the plans

Basis of Payment.
All installations of CNC for loop detection shall be included in the contract and not paid for separately.

HANDHOLES.

Add the following to Section 814 of the Standard Specifications:

All handholes shall be concrete, poured in place, with inside dimensions of 21-1/2 inches (549mm) minimum. Frames and lid openings shall match this dimension. The cover of the handhole frame shall be labeled "Traffic Signals" with legible raised letters.

For grounding purposes the handhole frame shall have provisions for a 7/16 inch (15.875mm) diameter stainless bolt cast into the frame. The covers shall have a stainless steel threaded stint extended from the eye hook assembly for the purpose of attaching the grounding conductor to the handhole cover.

The minimum wall thickness for heavy duty hand holes shall be 12 inches (300mm).

All conduits shall enter the handhole at a depth of 30 inches (760mm) except for the conduits for detector loops when the handhole is less than 5 feet (1.52 m) from the detector loop. All conduit ends should be sealed with a waterproof sealant to prevent the entrance of contaminants into the handhole.

Steel cable hooks shall be coated with hot-dipped galvanization in accordance with AASHTO Specification M111. Hooks shall be a minimum of 1/2 inch (12.7 mm) diameter with two 90 degree bends and extend into the handhole at least 6 inches (150 mm). Hooks shall be placed a minimum of 12 inches (300 mm) below the lid or lower if additional space is required.

GROUNDING CABLE.

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

Add the following to Article 817.02 (b) of the Standard Specifications:

Unless otherwise noted on the Plans, traffic signal grounding conductor shall be one conductor, #6 gauge copper, with a green color coded XLP jacket.

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

Add the following to Article 817.05 of the Standard Specifications:

Basis of Payment.
Grounding cable shall be measured in place for payment in foot (meter). Payment shall be at the contract unit price for ELECTRIC CABLE IN CONDUIT, GROUNDING, NO. 6, 1C, which price includes all associated labor and material including grounding clamps, splicing, exothermic welds, grounding connectors, conduit grounding bushings, and other hardware.

RAILROAD INTERCONNECT CABLE.

The cable shall meet the requirements of Section 873 of the Standard Specifications, except for the following:

Add to Article 873.02 of the Standard Specifications:

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

Add the following to Article 873.05 of the Standard Specifications:

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

FIBER OPTIC TRACER CABLE.

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

Add the following to Article 817.03 of the Standard Specifications:

In order to trace the fiber optic cable after installation, the tracer cable shall be installed in the same conduit as the fiber optic cable in locations shown on the plans. The tracer cable shall be continuous, extended into the controller cabinet and terminated on a barrier type terminal strip mounted on the side wall of the controller cabinet. The barrier type terminal strip and tracer cable shall be clearly marked and identified. All tracer cable splices shall be kept to a minimum and shall incorporate maximum lengths of cable supplied by the manufacturer. The tracer cable will be allowed to be spliced at handholes only. The tracer cable splice shall use a Western Union Splice soldered with resin core flux and shall be soldered using a soldering iron. Blow torches or other devices which oxidize copper cable shall not be allowed for soldering operations. All exposed surfaces of the solder shall be smooth. The splice shall be covered with a black shrink tube meeting UL 224 guidelines, Type V and rated 600v, minimum length 4 inches (100 mm) and with a minimum 1 inch (25 mm) coverage over the XLP insulation, underwater grade.

Add the following to Article 817.05 of the Standard Specifications:

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

MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION.

Revise Articles 850.02 and 850.03 of the Standard Specifications to read:

Procedure.
The energy charges for the operation of the traffic signal installation shall be paid for by others. Full maintenance responsibility shall start as soon as the Contractor begins any physical work on the Contract or any portion thereof.

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

This item shall include maintenance of all traffic signal equipment at the intersection, including emergency vehicle pre-emption equipment, master controllers, uninterruptible power supply (UPS and batteries), telephone service installations, communication cables, conduits to adjacent intersections, and other traffic signal equipment, but shall not include Automatic Traffic Enforcement equipment, such as Red Light Enforcement cameras, detectors, or peripheral equipment, not owned by the State.

Maintenance.
The maintenance shall be according to MAINTENANCE AND RESPONSIBILITY in Division 800 of these specifications and the following:.

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

The Contractor shall provide immediate corrective action when any part or parts of the system fail to function properly. Two far side heads facing each approach shall be considered the minimum acceptable signal operation pending permanent repairs. When repairs at a signalized intersection require that the controller be disconnected or otherwise removed from normal operation, and power is available, the Contractor shall place the traffic signal installation on flashing operation. The signals shall flash RED for all directions unless a different indication has been specified by the Engineer. The Contractor shall be required to place stop signs (R1-1-36) at each approach of the intersection as a temporary means of regulating traffic. When the signals operate in flash, the Contractor shall furnish and equip all their vehicles assigned to the maintenance of traffic signal installations with a sufficient number of stop signs as specified herein. The Contractor shall maintain a sufficient number of spare stop signs in stock at all times to replace stop signs which may be damaged or stolen.

The Contractor shall provide the Engineer with a 24 hour telephone number for the maintenance of the traffic signal installation and for emergency calls by the Engineer.

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

The Contractor shall respond to all emergency calls from the Department or others within one hour after notification and provide immediate corrective action. When equipment has been damaged or becomes faulty beyond repair, the Contractor shall replace it with new and identical equipment. The cost of furnishing and installing the replaced equipment shall be borne by the Contractor at no additional charge to the contract. The Contractor may institute action to recover damages from a responsible third party. If at any time the Contractor fails to perform all work as specified herein to keep the traffic signal installation in proper operating condition or if the Engineer cannot contact the Contractor's designated personnel, the Engineer shall have the State's Electrical Maintenance Contractor perform the maintenance work required. The State's Electrical Maintenance Contractor shall bill the Contractor for the total cost of the work. The Contractor shall pay this bill within thirty (30) days of the date of receipt of the invoice or the cost of such work will be deducted from the amount due the Contractor. The Contractor shall allow the Electrical Maintenance Contractor to make reviews of the Existing Traffic Signal Installation that has been transferred to the Contractor for Maintenance.

TRAFFIC ACTUATED CONTROLLER.

Add the following to Article 857.02 of the Standard Specifications:

Controllers shall be NTCIP compliant NEMA TS2 Type 1, Econolite ASC/3S-1000 or Eagle/Siemens M50 unless specified otherwise on the plans or elsewhere on these specifications. Only controllers supplied by one of the District One approved closed loop equipment manufacturers will be allowed. The controller shall be the most recent model and software version supplied by the manufacturer at the time of the approval and include the standard data key. The traffic signal controller shall provide features to inhibit simultaneous display of a circular yellow ball and a yellow arrow display. Individual load switches shall be provided for each vehicle, pedestrian, and right turn over lap phase. The controller shall prevent phases from being skipped during program changes and after all preemption events.

Add the following to Article 857.03 of the Standard Specifications:

The Contractor shall arrange to install a standard voice-grade dial-up telephone line to the RAILROAD, FULL-ACTUATED CONTROLLER AND CABINET as called for on the traffic signal installation plans. If the traffic signal installation is part of a traffic signal system, a telephone line is usually not required, unless a telephone line is called for on the traffic signal plans. The Contractor shall follow the requirements for the telephone service installation as contained in the current District One Traffic Signal Special Provisions under Master Controller.

MASTER CONTROLLER.

Revise Articles 860.02 - Materials and 860.03 - Installation of the Standard Specifications to read:

Only controllers supplied by one of the District approved closed loop equipment manufacturers will be allowed. Only NEMA TS 2 Type 1 Eagle/Siemens and Econolite closed loop systems shall be supplied. The latest model and software version of master controller shall be supplied.

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

The system commands shall consist of, as a minimum, six (6) cycle lengths, five (5) offsets, three (3) splits, and four (4) special functions. The system commands shall also include commands for free or coordinated operation.

Traffic Responsive operation shall consist of the real time acquisition of system detector data, data validation, and the scaling of acquired volumes and occupancies in a deterministic fashion so as to cause the selection and implementation of the most suitable traffic plan.

Upon request by the Engineer, each master shall be delivered with up to three (3) complete sets of the latest edition of registered remote monitoring software with full manufacture's support. Each set shall consist of software on CD, DVD, or other suitable media approved by the Engineer, and a bound set of manuals containing loading and operating instruction. One copy of the software and support data shall be delivered to the Agency in charge of system operation, if other than IDOT. One of these two sets will be provided to the Agency Signal Maintenance Contractor for use in monitoring the system.

The approved manufacturer of equipment shall loan the District one master controller and two intersection controllers of the most recent models and the newest software version to be used for instructional purposes in addition to the equipment to be supplied for the Contract.

The Contractor shall arrange to install a standard voice-grade dial-up telephone line to the master controller. This shall be accomplished through the following process utilizing District One staff. This telephone line may be coupled with a DSL line and a phone filter to isolate the dial-up line. An E911 address is required.

The cabinet shall be provided with an Outdoor Network Interface for termination of the telephone service. It shall be mounted to the inside of the cabinet in a location suitable to provide access for termination of the telephone service at a later date.

Full duplex communication between the master and its local controllers is recommended, but at this time not required. The data rate shall be 1200 baud minimum and shall be capable of speeds to 38,400 or above as technology allows. The controller, when installed in an Ethernet topology, may operate non-serial communications.

The cabinet shall be equipped with a 9600 baud, auto dial/auto answer modem. It shall be a US robotics 33.6K baud rate or equal.

As soon as practical or within one week after the contract has been awarded, the Contractor shall contact (via phone) the Administrative Support Manager in the District One Business Services Section at (847) 705-4011 to request a phone line installation.

A follow-up fax transmittal to the Administrative Support Manager (847-705-4712) with all required information pertaining to the phone installation is required from the Contractor as soon as possible or within one week after the initial request has been made. A copy of this fax transmittal must also be faxed by the Contractor to the Traffic Signal Systems Engineer at (847) 705-4089. The required information to be supplied on the fax shall include (but not limited to): A street address for the new traffic signal controller (or nearby address); a nearby existing telephone number; what type of telephone service is needed; the name and number of the Contractor's employee for the telephone company to contact regarding site work and questions.

The usual time frame for the activation of the phone line is 4-6 weeks after the Business Services Section has received the Contractor supplied fax. It is, therefore, imperative that the phone line conduit and pull-string be installed by the Contractor in anticipation of this time frame. On jobs which include roadway widening in which the conduit cannot be installed until this widening is completed, the Contractor will be allowed to delay the phone line installation request to the Business Services Section until a point in time that is 4-6 weeks prior to the anticipated completion of the traffic signal work. The contractor shall provide the Administrative Support Manager with an expected installation date considering the 4-6 week processing time.

The telephone line shall be installed and activated one month before the system final inspection.

All costs associated with the telephone line installation and activation (not including the Contract specified conduit installation between the point of telephone service and the traffic signal controller cabinet) shall be paid for by the District One Business Services Section (i.e., this will be an IDOT phone number not a Contractor phone number).

UNINTERRUPTIBLE POWER SUPPLY.

Add the following to Article 862.01 of the Standard Specifications:

The UPS shall have the power capacity to provide normal operation of a signalized intersection that utilizes all LED type signal head optics, for a minimum of six hours.

Add the following to Article 862.02 of the Standard Specifications:

Materials shall be according to Article 1074.04 as modified in UNINTERRUPTIBLE POWER SUPPLY in Division 1000 of these specifications.

Add the following to Article 862.03 of the Standard Specifications:

The UPS shall additionally include, but not be limited to, a battery cabinet. The UPS shall provide reliable emergency power to the traffic signals in the event of a power failure or interruption.

Revise Article 862.04 of the Standard Specifications to read:

Installation.
When a UPS is installed at an existing traffic signal cabinet, the UPS cabinet shall partially rest on the lip of the existing controller cabinet foundation and be secured to the existing controller cabinet by means of at least four (4) stainless steel bolts. The UPS cabinet shall be completely enclosed with the bottom and back constructed of the same material as the cabinet.

When a UPS is installed at a new signal cabinet and foundation, it shall be mounted as shown on the plans.

At locations where UPS is installed and Emergency Vehicle Priority System is in use, any existing incandescent confirmation beacons shall be replaced with LED lamps in accordance with the District One Emergency Vehicle Priority System specification at no additional cost to the contract. A concrete apron 67 in. x 50 in. x 5 in. (1702mm x 1270mm x 130mm) shall be provided on the side of the existing Type D Foundation, where the UPS cabinet is located. The concrete apron shall follow the District 1 Standard Traffic Signal Design Detail, Type D for Ground Mounted Controller Cabinet and UPS Battery Cabinet. The concrete apron shall follow Articles 424 and 202 of the Standard Specifications.

This item shall include any required modifications to an existing traffic signal controller as a result of the addition of the UPS.

Revise Article 862.05 of the Standard Specifications to read:

Basis of Payment.
This work will be paid for at the contract unit price per each for UNINTERRUPTIBLE POWER SUPPLY SPECIAL. Replacement of Emergency Vehicle Priority System confirmation beacons and any required modifications to the traffic signal controller shall be included in the cost of the UNINTERRUPTIBLE POWER SUPPLY SPECIAL item. The concrete apron and earth excavation required shall be included in the cast of the UNINTERRUPTIBLE POWER SUPPLY SPECIAL item.

FIBER OPTIC CABLE.

Add the following to Article 871.01 of the Standard Specifications:

The Fiber Optic cable shall be installed in conduit or as specified on the plans.

Add the following to Article 872.02 of the Standard Specifications:

The control cabinet distribution enclosure shall be CSC FTWO12KST-W/O 12 Port Fiber Wall Enclosure or an approved equivalent. The fiber optic cable shall provide six fibers per tube for the amount of fibers called for in the Fiber Optic Cable pay item in the Contract. Fiber Optic cable may be gel filled or have an approved water blocking tape.

Add the following to Article 871.04 of the Standard Specifications:

A minimum of six multimode fibers from each cable shall be terminated with approved mechanical connectors at the distribution enclosure. Fibers not being used shall be labeled "spare." Fibers not attached to the distribution enclosure shall be capped and sealed. A minimum of 13.0 feet (4m) of extra cable length shall be provided for controller cabinets. The controller cabinet extra cable length shall be stored as directed by the Engineer.

Add the following to Article 871.06 of the Standard Specifications:

The distribution enclosure and all connectors will be included in the cost of the fiber optic cable.

MAST ARM ASSEMBLY AND POLE.

Revise Article 877.01 of the Standard Specifications to read:

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

Revise Article 877.03 of the Standard Specifications:

Mast arm assembly and pole shall be as follows.

(a) Steel Mast Arm Assembly and Pole and Steel Combination Mast Arm Assembly and Pole. The steel mast arm assembly and pole and steel combination mast arm assembly and pole shall consist of a traffic signal mast arm, a luminaire mast arm or davit (for combination pole only), a pole, and a base, together with anchor rods and other appurtenances. The configuration of the mast arm assembly, pole, and base shall be according to the details shown on the plans.

(1) Loading. The mast arm assembly and pole, and combination mast arm assembly and pole shall be designed for the loading shown on the Highway Standards or elsewhere on the plans, whichever is greater. The design shall be according to AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals" 1994 Edition for 80 mph (130 km/hr) wind velocity. However, the arm-to-pole connection for tapered signal and luminaire arms shall be according to the "ring plate" detail as shown in Figure 11-1(f) of the 2002 Interim, to the AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals" 2001 4th Edition.

(2) Structural Steel Grade. The mast arm and pole shall be fabricated according to ASTM A 595, Grade A or B, ASTM A 572 Grade 55, or ASTM A 1011 Grade 55 HSLAS Class 2. The base and flange plates shall be of structural steel according to AASHTO M 270 Grade 50 (M 270M Grade 345). Luminaire arms and trussed arms 15 ft (4.5 m) or less shall be fabricated from one steel pipe or tube size according to ASTM A 53 Grade B or ASTM A 500 Grade B or C. All mast arm assemblies, poles, and bases shall be galvanized according to AASHTO M 111.

(3) Fabrication. The design and fabrication of the mast arm assembly, pole, and base shall be according to the requirements of the Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals published by AASHTO. The mast arm and pole may be of single length or sectional design. If section design is used, the overlap shall be at least 150 percent of the maximum diameter of the overlapping section and shall be assembled in the factory.

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

(4) Shop Drawing Approval. The Contractor shall submit detailed drawings showing design materials, thickness of sections, weld sizes, and anchor rods to the Engineer for approval prior to fabrication. These drawings shall be at least 11 x 17 in. (275 x 425 mm) in size and of adequate quality for microfilming. All product data and shop drawings shall be submitted in electronic form on CD-ROM

(b) Anchor Rods. The anchor rods shall be ASTM F 1554 Grade 105, coated by the hot-dip galvanizing process according to AASHTO M 232, and shall be threaded a minimum of 7 1/2 in. (185 mm) at one end and have a bend at the other end. The first 12 in. (300 mm) at the threaded end shall be galvanized. Two nuts, one lock washer, and one flat washer shall be furnished with each anchor rod. All nuts and washers shall be galvanized.

(c) The galvanized steel or extruded aluminum shroud shall have dimensions similar to those detailed in the "District One Standard Traffic Signal Design Details." The shroud shall be installed such that it allow air to circulate throughout the mast arm but not allow infestation of insects or other animals, and such that it is not hazardous to probing fingers and feet.

Add the following to Article 877.04 of the Standard Specifications:

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

CONCRETE FOUNDATIONS.

Add the following to Article 878.03 of the Standard Specifications:

All anchor bolts shall be according to Article 1006.09, with all anchor bolts hot dipped galvanized a minimum of 12 in. (300 mm) from the threaded end.

Concrete Foundations, Type "A" for Traffic Signal Posts shall provide anchor bolts with the bolt pattern specified within the "District One Standard Traffic Signal Design Details." All Type "A" foundations shall be a minimum depth of 48 inches (1220 mm).

Concrete Foundations, Type "C" for Traffic Signal Cabinets with Uninterruptible Power Supply (UPS) cabinet installations shall be a minimum of 72 inches (1830 mm) long and 31 inches (790 mm) wide. All Type "C" foundations shall be a minimum depth of 48 inches (1220 mm). The concrete apron in front of the Type IV or V cabinet shall be 36 in. x 48 in. x 5 in. (915 mm X 1220 mm X 130 mm). The concrete apron in front of the UPS cabinet shall be 36 in. x 67 in. x 5 in. (915 mm X 1700 mm X 130 mm). Anchor bolts shall provide bolt spacing as required by the manufacturer.

Concrete Foundations, Type "D" for Traffic Signal Cabinets shall be a minimum of 48 inches (1220 mm) long and 31 inches (790 mm) wide. All Type "D" foundations shall be a minimum depth of 48 inches (1220 mm). The concrete apron shall be 36 in. x 48 in. x 5 in. (910 mm X 1220 mm X 130 mm). Anchor bolts shall provide bolt spacing as required by the manufacturer.

Concrete Foundations, Type "E" for Mast Arm and Combination Mast Arm Poles shall meet the current requirements listed in the Highway Standards.

Foundations used for Combination Mast Arm Poles shall provide an extra 2-1/2 inch (65 mm) raceway.

No foundation is to be poured until the Resident Engineer gives his/her approval as to the depth of the foundation.

LIGHT EMITTING DIODE (LED) SIGNAL HEAD AND OPTICALLY PROGRAMMED LED SIGNAL HEAD.

Add the following to the first paragraph of Article 880.04 of the Standard Specifications:

Basis of Payment.
The price shall include furnishing the equipment described above, all mounting hardware and installing them in satisfactory operating condition.

LIGHT EMITING DIODE (LED), SIGNAL HEAD, RETROFIT

Description.
This work shall consist of retrofitting an existing polycarbonate traffic signal head with a traffic signal module, pedestrian signal module, and pedestrian countdown signal module, with light emitting diodes (LEDs) as specified in the plans.

Materials.
Materials shall be according to LIGHT EMITTING DIODE (LED) AND OPTICALLY PROGRAMMED LED SIGNAL HEAD, AND LIGHT EMITTING DIODE (LED) PEDESTRIAN SIGNAL HEAD in Divisions 880, 881 and 1000 of these specifications.

Add the following to Article 880.04 of the Standard Specifications:

Basis of Payment.
This item shall be paid for at the contract unit price each for SIGNAL HEAD, LED, RETROFIT, or PEDESTRIAN SIGNAL HEAD, LED, RETROFIT, for the type and number of polycarbonate signal heads, faces, and sections specified, which price shall be payment in full for furnishing the equipment described above including LED modules, all mounting hardware, and installing them in satisfactory operating condition. The type specified will indicate the number of faces and the method of mounting.

LIGHT EMITTING DIODE (LED) PEDESTRIAN SIGNAL HEAD

Add the following to the third paragraph of Article 881.03 of the Standard Specifications:

No mixing of different types of pedestrian traffic signals or displays will be permitted.

Add the following to Article 881.03 of the Standard Specifications:

(a) Pedestrian Countdown Signal Heads.

(1) Pedestrian Countdown Signal Heads shall not be installed at signalized intersections where traffic signals and railroad warning devices are interconnected.

(2) Pedestrian Countdown Signal Heads shall be 16 inch (406mm) x 18 inch (457mm), for single units with the housings glossy black polycarbonate. Connecting hardware and mounting brackets shall be polycarbonate (black). A corrosion resistant anti-seize lubricant shall be applied to all metallic mounting bracket joints, and shall be visible to the inspector at the signal turn-on.

(3) Each pedestrian signal LED module shall be fully MUTCD compliant and shall consist of double overlay message combining full LED symbols of an Upraised Hand and a Walking Person. "Egg Crate" type sun shields are not permitted. Numerals shall measure 9 inches (229mm) in height and easily identified from a distance of 120 feet (36.6m).

Add the following to Article 881.04 of the Standard Specifications:

Basis of Payment.
The price shall include furnishing the equipment described above, all mounting hardwire and installing them in satisfactory operating condition.

DETECTOR LOOP.

Revise Section 886 of the Standard Specifications to read:

Description.
This work shall consist of furnishing and installing a detector loop in the pavement.

Procedure.
A minimum of seven (7) working days prior to the Contractor cutting loops, the Contractor shall have the proposed loop locations marked and contact the Area Traffic Signal Maintenance and Operations Engineer (847) 705-4424 to inspect and approve the layout. When preformed detector loops are installed, the Contractor shall have them inspected and approved prior to the pouring of the Portland cement concrete surface, using the same notification process as above.

Installation.
Loop detectors shall be installed according to the requirements of the "District One Standard Traffic Signal Design Details." Saw-cuts (homeruns on preformed detector loops) from the loop to the edge of pavement shall be made perpendicular to the edge of pavement when possible in order to minimize the length of the saw-cut (homerun on preformed detector loops) unless directed otherwise by the Engineer or as shown on the plan.

The detector loop cable insulation shall be labeled with the cable specifications.

Each loop detector lead-in wire shall be labeled in the handhole using a Panduit PLFIM water proof tag, or an approved equal, secured to each wire with nylon ties.

Resistance to ground shall be a minimum of 100 mega-ohms under any conditions of weather or moisture. Inductance shall be more than 50 and less than 700 microhenries. Quality readings shall be more than 5.

(a) Type I. All loops installed in new asphalt pavement shall be installed in the binder course and not in the surface course. The edge of pavement, curb and handhole shall be cut with a 1/4 inch (6.3 mm) deep x 4 inches (100 mm) saw cut to mark location of each loop lead-in.

(b) Loop sealant shall be a two-component thixotropic chemically cured polyurethane either Chemque Q-Seal 295, Percol Elastic Cement AC Grade or an approved equal. The sealant shall be installed 1/8 inch (3 mm) below the pavement surface, if installed above the surface the overlap shall be removed immediately.

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

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

(e) Preformed detector loops shall be installed in new pavement constructed of Portland cement concrete using mounting chairs or tied to re-bar or the preformed detector loops may be placed in the sub-base. Loop lead-ins shall be extended to a temporary protective enclosure near the proposed handhole location. The protective enclosure shall provide sufficient protection from other construction activities and may be buried for additional protection.

(f) Handholes shall be placed next to the shoulder or back of curb when preformed detector loops enter the handhole. Non-metallic coilable duct, included in this pay item, shall be used to protect the preformed lead-ins from back of curb to the handhole.

(g) Preformed detector loops shall be factory assembled with ends capped and sealed against moisture and other contaminants. Homeruns and interconnects shall be pre-wired and shall be an integral part of the loop assembly. The loop configurations and homerun lengths shall be assembled for the specific application. The loop and homerun shall be constructed using 11/16 inch (17.2 mm) outside diameter (minimum), 3/8 inch (9.5 mm) inside diameter (minimum) Class A oil resistant synthetic cord reinforced hydraulic hose with 250 psi (1,720 kPa) internal pressure rating or a similarly sized XLPE cable jacket. Hose for the loop and homerun assembly shall be one continuous piece. No joints or splices shall be allowed in the hose except where necessary to connect homeruns or interconnects to the loops. This will provide maximum wire protection and loop system strength. Hose tee connections shall be heavy duty high temperature synthetic rubber. The tee shall be of proper size to attach directly to the hose, minimizing glue joints. The tee shall have the same flexible properties as the hose to insure that the whole assembly can conform to pavement movement and shifting without cracking or breaking. For XLPE jacketed preformed loops, all splice connections shall be soldered, sealed, and tested before being sealed in a high impact glass impregnated plastic splice enclosure. The wire used shall be #16 THWN stranded copper. The number of turns in the loop shall be application specific. Homerun wire pairs shall be twisted a minimum of four turns per foot. No wire splices will be allowed in the preformed loop assembly. The loop and homeruns shall be filled and sealed with a flexible sealant to insure complete moisture blockage and further protect the wire. The preformed loops shall be constructed to allow a minimum of 6.5 feet of extra cable in the handhole.

Method of Measurement.

This work will be measured for payment in feet (meters) in place. Type I detector loop will be measured along the sawed slot in the pavement containing the loop and lead-in, rather than the actual length of the wire. Preformed detector loops will be measured along the detector loop and lead-in embedded in the pavement, rather than the actual length of the wire.

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

EMERGENCY VEHICLE PRIORITY SYSTEM.

Revise Section 887 of the Standard Specifications to read:

It shall be the Contractor's responsibility to contact the municipality or fire district to verify the brand of emergency vehicle pre-emption equipment to be installed prior to the contract bidding. The equipment must be completely compatible with all components of the equipment currently in use by the Agency.

All new installations shall be equipped with Confirmation Beacons as shown on the "District One Standard Traffic Signal Design Details." The Confirmation Beacon shall consist of a 6 watt Par 38 LED flood lamp with a 30 degree light spread, maximum 6 watt energy consumption at 120V, and a 2,000 hour warranty for each direction of pre-emption. The lamp shall have an adjustable mount with a weatherproof enclosure for cable splicing. All hardware shall be cast aluminum or stainless steel. Holes drilled into signal poles, mast arms, or posts shall require rubber grommets. In order to maintain uniformity between communities, the confirmation beacons shall indicate when the control equipment receives the pre-emption signal. The pre-emption movement shall be signalized by a flashing indication at the rate specified by Section 4L.01 of the "Manual on Uniform Traffic Control Devices," and other applicable sections of future editions. The stopped pre-empted movements shall be signalized by a continuous indication.

All light operated systems shall include security and transit preemption software and operate at a uniform rate of 14.035 Hz ±0.002, or as otherwise required by the Engineer, and provide compatible operation with other light systems currently being operated in the District.

This item shall include any required modifications to an existing traffic signal controller as a result of the addition of the EMERGENCY VEHICLE PRIORITY SYSTEM.

Basis of Payment.
The work shall be paid for at the contract unit price each for furnishing and installing LIGHT DETECTOR and LIGHT DETECTOR AMPLIFIER. Furnishing and installing the confirmation beacon shall be included in the cost of the Light Detector. Any required modifications to the traffic signal controller shall be included in the cost of the LIGHT DETECTOR AMPLIFIER. The preemption detector amplifier shall be paid for on a basis of (1) one each per intersection

controller and shall provide operation for all movements required in the pre-emption phase sequence.

TEMPORARY TRAFFIC SIGNAL INSTALLATION.

Revise Section 890 of the Standard Specifications to read:

Description.
This work shall consist of furnishing, installing, maintaining, and removing a temporary traffic signal installation as shown on the plans, including but not limited to temporary signal heads, emergency vehicle priority systems, interconnect, vehicle detectors, uninterruptible power supply, and signing. Temporary traffic signal controllers and cabinets interconnected to railroad traffic control devices shall be new. When temporary traffic signals will be operating within a county or local agency Traffic Management System, the equipment must be NTCIP compliant and compatible with the current operating requirements of the Traffic Management System.

General.
Only an approved equipment vendor will be allowed to assemble the temporary traffic signal cabinet. Also, an approved equipment vendor shall assemble and test a temporary railroad traffic signal cabinet. (Refer to the "Inspection of Controller and Cabinet" specification). A representative of the approved control equipment vendor shall be present at the temporary traffic signal turn-on inspection.

Construction Requirements.

(a) Controllers.

1. Only controllers supplied by one of the District approved closed loop equipment manufacturers will be approved for use at temporary signal locations. All controllers used for temporary traffic signals shall be fully actuated NEMA microprocessor based with RS232 data entry ports compatible with existing monitoring software approved by IDOT District 1, installed in NEMA TS2 cabinets with 8 phase back panels, capable of supplying 255 seconds of cycle length and individual phase length settings up to 99 seconds. On projects with one lane open and two way traffic flow, such as bridge deck repairs, the temporary signal controller shall be capable of providing an adjustable all red clearance setting of up to 30 seconds in length. All controllers used for temporary traffic signals shall meet or exceed the requirements of Section 857 of the Standard Specifications with regards to internal time base coordination and preemption. All railroad interconnected temporary controllers and cabinets shall be new and shall satisfy the requirements of Article 857.02 of the Standard Specifications as modified herein.

2. Only control equipment, including controller cabinet and peripheral equipment, supplied by one of the District approved closed loop equipment manufacturers will be approved for use at temporary traffic signal locations. All control

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

(b) Cabinets. All temporary traffic signal cabinets shall have a closed bottom made of aluminum alloy. The bottom shall be sealed along the entire perimeter of the cabinet base to ensure a water, dust and insect-proof seal. The bottom shall provide a minimum of two (2) 4 inch (100 mm) diameter holes to run the electric cables through. The 4 inch (100 mm) diameter holes shall have a bushing installed to protect the electric cables and shall be sealed after the electric cables are installed.

(c) Grounding. Grounding shall be provided for the temporary traffic signal cabinet meeting or exceeding the applicable portions of the National Electrical Code, Section 806 of the Standard Specifications and shall meet the requirements of the District 1 Traffic Signal Specifications for "Grounding of Traffic Signal Systems."

(d) Traffic Signal Heads. All traffic signal sections and pedestrian signal sections shall be 12 inches (300 mm). Traffic signal sections shall be LED with expandable view, unless otherwise approved by the Engineer. Pedestrian signal heads shall be Light Emitting Diode (LED) Pedestrian Countdown Signal Heads except when a temporary traffic signal is installed at an intersection interconnected with a railroad grade crossing. When a temporary traffic signal is installed at an intersection interconnected with a railroad grade crossing, Light Emitting Diode (LED) Pedestrian Signal Heads shall be furnished. The temporary traffic signal heads shall be placed as indicated on the temporary traffic signal plan or as directed by the Engineer. The Contractor shall furnish enough extra cable length to relocate heads to any position on the span wire or at locations illustrated on the plans for construction staging. The temporary traffic signal shall remain in operation during all signal head relocations. Each temporary traffic signal head shall have its own cable from the controller cabinet to the signal head.

(e) Interconnect.

1. Temporary traffic signal interconnect shall be provided using fiber optic cable or wireless interconnect technology as specified in the plans. The Contractor may request, in writing, to substitute the fiber optic temporary interconnect indicated in the contract documents with a wireless interconnect. The Contractor must provide assurances that the radio device will operate properly at all times and during all construction staging. If approved for use by the Engineer, the Contractor shall submit marked-up traffic signal plans indicating locations of radios and antennas and installation details. If wireless interconnect is used, and in the opinion of the engineer, it is not viable, or if it fails during testing or operations, the Contractor shall be responsible for installing all necessary poles, fiber optic cable, and other infrastructure for providing temporary fiber optic interconnect at no cost to the contract.

2. The existing system interconnect and phone lines are to be maintained as part of the Temporary Traffic Signal Installation specified for on the plan. The interconnect shall be installed into the temporary controller cabinet as per the notes or details on the plans. All labor and equipment required to install and maintain the existing interconnect as part of the Temporary Traffic Signal Installation shall be included in the item Temporary Traffic Signal Installation. When shown in the plans, temporary traffic signal interconnect equipment shall be furnished and installed. The temporary traffic signal interconnect shall maintain interconnect communications throughout the entire signal system for the duration of the project.

3. Temporary wireless interconnect, complete. The radio interconnect system shall be compatible with Eagle or Econolite controller closed loop systems. This item shall include all temporary wireless interconnect components, complete, at the adjacent existing traffic signal(s) to provide a completely operational closed loop system. This item shall include all materials, labor and testing to provide the completely operational closed loop system as shown on the plans. The radio interconnect system shall include the following components:

    a. Rack or Shelf Mounted RS-232 Frequency Hopping Spread Spectrum (FHSS) Radio
    b. Software for Radio Configuration (Configure Frequency and Hopping Patterns)
    c. Antennas (Omni Directional or Yagi Directional)
    d. Antenna Cables, LMR400, Low Loss. Max. 100-ft from controller cabinet to antenna
    e. Brackets, Mounting Hardware, and Accessories Required for Installation
    f. RS232 Data Cable for Connection from the radio to the local or master controller
    g. All other components required for a fully functional radio interconnect system

    All controller cabinet modifications and other modifications to existing equipment that are required for the installation of the radio interconnect system components shall be included in this item.

    The radio interconnect system may operate at 900Mhz (902-928) or 2.4 Ghz depending on the results of a site survey. The telemetry shall have an acceptable rate of transmission errors, time outs, etc. comparable to that of a hardwire system.

    The proposed master controller and telemetry module shall be configured for use with the radio interconnect at a minimum rate of 9600 baud.

The radio interconnect system shall include all other components required for a complete and fully functional telemetry system and shall be installed in accordance to the manufacturers recommendations.

The following radio equipment is currently approved for use in Region One/District One: Encom Model 5100 and Intuicom Communicator II.

(f) Emergency Vehicle Pre-Emption. All emergency vehicle preemption equipment (light detectors, light detector amplifiers, confirmation beacons, etc.) as shown on the temporary traffic signal plans shall be provided by the Contractor. It shall be the Contractor's responsibility to contact the municipality or fire district to verify the brand of emergency vehicle preemption equipment to be installed prior to the contract bidding. The equipment must be completely compatible with all components of the equipment currently in use by the Agency. All light operated systems shall operate at a uniform rate of 14.035 hz ±0.002, or as otherwise required by the Engineer, and provide compatible operation with other light systems currently being operated in the District. All labor and material required to install and maintain the Emergency Vehicle Preemption installation shall be included in the item Temporary Traffic Signal Installation.

(g) Vehicle Detection. All temporary traffic signal installations shall have vehicular detection installed as shown on the plans or as directed by the Engineer. Pedestrian push buttons shall be provided for all pedestrian signal heads/phases as shown on the plans or as directed by the Engineer. All approaches shall have vehicular detection provided by vehicle detection system as shown on the plans or as directed by the Engineer. Microwave vehicle sensors or video vehicle detection system shall be approved by IDOT prior to Contractor furnishing and installing. The Contractor shall install, wire, and adjust the alignment of the microwave vehicle sensor or video vehicle detection system in accordance to the manufacturer's recommendations and requirements. The Contractor shall be responsible for adjusting the alignment of the microwave vehicle sensor or video vehicle detection system for all construction staging changes and for maintaining proper alignment throughout the project. A representative of the approved control equipment vendor shall be present and assist the contractor in setting up and maintaining the microwave vehicle sensor or video vehicle detection system. An in-cabinet video monitor shall be provided with all video vehicle detection systems and shall be included in the item Temporary Traffic Signal Installation.

(h) Uninterruptible Power Supply. All temporary traffic signal installations shall have Uninterruptible Power Supply (UPS). The UPS cabinet shall be mounted to the temporary traffic signal cabinet and meet the requirements of Uninterruptible Power Supply in Divisions 800 and 1000 of these specifications.

(i) Signs. All existing street name and intersection regulatory signs shall be removed from existing poles and relocated to the temporary signal span wire. If new mast arm assembly and pole(s) and posts are specified for the permanent signals, the signs

shall be relocated to the new equipment at no extra cost. Any intersection regulatory signs that are required for the temporary traffic signal shall be provided as shown on the plans or as directed by the Engineer. Relocation, removing, bagging and installing the regulatory signs for the various construction stages shall be provided as shown on the plans or as directed by the Engineer.

(j) Energy Charges. The electrical utility energy charges for the operation of the temporary traffic signal installation shall be paid for by others if the installation replaces an existing signal. Otherwise charges shall be paid for under 109.05 of the Standard Specifications.

(k) Maintenance. Maintenance shall meet the requirements of the Standard Specifications and MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION in Division 800 of these specifications. Maintenance of temporary signals and of the existing signals shall be included in the cost of the TEMPORARY TRAFFIC SIGNAL INSTALLATION pay item. When temporary traffic signals are to be installed at locations where existing signals are presently operating, the Contractor shall be fully responsible for the maintenance of the existing signal installation as soon as he begins any physical work on the Contract or any portion thereof. In addition, a minimum of seven (7) days prior to assuming maintenance of the existing traffic signal installation(s) under this Contract, the Contractor shall request that the Resident Engineer contact the Bureau of Traffic Operations (847) 705-4424 for an inspection of the installation(s).

(l) Temporary Traffic Signals for Bridge Projects. Temporary Traffic Signals for bridge projects shall follow the State Standards, Standard Specifications, District One Traffic Signal Specifications and any plans for Bridge Temporary Traffic Signals included in the plans. The installation shall meet the Standard Specifications and all other requirements in this TEMPORARY TRAFFIC SIGNAL INSTALLATION specification. In addition all electric cable shall be aerially suspended, at a minimum height of 18 feet (5.5m) on temporary wood poles (Class 5 or better) of 45 feet (13.7 m) minimum height. The signal heads shall be span wire mounted or bracket mounted to the wood pole or as directed by the Engineer. The Controller cabinet shall be mounted to the wood pole as shown in the plans, or as directed by the Engineer. Microwave vehicle sensors or video vehicle detection system may be used in place of detector loops as approved by the Engineer.

(m) Temporary Portable Traffic Signal for Bridge Projects.

1. Unless otherwise directed by the Engineer, temporary portable traffic signals shall be restricted to use on roadways of less than 8000 ADT that have limited access to electric utility service, shall not be installed on projects where the estimated need exceeds ten (10) weeks, and shall not be in operation during the period of November through March. The Contractor shall replace the temporary portable traffic signals with temporary span wire traffic signals noted herein at no cost to the contract if the bridge project or Engineer requires temporary traffic

signals to remain in operation into any part of period of November through March. If, in the opinion of the engineer, the reliability and safety of the temporary portable traffic signal is not similar to that of a temporary span wire traffic signal installation, the Contractor shall replace the temporary portable traffic signals with temporary span wire traffic signals noted herein at no cost to the contract.

2. The controller and LED signal displays shall meet the Standard Specifications and all other requirements in this TEMPORARY TRAFFIC SIGNAL INSTALLATION specification.

3. Work shall be according to Article 701.18(b) of the Standard Specifications except as noted herein.

4. General.

    a. The temporary portable bridge traffic signals shall be trailer-mounted units. The trailer-mounted units shall be set up securely and level. Each unit shall be self-contained and consist of two signal heads. The left signal head shall be mounted on a mast arm capable of extending over the travel lane. Each unit shall contain a solar cell system to facilitate battery charging. There shall be a minimum of 12 days backup reserve battery supply and the units shall be capable of operating with a 120 V power supply from a generator or electrical service.

    b. All signal heads located over the travel lane shall be mounted at a minimum height of 17 feet (5m) from the bottom of the signal back plate to the top of the road surface. All far right signal heads located outside the travel lane shall be mounted at a minimum height of 8 feet (2.5m) from the bottom of the signal back plate to the top of the adjacent travel lane surface.

    c. The long all red intervals for the traffic signal controller shall be adjustable up to 250 seconds in one-second increments.

    d. As an alternative to detector loops, temporary portable bridge traffic signals may be equipped with microwave sensors or other approved methods of vehicle detection and traffic actuation.

    e. All portable traffic signal units shall be interconnected using hardwire communication cable. Radio communication equipment may be used only with the approval of the Engineer. If radio communication is used, a site analysis shall be completed to ensure that there is no interference present that would affect the traffic signal operation. The radio equipment shall meet all applicable FCC requirements.

f. The temporary portable bridge traffic signal system shall meet the physical display and operational requirements of conventional traffic signals as specified in Part IV and other applicatble portions of the currently adopted version of the Manual on Uniform Traffic Control Devices (MUTCD) and the Illinois MUTCD. The signal system shall be designed to continuously operate over an ambient temperature range between -30 °F (-34 °C) and 120 °F (48 °C). When not being utilized to inform and direct traffic, portable signals shall be treated as nonoperating equipment according to Article 701.11.

g. Basis of Payment. This work will be paid for according to Article 701.20(c).

Basis of Payment.
This work shall be paid for at the contract unit price each for TEMPORARY TRAFFIC SIGNAL INSTALLATION, TEMPORARY BRIDGE TRAFFIC SIGNAL INSTALLATION, or TEMPORARY PORTABLE BRIDGE TRAFFIC SIGNAL INSTALLATION, the price of which shall include all costs for the modifications required for traffic staging, changes in signal phasing as required in the Contract plans, microwave vehicle sensors, video vehicle detection system, any maintenance or adjustment to the microwave vehicle sensors/video vehicle detection system, the temporary wireless interconnect system complete, temporary fiber optic interconnect system complete, all material required, the installation and complete removal of the temporary traffic signal. Each intersection will be paid for separately.

REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT.

Add the following to Article 895.05 of the Standard Specifications:

The traffic signal equipment which is to be removed and is to become the property of the Contractor shall be disposed of outside the right-of-way at the Contractor's expense.

All equipment to be returned to the State shall be delivered by the Contractor to the State's Traffic Signal Maintenance Contractor's main facility. The Contractor shall contact the State's Electrical Maintenance Contractor to schedule an appointment to deliver the equipment. No equipment will be accepted without a prior appointment. All equipment shall be delivered within 30 days of removing it from the traffic signal installation. The Contractor shall provide 5 copies of a list of equipment that is to remain the property of the State, including model and serial numbers, where applicable. The Contractor shall also provide a copy of the Contract plan or special provision showing the quantities and type of equipment. Controllers and peripheral equipment from the same location shall be boxed together (equipment from different locations may not be mixed) and all boxes and controller cabinets shall be clearly marked or labeled with the location from which they were removed. If equipment is not returned with these requirements, it will be rejected by the State's Electrical Maintenance Contractor. The Contractor shall be responsible for the condition of the traffic signal equipment from the time Contractor takes maintenance of the signal installation until the acceptance of a receipt drawn

by the State's Electrical Maintenance Contractor indicating the items have been returned in good condition.

The Contractor shall safely store and arrange for pick up or delivery of all equipment to be returned to agencies other than the State. The Contractor shall package the equipment and provide all necessary documentation as stated above.

Traffic signal equipment which is lost or not returned to the Department for any reason shall be replaced with new equipment meeting the requirements of these Specifications at no cost to the contract.

TRAFFIC SIGNAL PAINTING.

Description.
This work shall include surface preparation, powder type painted finish application and packaging of new galvanized steel traffic signal mast arm poles and posts assemblies. All work associated with applying the painted finish shall be performed at the manufacturing facility for the pole assembly or post or at a painting facility approved by the Engineer. Traffic signal mast arm shrouds and post bases shall also be painted the same color as the pole assemblies and posts.

Surface Preparation.
All weld flux and other contaminates shall be mechanically removed. The traffic mast arms and post assemblies shall be degreased, cleaned, and air dried to assure all moisture is removed.

Painted Finish.
All galvanized exterior surfaces shall be coated with a urethane or triglycidyl isocyanurate (TGIC) polyester powder to a dry film thickness of 2.0 mils. Prior to application, the surface shall be mechanically etched by brush blasting (Ref. SSPC-SP7) and the zinc coated substrate preheated to 450 °F for a minimum one (1) hour. The coating shall be electrostatically applied and cured by elevating the zinc-coated substrate temperature to a minimum of 400 °F.

The finish paint color shall be one of the manufacturer's standard colors and shall be as selected by the local agency responsible for paint costs. The Contractor shall confirm, in writing, the color selection with the local responsible agency and provide a copy of the approval to the Engineer and a copy of the approval shall be included in the material catalog submittal.

Painting of traffic signal heads, pedestrian signal heads and controller cabinets is not included in this pay item.

Any damage to the finish after leaving the manufacturer's facility shall be repaired to the satisfaction of the Engineer using a method recommended by the manufacturer and approved by the Engineer. If while at the manufacturer's facility the finish is damaged, the finish shall be re-applied at no cost to the contract.

Warranty.
The Contractor shall furnish in writing to the Engineer, the paint manufacturer's standard warranty and certification that the paint system has been properly applied.

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

Basis of Payment.
This work shall be paid for at the contract unit price each for PAINT NEW MAST ARM AND POLE, UNDER 40 FEET (12.19 METER), PAINT NEW MAST ARM AND POLE, 40 FEET (12.19 METER) AND OVER, PAINT NEW COMBINATION MAST ARM AND POLE, UNDER 40 FEET (12.19 METER), PAINT NEW COMBINATION MAST ARM AND POLE, 40 FEET (12.19 METER) AND OVER, or PAINT NEW TRAFFIC SIGNAL POST of the length specified, which shall be payment in full for painting and packaging the traffic signal mast arm poles and posts described above including all shrouds, bases and appurtenances.

ILLUMINATED STREET NAME SIGN

Description.
This work shall consist of furnishing and installing a LED internally illuminated street name sign.

Materials.
Materials shall be in accordance with ILLUMINATED STREET NAME SIGN in Division 1000 of these specifications.

Installation.
The sign can be mounted on most steel mast arm poles. Mounting on aluminum mast arm pole requires supporting structural calculations. Some older or special designed steel mast arm poles may require structural evaluation to assure that construction of the mast arm pole is adequate for the proposed additional loading. Structural calculations and other supporting documentation as determined by the Engineer shall be provided by the contractor for review by the Department.

The sign shall be located on a steel traffic signal mast arm no further than 8-feet from the center of the pole to the center of the sign at a height of between 16 to 18-feet above traveled pavement. Mounting hardware shall be Pelco model SE-5015, or approved equal, utilizing stainless steel components.

Signs shall be installed such that they are not energized when traffic signals are powered by an alternate energy source such as a generator or uninterruptible power supply (UPS). The signs shall be connected to the generator or UPS bypass circuitry.

Basis of Payment.

This work will be paid for at the contract unit price each for ILLUMINATED STREET NAME SIGN, of the length specified which shall be payment in full for furnishing and installing the LED internally illuminated street sign, complete with circuitry and mounting hardware including photo cell, circuit breaker, fusing, relay, connections and cabling as shown on the plans for proper operation and installation.

RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM.

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

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

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

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

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

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

system, in which case, the Consultant may be instructed to wait until the conditions return to normal or to follow specific instructions regarding the optimization.

(a) LEVEL I Re-Optimization

1. The following tasks are associated with LEVEL I Re-Optimization.
   a. Appropriate signal timings shall be developed for the subject intersection and existing timings shall be utilized for the rest of the intersections in the system.
   b. Proposed signal timing plan for the new or modified intersection(s) shall be forwarded to IDOT for review prior to implementation.
   c. Consultant shall conduct on-site implementation of the timings at the turn-on and make fine-tuning adjustments to the timings of the subject intersection in the field to alleviate observed adverse operating conditions and to enhance operations.

2. The following deliverables shall be provided for LEVEL I Re-Optimization.
   a. Consultant shall furnish to IDOT a cover letter describing the extent of the re-optimization work performed.
   b. Consultant shall furnish an updated intersection graphic display for the subject intersection to IDOT and to IDOT's Traffic Signal Maintenance Contractor.

(b) LEVEL II Re-Optimization

1. In addition to the requirements described in the LEVEL I Re-Optimization above, the following tasks are associated with LEVEL II Re-Optimization.
   a. Traffic counts shall be taken at the subject intersection after the traffic signals are approved for operation by the Area Traffic Signal Operations Engineer. Manual turning movement counts shall be conducted from 6:30 a.m. to 9:30 a.m., 11:00 a.m. to 1:00 p.m., and 3:30 p.m. to 6:30 p.m. on a typical weekday from midday Monday to midday Friday. The turning movement counts shall identify cars, and single-unit, multi-unit heavy vehicles, and transit buses.
   b. As necessary, the intersections shall be re-addressed and all system detectors reassigned in the master controller according to the current standard of District One.
   c. Traffic responsive program operation shall be evaluated to verify proper pattern selection and lack of oscillation and a report of the operation shall be provided to IDOT.

2. The following deliverables shall be provided for LEVEL II Re-Optimization.
   a. Consultant shall furnish to IDOT one (1) copy of a technical memorandum for the optimized system. The technical memorandum shall include the following elements:
      (1) Brief description of the project
      (2) Printed copies of the analysis output from Synchro (or other appropriate, approved optimization software file)
      (3) Printed copies of the traffic counts conducted at the subject intersection
   b. Consultant shall furnish to IDOT two (2) CDs for the optimized system. The CDs shall include the following elements:
      (1) Electronic copy of the technical memorandum in PDF format

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

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

OPTIMIZE TRAFFIC SIGNAL SYSTEM.

Description.
This work shall consist of optimizing a closed loop traffic signal system.

OPTIMIZE TRAFFIC SIGNAL SYSTEM applies when a new or existing closed loop traffic signal system is to be optimized and a formal Signal Coordination and Timing (SCAT) Report is to be prepared. The purpose of this work is to improve system performance by optimizing traffic signal timings, developing a time of day program and a traffic responsive program.

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

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

(a) The following tasks are associated with OPTIMIZE TRAFFIC SIGNAL SYSTEM.

1. Appropriate signal timings and offsets shall be developed for each intersection and appropriate cycle lengths shall be developed for the closed loop signal system.

2. Traffic counts shall be taken at all intersections after the permanent traffic signals are approved for operation by the Area Traffic Signal Operations Engineer. Manual turning movement counts shall be conducted from 6:30 a.m. to 9:30 a.m., 11:00 a.m. to 1:00 p.m., and 3:30 p.m. to 6:30 p.m. on a typical weekday from midday Monday to midday Friday. The turning movement counts shall identify cars, and single-unit and multi-unit heavy vehicles.

3. As necessary, the intersections shall be re-addressed and all system detectors reassigned in the master controller according to the current standard of District One.

4. A traffic responsive program shall be developed, which considers both volume and occupancy. A time-of-day program shall be developed for used as a back-up system.

5. Proposed signal timing plan for the new or modified intersection shall be forwarded to IDOT for review prior to implementation.

6. Consultant shall conduct on-site implementation of the timings and make fine-tuning adjustments to the timings in the field to alleviate observed adverse operating conditions and to enhance operations.

7. Speed and delay studies shall be conducted during each of the count periods along the system corridor in the field before and after implementation of the proposed timing plans for comparative evaluations. These studies should utilize specialized electronic timing and measuring devices.

(b) The following deliverables shall be provided for OPTIMIZE TRAFFIC SIGNAL SYSTEM.

1. Consultant shall furnish to IDOT one (1) copy of a SCAT Report for the optimized system. The SCAT Report shall include the following elements:

Cover Page in color showing a System Map

Figures

1. System overview map – showing system number, system schematic map with numbered system detectors, oversaturated movements, master location, system phone number, cycle lengths, and date of completion.
2. General location map in color – showing signal system location in the metropolitan area.
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Tab 2. Turning Movement Counts

1. Turning Movement Counts (Showing turning movement counts in the intersection diagram for each period, including truck percentage)

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Tab 6: Electronic Files

1. Two (2) CDs for the optimized system. The CDs shall include the following elements:
   a. Electronic copy of the SCAT Report in PDF format
   b. Copies of the Synchro files for the optimized system
   c. Traffic counts for the optimized system
   d. New or updated intersection graphic display files for each of the system intersections and the system graphic display file including system detector locations and addresses.

Basis of Payment.
The work shall be paid for at the contract unit each for OPTIMIZE TRAFFIC SIGNAL SYSTEM, which price shall be payment in full for performing all work described herein for the entire traffic signal system. Following the completion of traffic counts, 25 percent of the bid price will be paid. Following the completion of the Synchro analysis, 25 percent of the bid price will be paid. Following the setup and fine tuning of the timings, the speed-delay study, and the TRP programming, 25 percent of the bid price will be paid. The remaining 25 percent will be paid when the system is working to the satisfaction of the engineer and the report and CD have been submitted.

TEMPORARY TRAFFIC SIGNAL TIMINGS

Description.
This work shall consist of developing and maintaining appropriate traffic signal timings for the specified intersection for the duration of the temporary signalized condition, as well as impact to existing traffic signal timings caused by detours or other temporary conditions.

All timings and adjustments necessary for this work shall be performed by an approved Consultant who has previous experience in optimizing Closed Loop Traffic signal Systems for District One of the Illinois Department of Transportation. The Contractor shall contact the Traffic Signal Engineer at (847) 705-4424 for a listing of approved Consultants.

The following tasks are associated with TEMPORARY TRAFFIC SIGNAL TIMINGS.

(a) Consultant shall attend temporary traffic signal inspection (turn-on) and/or detour meeting and conduct on-site implementation of the traffic signal timings. Make fine-turning adjustments to the timings in the field to alleviate observed adverse operating conditions and to enhance operations.

(b) Consultant shall provide monthly observation of traffic signal operations in the field.

(c) Consultant shall provide on-site consultation and adjust timings as necessary for construction stage changes, temporary traffic signal phase changes, and any other conditions affecting timing and phasing, including lane closures, detours, and other construction activities.

(d) Consultant shall make timing adjustments and prepare comment responses as directed by the Area Traffic Signal Operations Engineer.

Basis of Payment.
The work shall be paid for at the contract unit price each for TEMPORARY TRAFFIC SIGNAL TIMINGS, which price shall be payment in full for performing all work described herein per intersection. When the temporary traffic signal installation is turned on and/or detour implemented, 50 percent of the bid price will be paid. The remaining 50 percent of the bid price will be paid following the removal of the temporary traffic signal installation and/or detour.

MODIFYING EXISTING CONTROLLER CABINET.

The work shall consist of modifying an existing controller cabinet as follows:

(a) Uninterruptible Power Supply (UPS). The addition of uninterruptible power supply (UPS) to an existing controller cabinet could require the relocation of the existing controller cabinet items to allow for the installation of the uninterruptible power supply (UPS) components inside the existing controller cabinet as outlined under Sections 862 and 1074.04 of the Standard Specifications.

(b) Light Emitting Diode (LED) Signal Heads, Light Emitting Diode (LED) Optically Programmed Signal Heads and Light Emitting Diode (LED) Pedestrian Signal Heads. The contractor shall verify that the existing load switches meet the requirements of Section 1074.03(5)(b)(2) of the Standard Specifications and the recommended load requirements of the light emitting diode (LED) signal heads that are being installed at the existing traffic signal. If any of the existing load switches do not meet these requirements, they shall be replaced, as directed by the Engineer.

(c) Light Emitting Diode (LED), Signal Head, Retrofit. The contractor shall verify that the existing load switches meet the requirements of Section 1074.03(2) of the Standard Specifications and the recommended load requirements of light emitting diode (LED) traffic signal modules, pedestrian signal modules, and pedestrian countdown signal modules as specified in the plans. If any of the existing load switches do not meet these requirements, they shall be replaced, as directed by the Engineer.

Basis of Payment.
Modifying an existing controller cabinet will be paid for at the contract unit price per each for MODIFY EXISTING CONTROLLER CABINET. This shall include all material and labor required to complete the work as described above, the removal and disposal of all items removed from the controller cabinet, as directed by the Engineer. The equipment for the Uninterruptible Power Supply (UPS) and labor to install it in the existing controller cabinet shall be included in the pay item Uninterruptible Power Supply. Modifying an existing controller will be paid for at the contract unit price per each for MODIFY EXISTING CONTROLLER, per Sections 895.04 and 895.08 of the Standard Specifications.

DIVISION 1000 MATERIALS

PEDESTRIAN PUSH-BUTTON.

Revise Article 1074.02(a) of the Standard Specifications to read:

The pedestrian push-button housing shall be constructed of aluminum alloy according to ASTM B 308 6061-T6 and powder coated yellow, unless otherwise noted on the plans. The housing shall be furnished with suitable mounting hardware.

Revise Article 1074-02(e) of the Standard Specifications to read:

Stations shall be designed to be mounted directly to a post, mast arm pole or wood pole. The station shall be aluminum and shall accept a 3 inch (75mm) round push-button assembly and a regulatory pedestrian instruction sign according to MUTCD, sign series R10-3e 9 x 15 inch sign with arrow(s) for a count-down pedestrian signal. The pedestrian station size without count-down pedestrian signals shall accommodate a MUTCD sign series R10-3b or R10-3d 9 x 12 inch sign with arrow(s).

Add the following to Article 1074.02(a) of the Standard Specifications:

(f) Location. Pedestrian push-buttons and stations shall be mounted directly to a post, mast arm pole or wood pole as shown on the plans and shall be fully accessible from a paved or concrete surface. See the District's Detail sheets for orientation and mounting details.

CONTROLLER CABINET AND PERIPHERAL EQUIPMENT.

Add the following to Article 1074.03 of the Standard Specifications:

(a) (6) Cabinets shall be designed for NEMA TS2 Type 1 operation. All cabinets shall be pre-wired for a minimum of eight (8) phases of vehicular, four (4) phases of pedestrian and four (4) phases of overlap operation.

(b) (5) Cabinets – Provide 1/8" (3.2 mm) thick unpainted aluminum alloy 5052-H32. The surface shall be smooth, free of marks and scratches. All external hardware shall be stainless steel.
(b) (6) Controller Harness – Provide a TS2 Type 2 "A" wired harness in addition to the TS2 Type 1 harness.
(b) (7) Surge Protection – Plug-in type EDCO SHA-1250 or Atlantic/Pacific approved equal.
(b) (8) BIU – Containment screw required.
(b) (9) Transfer Relays – Solid state or mechanical flash relays are acceptable.
(b) (10) Switch Guards – All switches shall be guarded.

(b) (11) Heating – One (1) 200 watt, thermostatically-controlled, Hoffman electric heater, or approved equivalent.

(b) (12) Lighting – One (1) LED Panel shall be placed inside the cabinet top panel and one (1) LED Panel shall be placed on each side of the pull-out drawer/shelf assembly located beneath the controller support shelf. The LED Panels shall be controlled by a wall switch. Relume Traffic Control Box LED Panels and power supply or approved equivalent.

(b) (13) The cabinet shall be equipped with a pull-out drawer/shelf assembly. A 1 ½ inch (38mm) deep drawer shall be provided in the cabinet, mounted directly beneath the controller support shelf. The drawer shall have a hinged top cover and shall be capable of accommodating one (1) complete set of cabinet prints and manuals. This drawer shall support 50 lbs. (23 kg) in weight when fully extended. The drawer shall open and close smoothly. Drawer dimensions shall make maximum use of available depth offered by the controller shelf and be a minimum of 24 inches (610mm) wide.

(b) (14) Plan & Wiring Diagrams – 12" x 16" (3.05mm x 4.06mm) moisture sealed container attached to door.

(b) (15) Detector Racks – Fully wired and labeled for four (4) channels of emergency vehicle pre-emption and sixteen channels (16) of vehicular operation.

(b) (16) Field Wiring Labels – All field wiring shall be labeled.

(b) (17) Field Wiring Termination – Approved channel lugs required.

(b) (18) Power Panel – Provide a nonconductive shield.

(b) (19) Circuit Breaker – The circuit breaker shall be sized for the proposed load but shall not be rated less than 30 amps.

(b) (20) Police Door – Provide wiring and termination for plug in manual phase advance switch.

(b) (21) Railroad Pre-Emption Test Switch – Eaton 8830K13 SHA 1250 or equivalent.

RAILROAD, FULL-ACTUATED CONTROLLER AND CABINET.

Controller shall comply with Article 1073.01 as amended in these Traffic Signal Special Provisions.

Controller Cabinet and Peripheral Equipment shall comply with Article 1074.03 as amended in these Traffic Signal Special Provisions.

Add the following to Articles 1073.01 (c) (2) and 1074.03 (a) (5) (e) of the Standard Specifications:

Controllers and cabinets shall be new and NEMA TS2 Type 1 design.

A method of monitoring and/or providing redundancy to the railroad preemptor input to the controller shall be included as a component of the Railroad, Full Actuated Controller and Cabinet installation and be verified by the traffic signal equipment supplier prior to installation.

Railroad interconnected controllers and cabinets shall be assembled only by an approved traffic signal equipment supplier. All railroad interconnected (including temporary railroad interconnect) controllers and cabinets shall be new, built, tested and approved by the controller equipment vendor, in the vendor's District One facility, prior to field installation. The vendor shall provide the technical equipment and assistance as required by the Engineer to fully test this equipment.

UNINTERRUPTIBLE POWER SUPPLY (UPS).

Revise Article 1074.04(a)(1) of the Standard Specifications to read:

The UPS shall be line interactive and provide voltage regulation and power conditioning when utilizing utility power. The UPS shall be sized appropriately for the intersection's normal traffic signal operating connected load, plus 20 percent (20%). The total connected traffic signal load shall not exceed the published ratings for the UPS. The UPS shall provide a minimum of six (6) hours of normal operation run-time for signalized intersections with LED type signal head optics at 77 °F (25 °C) (minimum 700 W/1000 VA active output capacity, with 90 percent minimum inverter efficiency).

Revise the first paragraph of Article 1074.04(a)(3) of the Standard Specifications to read:

The UPS shall have a minimum of four (4) sets of normally open (NO) and normally closed (NC) single-pole double-throw (SPDT) relay contact closures, available on a panel mounted terminal block or locking circular connectors, rated at a minimum 120 V/1 A, and labeled so as to identify each contact according to the plans.

Revise Article 1074.04(a)(10) of the Standard Specifications to read:

The UPS shall be compatible with the District's approved traffic controller assemblies utilizing NEMA TS 1 or NEMA TS 2 controllers and cabinet components for full time operation.

Revise Article 1074.04(a)(17) of the Standard Specifications to read:

When the intersection is in battery backup mode, the UPS shall bypass all internal cabinet lights, ventilation fans, cabinet heaters, service receptacles, any lighted street name signs, any automated enforcement equipment and any other devices directed by the Engineer.

Revise Article 1074.04(b)(2)b of the Standard Specifications to read:

Batteries, inverter/charger and power transfer relay shall be housed in a separate NEMA Type 3R cabinet. The cabinet shall be Aluminum alloy, 5052-H32, 0.125-inch thick and have a natural mill finish.

Revise Article 1074.04(b)(2)c of the Standard Specifications to read:

No more than three batteries shall be mounted on individual shelves for a cabinet housing six batteries and no more than four batteries per shelf for a cabinet housing eight batteries.

Revise Article 1074.04(b)(2)e of the Standard Specifications to read:

The battery cabinet housing shall have the following nominal outside dimensions: a width of 25 in. (785 mm), a depth of 16 in. (440 mm), and a height of 41 to 48 in. (1.1 to 1.3 m). Clearance between shelves shall be a minimum of 10 in. (250 mm).

UPS
End of paragraph 1074.04(b) (2)e

The door shall be equipped with a two position doorstop, one a 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, have a neoprene gasket, an Aluminum continuous piano hinge with stainless steel pin, and a three point locking system. The cabinet shall be provided with a main door lock which shall operate with a traffic industry conventional No. 2 key. Provisions for padlocking the door shall be provided.

Add the following to Article 1074.04(b)(2) of the Standard Specifications:

j. The battery cabinet shall have provisions for an external generator connection.

Add the following to Article 1074.04(c) of the Standard Specifications:

(8) The UPS shall include a tip or kill switch installed in the battery cabinet, which shall completely disconnect power from the UPS when the switch is manually activated.

(9) The UPS shall incorporate a flanged electric generator inlet for charging the batteries and operating the UPS. The generator connector shall be male type, twist-lock, rated as 15A, 125VAC with a NEMA L5-15P configuration and weatherproof lift cover plate (Hubbell model HBL4716C or approved equal). Access to the generator inlet shall be from a secured weatherproof lift cover plate or behind a locked battery cabinet police panel.

Battery System.
Revise Article 1074.04(d)(3) of the Standard Specifications to read:

All batteries supplied in the UPS shall be either gel cell or AGM type, deep cycle, completely sealed, prismatic leadcalcium based, silver alloy, valve regulated lead acid (VRLA) requiring no maintenance. All batteries in a UPS installation shall be the same type; mixing of gel cell and AGM types within a UPS installation is not permitted.

Revise Article 1074.04(d)(4) of the Standard Specifications to read:

Batteries shall be certified by the manufacturer to operate over a temperature range of -13 to 160 °F (-25 to + 71 °C) for gel cell batteries and -40 to 140 °F (-40 to + 60 °C) for AGM type batteries.

Add the following to Article 1074.04(d) of the Standard Specifications:

(9) The UPS shall consist of an even number of batteries that are capable of maintaining normal operation of the signalized intersection for a minimum of six hours. Calculations shall be provided showing the number of batteries of the type supplied that are needed to satisfy this requirement. A minimum of four batteries shall be provided.

Add the following to the Article 1074.04 of the Standard Specifications:

(e) Warranty. The warranty for an uninterruptible power supply (UPS) shall cover a minimum of two years from date the equipment is placed in operation; however, the batteries of the UPS shall be warranted for full replacement for a minimum of five years from the date the traffic signal and UPS are placed into service.

ELECTRIC CABLE.

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

Add the following to the Article 1076.04(d) of the Standard Specifications:

Service cable may be single or multiple conductor cable.

TRAFFIC SIGNAL POST.

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

All posts and bases shall be steel and hot dipped galvanized. If the Department approves painting, powder coating by the manufacturer will be required over the galvanization in accordance with TRAFFIC SIGNAL PAINTING in Division 800 of these specifications.

PEDESTRIAN PUSH-BUTTON POST.

Add the following to Article 1077.02(b) of the Standard Specifications:

All posts and bases shall be steel and hot-dipped galvanized. If the Department approves painting, powder coating by the manufacturer will be required over the galvanization in accordance with Traffic Signal Painting in Division 800 of these specifications.

MAST ARM ASSEMBLY AND POLE.

Add the following to Article 1077.03 (a) of the Standard Specifications:

Traffic signal mast arms shall be one piece construction, unless otherwise approved by the Engineer. All poles shall be galvanized. If the Department approves painting, powder coating by the manufacturer will be required over the galvanization in accordance with with TRAFFIC SIGNAL PAINTING in Division 800 of these specifications.

The shroud shall be of sufficient strength to deter pedestrian and vehicular damage. The shroud shall be constructed and designed to allow air to circulate throughout the mast arm but not allow infestation of insects or other animals, and such that it is not hazardous to probing fingers and feet. All mounting hardware shall be stainless steel.

LIGHT EMITTING DIODE (LED) TRAFFIC SIGNAL HEAD.

Add the following to Section 1078 of the Standard Specifications:

General.
All signal and pedestrian heads shall provide 12" (300 mm) displays with glossy yellow or black polycarbonate housings. All head housings shall be the same color (yellow or black) at the intersection. For new signalized intersections and existing signalized intersections where all signal and/or pedestrian heads are being replaced, the proposed head housings shall be black. Where only selected heads are being replaced, the proposed head housing color (yellow or black) shall match existing head housings. Connecting hardware and mounting brackets shall be polycarbonate (black). A corrosion resistant anti-seize lubricant shall be applied to all metallic mounting bracket joints, and shall be visible to the inspector at the signal turn-on. Post top mounting collars are required on all posts, and shall be constructed of the same material as the brackets.

Pedestrian signal heads shall be furnished with the international symbolic "Walking Person" and "Upraised Palm" displays. Egg crate sun shields are not permitted.

Signal heads shall be positioned according to the "District One Standard Traffic Signal Design Details."

LED signal heads (All Face and Section Quantities), (All Mounting Types) shall conform fully to the requirements of Articles 1078.01 and 1078.02 of the Standard Specifications amended herein.

1. The LED signal modules shall be replaced or repaired if an LED signal module fails to function as intended due to workmanship or material defects within the first 60 months from the date of delivery. LED signal modules which exhibit luminous intensities less than the minimum values specified in Table 1 of the ITE Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Circular Signal Supplement (June 27, 2005) [VTSCH], or applicable successor ITE specifications, or show signs of entrance of moisture or contaminants within the first 60 months of the date of delivery shall be replaced or repaired. The manufacturer's written warranty for the LED signal modules shall be dated, signed by an Officer of the company and included in the product submittal to the State.

(a) Physical and Mechanical Requirements

1. Modules can be manufactured under this specification for the following faces:

   a. 12 inch (300 mm) circular, multi-section
   b. 12 inch (300 mm) arrow, multi-section
   c. 12 inch (300 mm) pedestrian, 2 sections

2. The maximum weight of a module shall be 4 lbs. (1.8 kg).

3. Each module shall be a sealed unit to include all parts necessary for operation (a printed circuit board, power supply, a lens and gasket, etc.), and shall be weather proof after installation and connection.

4. Material used for the lens and signal module construction shall conform to ASTM specifications for the materials.

5. The lens of the module shall be tinted with a wavelength-matched color to reduce sun phantom effect and enhance on/off contrast. The tinting shall be uniform across the lens face. Polymeric lens shall provide a surface coating or chemical surface treatment applied to provide abrasion resistance. The lens of the module shall be integral to the unit, convex with a smooth outer surface and made of plastic. The lens shall have a textured surface to reduce glare.

6. The use of tinting or other materials to enhance ON/OFF contrasts shall not affect chromaticity and shall be uniform across the face of the lens.

7. Each module shall have a symbol of the type of module (i.e. circle, arrow, etc.) in the color of the module. The symbol shall be 1 inch (25.4 mm) in diameter. Additionally, the color shall be written out in 1/2 inch (12.7mm) letters next to the symbol.

(b) Photometric Requirements

1. The minimum initial luminous intensity values for the modules shall conform to the values in Table 1 of the VTCSH (2005) for circular signal indications, and as stated in Table 3 of these specifications for arrow and pedestrian indications at 25 °C.

2. The modules shall meet or exceed the illumination values stated in Articles 1078.01 and 1078.02 the Standard Specifications for circular signal indications, and Table 3 of these specifications for arrow and pedestrian indications, throughout the useful life based on normal use in a traffic signal operation over the operating temperature range.

3. The measured chromaticity coordinates of the modules shall conform to the chromaticity requirements of Section 4.2 of the VTCSH (2005) or applicable successor ITE specifications.

4. The LEDs utilized in the modules shall be AlInGaP technology for red, yellow, Portland orange (pedestrian) and white (pedestrian) indications, and GaN for green indications, and shall be the ultra bright type rated for 100,000 hours of continuous operation from -40 °C to +74 °C.

(c) Electrical

1. Maximum power consumption for LED modules is per Table 2.

2. Operating voltage of the modules shall be 120 VAC. All parameters shall be measured at this voltage.

3. The modules shall be operationally compatible with currently used controller assemblies (solid state load switches, flashers, and conflict monitors).

4. When a current of 20 mA AC (or less) is applied to the unit, the voltage read across the two leads shall be 15 VAC or less.

5. The LED modules shall provide constant light output under power. Modules with dimming capabilities shall have the option disabled or set on a non-dimming operation.

6. The individual LEDs shall be wired such that a catastrophic loss or the failure of one or more LED will not result in the loss of the entire module.

(d) Retrofit Traffic Signal Module

1. The following specification requirements apply to the Retrofit module only. All general specifications apply unless specifically superseded in this section.

2. Retrofit modules can be manufactured under this specification for the following faces:

   a. 12 inch (300 mm) circular, multi-section
   b. 12 inch (300 mm) arrow, multi-section

c. 12 inch (300 mm) pedestrian, 2 sections

3. Each Retrofit module shall be designed to be installed in the doorframe of a standard traffic signal housing. The Retrofit module shall be sealed in the doorframe with a one-piece EPDM (ethylene propylene rubber) gasket.

4. The maximum weight of a Retrofit module shall be 4 lbs. (1.8 kg).

5. Each Retrofit module shall be a sealed unit to include all parts necessary for operation (a printed circuit board, power supply, a lens and gasket, etc.), and shall be weather proof after installation and connection.

6. Electrical conductors for modules, including Retrofit modules, shall be 39.4 inches (1m) in length, with quick disconnect terminals attached.

7. The lens of the Retrofit module shall be integral to the unit, shall be convex with a smooth outer surface and made of plastic or of glass.

(e) The following specification requirements apply to the 12 inch (300 mm) arrow module only. All general specifications apply unless specifically superseded in this section.

1. The arrow module shall meet specifications stated in Section 9.01 of the Equipment and Material Standards of the Institute of Transportation Engineers (November 1998) [ITE Standards], Chapter 2 (Vehicle Traffic Control Signal Heads) or applicable successor ITE specifications for arrow indications.

2. The LEDs arrow indication shall be a solid display with a minimum of three (3) outlining rows of LEDs and at least one (1) fill row of LEDs.

(f) The following specification requirement applies to the 12 inch (300 mm) programmed visibility (PV) module only. All general specifications apply unless specifically superseded in this section.

1. The LED module shall be a module designed and constructed to be installed in a programmed visibility (PV) signal housing without modification to the housing.

(g) The following specification requirements apply to the 12 inch (300 mm) Pedestrian module only. All general specifications apply unless specifically superseded in this section.

1. Each pedestrian signal LED module shall provide the ability to actuate the solid upraised hand and the solid walking person on one 12 inch (300mm) section.

2. Two (2) pedestrian sections shall be installed. The top section shall be wired to illuminate only the upraised hand and the bottom section shall be the walking man.

3. "Egg Crate" type sun shields are not permitted. All figures must be a minimum of 9 inches (225mm) in height and easily identified from a distance of 120-feet (36.6m).

LIGHT EMITTING DIODE (LED) PEDESTRIAN COUNTDOWN SIGNAL HEAD.

Add the following to Article 1078.02 of the Standard Specifications:

General.

1. The module shall operate in one mode: Clearance Cycle Countdown Mode Only. The countdown module shall display actual controller programmed clearance cycle and shall start counting when the flashing clearance signal turns on and shall countdown to "0" and turn off when the steady Upraised Hand (symbolizing Don't Walk) signal turns on. Module shall not have user accessible switches or controls for modification of cycle.

2. At power on, the module shall enter a single automatic learning cycle. During the automatic learning cycle, the countdown display shall remain dark.

3. The module shall re-program itself if it detects any increase or decrease of Pedestrian Timing. The counting unit will go blank once a change is detected and then take one complete pedestrian cycle (with no counter during this cycle) to adjust its buffer timer.

4. The module shall allow for consecutive cycles without displaying the steady Upraised Hand.

5. The module shall recognize preemption events and temporarily modify the crossing cycle accordingly.

6. If the controller preempts during the Walking Person (symbolizing Walk), the countdown will follow the controller's directions and will adjust from Walking Person to flashing Upraised Hand. It will start to count down during the flashing Upraised Hand.

7. If the controller preempts during the flashing Upraised Hand, the countdown will continue to count down without interruption.

8. The next cycle, following the preemption event, shall use the correct, initially programmed values.

9. If the controller output displays Upraised Hand steady condition and the unit has not arrived to zero or if both the Upraised Hand and Walking Person are dark for some reason, the unit suspends any timing and the digits will go dark.

10. The digits will go dark for one pedestrian cycle after loss of power of more than 1.5 seconds.

11. The countdown numerals shall be two (2) "7 segment" digits forming the time display utilizing two rows of LEDs.

12. The LED module shall meet the requirements of the Institute of Transportation Engineers (ITE) LED purchase specification, "Pedestrian Traffic Control Signal Indications - Part 2: LED Pedestrian Traffic Signal Modules," or applicable successor ITE specifications, except as modified herein.

13. The LED modules shall provide constant light output under power. Modules with dimming capabilities shall have the option disabled or set on a non-dimming operation.

14. In the event of a power outage, light output from the LED modules shall cease instantaneously.

15. The LEDs utilized in the modules shall be AlInGaP technology for Portland Orange (Countdown Numerals and Upraised Hand) and GaN technology for Lunar White (Walking Person) indications.

16. The individual LEDs shall be wired such that a catastrophic loss or the failure of one or more LED will not result in the loss of the entire module.

Electrical.

1. Maximum power consumption for LED modules is 29 watts.

2. The measured chromaticity shall remain unchanged over the input line voltage range listed of 80 VAC to 135 VAC.

TRAFFIC SIGNAL BACKPLATE.

Delete 1st sentence of Article 1078.03 of the Standard Specifications and add "All backplates shall be aluminum and louvered".

Add the following to the third paragraph of Article 1078.03 of the Standard Specifications. The reflective backplate shall not contain louvers.

Delete second sentence of the fourth paragraph of Article 1078.03 f 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.

INDUCTIVE LOOP DETECTOR.

Add the following to Article 1079.01 of the Standard Specifications:

Contracts requiring new cabinets shall provide for rack mounted detector amplifier cards. Detector amplifiers shall provide LCD displays with loop frequency, inductance, and change of inductance readings.

ILLUMINATED SIGN, LIGHT EMITTING DIODE.

Delete last sentence of Article 1084.01(a) and add "Mounting hardwire 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) 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 (600 mm) by 24 inches (600 mm).

Add the following to Article 1084.01 of the Standard Specifications:

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

ILLUMINATED STREET NAME SIGN

The illuminate street name sign shall be as follows.

(a) Description.
The LEDs shall be white in color and utilize InGaN or UV thermally efficient technology. The LED Light Engines shall be designed to fit inside a standard fluorescent illuminated street sign housing in lieu of fluorescent lamps and ballasts or a slim line type housing. The LED internally-illuminated street name sign shall display the designated street name clearly and legibly in the daylight hours without being energized and at night when energized. The sign

assembly shall consist of a four-, six-, or eight-foot aluminum housing. White translucent 3M DG^3 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 ¾" 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^3 white VIP (Visual Impact Performance) diamond grade sheeting (ATSM Type 9) and 3M/Scotchlite Series 1177 or current 3M equivalent transparent green acrylic EC (electronic cut-able) film applied to the front of the sign face. The legend shall be framed

by a white polycarbonate border. A logo symbol and/or name of the community may be included with approval of the Engineer.

4. All surfaces of the sign shall be etched and primed in accordance to industry standards before receiving appropriate color coats of industrial enamel.

5. All fasteners and hardware shall be corrosion resistant stainless steel. No tools are required for routine maintenance.

6. All wiring shall be secured by insulated wire compression nuts.

7. A wire entrance junction box shall be supplied with the sign assembly. The box may be supplied mounted to the exterior or interior of the sign and provide a weather tight seal.

8. A photoelectric switch shall be mounted in the control cabinet to control lighting functions for day and night display. Each sign shall be individually fused.

9. Brackets and Mounting: LED internally-illuminated street name signs will be factory drilled to accommodate mast arm two-point support assembly mounting brackets.

(e) Electrical.

1. Photocell shall be rated 105-305V, turn on at 1.5 fcs. with a 3-5 second delay. A manufacturer's warranty of six (6) years shall be provided. Power consumption shall be no greater than 1 watt at 120V.

2. The LED Light Engine shall operate from a 60 +- 3 cycle AC line power over a voltage range of 80 to 135 Vac rms. Fluctuations in line voltage over the range of 80 to 135 Vac shall not affect luminous intensity by more than +- 10%.

3. Total harmonic distortion induced into the AC power line by the LED Light Engine, operated at a nominal operating voltage, and at a temperature of +25°C (+77°F), shall not exceed 20%.

4. The LED Light Engine shall 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^2.

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.

FULL-ACTUATED CONTROLLER AND CABINET

This work shall consist of furnishing and installing a(n) "Econolite" brand traffic actuated solid state digital controller in the controller cabinet of the type specified, meeting the requirements of the current District One Traffic Signal Special Provisions including conflict monitor, load switches and flasher relays, with all necessary connections for proper operation.

Basis of Payment. This work will be paid for at the contract unit price each for FULL-ACTUATED CONTROLLER AND TYPE IV CABINET or FULL-ACTUATED CONTROLLER AND TYPE V CABINET.

REMOVE TEMPORARY TRAFFIC SIGNAL INSTALLATION

This work shall consist of removing the existing temporary traffic signal installation at an intersection as listed and as shown on the plans.

The traffic signal equipment that is to be removed and is to remain the property of the agency as indicated on the intersection plan sheet shall be stored within the project limits by the Contractor for pickup by or delivery to agency forces, as specified on the plans. The Contractor shall be responsible for all stored traffic signal equipment until it is picked up. The traffic signal equipment which is to be removed and is to become the property of the Contractor shall be disposed of by them outside the right-of-way at their expense.

The Contractor shall provide five (5) copies of a list of equipment that is to be returned to each agency, including model and serial numbers where applicable. They shall also provide a copy of the contract plan or Special Provisions showing the quantities and type of equipment to each agency. The Contractor shall be responsible for the condition of the traffic signal equipment from the time of removal until the acceptance of a receipt drawn by the agency indicating that the items have been returned in good condition.

The backfilling of the holes created by the removal of the wood poles and reconstructing the surface to match the adjoining area shall be considered incidental to this pay item.

Basis of Payment. This work will be paid for at the contract unit price each for REMOVE TEMPORARY TRAFFIC SIGNAL INSTALLATION which price shall be payment in full for removing the equipment, and storing and/or disposing of it as required. The salvage value of the equipment retained by the Contractor shall be reflected in the contract unit price.

REMOVE FIBER OPTIC CABLE FROM CONDUIT

This work shall consist of removing the existing fiber optic interconnect cable along Quentin Road between the intersections of Field Parkway/Rue Royale and West Cuba Road, and along U.S. Route 12 (Rand Road) between the intersections of West Cuba Road and the Quentin Collection driveway. The existing fiber optic cable shall be disconnected from the traffic signal controller at each intersection and removed from the existing conduit to the handhole where the cable is connected aerially to the temporary traffic signal controller. The existing interconnect cable shall not be disconnected and removed until the proposed interconnect has been installed and is operational.

Basis of Payment. This work will be paid for at the contract unit price per foot for REMOVE FIBER OPTIC CABLE FROM CONDUIT which price shall be payment in full for disconnecting the existing fiber optic cable from the controllers and removing the existing fiber optic cable from the existing conduit.

REBUILD EXISTING HANDHOLE, SPECIAL

Description: This work shall consist of adjusting an existing heavy-duty handhole to bring the frame to the proposed grade at the locations shown on the plans or as directed by the Engineer.

General: The work shall be performed according to Section 603 and Section 814 of the "Standard Specifications", and the following:

1. Excavate the area adjacent to each side of the handhole to allow forming.

2. Remove the handhole frame and cover. Remove the existing walls of the handhole to a depth of 8" below the proposed finished grade.

3. Drill eight, ¾" diameter holes, 6" in deep into the remaining concrete. Drill 2 holes on each of the four handhole walls.

4. Install a 12" long section of #5 reinforcement bar, epoxy coated, in each drilled hole. The bars shall be installed with an approved masonry epoxy from the Approved List of Chemicals Adhesives (IDOT Bureau of Materials and Physical Research).

5. Form and place the new portions of the handhole walls. Replace the steel hooks as required.

6. Reinstall the handhole frame and cover.

All concrete debris shall be disposed of outside the County right-of-way according to the requirements of Article 202.03 of the "Standard Specifications".

Basis of Payment: This work will be paid for at the contract unit price per each for REBUILD EXISTING HANDHOLE, SPECIAL. *The unit price shall include all labor materials and equipment required to perform the work. No additional compensation will be allowed for multiple adjustments to the same structure.*

RELOCATE EXISTING ENCODER

This work shall consist of the removal, storage, and relocation of an existing video encoder from one traffic signal installation to another traffic signal installation.

The video encoder shall be removed and relocated as shown in the plans. Any damage sustained to the encoder 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 ENCODER, which price shall be payment in full for disconnecting the existing video encoder, packaging/storing it, transporting it, and relocating it to the new location complete and operating to the satisfaction of the Engineer.

Illinois Department of Transportation

Environmental Survey Request
Borrow/Waste/Use Areas

Borrow/Waste/Use Area Coordinator
(217) 782-4771

A. Submittal Date: _____ Requesting Agency: ☐ DOH ☐ DOA ☐ Local ☐ Other: _____
Previous survey request(s) submitted for this project? ☐ Yes ☐ No Addendum # _____
Date(s) of prior submittal(s): _____

B. Route: _____ Marked: _____ County(ies): _____ District: ___
Section: _____ Project No.: _____
Job No.: P- _____ C- _____ Contract No.: _____

C. ☐ Borrow/ ☐ Waste/ ☐ Use Area Location (Check each which applies.):

D. 0.00 m^3 (yds^3) borrow from this area. Borrow/Waste/Use Area Size: 0.00 ha. (acres)
Current Land Use (Check each which applies.): ☐ Timber ☐ Row Crops ☐ Pasture ☐ Other (Describe):

E. Name of Contractor: _____
Contact Person: _____ Phone: _____
Address: _____
Name of District/Local Resident Engineer: _____ Phone: _____

F. Has Borrow Area been approved by Bureau of Materials? (Check one.) ☐ Yes ☐ No ☐ Not Applicable
Date of Approval: _____

G. This request is number ##### of _____ requests for this project.

ATTACHMENTS REQUIRED

(LEAVE THIS SPACE BLANK)

Illinois Department of Transportation

Landowner Agreement For BDE 2289

To whom it may concern:

I, said property owner, _____
(Name and Address of Property Owner)
do hereby grant to the State Historic Preservation Officer and the Illinois Transportation Archaeological Research Program (ITARP), or their agents, permission to survey and/or test excavate said property, located:

_____

_____

_____
(Indicate location of property by county, range, township, section and sub-section, as necessary.)

_____
(Signature of Property Owner)

_____
(Name and Address of Property Owner)

_____

_____

I, _____ owner of said property, do hereby grant permission for the State Historic Preservation Officer and the Illinois Transportation Archaeological Research Program (ITARP), or their agents, acting on behalf of the Illinois Department Of Transportation, to remove artifacts found on said property and agree that all artifacts shall remain in public ownership, in the custody of the State Historic Preservation Officer and the University of Illinois, or their agents.

_____
(Signature of Property Owner)

_____
(Name and Address of Property Owner)

_____

_____

Illinois Department of Transportation

Storm Water Pollution Prevention Plan

Route	FAU (364)	Marked Rte.	Quentin Road
Section	02-00051-08-WR	Project No.	M-9003 (083)
County	Lake	Contract No.	63649

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.

Martin Buehler
Print Name

Signature

Director of Transportation, County Engineer
Title

10/20/11
Date

Lake County, Division of Transportation
Agency

I. Site Description:

A. Provide a description of the project location (include latitude and longitude):

This improvement includes Quentin Road from approximately 950 feet south of Long Grove Road to Boschome Drive, north of U.S. Route 12 (Rand Road). The improvement is located in the village of Kildeer and the Village of Deer Park in Lake County, Illinois. The total length of the project is 1.07 miles. Approximate latitude of the project location is 42D 9' 58", and the longitude is -88D 3' 46".

B. Provide a description of the construction activity which is the subject of this plan:

The proposed cross section will consist of two 12-foot through lanes in each direction with exclusive left turn lanes at the intersections of Long Grove Road, U.S. Route 12 (Rand Road) and White Pine Road and type B-6.24 concrete curb and gutter will be provided at the edges of pavement.

The work includes curb and gutter removal, pavement removal, combination concrete curb and gutter, full depth hot-mix asphalt pavement, and an enclosed drainage system as well as pavement marking, signing, landscape restoration, and all incidental and collateral work necessary to complete the project as shown on the plans and as described within the project specifications.

C. Provide the estimated duration of this project:

Estimate construction duration is a construction year.

D. The total area of the construction site is estimated to be 13 acres.

The total area of the site estimated to be disturbed by excavation, grading or other activities is 10.5 acres.

E. The following is a weighted average of the runoff coefficient for this project after construction activities are completed:

0.72

F. List all soils found within project boundaries. Include map unit name, slope information, and erosivity:

See the attached NRCS Soils Map. The soils found on this job vary from Hydric, Prime Agricultureal, to Highly Erodible Soils. The Erosivity Index is 2.88 has been determined for a construction period of 5/1/2009-5/10/2009.

G. Provide an aerial extent of wetland acreage at the site:

There are 13 wetlands located in the vicinity of the project. Wetlands 1,1A, 2, 3, 8, 9, 10, 12A, as referenced int the attached exhibit, are under the jurisdiction of the U.S. Army Corp of Engineers. Wetlands 4, 5, 6, 7, and 12B are considered isolated wetlands. The total area of impacted wetland is 1.08 acres.

H. Provide a description of potentially erosive areas associated with this project:

Existing soil removal and replacement will be performed in areas East of Quentin Road, due to poor soils beneath the areas that the road widening will occur. Ditch lines and steeply sloped areas along the roadway will be subject to potentially erosive conditions while those areas are being constructed. The proposed detention pond will also be a potentially erosive area.

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 soil distrubing activities are listed above under letter "C." The listed activities will be performed along the entire length of the project. In the Erosion Control Plans, the areas called out as Seeding, Class 2A are areas where the slopes do not exceed 4:1. The areas called out as Seeding, Class 1A (Special) are areas with steep slopes from 4:1 to 2:1. The detention pond area has the proposed contours drawn into the Erosion Control Sheets.

J. See the erosion control plans and/or drainage plans for this contract for information regarding drainage patterns, approximate slopes anticipated before and after major grading activities, locations where vehicles enter or exit the site and controls to prevent offsite sediment tracking (to be added after contractor identifies locations), areas of soil disturbance, the location of major structural and non-structural controls identified in the plan, the location of areas where stabilization practices are expected to occur, surface waters (including wetlands) and locations where storm water is discharged to surface water including wetlands.

K. Identify who owns the drainage system (municipality or agency) this project will drain into:

The storm water from the Quentin Road Improvement flows through ditch lines and the proposed detention basin to the Tributary to Buffalo Creek.

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:

The storm water from the Quentin Road Improvement flows to the Tributary to Buffalo Creek and ultimately to Buffalo Creek.

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.

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:

☒	Soil Sediment	☐	Petroleum (gas, diesel, oil, kerosene, hydraulic oil / fluids)
☒	Concrete	☐	Antifreeze / Coolants
☒	Concrete Truck Waste	☒	Waste water from cleaning construction equipment
☒	Concrete Curing Compounds	☐	Other (specify)
☐	Solid Waste Debris	☐	Other (specify)
☐	Paints	☐	Other (specify)
☐	Solvents	☐	Other (specify)
☒	Fertilizers / Pesticides	☐	Other (specify)

II. Controls:

This section of the plan addresses the controls that will be implemented for each of the major construction activities described in I.C. above and for all use areas, borrow sites, and waste sites. For each measure discussed, the Contractor will be responsible for its implementation as indicated. The Contractor shall provide to the Resident Engineer a plan for the implementation of the measures indicated. The Contractor, and subcontractors, will notify the Resident Engineer of any proposed changes, maintenance, or modifications to keep construction activities compliant with the Permit ILR10. Each such Contractor has signed the required certification on forms which are attached to, and are a part of, this plan:

A. Erosion and Sediment Controls

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:

- ☒ Preservation of Mature Vegetation
- ☐ Vegetated Buffer Strips
- ☒ Protection of Trees
- ☒ Temporary Erosion Control Seeding
- ☐ Temporary Turf (Seeding, Class 7)
- ☐ Temporary Mulching
- ☒ Permanent Seeding
- ☒ Erosion Control Blanket / Mulching
- ☒ Sodding
- ☒ Geotextiles
- ☐ Other (specify)
- ☐ Other (specify)
- ☐ Other (specify)
- ☐ Other (specify)

Describe how the stabilization practices listed above will be utilized during construction:

Perservation of Mature Vegetation and Protection of Trees will be utilized where applicable, Tree Trunk Protection, Tree Root Pruning, and Tree Pruning (1 to 10 inch Diameter) in accordance with Section 201 of the IDOT "Section Specifications" for Road and Bridge Construction" shall be used to preserve existing trees.

Temporary Erosion Control Seeding shall be used to protect bare earth while construction is continuing elsewhere.

Permanent Seeding shall be applied to all areas shown in the Erosion Control and Landscaping Plans.

Erosion Control Blanket will be used to prevent erosion, assist in germination of the seeds, and protect the seeds, all areas receiving pulverized topsoil, fertilizer, and seed shall be covered.

Sodding will be used in ditchlines to protect the soils from eroding before seeded ares grow in fully.

Geotextiles will be placed in all areas with unsuitable soils under the Porous Granular Embankment.

Describe how the stabilization practices listed above will be utilized after construction activities have been completed:

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:

- ☒ Perimeter Erosion Barrier
- ☒ Temporary Ditch Check
- ☒ Storm Drain Inlet Protection
- ☒ Sediment Trap
- ☐ Temporary Pipe Slope Drain
- ☒ Temporary Sediment Basin
- ☐ Temporary Stream Crossing
- ☒ Stabilized Construction Exits
- ☐ Turf Reinforcement Mats
- ☐ Permanent Check Dams
- ☒ Permanent Sediment Basin
- ☐ Aggregate Ditch
- ☐ Paved Ditch
- ☐ Rock Outlet Protection
- ☒ Riprap
- ☐ Gabions
- ☐ Slope Mattress
- ☐ Retaining Walls
- ☐ Slope Walls
- ☐ Concrete Revetment Mats
- ☒ Level Spreaders
- ☐ Other (specify)
- ☐ Other (specify)
- ☐ Other (specify)
- ☐ Other (specify)
- ☐ Other (specify)

Describe how the structural practices listed above will be utilized during construction:

Perimeter Erosion Barrier will be provided along the project construction limits to minimize potential erosion sediment runoff where indicated in the plans or as approved by the Engineer.

Temporary Ditch Check will be placed every 500 feet along a ditch line or as approved by the Engineer to

minimize erosion sediment runoff.

Storm Drain Inlet Protection will be placed at storm sewer structures per the Erosion Control Plans to reduce sediment infiltration and downstream erosion.

Sediment Trap unit will be placed within storm sewer mainline upstream from the detention pond to minimize the amount of sediment and floatables entering the pond.

Temporary Sediment Basin will be constructed at the detention pond to eliminate some of the sediment created during construction.

Stabilized Construction exits will be constructed at the locations specified by the Engineer to prevent soil erosion and associated with construction.

Permanent Sediment Basin will be constructed and perennial and native plant species will be planted along it to eliminate the sediment from the job site in both temporary and permanent condition.

Riprap will be used at the location where storm water will flow into or out of the enclosed drainage system. It has also been placed at potentially erosive areas inside the detention pond including outfalls and the overtopping weir.

Level Spreaders are used at locations where storm water from our enclosed system flows from our sites to an existing creek.

Describe how the structural practices listed above will be utilized after construction activities have been completed:

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:

   The enclosed storm system empties into a vegetated detention pond and the flow will be restricted into the Tributary to Buffalo Creek.

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:

See Erosion Control and Landscaping Plans.

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, 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.

Illinois Department of Transportation

Contractor Certification Statement

Prior to conducting any professional services at the site covered by this contract, the Contractor and every subcontractor must complete and return to the Resident Engineer the following certification. A separate certification must be submitted by each firm. Attach to this certification all items required by Section II.5 of the Storm Water Pollution Prevention Plan (SWPPP) which will be handled by the Contractor/subcontractor completing this form.

Route	FAU (364)	Marked Rte.	Quentin Road
Section	02-00051-08-WR	Project No.	M-9003 (083)
County	Lake	Contract No.	63649

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.

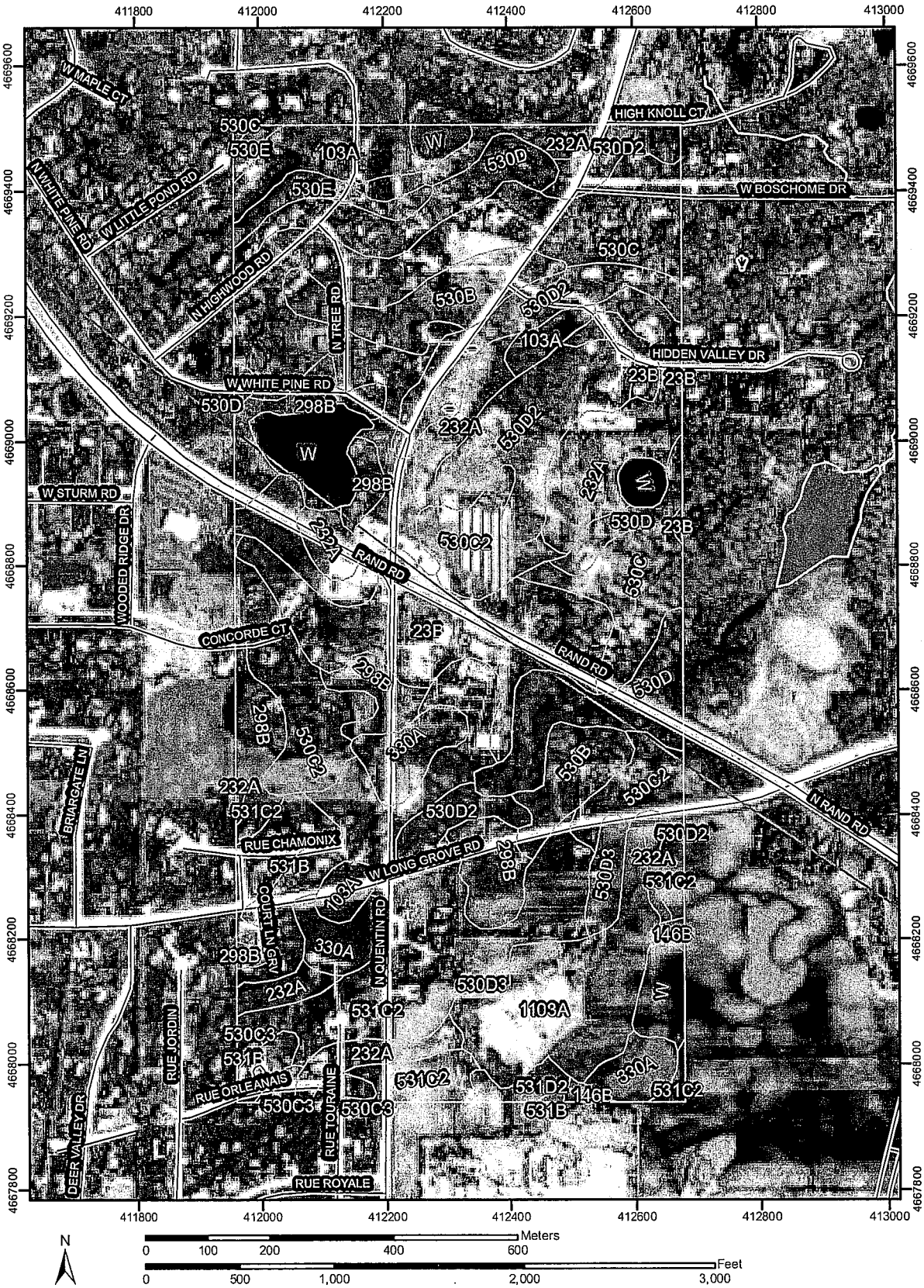
☐ Contractor

☐ Sub-Contractor

Print Name	Signature
Title	Date
Name of Firm	Telephone
Street Address	City/State/ZIP

Items which this Contractor/subcontractor will be responsible for as required in Section II.5. of the SWPPP:

Soil Map–Lake County, Illinois
(Quentin Road Improvement)



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MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features

Municipalities
- Cities
- Urban Areas

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails

Roads
- Interstate Highways
- US Routes
- State Highways
- Local Roads
- Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 16N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lake County, Illinois
Survey Area Data: Version 4, Dec 29, 2006

Date(s) aerial images were photographed: 1998

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

LS2

Map Unit Legend

Lake County, Illinois (IL097)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
23B	Blount silt loam, 2 to 4 percent slopes	21.3	7.6%
103A	Houghton muck, 0 to 2 percent slopes	9.2	3.3%
146B	Elliott silt loam, 2 to 4 percent slopes	0.8	0.3%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	24.9	8.9%
298B	Beecher silt loam, 2 to 4 percent slopes	16.4	5.9%
330A	Peotone silty clay loam, 0 to 2 percent slopes	9.4	3.4%
530B	Ozaukee silt loam, 2 to 4 percent slopes	12.6	4.5%
530C	Ozaukee silt loam, 4 to 6 percent slopes	41.3	14.8%
530C2	Ozaukee silt loam, 4 to 6 percent slopes, eroded	18.9	6.8%
530C3	Ozaukee silty clay loam, 4 to 6 percent slopes, severely eroded	1.6	0.6%
530D	Ozaukee silt loam, 6 to 12 percent slopes	19.6	7.1%
530D2	Ozaukee silt loam, 6 to 12 percent slopes, eroded	25.6	9.2%
530D3	Ozaukee silty clay loam, 6 to 12 percent slopes, severely eroded	2.9	1.0%
530E	Ozaukee silt loam, 12 to 20 percent slopes	3.5	1.3%
531B	Markham silt loam, 2 to 4 percent slopes	5.8	2.1%
531C2	Markham silt loam, 4 to 6 percent slopes, eroded	37.5	13.5%
531D2	Markham silt loam, 6 to 12 percent slopes, eroded	1.5	0.6%
1103A	Houghton muck, undrained, 0 to 2 percent slopes	15.1	5.4%
W	Water	10.4	3.7%
Totals for Area of Interest (AOI)		278.4	100.0%

See page three for instructions

Form Approved OMB No. 2040-0211

NPDES FORM

United States Environmental Protection Agency
Washington, DC 20460

Low Erosivity Waiver Certification

This form provides notice to EPA that you, the project operator identified in Section I of this form, are certifying that construction activity at the project site identified in Section II, will take place during a period when the rainfall erosivity factor is less than five [40 CFR 122.26(b)(15)(i)(A)]. By submitting a complete and accurate form, the otherwise applicable NPDES permitting requirements for stormwater discharges associated with construction activity, are waived. Based on your certification, a waiver is granted for the period beginning on the date this Low Erosivity Waiver Form is mailed to EPA (i.e., postmark date), or the project start date specified in Part III of this form, whichever shall occur last, and ending on the project completion date specified in Part III. Refer to the instructions at the end of this form for more details.

I. Operator Information

Company Name:

IRS Employer Identification Number (EIN): __ – _____

Mailing Address:

Street:

City: State: Zip Code: -

Contact Name:

Phone: - - Fax (optional): - -

Email:

II. Construction Project/Site Information

Project/Site Name:

Project Street/Location:

City: State: Zip Code: -

County or similar government subdivision:

Latitude and Longitude (Use one of three formats given, and specify the source)

1. Degrees, minutes, seconds (e.g., 76°, 30′, 45″) Latitude: __ __ ° __ __ ′ __ __ ″ N Longitude: __ __ __ ° __ __ ′ __ __ ″ W
2. Degrees, minutes with 2 decimal places (e.g., 76° 30.75′) __ __ ° __ __ . __ __ ′ N __ __ __ ° __ __ . __ __ ′ W
3. Degrees, minutes with 4 decimal places (e.g., 76.5125°) __ __ . __ __ __ __ ° N __ __ __ . __ __ __ __ ° W

- Lat/Lon source? ☐ USGS topographic map ☐ EPA Web siting tool ☐ GPS ☐ Other (specify source): _____
- If you used a USGS topographic map, what is the scale? _____
- Horizontal Reference Datum? ☐ NAD 27 ☐ NAD 83 or WGS 84 ☐ Unknown
- Is the project located on Indian country? ☐ Yes ☐ No If yes, enter Indian reservation name _____
- Is the project a federal facility or part of a federal facility? ☐ Yes ☐ No
- Is the project located in the State of Oklahoma and associated with oil and gas exploration, drilling, operations, and pipelines (includes SIC Groups 13 and 46, and SIC codes 492 and 5171)? ☐ Yes ☐ No
- Is the project located in the State of Oklahoma and associated with agricultural production, services and silviculture (includes SIC Groups 01, 02, 07, 08 and 09)? ☐ Yes ☐ No
- Is the project located in the State of Texas and associated with the exploration, development, or production of oil or gas or geothermal resources, including transportation or crude oil or natural gas by pipeline? ☐ Yes ☐ No

Estimated Area to be Disturbed (to the nearest quarter acre): _____ - __

III. Rainfall Erosivity Factor Calculation Data

Project Start Date: ☐☐ / ☐☐ / ☐☐☐☐ (Month / Day / Year)

Project Completion Date: ☐☐ / ☐☐ / ☐☐☐☐ (Month / Day / Year)

Are interim non-vegetative site stabilization measures used to establish the project completion date for purposes of obtaining this waiver? ☐ Yes ☐ No

Rainfall erosivity factor (R factor): __.__ __

Note: To qualify for this waiver, the construction activity must take place during a period when the R factor is less than five.

Rainfall erosivity factor was calculated by using: ☐ Online calculator ☐ EPA Fact Sheet 3-1 ☐ USDA Handbook 703

IV. Operator Certification

I certify under penalty of law that: (1) construction activity at the project or site specified in Part II shall disturb less than five acres and shall take place during a period when the rainfall erosivity factor is less than five, (2) final stabilization will be completed as defined in the Construction General Permit, and (3) 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. Further, if interim non-vegetative measures are used to establish the end of the construction period for the purposes of obtaining this waiver, I commit to periodically inspect and properly maintain the area until the criteria for final vegetative stabilization have been met.

Print Name: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Print Title: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Signature: _____ Date: ☐☐ / ☐☐ / ☐☐☐☐ (Month / Day / Year)

Email: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Basic Information | NPDES Topics | Alphabetical Index | Glossary | About NPDES

eNOI

Municipal MS4s

Construction Activities

Industrial Activities

Road-Related MS4s

Menu of BMPs

Green Infrastructure

Urban BMP Tool

Stormwater Home

Rainfall Erosivity Factor Calculator for Small Construction Sites

Facility Information

Facility Name: Quentin Road
Start Date: 10/1/2012
End Date: 10/10/2012
Latitude: 42.1661
Longitutde: -88.0627

Erosivity Index Calculator Results

AN EROSIVITY INDEX VALUE OF **3.87** HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF **10/1/2012 - 10/10/2012**.

A rainfall erosivity factor of less than 5.0 has been calculated for your site and period of construction. Contact your permitting authority to determine if you are eligible for a waiver from NPDES permitting requirements. If you are covered under EPA's construction general permit then you can use eNOI to submit your low erosivity waiver certification.

If your construction activity extends past the project completion date you specified above, you must recalculate the R factor using the original start date and a new project completion date. If the recalculated R factor is still less than 5.0, a new waiver certification form must be submitted before the end of the original construction period. If the new R factor is 5.0 or greater, the operator must submit a Notice of Intent to be covered by the Construction General Permit before the original project completion date.

Start Over

Stormwater Information

Recent Additions

FAQs

Publications

Regulations

Training & Meetings

Links

Contacts

Sign Up for NPDES eNEWS

Get Acrobat Reader

The documents on this site are best viewed with Acrobat 8.0

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Last updated on August 07, 2009 3:37 PM
URL:http://cfpub.epa.gov/npdes/stormwater/lew/erosivity_index_result.cfm

Illinois Department of Transportation

Erosion and Sediment Control Analysis

1. a. Phase I & II NPDES Storm Water Permit Requirements (Applicable to all projects involving soil disturbance of 1 acre (0.4 hectares) or more.

Will the project involve soil disturbance of 1 acre (0.4 hectares) or more?

☒ Yes The project must comply with the Phase II NPDES Storm Water Permit Requirements.

☐ No

2. Identify, by station, the known location of bridges and culverts. Indicate the anticipated size of each and the nature of the soil disturbance activity(ies) that each will involve (e.g., slope grading, channel shaping, watercourse

36+10 36-inch Stormwater Management / Slope Grading / Channel Shaping
5+00 36-inch Stormwater Management / Slope Grading / Channel Shaping
8+80 24-inch Stormwater Management / Slope Grading / Channel Shaping
14+00 24-inch Stormwater Management / Slope Grading / Channel Shaping

3. Indicate the type and identify the location, by station, of any resources requiring special consideration for protection from sedimentation, such as wetlands, endangered and threatened species locations, or other resources involving special commitments for protection.

Resources such as wetlands & special consideration areas are reflected within the contract plans. See Erosion Control and Landscaping, Plan and Profiles, Drainage and Utilities, and Stormwater Management Plans for protective measures.

4. When possible, graphically indicate on a map or plan drawing the drainage areas, and soil types (via. County Soils Maps) in locations of the project to be affected by clearing and grubbing, excavation or placement of embankment. Also describe or indicate any locations in which known soil disturbance by others (e.g., for agricultural crop production) could introduce additional sediment within the project limits. Highly erodible soils will affect the complexity needed in the ESC plan.

See the attached Soils Map and Erosion Control and Landscaping Plans for locations and additional information.

5. When possible, graphically indicate on a map or plan drawing the locations in which routine practices such as ditch checks and perimeter silt fence will be used and indicate the type and location of other, non-routine practices recommended to use.

See Erosion Control and Landscaping Plans.

*Note: This form is NOT to take the place of the SWPPP, but is to provide information to go into the project report for the benefit of the R.E.

Illinois Department of Transportation

Storm Water Pollution Prevention Plan
Erosion Control Inspection Report

Date of Inspection: _____ County: LAKE

Name of Inspector: _____ Section: 02-00051-08-WR

Type of Inspection: Weekly ☐ Route: FAU (364)

>0.5" Precip. ☐ Precip. Amt: _____ " District: IDOT DISTRICT 1

Contractor: _____ Contract No: 63649

Subs: _____ Job No. C-91-016-09

_____ Project: M-9003 (083)

NPDES/ESC Deficiency Deduction: $ _____ NPDES Permit No: _____

Total Disturbed Area: _____ acre Ready for Final Cover: _____ acre

Final Cover Established: _____ acre

Erosion and Sediment Control Practices

Item # / BMP			YES	NO	N/A
1.	**Slopes:**	Do all slopes and exposed areas where soil disturbing activities have temporarily or permanently ceased, and not permanently stabilized, have adequate temporary seed or other stabilization in accordance with the NPDES permitted 7 and 14 day rule?	☐	☐	☐
2.	**Ditches**	Are all ditches (existing and temporary) clear of sediment and/or debris?	☐	☐	☐
		Do all ditches have adequate stabilization and structural practices in place?	☐	☐	☐
3.	**Perimeter Erosion Barrier:**	Are all perimeter erosion barriers in good working order?	☐	☐	☐
		Has perimeter barrier no longer needed been removed and the area stabilized?	☐	☐	☐
4.	**Temporary Ditch Checks:**	Are all temporary ditch checks in good working order?	☐	☐	☐
		Are the current ditch checks adequate to control erosion?	☐	☐	☐
5.	**Temp Diversions/ Slope Drains:**	Are all Temporary Diversions and Slope Drains functioning properly?	☐	☐	☐
6.	**Inlet Protection:**	Are ALL inlet protection devices in good working order?	☐	☐	☐
		Are ALL inlet filters less than 25% full and fabric unobstructed?	☐	☐	☐
7.	**Sediment Basins/Traps:**	Are ALL sediment basins/traps in good working order?	☐	☐	☐
		Does sufficient capacity exist for the design stormwater event?	☐	☐	☐
8.	**Areas of Interest – Wetland/Prairie/Tree Preservation:**	Has the contractor remained clear of all designated "no entry" areas?	☐	☐	☐
		Are all "no intrusion" areas adequately marked to prevent accidental entry?	☐	☐	☐
9.	**Stock Piles:**	Are all stockpiles properly situated and maintained to prevent runoff and protected to minimize discharge of materials or residue in case of erosion?	☐	☐	☐
10.	**Borrow/Waste Sites:**	Are all borrow and waste locations, including those located offsite, in compliance with NPDES requirements?	☐	☐	☐
11.	**Other Installations:**	Are all other BMP installations shown in the plans properly functioning? (note in comments)	☐	☐	☐

General Site Maintenance Required of the Permit

12.	**Vehicle Tracking:**	Is the site free from mud, sediment and debris from the vehicles entering/leaving off road areas throughout the site?	☐	☐	☐
		Are Stabilized Construction field entrances properly located?	☐	☐	☐
		Are Stabilized Construction field entrances in good working condition?	☐	☐	☐

Item # / BMP			YES	NO	N/A
13.	**Concrete Washout Areas:**	Are concrete washout areas adequately signed and maintained? Has all washout occurred only at designated washout locations?	☐ ☐	☐ ☐	☐ ☐
14.	**Staging/Storage Areas:**	Are all staging/storage facilities free of litter, leaking containers, leaking equipment, spills, etc?	☐	☐	☐
15.	**Fuel/Chemical Storage:**	Are all fuels and chemicals stored only in designated locations? Are all designated locations free of evidence of leaks and or spills?	☐ ☐	☐ ☐	☐ ☐
16.	**Previous Inspection Follow Up:**	Have all corrections from the last report been properly completed? If not, has a NPDES/ESC Deficiency Deduction been assessed?	☐ ☐	☐ ☐	☐ ☐
17.	**Update SWPPP:**	Have all changes to the projects SWPPP been noted on the graphic site plan, signed and dated?	☐	☐	☐
18.	**Off-site Dischare of Sediment:**	Has sediment or other pollutants of concern been released from the project site? If Yes, has the Illinois Environmental Protection Agency been notified within 24 hours of your observation of the discharge and an Incidence of Non-Compliance (ION) mailed within 5 days?	☐ ☐	☐ ☐	☐ ☐

Specific Instructions Related to "No" Answers From Above:

Item #	Station or Station to Station	Practice	Comments/Actions Required	Time for Repair

Other Comments:

Additional Pages (Attached As Needed)

☐ Outfalls / Receiving Waters
☐ Drainage Structure/Ditch Check Locations
☐ Additional Instructions to Contractor

Other: _____

If the answer to any of Items 1-16 above is "No", the contractor is hereby ordered to correct the deficiency. Repairs and stabilization are to be completed within 24 hours of this report (or as indicated above) or the DAILY NPDES/ESC Deficiency Deduction will be assessed for each noted deficiency until the required action is completed.

Inspector's Signature _____ Date/Time: _____

Contractor's Signature _____ Date/Time: _____

Original: Project File
cc: Contractor

Illinois Environmental Protection Agency

Bureau of Water • 1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276

Division of Water Pollution Control
Notice of Intent (NOI) for General Permit
to Discharge Storm Water Associated with Construction Site Activities

This fillable form may be completed online, a copy saved locally, printed and signed before it is submitted to the Permit Section at the above address.

For Office Use Only

Permit No. ILR10 _____

OWNER INFORMATION

Company/Owner Name: LAKE COUNTY DIVISION OF TRANSPORTATION

Mailing Address: 600 WINCHESTER ROAD Phone: (847) 377-7462

City: LIBERTYVILLE State: IL Zip: 60048 Fax: (847) 362-5290

Contact Person: MR. MICHAEL J. BURKE E-mail: mjburke@co.lake.il.us

Owner Type (select one) County

CONTRACTOR INFORMATION

MS4 Community: ☑ Yes ☐ No

Contractor Name: _____

Mailing Address: _____ Phone: _____

City: _____ State: ___ Zip: _____ Fax: _____

CONSTRUCTION SITE INFORMATION

Select One: ☐ New ☐ Change of information for: ~~ILR10~~ ILR40 0517

Project Name: QUENTIN ROAD RECONSTRUCTION County: Lake

Street Address: QUENTIN RD. AND RAND RD. City: KILDEER/DEER PARK IL Zip: 60047

Latitude:	42	9	58.44	Longitude:	-88	3	46.39	SW 27	43N	**10E**
	(Deg)	(Min)	(Sec)		(Deg)	(Min)	(Sec)	Section	Township	Range

Approximate Construction Start Date _____ Approximate Construction End Date _____

Total size of construction site in acres: 13

If less than 1 acre, is the site part of a larger common plan of development?

☐ Yes ☐ No

Fee Schedule for Construction Sites:
Less than 5 acres - $250
5 or more acres - $750

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

Has the SWPPP been submitted to the Agency? ☑ Yes ☐ No

(Submit SWPPP electronically to: epa.constilr10swppp@illinois.gov)

Location of SWPPP for viewing: Address: _____ City: _____

SWPPP contact information: Inspector qualifications:

Contact Name: _____

Phone: _____ Fax: _____ E-mail: _____

Project inspector, if different from above Inspector qualifications:

Inspector's Name: _____

Phone: _____ Fax: _____ E-mail: _____

IL 532 2104 WPC 623
Rev 5/10

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) and may also prevent this form from being processed and could result in your application being denied. This form has been approved by the Forms Management Center. 260

TYPE OF CONSTRUCTION (select one)

Construction Type Reconstruction

SIC Code: _____

Type a detailed description of the project:

PROJECT IS THE RECONSTRUCTION, WIDENING, AND RESURFACING OF QUENTIN ROAD FROM 950 FEET SOUTH OF LONG GROVE ROAD TO BOSCHOME DRIVE, NORTH OF US ROUTE 12 (RAND ROAD).

HISTORIC PRESERVATION AND ENDANGERED SPECIES COMPLIANCE

Has the project been submitted to the following state agencies to satisfy applicable requirements for compliance with Illinois law on:

Historic Preservation Agency ☑ Yes ☐ No

Endangered Species ☑ Yes ☐ No

RECEIVING WATER INFORMATION

Does your storm water discharge directly to: ☐ Waters of the State or ☑ Storm Sewer

Owner of storm sewer system: LAKE COUNTY DIVISION OF TRANSPORTATION

Name of closest receiving water body to which you discharge: TRIBUTARY TO BUFFALO CREEK

Mail completed form to: Illinois Environmental Protection Agency
Division of Water Pollution Control
Attn: Permit Section
Post Office Box 19276
Springfield, Illinois 62794-9276
or call (217) 782-0610
FAX: (217) 782-9891

Or submit electronically to: epa.constilr10swppp@illinois.gov

I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage this 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. In addition, I certify that the provisions of the permit, including the development and implementation of a storm water pollution prevention plan and a monitoring program plan, will be complied with.

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))

Mark M Buehler
Owner Signature:

10/20/11
Date:

Martin Buehler
Printed Name:

Director of Transportation, County Engineer
Title:

2660

INSTRUCTIONS FOR COMPLETION OF CONSTRUCTION ACTIVITY NOTICE OF INTENT (NOI) FORM

Submit original, electronic or facsimile copies. Facsimile and/or electronic copies should be followed-up with submission of an original signature copy as soon as possible. Please write "copy" under the "For Office Use Only" box in the upper right hand corner of the first page.

This fillable form may be completed online, a copy saved locally, printed and signed before it is submitted to the Permit Section at:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Permit Section
Post Office Box 19276
Springfield, Illinois 62794-9276
or call (217) 782-0610
FAX: (217) 782-9891

Or submit electronically to: epa.constilr10swppp@illinois.gov

Reports must be typed or printed legibly and signed.

Any facility that is not presently covered by the General NPDES Permit for Storm Water Discharges From Construction Site Activities is considered a new facility.

If this is a change in your facility information, renewal, etc., please fill in your permit number on the appropriate line, changes of information or permit renewal notifications do not require a fee.

NOTE: FACILITY LOCATION IS NOT NECESSARILY THE FACILITY MAILING ADDRESS, BUT SHOULD DESCRIBE WHERE THE FACILITY IS LOCATED.

Use the formats given in the following examples for correct form completion.

	Example	Format
Section	12	1 or 2 numerical digits
Township	12N	1 or 2 numerical digits followed by "N" or "S"
Range	12W	1 or 2 numerical digits followed by "E" or "W"

For the Name of Closest Receiving Waters, do not use terms such as ditch or channel. For unnamed tributaries, use terms which include at least a named main tributary such as "Unnamed Tributary to Sugar Creek to Sangamon River."

Submission of initial fee and an electronic submission of Storm Water Pollution Prevention Plan (SWPPP) for Initial Permit prior to the Notice of Intent being considered complete for coverage by the ILR10 General Permits. Please make checks payable to: Illinois EPA at the above address.

Construction sites with less than 5 acres of land disturbance - fee is $250.

Construction sites with 5 or more acres of land disturbance - fee is $750.

SWPPP should be submitted electronically to: epa.constilr10swppp@illinois.gov When submitting electronically, use Project Name and City as indicated on NOI form.

DEPARTMENT OF THE ARMY
CHICAGO DISTRICT, CORPS OF ENGINEERS
111 NORTH CANAL STREET
CHICAGO, ILLINOIS 60606-7206

REPLY TO
ATTENTION OF:

Technical Services Division
Regulatory Branch
LRC-2005-23158

JUL 0 8 2009

SUBJECT: Discharge of Fill into 0.88 acres of Jurisdictional Wetland and Waters of the United States for Improvements to Quentin Road from Long Grove Road to Boschome Drive North of Route 12 in the Buffalo Creek Watershed of the Villages of Deer Park and Kildeer, Lake County, Illinois

Martin Buehler
Lake County Division of Transportation
650 West Winchester
Libertyville, Illinois 60048

Dear Mr. Buehler:

This office has verified that your proposed activity complies with the terms and conditions of Regional Permit 3 (Transportation Projects) and the overall RPP under Category I of the Regional Permit Program dated April 1, 2007. The activity may be performed without further authorization from this office provided the activity is conducted in compliance with the terms and conditions of the RPP. Enclosed is your copy of the executed RPP Permit authorization.

This verification expires three years from the date of this letter, and covers only your project as described in your notification and as shown on the plans titled Quentin Road Reconstruction, dated July 25, 2008, prepared by Civiltech, Inc. If the design, location, or purpose of the project is changed, you should contact this office to determine the need for further authorization.

This office has verified that 1.32 acres of mitigation credit are available in your previously purchased credits at the Butterfield Road Mitigation Bank. This amount has been deducted from your available total and all future record keeping for your previously purchased credits should reflect this deduction.

Once you have completed the authorized activity, please sign and return the enclosed compliance certification. If you have any questions, please contact Michael Murphy of my staff by telephone at 312-846-5538, or email at Michael.J.Murphy@usace.army.mil.

Sincerely,

Leesa A. Beal
Chief, East Section
Regulatory Branch

Enclosures

Copy Furnished (with authorization):
Lake County Stormwater Management Commission (Kurt Woolford)

Copy Furnished (w/o authorization):
United States Fish & Wildlife Service (Rogner)
Illinois Department of Natural Resources (Schanzle)
Illinois Department of Natural Resources/OWR (Jereb)
Illinois Environmental Protection Agency (Heacock)
Hey and Associates, Inc. (Steve Rauch)

REGIONAL PERMIT PROGRAM

AUTHORIZATION

PERMITTEE: Lake County Division of Transportation

APPLICATION: LRC-2005-23158

ISSUING OFFICE: U.S. Army Corps of Engineers, Chicago District

DATE: JUL 0 8 2009

You are hereby authorized to perform work in accordance with the terms and conditions specified below. This verification expires three (3) years from the date indicated above.

Note: The term "you" and its derivatives, as used in this authorization, means the permittee or any future transferee. The term "this office" refers to the U.S. Army Corps of Engineers, Chicago District.

PROJECT DESCRIPTION: Discharge of fill into 0.88 acres of jurisdictional wetland and waters of the United States for improvements to Quentin Road from 950 feet south of Long Grove Road to Boschome Drive north of Route 12, as described in your notification and as shown on the plans entitled Quentin Road Reconstruction, dated July 25, 2008, prepared by Civiltech, Inc. To offset impacts, 1.32 acres of mitigation credit shall be deducted from Lake County DOT's previously purchased credits in the Butterfield Road Mitigation Bank.

PROJECT LOCATION: Buffalo Creek Watershed of the Villages of Deer Park and Kildeer, Lake County, Illinois (Section 33, Township 43 N, Range 10 E).

GENERAL CONDITIONS: The above described work is authorized under the terms, conditions and requirements of Regional Permit 3 (Transportation Projects) and shall follow the General Conditions outlined in the Regional Permit Program dated April 1, 2007.

SPECIAL CONDITIONS: To ensure that the activity has minimal individual and cumulative impacts, the following special conditions are required:

1. This authorization is based on the materials submitted as part of application number LRC-2005-23158. Failure to comply with the terms and conditions of this authorization may result in suspension and revocation of your authorization.

2. The time limit for completing the authorized work ends three years from date of issuance. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office at least two months before the above date is reached.

3. You shall undertake and complete the project as described in the plans entitled Quentin Road Reconstruction, dated July 25, 2008, prepared by Civiltech, Inc. and including all relevant documentation to the project plans as proposed.

4. You shall provide evidence that 1.32 acres of uncertified mitigation credit is available to be deducted from your previously purchased credits at the Corps approved Butterfield Road Wetland Mitigation Bank when you return the signed copies of the RPP authorization to this office. This office will not counter-sign the authorization until such evidence has been received.

5. You shall comply with the water quality certification issued under Section 401 of the Clean Water Act by the Illinois Environmental Protection Agency for the project.

6. You shall plant the proposed detention basin with an approver native vegetation seed mix. You shall not include any variety of *Agrostis alba* (including *Agrostis alba palustris*) or *Polygonum pennsylvanicum* as part of a planting mix or cover crop. You shall submit a proposed planting mix to this office for approval when you return the signed copies of the RPP authorization to this office.

7. 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.

8. Work authorized herein shall not commence until you provide written evidence to this office that the LCSMC or the LCSMC's designated agent has determined that your plans meets technical standards. In addition, 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.

9. You shall notify the LCSMC 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.

10. You are responsible for all work authorized herein and for ensuring that all contractors are aware of the terms and conditions of this authorization. A copy of this authorization must be present at the project site during all phases of construction.

11. 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.

12. You shall ensure that any wetland areas created or preserved as mitigation for work authorized by this permit shall not be made subject to any future construction and/or fill activities, except for the purposes of enhancing or restoring the mitigation area associated with this permit. All plans are to be approved by this office prior to commencement of any work.

13. 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.

OTHER INFORMATION:

1. This office has authority to determine if an activity complies with the terms and conditions of the Regional Permit Program (RPP).

2. Limits of RPP authorization:

a. This authorization does not obviate the need to obtain other federal, state, or local authorizations required by law.

b. This authorization does not grant any property rights or exclusive privileges.

c. This authorization does not authorize any injury to the property or rights of others.

d. This authorization does not permit interference with any existing or proposed Federal project.

3. Limits of Federal Liability. The Federal Government does not assume any liability for the following:

a. Damages to the authorized project or uses thereof as a result of other authorized activities or from natural causes.

b. Damages to the authorized project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by this authorized activity.

d. Design or construction deficiencies associated with the authorized work.

e. Damage claims associated with any future modifications, suspension, or revocation of this authorization.

4. Reliance on Applicant's Data. The determination by the issuing office that this activity complies with the terms and conditions of the RPP was made in the reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this authorization at any time the circumstances warrant. In addition, this office may reevaluate the determination that the project qualifies under a RPP. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this authorization.

b. The information provided by you in support of your application proves to have been false, incomplete or inaccurate (see 4 above).

c. Significant new information surfaces which was not considered in reaching the original interest decision.

Such a reevaluation may result in a determination that it is appropriate to suspend, modify or revoke your authorization.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this authorization.

Mark A Buehler — 5-1-09

PERMITTEE — DATE

Martin Buehler
Lake County Division of Transportation
600 Winchester Road
Libertyville, IL 60048

LRC-2005-23158
Corps Authorization Number

This authorization becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

[signature] — 8 Jul 09

For and on behalf of — DATE
Vincent V. Quarles
Colonel, U.S. Army
District Commander

When the structures or work authorized by this authorization are still in existence at the time the property is transferred, the terms and conditions of this authorization will continue to be binding on the new owner(s) of the property. To validate the transfer of this authorization and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

TRANSFEREE — DATE

ADDRESS

TELEPHONE

PERMIT COMPLIANCE

CERTIFICATION

Permit Number: LRC-2005-23158

Permittee: Lake County Division of Transportation

Date of Issuance: JUL 0 8 2009

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.[1]

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
111 North Canal Street, 6th Floor
Chicago, Illinois 60606-7206

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.

[1] 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.

Chicago Testing Laboratory, Inc.
18000 South Williams Street, Thornton, IL 60476 p 708.877.1801 f 708.877.6926
3966 West Dayton Street, Unit A, McHenry, IL 60050 p 815.385.8351 f 815.385.8456
1612 Landmeier Road, Unit B, Elk Grove Village, IL 60007 p 847.228.1079 f 847.228.0633
www.chicagotestinglab.com
info@chicagotestinglab.com
Founded 1912
Testing • Inspection • Training • Consulting • Research • Geotechnical

July13, 2005

Ms. Mary Young, P.E.
Civiltech Engineering, Inc.
450 E. Devon Avenue
Suite 300
Itasca, Illinois 60631

Re: Roadway Soils Survey
Quentin Road/ US Route 12 (Rand Road)
Lake County, Illinois
CTL File No. 74IL331

Dear Ms. Young:

We have completed the field exploration work and analysis of the subgrade conditions for the proposed improvements on the referenced project. This report was prepared for your use in preparing the project design plans.

Purpose

The purpose of this exploration was to determine the types of soil encountered at the proposed subgrade elevation and to determine the presence of problem subgrade materials that may require special treatments.

Scope

The scope of this analysis includes field exploration, field and laboratory testing and analysis of the combined data.

General

This report was prepared on the basis of project information supplied by the client and is only intended for use on this project. Changes in the grades or alignment of the project should be submitted for our review since changes of this kind may cause changes in our recommendations.

This report was prepared by interpreting the data from field and laboratory tests. Using this information along with the proposed project information supplied, design criteria and remedial subgrade treatment recommendations have been prepared for use by the Design Engineers in preparing the plans and specifications. This report gives a representative, but not exhaustive, picture of the project subsoil make-up.

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The soil engineer warrants findings, recommendations, specifications, and/or professional advice to have been promulgated with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology.

Reference Documents

This soils exploration and survey was performed in general accordance with the State of Illinois, 'Soils Manual' dated January 1, 1999.

DESCRIPTION

Project Location

The project is located in Lake County, Sections 27,28.33 and 34, T 43 N, R 10 E. The project area lies partly within the towns of Deer Park and Kildeer as well as parts of unincorporated Ela Township, Illinois. Refer to the Project Vicinity Map, Figure 1, for project location.

Project Description

The project involves the reconstruction and partial realignment of Quentin Road from south of Long Grove Road to just south of Boschome Road, a total length of 4888 feet. In addition to Quentin Road improvements, widening and resurfacing of US Route 12, a.k.a. Rand Road, from 2232' west of Quentin Road to 1305' east of Long Grove Road, a total length of 5879' is scheduled. Resurfacing of Long Grove Road at the intersection of Quentin Road and US Route 12 is anticipated, as well.

Site Pedology and Geology

A study of Lake County Soils Survey (USDA/ Illinois Agricultural Experiment Station Soil Report No. 88 , issued September, 1970) was reviewed. Six (6) soil types are mapped within the project area. These types are: Houghton Muck (103), Morley silt loam (194). Ashkum silty clay loam (232), Beecher silt loam (298B), Peotone silty clay loam (330) and Markham silt loam (531C2). The distribution of these soil types within the project area are presented on the Soil Survey Exhibit, Figure 2, included in the Appendix to this report.

Geologically, the deposits found within the project area are part of the Valparaiso Morainic System, part of the Wadsworth member of the Wedron Formation. The deposits are generally silty and clayey tills, with local lenses of silts , generally low in pebble, cobble and boulder content. (H.B. Willman (Illinois State Geological Survey, Circular 460, 1970)).

FIELD EXPLORATION

General

The procedures for this exploration were conducted in general accordance with the appropriate Illinois Department of Transportation Standards. A field geologist from the office of Chicago Testing Laboratory, Inc supervised the performance of borings at all times. Representative soil specimens obtained were transported to our laboratory for testing and analysis. Each phase of this investigation have been directed by our project engineer.

A total of 51 borings and 18 pavement cores were completed. The borings were performed in the areas of proposed widening and realignment construction on Quentin Road and US Route 12 (Rand Road). The cores were performed in the existing Quentin Road and US 12 pavements.

Soil Drilling and Sampling Procedures

The soil borings were performed with a drilling rig equipped with a rotary head. Continuous flight augers were used to advance the holes. Representative samples of the upper profile soils were obtained by the use of split-spoon sampling methods in general accordance with the ASTM procedure D 1586. Field logs of the soils encountered, descriptions and measurements were prepared by the field geologist and submitted along with each sample obtained. Each boring was extended to a minimum depth of 6' below the existing ground surface.

Pavement Cores

Pavement cores were performed with a portable coring machine equipped with 4"(O.D.) diamond tipped core barrel. The cores were retained and brought to our laboratory for analysis and final documentation. Hand auger borings were extended beneath the cored pavement through the base course and into the subgrade. Measurements of base course thickness were recorded and representative auger samples were obtained for testing

Strength Tests

A calibrated hand penetrometer was used to aid in determining the unconfined compressive strength and relative consistency of cohesive soil samples (Qp) in the field.

Water Level Measurements

Water level observations were made during and after the boring operations and are noted on the Soil Profile and Records of Subsurface Exploration presented herein. In relatively pervious, sandy soils, the water level elevations would be considered reliable.

In relatively impervious, clayey soils, such as the majority of soils found on this site, the accurate determination of the groundwater elevation may not be possible, even after several days of observation. Many factors influence the levels of groundwater. Factors such as temperature, permeability of the soils, and seasonal variations in rainfall are a few of the major factors

Climatological Data

The fieldwork for this soil survey was accomplished during the last week of May, 2005. The table below lists the actual precipitation as measured at O'Hare International Airport by NOAA.

Month	Actual Precipitation	Departure From Normal
December, 2004	1.15"	-1.28
January, 2005	4.00"	2.25
February, 2005	2.19"	0.56
March, 2005	1.48	-1.17
April, 2005	1.53	-2.15
May, 2005	1.99	-1.39

From this data we see that the general area under investigation received 3.18" less precipitation than is 'normal' and that four of the six months previous were 'drier' than normal.

LABORATORY TESTING

Laboratory Testing

A laboratory testing program was conducted to ascertain additional pertinent engineering characteristics of the sampled materials. The soils laboratory work was performed in general accordance with applicable ASTM and IDOT standards. The laboratory testing program included visual classification, unconfined compressive strength testing by the Rimac method as modified by IDOT and moisture content determination for each sample obtained. Samples were selected for further laboratory testing that included grain size analysis, organic content and Illinois Bearing Ratio (IBR). The soils encountered in the borings have been classified using both the Illinois Department of Highways Textural Classification Chart and the American Association of State Highway and Transportation Officials (AASHTO) system of soil classification (AASHTO M145). Details of the laboratory test results are presented on the 'Soil Profile', Records of Subsurface Exploration and Soil Test Data BD-508A sheet included in the Appendix to this report.

PAVEMENT CONDITIONS

Existing Pavement Materials – Quentin Road

Four (4) pavement cores were performed on Quentin Road to supplement the detailed records of resurfacing that has been provided by Lake County. We have included the Quentin Road Pavement History, Sections 051 and 090 documents in the Appendix to this report. The pavement section encountered in C-1 through C-4 consisted of a full depth bituminous concrete. The bituminous concrete materials ranged from 13" to 18" thick. At Core C-1, the bituminous concrete was encountered over Dark Brown SAND (with little GRAVEL), A-1-b,FILL. At core C-2 through C-4, the bituminous concrete was encountered over fine grained Silty CLAY, A-6 subgrade soils. Reference Pavement Core Measurement Log included in the Appendix.

Existing Pavement Materials – US Route 12 (Rand Road)

14 pavement cores were performed on US 12 from approximately 1200' west of Quentin Road to Long Grove Road. The pavement section encountered at C-1 through C-14 consisted of bituminous concrete ranging in thickness from 4 3/8 to 12". P.C. Concrete was encountered beneath bituminous concrete at 11 of the 14 core locations and ranges from 6 7/8 to 9" in thickness. At six (6) of the 14 core locations, aggregate subbase materials of Recycled Asphalt Pavement GRAVEL (RAP) or Brown SAND and GRAVEL were encountered beneath the pavement sections. At the remaining eight (8) core locations no subbase materials were encountered. The subgrade soils encountered at the core locations in fine grained Silty CLAY, A-6. Reference Pavement Core Measurement Log included in the Appendix.

SUBSURFACE & SUBGRADE CONDITIONS

Subsurface Conditions

Materials encountered along the alignments are generally cohesive in nature, classified as CLAY, Silty CLAY, or Clay LOAM, A-6 to A-7-6.

CLAY, A-6 to A-7-6, occurs at the surface in the majority of the borings. It is generally stiff to hard in consistency with moisture content ranging from 11 to 27%.

Soils of the Peotone soil series were encountered near Quentin Road from approximately station 33+00 to 38+00 in the area of proposed realignment (east of the existing roadway). Soils encountered in this section are of particular concern for construction. The soils encountered in B-5 through B-9 are Dark Brown, Dark Grey and Black in color and are described as CLAY with organic materials and or organic fibers. They are soft to stiff in consistency with Qu/Qp values of 0.25 to 1.75 tsf at moisture contents of 25 to 71%. Total Organic Matter tests on these soils range from 3.5 to 10.3%. Groundwater was encountered in each of these borings at depths of 3' to 8', but rose to depths of 3" to 3' below the existing ground surface after a period of 22 days. Groundwater elevations are presented on the Soil Profile in the Apppendix.

Fill soils of considerable extent were encountered near Quentin Road from approximately station 4+00 to 8+00 in the area of proposed realignment (east of the existing roadway). The soils encountered in B-13 and B-14 are Dark Brown, Brown, Grey and Black in color and are described as Clay LOAM, Silty Clay LOAM and CLAY, A-6 to A-7-6. These fill soils have variable amounts of wood, plant matter, wood mulch and concrete rubble. Trees of moderate age (approx. 10 years) are noted in the immediate area, suggesting that these fill soils have been in place for several years if not longer. The soils are stiff to very stiff with Qu/Qp values of 0.75 to 3.25 tsf at moisture contents of 17 to 29%. Groundwater was noted at a depth of 12' below the existing ground surface in B-13 . B-14 was dry. Groundwater elevations are presented on the Soil Profile in the Appendix.

Soil encountered at the anticipated subgrade elevation consists of CLAY, A-6, CLAY, A-7-6, CLAY, A-7-6, TOPSOIL, Clay LOAM, A-6, Clay LOAM, A-7-6, Silty CLAY, A-7-6 , and SAND, A-2. These soils are soft to hard in consistency with Qp and Qu (Rimac) values ranging from 0.25 to 5.24 tsf at moisture contents of 11 to 43%.

Details of the materials encountered and laboratory test results are presented on the Soil Profile, Records of Subsurface Exploration and Soil Test Data BD-508A sheet included in the Appendix to this report.

Subgrade Conditions

Soils encountered as the proposed subgrade elevation are considered to have a Subgrade Support Rating (SSR) of **'FAIR to POOR'** for full depth Bituminous and Rigid Pavement Design. Refer to Soil Test Data BD-508A sheet and Subgrade Support Rating

(SSR) chart located in the Appendix of this report. An Illinois Bearing Ratio of 4.2% was determined from the test sample. Reference IBR Test Data Sheet.

Groundwater Observations

Groundwater was encountered in 14 of the 51 boreholes. The groundwater was recorded at depths of 1.5' to 14.5 below the existing ground surface. At B-5 through B-9 the groundwater was encountered from 3' to 8' below the existing ground surface. After a period of 22 days the groundwater elevation was measured at depths of 3" to 3' below the existing ground surface. The remaining boreholes were backfilled upon completion. No delayed observations of the groundwater conditions were made at these locations. The measured groundwater elevations are noted on the Soil Profile and Records of Subsurface Exploration included in the Appendix of this report.

Susceptibility of Subgrade Soils to Detrimental Frost Action

The susceptibility of the subgrade soils to detrimental frost action has been reviewed. The results of laboratory testing indicate that the soils present at the anticipated subgrade elevation have a fine sand and silt content of 39 to 56% and plasticity indices of 14 to 53. Apparent groundwater was not encountered within the zone of frost penetration (3.5' below the Proposed Grade Line) at the time of exploration. The soils exposed at the subgrade elevation are therefore not considered to be susceptible to the detrimental effects of frost action.

General Earthwork and Roadway Subgrade Preparation

All earthwork excavation, backfill, embankment and subgrade preparation should be conducted in accordance with the requirements of Sections 200 and 300 of the current IDOT "Standard Specifications for Road and Bridge Construction".

Remedial Treatment Areas

All undercuts must be verified by cone penetrometer tests on the subgrade during construction in accordance with the guidelines in the Illinois Department of Transportation "Subgrade Stability Manual". Areas that were identified by the borings as needing additional treatment are summarized on the following tabulation.

Summary of Special Earthwork Remedial Treatment Areas

Location	Replacement Indicated By	Depth[1]	Treatment Width	Treatment Material[2]
Quentin Road				
Station 19+71 to 23+84 (B-1)	Qu=4.80 tsf Mc= 19% Brown and trace Grey CLAY, A-6	-	No Treatment Indicated	
Station 23+84 to 26+82 (B-2)	Qp= 3.0 tsf Mc= 22% Brown CLAY, A-7-6	-	No Treatment Indicated	
Station 26+82 to 29+85 (B-3)	Qp=1.5 tsf Mc= 27% Dark Brown to Black CLAY, A-7-6(26), FILL	12"	Widening	PGES
Station 29+85 to 32+29 (B-4)	Qp/Qu= 3.49 tsf Mc= 20% Light Brown and Grey CLAY, A-7-6	-	No Treatment Indicated	
Station 32+29 to 33+79 (B-5)	Qp= 1.75 Mc= 15% Dark Brown to Black CLAY, A-7-6	See Note 3		
Station 33+79 to 34+93 (B-6)	Qu= 0.78 tsf Mc= 37% Black CLAY, A-7-6	See Note 3		
Station 34+93 to 36+10 (B-7)	Qu= 0.58 tsf Mc= 40% Dark Grey CLAY (with organic material), A-7-6 (T.O.M.=6.1%)	See Note 3		
Station 36+10 to 37+60 (B-8)	Qp=0.25 tsf Mc= 43% Grey Organic CLAY (with organic fibers), A-7-6 (T.O.M. =10.3%)	See Note 3		
Station 37+60 to 39+88 (B-9)	Qp= 1.5 tsf Mc= 28% Dark Brown CLAY (with organic fibers), A-7-6, FILL	See Note 4		
Station 39+88 to 42+63 (B-10)	Qp= 2.0 tsf Mc= 23% Grey and Brown CLAY, A-7-6(23)	10"	Widening	PGES

continued...

Location	Replacement Indicated By	Depth[1]	Treatment Width	Treatment Material[2]
Station 42+63 to 45+35 (B-11)	Qu= 2.10 tsf Mc= 20% Brown CLAY, A-7-6, FILL	-	No Treatment Indicated	
Station 0+00 to 3+24 (B-12)	Qp= 1.75 tsf Mc= 19% Dark Brown Silty Clay LOAM, mixed w/ crushed stone, A-7-6, FILL	10"	Widening	PGES
Station 3+24 to 6+09 (B-13)	Qu= 2.88 tsf Mc= 19% Dark Brown, Brown, Grey and Black Clay LOAM (mixed with small amounts of wood and plant matter), A-6 to A-7-6, FILL	-	No Treatment Indicated	
Station 6+09 to 8+78 (B-14)	Qu= 1.24 tsf Mc= 27% Brown, Grey and Black CLAY, A-7-6, FILL	12"	Widening	PGES
Station 8+78 to 11+77 (B-15)	Qu= 4.26 tsf Mc= 19% Light Brown and trace Light Grey CLAY, A-6 (10)	-	No Treatment Indicated	
Station 11+77 to 14+69 (B-16)	Qu= 2.72 tsf Mc= 19% Brown CLAY, A-6	-	No Treatment Indicated	
Station 14+69 to 17+37 (B-17)	Qu= 1.96 tsf Mc= 18% Brown Clay LOAM, A-6, FILL	10"	Widening	PGES
Station 17+37 to 19+77 (B-18)	Qp= 2.5 tsf Mc= 11% Dark Brown, Brown and Black Clay LOAM, A-6, FILL	-	No Treatment Indicated	
Station 19+77 to 23+24 (B-19)	Qp= 3.5 tsf Mc= 13% Brown CLAY mixed with crushed stone and sand, A-6, FILL	-	No Treatment Indicated	
US Route 12 (Rand Road) Eastbound Widening				
Station 204+50 to 207+68 (B-20)	Qp= 3.0 tsf Mc= 14% Brown CLAY, A-6, FILL	-	No Treatment Indicated	

continued...

Location	Replacement Indicated By	Depth[1]	Treatment Width	Treatment Material[2]
Station 207+68 to 210+51 (B-21)	Qp= 4.5+ tsf Mc= 15% Brown and Dark Grey CLAY, A-7-6, FILL	-	No Treatment Indicated	
Station 210+51 to 213+38 (B-22)	Qu/Qp= 4.68 to 1.5 tsf Mc= 17 to 28% Brown and Black CLAY, A-7-6, FILL (over) Black Clay LOAM, A-6(16)	10"	Widening	PGES or EMB
Station 213+38 to 216+13 (B-23)	Qp/Qu= 2.0 to 1.71 tsf Mc= 26 to 27% Black and Dark Brown CLAY, A-7-6, FILL (over) Brown and Greyish Brown CLAY, A-7-6	10"	Widening	PGES
Station 216+13 to 218+60 (B-24)	Qp= 4.0 tsf Mc= 18 to 21% Brown CLAY, A-6, FILL	-	No Treatment Indicated	
Station 218+60 to 221+30 (B-25)	Qp/Qu= 0.5 to 0.43 tsf Mc= 25 to 24% Dark Brown CLAY (wet), A-7-6, FILL (over) Brown CLAY (wet), A-7-6	24"	Widening	PGES and FABRIC
Station 221+30 to 224+22 (B-26)	Qu= 2.95 tsf Mc= 17% Light Brown and trace light Grey CLAY, A-6(12)	-	No Treatment Indicated	
Station 224+22 to 226+89 (B-27)	Qu= 3.80 tsf Mc= 16% Light Brown and trace Light Grey CLAY, A-6	-	No Treatment Indicated	
Station 226+89 to 229+64 (B-28)	Qu= 4.68 tsf Mc= 17% Light Yellowish Brown CLAY, A-6	-	No Treatment Indicated	
Station 229+64 to 232+29 (B-29)	Qp= 3.5 tsf Mc= 20% Orangish Brown CLAY, A-6	-	No Treatment Indicated	

continued...

Location	Replacement Indicated By	Depth[1]	Treatment Width	Treatment Material[2]
Station 232+29 to 234+80 (B-30)	Qp/Qu= 1.0 to 1.71 tsf Mc= 39 to 21% Dark Grey to Black CLAY, A-7-6, TOPSOIL (12") (over) Brown CLAY, A-7-6	12"	Widening	PGES or EMB
Station 234+80 to 237+55 (B-31)	N=15 Mc= 5% Dark Brown SAND, A-2-4, FILL	-	No Treatment Indicated	
Station 237+55 to 240+45 (B-32)	Qu= 3.88 tsf Mc= 15% Brown CLAY, A-6	-	No Treatment Indicated	
Station 240+45 244+00 (B-33)	Qp= 2.5 tsf Mc= 21% Dark Brown CLAY, A-7-6, FILL (6") (over)Brown CLAY, A-7-6, FILL	6"	Widening	PGES or EMB
Station 244+00 to 247+54 (B-34)	Qu= 4.07 tsf Mc= 19% Light Yellowish Brown CLAY, A-6	-	No Treatment Indicated	
Station 247+54 to 250+53 (B-35)	Qu= 2.87 tsf Mc= 20% Black, Grey and Brown Silty CLAY, A-7-6(22), FILL	-	No Treatment Indicated	
Station 250+53 to 253+59 (B-36)	Qu= 5.24 tsf Mc= 17% Brown, Grey and Black Silty CLAY, A-7-6, FILL	-	No Treatment Indicated	
Station 253+59 to 257+73 (B-37)	Qp/Qu= 1.0 to 1.47 tsf Mc= 30% Black CLAY, A-7-6, TOPSOIL (16") (over) Light Brown and Light Grey CLAY, A-7-6	16"	Widening	PGES
US Route 12 (Rand Road) Westbound Widening				
Station 206+00 to 209+00 (B-52)	Qp= 2.75 tsf Mc= 19% Grey and Brown CLAY, A-6	-	No Treatment Indicated	
Station 209+00 to 212+00 (B-51)	Qp= 4.5+ tsf Mc= 21% Light Brown CLAY, A-6	-	No Treatment Indicated	

continued...

Location	Replacement Indicated By	Depth[1]	Treatment Width	Treatment Material[2]
Station 212+00 to 215+00 (B-50)	Qu= 5.04 tsf Mc= 18% Light Brown CLAY, A-6(18)	-	No Treatment Indicated	
Station 215+00 to 218+00 (B-49)	Qp= 3.5 tsf Mc= 13% Brown Clay LOAM, A-6, FILL	-	No Treatment Indicated	
Station 218+00 to 221+02 (B-48)	Qp/Qu= 1.25 to 2.95 tsf Mc= 22% Dark Grey CLAY, A-7-6, TOPSOIL (12") (over) Brown and trace Grey CLAY, A-6	12"	Widening	PGES
Station 221+02 to 223+95 (B-47)	Qp= 4.0 tsf Mc= 20% Brown and Grey CLAY, A-6, FILL	-	No Treatment Indicated	
Station 223+95 to 226+94 (B-46)	Qp= 4.5+ tsf Mc= 17% Brown CLAY, A-6, FILL	-	No Treatment Indicated	
Station 226+94 to 231+37 (B-45)	Qp= 2.5 tsf Mc= 17% Light Brown CLAY, A-6, FILL	-	No Treatment Indicated	
Station 231+37 to 235+98 (B-43)	N= 7(blows/foot) Mc= 10% Brown Sandy CLAY, A-6, FILL	-	No Treatment Indicated	
Station 235+98 to 239+13 (B-42)	Qp= 1.25 tsf Mc= 35% Dark Brown to Black CLAY to Silty CLAY, A-7-6, FILL	12"	Widening	PGES or EMB
Station 239+13 to 242+03 (B-41)	Qu=3.69 tsf Mc= 19% Brown to Brown and Grey CLAY, A-6	-	No Treatment Indicated	
Station 242+03 to 245+97 (B-40)	Qu= 2.80 tsf Mc= 16% Brown and Grey CLAY, A-6	-	No Treatment Indicated	

continued...

Location	Replacement Indicated By	Depth[1]	Treatment Width	Treatment Material[2]
Station 245+97 to 250+04 (B-39)	Qp/Qu= 1.5 to 3.88 tsf Mc= 32 to 24% Black CLAY, A-7-6, TOPSOIL (6") (over) Yellowish Brown CLAY, A-6	6"	Widening	PGES
Station 250+04 to 257+73 (B-38)	Qu= 2.10 tsf Mc= 19% Brown Clay LOAM, A-6, FILL	-	No Treatment Indicated	

Remedial Treatment Notes:

[1]= Depth refers to depth of remedial treatment below the design subgrade elevation. The design subgrade elevation has been determined based on bituminous pavement design thickness of 14" and aggegate subgrade thickness of 12". These are preliminary and are used here for purposes of determining the design subgrade elevation based on the Proposed Grade Line (PGL) presented on Proposed Plan and Profile dated January 31, 2005. Changes in the PGL or pavement design may affect the remedial treatments presented.

[2]= Replacement Materials or Treatment:

EMB= Embankment Material and placement in accordance with Sections 205, 207 and Reoccurring Special Provisions

PGES = Porous Granular Embankment Subgrade

FABRIC= Fabric material in accordance with Section 1080.02 and placement in accordance with section 210.

3= Depressional soils of the Peotone series were encountered in B-5 through B-8. These depressional soils are associated with the existing wetland area outlined on the Soil Profile included in the Appendix. It is likely that the existing Quentin Road embankment and roadway adjacent to this wetland is most likely built upon these soils. Based on the information available at this time, the following recommendations are presented for construction of the roadway embankment in this area

Option 1

The most positive option for uniform roadway support is the removal of the compressible materials to the depth and dimensions encountered. Followed by replacement of undercut area with suitable Embankment fill or Pourous Granular Embankment to design subgrade elevation. Underdrain (s) are suggested depending on outlet elevation. Full reconstruction of the entire roadway is recommended if this option is chosen. Based on the extent and depth of the soils, additional Right of Way or construction easement may be required.

Option 2

Because highly compressible fiberous peat or organic silt was not encountered and the problem soils consist mainly of soft CLAY, a geopier

stabilization of these deposits may be a viable option. This method used for all new pavement/shoulder areas consists of excavating a series of drilled holes and backfilling with compacted stone. The spacing, depth and settlement estimates would be provided by an experienced design/installer such as Geopier, (www.geopiers.com). This method would eliminate the need for a deep open excavation next to the existing pavement. Future utilities can generally be excavated through the treatment area.

Option 3

To reduce differential settlement from old to new pavements, lightweight fill for the widening can be utilized. Lightweight fill typically consists of cellular concrete fill or expanded polystyrene (EP). At this site containment of the outside edge would be necessary if pumped lightweight concrete is used. Based on the Soil Profile drawing provided, 3 to 5 feet of fill is required to meet the design subgrade elevation at the centerline. This fill amount may be greater at the pavement edge. Ideally the subgrade should be roughly graded and stripped of surface vegetation, followed by lightweight fill placement to grade. Further details can be provided for lightweight fill placement if this method is chosen. Utilities would be located outside of the lightweight fill placement area, where possible to reduce future repair costs.

Option 4

Partial removal of compressible materials beneath the widened area, followed by the placement of a properly designed 'geogrid' material or fabric across the width of the embankment is recommended to help to control settlement. Replacement with suitable Pourous Granular Embankment to design subgrade elevation is recommended. Construction over compressible deposits, not previously surcharged can be expected to result in settlement. The magnitude of this expected settlement will vary based on the extent of compressible soils left in place.

4= Excavate/remove surface vegetation to depth encountered (6") prior to fill placement. 2 1/2' of fill will be required to reach design subgrade elevation. Use of PGE or Embankment soils will be determined at the time of construction by the geotechnical engineer.

Subgrade Treatment Plan Notes

Porous Granular Embankment, Subgrade (PGES) should be specified for undercuts of soils that tend to be unsuitable or unstable at the time of construction. The actual need for removal and replacement with PGES will be determined in the field at the time of construction by the geotechnical engineer. All potentially unstable soils should be tested with a static cone penetrometer and treated in accordance with Article 301.03 and the undercut guidelines in the IDOT Subgrade Stability Manual (SSM) dated May 1, 2005. If unstable and/or unsuitable material is encountered, the soil shall be removed and replaced with PGES or Embankment as determined by the geotechnical engineer. If unstable and/or unsuitable material is not encountered, then the quantities of undercuts/ over-excavations and fill materials shall be adjusted accordingly.

Longitudinal drains at the outside edge of the pavement may be installed at low points to drain the Aggregate Subgrade. Pipe underdrains should be installed in accordance with Section 601 of the Standard Specifications, adopted January 1, 2002, in a wrapped fabric trench, backfilled with approved backfill (refer to Section 1080 and Check Sheet #25 of the Recurring Special Provisions; adopted January 1, 2002).

Closure

Thank you for the opportunity to be of continuing service. Please contact us if you have any questions regarding the information contained in this report.

Very truly yours,

CHICAGO TESTING LABORATORY, INC.

William J. Wyzgala, P.E.
Geotechnical Engineer

Donald K. Sisson
Project Geologist

wjw/dks

Appendix

APPENDIX

PROJECT VICINITY MAP
Figure 1

SOIL SURVEY EXHIBIT
FIGURE 2

SOIL SERIES DATA SHEETS
Houghton Muck (103)
Morley silt loam (194)
Ashkum silty clay loam (232)
Beecher silt loam (298B)
Peotone silty clay loam (330)
Markham silt loam (531C2).

SOIL TEST DATA SHEET BD-508A

QUENTIN ROAD PAVEMENT HISTORY
Sections 051 and 090

PAVEMENT CORE MEASUREMENT LOG
Quentin Road (C-1 through C-4)
US Route 12 (Rand Road) (C-1 through C-14)

Soil Profile

Records of Subsurface Exploration (Boring Logs)
B-38 through B-52

SUBGRADE SUPPORT CHART
(Soils Manual Figure 5.5)

IBR TEST DATA

SOIL COMPACTION TEST GRAPH

Project Vicinity Map

Quentin Road/ Rand Road (US 12)

Lake County, IL

CTL# 74IL331

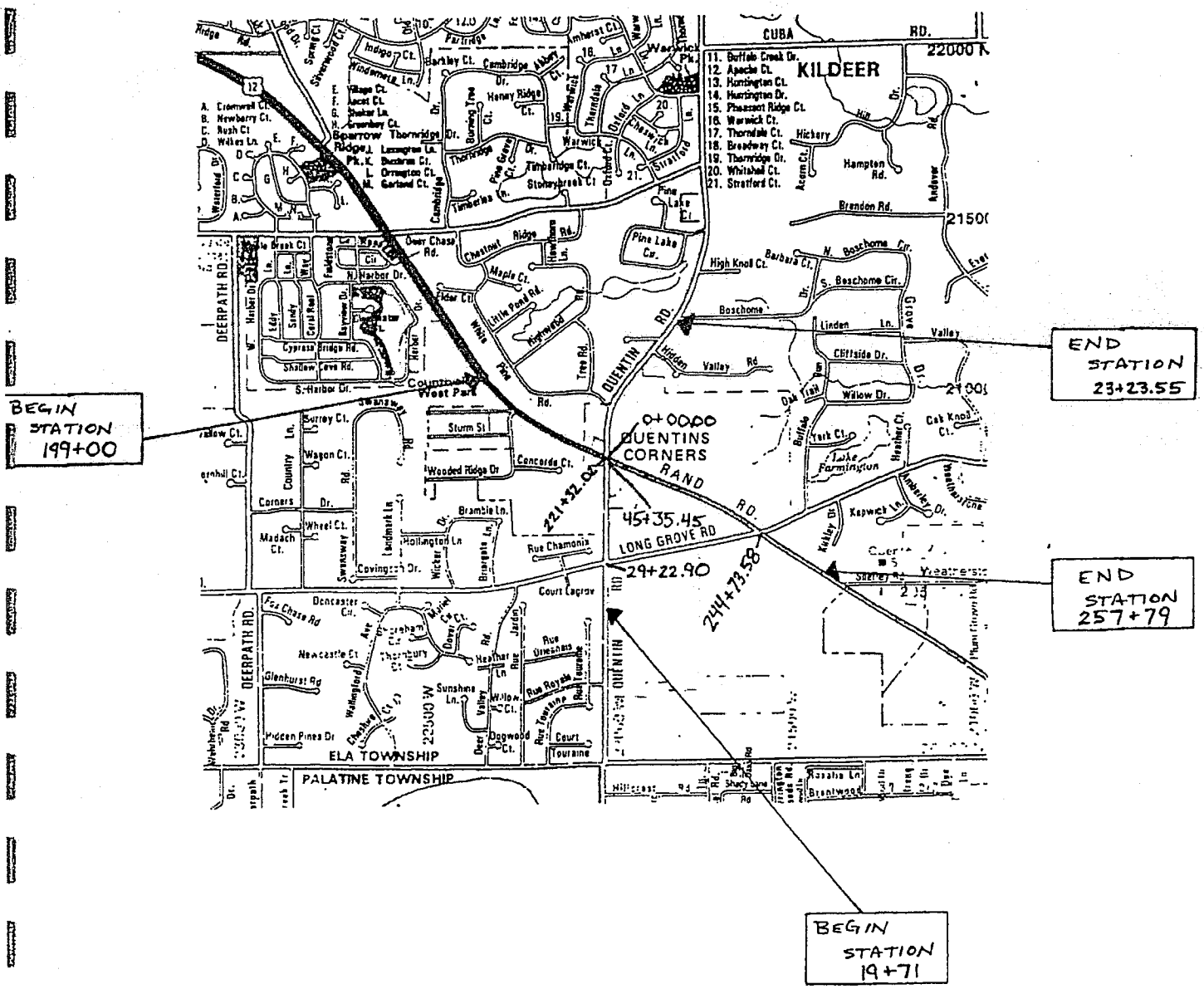


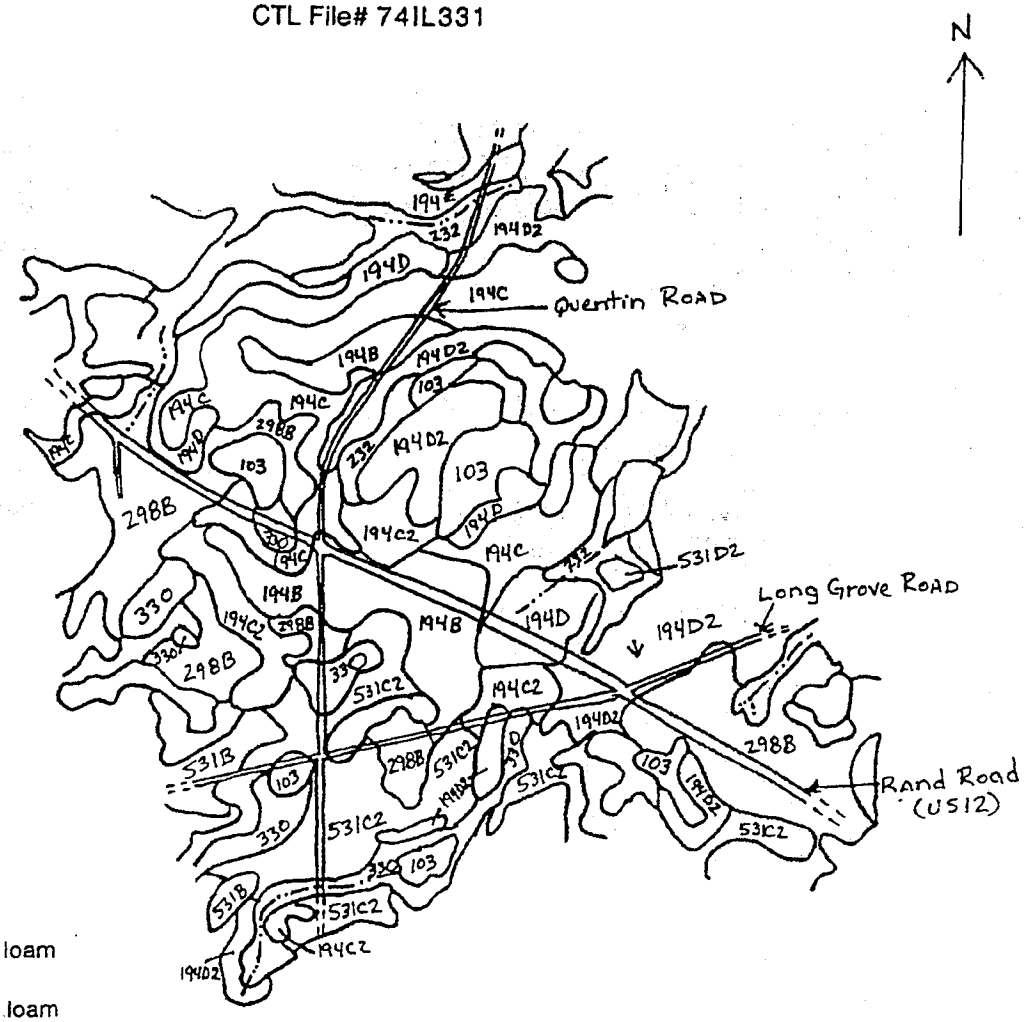
Figure 1

Soil Survey Exhibit

Quentin Road/ Rand Road (US 12)

Lake County, IL

CTL File# 741L331



103	Houghton muck
194(B-E)	Morley silt loam
232	Ashkum silty clay loam
298B	Beecher silt loam
330	Peotone silty clay loam
531C2	Markham silt loam

Scale 1 : 15,840

Exhibit was adapted from:
"Soil Survey Lake County, Illinois", Illinois Agricultural Experiment Station Soil Report 88, Lake County Soil and Water Conservation District in cooperation with Soil Conservation Service, United States Department of Agriculture September, 1970.

FIGURE 2

HOUGHTON MUCK (103)

Parent Material: Organic matter and silty sediments
Topography: Usually depressional, 0 to .5% slope
Soil Association: J
Location: Northeastern Illinois
Soil Group: Typic Medisaprist (Bog)
Associated Series: Lena, Palms

ESTIMATED PHYSICAL AND CHEMICAL PROPERTIES

PROFILE DESCRIPTION	LL %	PI %	Ymax pcf	OMC %	MECHANICAL ANALYSIS- % less than No.4	No.10	No.40	No.200	2u	CLASSIFICATION AASHO	UNIFIED	pH	K in/hr	STABILIZATION SM	CE	SD
Depth (in) 0–12: A — Black or very dark brown organic matter or organic silt	INSUFFICIENT DATA AVAILABLE TO ESTIMATE TYPICAL PROPERTIES OF THIS ORGANIC SOIL											5.6-7.3	6.30-20.0	-	-	-
12–72: C — Brown peat overlying soft grey marl or calcareous fine-grained sediments at any depth below 3 ft.												5.6-7.3	.063-0.20	-	-	-

DESIGN AND CONSTRUCTION INFORMATION

ALIGNMENT	this material should be avoided if possible; if crossing is necessary, excavate all soft organic soil and fill with good borrow
CUT SLOPES	temporarily stable at 1.5 to 1; deep cuts may require sheeting
EROSION	no problem since cuts are only open temporarily
EXCAVATION	no difficulty; dragline usually required
COMPACTION	not suitable for borrow
WATER TABLE AND DRAINAGE	0 to 3 ft, very poor drainage
FROST ACTION	medium to high susceptibility, F_3
SHRINK-SWELL POTENTIAL	A-horizon: low C-horizon: high
CORROSION POTENTIAL	metal: high concrete: moderate
SOURCE OF BORROW	no
SOURCE OF GRANULAR	no
SOURCE OF TOPSOIL	good

SPECIAL RECOMMENDATIONS : to provide a stable base for fill, all organic and soft sediments should be excavated in order to determine depth of compressible material within the right-of-way line, a detailed exploration should be conducted; special swamp treatment methods may be needed for deep deposits.

MORLEY SILT LOAM (194)

Parent Material: Thin loess, 0 to 2 ft, on silty clay loam till
Topography: Moderate to strongly sloping, 5 to 15% slope
Soil Association: y
Location: Northeastern Illinois
Soil Group: Typic Hapludalf (Gray-Brown Podzolic)
Associated Series: Beecher, Blount, Markham

ESTIMATED PHYSICAL AND CHEMICAL PROPERTIES[a]

PROFILE DESCRIPTION			LL	PI	γmax	OMC	MECHANICAL ANALYSIS- % less than					CLASSIFICATION		pH	K	STABILIZATION		
Depth (in)			%	%	pcf	%	No.4	No.10	No.40	No.200	2u	AASHO	UNIFIED		in/hr	SM	CE	SD
0-12	A	Yellow gray to gray brown silt loam grading to gray yellow to yellow brown silt loam to silty clay loam below 5 to 7 in.	26-43	5-14	94-107	16-23	99-100	98-99	94-98	81-90	15-30	A-4 A-7-5 A-6	CL OL	5.6-6.5	0.63-2.00	L	L	C[+]
12-36	B	Yellow brown clay loam to silty clay loam or silty clay	32-50	13-27	96-107	17-23	99-100	98-100	96-99	86-94	35-58	A-7-6 A-6	CL	5.6-6.5	0.20-0.63	L	L	C
36-72	C	Gray brown to pale brown silty clay loam	32-38	14-19	105-112	16-19	93-100	91-100	88-99	80-92	32-44	A-6	CL	7.4-8.4	0.20-0.63	L	L	C,L

DESIGN AND CONSTRUCTION INFORMATION

ALIGNMENT	moderate to deep cuts and fills
CUT SLOPES	stable at 1.5 to 1; exposed silt pockets slough where seepage occurs
EROSION	sometimes serious on both natural and man-made slopes
EXCAVATION	no difficulty above water table; below water table material may not break up easily; surface becomes slippery when wet, but bakes hard upon drying
COMPACTION	no difficulty at water contents near optimum for layers of proper thickness; heavy tamping rollers recommended
WATER TABLE AND DRAINAGE	below 6 feet, fair to good drainage
FROST ACTION	medium to high susceptibility, F_3, very high for exposed silt strata, F_4
SHRINK-SWELL POTENTIAL	A-horizon:low to moderate B-horizon:high C-horizon:moderate to high
CORROSION POTENTIAL	metal:high concrete:moderate
SOURCE OF BORROW	generally good
SOURCE OF GRANULAR	no
SOURCE OF TOPSOIL	poor

SPECIAL RECOMMENDATIONS: under low fills - strip vegetation; embankment material should be carefully broken up to prevent hard lumps forming upon drying or layers of excessive thickness; soil in cuts below water table become unstable under heavy construction traffic

ASHKUM SILTY CLAY LOAM (232)

Parent Material: Silty sediments, 0 to 3 ft on silty clay loam till
Topography: Nearly level to depressional, 0 to 1% slope
Soil Association: J
Location: Northeastern Illinois uplands
Soil Group: Typic Haplaquoll (Humic Gley)
Associated Series: Elliott, Varna, Andres, Symerton

ESTIMATED PHYSICAL AND CHEMICAL PROPERTIES*

PROFILE DESCRIPTION		LL %	PI %	γmax pcf	OMC %	MECHANICAL ANALYSIS- % less than No.4	No.10	No.40	No.200	2u	CLASSIFICATION AASHO	UNIFIED	pH	K in/hr	STABILIZATION SM	CE	SD
A	Black silty clay loam to clay loam grading to dark gray silty clay loam to clay loam below 8 to 15 in.	40-74	13-34	83-94	23-29	99-100	98-100	95-100	86-100	29-34	A-7-5	OH OL CH	6.6-7.3	0.63-2.00	L	L	C*
B	Brown gray, mottled with yellow brown silty clay.	51-58	19-33	94-105	17-24	99-100	99-100	97-100	82-98	37-42	A-7-6	CH CL	6.6-7.3	0.20-0.63	L	L	C,L
	Brown gray to gray silty clay loam with some gravel	31-52	12-33	101-111	15-21	99-100	98-100	95-99	79-97	32-41	A-7-6 A-6	CL CH	7.4-8.4	0.20-0.63	L	L	C,L

Depth (in): 12, 24, 36, 48, 60, 72

DESIGN AND CONSTRUCTION INFORMATION

ALIGNMENT	shallow fills
CUT SLOPES	stable at 1.5 to 1; exposed silt pockets will slough where seepage occurs
EROSION	no problem except for easily eroded silt pockets
EXCAVATION	no difficulty above water table during dry season; below 4 ft material may not break up readily; surface becomes slippery and soft when wet, bakes hard on drying
COMPACTION	no difficulty if moisture content near optimum and layers are of proper thickness; heavy tamping rollers recommended
WATER TABLE AND DRAINAGE	0 to 3 ft, very poor drainage
FROST ACTION	medium to high susceptibility, F_3
SHRINK-SWELL POTENTIAL	A-horizon: high B-horizon: high C-horizon: moderate to high
CORROSION POTENTIAL	metal: high concrete: low
SOURCE OF BORROW	fair to poor; drying usually required to reach optimum water content
SOURCE OF GRANULAR	no
SOURCE OF TOPSOIL	good to excellent

SPECIAL RECOMMENDATIONS 12 in. or more of topsoil is compressible organic soil; strip vegetation beneath low fills; very unstable under heavy construction traffic if water content is high; preferable to elevate grade line 4 to 5 ft and not to attempt to strip topsoil

BEECHER SILT LOAM (298)

Parent Material: Thin loess, 0 to 2 ft on silty clay loam till

Topography: Gently to strongly sloping, 2 to 12% slope

Soil Association: V

Location: Northeastern Illinois uplands

Soil Group: Udollic Ochraqualf (Gray-Brown Podzolic-Brunizem)

Associated Series: Elliott, Ashkum, Blount

ESTIMATED PHYSICAL AND CHEMICAL PROPERTIES*

PROFILE DESCRIPTION			LL %	PI %	γmax pcf	OMC %	MECHANICAL ANALYSIS- % less than No.4	No.10	No.40	No.200	2u	CLASSIFICATION AASHO	UNIFIED	pH	K in/hr	STABILIZATION SM	CE	SD
Depth (in) 0–12	A	Dark gray brown silt loam grading to light yellow gray silt loam below 6 to 9 in.	33-47	6-16	93-100	19-24	98-100	97-100	93-99	85-87	20-29	A-6 A-7-6 A-4 A-5	OL	5.1-6.0	0.63-2.00	L	L	C
12–36	B	Brown gray silty clay loam	37-45	13-22	94-106	19-25	97-100	96-100	93-99	86-91	28-49	A-6 A-7-6	CL ML	5.6-6.5	0.063-0.20	L	L	C
36–72	C	Gray brown silty clay loam	29-38	10-18	110-111	16-18	95-100	93-100	88-100	77-92	26-42	A-6 A-4	CL	7.4-8.4	0.20-0.63	L	L	C,L

DESIGN AND CONSTRUCTION INFORMATION

ALIGNMENT	moderate cuts and fills
CUT SLOPES	stable at 1.5 to 1; exposed silt pockets slough rapidly where seepage occurs
EROSION	no problems except for easily eroded silt pockets
EXCAVATION	little difficulty above water table, but below, material may not break up readily; surface slippery when wet, bakes hard on drying
COMPACTION	not difficult if water content near optimum and layers are of proper thickness; heavy tamping rollers recommended
WATER TABLE AND DRAINAGE	below 6 feet, fair drainage
FROST ACTION	medium to high susceptibility, F_3; very high for exposed silt strata
SHRINK-SWELL POTENTIAL	A-horizon: moderate B-horizon: high C-horizon: moderate to high
CORROSION POTENTIAL	metal: high concrete: moderate
SOURCE OF BORROW	generally good, but drying may be necessary to reduce water content to optimum
SOURCE OF GRANULAR	no
SOURCE OF TOPSOIL	poor to fair

SPECIAL RECOMMENDATIONS: beneath low fills strip vegetation; embankment material must be carefully broken up to avoid formation of lumps upon drying or compaction of layers exceeding normal thickness; cuts below water table become unstable under heavy construction traffic.

PEOTONE SILTY CLAY LOAM (330)

Parent Material: Moderately fine textured material, local slope wash **Topography:** Depressional, 0 to 0.5% slope

Soil Association: B, C, J **Location:** Northeastern Illinois

Soil Group: Cumulic Haplaquoll (Humic Clay) **Associated Series:** Treator, Rutland, Lisbon, Drummer, Elliott, Ashkum

ESTIMATED PHYSICAL AND CHEMICAL PROPERTIES [a]

PROFILE DESCRIPTION			LL %	PI %	γmax pcf	OMC %	MECHANICAL ANALYSIS- % less than No.4	No.10	No.40	No.200	2u	CLASSIFICATION AASHO	UNIFIED	pH	K in/hr	STABILIZATION SM	CE	SD
Depth (in) 0–12	A	Black to very dark gray silty clay loam	38-66	14-24	78-103	18-34	100	99-100	96-100	87-100	29-39	A-7-5 A-7-6 A-6	OH CL OL	6.6-7.3	0.63-2.00	L	L	C+
12–36	B	Very dark gray to black silty clay loam	34-76	8-39	73-114	14-37	100	100	96-100	91-99	25-58	A-7-6 A-7-5	CL MH CH	6.6-7.3	0.20-0.63	L	L	L,C
36–72	C	Dark gray to very dark gray silty clay loam to silty clay	18-78	4-46	80-123	9-33	96-100	94-100	90-100	78-100	19-55	A-7-6 A-6 A-7-5	CL MH CH	7.4-8.4	0.20-0.63	L	L	L,C

DESIGN AND CONSTRUCTION INFORMATION

ALIGNMENT	shallow fills
CUT SLOPES	stable at 1.5 to 1; exposed silt pockets slough where seepage occurs
EROSION	no problem except for easily eroded silt pockets
EXCAVATION	no difficulty above water table during dry season; below 2 ft the material may not break up readily; surface becomes slippery when wet, bakes hard on drying
COMPACTION	no difficulty if layers are of proper thickness and moisture content is near optimum; heavy tamping rollers recommended
WATER TABLE AND DRAINAGE	0 to 3 ft, very poor drainage
FROST ACTION	medium to high susceptibility, F_3; occasionally very high, F_4
SHRINK-SWELL POTENTIAL	A-horizon: high B-horizon: high C-horizon: moderate to high
CORROSION POTENTIAL	metal: high concrete: low
SOURCE OF BORROW	fair to poor; drying usually required to reduce moisture content to optimum
SOURCE OF GRANULAR	no
SOURCE OF TOPSOIL	good to excellent

SPECIAL RECOMMENDATIONS: under low fills strip vegetation; upper 12 in. of topsoil is compressible organic soil; at high water contents soil is very unstable under heavy construction traffic; preferable to elevate grade line 4 to 5 ft and not to attempt to strip topsoil

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A3-166

MARKHAM SILT LOAM (531)

Parent Material: Loess, 0 to 2 ft on silty clay loam glacial till
Topography: Moderately sloping, 3 to 8% slope
Soil Association: V
Location: Northeastern Illinois
Soil Group: Mollic Hapludalf (Gray-Brown Podzolic to Brunizem)
Associated Series: Morley, Blount

ESTIMATED PHYSICAL AND CHEMICAL PROPERTIES

Depth (in)	PROFILE DESCRIPTION		LL %	PI %	γmax pcf	OMC %	MECHANICAL ANALYSIS- % less than No.4	No.10	No.40	No.200	2u	CLASSIFICATION AASHO	UNIFIED	pH	K in/hr	STABILIZATION SM	CE	SD
0-12	A	Very dark gray brown silt loam	30-50	10-25	--	--	98-100	95-100	95-100	90-100	15-25	A-4 A-6 A-7-5	CL OL	5.6-6.5	0.63-2.00	L	L	C+
12-24	B	Brown silty clay to silty clay loam	35-55	15-3	95-105	17-23	95-100	90-100	90-100	85-100	40-55	A-7-6	CL CH	5.6-6.5	0.063-0.63	L	L	C
24-36																		
36-48	C	Brown to yellow brown silty clay loam (till)	30-40	14-20	105-115	13-18	95-100	90-100	90-100	85-95	25-40	A-6	CL	7.4-8.4	0.20-0.63	L	L	C,L
48-60																		
60-72																		

DESIGN AND CONSTRUCTION INFORMATION

ALIGNMENT	moderate cuts and fills
CUT SLOPES	stable at 1.5 to 1; exposed silt pockets slough where seepage occurs
EROSION	may be serious for A horizon on cut slopes
EXCAVATION	no difficulty above water table; soil becomes slippery when wet, but bakes hard on drying
COMPACTION	not difficult at water contents near optimum; tamping rollers recommended
WATER TABLE AND DRAINAGE	usually more than 6 ft; fair to good drainage
FROST ACTION	high susceptibility, F_3
SHRINK-SWELL POTENTIAL	A-horizon:low to moderate B-horizon:high C-horizon:moderate to high
CORROSION POTENTIAL	metal:high concrete:moderate
SOURCE OF BORROW	generally good
SOURCE OF GRANULAR	no
SOURCE OF TOPSOIL	fair to poor

SPECIAL RECOMMENDATIONS A horizon generally unsuitable as subgrade; embankment material should be carefully broken up to prevent hard lumps forming upon drying; surface may absorb water and become very unstable under heavy construction traffic.

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REV. 2-65
Mod.12-90SHA
Mod.6- 2005 CTL

STATE OF ILLINOIS
Department of Public Works and Buildings
Divison of Highways

SOIL TEST DATA

CTL JOB NUMBER: 74IL331
SECTION: Quentin Road
02-00051-18-WR

PROJECT: Quentin Road Improvements
CITY: Deer Park/ Kildeer, Illinois
COUNTY: Lake

LAB. NO.		44-1	44-11	44-2/ 44-12	90	44-3
STATION		28+35	33+22	35+50	36+70	41+25
OFFSET		44' R	43' R	46' R	48' R	48' R
DEPTH		1.0-4.4'	8.5-10.0'	1.0-2.5'	1.0-2.0'	3.5-5.0'
HRB CLASSIFICATION (GROUP INDEX)		A-7-6(26)	A-7-6	A-7-6(52)	A-7-6	A-7-6(23)
GRAIN SIZE CLASSIFICATION		CLAY	"CLAY"	CLAY	"CLAY"	CLAY
GRADATION-PASSING 1" SIEVE	%					
" 3/4" "	%					
" 1/2" "	%	100				
" NO. 4 "	%	99		100		100
" NO. 10 "	%	98		99		94
" NO. 40 "	%	92		98		91
" NO. 100 "	%	84		98		86
" NO. 200 "	%	82		97		84
SAND	%	16		2		10
SILT	%	45		41		32
CLAY	%	37		56		52
LIQUID LIMIT	%	55		69		49
PLASTICITY INDEX	%	30		53		26
SSR RATING		Fair		Fair		Fair
BEARING RATIO		-		-		-
STD. DRY DENSITY AASHTO T99	pcf	-		-		-
OPTIMUM MOISTURE	%	-		-		-

REMARKS:

ORGANIC CONTENTAASHTO T-194 - 'Wet Combustion Method'	%	-	3.5%	-	-	-
ORGANIC CONTENT ASTM D 2974 - 'Dry Combustion Method'	%	-	-	6.1%	10.3%	-

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REV. 2-65
Mod.12-90SHA
Mod.6- 2005 CTL

STATE OF ILLINOIS
Department of Public Works and Buildings
Divison of Highways

SOIL TEST DATA

CTL JOB NUMBER: 74IL331
SECTION: Quentin Road
02-00051-18-WR

PROJECT: Quentin Road improvements
CITY: Deer Park/ Kildeer, Illinois
COUNTY: Lake

LAB. NO.		44-4				
STATION		10+31				
OFFSET		56' R				
DEPTH		3.5-5.0'				
HRB CLASSIFICATION (GROUP INDEX)		A-6(10)				
GRAIN SIZE CLASSIFICATION		CLAY				
GRADATION-PASSING 1" SIEVE	%					
" 3/4" "	%					
" 1/2" "	%	100				
" NO. 4 "	%	99				
" NO. 10 "	%	98				
" NO. 40 "	%	92				
" NO. 100 "	%	87				
" NO. 200 "	%	85				
SAND	%	13				
SILT	%	47				
CLAY	%	38				
LIQUID LIMIT	%	31				
PLASTICITY INDEX	%	14				
SSR RATING		Fair				
BEARING RATIO		-				
STD. DRY DENSITY AASHTO T99	pcf	-				
OPTIMUM MOISTURE	%	-				

REMARKS:

ORGANIC CONTENTAASHTO T-194 % -
- 'Wet Combustion Method'

ORGANIC CONTENT ASTM D 2974 % -
- 'Dry Combustion Method'

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REV. 2-65
Mod.12-90SHA
Mod.6- 2005 CTL

STATE OF ILLINOIS
Department of Public Works and Buildings
Divison of Highways

SOIL TEST DATA

CTL JOB NUMBER: 74IL331
SECTION: US 12 (Rand Road)
02-00051-18-WR

PROJECT: Quentin Road Improvements
CITY: Deer Park/ Kildeer, Illinois
COUNTY: Lake

LAB. NO.		44-5/44-13	44-6	44-7	44-8	44-9
STATION		211+90	222+80	236+05	249+02	234+22
OFFSET		39' R	53' R	35' R	63' R	44' L
DEPTH		3.5-5.0'	3.5-5.0'	13.5-15.0'	1.2-4.5'	4.5-7.5'
HRB CLASSIFICATION (GROUP INDEX)		A-6(16)	A-6(12)	A-4(1)	A-7-6(22)	A-6(12)
GRAIN SIZE CLASSIFICATION		Clay LOAM	CLAY	Silty Clay LOAM	Silty CLAY	CLAY
GRADATION-PASSING 1" SIEVE	%					
" 3/4" "	%	100				
" 1/2" "	%	96		100	100	
" NO. 4 "	%	90	100	98	99	100
" NO. 10 "	%	86	98	94	98	98
" NO. 40 "	%	78	94	90	96	96
" NO. 100 "	%	72	89	84	93	94
" NO. 200 "	%	70	85	77	92	93
SAND	%	16	13	17	6	5
SILT	%	41	45	51	52	45
CLAY	%	29	40	26	40	48
LIQUID LIMIT	%	46	31	18	43	31
PLASTICITY INDEX	%	24	16	5	23	14
SSR RATING		Fair to Poor	Fair	-	Fair	Fair
BEARING RATIO		-	-	-	-	-
STD. DRY DENSITY AASHTO T99	pcf	-	-	-	-	-
OPTIMUM MOISTURE	%	-	-	-	-	-

REMARKS:

ORGANIC CONTENTAASHTO T-194	%	4.1%	-	-	-	-
ORGANIC CONTENT ASTM D 2974 - 'Dry Combustion Method'	%	-	-	-	-	-

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REV. 2-65
Mod.12-90SHA
Mod.6- 2005 CTL

STATE OF ILLINOIS
Department of Public Works and Buildings
Divison of Highways

SOIL TEST DATA

CTL JOB NUMBER: 74IL331
SECTION: US 12 (Rand Road)
02-00051-18-WR

PROJECT: Quentin Road Improvements
CITY: Deer Park/ Kildeer, Illinois
COUNTY: Lake

LAB. NO.		44-10	44-14	79		
STATION		213+50	251+65	239 to 243 *		
OFFSET		48' L	L	*		
DEPTH		1-2.5'	6.0-7.5'	1-5'		
HRB CLASSIFICATION (GROUP INDEX)		A-6(18)		A-7-6 to A-6		
GRAIN SIZE CLASSIFICATION		CLAY		"CLAY"		
GRADATION-PASSING 1" SIEVE	%					
" 3/4" "	%					
" 1/2" "	%	100				
" NO. 4 "	%	99				
" NO. 10 "	%	94				
" NO. 40 "	%	94				
" NO. 100 "	%	91				
" NO. 200 "	%	89				
SAND	%	5				
SILT	%	45				
CLAY	%	44				
LIQUID LIMIT	%	38				
PLASTICITY INDEX	%	20				
SSR RATING		Fair				
BEARING RATIO		-		4.2		
STD. DRY DENSITY AASHTO T99	pcf	-		115.8		
OPTIMUM MOISTURE	%	-		15.0		

REMARKS:

* Bulk Sample B32,40,41 & 42

ORGANIC CONTENTAASHTO T-194	%	-	1.8%	-
ORGANIC CONTENT ASTM D 2974 - 'Dry Combustion Method'	%	-	-	-

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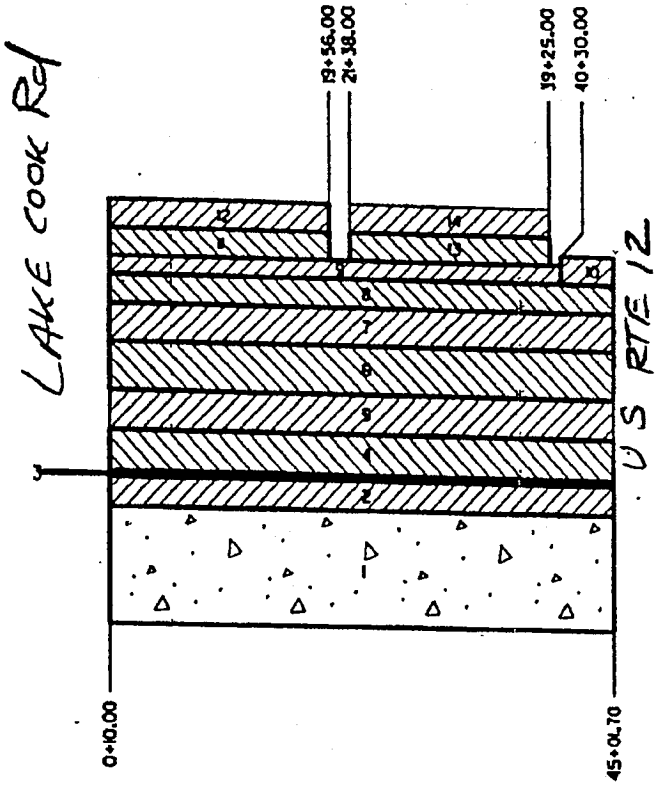
ROUTE	SECTION	COUNTY
CH5	051	LAKE

PAVEMENT HISTORY



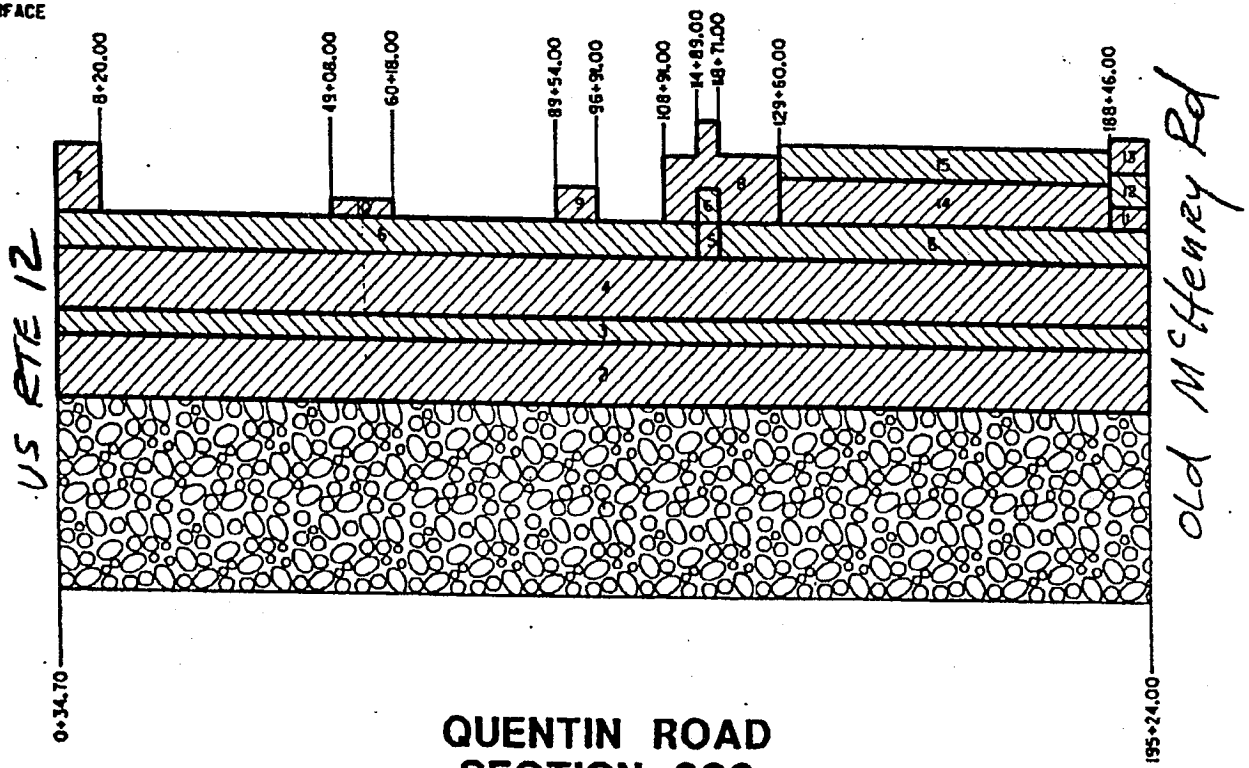
1. 1940 - 6" SOIL CEMENT
2. 1940 - 1 1/2" C-6
3. 1941 - 1/4" NATURAL ROCK ASPHAULT SEAL
4. 1947 - 2" B-3
5. 1957 - 2" B-3
6. 1966 - 2 1/2" BITUMINOUS PLANT MIX
7. 1974 - 2" BITUMINOUS SURFACE PLANT MIX
8. 1984 - 1 1/2" BITUMINOUS CONCRETE BINDER COURSE
9. 1984 - 1" BITUMINOUS CONCRETE SURFACE
10. 1984 - 1 1/2" BITUMINOUS CONCRETE SURFACE
11. 1989 - 1 1/2" BINDER
12. 1989 - 1 1/2" SURFACE
13. 1990 - 1 1/2" BINDER
14. 1990 - 1 1/2" SURFACE

QUENTIN ROAD
SECTION 051
PAVEMENT HISTORY

ROUTE	SECTION	COUNTY
CH5	090	LAKE

PAVEMENT HISTORY

1. 1952 - 8" GRAVEL TYPE B
2. 1952 - 2 1/2" B4
3. 1964 - 1" PLANT MIX SEAL
4. 1971 - 2 1/2" B-5
5. 1975 - 3" BINDER AND SURFACE
6. 1978 - 1 1/2" CLASS I SURFACE
7. 1984 - 3" BINDER AND SURFACE
8. 1985 - 3" BINDER AND SURFACE
9. 1988 - 1 1/2" SURFACE
10. 1989 - 1 1/2" SURFACE
11. 1989 - 1" LEVELING BINDER
12. 1989 - 1 1/2" BINDER
13. 1989 - 1 1/2" SURFACE
14. 1992 - 2" BINDER
15. 1992 - 1 1/2" SURFACE



QUENTIN ROAD
SECTION 090
PAVEMENT HISTORY

CTL File Number 74IL331

PAVEMENT CORE MEASUREMENT LOG

Quentin Road

Core No. C-1
Location Station 25+28, @ Centerline

Material	Depth(in.)			Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to	1- 3/4	1- 3/4	Good
Bituminous Binder	1- 3/4	to	4- 1/4	2- 1/2	Good
Bituminous Surface	4- 1/4	to	5- 1/4	1	Good
Bituminous Binder	5- 1/4	to	7- 1/4	2	Good
Bituminous Base Course	7- 1/4	to	13	5- 3/4	Fair
Granular Subbase	13	to	32	19	Dk Brown SAND, little Gravel, tr Limestone, A-1-b, Mc= 5%
Subgrade	32	to	36+	-	Dark Brown Silty CLAY, A-6, FILL, Qp= 2.0 tsf

Core No. C-2
Location Station 35+50, 13' Right of Centerline

Material	Depth(in.)			Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to	1	1	Fair
Bituminous Binder	1	to	6	5	Fair to poor
Bituminous Base Course	6	to	13- 1/2	7- 1/2	Poor - deteriorated
Subgrade	13- 1/2	to	36+	-	Brownish green Silty CLAY, A-6, FILL, Qp= 2.0 tsf, Mc= 18%

Core No. C-3
Location Station 5+35, @ Centerline

Material	Depth(in.)			Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to	1- 5/8	1- 5/8	Fair
Bituminous Binder	1- 5/8	to	6- 3/8	4- 3/4	Fair to good
Bituminous Binder	6- 3/8	to	10- 3/4	4- 3/8	Fair to good
Bituminous Base Course	10- 3/4	to	16- 1/4	5- 1/2	Very Poor - badly deteriorated
Subgrade	16- 1/4	to	36+	-	Light Brown Silty CLAY, A-6, Qp= 4.5+ tsf, Mc= 14%

Core No. C-4
Location Station 16+23, 10' Left of Centerline

Material	Depth(in.)			Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to	1	1	Fair
Bituminous Binder/ BBC	1	to	4- 3/4	3- 3/4	Fair to good
Bituminous Binder/ BBC	4- 3/4	to	6- 7/8	2- 1/8	Fair
Bituminous Binder/ BBC	6- 7/8	to	9- 3/4	2- 7/8	Fair
Bituminous Binder/ BBC	9- 3/4	to	13- 1/2	3- 3/4	Fair
Bituminous Binder/ BBC	13- 1/2	to	18	4- 1/2	Fair
Subgrade	18		36+	-	Brown Silty CLAY, A-6, Qp= 4.5+ tsf, Mc= 21%

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PAVEMENT CORE MEASUREMENT LOG

US Route 12 (Rand Road)

Core No. C-1
Location Station 210+00, 28' Right of Centerline

Material	Depth(in.)		Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to 1- 3/4	1- 3/4	Good
Bituminous Level Binder	1- 3/4	to 2- 3/4	1	Good
Bituminous Binder	2- 3/4	to 5- 7/8	3- 1/8	Good
P.C. Concrete	5- 7/8	to 14- 7/8	9	Good
Aggregate Subbase	14- 7/8	to 16- 1/2	1- 5/8	RAP Gravel, A-1 or A-2, Mc=17%
Subgrade	16- 1/2	to 21+	--	Brown Silty CLAY, A-6, Qp= 3.5+, Mc=18%

Core No. C-2
Location Station 214+50, 15' Right of Centerline

Material	Depth(in.)		Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to 1- 5/8	1- 5/8	Good
Bituminous Level Binder	1- 5/8	to 2- 1/4	5/8	Good
Bituminous Surface	2- 1/4	to 4- 3/4	2- 1/2	Good
Bituminous Binder	4- 3/4	to 6- 3/8	1- 5/8	Fair
Bituminous Binder	6- 3/8	to 8	1- 5/8	Fair
Bituminous Base Course	8	to 9- 5/8	1- 5/8	Fair
P.C. Concrete	9- 5/8	to 18- 1/8	8- 1/2	Good
Subgrade	18- 1/8	to 25+	--	Brown and Dk Grey Silty CLAY, A-6, Qp=1.75+ tsf, Mc=24%

Core No. C-3
Location Station 219+00, 28' Right of Centerline

Material	Depth(in.)		Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to 1- 3/4	1- 3/4	Good
Bituminous Binder	1- 3/4	to 3- 3/4	2	Good
Bituminous Binder	3- 3/4	to 6- 1/4	2- 1/2	Fair
Bituminous Base Course	6- 1/4	to 11	4- 3/4	Fair
Aggregate Subbase	11	to 20- 1/2	9- 1/2	RAP Gravel, A-1 or A-2, Mc=10%
Subgrade	20- 1/2	to 25+	--	Brown Silty CLAY, A-6, Qp= 2.0+, Mc=24%

Core No. C-4
Location Station 225+00, 15' Right of Centerline

Material	Depth(in.)		Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to 1- 1/2	1- 1/2	Good
Bituminous Level Binder	1- 1/2	to 2- 3/4	1- 1/4	Good
Bituminous Binder	2- 3/4	to 6	3- 1/4	Good
Bituminous Base Course	6	to 8- 7/8	2- 7/8	Good
P.C. Concrete	8- 7/8	to 17- 1/4	8- 3/8	Good
Subgrade	17- 1/4	to 25+	--	Brown Silty CLAY, A-6, Qp= 2.25+, Mc=23%

Core No. C-5
Location Station 230+00, 24' Right of Centerline

Material	Depth(in.)		Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to 1- 5/8	1- 5/8	Good
Bituminous Level Binder	1- 5/8	to 2- 5/8	1	Good
Bituminous Binder	2- 5/8	to 4- 3/8	1- 3/4	Good
P.C. Concrete	4- 3/8	to 12- 1/2	8- 1/8	Good
Aggregate Subbase	12- 1/2	to 14	1- 1/2	Brown Sand & Gravel, A-1-b, Mc=12%
Subgrade	14	to 20+	--	Brown Silty CLAY, A-6, Qp= 3.0, Mc=19%

PAVEMENT CORE MEASUREMENT LOG

US Route 12 (Rand Road)

Core No. C-6
Location Station 236+69, 12' Right of Centerline

Material	Depth(in.)		Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to 3/4	3/4	Good
Bituminous Surface	3/4	to 1- 5/8	7/8	Good
Bituminous Level Binder	1- 5/8	to 2- 3/4	1- 1/8	Good
Bituminous Binder	2- 3/4	to 4- 3/4	2	Good
P.C. Concrete	4- 3/4	to 13	8- 1/4	Good
Subgrade	13	to 19+	--	Brown Silty CLAY, A-6, Qp= 3.0, Mc=23%

Core No. C-7
Location Station 242+03, 24' Right of Centerline

Material	Depth(in.)		Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to 2	2	Good
Bituminous Binder	2	to 4- 7/8	2- 7/8	Good
P.C. Concrete	4- 7/8	to 11- 3/4	6- 7/8	Good
Aggregate Subbase	11- 3/4	to 15	3- 1/4	Brown Sand & Gravel, A-1-b, Mc=11%
Subgrade	15	to 22+	--	Brown Silty CLAY, A-6, Qp= 3.0, Mc=23%

Core No. C-8
Location Station 242+03, 12' Left of Centerline

Material	Depth(in.)		Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to 1- 5/8	1- 5/8	Good
Bituminous Level Binder	1- 5/8	to 2	3/8	Good
Bituminous Binder	2	to 3- 1/4	1- 1/4	Good
Bituminous Base Course	3- 1/4	to 7	3- 3/4	Good
P.C. Concrete	7	to 15- 1/4	8- 1/4	Good
Subgrade	15- 1/4	to 22+	--	Brown Silty CLAY, A-6, Qp=1.5+ tsf, Mc=24%

Core No. C-9
Location Station 236+69, 21' Left of Centerline

Material	Depth(in.)		Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to 1- 1/2	1- 1/2	Good
Bituminous Level Binder	1- 1/2	to 2	1/2	Good
Bituminous Binder	2	to 4- 1/2	2- 1/2	Good
P.C. Concrete	4- 1/2	to 11- 1/2	7	Good
Subgrade	11- 1/2	to 18+	--	Brown and Dk Grey Silty CLAY, A-6, Qp=2.0 tsf, Mc=31%

Core No. C-10
Location Station 230+00, 12' Left of Centerline

Material	Depth(in.)		Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to 1- 7/8	1- 7/8	Good
Bituminous Level Binder	1- 7/8	to 2- 1/2	5/8	Good
Bituminous Binder	2- 1/2	to 4	1- 1/2	Good
Bituminous Base Course	4	to 6- 7/8	2- 7/8	Good
P.C. Concrete	6- 7/8	to 15- 1/2	8- 5/8	Good
Subgrade	15- 1/2	to 16- 1/2	1	Brown Clayey SAND, A-2-6, Fill
Subgrade	16 1/2"	to 22+	--	Brown Silty CLAY, A-6, Qp=1.5+ tsf, Mc=25%

CTL File Number 74IL331

PAVEMENT CORE MEASUREMENT LOG

US Route 12 (Rand Road)

Core No. C-11
Location Station 225+00, 32' Left of Centerline

Material	Depth(in.)		Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to 1- 7/8	1- 7/8	Good
Bituminous Level Binder	1- 7/8	to 2- 5/8	3/4	Good
Bituminous Binder	2- 5/8	to 5	2- 3/8 (max)	Fair - * Varies in core from 3/4" to 2-3/8" thick
P.C. Concrete (Chunck)	3- 3/8	to 6- 1/2	3- 1/4 (max)	Fair - * Varies in core from 0" to 3- 1/4" thick
Aggregate Subbase	5	to 9	4 (max)	Broken RAP Chunks - * varies 2- 1/2" to 4" thick
Aggregate Subbase	9	to 15	6	RAP Sand and Gravel, A-1-b, Mc= 7%
Subgrade	15	to 20+	--	Brown Silty CLAY, A-6, Qp=4.0+ tsf, Mc=16%

Core No. C-12
Location Station 219+00, 15' Left of Centerline

Material	Depth(in.)		Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to 1- 7/8	1- 7/8	Good
Bituminous Level Binder	1- 7/8	to 2- 7/8	1	Good
Bituminous Binder	2- 7/8	to 4- 1/2	1- 5/8	Good
Bituminous Base Course	4- 1/2	to 8- 1/4	3- 3/4	Good
P.C. Concrete	8- 1/4	to 17- 1/4	9	Good
Subgrade	17- 1/4	to 22+	--	Brown Silty CLAY, A-6, Qp=2.75 tsf, Mc=25%

Core No. C-13
Location Station 214+50, 26' Left of Centerline

Material	Depth(in.)		Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to 1- 7/8	1- 7/8	Good
Bituminous Level Binder	1- 7/8	to 2- 3/8	1/2	Good
Bituminous Binder	2- 3/8	to 4- 3/4	2- 3/8	Fair
Bituminous Base Course	4- 3/4	to 12	7- 1/4	Fair
Aggregate Subbase	12	to 19- 1/2	7- 1/2	RAP Gravel, A-1 or A-2 (very strong petro. odor), Mc=2%
Subgrade	19- 1/2	to 24+	--	Brown Silty CLAY, A-6, Qp= 3.5+, Mc=23%

Core No. C-14
Location Station 210+00, 16' Left of Centerline

Material	Depth(in.)		Thickness(in.)	Remarks/Condition
Bituminous Surface	0	to 2	2	Good
Bituminous Level Binder	2	to 2- 3/4	3/4	Good
Bituminous Binder	2- 3/4	to 5	2- 1/4	Good
P.C. Concrete	5	to 13- 1/4	8- 1/4	Good
Subgrade	13- 1/4	to 19+	--	Brown Silty CLAY, A-6, Qp=2.5 tsf, Mc=23%

CHICAGO TESTING LABORATORY, INC.

1612 Landmeier Road, Suite C, Elk Grove Village, Illinois 60007 (847) 228-1079

RECORD OF SUBSURFACE EXPLORATION

BORING B-38 PAGE 1 OF 1

PROJECT NAME	Quentin Road Improvements	DATE STARTED	5/12/05
		DATE COMPLETED	5/12/05
CTL PROJECT NO.	74IL331	DRILLER	V.K.
SITE LOCATION	Deer Park/ Kildeer/ Ela Township, Illinois	BORING METHOD	CFA
Alignment:	US Route 12 (Rand Road)	GW ENCOUNTERED WHILE DRILLING	None
Station:	251+70	GROUNDWATER, AT COMPLETION	Dry
Offset:	40' L of CBL	GROUNDWATER, AFTER	- DAYS -
		HOLE CAVED,	- AT -

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
-1.0' CL	SURFACE	Feet						
	Black CLAY, A-7-6, Topsoil, Fill (5")							Borehole backfilled
	Brown Clay LOAM, A-6, Fill		1 SS	9	2.10	3.0 1.5	19	
			2 SS	5	= -	2.5 1.0	17 21	
	Dark Brown Sandy CLAY, (moist), A-6, Fill	5						
	Black CLAY, A-7-6, Topsoil		3 SS	15	-	1.0	23	
			4 SS	19	= -	1.5 2.25	31 23	
	Light Brown to Yellowish Brown CLAY, A-7-6	10						
			5 AU	-	-	1.75	23	
	End of Boring @ 12.5'							
		15						
		20						

SYMBOLS
N: STANDARD PENETRATION, BLWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

CHICAGO TESTING LABORATORY, INC.

1612 Landmeier Road, Suite C, Elk Grove Village, Illinois 60007 (847) 228-1079

RECORD OF SUBSURFACE EXPLORATION

BORING B-39 PAGE 1 OF 1

PROJECT NAME	Quentin Road Improvements	DATE STARTED	5/12/2005
		DATE COMPLETED	5/12/2005
CTL PROJECT NO.	74IL331	DRILLER	V.K.
SITE LOCATION	Deer Park/ Kildeer/ Ela Township, Illinois	BORING METHOD	CFA
Alignment:	US Route 12 (Rand Road)	GW ENCOUNTERED WHILE DRILLING	None
Station:	248+39	GROUNDWATER, AT COMPLETION	Dry
Offset:	48' L of CBL	GROUNDWATER, AFTER	- DAYS -
		HOLE CAVED,	- AT -

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
-1.0' CL	SURFACE	Feet						
	Black CLAY, A-7-6, Topsoil (13")		1 AU	-	-	1.5	32	Borehole backfilled
	Yellowish Brown CLAY, A-6		1 SS	18	3.88	3.25	24	
			2 SS	18	1.33	4.0	17	
		5	3 SS	20	4.27	4.5+	18	
			4 SS	26	4.68	4.5+	17	
	End of Boring @ 10.0'	10						
		15						
		20						

SYMBOLS
N: STANDARD PENETRATION, BLWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

CHICAGO TESTING LABORATORY, INC.

1612 Landmeier Road, Suite C, Elk Grove Village, Illinois 60007 (847) 228-1079

RECORD OF SUBSURFACE EXPLORATION

BORING B-40 PAGE 1 OF 1

PROJECT NAME	Quentin Road Improvements	DATE STARTED	6/17/05
		DATE COMPLETED	6/17/05
CTL PROJECT NO.	74IL331	DRILLER V.K.	BORING METHOD CFA
SITE LOCATION	Deer Park/ Kildeer/ Ela Township, Illinois	GW ENCOUNTERED WHILE DRILLING	None
Alignment:	US Route 12 (Rand Road)	GROUNDWATER, AT COMPLETION	Dry
Station:	243+54	GROUNDWATER, AFTER -	DAYS -
Offset:	43' L of CBL	HOLE CAVED, -	AT -

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
-0.7'	SURFACE	Feet						
	Black CLAY, A-7-6, Topsoil (3")							Borehole backfilled
	Brown and Grey CLAY, A-6		1 SS	29	2.80	3.5	16	
			2 SS	25	6.60	3.5	18	
		5	3 SS	17	4.68	3.25	19	
			4 SS	16	4.27	4.0	19	
	End of Boring @ 10.0'	10						
		15						
		20						

SYMBOLS
N: STANDARD PENETRATION, BLWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

CHICAGO TESTING LABORATORY, INC.

1612 Landmeier Road, Suite C, Elk Grove Village, Illinois 60007 (847) 228-1079

RECORD OF SUBSURFACE EXPLORATION

BORING B-41 PAGE 1 OF 1

PROJECT NAME Quentin Road Improvements

CTL PROJECT NO. 74IL331

SITE LOCATION Deer Park/ Kildeer/ Ela Township, Illinois

Alignment: US Route 12 (Rand Road)

Station: 240+53

Offset: 38' L of CBL

DATE STARTED 6/17/2005

DATE COMPLETED 6/17/2005

DRILLER V.K. BORING METHOD CFA

GW ENCOUNTERED WHILE DRILLING None

GROUNDWATER, AT COMPLETION Dry

GROUNDWATER, AFTER - DAYS -

HOLE CAVED, - AT -

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
-0.9'	SURFACE	Feet						
	Black CLAY, A-7-6, Topsoil (6")							Borehole backfilled
	Brown to Brown and Grey CLAY, A-6		1 SS	22	3.89	4.5+	18 19	
		5	2 SS	18	2.95	4.5+	16	
			3 SS	24	7.95	4.0	17	
			4 SS	24	7.37	4.5+	17	
	End of Boring @ 10.0'	10						
		15						
		20						

SYMBOLS
N: STANDARD PENETRATION, BLWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

CHICAGO TESTING LABORATORY, INC.

1612 Landmeier Road, Suite C, Elk Grove Village, Illinois 60007 (847) 228-1079

RECORD OF SUBSURFACE EXPLORATION

BORING B-42 PAGE 1 OF 1

PROJECT NAME	Quentin Road Improvements	DATE STARTED	6/17/05
		DATE COMPLETED	6/17/05
CTL PROJECT NO.	741L331	DRILLER V.K.	BORING METHOD HA
SITE LOCATION	Deer Park/ Kildeer/ Ela Township, Illinois	GW ENCOUNTERED WHILE DRILLING	None
Alignment:	US Route 12 (Rand Road)	GROUNDWATER, AT COMPLETION	Dry
Station:	237+73	GROUNDWATER, AFTER - DAYS	-
Offset:	51' L of CBL	HOLE CAVED, - AT	-

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
-3.0'	SURFACE	Feet						
	Dark Brown to Black CLAY to Silty CLAY, A-7-6, Fill							Borehole backfilled
			1 AU	-	-	1.25	35	
	Brown CLAY, A-6	5	2 AU	-	-	2.75	24	
			3 AU	-	-	3.5	16	
	End of Boring @ 6.0'							
		10						
		15						
		20						

SYMBOLS
N: STANDARD PENETRATION, BLWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

CHICAGO TESTING LABORATORY, INC.

1612 Landmeier Road, Suite C, Elk Grove Village, Illinois 60007 (847) 228-1079

RECORD OF SUBSURFACE EXPLORATION

BORING B-43 PAGE 1 OF 1

PROJECT NAME	Quentin Road Improvements	DATE STARTED	5/19/05
		DATE COMPLETED	5/19/05
CTL PROJECT NO.	74IL331	DRILLER V.K.	BORING METHOD HA
SITE LOCATION	Deer Park/ Kildeer/ Ela Township, Illinois	GW ENCOUNTERED WHILE DRILLING	None
Alignment:	US Route 12 (Rand Road)	GROUNDWATER, AT COMPLETION	Dry
Station:	234+22	GROUNDWATER, AFTER - DAYS	-
Offset:	44' L of CBL	HOLE CAVED, - AT	-

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
+1.3' CL	SURFACE	Feet						
	Bituminous Concrete Pavement (12.5")							Borehole backfilled
	Brown SAND, A-2, Fill		1 SS	8	-	-	5	
	Brown Sandy CLAY, A-6, Fill					1.5		
	Brown SAND, A-2, Fill		2 SS	7	-	4.5+	14 16	
	Brown CLAY, A-6 (12)	5						
			3 SS	29	5.43	4.5+	17	
			4 SS	38	8.73	4.5+	15	
	End of Boring @ 10.0'	10						
		15						
		20						

SYMBOLS
N: STANDARD PENETRATION, BLWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

CHICAGO TESTING LABORATORY, INC.

1612 Landmeier Road, Suite C, Elk Grove Village, Illinois 60007 (847) 228-1079

RECORD OF SUBSURFACE EXPLORATION

BORING B-45 PAGE 1 OF 1

PROJECT NAME	Quentin Road Improvements	DATE STARTED	5/13/05
		DATE COMPLETED	5/13/05
CTL PROJECT NO.	74IL331	DRILLER V.K.	BORING METHOD CFA
SITE LOCATION	Deer Park/ Kildeer/ Ela Township, Illinois	GW ENCOUNTERED WHILE DRILLING	8.5'
Alignment:	US Route 12 (Rand Road)	GROUNDWATER, AT COMPLETION	8.5'
Station:	228+50	GROUNDWATER, AFTER -	DAYS -
Offset:	35' L of CBL	HOLE CAVED, -	AT -

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
-0.4' CL	SURFACE	Feet						
	Brown CLAY, A-6, Fill							Borehole backfilled
	Brown LOAM to Sandy LOAM, A-2-4, Fill		1 SS	6	= / -	= / 2.5	10 / 17	
	Light Brown CLAY, A-6, Fill	5	2 SS	8	1.94	1.25	16	
	Brown CLAY, mixed with SAND, A-6, Fill		3 AU	50"/0	-	0.25	18	Spoon Refusal Auger Sample
	Light Brown and Light Grey CLAY, A-6	10	4 SS	9	= / 4.27	0.25 / 4.5+	28 / 19	
	End of Boring @ 10.0'	15						
		20						

SYMBOLS
N: STANDARD PENETRATION, BLWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

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CHICAGO TESTING LABORATORY, INC.

1612 Landmeier Road, Suite C, Elk Grove Village, Illinois 60007 (847) 228-1079

RECORD OF SUBSURFACE EXPLORATION

BORING B-46 PAGE 1 OF 1

PROJECT NAME Quentin Road Improvements

CTL PROJECT NO. 74IL331

SITE LOCATION Deer Park/ Kildeer/ Ela Township, Illinois

Alignment: US Route 12 (Rand Road)

Station: 225+37

Offset: 58' L of CBL

DATE STARTED 5/19/2005

DATE COMPLETED 5/19/2005

DRILLER V.K. BORING METHOD CFA

GW ENCOUNTERED WHILE DRILLING None

GROUNDWATER, AT COMPLETION Dry

GROUNDWATER, AFTER - DAYS -

HOLE CAVED, - AT -

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
+0.1' CL	SURFACE	Feet						
	Black Silty Clay LOAM, A-7-6, Fill (3")							Borehole backfilled
	Brown CLAY, A-6, Fill		1 SS	16	-	4.5+	18	
	Brown CLAY, A-6 to A-7-6	5	2 SS	11	2.41	3.75	17	
			3 SS	19	2.56	2.25	27	
	Light Brown Sandy Clay LOAM, A-6		4 SS	20	2.87	2.0	13	
	End of Boring @ 10.0'	10						
		15						
		20						

SYMBOLS

N: STANDARD PENETRATION, BLWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION

SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD

HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

CHICAGO TESTING LABORATORY, INC.

1612 Landmeier Road, Suite C, Elk Grove Village, Illinois 60007 (847) 228-1079

RECORD OF SUBSURFACE EXPLORATION

BORING B-47 PAGE 1 OF 1

PROJECT NAME	Quentin Road Improvements	DATE STARTED	5/19/05
		DATE COMPLETED	5/19/05
CTL PROJECT NO.	741L331	DRILLER	VK
SITE LOCATION	Deer Park/ Kildeer/ Ela Township, Illinois	BORING METHOD	CFA
Alignment:	US Route 12 (Rand Road)	GW ENCOUNTERED WHILE DRILLING	None
Station:	222+53	GROUNDWATER, AT COMPLETION	Dry
Offset:	61' L of CBL	GROUNDWATER, AFTER - DAYS	-
		HOLE CAVED, - AT	-

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
-0.3' CL	SURFACE	Feet						
	Bituminous Concrete Pavement (5")							Borehole backfilled
	Grey Crushed Limestone, A-1-a							
	Brown and Grey CLAY, A-6, Fill		1 SS	23	4.68	4.5+	20	
			2 SS	21	2.41	4.0 2.75	17	
	Dark Grey Clay LOAM, A-6 to A-7-6, Fill	5						
	Black CLAY, A-7-6, Topsoil		3 SS	15	1.94 2.72	1.25 2.5	25 26	
	Brown and trace Grey CLAY, A-6							
			4 SS	19	4.07	4.5+	15	
	End of Boring @ 10.0'	10						
		15						
		20						

SYMBOLS
N: STANDARD PENETRATION, BLWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

CHICAGO TESTING LABORATORY, INC.

1612 Landmeier Road, Suite C, Elk Grove Village, Illinois 60007 (847) 228-1079

RECORD OF SUBSURFACE EXPLORATION

BORING B-48 PAGE 1 OF 1

PROJECT NAME Quentin Road Improvements

CTL PROJECT NO. 74IL331

SITE LOCATION Deer Park/ Kildeer/ Ela Township, Illinois

Alignment: US Route 12 (Rand Road)

Station: 219+50

Offset: 45' L of CBL

DATE STARTED 5/13/05

DATE COMPLETED 5/13/05

DRILLER V.K. BORING METHOD CFA

GW ENCOUNTERED WHILE DRILLING None

GROUNDWATER, AT COMPLETION Dry

GROUNDWATER, AFTER - DAYS -

HOLE CAVED, - AT -

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
+0.2' CL	SURFACE	Feet						
	Black and Brown Clay LOAM, A-6, Fill							Borehole backfilled
	Crushed Limestone, A-1-a, Fill		1 SS	53	-	4.5+	14	
	Dark Grey CLAY, A-7-6, Topsoil						4	
	Brown and trace Grey CLAY, A-6	5	2 SS	18	2.95	3.75	23	
			3 SS	24	4.85	4.5+	17	
			4 SS	29	6.60	4.5+	16	
	End of Boring @ 10.0'	10						
		15						
		20						

SYMBOLS

N: STANDARD PENETRATION, BLWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION

SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD

HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

CHICAGO TESTING LABORATORY, INC.

1612 Landmeier Road, Suite C, Elk Grove Village, Illinois 60007 (847) 228-1079

RECORD OF SUBSURFACE EXPLORATION

BORING B-49 PAGE 1 OF 1

PROJECT NAME	Quentin Road Improvements	DATE STARTED	5/13/05
		DATE COMPLETED	5/13/05
CTL PROJECT NO.	74IL331	DRILLER V.K.	BORING METHOD CFA
SITE LOCATION	Deer Park/ Kildeer/ Ela Township, Illinois	GW ENCOUNTERED WHILE DRILLING	8.5'
Alignment:	US Route 12 (Rand Road)	GROUNDWATER, AT COMPLETION	Dry
Station:	216+50	GROUNDWATER, AFTER -	DAYS -
Offset:	38' L of CBL	HOLE CAVED, -	AT -

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
-0.3' CL	SURFACE	Feet						
	Dark Brown Clay LOAM, A-6, Fill							Borehole backfilled
	Brown Clay LOAM, A-6, Fill		1 SS	10	-	3.5	13	
	Dark Brown Sandy LOAM, A-2-4, Fill		2 SS	9	-	3.0	14	
	Grey CLAY, A-6, Fill	5						
	Dark Grey CLAY, A-7-6		3 SS	11	1.40 1.84	1.25 2.5	22 27	
	Light Brown and trace Light Grey CLAY, A-7-6 to A-6							
			4 SS	15	5.24	4.5	17	
		10						
	End of Boring @ 10.0'							
		15						
		20						

SYMBOLS
N: STANDARD PENETRATION, BLWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

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CHICAGO TESTING LABORATORY, INC.

1612 Landmeier Road, Suite C, Elk Grove Village, Illinois 60007 (847) 228-1079

RECORD OF SUBSURFACE EXPLORATION

BORING B-50 PAGE 1 OF 1

PROJECT NAME	Quentin Road Improvements	DATE STARTED	5/19/2005
		DATE COMPLETED	5/19/2005
CTL PROJECT NO.	74IL331	DRILLER	V.K.
SITE LOCATION	Deer Park/ Kildeer/ Ela Township, Illinois	BORING METHOD	CFA
Alignment:	US Route 12 (Rand Road)	GW ENCOUNTERED WHILE DRILLING	None
Station:	213+50	GROUNDWATER, AT COMPLETION	Dry
Offset:	48' L of CBL	GROUNDWATER, AFTER	- DAYS -
		HOLE CAVED,	- AT -

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
-0.4' CL	SURFACE	Feet						
	Black CLAY, A-7-6, Topsoil							Borehole backfilled
	Light Brown CLAY, A-6 (18)		1 SS	22	5.04	4.5+	18	
			2 SS	25	6.01	4.5+	16	
		5	3 SS	34	7.76	4.5+	18	
			4 SS	35	8.73	4.5+	18	
	End of Boring @ 10.0'	10						
		15						
		20						

SYMBOLS
N: STANDARD PENETRATION, BLWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

CHICAGO TESTING LABORATORY, INC.

1612 Landmeier Road, Suite C, Elk Grove Village, Illinois 60007 (847) 228-1079

RECORD OF SUBSURFACE EXPLORATION

BORING B-51 PAGE 1 OF 1

PROJECT NAME	Quentin Road Improvements	DATE STARTED	5/19/2005
		DATE COMPLETED	5/19/2005
CTL PROJECT NO.	74IL331	DRILLER V.K.	BORING METHOD CFA
SITE LOCATION	Deer Park/ Kildeer/ Ela Township, Illinois	GW ENCOUNTERED WHILE DRILLING	None
Alignment:	US Route 12 (Rand Road)	GROUNDWATER, AT COMPLETION	Dry
Station:	210+50	GROUNDWATER, AFTER - DAYS	-
Offset:	44' L of CBL	HOLE CAVED, - AT	-

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
-0.4' CL	SURFACE	Feet						
	Dark Brown and Black Clay LOAM, A-6, Fill							Borehole backfilled
			1 SS	9	-	1.0	27	
					-	4.5+	21	
	Light Brown CLAY, A-6							
			2 SS	17	5.24	4.5+	19	
		5						
			3 SS	35	8.73	4.5+	20	
			4 SS	22	4.07	3.5	23	
		10						
	End of Boring @ 10.0'							
		15						
		20						

SYMBOLS
N: STANDARD PENETRATION, BLWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

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CHICAGO TESTING LABORATORY, INC.

1612 Landmeier Road, Suite C, Elk Grove Village, Illinois 60007 (847) 228-1079

RECORD OF SUBSURFACE EXPLORATION

BORING B-52 PAGE 1 OF 1

PROJECT NAME Quentin Road Improvements

CTL PROJECT NO. 74IL331

SITE LOCATION Deer Park/ Kildeer/ Ela Township, Illinois

Alignment: US Route 12 (Rand Road)

Station: 207+50

Offset: 45' L of CBL

DATE STARTED 5/19/2005

DATE COMPLETED 5/19/2005

DRILLER V.K. BORING METHOD CFA

GW ENCOUNTERED WHILE DRILLING None

GROUNDWATER, AT COMPLETION Dry

GROUNDWATER, AFTER - DAYS -

HOLE CAVED, - AT -

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
-0.4' CL	SURFACE	Feet						
	GRAVEL Shoulder, A-1-a, Fill (3") Brown Sandy LOAM, A-2, Fill		1 AU	-	-	-	9	Borehole backfilled
	Grey and Brown CLAY, A-6		1 SS	14	-	2.75	19	
		5	2 SS	20	2.64	2.25	18	
			3 SS	19	2.56	2.0	18	
		10	4 SS	17	2.56	2.0	18	
	End of Boring @ 10.0'							
		15						
		20						

SYMBOLS

N: STANDARD PENETRATION, BLWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION

SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD

HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

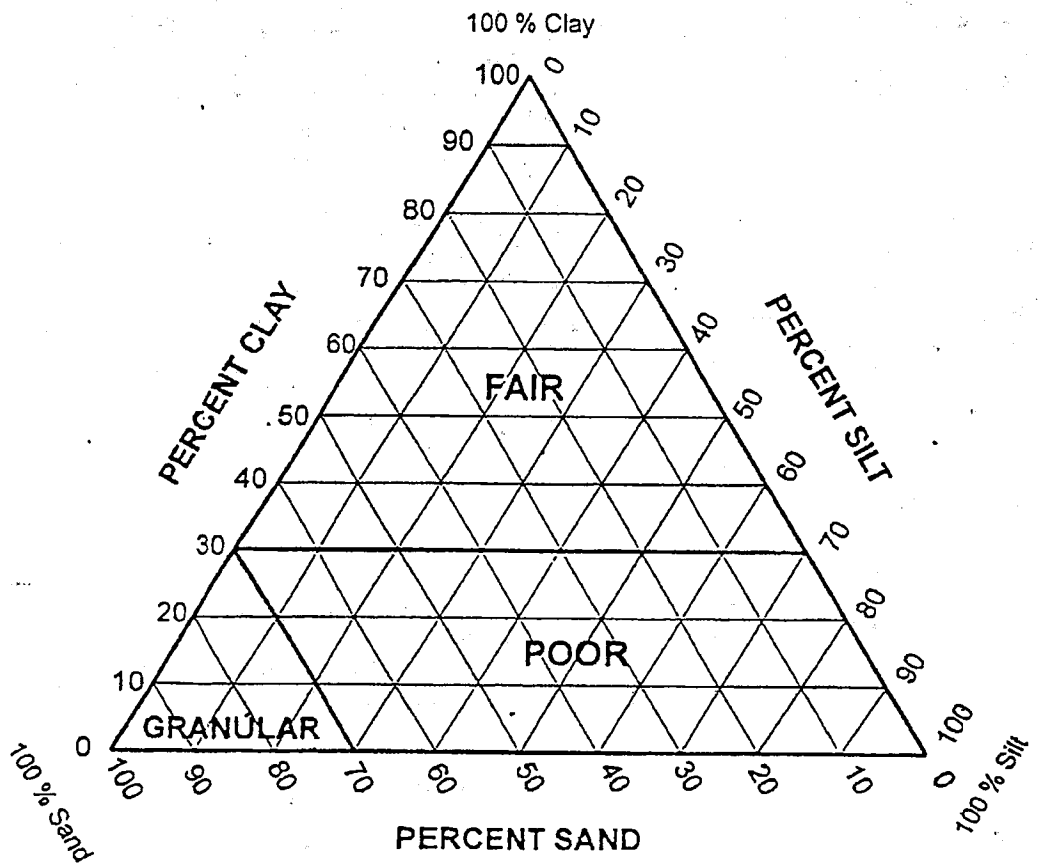


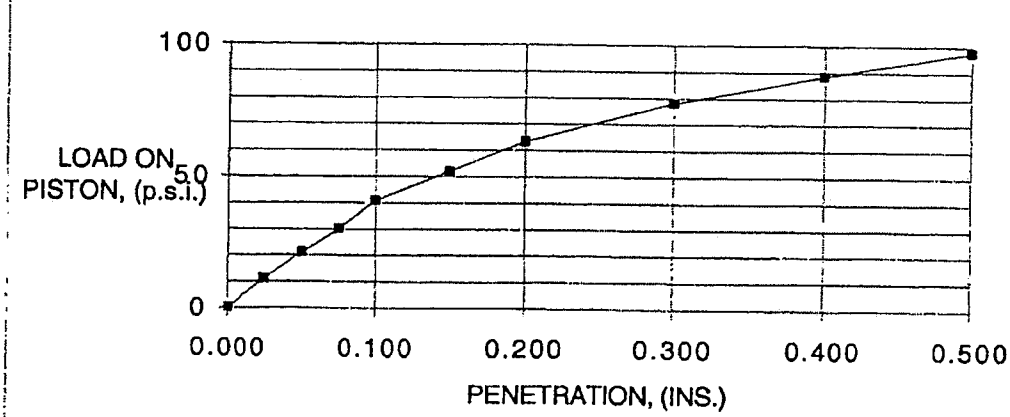
Figure 5.5 Subgrade Support Rating (SSR Chart)

FILE NO.:	74IL331
PROJECT NAME:	Quentin Road Improvements
SAMPLE I.D.:	B-32, 40, 41, 42
CLASSIFICATION:	CLAY, A-7-6
MAX.UNIT WT.:	115.8 P.C.F.
OPT. M.C.:	15.0 %
TEST UNIT WT.:	112.1 P.C.F.
TEST INIT. M.C.:	14.5 %
TEST% of MAX.	96.8 %

RAW LOAD/PENETRATION DATA		
Penetration, (INS.)	Dial Gage ReadingX0.001	Load,lbs
0	0.00	0.0
0.025	16.00	33.8
0.05	30.00	63.3
0.075	43.00	90.7
0.1	58.00	122.4
0.15	74.00	156.1
0.2	90.00	189.9
0.3	111.00	234.2
0.4	126.00	265.9
0.5	139.00	293.3

BEARING RATIO RESULTS TO GRAPH		
Penetration, (INS.)	Load on Piston, (PSI)	IBR,@penetration
0.000	0	
0.025	11	
0.050	21	
0.075	30	
0.100	41	**4.1%**
0.150	52	
0.200	63	**4.2%**
0.300	78	
0.400	89	
0.500	98	

Graph of Load vs. Penetration



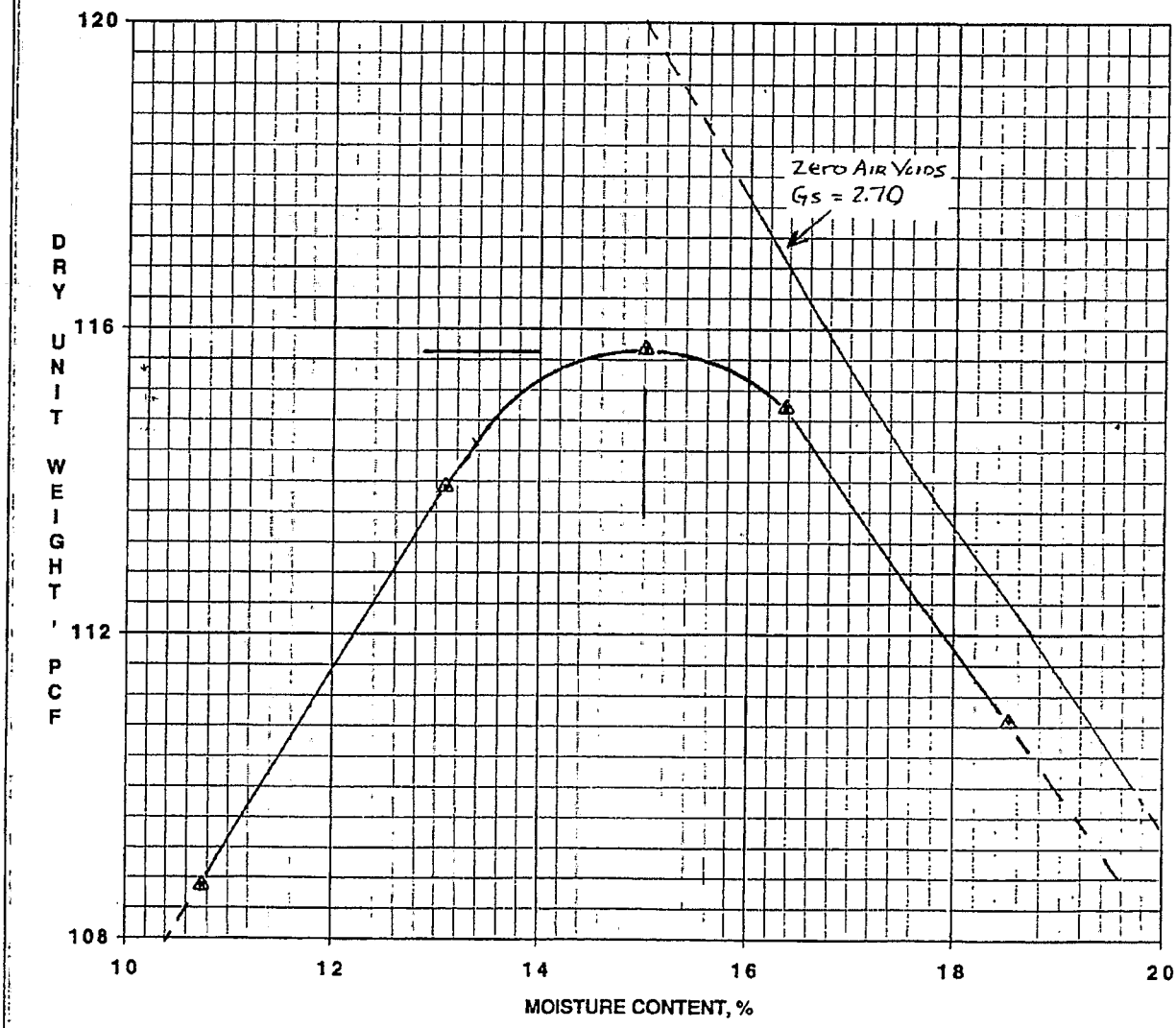
Chicago Testing Laboratory, Inc.

1612 LANDMEIER ROAD, SUITE C, ELK GROVE VILLAGE, IL 60007 (847) 228-1079

SOIL COMPACTION TEST GRAPH

PROJECT:	Quentin Road Improvements	REPORT NO.	1 MDR
LOCATION:	Lake County, IL	DATE:	6/27/05
CLIENT:	Civiltech Engineering, Inc.	OUR JOB NO.	74IL331

DESCRIPTION OF SOIL:	Brown Silty CLAY, trace Sand, trace gravel, CL	RAMMER TYPE:	Mechanical
TEST PROCEDURE:	ASTM D 698	PREPARATION METHOD:	Dry
MATERIAL SOURCE:	B-32, 40, 41 & 42, Depth: 1-5'	MOISTURE CONTENT AS RECEIVED:	N/A
TEST RESULTS: MAXIMUM DRY DENSITY	115.8 PCF	OPTIMUM MOISTURE	15.0%



REMARKS:

Date Received : 6/17/05 Date Tested: 6/24/05 By: JCF Submitted: DKS

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MIDLAND STANDARD ENGINEERING & TESTING, INC.
558 PLATE DRIVE UNIT 6
EAST DUNDEE, ILLINOIS 60118
(847) 844-1895, f (847) 844-3875

June 25, 2007

Mr. Reid T. Magner, P.E.
Civiltech Engineering, Inc.
450 E. Devon Avenue Suite 300
Itasca, Illinois 60143

Re: Retaining Wall Borings
Quentin Road
Lake County, Illinois
MSET File No. 77210

Dear Mr. Magner:

We have completed the field exploration work and analysis of the subsurface conditions for proposed improvements on the referenced project. This report was prepared for your use in preparing the project design plans.

Purpose

The purpose of this exploration was to determine the types of soil encountered along the proposed retaining wall alignment and to determine the presence of unsuitable support materials that may require special treatments or alternative foundation recommendations. Using this information along with the project data provided, design criteria and recommendations for foundation design have been prepared for use in preparing the plans and specifications.

Scope

The scope of this exploration and analysis included review of available information from previous work conducted in the area, subsurface exploration, field and laboratory testing, analysis of the data obtained, formulation of our recommendations and preparation of this report. The field exploration included making eleven (11) structure borings along the proposed retaining wall locations along the alignment as follows:

Quentin Road Sta. 3+00 to 6+65, R (Borings B-1 to B-3)
Quentin Road Sta. 8+30 to 11+00, R (Borings B-4 to B-6)
Quentin Road Sta. 14+00 to 17+00, R (Borings B-7 and B-8)
Quentin Road Sta. 31+00 to 33+00, L (Borings B-9 and B-10)
Long Grove Road Sta. 104+40, L (Boring B-11) to
Quentin Road, Sta. 30+00 L (Boring B-12)

Reference Documents

This soils exploration and survey was performed in accordance with the State of Illinois, 'Geotechnical Manual' dated January 1, 1999.

Project Description

The project includes the construction of retaining walls to facilitate widening of Quentin Road from Long Grove Road, north to Boschome Drive. Three (3) sections of wall are planned, north of Rand Road along the eastern right of way. Wall heights of 6.5' to 12.0' are indicated from top of wall to existing grade. Two (2) wall sections are planned at the northwest corner of Quentin Road and Long Grove Road. Wall heights of – to – are indicated from top of wall to existing grade.

Cast in place, concrete retaining walls on conventional shallow depth foundations are anticipated.

Drilling and Sampling Procedures

The soil borings were performed using a Mobile B-45 and Geoprobe 6620DT drill rigs equipped with a rotary head. Continuous flight augers were used to advance the holes. Representative samples were obtained by the use of split-spoon sampling procedures in accordance with A.S.T.M. Procedure D-1586.

Field Tests and Measurements

During the split-spoon sampling procedures, a standard penetration test was performed in accordance with current A.S.T.M. D-1586 Procedures. At sampling intervals, advancement of the boring was stopped and all loose material removed from the borehole. The sampler was then lowered into the hole and seated in undisturbed soil by pushing or tapping, taking suitable precautions that the rods were reasonably tight. The sampling spoon was then advanced by driving, using an automatic drop hammer. During the sampling procedure, the standard penetration value (N) of the soil was determined. The standard penetration value (N) is defined as the number of blows of a one hundred-forty pound (140 lb.) hammer required to advance the spoon sampler one foot (12") into the soil.

The results of the standard penetration tests indicated the relative density and comparative consistency of the soils, and thereby provide a basis for estimating the relative strength and compressibility of the soil profile components. The results of standard penetration tests can be found on the boring logs included in the Appendix.

During the field boring operations, samples of the predominantly cohesive soil from the split-spoon sampling device were tested using a gear modified Rimac spring tester and a hand penetrometer to aid in determining the strength of the soil. Consideration must be given to the manner in which the values of the unconfined compressive strengths were obtained. Split-spoon sampling techniques provide a representative, but somewhat disturbed, soil sample.

Water Level Measurements - Water level observations were made during and after the boring operations and are noted on the boring logs presented herewith. Temporary monitoring wells were installed at selected boring locations to provide delayed water level information. In relatively pervious soils, such as sandy soils, the indicated elevations are considered reliable groundwater levels. In relatively impervious soils, the accurate determination of the groundwater elevation may not be possible, even after several days of observation. Seasonal

variations, temperature and recent rainfall conditions may influence the levels of the groundwater table, and volumes of water will depend on the permeability of the soils.

DISCUSSION & RECOMMENDATIONS

Retaining Walls - Quentin Road, Right

Materials encountered at the anticipated footing depth were evaluated for foundation support characteristics. Shallow depth footings should be constructed on approved bearing soils at a minimum depth of 3.5 feet below the final grade at the exposed face of the wall.

The following is a summary of the estimated depth to suitable bearing material at the boring locations:

Quentin Road (Sta. 3+00 to 5+00)
Top of Wall: Est. 806.0

Boring No.	Location	Offset	Ground Surface Elevation	Anticipated Footing Elevation	Est. Elevation of Bearing Soils
SB-1	3+50	90'R	799.0	795.5	**785±**
SB-2	5+15	85'R	807.0	no wall	
SB-3	6+65	85'R	806.0	no wall	

Quentin Road (Sta. 8+00 to 9+50)
Top of Wall: Est. 808.0

Boring No.	Location	Offset	Ground Surface Elevation	Anticipated Footing Elevation	Est. Elevation of Bearing Soils
SB-4	8+00	85'R	796.0	795.5	**782±**
SB-5	8+75	85'R	798.0	794.5	794.5
SB-6	10+25	85'R	812.5	no wall	

Quentin Road (Sta. 14+00 to 17+00)
Top of Wall: Est. 812.0

Boring No.	Location	Offset	Ground Surface Elevation	Anticipated Footing Elevation	Est. Elevation of Bearing Soils
SB-7	14+75	70'R	804.0	800.5	800.5
SB-8	16+25	70'R	808.5	805.0	805.0

The 'Estimated Elevation of Bearing Soils' considers the 'Anticipated Footing Elevation', which will provide the required frost protection depth from final exterior grade. If the grade at the front of the wall changes, soils at the planned footing elevation should be reviewed.

'Bold' elevations indicate that suitable bearing soils were encountered at a depth below the anticipated footing depth. It is recommended that the retaining walls in these areas be supported on **drilled piers** extended through the upper fill and underlying organic, compressible soils encountered to a depth of 13.0'. The walls may be stepped up to conventional shallow depth footings or supported on drilled piers extended to the nominal frost depth.

Drilled piers may be proportioned for a net allowable bearing capacity of **4,000** pounds per square

foot on the approved underlying bearing soils at the depths summarized above.

Where indicated, conventional shallow depth footings may be used support the structure, constructed at the design elevation in the approved natural soils. The foundations may be proportioned for a net allowable bearing capacity of **4,000** pounds per square foot on the approved underlying bearing soils.

Retaining Walls - Northwest Corner Quentin Road and Long Grove Road

Quentin Road (Sta. 31+00 to 33+00)
Top of Wall: Est. 802.0
Bottom of Wall: 796.5

Boring No.	Location	Offset	Ground Surface Elevation	Anticipated Footing Elevation	Est. Elevation of Bearing Soils
SB-9	31+25	30'L	801.6	793.0	793.0
SB-10	32+75	30'L	799.4	793.0	**791.0**

Long Grove Road (Sta. 104+40) to Quentin Road (Sta. 30+00)
Top of Wall: Est. 804.0
Bottom of Wall: 800.0

Boring No.	Location	Offset	Ground Surface Elevation	Anticipated Footing Elevation	Est. Elevation of Bearing Soils
SB-11	104+80	30'L	803.2	796.5	797.5
SB-12	29+97	30'L	803.5	796.5	800.0

The 'Estimated Elevation of Bearing Soils' considers the 'Anticipated Footing Elevation', which will provide the required frost protection depth from final exterior grade. If the grade at the front of the wall changes, soils at the planned footing elevation should be reviewed. **'Bold'** elevations indicate that suitable bearing soils were encountered at a depth below the anticipated footing depth.

Conventional **shallow depth footings** may be used support the structure, constructed at the design elevation in the approved natural soils; stepped to suitable bearing soils encountered below or constructed at the design depth on a properly constructed Granular Structural Fill. The foundations may be proportioned for a net allowable bearing capacity of **2,500** pounds per square foot on the approved underlying bearing soils.

Granular Structural FILL

Material used as Granular Structural Fill beneath the foundations should be well-graded crushed limestone or crushed gravel, IDOT CA06 gradation or equivalent. The structural fill placed under structures should be placed in 9-inch maximum lifts loose measure and compacted to 95 percent of the maximum dry density as defined by ASTM D-1557.

Wall Backfill and Lateral Earth Pressure

The retaining wall should be backfilled with a free draining granular material such as IDOT FA02 or FA01. Drainage should be provided near the base of the wall to prevent the build up of hydrostatic pressures behind the wall. Note that weep holes in the face of the wall

would not provide positive drainage during times of high flow in the drainage swale. A back drain system should be considered.

A lateral Active Earth Pressure of 45 pounds per square foot per foot of depth may be used for design of a properly drained wall. An increased design lateral pressure of 85 pounds per square foot per foot of depth, equivalent fluid pressure should be used for undrained walls. It is emphasized that these active pressures assume that the wall is allowed to yield, (i.e. unrestrained) enough to allow and active pressure state to develop. The effects of surcharge loads and live loads on the roadway behind the wall must then be added to these earth pressures.

Closure

Thank you for the opportunity to be of continuing service. Please contact us if you have any questions regarding the information contained in this report.

Very truly yours,

MIDLAND STANDARD ENGINEERING & TESTING, INC.

William D. Prigge, P.E.
Principal Engineer

cc: Mr. Otto Hatlestad, S.E., P.E, Civiltech Engineering, Inc.

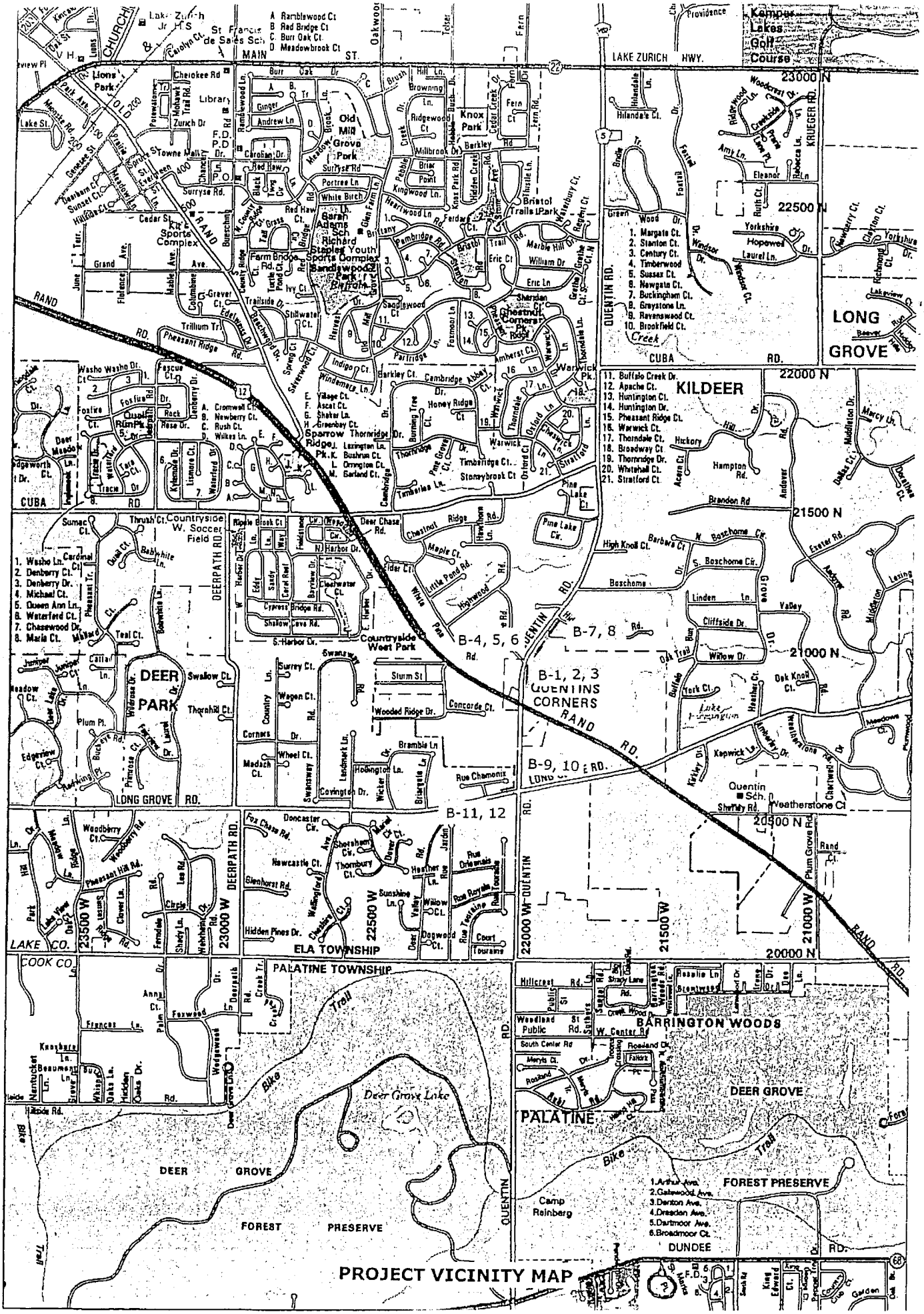
Appendix

APPENDIX

PROJECT VICINITY MAP

RECORDS OF SUBSURFACE EXPLORATION
SB-1 through SB-12

GENERAL NOTES


PROJECT VICINITY MAP
MAIN ST.
LAKE ZURICH HWY.
CHURCH
RAND RD.
QUENTIN RD.
DEERPATH RD.
LONG GROVE RD.
CUBA RD.
LAKE ZURICH
LONG GROVE
KILDEER
DEER PARK
BARRINGTON WOODS
PALATINE
DEER GROVE
ELA TOWNSHIP
PALATINE TOWNSHIP
FOREST PRESERVE
Deer Grove Lake
Bike Trail
Countryside W. Soccer Field
Countryside West Park
Knox Park
Old Mill Grove Park
Sandalwood Park
Richard Stegall Youth Sports Complex
Kildeer Sports Complex
Kemper Lakes Golf Course
Quentin Sch.
Camp Reinberg
QUENTINS CORNERS
B-1, 2, 3
B-4, 5, 6
B-7, 8
B-9, 10
B-11, 12
23000 N
22500 N
22000 N
21500 N
21000 N
20500 N
20000 N
23500 W
22500 W
22000 W
21500 W
21000 W
LAKE CO.
COOK CO.

MIDLAND STANDARD ENGINEERING & TESTING, INC.

558 Plate Drive Unit 6 East Dundee, Illinois 60118 (847) 844-1895

RECORD OF SUBSURFACE EXPLORATION

BORING B-1 PAGE 1 OF 1

PROJECT NAME *Quentin Road Retaining Walls*
MSET PROJECT NO. *77210*
SITE LOCATION *Lake County, Illinois*
Station 3+50, ±90' Right of Centerline

DATE STARTED *4/27/07*
DATE COMPLETED *4/27/07*
LOGGED BY *SE* BORING METHOD *VD/C*
GW ENCOUNTERED WHILE DRILLING *none*
GROUNDWATER, AT COMPLETION *dry*
GROUNDWATER, AFTER ____ DAYS ____
HOLE CAVED, ____ AT ____

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu LAB	Qp FIELD	Wc LAB	Remarks
799.0	SURFACE	Feet						
	Black and Brown Silty Clay LOAM, A-6 to A-7-6: FILL		SS-1	5	--	--	25	
	few Bricks		SS-2	5	--	--	25	
	Brown, Black, and Grey Silt LOAM, A-4: FILL	5	SS-3	2	--	--	81	
	Dark Grey and Black Organic SILT and PEAT, soft, A-8: FILL		SS-4	3	--	--	30	
		10	SS-5	6	--	--	38	
	Brown and Grey Silty CLAY, very stiff, A-6		SS-6	15	3.49	2.5	24	
	End of Boring @ 15.0'	15						

SYMBOLS
N: STANDARD PENETRATION, BLOWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

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558 Plate Drive Unit 6 East Dundee, Illinois 60118 (847) 844-1895

RECORD OF SUBSURFACE EXPLORATION

BORING B-2 PAGE 1 OF 1

PROJECT NAME *Quentin Road Retaining Walls*
MSET PROJECT NO. *77210*
SITE LOCATION *Lake County, Illinois*
Station 5+15, ±85' Right of Centerline

DATE STARTED *4/6/07*
DATE COMPLETED *4/6/07*
LOGGED BY *SE* BORING METHOD *CFA*
GW ENCOUNTERED WHILE DRILLING *none*
GROUNDWATER, AT COMPLETION *dry*
GROUNDWATER, AFTER ____ DAYS ____
HOLE CAVED, ____ AT ____

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu LAB	Qp FIELD	Wc LAB	Remarks
807.0	SURFACE	Feet						
	±10" Black Silty CLAY/TOPSOIL: FILL							
	Brown and Black Silty CLAY, A-6: FILL		SS-1	9	-	3.25	14	
			SS-2	6	-	2.0	20	
		5	SS-3	7	1.40	3.0	23	
			SS-4	7	1.98	3.0	44	
		10						
	Olive-Brown Silty CLAY, very stiff, A-7-6		SS-5	9	2.02	2.5	26	
	Brown Silty CLAY, hard, A-6		SS-6	20	-	4.5	17	
		15	SS-7	26	-	4.5	16	
	End of Boring @ 17.5'							
		20						

SYMBOLS
N: STANDARD PENETRATION, BLOWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

MIDLAND STANDARD ENGINEERING & TESTING, INC.

558 Plate Drive Unit 6 East Dundee, Illinois 60118 (847) 844-1895

RECORD OF SUBSURFACE EXPLORATION

BORING B-3 PAGE 1 OF 1

PROJECT NAME *Quentin Road Retaining Walls*
MSET PROJECT NO. *77210*
SITE LOCATION *Lake County, Illinois*
Station 6+65, ±85' Right of Centerline

DATE STARTED *4/6/07*
DATE COMPLETED *4/6/07*
LOGGED BY *SE* BORING METHOD *CFA*
GW ENCOUNTERED WHILE DRILLING *none*
GROUNDWATER, AT COMPLETION *dry*
GROUNDWATER, AFTER ____ DAYS ____
HOLE CAVED, ____ AT ____

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
806.0	SURFACE	Feet			LAB	FIELD	LAB	
	±4" Black Silty CLAY/TOPSOIL: FILL							
	Brown and Dark Brown Silt Clay LOAM, A-6, some Concrete: FILL		SS-1	10	4.07	1.5	17	
			SS-2	6	-	3.25	22	
	Brown Silty CLAY, stiff to very stiff, A-6	5						
			SS-3	12	2.56	3.75	23	
			SS-4	24	1.96	3.5	15	
		10						
	Brown and Grey Silty CLAY, very stiff to hard, A-6		SS-5	19	3.96	4.5	18	
			SS-6	20	4.46	4.5+	17	
		15						
	End of Boring @ 15.0'							

SYMBOLS
N: STANDARD PENETRATION, BLOWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

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558 Plate Drive Unit 6 East Dundee, Illinois 60118 (847) 844-1895

RECORD OF SUBSURFACE EXPLORATION

BORING B-4 PAGE 1 OF 1

PROJECT NAME *Quentin Road Retaining Walls*
MSET PROJECT NO. *77210*
SITE LOCATION *Lake County, Illinois*
Station 8+00, ±85' Right of Centerline

DATE STARTED *4/27/07*
DATE COMPLETED *4/27/07*
LOGGED BY *SE* BORING METHOD *VD/C*
GW ENCOUNTERED WHILE DRILLING *none*
GROUNDWATER, AT COMPLETION *dry*
GROUNDWATER, AFTER ____ DAYS ____
HOLE CAVED, ____ AT ____

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
796.0	SURFACE	Feet			LAB	FIELD	LAB	
	Brown and Black Silty Clay LOAM, A-6: FILL trace Asphalt							
			SS-1	7	--	2.5	18	
			SS-2	8	1.98	2.5	15	
	Concrete pieces	5						
	Brown and Black Organic CLAY and PEAT, A-8		SS-3	13	--	--	70	
	Yellow-Brown Silty CLAY, little Sand, trace Gravel, trace Wood, A-6	10	SS-4	6	--	--	22	
	Grey Silty Clay LOAM, firm to stiff, A-6		SS-5	8	0.78	1.75	29	
	Brown and Grey Silty CLAY, very stiff to hard, A-6	15	SS-6	14	2.95	4.25	20	
	End of Boring @ 15.0'							

SYMBOLS
N: STANDARD PENETRATION, BLOWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM
BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

MIDLAND STANDARD ENGINEERING & TESTING, INC.

558 Plate Drive Unit 6 East Dundee, Illinois 60118 (847) 844-1895

RECORD OF SUBSURFACE EXPLORATION

BORING B-5 PAGE 1 OF 1

PROJECT NAME *Quentin Road Retaining Walls*

MSET PROJECT NO. *77210*

SITE LOCATION *Lake County, Illinois*
Station 8+75, ±85' Right of Centerline

DATE STARTED *7/27/07*
DATE COMPLETED *4/27/07*
LOGGED BY *SE* BORING METHOD *VD/C*
GW ENCOUNTERED WHILE DRILLING *none*
GROUNDWATER, AT COMPLETION *dry*
GROUNDWATER, AFTER ____ DAYS ____
HOLE CAVED, ____ AT ____

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
		Feet			LAB	FIELD	LAB	
798.0	SURFACE							
	±10" Dark Brown Silty CLAY/TOPSOIL							
	Brown and Yellow-Brown Silty Clay LOAM, stiff to very stiff, A-6		SS-1	6	1.16	2.0	15	
	Brown and Grey Silty CLAY, very stiff to hard, A-6	5	SS-2	26	3.49	4.25	18	
			SS-3	23	8.34	3.25	17	
		10	SS-4	23	8.92	4.5+	15	
			SS-5	20	8.15	4.5+	16	
		15	SS-6	23	--	4.5+	14	
	End of Boring @ 15.0'							

SYMBOLS
N: STANDARD PENETRATION, BLOWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM
BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

MIDLAND STANDARD ENGINEERING & TESTING, INC.

558 Plate Drive Unit 6 East Dundee, Illinois 60118 (847) 844-1895

RECORD OF SUBSURFACE EXPLORATION

BORING B-6 PAGE 1 OF 1

PROJECT NAME *Quentin Road Retaining Walls*
MSET PROJECT NO. *77210*
SITE LOCATION *Lake County, Illinois*
Station 10+25, ±85' Right of Centerline

DATE STARTED *4/6/07*
DATE COMPLETED *4/6/07*
LOGGED BY *SE* BORING METHOD *CFA*
GW ENCOUNTERED WHILE DRILLING *8.0'*
GROUNDWATER, AT COMPLETION *4.4'*
GROUNDWATER, AFTER ____ DAYS ____
HOLE CAVED, *8.8'* AT *completion*

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
812.6	SURFACE	Feet			LAB	FIELD	LAB	
	±7" Dark Brown Silty CLAY/TOPSOIL							
	Brown Silty CLAY, very stiff to hard, A-6		SS-1	13	6.54	4.25	16	
			SS-2	13	2.47	4.25	18	
	Brown and Grey Silty CLAY, hard, A-6	5						
			SS-3	23	9.07	4.5+	16	
	wet Sand seam @ ±8.0'							
	Brown and Grey Silty Clay LOAM, very stiff A-6		SS-4	15	--	3.75	19	
		10						
			SS-5	19	--	4.0	13	
	Grey Silty CLAY, very stiff, A-6		SS-6	14	--	2.5	12	
		15						
	End of Boring @ 15.0'							

SYMBOLS
N: STANDARD PENETRATION, BLOWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM
BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

MIDLAND STANDARD ENGINEERING & TESTING, INC.

558 Plate Drive Unit 6 East Dundee, Illinois 60118 (847) 844-1895

RECORD OF SUBSURFACE EXPLORATION

BORING B-7 PAGE 1 OF 1

PROJECT NAME *Quentin Road Retaining Walls*
MSET PROJECT NO. *77210*
SITE LOCATION *Lake County, Illinois*
Station 14+75, ±70' Right of Centerline

DATE STARTED *4/27/07*
DATE COMPLETED *4/27/07*
LOGGED BY *SE* BORING METHOD *VD/C*
GW ENCOUNTERED WHILE DRILLING *none*
GROUNDWATER, AT COMPLETION *dry*
GROUNDWATER, AFTER ____ DAYS ____
HOLE CAVED, ____ AT ____

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu LAB	Qp FIELD	Wc LAB	Remarks
804.0	SURFACE	Feet						
	±7" Dark Brown Silty CLAY/TOPSOIL							
	Yellow-Brown and Brown Silty CLAY, stiff, A-6		SS-1	5	1.40	1.5	35	
	Brown and Grey Silty CLAY, hard to very stiff, A-6	5	SS-2	16	7.57	4.5	16	
			SS-3	17	4.74	4.25	18	
		10	SS-4	16	9.20	4.5+	16	
			SS-5	26	--	4.5+	18	
		15	SS-6	24	3.30	4.5+	18	
	End of Boring @ 15.0'							

SYMBOLS
N: STANDARD PENETRATION, BLOWS/FT.
Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

MIDLAND STANDARD ENGINEERING & TESTING, INC.

558 Plate Drive Unit 6 East Dundee, Illinois 60118 (847) 844-1895

RECORD OF SUBSURFACE EXPLORATION

BORING B-8 PAGE 1 OF 1

PROJECT NAME *Quentin Road Retaining Walls*
MSET PROJECT NO. *77210*
SITE LOCATION *Lake County, Illinois*
Station 16+25, ±70' Right of Centerline

DATE STARTED *4/10/07*
DATE COMPLETED *4/10/07*
LOGGED BY *SE* BORING METHOD *CFA*
GW ENCOUNTERED WHILE DRILLING *none*
GROUNDWATER, AT COMPLETION *dry*
GROUNDWATER, AFTER ____ DAYS ____
HOLE CAVED, ____ AT ____

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu LAB	Qp FIELD	Wc LAB	Remarks
808.5	SURFACE	Feet						
	±8" Dark Brown Silty CLAY/TOPSOIL							
	Yellow-Brown and Grey Silty CLAY, stiff to very stiff, A-6		SS-1	7	1.78	2.75	24	
			SS-2	11	1.01	3.5	32	
	Brown and Grey Silty CLAY, very stiff to hard, A-6	5	SS-3	21	5.43	4.5+	18	
			SS-4	27	6.01	4.5+	17	
		10	SS-5	23	3.13	4.5+	17	
			SS-6	27	6.01	4.5+	16	
	Grey near tip	15						
	End of Boring @ 15.0'							

SYMBOLS
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Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM
BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

MIDLAND STANDARD ENGINEERING & TESTING, INC.

558 Plate Drive Unit 6 East Dundee, Illinois 60118 (847) 844-1895

RECORD OF SUBSURFACE EXPLORATION

BORING B-9 PAGE 1 OF 1

PROJECT NAME *Quentin Road Retaining Walls*
MSET PROJECT NO. *77210*
SITE LOCATION *Lake County, Illinois*
Station 31+25, 30' Left of Centerline

DATE STARTED *4/10/07*
DATE COMPLETED *4/10/07*
LOGGED BY *SE* BORING METHOD *CFA*
GW ENCOUNTERED WHILE DRILLING *none*
GROUNDWATER, AT COMPLETION *dry*
GROUNDWATER, AFTER ____ DAYS ____
HOLE CAVED, ____ AT ____

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu LAB	Qp FIELD	Wc LAB	Remarks
801.6	SURFACE	Feet						
	±5" Brown Crushed Shoulder Gravel							
	Grey and Dark Grey Silty CLAY, A-6: FILL		SS-1	9	1.57	3.5	23	
	Brown and Grey Silty CLAY, very stiff to hard, A-6	5	SS-2	10	3.31	4.5+	17	
			SS-3	26	8.15	4.5+	17	
		10	SS-4	13	4.86	4.0	17	
	Grey Silty CLAY, very stiff to hard, A-6		SS-5	19	3.72	4.5	17	
		15	SS-6	10	2.56	2.75	17	
	End of Boring @ 15.0'							

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Wc WATER CONTENT, %
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Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM
BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

MIDLAND STANDARD ENGINEERING & TESTING, INC.

558 Plate Drive Unit 6 East Dundee, Illinois 60118 (847) 844-1895

RECORD OF SUBSURFACE EXPLORATION

BORING B-10 PAGE 1 OF 1

PROJECT NAME *Quentin Road Retaining Walls*
MSET PROJECT NO. *77210*
SITE LOCATION *Lake County, Illinois*
Station 32+75, ±35' Left of Centerline

DATE STARTED *4/10/07*
DATE COMPLETED *4/10/07*
LOGGED BY *SE* BORING METHOD *CFA*
GW ENCOUNTERED WHILE DRILLING *13.0'*
GROUNDWATER, AT COMPLETION *12.8'*
GROUNDWATER, AFTER ____ DAYS ____
HOLE CAVED, *13.4'* AT *completion*

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
799.4	SURFACE	Feet			LAB	FIELD	LAB	
	Dark Grey and Olive-Grey Silty CLAY, A-6 to A-7-6: FILL		*SS-1*	*9*	-	*1.75*	*20*	
	to Brown, Grey, and Dark Grey	*5*	*SS-2*	*5*	*1.70*	*2.5*	*24*	
	Dark Grey and Yellow-Brown mottled Silty CLAY, firm to stiff, A-7-6		*SS-3*	*6*	*0.78*	*1.25*	*27*	
	Yellow-Brown and Grey Silty CLAY, stiff, A-7-6	*10*	*SS-4*	*5*	*1.40*	*1.25*	*25*	
	Grey Silty CLAY, firm to stiff, A-7-6		*SS-5*	*4*	*0.85*	*1.25*	*24*	
	Brown and Grey Gravelly LOAM, medium dense, A-2-4	*15*	*SS-6*	*19*	-	-	*11*	
	End of Boring @ 15.0'							

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Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

MIDLAND STANDARD ENGINEERING & TESTING, INC.

558 Plate Drive Unit 6 East Dundee, Illinois 60118 (847) 844-1895

RECORD OF SUBSURFACE EXPLORATION

BORING B-11 PAGE 1 OF 1

PROJECT NAME *Quentin Road Retaining Walls*
MSET PROJECT NO. *77210*
SITE LOCATION *Lake County, Illinois*
Station 104+80, ±30' Left of Centerline

DATE STARTED *4/6/07*
DATE COMPLETED *4/6/07*
LOGGED BY *SE* BORING METHOD *CFA*
GW ENCOUNTERED WHILE DRILLING *none*
GROUNDWATER, AT COMPLETION *dry*
GROUNDWATER, AFTER ____ DAYS ____
HOLE CAVED, ____ AT ____

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu	Qp	Wc	Remarks
803.2	SURFACE	Feet			LAB	FIELD	LAB	
	Dark Grey and Olive-Grey Silty CLAY, A-6: FILL		SS-1	6	1.26	3.25	21	
	Black Organic Silty CLAY, stiff, A-8	5	SS-2	4	--	1.0	36	
	Olive-Brown and Grey Silty CLAY, stiff to very stiff, A-7-6		SS-3	7	1.73	2.0	25	
	Brown and Grey Silty CLAY, hard, A-6	10	SS-4	10	6.79	4.5+	15	
	Grey Silty CLAY, hard, A-6		SS-5	21	4.86	4.5+	15	
		15	SS-6	19	5.43	4.5+	17	
	End of Boring @ 15.0'							

SYMBOLS
N: STANDARD PENETRATION, BLOWS/FT.
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Wc WATER CONTENT, %
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PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

MIDLAND STANDARD ENGINEERING & TESTING, INC.

558 Plate Drive Unit 6 East Dundee, Illinois 60118 (847) 844-1895

RECORD OF SUBSURFACE EXPLORATION

BORING B-12 PAGE 1 OF 1

PROJECT NAME: Quentin Road Retaining Walls
MSET PROJECT NO.: 77210
SITE LOCATION: Lake County, Illinois
Station 29+97, ±30' Left of Centerline

DATE STARTED: 4/10/07
DATE COMPLETED: 4/10/07
LOGGED BY: SE BORING METHOD: CFA
GW ENCOUNTERED WHILE DRILLING: 10.5'
GROUNDWATER, AT COMPLETION: 8.7'
GROUNDWATER, AFTER ____ DAYS
HOLE CAVED, 12.3' AT

ELEV.	DESCRIPTION	DEPTH	SAMPLE	N	Qu LAB	Qp FIELD	Wc LAB	Remarks
803.5	SURFACE	Feet						
	±8" Brown Crushed Shoulder Gravel							
	Brown and Olive-Grey Silty CLAY, stiff, A-6		SS-1	7	--	--	24	
	Brown and Grey Silty CLAY, hard, A-6	5	SS-2	11	4.27	4.5+	17	
			SS-3	19	8.59	4.5+	17	
		10	SS-4	13	6.01	4.0	15	
	Brown Sand seam, wet							
	Grey Silty CLAY, stiff to hard, A-6		SS-5	14	1.94	4.0	18	
		15	SS-6	13	1.94	3.5	18	
	End of Boring @ 15.0'							

SYMBOLS
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Qu: UNCONFINED COMPRESSIVE STRENGTH, TONS/SQ. FT.
Wc WATER CONTENT, %
LL: LIQUID LIMIT, %
PI: PLASTICITY INDEX, %
Dd: NATURAL DRY DENSITY, LBS./CU. FT.
Qp: HAND PENETROMETER, TONS/SQ. FT.
GW: GROUND WATER

SAMPLE DESIGNATION
SS- DRIVEN SPLIT SPOON 1 3/8" I.D., 2" O.D.
ST- PRESSED SHELBY TUBE
AU- AUGER SAMPLE
RC- ROCK CORE - NXM

BORING METHOD
HSA- HOLLOW STEM AUGER
CFA- CONTINUOUS FLIGHT AUGERS
C- CASING
MD- MUD DRILLING

NOTE: The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

PARTICLE SIZE DESCRIPTION & TERMINOLOGY

Coarse Grained or Granular Soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine Grained soils have less than 50% of their dry weight retained on a #200 sieve; they are described as: clays or clayey silts if they are cohesive and silts if they are non-cohesive. In addition to gradation, granular soils are defined on the basis of their relative in-place density and the fine grained soils on the basis of their strength or consistency and their plasticity.

Major Component of Sample	Size Range
Boulders	Over 8 in. (200 mm)
Cobbles	8 inches to 3 inches (200 mm to 75mm)
Gravel	3 inches to #10 sieve (75mm to 2.00mm)
Sand	#10 to #200 sieve (2.00mm to 75mm)
Silt	Passing #200 sieve (75mm to 2mm)
Clay	Smaller than 2mm

Descriptive Term of Components Also Present in Sample	Approximate Quantity (Percent)
Trace	1 - 9
Little	10 - 19
Some	20 - 34
And	35 - 50

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

GRANULAR SOILS

DENSITY CLASSIFICATION	APPROXIMATE RANGE OF N *
Very Loose	0 - 3
Slightly Dense	4 - 9
Medium Dense	10 - 29
Dense	30 - 49
Very Dense	50 - 80
Extremely Dense	80 +

COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH, Qu - TSF	APPROXIMATE RANGE OF N *
Very Soft	0.25	0 - 2
Soft	0.25 - 0.49	3 - 4
Firm	0.50 - 0.99	5 - 8
Stiff	1.00 - 1.99	9 - 15
Very Stiff	2.00 - 3.99	16 - 30
Hard	4.00 - 8.00	31 - 50
Very Hard	8.00 +	Over 50

* STANDARD PENETRATION TEST (ASTM D1586) - A 2.0" outside-diameter, split barrel sampler is driven into undisturbed soil by means of a 140 pound weight falling freely through a vertical distance of 30 inches. The sampler is normally driven 3 successive 6 inch increments. The total number of blows required for the final 12 inches of penetration is the Standard Penetration Resistance (N).

MIDLAND STANDARD ENGINEERING & TESTING, INC.

26575 West Commerce Drive, Unit 607
Volo, Illinois 60073
(847) 270-0832 f(847) 270-0836

November 16, 2007

Mr. Reid T. Magner, P.E.
Civiltech Engineering, Inc.
450 E. Devon Avenue, Suite 300
Itasca, Illinois 60143

Re: Quentin Road
Lake County, Illinois
MSET No. 77210

Dear Mr. Magner:

Midland Standard Engineering and Testing, Inc. has received the plan, cross-section, and soil report data addressing certain areas for the referenced project. After a review of this data, we are providing soil recommendations for the two areas of concern: the pavement/embankment widening on the east side of Quentin Road: Sta. 32+00 to Sta. 38+00; and the proposed widening at Quentin Road: Sta. 8+00, Right.

Low Strength Soil Deposits, Sta. 32+00 to Sta. 38+00, Widening East Side

For the pavement widening, through the low ground at Sta. 32+00 to Sta. 38+00, an estimate of the settlement was performed. Please note that the settlement estimates provided in this letter were determined using procedures to estimate the soil compression characteristics from liquid limit testing, rather than more accurate laboratory consolidation testing.

The estimate is based on the plan grades and the available soil boring information, borings B-5, B-6, B-7, and B-8 of Chicago Testing Laboratory, Inc. soil report File No. 71IL331 dated July 13, 2005. The calculated settlement through this area for the proposed widening embankment ranges from 2 to 2-1/2 inches. We would expect this settlement to occur slowly because of the compressible soil deposit is a CLAY, A-7-6 with a low permeability rate.

If this amount of settlement is not tolerable, the compressible soil layer should be removed partially or completely through this area and replaced with compacted embankment FILL. The partial depth of removal implemented to control long term settlement to one inch or less should be as follows:

> Sta. 32+25 to Sta. 33+75, excavated to elevation 785 to partially remove poor soil deposit.
>
> Sta. 33+75 to Sta. 37+50, excavate to elevation 787 to partially, or in some areas, completely remove poor soil.

These undercuts are for the widening area on the right (east) side of the alignment and they should be made with a nearly vertical cut at the edge of existing pavement and extends so that support for the curb starts two feet behind the curb and extends downward and out at a 2 vertical to 1 horizontal slope.

Once the undercut is made, the backfill should begin with a ground stabilization fabric and a two foot thick layer of PGEs because of wet conditions. This letter would be followed by embankment fill, placed in lifts and compacted to the required density. The backfill should be accomplished soon after the undercut to provide support for the vertical cut at existing pavement. Support for this cut may be necessary if delays in backfill occur. Traffic control/lane closure would likely be necessary because of the steep drop off next to existing, until backfill is complete.

Embankment Settlement Concern at Sta. 8+00, N.E. Quadrant of White Pines Road and Quentin Road

This area has 5 feet to 12 feet of compacted fill proposed to widen the existing roadway embankment to the east. A retaining wall was planned near the ROW to make the change of grade embankment to existing. The soil boring made for the wall revealed a layer of Organic CLAY and PEAT from 5.5 feet to 8.0 feet below the existing surface.

A calculation of settlement was performed for this area using estimated soil compression properties for the Organic CLAY and PEAT layer. Because we know that the weak soil layer has some previously consolidation and has some strength, the predicted settlement from 12 feet of FILL over this layer is one inch or less. This compressed organic soil layer can be left in place in this area.

If the retaining wall for this area is eliminated and replaced with a slope steeper then 3:1, slope-stability calculations would be required. MSET can provide this service once the design, wall or no wall is set. Global stability calculations for the wall design can also be provided.

General Subgrade Treatment Recommendation from Embankment Fill Areas

In low ground areas where placement and compaction of FILL is used to widen the existing embankment, undercut treatment given of pages 8 to 12 of the July 13, 2005 report would not apply to the FILL areas. Rather, the grade would be inspected and prepared per Section 301 of IDOT Standard Specification for Road and Bridge Construction and then filled to subgrade per Section 205. This filled subgrade would then be inspected prior to base course placement, with heavy treatment of new fill areas not anticipated. The recommendation given in the report would apply to widening subgrade areas in the existing embankment, encountering soil sampled in the borings at pavement subgrade level.

Thank you for the opportunity to be of continuing service. Please contact me with any questions you have regarding this information.

Sincerely,
MIDLAND STANDARD ENGINEERING & TESTING, INC.

William Wyzgala

William J. Wyzgala, P.E.
Project Engineer

WJW/rlm

Calculate settlement at Boring B-5 from weight of 5' of FILL & Pavement.
Sta 33+22.

Two compressible layers at this boring
Layer A 7.5' thick, water at -2.5'

Average M_c = 15 + 25 + 35 / 3 = 25%
Average Q_u = 1.75 + 2.33 + 0.78 / 3 = 1.62 tsf

$C_c = 0.009 (LL - 10)$ LL = liquid limit
from boring B-7 test LL = 69

$C_c = 0.009(69 - 10) = 0.53$ however this est. value is for a normally loaded deposit and we have Q_u = 1.62 tsf, therefore reduce by factor of 10. $C_c = 0.053$

$e_0 = M_c \times$ Sp. Grav. $= 0.25 \times 2.70 = 0.67$

Use $\gamma = 125$ pcf for unit weight of mat. soil

$P_0 = (2.5' \times 125\ pcf) + (1.25' \times (125 - 62.5))$
@ at center of layer depth = 3.75'

$P_0 = 390$ psf

assume 2 feet of pavement materials

$\Delta p = (3' \times 130\ pcf) + (2' \times 140\ pcf)$

$\Delta p = 670\ pcf$

Calculate settlement

$$S = \frac{C_c}{1+e_o} H \log_{10} \frac{p_o + \Delta p}{p_o}$$

$$S = \frac{0.053}{1+0.67} \times 7.5' \times \log_{10} \frac{390 + 670}{390}$$

$S = 0.10$ feet $= 1.2$ inches (Layer A)

Layer B (Boring B-5) extend from 7.5' to 17'

thickness $= 9.5'$

Average $M_c = 35+65+71/3 = 57\%$

Average $Q_v = 0.78+0.78/2 = 0.78$ tsf

$C_c = 0.009(69-10) = 0.53$ reduce by factor of 5

for some preconsolidation, use 0.10

$e_o = 0.57 \times 2.70 = 1.54$

$\gamma = 125$ pcf for mat. soil

P_0 at center of layer depth = 11.75'

$P_0 = (2.5' \times 125\text{ pcf}) + (9.25' \times (125 - 62.5))$

$P_0 = 890$ pcf

$\Delta p = 670$ pcf (same as before)

$$S = \frac{0.10}{1+1.54} 9.5' \log_{10} \frac{890+670}{890}$$

$S = 0.091$ feet $= 1.09$ inches Layer B

Total estimated settlement @ B-5

$= 1.20 + 1.09$ inches $\approx$ 2.2 inches

This is expected over a long period because soil to consolidate is a very plastic clay (low permeability).

Calculate Settlement at Boring B-8 from weight of 5' of Fill & Pave.

Sta 36+70

Similar Soils from depth 0 to 7', water at surf.

Average M_c = 43+32+47+56/4 = 45%

Average Q_u = 0.25+0.78+0.58+0.79/4 = 0.60 tsf

C_c = 0.009(69-10) = 0.53, however soil is preconsolidated → Q_u = 0.60 tsf

Reduce C_c by factor of 5 C_c = 0.10

$e = 0.45 \times 2.70 = 1.22$

unit weight of wet soil γ = 125 pcf

P_o (center of Layer depth = 3.5') = 3.5' x (125-62.5)

P_o = 220 psf

Δ_p for 5' (3' Fill + 2' pave section)

= 3' x 130 pcf + 2' x 140 pcf

= 670 psf

$$S = \frac{0.10}{1+1.22} \times 7.0' \times \text{Log}_{10} \frac{220+670}{220}$$

S = 0.191 feet x 12 = 2.29 inches

Calculate Settlement at Boring B-6 from weight of 4.5' of Fill & Pavement.

Station 34+35

The compressible soil layer at this boring Layer A is 6' thick, Water at surface

Average M_c = 31 + 59 /2 = 45%

Average Q_u = 0.78 tsf

$C_c = 0.009(69-10) = 0.53$

use 0.53/5 for some preconsolidation (Q_u = 0.78)

use 0.10

$e_0 = 0.45 \times 2.70 = 1.22$

$P_0 = 3' \times (125\,pcf - 62.5\,pcf) = 190\,psf$

Δ_p for 4.5', (2.5' Fill + 2' Pave)

$= (2.5' \times 130\,pcf) + (2' \times 140\,pcf)$

$= 605\,psf$

$$S = \frac{0.10}{1+1.22} \cdot 7' \cdot \text{Log}_{10} \frac{190+605}{190}$$

$S = 0.20$ feet $= 2.35$ inches

Settlement from 12' of FILL Boring B-4 (Station 8+00)

AA Compressible Layer is 2.5' thick, depth = 5.5' to 8.0' from existing ground prior to construction

$M_c = 70\%$, $N = 13$ bpf LL = ? say 85

$C_c = 0.67$ (est.)

$e_o = 0.70 \times 2.70 = 1.89$

P_o, assume GW @ 5.5', γ_{sw} fill = 130 pcf old and new

$P_o = (5.5' \times 130 pcf) + (1.25 \times (130 - 62.5)) = 800$ psf

$\Delta P = (12 \times 130 pcf) = 1560$

$$S = \frac{0.67}{1 + 1.89} (2.5') \log_{10} \frac{800 + 1560}{800}$$ (2360)

$S = 0.27' = 3.27"$ however because N = 13 bpf for compressible layer, the layer is preconsolidated and 5.5' of fill is already present.

settlement should be divided by at least 4, and settlement less than 1 inch

MIDLAND STANDARD ENGINEERING & TESTING, INC.
26575 West Commerce Drive, Unit 607 Volo, Illinois 60073
(847) 270-0832 f(847) 270-0836

June 20, 2008

Mr. Reid T. Magner
Civiltech Engineering, Inc.
450 East Devon Avenue, Suite 300
Itasca, Illinois 60143

Re: Subgrade Treatment Table/ Slope Stability Analysis
Quentin Road Widening
Lake County, Illinois
MSET Project No. 88248

Dear Mr. Magner:

Midland Standard Engineering & Testing, Inc. (MSET) has completed the field study and review of the proposed Quentin Road widening, north of Illinois Route 12. The recommendations in this report are in addition to the previous MSET report dated June 25, 2007. The purpose of this report is to identify problem subgrade areas and analyze the global stability of embankment slopes for the planned widening.

The field exploration consisted of performing two (2) hand auger borings, labeled HA-1 and HA-2, on the northeast corner of Quentin Road and White Pines Road, in the delineated wetland area, near the toe of the planned embankment slopes, to identify the presence of existing organic material. Samples of the different soil layers were subjected to moisture content determinations at the laboratory. The soil descriptions, depth, in-field soil strength (Qp), and laboratory moisture contents are presented on the attached boring logs.

Subsurface Exploration

The subsurface materials encountered in the hand auger borings generally consists of 6 to 17 inches of Dark Grey to Black Silty CLAY TOPSOIL and plant roots over GRANULAR materials and stiff to very stiff Brown Silty CLAY. PEAT and other highly compressible materials were not encountered in the hand auger locations. However, localized deposits of such materials may be encountered near the wetland area during construction. If encountered, such deposits should be removed and treated as described in the "Embankment Construction" section below.

Global Slope Stability Analysis

It is our understanding that the proposed slope construction will not exceed a slope of 2.3:1, as depicted on the project plans provided to us by Civiltech Engineering, Inc. Provided that the slope is constructed in accordance with Section 205 of the current IDOT "Standard Specifications for Road and Bridge Construction", the calculated factor of safety is 6.78. Details of the analysis can be found on the attached "Quentin Road Slope Stability Report".

General Embankment Construction

The encountered TOPSOIL material and other organic materials possess poor engineering properties and is not suitable for roadway embankment support. Therefore, all TOPSOIL and organics should be removed to the depth encountered to prepared the widening area for Embankment FILL placement. The grade should be cleaned of debris or other unsuitable accumulation. Embankment FILL should then be placed and compacted in lifts to design subgrade. All embankment preparation and construction should be conducted in accordance with the requirements of Section 205 of the current IDOT "Standard Specifications for Road and Bridge Construction".

Remedial Treatment Areas

The previous soil borings performed at the site from MSET's June 25, 2007 report were reviewed with respect to the current widening plans with the following treatment areas were identified. All undercuts must be verified by cone penetrometer tests on the subgrade during construction in accordance with the guidelines in the Illinois Department of Transportation "Subgrade Stability Manual". Areas that were identified by the borings as needing additional treatment are summarized on the following tabulation.

Summary of Earthwork Remedial Treatment Areas

Location Quentin Road	Replacement Indicated By:	Depth [1]	Treatment Width	Material or Treatment
Boring B-1 Sta. 2+75 to Sta. 4+00	Dark Grey and Black Organic SILT and PEAT, soft, A-8: FILL, N=2 to 5 bpf, Mc=25 to 81%	12.5'	Embankment Widening East Side	Note 1

Note 1 – This boring, located 95 feet right of centerline, encountered 12.5 feet of loosely compacted Organic FILL that should be removed to the depth encountered and replaced with suitable embankment FILL compacted in lifts per IDOT Standard Specification Section 205. The upper six feet of the removal, if consisting of low organic content soil, can be inspected for reuse as embankment FILL per standard specification for embankment. The extent of the reworked FILL, north and south, should be confirmed with a series of test pit excavations prior to the start of work.

Thank you for the opportunity to be of continuing service. If you have any questions regarding this letter, please contact us at your convenience.

Sincerely,
MIDLAND STANDARD ENGINEERING & TESTING, INC.

Clay Disney

Clay Disney, E.I.T.
Staff Engineer

William J Wyzgala

William J. Wyzgala, P.E.
Project Engineer

CJD/WJW/rlm

Attachments:

Soil Boring Logs (HA-1, HA-2, and previous borings B-1 through B-12)
Quentin Road Slope Stability Report
General Notes

MSET PROJECT NO.: 88248	LOG OF BORING NO. HA-1	Page 1 of 1

PROJECT: Quentin Road Slope Stability

LOCATION: Sta. 8+10 - Lake County, IL

CLIENT: Civiltech Engineering, Inc.

DEPTH (feet)	SOIL TYPE	MATERIAL DESCRIPTION	Elevation	SAMPLE TYPE/ INTERVAL	SAMPLE No.	SAMPLE N-VALUE Blows per ft.	TESTS Wc%	TESTS Dry Unit Weight, pcf	TESTS Unconfined Compressive Strength, tsf	REMARKS
		Ground Surface	±795.5							
1		±17" Dark Brown to Black Silty CLAY/TOPSOIL, few Roots		AU	1	-	33	-	-	
2		Brown GRAVEL, some Sand, little Silt, (GP)	794.0	AU	2	-	9	-	-	
		End of Hand Auger @ 2.0'	793.5							

WATER LEVEL OBSERVATIONS, in.

During Drilling: ▽ 1.4'

Immediately After Drilling: ▽ 1.4'

Delayed Reading After - Days ▽ -

MSET

BORING STARTED: 6/12/08

BORING COMPLETED: 6/12/08

LOGGED BY: CD

BORING METHOD: HA

MSET PROJECT NO.: 88248	**LOG OF BORING NO. HA-2**	Page 1 of 1

PROJECT: Quentin Road Slope Stability
LOCATION: Sta. 8+20 - Lake County, IL
CLIENT: Civiltech Engineering, Inc.

DEPTH (feet)	SOIL TYPE	MATERIAL DESCRIPTION	Elevation	SAMPLE TYPE/ INTERVAL	SAMPLE No.	SAMPLE N-VALUE Blows per ft.	TESTS Wc%	TESTS Dry Unit Weight, pcf	TESTS Unconfined Compressive Strength, tsf	REMARKS
		Ground Surface	±795.5							
		±6" Dark Grey Silty CLAY/ TOPSOIL								
		Brown Silty CLAY, stiff, (CL)	795.0							
1				AU	1	-	24	-	1.0 (Qp)	
2		trace Roots								
		very stiff		AU	2	-	24	-	2.5 (Qp)	
3										
		End of Hand Auger @ 3.5'	792.0							
4										

WATER LEVEL OBSERVATIONS, in.
During Drilling: ▽ none
Immediately After Drilling: ▽ dry
Delayed Reading After - Days ▽ -

MSET

BORING STARTED: 6/12/08
BORING COMPLETED: 6/12/08
LOGGED BY: CD
BORING METHOD: HA

3L00

MSET

Midland Standard Engineering & Testing, Inc.

Geotechnical and Construction Materials Engineering

Quentin Road Slope Stability Report

PROJECT IDENTIFICATION

Title:	Quentin Road Slope Stability Report
Project Number:	88248 -
Client:	Civiltech Engineering, Inc.
Designer:	Civiltech Engineering, Inc.

Description:
Quentin Road Widening Slope Stability

Company's information:

Name:	Midland Standard Engineering & Testing, Inc
Street:	26575 W. Commerce Drive, Unit 607 Volo, IL 60073
Telephone #:	(847) 270-0832
Fax #:	(847) 270-0836
E-Mail:	VOLO@MSETINC.COM

Original file path and name: C:\Documen ..... e Stability\88248 Quentin Road Slope Stability.MSE
Original date and time of creating this file: Tue Jun 17 2008

PROGRAM MODE: Analysis of a General Slope using NO reinforcement material.

361

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [lb/ft^3]	Internal angle of friction, ϕ [deg.]	Cohesion, c [lb/ft^2]
....1.....Proposed Embankment FILL.....	115.0	0.0	1500.0
....2.....Existing.....	125.0	0.0	4000.0

REINFORCEMENT

Analysis of slope WITHOUT reinforcement.

WATER

Water is not present

SEISMICITY

Not Applicable

2 of 2

DRAWING OF SPECIFIED GEOMETRY - COMPLEX - Quick Input

-- Problem geometry is defined along sections selected by user at x,y coordinates.
-- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.

GEOMETRY

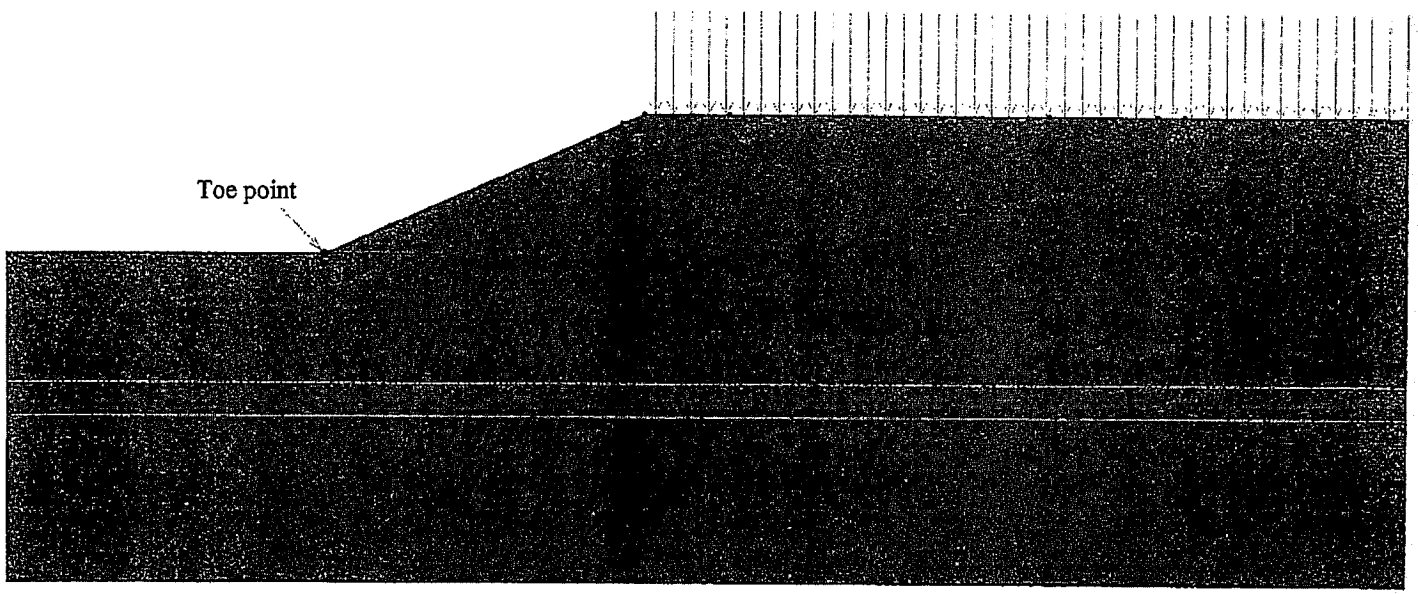
Soil profile contains 2 layers

UNIFORM SURCHARGE

Load Q1 = 300.00 [lb/ft²] inclined from verical at 0.00 degrees, starts at X1s = 61.00 and ends at X1e = 155.00 [ft].
Surcharge load, Q2.....None
Surcharge load, Q3.....None

STRIP LOAD

.....None.....



SCALE:

0 5 10 15 20 25 30 [ft]

RESULTS OF ROTATIONAL STABILITY ANALYSIS

Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each entry point (considering all specified exit points)

Entry Point #	Entry Point (X,Y) [ft]		Exit Point (X,Y) [ft]		Critical Circle (Xc,Yc,R) [ft]			Fs	STATUS
1	62.10	43.00	33.88	31.90	42.48	51.46	21.37	9.12	
2	64.68	43.00	35.31	32.41	45.09	51.32	21.29	7.82	
3	67.26	43.00	35.30	32.41	45.73	54.45	24.39	7.26	
4	69.84	43.00	35.31	32.40	46.33	58.05	27.92	6.95	
5	72.42	43.00	35.25	32.42	47.12	61.30	31.23	6.82	
6	75.00	43.00	35.19	32.44	47.90	64.85	34.82	6.78	OK
7	77.58	43.00	35.15	32.45	48.66	68.72	38.70	6.85	
8	80.16	43.00	35.11	32.46	49.40	72.94	42.93	6.92	
9	82.74	43.00	35.10	32.45	50.11	77.55	47.52	7.11	
10	85.32	43.00	33.98	31.83	48.41	89.06	59.03	7.25	
11	87.90	43.00	34.07	31.80	48.87	95.64	65.53	7.51	

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-entry' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

****

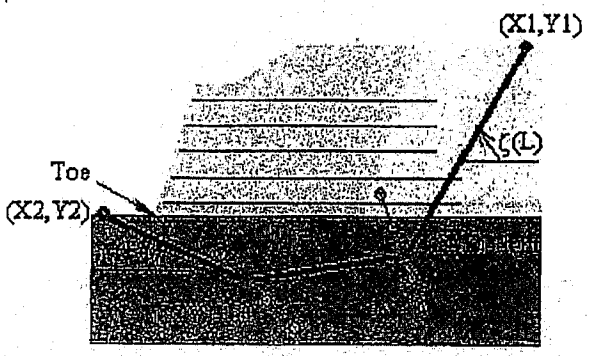
Results in the tables below represent critical circles identified between specified points on entry and exit. (Theta-exit set to 50.00 deg.) The most critical circle is obtained from a search considering all the combinations of input entry and exit points.

Critical circles for each exit point (considering all specified entry points)

Exit Point #	Exit Point (X,Y) [ft]		Entry Point (X,Y) [ft]		Critical Circle (Xc,Yc,R) [ft]			Fs	STATUS
1	24.47	30.01	87.90	43.00	27.65	175.88	145.91	10.80	
2	25.99	30.01	80.16	43.00	28.31	139.78	109.80	10.16	
3	27.31	30.01	80.16	43.00	29.51	135.03	105.05	9.74	
4	28.45	30.01	80.16	43.00	30.72	130.39	100.40	9.33	
5	30.20	30.12	77.58	43.00	34.36	108.38	78.37	7.77	
6	31.52	30.68	75.00	43.00	39.96	83.77	53.76	7.20	
7	32.68	31.27	75.00	43.00	43.13	75.79	45.73	6.92	
8	34.07	31.81	75.00	43.00	45.71	69.67	39.62	6.81	
9	35.19	32.44	75.00	43.00	47.90	64.85	34.82	6.78	OK
10	36.43	33.04	75.00	43.00	49.79	60.96	30.95	6.83	
11	37.83	33.57	72.42	43.00	50.52	55.16	25.05	6.93	

Note: In the 'Status' column, OK means the critical circle was identified within the specified search domain. 'On extreme X-exit' means that the critical result is on the edge of the search domain; a lower Fs may result if the search domain is expanded.

RESULTS OF 3-PART WEDGE ANALYSIS



Results in the table below represent the critical slip surface composed of a three-part wedge and identified by the specified points (X-left, Y-left) and (X-right, Y-right) and angles Zeta(L) and Zeta(R). ReSSA finds the (X,Y) coordinates, as well as the angles Zeta, based on user-specified search domain. The trace of the critical three-part wedge is fully defined by four points: (X1, Y1), (X-left, Y-left), (X-right, Y-right), (X2, Y2).

Critical 3-part wedge (Automatic search):

(X2, Y2) [ft]	Zeta(L) [degrees]	(X-left, Y-left) [ft]	(X-right, Y-right) [ft]	Zeta(R) [degrees]	(X1, Y1) [ft]	Fs
(36.27, 32.72)	41.00	(39.40, 30.00)	(65.30, 33.30)	35.00	(79.15, 43.00)	7.863

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis

Minimum Factor of Safety = 6.78
Critical Circle: Xc = 47.90[ft], Yc = 64.85[ft], R = 34.82[ft]. (Number of slices used = 52)

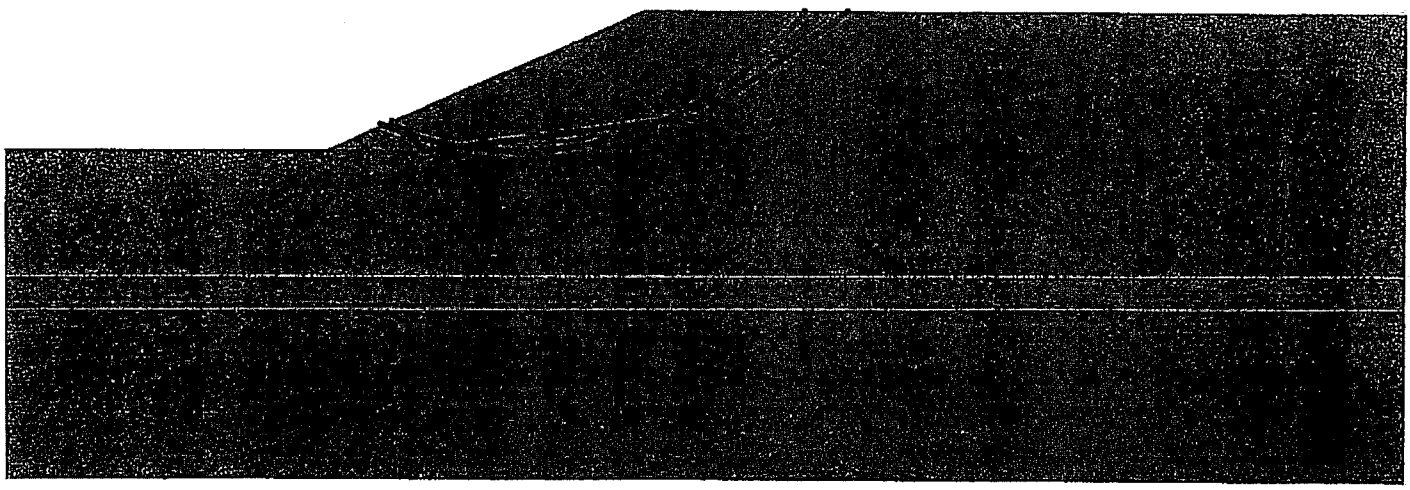
Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

NOT CONDUCTED

Three-Part Wedge Stability Analysis

Minimum Factor of Safety = 7.86
Critical Three-Part Wedge: (X2 = 36.27, Y2 = 32.72) [ft]
(X-left = 39.40, Y-left = 30.00) [ft]
(X-right = 65.30, Y-right = 33.30) [ft]
(X1 = 79.15, Y1 = 43.00) [ft]
(Number of slices used = 45)
Interslice resultant force inclination = 10.72 [degrees]

REINFORCEMENT LAYOUT: DRAWING



SCALE:

0 5 10 15 20 25 30 [ft]

3Ldo

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

The entities listed above and their officers, employees, and agents shall be indemnified and held harmless in accordance with Article 107.26.

AGREEMENT TO PLAN QUANTITY (BDE)

Effective: January 1, 2012

Revise the second paragraph of Article 202.07(a) of the Standard Specifications to read:

"When the plans or work have been altered, or when disagreement exists between the Contractor and the Engineer as to the accuracy of the plan quantities, either party shall, before any work is started which would affect the measurement, have the right to request in writing and thereby cause the quantities involved to be measured. When plan quantities are revised by the issuance of revised plan sheets that are made part of the contract, and the Contractor and the Engineer have agreed in writing that the revised quantities are accurate, no further measurement will be required and payment will be made for the revised quantities shown."

80275

BITUMINOUS MATERIALS COST ADJUSTMENTS (BDE) (RETURN FORM WITH BID)

Effective: November 2, 2006
Revised: January 1, 2012

Description. Bituminous material cost adjustments will be made to provide additional compensation to the Contractor, or credit to the Department, for fluctuations in the cost of bituminous materials when optioned by the Contractor. The adjustments shall apply to permanent and temporary hot-mix asphalt (HMA) mixtures, bituminous surface treatments (cover and seal coats), and preventative maintenance type surface treatments. The adjustments shall not apply to bituminous prime coats, tack coats, crack filling/sealing, or joint filling/sealing.

The bidder shall indicate on the attached form whether or not this special provision will be part of the contract and submit the completed form with his/her bid. Failure to submit the form, or failure to fill out the form completely, shall make this contract exempt of bituminous materials cost adjustments.

Method of Adjustment. Bituminous materials cost adjustments will be computed as follows.

$CA = (BPI_P - BPI_L) \times (\%AC_V / 100) \times Q$

Where: CA = Cost Adjustment, $.
BPI_P = Bituminous Price Index, as published by the Department for the month the work is performed, $/ton ($/metric ton).
BPI_L = Bituminous Price Index, as published by the Department for the month prior to the letting, $/ton ($/metric ton).
$\%AC_V$ = Percent of virgin Asphalt Cement in the Quantity being adjusted. For HMA mixtures, the % AC_V will be determined from the adjusted job mix formula. For bituminous materials applied, a performance graded or cutback asphalt will be considered to be 100% AC_V and undiluted emulsified asphalt will be considered to be 65% AC_V.
Q = Authorized construction Quantity, tons (metric tons) (see below).

For HMA mixtures measured in square yards: Q, tons = A x D x (G_{mb} x 46.8) / 2000. For HMA mixtures measured in square meters: Q, metric tons = A x D x (G_{mb} x 24.99) / 1000. When computing adjustments for full-depth HMA pavement, separate calculations will be made for the binder and surface courses to account for their different G_{mb} and % AC_V.

For bituminous materials measured in gallons: Q, tons = V x 8.33 lb/gal x SG / 2000
For bituminous materials measured in liters: Q, metric tons = V x 1.0 kg/L x SG / 1000

Where: A = Area of the HMA mixture, sq yd (sq m).
D = Depth of the HMA mixture, in. (mm).
G_{mb} = Average bulk specific gravity of the mixture, from the approved mix design.
V = Volume of the bituminous material, gal (L).

SG = Specific Gravity of bituminous material as shown on the bill of lading.

Basis of Payment. Bituminous materials cost adjustments may be positive or negative but will only be made when there is a difference between the BPI_L and BPI_P in excess of five percent, as calculated by:

Percent Difference = $\{(BPI_L - BPI_P) \div BPI_L\} \times 100$

Bituminous materials cost adjustments will be calculated for each calendar month in which applicable bituminous material is placed; and will be paid or deducted when all other contract requirements for the work placed during the month are satisfied. The adjustments shall not apply during contract time subject to liquidated damages for completion of the entire contract.

Return With Bid

ILLINOIS DEPARTMENT OF TRANSPORTATION

OPTION FOR BITUMINOUS MATERIALS COST ADJUSTMENTS

The bidder shall submit this completed form with his/her bid. Failure to submit the form, or failure to fill out the form completely, shall make this contract exempt of bituminous materials cost adjustments. After award, this form, when submitted, shall become part of the contract.

Contract No.: _____

Company Name: _____

Contractor's Option:

Is your company opting to include this special provision as part of the contract?

Yes ☐ No ☐

Signature: _____ **Date:** _____

80173

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 1/	600-749	2002
	750 and up	2006
June 1, 2011 2/	100-299	2003
	300-599	2001
	600-749	2002
	750 and up	2006
June 1, 2012 2/	50-99	2004
	100-299	2003
	300-599	2001
	600-749	2002
	750 and up	2006

1/ Effective dates apply to Contractor diesel powered off-road equipment assigned to the contract.

2/ Effective dates apply to Contractor and subcontractor diesel powered off-road equipment assigned to the contract.

The retrofit emission control devices shall achieve a minimum PM emission reduction of 50 percent and shall be:

a) Included on the U.S. Environmental Protection Agency (USEPA) *Verified Retrofit Technology List* (http://www.epa.gov/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

CONSTRUCTION AIR QUALITY - DIESEL VEHICLE EMISSIONS CONTROL (BDE)

Effective: April 1, 2009
Revised: January 2, 2012

Diesel Vehicle Emissions Control. The reduction of construction air emissions shall be accomplished by using cleaner burning diesel fuel. The term "equipment" refers to any and all diesel fuel powered devices rated at 50 hp and above, to be used on the project site in excess of seven calendar days over the course of the construction period on the project site (including any "rental" equipment).

All equipment on the jobsite, with engine ratings of 50 hp and above, shall be required to: use Ultra Low Sulfur Diesel fuel (ULSD) exclusively (15 ppm sulfur content or less).

Diesel powered equipment in non-compliance will not be allowed to be used on the project site, and is also subject to a notice of non-compliance as outlined below.

The Contractor shall certify that only ULSD will be used in all jobsite equipment. The certification shall be presented to the Department prior to the commencement of the work.

If any diesel powered equipment is found to be in non-compliance with any portion of this specification, the Engineer will issue the Contractor a notice of non-compliance and identify an appropriate period of time, as outlined below under environmental deficiency deduction, in which to bring the equipment into compliance or remove it from the project site.

Any costs associated with bringing any diesel powered equipment into compliance with these diesel vehicle emissions controls shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed. The Contractor's compliance with this notice and any associated regulations shall also not be grounds for a claim.

Environmental Deficiency Deduction. When the Engineer is notified, or determines that an environmental control deficiency exists, he/she will notify the Contractor in writing, and direct the Contractor to correct the deficiency within a specified time period. The specified time-period, which begins upon Contractor notification, will be from 1/2 hour to 24 hours long, based on the urgency of the situation and the nature of the deficiency. The Engineer shall be the sole judge regarding the time period.

The deficiency will be based on lack of repair, maintenance and diesel vehicle emissions control.

If the Contractor fails to correct the deficiency within the specified time frame, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency continues to exist. The calendar day(s) will begin when the time period for correction is exceeded and end with the Engineer's written acceptance of the correction. The daily monetary deduction will be $1,000.00 for each deficiency identified.

If a Contractor or subcontractor accumulates three environmental deficiency deductions in a contract period, the Contractor will be shutdown until the deficiency is corrected. Such a shutdown will not be grounds for any extension of contract time, waiver of penalties, or be grounds for any claim.

80237

CONSTRUCTION AIR QUALITY - IDLING RESTRICTIONS (BDE)

Effective: April 1, 2009

Idling Restrictions. The Contractor shall establish truck-staging areas for all diesel powered vehicles that are waiting to load or unload material at the jobsite. Staging areas shall be located where the diesel emissions from the equipment will have a minimum impact on adjacent sensitive receptors. The Department will review the selection of staging areas, whether within or outside the existing highway right-of-way, to avoid locations near sensitive areas or populations to the extent possible. Sensitive receptors include, but are not limited to, hospitals, schools, residences, motels, hotels, daycare facilities, elderly housing and convalescent facilities. Diesel powered engines shall also be located as far away as possible from fresh air intakes, air conditioners, and windows. The Engineer will approve staging areas before implementation.

Diesel powered vehicle operators may not cause or allow the motor vehicle, when it is not in motion, to idle for more than a total of 10 minutes within any 60 minute period, except under any of the following circumstances:

1) The motor vehicle has a gross vehicle weight rating of less than 8000 lb (3630 kg).
2) The motor vehicle idles while forced to remain motionless because of on-highway traffic, an official traffic control device or signal, or at the direction of a law enforcement official.
3) The motor vehicle idles when operating defrosters, heaters, air conditioners, or other equipment solely to prevent a safety or health emergency.
4) A police, fire, ambulance, public safety, other emergency or law enforcement motor vehicle, or any motor vehicle used in an emergency capacity, idles while in an emergency or training mode and not for the convenience of the vehicle operator.
5) The primary propulsion engine idles for maintenance, servicing, repairing, or diagnostic purposes if idling is necessary for such activity.
6) A motor vehicle idles as part of a government inspection to verify that all equipment is in good working order, provided idling is required as part of the inspection.
7) When idling of the motor vehicle is required to operate auxiliary equipment to accomplish the intended use of the vehicle (such as loading, unloading, mixing, or processing cargo; controlling cargo temperature; construction operations, lumbering operations; oil or gas well servicing; or farming operations), provided that this exemption does not apply when the vehicle is idling solely for cabin comfort or to operate non-essential equipment such as air conditioning, heating, microwave ovens, or televisions.
8) When the motor vehicle idles due to mechanical difficulties over which the operator has no control.
9) The outdoor temperature is less than 32 °F (0 °C) or greater than 80 °F (26 °C).

When the outdoor temperature is greater than or equal to 32 °F (0 °C) or less than or equal to 80 °F (26 °C), a person who operates a motor vehicle operating on diesel fuel shall not cause or allow the motor vehicle to idle for a period greater than 30 minutes in any 60 minute period while waiting to weigh, load, or unload cargo or freight, unless the vehicle is in a line of vehicles that regularly and periodically moves forward.

The above requirements do not prohibit the operation of an auxiliary power unit or generator set as an alternative to idling the main engine of a motor vehicle operating on diesel fuel.

Environmental Deficiency Deduction. When the Engineer is notified, or determines that an environmental control deficiency exists based on non-compliance with the idling restrictions, he/she will notify the Contractor, and direct the Contractor to correct the deficiency.

If the Contractor fails to correct the deficiency a monetary deduction will be imposed. The monetary deduction will be $1,000.00 for each deficiency identified.

80239

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE)

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 11.00% of the work. This percentage is set as the DBE participation goal for this contract. Consequently, in addition to the other award criteria established for this contract, the Department will only award this contract to a bidder who makes a good faith effort to meet this goal of DBE participation in the performance of the work. A bidder makes a good faith effort for award consideration if either of the following is done in accordance with the procedures set for in this Special Provision:

(a) The bidder documents that enough DBE participation has been obtained to meet the goal: or

(b) The bidder documents that a good faith effort has been made to meet the goal, even though the effort did not succeed in obtaining enough DBE participation to meet the goal.

DBE LOCATOR REFERENCES. Bidders shall consult the IL UCP DBE Directory as a reference source for DBE-certified companies. In addition, the Department maintains a letting and item specific DBE locator information system whereby DBE companies can register their interest in providing quotes on particular bid items advertised for letting. Information concerning DBE companies willing to quote work for particular contracts may be obtained by contacting the Department's Bureau of Small Business Enterprises at telephone number (217)785-4611, or by visiting the Department's website at www.dot.il.gov.

BIDDING PROCEDURES. Compliance with this Special Provision is a material bidding requirement. The failure of the bidder to comply will render the bid not responsive.

(a) The bidder shall submit a Disadvantaged Business Utilization Plan on Department forms SBE 2025 and 2026 with the bid.

(b) The Utilization Plan shall indicate that the bidder either has obtained sufficient DBE participation commitments to meet the contract goal or has not obtained enough DBE participation commitments in spite of a good faith effort to meet the goal. The Utilization Plan shall further provide the name, telephone number, and telefax number of a responsible official of the bidder designated for purposes of notification of plan approval or disapproval under the procedures of this Special Provision.

(c) The Utilization Plan shall include a DBE Participation Commitment Statement, Department form SBE 2025, for each DBE proposed for the performance of work to achieve the contract goal. For bidding purposes, submission of the completed SBE 2025 forms, signed by the DBEs and faxed to the bidder will be acceptable as long as the original is available and provided upon request. All elements of information indicated on the said form shall be provided, including but not limited to the following:

(1) The names and addresses of DBE firms that will participate in the contract;

(2) A description, including pay item numbers, of the work each DBE will perform;

(3) The dollar amount of the participation of each DBE firm participating. The dollar amount of participation for identified work shall specifically state the quantity, unit price, and total subcontract price for the work to be completed by the DBE. If partial pay items are to be performed by the DBE, indicate the portion of each item, a unit price where appropriate and the subcontract price amount;

(4) DBE Participation Commitment Statements, form SBE 2025, signed by the bidder and each participating DBE firm documenting the commitment to use the DBE subcontractors whose participation is submitted to meet the contract goal;

(5) if the bidder is a joint venture comprised of DBE companies and non-DBE companies, the plan must also include a clear identification of the portion of the work to be performed by the DBE partner(s); and,

(6) If the contract goal if 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, than a new Request for Approval of Subcontractor shall not be required. However, the Contractor must document efforts to assure that the existing DBE subcontractor is capable of performing the additional work and has agreed in writing to the change.

(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 my request administrative reconsideration of a decision to deduct the amount of the goal not achieved as liquidated damages. A request to reconsider shall be delivered to the Contract Compliance Section and shall be handled and considered in the same manner as set forth in paragraph (c) of "Good Faith Effort Procedures" of this Special Provision, except a final decision that a good faith effort was not made during contract performance to achieve the goal agreed to in the Utilization Plan shall be the final administrative decision of the Department.

80029

ERRATA FOR THE 2012 STANDARD SPECIFICATIONS (BDE)

Effective: April 1, 2012

Page 337 Article 505.04. Revise the subparagraph "(i) Match Making." to read "(i) Match Marking.".

Page 360 Article 506.07. In the first line of the second paragraph change "AASHTO/AWS D1.5/D1.5:" to "AASHTO/AWS D1.5M/D1.5:".

Page 361 Article 506.08. In the third line of the sixth paragraph change "506.08(a)" to "506.08(b)".

Page 531 Article 609.07. In the first paragraph delete "TYPE B, C, or D INLET BOX STANDARD 609001 or".

Page 609 Article 703.05. In the first line of the second paragraph delete "or Type II".

Page 989 Article 1083.02(a). In the seventh line of the first paragraph change "Table 14.7.5.2-2" to "Table 14.7.5.2-1".

80296

FLAGGER AT SIDE ROADS AND ENTRANCES (BDE)

Effective: April 1, 2009

Revise the second paragraph of Article 701.13(a) of the Standard Specifications to read:

"The Engineer will determine when a side road or entrance shall be closed to traffic. A flagger will be required at each side road or entrance remaining open to traffic within the operation where two-way traffic is maintained on one lane of pavement. The flagger shall be positioned as shown on the plans or as directed by the Engineer."

Revise the first and second paragraph of Article 701.20(i) of the Standard Specifications to read:

"Signs, barricades, or other traffic control devices required by the Engineer over and above those specified will be paid for according to Article 109.04. All flaggers required at side roads and entrances remaining open to traffic including those that are shown on the Highway Standards and/or additional barricades required by the Engineer to close side roads and entrances will be paid for according to Article 109.04."

80228

FRICTION AGGREGATE (BDE)

Effective: January 1, 2011

Revise Article 1004.01(a)(4) of the Standard Specifications to read:

"(4) Crushed Stone. Crushed stone shall be the angular fragments resulting from crushing undisturbed, consolidated deposits of rock by mechanical means. Crushed stone shall be divided into the following, when specified.

a. Carbonate Crushed Stone. Carbonate crushed stone shall be either dolomite or limestone. Dolomite shall contain 11.0 percent or more magnesium oxide (MgO). Limestone shall contain less than 11.0 percent magnesium oxide (MgO).

b. Crystalline Crushed Stone. Crystalline crushed stone shall be either metamorphic or igneous stone, including but is not limited to, quartzite, granite, rhyolite and diabase."

Revise Article 1004.03(a) of the Standard Specifications to read:

"**1004.03 Coarse Aggregate for Hot-Mix Asphalt (HMA).** The aggregate shall be according to Article 1004.01 and the following.

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

Use	Mixture	Aggregates Allowed
Class A	Seal or Cover	<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
HMA All Other	Stabilized Subbase or Shoulders	<u>Allowed Alone or in Combination:</u> Gravel Crushed Gravel Carbonate Crushed Stone Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag[1/] Crushed Concrete

<table>
<tr><th>Use</th><th>Mixture</th><th>Aggregates Allowed</th></tr>
<tr><td>HMA
High ESAL
Low ESAL</td><td>Binder
IL-25.0, IL-19.0,
or IL-19.0L

SMA Binder</td><td><u>Allowed Alone or in Combination:</u>
Crushed Gravel
Carbonate Crushed Stone[2/]
Crystalline Crushed Stone
Crushed Sandstone
Crushed Slag (ACBF)
Crushed Concrete[3/]</td></tr>
<tr><td>HMA
High ESAL
Low ESAL</td><td>C Surface and
Leveling Binder
IL-12.5,IL-9.5,
or IL-9.5L

SMA
Ndesign 50
Surface</td><td><u>Allowed Alone or in Combination:</u>
Crushed Gravel
Carbonate Crushed Stone[2/]
Crystalline Crushed Stone
Crushed Sandstone
Crushed Slag (ACBF)
Crushed Steel Slag[4/]
Crushed Concrete[3/]</td></tr>
<tr><td rowspan="5">HMA
High ESAL</td><td rowspan="5">D Surface and
Leveling Binder
IL-12.5 or
IL-9.5

SMA
Ndesign 50
Surface</td><td><u>Allowed Alone or in Combination:</u>
Crushed Gravel
Carbonate Crushed Stone (other than Limestone)[2/]
Crystalline Crushed Stone
Crushed Sandstone
Crushed Slag (ACBF)[5/]
Crushed Steel Slag[4/ 5/]
Crushed Concrete[3/]</td></tr>
<tr><td><u>Other Combinations Allowed:</u>
<table><tr><th>Up to...</th><th>With...</th></tr><tr><td>25% Limestone</td><td>Dolomite</td></tr><tr><td>50% Limestone</td><td>Any Mixture D aggregate other than Dolomite</td></tr><tr><td>75% Limestone</td><td>Crushed Slag (ACBF)[5/] or Crushed Sandstone</td></tr></table></td></tr>
</table>

Use	Mixture	Aggregates Allowed	
HMA High ESAL	E Surface IL-12.5 or IL-9.5 SMA Ndesign 80 Surface	<u>Allowed Alone or in Combination:</u> Crushed Gravel Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF)[5/] Crushed Steel Slag[5/] Crushed Concrete[3/] No Limestone.	
		<u>Other Combinations Allowed:</u>	
		Up to...	*With...*
		50% Dolomite[2/]	Any Mixture E aggregate
		75% Dolomite[2/]	Crushed Sandstone, Crushed Slag (ACBF)[5/], Crushed Steel Slag[5/], or Crystalline Crushed Stone
		75% Crushed Gravel or Crushed Concrete[3/]	Crushed Sandstone, Crystalline Crushed Stone, Crushed Slag (ACBF)[5/], or Crushed Steel Slag[5/]
HMA High ESAL	F Surface IL-12.5 or IL-9.5 SMA Ndesign 80 Surface	<u>Allowed Alone or in Combination:</u> Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF)[5/] Crushed Steel Slag[5/] No Limestone.	
		<u>Other Combinations Allowed</u>:	
		Up to...	*With...*

Use	Mixture	Aggregates Allowed	
		50% Crushed Gravel, Crushed Concrete[3/], or Dolomite[2/]	Crushed Sandstone, Crushed Slag (ACBF)[5/], Crushed Steel Slag[5/], or Crystalline Crushed Stone

1/ Crushed steel slag allowed in shoulder surface only.
2/ Carbonate crushed stone shall not be used in SMA Ndesign 80. In SMA Ndesign 50, carbonate crushed stone shall not be blended with any of the other aggregates allowed alone in Ndesign 50 SMA binder or Ndesign 50 SMA surface.
3/ Crushed concrete will not be permitted in SMA mixes.
4/ Crushed steel slag shall not be used as leveling binder.
5/ When either slag is used, the blend percentages listed shall be by volume."

80265

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_P = Fuel Price Index, as published by the Department for the month the work is performed, $/gal ($/liter)
FPI_L = Fuel Price Index, as published by the Department for the month prior to the letting, $/gal ($/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_P 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_L and FPI_P in excess of five percent, as calculated by:

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 ☐
Category B	Subbases and Aggregate Base Courses	Yes ☐
Category C	HMA Bases, Pavements and Shoulders	Yes ☐
Category D	PCC Bases, Pavements and Shoulders	Yes ☐
Category E	Structures	Yes ☐

Signature: _____ **Date:** _____

80229

HOT-MIX ASPHALT - DENSITY TESTING OF LONGITUDINAL JOINTS (BDE)

Effective: January 1, 2010
Revised: April 1, 2012

Description. This work shall consist of testing the density of longitudinal joints as part of the quality control/quality assurance (QC/QA) of hot-mix asphalt (HMA). Work shall be according to Section 1030 of the Standard Specifications except as follows.

Quality Control/Quality Assurance (QC/QA). Delete the second and third sentence of the third paragraph of Article 1030.05(d)(3) of the Standard Specifications.

Add the following paragraphs to the end of Article 1030.05(d)(3) of the Standard Specifications:

"Longitudinal joint density testing shall be performed at each random density test location. Longitudinal joint testing shall be located at a distance equal to the lift thickness or a minimum of 4 in. (100 mm), from each pavement edge. (i.e. for a 5 in. (125 mm) lift the near edge of the density gauge or core barrel shall be within 5 in. (125 mm) from the edge of pavement.) Longitudinal joint density testing shall be performed using either a correlated nuclear gauge or cores.

a. Confined Edge. Each confined edge density shall be represented by a one-minute nuclear density reading or a core density and shall be included in the average of density readings or core densities taken across the mat which represents the Individual Test.

b. Unconfined Edge. Each unconfined edge joint density shall be represented by an average of three one-minute density readings or a single core density at the given density test location and shall meet the density requirements specified herein. The three one-minute readings shall be spaced ten feet apart longitudinally along the unconfined pavement edge and centered at the random density test location."

Revise the Density Control Limits table in Article 1030.05(d)(4) of the Standard Specifications to read:

"Mixture Composition	Parameter	Individual Test (includes confined edges)	Unconfined Edge Joint Density Minimum
IL-4.75	Ndesign = 50	93.0 – 97.4%	91.0%
IL-9.5, IL-12.5	Ndesign ≥ 90	92.0 – 96.0%	90.0%
IL-9.5,IL-9.5L, IL-12.5	Ndesign < 90	92.5 – 97.4%	90.0%
IL-19.0, IL-25.0	Ndesign ≥ 90	93.0 – 96.0%	90.0%
IL-19.0, IL-19.0L, IL-25.0	Ndesign < 90	93.0 – 97.4%	90.0%

SMA	Ndesign = 50 & 80	93.5 – 97.4%	91.0%
All Other	Ndesign = 30	93.0 - 97.4%	90.0%"

80246

METAL HARDWARE CAST INTO CONCRETE (BDE)

Effective: April 1, 2008
Revised: January 1, 2012

Add the following to Article 503.02 of the Standard Specifications:

"(h) Metal Hardware Cast into Concrete ..... 1006.13"

Add the following to Article 504.02 of the Standard Specifications:

"(j) Metal Hardware Cast into Concrete ..... 1006.13"

Revise Article 1006.13 of the Standard Specifications to read:

"**1006.13 Metal Hardware Cast into Concrete.** Unless otherwise noted, all steel hardware cast into concrete, such as inserts, brackets, cable clamps, metal casings for formed holes, and other miscellaneous items, shall be galvanized according to AASHTO M 232 or AASHTO M 111. Aluminum inserts will not be allowed. Zinc alloy inserts shall be according to ASTM B 86, Alloys 3, 5, or 7.

When stainless steel junction boxes or other stainless steel appurtenances are specified, Type 304 stainless steel hardware shall be used when cast into concrete.

The inserts shall be UNC threaded type anchorages having the following minimum certified proof load.

Insert Diameter	Proof Load
5/8 in. (16 mm)	6600 lb (29.4 kN)
3/4 in. (19 mm)	6600 lb (29.4 kN)
1 in. (25 mm)	9240 lb (41.1 kN)"

80203

PAVEMENT MARKING REMOVAL (BDE)

Effective: April 1, 2009

Add the following to the end of the first paragraph of Article 783.03(a) of the Standard Specifications:

"The use of grinders will not be allowed on new surface courses."

80231

PAVEMENT PATCHING (BDE)

Effective: January 1, 2010

Revise the first sentence of the second paragraph of Article 701.17(e)(1) of the Standard Specifications to read:

"In addition to the traffic control and protection shown elsewhere in the contract for pavement, two devices shall be placed immediately in front of each open patch, open hole, and broken pavement where temporary concrete barriers are not used to separate traffic from the work area."

80254

PAYMENTS TO SUBCONTRACTORS (BDE)

Effective: June 1, 2000
Revised: January 1, 2006

Federal regulations found at 49 CFR §26.29 mandate the Department to establish a contract clause to require Contractors to pay subcontractors for satisfactory performance of their subcontracts and to set the time for such payments.

State law also addresses the timing of payments to be made to subcontractors and material suppliers. Section 7 of the Prompt Payment Act, 30 ILCS 540/7, requires that when a Contractor receives any payment from the Department, the Contractor shall make corresponding, proportional payments to each subcontractor and material supplier performing work or supplying material within 15 calendar days after receipt of the Department payment. Section 7 of the Act further provides that interest in the amount of two percent per month, in addition to the payment due, shall be paid to any subcontractor or material supplier by the Contractor if the payment required by the Act is withheld or delayed without reasonable cause. The Act also provides that the time for payment required and the calculation of any interest due applies to transactions between subcontractors and lower-tier subcontractors and material suppliers throughout the contracting chain.

This Special Provision establishes the required federal contract clause, and adopts the 15 calendar day requirement of the State Prompt Payment Act for purposes of compliance with the federal regulation regarding payments to subcontractors. This contract is subject to the following payment obligations.

When progress payments are made to the Contractor according to Article 109.07 of the Standard Specifications, the Contractor shall make a corresponding payment to each subcontractor and material supplier in proportion to the work satisfactorily completed by each subcontractor and for the material supplied to perform any work of the contract. The proportionate amount of partial payment due to each subcontractor and material supplier throughout the contracting chain shall be determined by the quantities measured or otherwise determined as eligible for payment by the Department and included in the progress payment to the Contractor. Subcontractors and material suppliers shall be paid by the Contractor within 15 calendar days after the receipt of payment from the Department. The Contractor shall not hold retainage from the subcontractors. These obligations shall also apply to any payments made by subcontractors and material suppliers to their subcontractors and material suppliers; and to all payments made to lower tier subcontractors and material suppliers throughout the contracting chain. Any payment or portion of a payment subject to this provision may only be withheld from the subcontractor or material supplier to whom it is due for reasonable cause.

This Special Provision does not create any rights in favor of any subcontractor or material supplier against the State or authorize any cause of action against the State on account of any payment, nonpayment, delayed payment, or interest claimed by application of the State Prompt Payment Act. The Department will not approve any delay or postponement of the 15 day requirement except for reasonable cause shown after notice and hearing pursuant to Section

7(b) of the State Prompt Payment Act. State law creates other and additional remedies available to any subcontractor or material supplier, regardless of tier, who has not been paid for work properly performed or material furnished. These remedies are a lien against public funds set forth in Section 23(c) of the Mechanics Lien Act, 770 ILCS 60/23(c), and a recovery on the Contractor's payment bond according to the Public Construction Bond Act, 30 ILCS 550.

80022

PORTLAND CEMENT CONCRETE (BDE)

Effective: January 1, 2012

Revise Notes 1 and 2 of Article 312.24 of the Standard Specifications to read:

"Note 1. Coarse aggregate shall be gradation CA 6, CA 7, CA 9, CA 10, or CA 11, Class D quality or better. Article 1020.05(d) shall apply.

Note 2. Fine aggregate shall be FA 1 or FA 2. Article 1020.05(d) shall apply."

Revise the first paragraph of Article 312.26 of the Standard Specifications to read:

"**312.26 Proportioning and Mix Design.** At least 60 days prior to start of placing CAM II, the Contractor shall submit samples of materials for proportioning and testing. The mixture shall contain a minimum of 200 lb (90 kg) of cement per cubic yard (cubic meter). Portland cement may be replaced with fly ash according to Article 1020.05(c)(1). Blends of coarse and fine aggregates will be permitted, provided the volume of fine aggregate does not exceed the volume of coarse aggregate. The Engineer will determine the proportions of materials for the mixture. However, the Contractor may substitute their own mix design. Article 1020.05(a) shall apply and a Level III PCC Technician shall develop the mix design."

Revise the second paragraph of Article 503.22 of the Standard Specifications to read:

Other cast-in-place concrete for structures will be paid for at the contract unit price per cubic yard (cubic meter) for CONCRETE HANDRAIL, CONCRETE ENCASEMENT, and SEAL COAT CONCRETE."

Add the following to Article 1003.02 of the Standard Specifications:

(e) Alkali Reaction.

(1) ASTM C 1260. Each fine aggregate will be tested by the Department for alkali reaction according to ASTM C 1260. The test will be performed with Type I or II portland cement having a total equivalent alkali content (Na_2O + $0.658K_2O$) of 0.90 percent or greater. The Engineer will determine the assigned expansion value for each aggregate, and these values will be made available on the Department's Alkali-Silica Potential Reactivity Rating List. The Engineer may differentiate aggregate based on ledge, production method, gradation number, or other factors. An expansion value of 0.03 percent will be assigned to limestone or dolomite fine aggregates (manufactured stone sand). However, the Department reserves the right to perform the ASTM C 1260 test.

(2) ASTM C 1293 by Department. In some instances, such as chert natural sand or other fine aggregates, testing according to ASTM C 1260 may not provide accurate test results. In this case, the Department may only test according to ASTM C 1293.

(3) ASTM C 1293 by Contractor. If an individual aggregate has an ASTM C 1260 expansion value that is unacceptable to the Contractor, an ASTM C 1293 test may be performed by the Contractor to evaluate the Department's ASTM C 1260 test result. The laboratory performing the ASTM C 1293 test shall be approved by the Department according to the current Bureau of Materials and Physical Research Policy Memorandum "Minimum Laboratory Requirements for Alkali-Silica Reactivity (ASR) Testing".

The ASTM C 1293 test shall be performed with Type I or II portland cement having a total equivalent alkali content ($Na_2O + 0.658K_2O$) of 0.80 percent or greater. The interior vertical wall of the ASTM C 1293 recommended container (pail) shall be half covered with a wick of absorbent material consisting of blotting paper. If the testing laboratory desires to use an alternate container, wick of absorbent material, or amount of coverage inside the container with blotting paper, ASTM C 1293 test results with an alkali-reactive aggregate of known expansion characteristics shall be provided to the Engineer for review and approval. If the expansion is less than 0.040 percent after one year, the aggregate will be assigned an ASTM C 1260 expansion value of 0.08 percent that will be valid for two years, unless the Engineer determines the aggregate has changed significantly. If the aggregate is manufactured into multiple gradation numbers, and the other gradation numbers have the same or lower ASTM C 1260 value, the ASTM C 1293 test result may apply to multiple gradation numbers.

The Engineer reserves the right to verify a Contractor's ASTM C 1293 test result. When the Contractor performs the test, a split sample shall be provided to the Engineer. The Engineer may also independently obtain a sample at any time. The aggregate will be considered reactive if the Contractor or Engineer obtains an expansion value of 0.040 percent or greater.

Revise Article 1004.02(d) of the Standard Specifications to read:

"(d) Combining Sizes. Each size shall be stored separately and care shall be taken to prevent them from being mixed until they are ready to be proportioned. Separate compartments shall be provided to proportion each size.

(1) When Class BS concrete is to be pumped, the coarse aggregate gradation shall have a minimum of 45 percent passing the 1/2 in. (12.5 mm) sieve. The Contractor

may combine two or more coarse aggregate sizes, consisting of CA 7, CA 11, CA 13, CA 14, and CA 16, provided a CA 7 or CA 11 is included in the blend.

(2) If the coarse aggregate is furnished in separate sizes, they shall be combined in proportions to provide a uniformly graded coarse aggregate grading within the following limits.

Class of Concrete 1/	Combined Sizes	Sieve Size and Percent Passing						
		2 1/2 in.	2 in.	1 3/4 in.	1 1/2 in.	1 in.	1/2 in.	No. 4
PV 2/								
	CA 5 & CA 7	---	---	100	98±2	72±22	22±12	3±3
	CA 5 & CA 11	---	---	100	98±2	72±22	22±12	3±3
SI and SC 2/								
	CA 3 & CA 7	100	95±5	---	---	55±25	20±10	3±3
	CA 3 & CA 11	100	95±5	---	---	55±25	20±10	3±3
	CA 5 & CA 7	---	---	100	98±2	72±22	22±12	3±3
	CA 5 & CA 11	---	---	100	98±2	72±22	22±12	3±3

Class of Concrete 1/	Combined Sizes	Sieve Size (metric) and Percent Passing						
		63 mm	50 mm	45 mm	37.5 mm	25 mm	12.5 mm	4.75 mm
PV 2/								
	CA 5 & CA 7	---	---	100	98±2	72±22	22±12	3±3
	CA 5 & CA 11	---	---	100	98±2	72±22	22±12	3±3
SI and SC 2/								
	CA 3 & CA 7	100	95±5	---	---	55±25	20±10	3±3
	CA 3 & CA 11	100	95±5	---	---	55±25	20±10	3±3
	CA 5 & CA 7	---	---	100	98±2	72±22	22±12	3±3
	CA 5 & CA 11	---	---	100	98±2	72±22	22±12	3±3

1/ See Table 1 of Article 1020.04.

2/ Any of the listed combination of sizes may be used."

Add the following to Article 1004.02 of the Standard Specifications:

(g) Alkali Reaction.

(1) Each coarse aggregate will be tested by the Department for alkali reaction according to ASTM C 1260. The test will be performed with Type I or II portland cement having a total equivalent alkali content ($Na_2O + 0.658K_2O$) of 0.90 percent or greater. The Engineer will determine the assigned expansion value for each aggregate, and these values will be made available on the Department's Alkali-Silica Potential Reactivity Rating List. The Engineer may differentiate aggregate based on ledge, production method, gradation number, or other factors. An expansion value of 0.05 percent will

be assigned to limestone or dolomite coarse aggregates. However, the Department reserves the right to perform the ASTM C 1260 test.

(2) ASTM C 1293 by Department. In some instances testing a coarse aggregate according to ASTM C 1260 may not provide accurate test results. In this case, the Department may only test according to ASTM C 1293.

(3) ASTM C 1293 by Contractor. If an individual aggregate has an ASTM C 1260 expansion value that is unacceptable to the Contractor, an ASTM C 1293 test may be performed by the Contractor according to Article 1003.02(e)(3).

Revise the first paragraph of Article 1019.06 of the Standard Specifications to read:

"**1019.06 Contractor Mix Design.** A Contractor may submit their own mix design and may propose alternate fine aggregate materials, fine aggregate gradations, or material proportions. Article 1020.05(a) shall apply and a Level III PCC Technician shall develop the mix design."

Revise Section 1020 of the Standard Specifications to read:

"SECTION 1020. PORTLAND CEMENT CONCRETE

1020.01 Description. This item shall consist of the materials, mix design, production, testing, curing, low air temperature protection, and temperature control of concrete.

1020.02 Materials. Materials shall be according to the following.

Item	Article/Section
(a) Cement	1001
(b) Water	1002
(c) Fine Aggregate	1003
(d) Coarse Aggregate	1004
(e) Concrete Admixtures	1021
(f) Finely Divided Minerals	1010
(g) Concrete Curing Materials	1022
(h) Straw	1081.06(a)(1)
(i) Calcium Chloride	1013.01

1020.03 Equipment. Equipment shall be according to the following.

Item	Article/Section

(a) Concrete Mixers and Trucks 1103.01
(b) Batching and Weighing Equipment 1103.02
(c) Automatic and Semi-Automatic Batching Equipment 1103.03
(d) Water Supply Equipment 1103.11
(e) Membrane Curing Equipment 1101.09
(f) Mobile Portland Cement Concrete Plants 1103.04

1020.04 Concrete Classes and General Mix Design Criteria. The classes of concrete shown in Table 1 identify the various mixtures by the general uses and mix design criteria. If the class of concrete for a specific item of construction is not specified, Class SI concrete shall be used.

For the minimum cement factor in Table 1, it shall apply to portland cement, portland-pozzolan cement, and portland blast-furnace slag except when a particular cement is specified in the Table.

The Contractor shall not assume that the minimum cement factor indicated in Table 1 will produce a mixture that will meet the specified strength. In addition, the Contractor shall not assume that the maximum finely divided mineral allowed in a mix design according to Article 1020.05(c) will produce a mixture that will meet the specified strength. The Contractor shall select a cement factor within the allowable range that will obtain the specified strength. The Contractor shall take into consideration materials selected, seasonal temperatures, and other factors which may require the Contractor to submit multiple mix designs.

For a portland-pozzolan cement, portland blast-furnace slag cement, or when replacing portland cement with finely divided minerals per Articles 1020.05(c) and 1020.05(d), the portland cement content in the mixture shall be a minimum of 375 lbs/cu yd (222 kg/cu m). When the total of organic processing additions, inorganic processing additions, and limestone addition exceed 5.0 percent in the cement, the minimum portland cement content in the mixture shall be 400 lbs/cu yd (237 kg/cu m). When calculating the portland cement portion in the portland-pozzolan or portland blast-furnace slag cement, the AASHTO M 240 tolerance may be ignored.

Special classifications may be made for the purpose of including the concrete for a particular use or location as a separate pay item in the contract. The concrete used in such cases shall conform to this section.

TABLE 1. CLASSES OF CONCRETE AND MIX DESIGN CRITERIA

Class of Conc.	Use	Specification Section Reference	Cement Factor cwt/cu yd (3)		Water / Cement Ratio lb/lb	Slump in. (4)	Mix Design Compressive Strength (Flexural Strength) psi, minimum			Air Content %	Coarse Aggregate Gradations (14)
							Days				
			Min.	Max			3	14	28		
PV	Pavement Base Course Base Course Widening Driveway Pavement Shoulders Shoulder Curb	420 or 421 353 354 423 483 662	5.65 (1) 6.05 (2)	7.05	0.32 - 0.42	2 - 4 (5)	Ty III 3500 (650)	3500 (650)		5.0 - 8.0	CA 5 & CA 7, CA 5 & CA 11, CA 7, CA 11, or CA 14
PP	Pavement Patching Bridge Deck Patching (10)	442					3200 (600) Article 701.17(e)(3)b.				
	PP-1		6.50 6.20 (Ty III)	7.50 7.20 (Ty III)	0.32 - 0.44	2 - 4	at 48 hours			4.0 - 7.0	CA 7, CA 11, CA 13, CA 14, or CA 16
	PP-2		7.35	7.35	0.32 - 0.38	2 - 6	at 24 hours			4.0 - 6.0	
	PP-3		7.35 (Ty III) (8)	7.35 (Ty III) (8)	0.32 - 0.35	2 - 4	at 16 hours			4.0 - 6.0	
	PP-4		6.00 (9)	6.25 (9)	0.32 - 0.50	2 - 6	at 8 hours			4.0 - 6.0	
	PP-5		6.75 (9)	6.75 (9)	0.32 - 0.40	2 - 8	at 4 hours			4.0 - 6.0	CA 13, CA 14, or CA 16
RR	Railroad Crossing	422	6.50 6.20 (Ty III)	7.50 7.20 (Ty III)	0.32 - 0.44	2 - 4	3500 (650) at 48 hours			4.0 - 7.0	CA 7, CA 11, or CA 14
BS	Bridge Superstructure Bridge Approach Slab	503	6.05	7.05	0.32 - 0.44	2 - 4 (5)		4000 (675)		5.0 - 8.0	CA 7, CA 11, or CA 14 (7)
PC	Various Precast Concrete Items Wet Cast Dry Cast	1042	5.65 5.65 (TY III)	7.05 7.05 (TY III)	0.32 - 0.44 0.25 - 0.40	1 - 4 0 - 1	See Section 1042			5.0 - 8.0 N/A	CA7, CA11,CA 13, CA 14, CA 16, or CA 7 & CA 16
PS	Precast Prestressed Members	504	5.65 5.65 (TY III)	7.05 7.05 (TY III)	0.32 - 0.44	1 - 4			Plans	5.0 - 8.0	CA 11 (11), CA 13, CA 14 (11), or CA 16
	Precast Prestressed Piles and Extensions	512							5000		
	Precast Prestressed Sight Screen	639							3500		

TABLE 1. CLASSES OF CONCRETE AND MIX DESIGN CRITERIA

Class of Conc.	Use	Specification Section Reference	Cement Factor cwt/cu yd (3)		Water / Cement Ratio lb/lb	Slump in. (4)	Mix Design Compressive Strength (Flexural Strength) psi, minimum Days			Air Content %	Coarse Aggregate Gradations (14)
			Min.	Max			3	14	28		
DS	Drilled Shaft (12) Metal Shell Piles (12) Sign Structures Drilled Shaft (12) Light Tower Foundation (12)	516 512 734 837	6.65	7.05	0.32 - 0.44	6 - 8 (6)		4000 (675)		5.0 - 8.0	CA 13, CA 14, CA 16, or a blend of these gradations.
SC	Seal Coat	503	5.65 (1) 6.05 (2)	7.05	0.32 - 0.44	3 - 5		3500 (650)		Optional 6.0 max.	CA 3 & CA 7, CA 3 & CA 11, CA 5 & CA 7, CA 7 & CA 11, CA 7, or CA 11
SI	Structures (except Superstructure) Sidewalk Slope Wall Encasement Box Culverts End Section and Collar Curb, Gutter, Curb & Gutter, Median, and Paved Ditch Concrete Barrier Sign Structures Spread Footing Concrete Foundation Pole Foundation (12) Traffic Signal Foundation Drilled Shaft (12) Square or Rectangular	503 424 511 512 540 542 606 637 734 836 878	5.65 (1) 6.05 (2)	7.05	0.32 - 0.44	2 - 4 (5)		3500 (650)		5.0 - 8.0	CA 3 & CA 7, CA 3 & CA 11, CA 5 & CA 7, CA 5 & CA 11, CA 7, CA 11, CA 13, CA 14, or CA 16 (13)

Notes:

(1) Central-mixed.

(2) Truck-mixed or shrink-mixed. Shrink-mixed concrete will not be permitted for Class PV concrete.

(3) For Class SC concrete and for any other class of concrete that is to be placed underwater, except Class DS concrete, the cement factor shall be increased by ten percent.

(4) The maximum slump may be increased to 7 in. when a high range water-reducing admixture is used for all classes of concrete, except Class PV, SC, and PP. For Class SC, the maximum slump may be increased to 8 in. For Class PP-1, the maximum slump may be increased to 6 in. For Class PS, the 7 in. maximum slump may be increased to 8 1/2 in. if the high range water-reducing admixture is the polycarboxylate type.

(5) The slump range for slipform construction shall be 1/2 to 1 1/2 in.

(6) If concrete is placed to displace drilling fluid, or against temporary casing, the slump shall be 8 - 10 in. at the point of placement. If a water-reducing admixture is used in lieu of a high range water-reducing admixture according to Article 1020.05(b)(7), the slump shall be 2 - 4 in.

(7) For Class BS concrete used in bridge deck patching, the coarse aggregate gradation shall be CA 13, CA 14, or CA 16, except CA 11 may be used for full-depth patching.

(8) In addition to the Type III portland cement, 100 lb/cu yd of ground granulated blast-furnace slag and 50 lb/cu yd of microsilica (silica fume) shall be used. For an air temperature greater than 85 °F, the Type III portland cement may be replaced with Type I or II portland cement.

(9) The cement shall be a rapid hardening cement from the Department's "Approved List of Packaged, Dry, Rapid Hardening Cementitious Materials for Concrete Repairs" for PP-4 and calcium aluminate cement for PP-5.

(10) For Class PP concrete used in bridge deck patching, the aggregate gradation shall be CA 13, CA 14, or CA 16, except CA 11 may be used for full-depth patching. In addition, the mix design shall have 72 hours to obtain a 4,000 psi compressive or 675 psi flexural strength for all PP mix designs.

(11) The nominal maximum size permitted is 3/4 in. Nominal maximum size is defined as the largest sieve which retains any of the aggregate sample particles.

(12) The concrete mix shall be designed to remain fluid throughout the anticipated duration of the pour plus one hour. At the Engineer's discretion, the Contractor may be required to conduct a minimum 2 cu yd trial batch to verify the mix design.

(13) CA 3 or CA 5 may be used when the nominal maximum size does not exceed two-thirds the clear distance between parallel reinforcement bars, or between the reinforcement bar and the form. Nominal maximum size is defined in Note 11.

(14) Alternate combinations of gradations sizes may be used with the approval of the Engineer. Refer also to Article 1004.02(d) for additional information on combining sizes.

TABLE 1. CLASSES OF CONCRETE AND MIX DESIGN CRITERIA (metric)												
Class of Conc.	Use	Specification Section Reference	Cement Factor kg/cu m (3)		Water / Cement Ratio kg/kg	Slump mm (4)	Mix Design Compressive Strength (Flexural Strength) kPa, minimum			Air Content %	Coarse Aggregate Gradations (14)
							Days				
			Min.	Max			3	14	28		
PV	Pavement Base Course Base Course Widening Driveway Pavement Shoulders Shoulder Curb	420 or 421 353 354 423 483 662	335 (1) 360 (2)	418	0.32 - 0.42	50 - 100 (5)	Ty III 24,000 (4500)	24,000 (4500)		5.0 - 8.0	CA 5 & CA 7, CA 5 & CA 11, CA 7, CA 11, or CA 14
PP	Pavement Patching Bridge Deck Patching (10)	442					22,100 (4150) Article 701.17(e)(3)b.				
	PP-1		385 365 (Ty III)	445 425 (Ty III)	0.32 - 0.44	50 - 100	at 48 hours			4.0 - 7.0	CA 7, CA 11, CA 13, CA 14, or CA 16
	PP-2		435	435	0.32 - 0.38	50 - 150	at 24 hours			4.0 - 6.0	
	PP-3		435 (Ty III) (8)	435 (Ty III) (8)	0.32 - 0.35	50 - 100	at 16 hours			4.0 - 6.0	
	PP-4		355 (9)	370 (9)	0.32 - 0.50	50 - 150	at 8 hours			4.0 - 6.0	
	PP-5		400 (9)	400 (9)	0.32 – 0.40	50 - 200	at 4 hours			4.0 – 6.0	CA 13, CA 14, or CA 16
RR	Railroad Crossing	422	385 365 (Ty III)	445 425 (Ty III)	0.32 - 0.44	50 - 100	24,000 (4500) at 48 hours			4.0 - 7.0	CA 7, CA 11, or CA 14
BS	Bridge Superstructure Bridge Approach Slab	503	360	418	0.32 - 0.44	50 - 100 (5)		27,500 (4650)		5.0 - 8.0	CA 7, CA 11, or CA 14 (7)
PC	Various Precast Concrete Items Wet Cast Dry Cast	1042	335 335 (TY III)	418 418 (TY III)	0.32 - 0.44 0.25 - 0.40	25 - 100 0 - 25	See Section 1042			5.0 - 8.0 N/A	CA7, CA11, CA13, CA 14, CA 16, or CA 7 & CA 16
PS	Precast Prestressed Members	504	335 335 (TY III)	418 418 (TY III)	0.32 - 0.44	25 - 100			Plans	5.0 - 8.0	CA 11 (11), CA 13, CA 14 (11), or CA 16
	Precast Prestressed Piles and Extensions	512							34,500		
	Precast Prestressed Sight Screen	639							24,000		

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TABLE 1. CLASSES OF CONCRETE AND MIX DESIGN CRITERIA (metric)

Class of Conc.	Use	Specification Section Reference	Cement Factor kg/cu m (3)		Water / Cement Ratio kg/kg	Slump mm (4)	Mix Design Compressive Strength (Flexural Strength) kPa, minimum Days			Air Content %	Coarse Aggregate Gradations (14)
			Min.	Max			3	14	28		
DS	Drilled Shaft (12) Metal Shell Piles (12) Sign Structures Drilled Shaft (12) Light Tower Foundation (12)	516 512 734 837	395	418	0.32 - 0.44	150 -200 (6)		27,500 (4650)		5.0 - 8.0	CA 13, CA 14, CA 16, or a blend of these gradations.
SC	Seal Coat	503	335 (1) 360 (2)	418	0.32 - 0.44	75 - 125		24,000 (4500)		Optional 6.0 max.	CA 3 & CA 7, CA 3 & CA 11, CA 5 & CA 7, CA 7 & CA 11, CA 7, or CA 11
SI	Structures (except Superstructure) Sidewalk Slope Wall Encasement Box Culverts End Section and Collar Curb, Gutter, Curb & Gutter, Median, and Paved Ditch Concrete Barrier Sign Structures Spread Footing Concrete Foundation Pole Foundation (12) Traffic Signal Foundation Drilled Shaft (12) Square or Rectangular	503 424 511 512 540 542 606 637 734 836 878	335 (1) 360 (2)	418	0.32 - 0.44	50 - 100 (5)		24,000 (4500)		5.0 - 8.0	CA 3 & CA 7, CA 3 & CA 11, CA 5 & CA 7, CA 5 7 CA 11, CA 7, CA 11, CA 13, CA 14, or CA 16 (13)

Notes:

(1) Central-mixed.

(2) Truck-mixed or shrink-mixed. Shrink-mixed concrete will not be permitted for Class PV concrete.

(3) For Class SC concrete and for any other class of concrete that is to be placed underwater, except Class DS concrete, the cement factor shall be increased by ten percent.

(4) The maximum slump may be increased to 175 mm when a high range water-reducing admixture is used for all classes of concrete except Class PV, SC, and PP. For Class SC, the maximum slump may be increased to 200 mm. For Class PP-1, the maximum slump may be increased to 150 mm. For Class PS, the 175 mm maximum slump may be increased to 215 mm if the high range water-reducing admixture is the polycarboxylate type.

(5) The slump range for slipform construction shall be 13 to 40 mm.

(6) If concrete is placed to displace drilling fluid, or against temporary casing, the slump shall be 200 - 250 mm at the point of placement. If a water-reducing admixture is used in lieu of a high range water-reducing admixture according to Article 1020.05(b)(7), the slump shall be 50 – 100 mm.

(7) For Class BS concrete used in bridge deck patching, the coarse aggregate gradation shall be CA 13, CA 14, or CA 16, except CA 11 may be used for full-depth patching.

(8) In addition to the Type III portland cement, 60 kg/cu m of ground granulated blast-furnace slag and 30 kg/cu m of microsilica (silica fume) shall be used. For an air temperature greater than 30 °C, the Type III portland cement may be replaced with Type I or II portland cement.

(9) The cement shall be a rapid hardening cement from the Department's "Approved List of Packaged, Dry, Rapid Hardening Cementitious Materials for Concrete Repairs" for PP-4 and calcium aluminate cement for PP-5.

(10) For Class PP concrete used in bridge deck patching, the aggregate gradation shall be CA 13, CA 14, or CA 16, except CA 11 may be used for full-depth patching. In addition, the mix design shall have 72 hours to obtain a 27,500 kPa compressive or 4,650 kPa flexural.

(11) The nominal maximum size permitted is 19 mm. Nominal maximum size is defined as the largest sieve which retains any of the aggregate sample particles.

(12) The concrete mix shall be designed to remain fluid throughout the anticipated duration of the pour plus one hour. At the Engineer's discretion, the Contractor may be required to conduct a minimum 1.5 cu m trial batch to verify the mix design.

(13) CA 3 or CA 5 may be used when the nominal maximum size does not exceed two-thirds the clear distance between parallel reinforcement bars, or between the reinforcement bar and the form. Nominal maximum size is defined in Note 11.

(14) Alternate combinations of gradation sizes may be used with the approval of the Engineer. Refer also to Article 1004.02(d) for additional information on combining sizes.

1020.05 Other Concrete Criteria. The concrete shall be according to the following.

(a) Proportioning and Mix Design. For all Classes of concrete, it shall be the Contractors responsibility to determine mix design material proportions and to proportion each batch of concrete. A Level III PCC Technician shall develop the mix design for all Classes of concrete, except Classes PC and PS. The mix design, submittal information, trial batch, and Engineer verification shall be according to the "Portland Cement Concrete Level III Technician" course material.

The Contractor shall provide the mix designs a minimum of 45 calendar days prior to production. More than one mix design may be submitted for each class of concrete.

The Engineer will verify the mix design submitted by the Contractor. Verification of a mix design shall in no manner be construed as acceptance of any mixture produced. Once a mix design has been verified, the Engineer shall be notified of any proposed changes.

Tests performed at the jobsite will determine if a mix design can meet specifications. If the tests indicate it cannot, the Contractor shall make adjustments to a mix design, or submit a new mix design if necessary, to comply with the specifications.

(b) Admixtures. The Contractor shall be responsible for using admixtures and determining dosages for all Classes of concrete, cement aggregate mixture II, and controlled low-strength material that will produce a mixture with suitable workability, consistency, and plasticity. In addition, admixture dosages shall result in the mixture meeting the specified plastic and hardened properties. The Contractor shall obtain approval from the Engineer to use an accelerator when the concrete temperature is greater than 60 °F (16 °C). However, this accelerator approval will not be required for Class PP, RR, PC, and PS concrete. The accelerator shall be the non-chloride type unless otherwise specified in the contract plans.

The Department will maintain an Approved List of Corrosion Inhibitors. Corrosion inhibitor dosage rates shall be according to Article 1020.05(b)(10). For information on approved controlled low-strength material air-entraining admixtures, refer to Article 1019.02. The Department will also maintain an Approved List of Concrete Admixtures, and an admixture technical representative shall be consulted by the Contractor prior to the pour when determining an admixture dosage from this list or when making minor admixture dosage adjustments at the jobsite. The dosage shall be within the range indicated on the approved list unless the influence by other admixtures, jobsite conditions (such as a very short haul time), or other circumstances warrant a dosage outside the range. The Engineer shall be notified when a dosage is proposed outside the range. To determine an admixture dosage, air temperature, concrete temperature, cement source and quantity, finely divided mineral sources and quantity, influence of other admixtures, haul time, placement conditions, and other factors as appropriate shall be considered. The Engineer may request the Contractor to have a batch of concrete mixed in the lab or field to verify the admixture dosage is correct. An admixture dosage or combination of admixture dosages shall not delay the initial set of concrete by more

than one hour. When a retarding admixture is required or appropriate for a bridge deck or bridge deck overlay pour, the initial set time shall be delayed until the deflections due to the concrete dead load are no longer a concern for inducing cracks in the completed work. However, a retarding admixture shall not be used to further extend the pour time and justify the alteration of a bridge deck pour sequence.

When determining water in admixtures for water/cement ratio, the Contractor shall calculate 70 percent of the admixture dosage as water, except a value of 50 percent shall be used for a latex admixture used in bridge deck latex concrete overlays.

The sequence, method, and equipment for adding the admixtures shall be approved by the Engineer. Admixtures shall be added to the concrete separately. An accelerator shall always be added prior to a high range water-reducing admixture, if both are used.

Admixture use shall be according to the following.

(1) When the atmosphere or concrete temperature is 65 °F (18 °C) or higher, a retarding admixture shall be used in the Class BS concrete and concrete bridge deck overlays. The proportions of the ingredients of the concrete shall be the same as without the retarding admixture, except that the amount of mixing water shall be reduced, as may be necessary, in order to maintain the consistency of the concrete as required. In addition, a high range water-reducing admixture shall be used in bridge deck concrete. At the option of the Contractor, a water-reducing admixture may be used ~~with the high~~ range water-reducing admixture in Class BS concrete.

(2) At the Contractor's option, admixtures in addition to an air-entraining admixture may be used for Class PP-1 or RR concrete. When the air temperature is less than 55 °F (13 °C) and an accelerator is used, the non-chloride accelerator shall be calcium nitrite.

(3) When Class C fly ash or ground granulated blast-furnace slag is used in Class PP-1 or RR concrete, a water-reducing or high range water-reducing admixture shall be used.

(4) For Class PP-2 or PP-3 concrete, a non-chloride accelerator followed by a high range water-reducing admixture shall be used, in addition to the air-entraining admixture. The Contractor has the option to use a water-reducing admixture with the high range water-reducing admixture. For Class PP-3 concrete, the non-chloride accelerator shall be calcium nitrite. For Class PP-2 concrete, the non-chloride accelerator shall be calcium nitrite when the air temperature is less than 55 °F (13 °C).

(5) For Class PP-4 concrete, a high range water-reducing admixture shall be used in addition to the air-entraining admixture. The Contractor has the option to use a water-reducing admixture with the high range water-reducing admixture. An accelerator shall not be used. For stationary or truck-mixed concrete, a retarding

admixture shall be used to allow for haul time. The Contractor has the option to use a mobile portland cement concrete plant, but a retarding admixture shall not be used unless approved by the Engineer.

For PP-5 concrete, a non-chloride accelerator, high range water-reducing admixture, and air-entraining admixture shall be used. The accelerator, high range water-reducing admixture, and air-entraining admixture shall be per the Contractor's recommendation and dosage. The approved list of concrete admixtures shall not apply. A mobile portland cement concrete plant shall be used to produce the patching mixture.

(6) When a calcium chloride accelerator is specified in the contract, the maximum chloride dosage shall be 1.0 quart (1.0 L) of solution per 100 lb (45 kg) of cement. The dosage may be increased to a maximum 2.0 quarts (2.0 L) per 100 lb (45 kg) of cement if approved by the Engineer. When a calcium chloride accelerator for Class PP-2 concrete is specified in the contract, the maximum chloride dosage shall be 1.3 quarts (1.3 L) of solution per 100 lb (45 kg) of cement. The dosage may be increased to a maximum 2.6 quarts (2.6 L) per 100 lb (45 kg) of cement if approved by the Engineer.

(7) For Class DS concrete a retarding admixture and a high range water-reducing admixture shall be used. For dry excavations that are 10 ft (3 m) or less, the high range water-reducing admixture may be replaced with a water-reducing admixture if the concrete is vibrated. The use of admixtures shall take into consideration the slump loss limits specified in Article 516.12 and the fluidity requirement in Article 1020.04 (Note 12).

(8) At the Contractor's option, when a water-reducing admixture or a high range water-reducing admixture is used for Class PV, PP-1, RR, SC, and SI concrete, the cement factor may be reduced a maximum 0.30 hundredweight/cu yd (18 kg/cu m). However, a cement factor reduction will not be allowed for concrete placed underwater.

(9) When Type F or Type G high range water-reducing admixtures are used, the initial slump shall be a minimum of 1 1/2 in. (40 mm) prior to addition of the Type F or Type G admixture, except as approved by the Engineer.

(10) When specified, a corrosion inhibitor shall be added to the concrete mixture utilized in the manufacture of precast, prestressed concrete members and/or other applications. It shall be added, at the same rate, to all grout around post-tensioning steel when specified.

When calcium nitrite is used, it shall be added at the rate of 4 gal/cu yd (20 L/cu m), and shall be added to the mix immediately after all compatible admixtures have been introduced to the batch.

When Rheocrete 222+ is used, it shall be added at the rate of 1.0 gal/cu yd (5.0 L/cu m), and the batching sequence shall be according to the manufacturer's instructions.

(c) Finely Divided Minerals. Use of finely divided minerals shall be according to the following.

(1) Fly Ash. At the Contractor's option, fly ash from approved sources may partially replace portland cement in cement aggregate mixture II, Class PV, PP-1, PP-2, RR, BS, PC, PS, DS, SC, and SI concrete.

The use of fly ash shall be according to the following.

a. Measurements of fly ash and portland cement shall be rounded up to the nearest 5 lb (2.5 kg).

b. When Class F fly ash is used in cement aggregate mixture II, Class PV, BS, PC, PS, DS, SC, and SI concrete, the amount of portland cement replaced shall not exceed 25 percent by weight (mass).

c. When Class C fly ash is used in cement aggregate mixture II, Class PV, PP-1, PP-2, RR, BS, PC, PS, DS, SC, and SI concrete, the amount of portland cement replaced shall not exceed 30 percent by weight (mass).

d. Fly ash may be used in concrete mixtures when the air temperature is below 40 °F (4 °C), but the Engineer may request a trial batch of the concrete mixture to show the mix design strength requirement will be met.

(2) Ground Granulated Blast-Furnace (GGBF) Slag. At the Contractor's option, GGBF slag may partially replace portland cement in concrete mixtures, for Class PV, PP-1, PP-2, RR, BS, PC, PS, DS, SC, and SI concrete. For Class PP-3 concrete, GGBF slag shall be used according to Article 1020.04.

The use of GGBF slag shall be according to the following.

a. Measurements of GGBF slag and portland cement shall be rounded up to the nearest 5 lb (2.5 kg).

b. When GGBF slag is used in Class PV, PP-1, PP-2, RR, BS, PC, PS, DS, SC and SI concrete, the amount of portland cement replaced shall not exceed 35 percent by weight (mass).

c. GGBF slag may be used in concrete mixtures when the air temperature is below 40 °F (4 °C), but the Engineer may request a trial batch of the concrete mixture to show the mix design strength requirement will be met.

(3) Microsilica. At the Contractor's option, microsilica may be added at a maximum of 5.0 percent by weight (mass) of the cement and finely divided minerals summed together.

Microsilica shall be used in Class PP-3 concrete according to Article 1020.04.

(4) High Reactivity Metakaolin (HRM). At the Contractor's option, HRM may be added at a maximum of 5.0 percent by weight (mass) of the cement and finely divided minerals summed together.

(5) Mixtures with Multiple Finely Divided Minerals. Except as specified for Class PP-3 concrete, the Contractor has the option to use more than one finely divided mineral in Class PV, PP-1, PP-2, RR, BS, PC, PS, DS, SC, and SI concrete as follows.

a. The mixture shall contain a maximum of two finely divided minerals. The finely divided mineral in portland-pozzolan cement or portland blast-furnace slag cement shall count toward the total number of finely divided minerals allowed. The finely divided minerals shall constitute a maximum of 35.0 percent of the total cement plus finely divided minerals. The fly ash portion shall not exceed 30.0 percent for Class C fly ash or 25.0 percent for Class F fly ash. The Class C and F fly ash combination shall not exceed 30.0 percent. The ground granulated blast-furnace slag portion shall not exceed 35.0 percent. The microsilica or high-reactivity metakaolin portion used together or separately shall not exceed ten percent. The finely divided mineral in the portland-pozzolan cement or portland blast-furnace slag blended cement shall apply to the maximum 35.0 percent.

b. Central Mixed. For Class PV, SC, and SI concrete, the mixture shall contain a minimum of 565 lbs/cu yd (335 kg/cu m) of cement and finely divided minerals summed together. If a water-reducing or high-range water-reducing admixture is used, the Contractor has the option to use a minimum of 535 lbs/cu yd (320 kg/cu m).

c. Truck-Mixed or Shrink-Mixed. For Class PV (only truck-mixed permitted), SC, and SI concrete, the mixture shall contain a minimum of 605 lbs/cu yd (360 kg/cu m) of cement and finely divided minerals summed together. If a water-reducing or high-range water-reducing admixture is used, the Contractor has the option to use a minimum of 575 lbs/cu yd (345 kg/cu m).

d. Central-Mixed, Truck-Mixed or Shrink-Mixed. For Class PP-1 and RR concrete, the mixture shall contain a minimum of 650 lbs/cu yd (385 kg/cu m) of cement and finely divided minerals summed together. For Class PP-1 and RR concrete using Type III portland cement, the mixture shall contain a minimum of 620 lbs/cu yd (365 kg/cu m).

For Class PP-2 concrete, the mixture shall contain a minimum of 735 lbs/cu yd (435 kg/cu m) of cement and finely divided minerals summed together. For Class BS concrete, the mixture shall contain a minimum of 605 lbs/cu yd (360 kg/cu m). For Class DS concrete, the mixture shall contain a minimum of 665 lbs/cu yd (395 kg/cu m).

If a water-reducing or high range water-reducing admixture is used in Class PP-1 and RR concrete, the Contractor has the option to use a minimum of 620 lbs/cu yd (365 kg/cu m) of cement and finely divided minerals summed together. If a water-reducing or high-range water-reducing admixture is used with Type III portland cement in Class PP-1 and RR concrete, the Contractor has the option to use a minimum of 590 lbs/cu yd (350 kg/cu m).

e. Central-Mixed or Truck-Mixed. For Class PC and PS concrete, the mixture shall contain a minimum of 565 lbs/cu yd (335 kg/cu m) of cement and finely divided minerals summed together.

f. The mixture shall contain a maximum of 705 lbs/cu yd (418 kg/cu m) of cement and finely divided mineral(s) summed together for Class PV, BS, PC, PS, DS, SC, and SI concrete. For Class PP-1 and RR concrete, the mixture shall contain a maximum of 750 lbs/cu yd (445 kg/cu m). For Class PP-1 and RR concrete using Type III portland cement, the mixture shall contain a maximum of 720 lbs/cu yd (425 kg/cu m). For Class PP-2 concrete, the mixture shall contain a maximum of 735 lbs/cu yd (435 kg/cu m).

g. For Class SC concrete and for any other class of concrete that is to be placed underwater, except Class DS concrete, the allowable cement and finely divided minerals summed together shall be increased by ten percent.

h. The combination of cement and finely divided minerals shall comply with Article 1020.05(d).

(d) Alkali-Silica Reaction. For cast-in-place (includes cement aggregate mixture II), precast, and precast prestressed concrete, one of the mixture options provided in Article 1020.05(d)(2) shall be used to reduce the risk of a deleterious alkali-silica reaction in concrete exposed to humid or wet conditions. The mixture options are not intended or adequate for concrete exposed to potassium acetate, potassium formate, sodium acetate, or sodium formate. The mixture options will not be required for the dry environment (humidity less than 60 percent) found inside buildings for residential or commercial occupancy.

The mixture options shall not apply to concrete revetment mats, insertion lining of pipe culverts, portland cement mortar fairing course, controlled low-strength material, miscellaneous grouts that are not prepackaged, Class PP-3 concrete, Class PP-4 concrete, and Class PP-5 concrete.

(1) Aggregate Groups. Each combination of aggregates used in a mixture will be assigned to an aggregate group. The point at which the coarse aggregate and fine aggregate expansion values intersect in the following table will determine the group.

Aggregate Groups			
Coarse Aggregate or Coarse Aggregate Blend ASTM C 1260 Expansion	Fine Aggregate Or Fine Aggregate Blend ASTM C 1260 Expansion		
	≤0.16%	>0.16% - 0.27%	>0.27%
≤0.16%	Group I	Group II	Group III
>0.16% - 0.27%	Group II	Group II	Group III
>0.27%	Group III	Group III	Group IV

(2) Mixture Options. Based upon the aggregate group, the following mixture options shall be used. However, the Department may prohibit a mixture option if field performance shows a deleterious alkali-silika reaction or Department testing indicates the mixture may experience a deleterious alkali-silica reaction.

Group I – Mixture options are not applicable. Use any cement or finely divided mineral.
Group II – Mixture options 1, 2, 3, 4, or 5 shall be used.
Group III – Mixture options 1, combine 2 with 3, 4 or 5 shall be used.
Group IV – Mixture options 1, combine 2 with 4, or 5 shall be used.

a. Mixture Option 1. The coarse or fine aggregates shall be blended to place the material in a group that will allow the selected cement or finely divided mineral to be used. Coarse aggregate may only be blended with another coarse aggregate. Fine aggregate may only be blended with another fine aggregate. Blending of coarse with fine aggregate to place the material in another group will not be permitted.

When a coarse for fine aggregate is blended, the weighted expansion value shall be calculated separately for the coarse and fine aggregate as follows:

Weighted Expansion Value = (a/100 x A) + (b/100 x B) + (c/100 x C) + ...

Where: a, b, c... = percentage of aggregate in the blend;
A, B, C... = expansion value for that aggregate.

b. Mixture Option 2. A finely divided mineral shall be used as described in 1), 2), 3), or 4) that follow.

1. Class F Fly Ash. For cement aggregate mixture II, Class PV, BS, PC, PS, MS, DS, SC and SI concrete, the Class F fly ash shall be a minimum 25.0 percent by weight (mass) of the cement and finely divided minerals summed together.

   If the maximum total equivalent available alkali content ($Na_2O + 0.658K_2O$) exceeds 4.50 percent for the Class F fly ash, it may be used only if it complies with Mixture Option 5.

2. Class C Fly Ash. For cement aggregate mixture II, Class PV, PP-1, PP-2, RR, BS, PC, PS, DS, SC, and SI concrete, Class C fly ash shall be a minimum of 25.0 percent by weight (mass) of the cement and finely divided minerals summed together.

   If the maximum total equivalent available alkali content ($Na_2O + 0.658K_2O$) exceeds 4.50 percent or the calcium oxide exceeds 26.50 percent for the Class C fly ash, it may be used only per Mixture Option 5.

3. Ground Granulated Blast-Furnace Slag. For Class PV, PP-1, PP-2, RR, BS, PC, PS, DS, SC, and SI concrete, ground granulated blast-furnace slag shall be a minimum of 25.0 percent by weight (mass) of the cement and finely divided minerals summed together.

   If the maximum total equivalent available alkali content ($Na_2O + 0.658K_2O$) exceeds 1.00 percent for the ground granulated blast-furnace slag, it may be used only per Mixture Option 5.

4. Microsilica or High Reactivity Metakaolin, Microsilica solids or high reactivity metakaolin shall be a minimum 5.0 percent by weight (mass) of the cement and finely divided minerals summed together.

   If the maximum total equivalent available alkali content ($Na_2O + 0.658K_2O$) exceeds 1.00 percent for the Microsilica or High Reactivity Metakaolin, it may be used only if it complies with Mixture Option 5.

c. Mixture Option 3. The cement used shall have a maximum total equivalent alkali content ($Na_2O + 0.658K_2O$) of 0.60 percent. When aggregate in Group II is involved and the Contractor desires to use a finely divided mineral, any finely divided mineral may be used with the cement unless the maximum total equivalent available alkali content ($Na_2O + 0.658K_2O$) exceeds 4.50 percent for the fly ash; or 1.00 percent for the ground granulated blast-furnace slag, microsilica or high reactivity metakaolin. If the alkali content is exceeded, the finely divided mineral may be used only per Mixture Option 5.

d. Mixture option 4. The cement used shall have a maximum total equivalent alkali content ($Na_2O + 0.658K_2O$) of 0.45 percent. When aggregate in Group II or III is

involved and the Contractor desires to use a finely divided mineral, any finely divided mineral may be used with the cement unless the maximum total equivalent available alkali content ($Na_2O + 0.658K_2O$) exceeds 4.50 percent for the fly ash; or 1.00 percent for the ground granulated blast-furnace slag, microsilica, or high reactivity metakaolin. If the alkali content is exceeded, the finely divided mineral may be used only per Mixture Option 5.

e. Mixture Option 5. The proposed cement or finely divided mineral may be used if the ASTM C 1567 expansion value is ≤ 0.16 percent when performed on the aggregate in the concrete mixture with the highest ASTM C 1260 test result. The laboratory performing the ASTM C 1567 test shall be approved by the Department according to the current Bureau of Materials and Physical Research Policy Memorandum "Minimum Laboratory Requirements for Alkali-Silica Reactivity (ASR) Testing". The ASTM C 1567 test will be valid for two years, unless the Engineer determines the materials have changed significantly. For latex concrete, the ASTM C 1567 test shall be performed without the latex. The 0.20 percent autoclave expansion limit in ASTM C 1567 shall not apply.

   If during the two year time period the Contractor needs to replace the cement, and the replacement cement has an equal or lower total equivalent alkali content ($Na_2O + 0.658K_2O$), a new ASTM C 1567 test will not be required.

   The Engineer reserved the right to verify a Contractor's ASTM C 1567 test result. When the Contractor performs the test, a split sample may be requested by the Engineer. The Engineer may also independently obtain a sample at any time. The proposed cement or finely divided mineral will not be allowed for use if the Contractor or Engineer obtains an expansion value greater than 0.16 percent.

1020.06 Water/Cement Ratio. The water/cement ratio shall be determined on a weight (mass) basis. When a maximum water/cement ratio is specified, the water shall include mixing water, water in admixtures, free moisture on the aggregates, and water added at the jobsite. The quantity of water may be adjusted within the limit specified to meet slump requirements.

When fly ash, ground granulated blast-furnace slag, high-reactivity metakaolin, or microsilica (silica fume) are used in a concrete mix, the water/cement ratio will be based on the total cement and finely divided minerals contained in the mixture.

1020.07 Slump. The slump shall be determined according to Illinois Modified AASHTO T 119.

If the measured slump falls outside the limits specified, a check test will be made. In the event of a second failure, the Engineer may refuse to permit the use of the batch of concrete represented.

If the Contractor is unable to add water to prepare concrete of the specified slump without exceeding the maximum design water/cement ratio, additional cement or water-reducing admixture shall be added.

1020.08 Air Content. The air content shall be determined according to Illinois Modified AASHTO T 152 or Illinois Modified AASHTO T 196. The air-entrainment shall be obtained by the use of cement with an approved air-entraining admixture added during the mixing of the concrete or the use of air-entraining cement.

If the air-entraining cement furnished is found to produce concrete having an air content outside the limits specified, its use shall be discontinued immediately and the Contractor shall provide other air-entraining cement which will produce air contents within the specified limits.

If the air content obtained is above the specified maximum limit at the jobsite, the Contractor, with the Engineer's approval, may add to the truck mixer non air-entraining cement in the proportion necessary to bring the air content within the specified limits, or the concrete may be further mixed, within the limits of time and revolutions specified, to reduce the air content. If the air content obtained is below the specified minimum limit, the Contractor may add to the concrete a sufficient quantity of an approved air-entraining admixture at the jobsite to bring the air content within the specified limits.

1020.09 Strength Tests. The specimens shall be molded and cured according to Illinois Modified AASHTO T 23. Specimens shall be field cured with the construction item as specified in Illinois Modified AASHTO T 23. The compressive strength shall be determined according to Illinois Modified AASHTO T 22. The flexural strength shall be determined according to Illinois Modified AASHTO T 177.

Except for Class PC and PS concrete, the Contractor shall transport the strength specimens from the site of the work to the field laboratory or other location as instructed by the Engineer. During transportation in a suitable light truck, the specimens shall be embedded in straw, burlap, or other acceptable material in a manner meeting with the approval of the Engineer to protect them from damage; care shall be taken to avoid impacts during hauling and handling. For strength specimens, the Contractor shall provide a water storage tank for curing.

1020.10 Handling, Measuring, and Batching Materials. Aggregates shall be handled in a manner to prevent mixing with soil and other foreign material.

Aggregates shall be handled in a manner which produces a uniform gradation, before placement in the plant bins. Aggregates delivered to the plant in a nonuniform gradation condition shall be stockpiled. The stockpiled aggregate shall be mixed uniformly before placement in the plant bins.

Aggregates shall have a uniform moisture content before placement in the plant bins. This may require aggregates to be stockpiled for 12 hours or more to allow drainage, or water added to the stockpile, or other methods approved by the Engineer. Moisture content requirements for crushed slag or lightweight aggregate shall be according to Article 1004.01(e).

Aggregates, cement, and finely divided minerals shall be measured by weight (mass). Water and admixtures shall be measured by volume or weight (mass).

The Engineer may permit aggregates, cement, and finely divided minerals to be measured by volume for small isolated structures and for miscellaneous items. Aggregates, cement, and finely divided minerals shall be measured individually. The volume shall be based upon dry, loose materials.

1020.11 Mixing Portland Cement Concrete. The mixing of concrete shall be according to the following.

(a) Ready-Mixed Concrete. Ready-mixed concrete is central-mixed, truck-mixed, or shrink-mixed concrete transported and delivered in a plastic state ready for placement in the work and shall be according to the following.

(1) Central-Mixed Concrete. Central-mixed concrete is concrete which has been completely mixed in a stationary mixer and delivered in a truck agitator, a truck mixer operating at agitating speed, or a nonagitator truck.

The stationary mixer shall operate at the drum speed for which it was designed. The batch shall be charged into the drum so that some of the water shall enter in advance of the cement, finely divided minerals, and aggregates. The flow of the water shall be uniform and all water shall be in the drum by the end of the first 15 seconds of the mixing period. Water shall begin to enter the drum from zero to two seconds in advance of solid material and shall stop flowing within two seconds of the beginning of mixing time.

Some coarse aggregate shall enter in advance of other solid materials. For the balance of the charging time for solid materials, the aggregates, finely divided minerals, and cement (to assure thorough blending) shall each flow at acceptably uniform rates, as determined by visual observation. Coarse aggregate shall enter two seconds in advance of other solid materials and a uniform rate of flow shall continue to within two seconds of the completion of charging time.

The entire contents of the drum, or of each single compartment of a multiple-drum mixer, shall be discharged before the succeeding batch is introduced.

The volume of concrete mixed per batch shall not exceed the mixer's rated capacity as shown on the standard rating plate on the mixer by more than ten percent.

The minimum mixing time shall be 75 seconds for a stationary mixer having a capacity greater than 2 cu yd (1.5 cu m). For a mixer with a capacity equal to or less than 2 cu yd (1.5 cu m) the mixing time shall be 60 seconds. Transfer time in multiple drum mixers is included in the mixing time. Mixing time shall begin when all materials are in the mixing compartment and shall end when the discharge of any

part of the batch is started. The required mixing times will be established by the Engineer for all types of stationary mixers.

When central-mixed concrete is to be transported in a truck agitator or a truck mixer, the stationary-mixed batch shall be transferred to the agitating unit without delay and without loss of any portion of the batch. Agitating shall start immediately thereafter and shall continue without interruption until the batch is discharged from the agitator. The ingredients of the batch shall be completely discharged from the agitator before the succeeding batch is introduced. Drums and auxiliary parts of the equipment shall be kept free from accumulations of materials.

The vehicles used for transporting the mixed concrete shall be of such capacity, or the batches shall be so proportioned, that the entire contents of the mixer drum can be discharged into each vehicle load.

(2) Truck-Mixed Concrete. Truck-mixed concrete is completely mixed and delivered in a truck mixer. When the mixer is charged with fine and coarse aggregates simultaneously, not less than 60 nor more than 100 revolutions of the drum or blades at mixing speed shall be required, after all of the ingredients including water are in the drum. When fine and coarse aggregates are charged separately, not less than 70 revolutions will be required. Additional mixing beyond 100 revolutions shall be at agitating speed unless additions of water, admixtures, cement, or other materials are made at the jobsite. The mixing operation shall begin immediately after the cement and water, or the cement and wet aggregates, come in contact. The ingredients of the batch shall be completely discharged from the drum before the succeeding batch is introduced. The drum and auxiliary parts of the equipment shall be kept free from accumulations of materials. If additional water or an admixture is added at the jobsite, the concrete batch shall be mixed a minimum of 40 additional revolutions after each addition.

(3) Shrink-Mixed Concrete. Shrink-mixed concrete is mixed partially in a stationary mixer and completed in a truck mixer for delivery. The mixing time of the stationary mixer may be reduced to a minimum of 30 seconds to intermingle the ingredients, before transferring to the truck mixer. All ingredients for the batch shall be in the stationary mixer and partially mixed before any of the mixture is discharged into the truck mixer. The partially mixed batch shall be transferred to the truck mixer without delay and without loss of any portion of the batch, and mixing in the truck mixer shall start immediately. The mixing time in the truck mixer shall be not less than 50 nor more than 100 revolutions of the drum or blades at mixing speed. Additional mixing beyond 100 revolutions shall be at agitating speed, unless additions of water, admixtures, cement, or other materials are made at the jobsite. Units designed as agitators shall not be used for shrink mixing. The ingredients of the batch shall be completely discharged from the drum before the succeeding batch is introduced. The drum and auxiliary parts of the equipment shall be kept free from accumulations of materials. If additional water or an admixture is added at the jobsite, the concrete batch shall be mixed a minimum of 40 additional revolutions after each addition.

(4) Mixing Water. Wash water shall be completely discharged from the drum or container before a batch is introduced. All mixing water shall be added at the plant and any adjustment of water at the jobsite by the Contractor shall not exceed the specified maximum water/cement ratio or slump. If strength specimens have been made for a batch of concrete, and subsequently during discharge there is more water added, additional strength specimens shall be made for the batch of concrete. No additional water may be added at the jobsite to central-mixed concrete if the mix design has less than 565 lbs/cu yd (335 kg/cu m) of cement and finely divided minerals summed together.

(5) Mixing and Agitating Speeds. The mixing or agitating speeds used for truck mixers or truck agitators shall be per the manufacturer's rating plate.

(6) Capacities. The volume of plastic concrete in a given batch will be determined according to AASHTO T 121, based on the total weight (mass) of the batch, determined either from the weight (masses) of all materials, including water, entering the batch or directly from the net weight (mass) of the concrete in the batch as delivered.

The volume of mixed concrete in truck mixers or truck agitators shall in no case be greater than the rated capacity determined according to the Truck Mixer, Agitator, and Front Discharge Concrete Carrier Standards of the Truck Mixer Manufacturer's Bureau, as shown by the rating plate attached to the truck. If the truck mixer does not have a rating plate, the volume of mixed concrete shall not exceed 63 percent of the gross volume of the drum or container, disregarding the blades. For truck agitators, the value is 80 percent.

(7) Time of Haul. Haul time shall begin when the delivery ticket is stamped. The delivery ticket shall be stamped no later than five minutes after the addition of the mixing water to the cement, or after the addition of the cement to the aggregate when the combined aggregates contain free moisture in excess of two percent by weight (mass). If more than one batch is required for charging a truck using a stationary mixer, the time of haul shall start with mixing of the first batch. Haul time shall end when the truck is emptied for incorporation of the concrete into the work.

The time elapsing from when water is added to the mix until it is deposited in place at the site of the work shall not exceed 30 minutes when the concrete is transported in nonagitating trucks.

The maximum haul time for concrete transported in truck mixers or truck agitators shall be according to the following.

Concrete Temperature at Point of Discharge °F (°C)	Haul Time	
	Hours	Minutes
50-64 (10-17.5)	1	30

>64 (>17.5) - without retarder	1	0
>64 (>17.5) - with retarder	1	30

To encourage start-up testing for mix adjustments at the plant, the first two trucks will be allowed an additional 15 minutes haul time whenever such testing is performed.

For a mixture which is not mixed on the jobsite, a delivery ticket shall be required for each load. The following information shall be recorded on each delivery ticket: (1) ticket number; (2) name of producer and plant location; (3) contract number; (4) name of Contractor; (5) stamped date and time batched; (6) truck number; (7) quantity batched; (8) amount of admixture(s) in the batch; (9) amount of water in the batch; and (10) Department mix design number.

For concrete mixed in jobsite stationary mixers, the above delivery ticket may be waived, but a method of verifying the haul time shall be established to the satisfaction of the Engineer.

(8) Production and Delivery. The production of ready-mixed concrete shall be such that the operations of placing and finishing will be continuous insofar as the job operations require. The Contractor shall be responsible for producing concrete that will have the required workability, consistency, and plasticity when delivered to the work. Concrete which is unsuitable for placement as delivered will be rejected. The Contractor shall minimize the need to adjust the mixture at the jobsite, such as adding water, admixtures, and cement prior to discharging.

(9) Use of Multiple Plants in the Same Construction Item. The Contractor may simultaneously use central-mixed, truck-mixed, and shrink-mixed concrete from more than one plant, for the same construction item, on the same day, and in the same pour. However, the following criteria shall be met.

a. Each plant shall use the same cement, finely divided minerals, aggregates, admixtures, and fibers.

b. Each plant shall use the same mix design. However, material proportions may be altered slightly in the field to meet slump and air content criteria. Field water adjustments shall not result in a difference that exceeds 0.02 between plants for water/cement ratio. The required cement factor for central-mixed concrete shall be increased to match truck-mixed or shrink-mixed concrete, if the latter two types of mixed concrete are used in the same pour.

c. The maximum slump difference between deliveries of concrete shall be 3/4 in. (19 mm) when tested at the jobsite. If the difference is exceeded, but test results are within specification limits, the concrete may be used. The Contractor shall take immediate corrective action and shall test subsequent deliveries of concrete until the slump difference is corrected. For each day, the first three truck loads of delivered concrete from each plant shall be tested for slump by the Contractor.

Thereafter, when a specified test frequency for slump is to be performed, it shall be conducted for each plant at the same time.

d. The maximum air content difference between deliveries of concrete shall be 1.5 percent when tested at the jobsite. If the difference is exceeded, but test results are within specification limits, the concrete may be used. The Contractor shall take immediate corrective action and shall test subsequent deliveries of concrete until the air content difference is corrected. For each day, the first three truck loads of delivered concrete from each plant shall be tested for air content by the Contractor. Thereafter, when a specified test frequency for air content is to be performed, it shall be conducted for each plant at the same time.

e. Strength tests shall be performed and taken at the jobsite for each plant. When a specified strength test is to be performed, it shall be conducted for each plant at the same time. The difference between plants for strength shall not exceed 900 psi (6200 kPa) compressive and 90 psi (620 kPa) flexural. If the strength difference requirements are exceeded, the Contractor shall take corrective action.

f. The maximum haul time difference between deliveries of concrete shall be 15 minutes. If the difference is exceeded, but haul time is within specification limits, the concrete may be used. The Contractor shall take immediate corrective action and check subsequent deliveries of concrete.

(b) Class PC Concrete. The concrete shall be central-mixed or truck-mixed. Variations in plastic concrete properties shall be minimized between batches.

(c) Class PV Concrete. The concrete shall be central-mixed or truck-mixed.

The required mixing time for stationary mixers with a capacity greater than 2 cu yd (1.5 cu m) may be less than 75 seconds upon satisfactory completion of a mixer performance test. Mixer performance tests may be requested by the Contractor when the quantity of concrete to be placed exceeds 50,000 sq yd (42,000 sq m). The testing shall be conducted according to the current Bureau of Materials and Physical Research's Policy Memorandum, "Field Test Procedures for Mixer Performance and Concrete Uniformity Tests".

The Contractor will be allowed to test two mixing times within a range of 50 to 75 seconds. If satisfactory results are not obtained from the required tests, the mixing time shall continue to be 75 seconds for the remainder of the contract. If satisfactory results are obtained, the mixing time may be reduced. In no event will mixing time be less than 50 seconds.

The Contractor shall furnish the labor, equipment, and material required to perform the testing according to the current Bureau of Materials and Physical Research's Policy

Memorandum, "Field Test Procedures for Mixer Performance and Concrete Uniformity Tests".

A contract which has 12 ft (3.6 m) wide pavement or base course, and a continuous length of 1/2 mile (0.8 km) or more, shall have the following additional requirements.

(1) The plant and truck delivery operation shall be able to provide a minimum of 50 cu yd (38 cu m) of concrete per hour.

(2) The plant shall have automatic or semi-automatic batching equipment.

(d) All Other Classes of Concrete. The concrete shall be central-mixed, truck-mixed, or shrink-mixed concrete.

1020.12 Mobile Portland Cement Concrete Plants. The use of a mobile portland cement concrete plant may be approved under the provisions of Article 1020.10 for volumetric proportioning in small isolated structures, thin overlays, and for miscellaneous and incidental concrete items.

The first 1 cu ft (0.03 cu m) of concrete produced may not contain sufficient mortar and shall not be incorporated in the work. The side plate on the cement feeder shall be removed periodically (normally the first time the mixer is used each day) to see if cement is building up on the feed drum.

Sufficient mixing capacity of mixers shall be provided to enable continuous placing and finishing insofar as the job operations and the specifications require.

Slump and air tests made immediately after discharge of the mix may be misleading, since the aggregates may absorb a significant amount of water for four or five minutes after mixing.

1020.13 Curing and Protection. The method of curing, curing period, and method of protection for each type of concrete construction is included in the following Index Table.

INDEX TABLE OF CURING AND PROTECTION OF CONCRETE CONSTRUCTION			
TYPE OF CONSTRUCTION	CURING METHODS	CURING PERIOD DAYS	LOW AIR TEMPERATURE PROTECTION METHODS
Cast-in-Place Concrete [11/]			
Pavement Shoulder	1020.13(a)(1)(2)(3)(4)(5) [3/ 5/]	3	1020.13(c)
Base Course Base Course Widening	1020.13(a)(1)(2)(3)(4)(5) [2/]	3	1020.13(c)
Driveway Median Barrier Curb Gutter Curb & Gutter Sidewalk Slope Wall Paved Ditch	1020.13(a)(1)(2)(3)(4)(5) [4/ 5/]	3	1020.13(c) [16/]
Catch Basin Manhole Inlet Valve Vault	1020.13(a)(1)(2)(3)(4)(5) [4/]	3	1020.13(c)
Pavement Patching	1020.13(a)(1)(2)(3)(4)(5) [2/]	3 [12/]	1020.13(c)
Bridge Deck Patching	1020.13(a)(3)(5)	3 or 7 [12/]	1020.13(c)
Railroad Crossing	1020.13(a)(3)(5)	1	1020.13(c)
Piles and Drilled Shafts	1020.13(a)(3)(5)	7	1020.13(d)(1)(2)(3)
Foundations & Footings Seal Coat	1020.13(a)(1)(2)(3)(4)(5) [4/ 6/]	7	1020.13(d)(1)(2)(3)
Substructure	1020.13(a)(1)(2)(3)(4)(5) [1/ 7/]	7	1020.13(d)(1)(2)(3)
Superstructure (except deck)	1020.13(a)(1)(2)(3)(5) [8/]	7	1020.13(d)(1)(2)
Deck Bridge Approach Slab	1020.13(a)(5)	7	1020.13(d)(1)(2) [17/]
Retaining Walls	1020.13(a)(1)(2)(3)(4)(5) [1/ 7/]	7	1020.13(d)(1)(2)
Pump Houses	1020.13(a)(1)(2)(3)(4)(5) [1/]	7	1020.13(d)(1)(2)
Culverts	1020.13(a)(1)(2)(3)(4)(5) [4/ 6/]	7	1020.13(d)(1)(2) [18/]
Other Incidental Concrete	1020.13(a)(1)(2)(3)(5)	3	1020.13(c)
Precast Concrete [11/]			
Bridge Slabs Piles and Pile Caps Other Structural Members	1020.13(a)(3)(5) [9/ 10/]	As [13/] Required	9/
All Other Precast Items	1020.13(a)(3)(4)(5) [2/ 9/ 10/]	As [14/] Required	9/
Precast, Prestressed Concrete [11/]			
All Items	1020(a)(3)(5) [9/ 10/]	Until Strand Tensioning is Released [15/]	9/

Notes-General:

1/ Type I, membrane curing only

2/ Type II, membrane curing only

3/ Type III, membrane curing only

4/ Type I, II and III membrane curing

5/ Membrane Curing will not be permitted between November 1 and April 15.

6/ The use of water to inundate foundations and footings, seal coats or the bottom slab of culverts is permissible when approved by the Engineer, provided the water temperature can be maintained at 45 °F (7 °C) or higher.

7/ Asphalt emulsion for waterproofing may be used in lieu of other curing methods when specified and permitted according to Article 503.18.

8/ On non-traffic surfaces which receive protective coat according to Article 503.19, a linseed oil emulsion curing compound may be used as a substitute for protective coat and other curing methods. The linseed oil emulsion curing compound will be permitted between April 16 and October 31 of the same year, provided it is applied with a mechanical sprayer according to Article 1101.09(b).

9/ Steam, supplemental heat, or insulated blankets (with or without steam/supplemental heat) are acceptable and shall be according to the Bureau of Materials and Physical Research's Policy Memorandum "Quality Control/Quality Assurance Program for Precast Concrete Products" and the "Manual for Fabrication of Precast, Prestressed Concrete Products".

10/ A moist room according to AASHTO M 201 is acceptable for curing.

11/ If curing is required and interrupted because of form removal for cast-in-place concrete items, precast concrete products, or precast prestressed concrete products, the curing shall be resumed within two hours from the start of the form removal.

12/ Curing maintained only until opening strength is attained for pavement patching, with a maximum curing period of three days. For bridge deck patching the curing period shall be three days if Class PP concrete is used and 7 days if Class BS concrete is used.

13/ The curing period shall end when the concrete has attained the mix design strength. The producer has the option to discontinue curing when the concrete has attained 80 percent of the mix design strength or after seven days. All strength test specimens shall remain with the units and shall be subjected to the same curing method and environmental condition as the units, until the time of testing.

14/ The producer shall determine the curing period or may elect to not cure the product. All strength test specimens shall remain with the units and shall be subjected to the same curing method and environmental condition as the units, until the time of testing.

15/ The producer has the option to continue curing after strand release.

16/ When structural steel or structural concrete is in place above slope wall, Article 1020.13(c) shall not apply. The protection method shall be according to Article 1020.13(d)(1).

17/ When Article 1020.13(d)(2) is used to protect the deck, the housing may enclose only the bottom and sides. The top surface shall be protected according to Article 1020.13(d)(1).

18/ For culverts having a waterway opening of 10 sq ft (1 sq m) or less, the culverts may be protected according to Article 1020.13(d)(3).

(a) Methods of Curing. Except as provided for in the Index Table of Curing and Protection of Concrete Construction, curing shall be accomplished by one of the following described methods. When water is required to wet the surface, it shall be applied as a fine spray so that it will not mar or pond on the surface. Except where otherwise specified, the curing period shall be at least 72 hours.

(1) Waterproof Paper Method. The surface of the concrete shall be covered with waterproof paper as soon as the concrete has hardened sufficiently to prevent marring the surface. The surface of the concrete shall be wetted immediately before the paper is placed. The blankets shall be lapped at least 12 in. (300 mm) end to end, and these laps shall be securely weighted with a windrow of earth, or other approved method, to form a closed joint. The same requirements shall apply to the longitudinal laps where separate strips are used for curing edges, except the lap shall be at least 9 in. (225 mm). The edges of the blanket shall be weighted securely with a continuous windrow of earth or any other means satisfactory to the Engineer to provide an air-tight cover. Any torn places or holes in the paper shall be repaired immediately by patches cemented over the openings, using a bituminous cement having a melting point of not less than 180 °F (82 °C). The blankets may be reused, provided they are air-tight and kept serviceable by proper repairs.

A longitudinal pleat shall be provided in the blanket to permit shrinkage where the width of the blanket is sufficient to cover the entire surface. The pleat will not be required where separate strips are used for the edges. Joints in the blanket shall be sewn or cemented together in such a manner that they will not separate during use.

(2) Polyethylene Sheeting Method. The surface of the concrete shall be covered with white polyethylene sheeting as soon as the concrete has hardened sufficiently to prevent marring the surface. The surface of the concrete shall be wetted immediately before the sheeting is placed. The edges of the sheeting shall be weighted securely with a continuous windrow of earth or any other means satisfactory to the Engineer to provide an air-tight cover. Adjoining sheets shall overlap not less than 12 in. (300 mm) and the laps shall be securely weighted with earth, or any other means satisfactory to the Engineer, to provide an air tight cover.

For surface and base course concrete, the polyethylene sheets shall be not less than 100 ft (30 m) in length nor longer than can be conveniently handled, and shall be of such width that, when in place, they will cover the full width of the surface, including the edges, except that separate strips may be used to cover the edges. Any tears or holes in the sheeting shall be repaired. When sheets are no longer serviceable as a single unit, the Contractor may select from such sheets and reuse those which will serve for further applications, provided two sheets are used as a single unit; however, the double sheet units will be rejected when the Engineer deems that they no longer provide an air tight cover.

(3) Wetted Burlap Method. The surface of the concrete shall be covered with wetted burlap blankets as soon as the concrete has hardened sufficiently to prevent marring the surface. The blankets shall overlap 6 in. (150 mm). At least two layers of wetted burlap shall be placed on the finished surface. The burlap shall be kept saturated by means of a mechanically operated sprinkling system. In place of the sprinkling system, at the Contractor's option, two layers of burlap covered with impermeable covering shall be used. The burlap shall be kept saturated with water. Plastic coated burlap may be substituted for one layer of burlap and impermeable covering.

The blankets shall be placed so that they are in contact with the edges of the concrete, and that portion of the material in contact with the edges shall be kept saturated with water.

(4) Membrane Curing Method. Membrane curing will not be permitted where a protective coat, concrete sealer, or waterproofing is to be applied, or at areas where rubbing or a normal finish is required, or at construction joints other than those necessary in pavement or base course. Concrete at these locations shall be cured by another method specified in Article 1020.13(a).

After the concrete has been finished and the water sheen has disappeared from the surface, the concrete shall be immediately sealed with membrane curing compound of the type specified. The seal shall be maintained for the specified curing period. The edges of the concrete shall, likewise, be sealed immediately after the forms are removed. Two separate applications, applied at least one minute apart, each at the rate of not less than 1 gal/250 sq ft (0.16 L/sq m) will be required upon the surfaces and edges of the concrete. These applications shall be made with the mechanical equipment specified. Type III compound shall be agitated immediately before and during the application.

At locations where the coating is discontinuous or where pin holes show or where the coating is damaged due to any cause and on areas adjacent to sawed joints, immediately after sawing is completed, an additional coating of membrane curing compound shall be applied at the above specified rate. The equipment used may be of the same type as that used for coating variable widths of pavement. Before the additional coating is applied adjacent to sawed joints, the cut faces of the joint shall be protected by inserting a suitable flexible material in the joint, or placing an

adhesive width of impermeable material over the joint, or by placing the permanent sealing compound in the joint. Material, other than the permanent sealing compound, used to protect cut faces of the joint, shall remain in place for the duration of the curing period. In lieu of applying the additional coating, the area of the sawed joint may be cured according to any other method permitted.

When rain occurs before an application of membrane curing compound has dried, and the coating is damaged, the Engineer may require another application be made in the same manner and at the same rate as the original coat. The Engineer may order curing by another method specified, if unsatisfactory results are obtained with membrane curing compound.

(5) Wetted Cotton Mat Method. After the surface of concrete has been textured or finished, it shall be covered immediately with dry or damp cotton mats. The cotton mats shall be placed in a manner which will not mar the concrete surface. A texture resulting from the cotton mat material is acceptable. The cotton mats shall then be wetted immediately and thoroughly soaked with a gentle spray of water. For bridge decks, a foot bridge shall be used to place and wet the cotton mats.

The cotton mats shall be maintained in a wetted condition until the concrete has hardened sufficiently to place soaker hoses without marring the concrete surface. The soaker hoses shall be placed on top of the cotton mats at a maximum 4 ft (1.2 m) spacing. The cotton mats shall be kept wet with a continuous supply of water for the remainder of the curing period. Other continuous wetting systems may be used if approved by the Engineer.

After placement of the soaker hoses, the cotton mats shall be covered with white polyethylene sheeting or burlap-polyethylene blankets.

For construction items other than bridge decks, soaker hoses or a continuous wetting system will not be required if the alternative method keeps the cotton mats wet. Periodic wetting of the cotton mats is acceptable.

For areas inaccessible to the cotton mats on bridge decks, curing shall be according to Article 1020.13(a)(3).

(b) Removing and Replacing Curing Covering. When curing methods specified above in Article 1020.13(a), (1), (2), or (3) are used for concrete pavement, the curing covering for each day's paving shall be removed to permit testing of the pavement surface with a profilograph or straightedge, as directed by the Engineer.

Immediately after testing, the surface of the pavement shall be wetted thoroughly and the curing coverings replaced. The top surface and the edges of the concrete shall not be left unprotected for a period of more than 1/2 hour.

(c) Protection of Concrete, Other Than Structures, From Low Air Temperatures. When the official National Weather Service forecast for the construction area predicts a low of 32 °F (0 °C), or lower, or if the actual temperature drops to 32 °F (0 °C), or lower, concrete less than 72 hours old shall be provided at least the following protection.

Minimum Temperature	Protection
25 – 32 °F (-4 – 0 °C)	Two layers of polyethylene sheeting, one layer of polyethylene and one layer of burlap, or two layers of waterproof paper.
Below 25 °F (-4 °C)	6 in. (150 mm) of straw covered with one layer of polyethylene sheeting or waterproof paper.

These protective covers shall remain in place until the concrete is at least 96 hours old. When straw is required on pavement cured with membrane curing compound, the compound shall be covered with a layer of burlap, polyethylene sheeting or waterproof paper before the straw is applied.

After September 15, there shall be available to the work within four hours, sufficient clean, dry straw to cover at least two days production. Additional straw shall be provided as needed to afford the protection required. Regardless of the precautions taken, the Contractor shall be responsible for protection of the concrete placed and any concrete damaged by cold temperatures shall be removed and replaced.

(d) Protection of Concrete Structures From Low Air Temperatures. When the official National Weather Service forecast for the construction area predicts a low below 45 °F (7 °C), or if the actual temperature drops below 45 °F (7 °C), concrete less than 72 hours old shall be provided protection. Concrete shall also be provided protection when placed during the winter period of December 1 through March 15. Concrete shall not be placed until the materials, facilities, and equipment for protection are approved by the Engineer.

When directed by the Engineer, the Contractor may be required to place concrete during the winter period. When winter construction is specified, the Contractor shall proceed with the construction, including excavation, pile driving, concrete, steel erection, and all appurtenant work required for the complete construction of the item, except at times when weather conditions make such operations impracticable.

Regardless of the precautions taken, the Contractor shall be responsible for protection of the concrete placed and any concrete damaged by cold temperatures shall be removed and replaced.

(1) Protection Method I. The concrete shall be completely covered with insulating material such as fiberglass, rock wool, or other approved commercial insulating material having the minimum thermal resistance R, as defined in ASTM C 168, for

the corresponding minimum dimension of the concrete unit being protected as shown in the following table.

Minimum Pour Dimension		Thermal Resistance R
in.	(mm)	
6 or less	(150 or less)	R=16
> 6 to 12	(> 150 to 300)	R=10
> 12 to 18	(> 300 to 450)	R=6
> 18	(> 450)	R=4

The insulating material manufacturer shall clearly mark the insulating material with the thermal resistance R value.

The insulating material shall be completely enclosed on sides and edges with an approved waterproof liner and shall be maintained in a serviceable condition. Any tears in the liner shall be repaired in a manner approved by the Engineer. The Contractor shall provide means for checking the temperature of the surface of the concrete during the protection period.

On formed surfaces, the insulating material shall be attached to the outside of the forms with wood cleats or other suitable means to prevent any circulation of air under the insulation and shall be in place before the concrete is placed. The blanket insulation shall be applied tightly against the forms. The edges and ends shall be attached so as to exclude air and moisture. If the blankets are provided with nailing flanges, the flanges shall be attached to the studs with cleats. Where tie rods or reinforcement bars protrude, the areas adjacent to the rods or bars shall be adequately protected in a manner satisfactory to the Engineer. Where practicable, the insulation shall overlap any previously placed concrete by at least 1 ft (300 mm). Insulation on the underside of floors on steel members shall cover the top flanges of supporting members. On horizontal surfaces, the insulating material shall be placed as soon as the concrete has set, so that the surface will not be marred and shall be covered with canvas or other waterproof covering. The insulating material shall remain in place for a period of seven days after the concrete is placed.

The Contractor may remove the forms, providing the temperature is 35 °F (2 °C) and rising and the Contractor is able to wrap the particular section within two hours from the time of the start of the form removal. The insulation shall remain in place for the remainder of the seven days curing period.

(2) Protection Method II. The concrete shall be enclosed in adequate housing and the air surrounding the concrete kept at a temperature of not less than 50 °F (10 °C) nor more than 80 °F (27 °C) for a period of seven days after the concrete is placed. The Contractor shall provide means for checking the temperature of the surface of the concrete or air temperature within the housing during the protection period. All exposed surfaces within the housing shall be cured according to the Index Table.

The Contractor shall provide adequate fire protection where heating is in progress and such protection shall be accessible at all times. The Contractor shall maintain labor to keep the heating equipment in continuous operation.

At the close of the heating period, the temperature shall be decreased to the approximate temperature of the outside air at a rate not to exceed 15 °F (8 °C) per 12 hour period, after which the housing maybe removed. The surface of the concrete shall be permitted to dry during the cooling period.

(3) Protection Method III. As soon as the surface is sufficiently set to prevent marring, the concrete shall be covered with 12 in. (300 mm) of loose, dry straw followed by a layer of impermeable covering. The edges of the covering shall be sealed to prevent circulation of air and prevent the cover from flapping or blowing. The protection shall remain in place until the concrete is seven days old. If construction operations require removal, the protection removed shall be replaced immediately after completion or suspension of such operations.

1020.14 Temperature Control for Placement. Temperature control for concrete placement shall be according to the following.

(a) Concrete other than Structures. Concrete may be placed when the air temperature is above 35 °F (2 °C) and rising, and concrete placement shall stop when the falling temperature reaches 40 °F (4 °C) or below, unless otherwise approved by the Engineer.

The temperature of concrete immediately before placement shall be a minimum of 50 °F (10 °C) and a maximum of 90 °F (32 °C). If concrete is pumped, the temperature of the concrete as placed in the forms shall be a minimum of 50 °F (10 °C) and a maximum of 90 °F (32 °C). A maximum concrete temperature shall not apply to Class PP concrete.

(b) Concrete in Structures. Concrete may be placed when the air temperature is above 40 °F (4 °C) and rising, and concrete placement shall stop when the falling temperature reaches 45 °F (7 °C) or below, unless otherwise approved by the Engineer.

The temperature of the concrete immediately before placement shall be a minimum of 50 °F (10 °C) and a maximum of 90 °F (32 °C). If concrete is pumped, the temperature of the concrete as placed in the forms shall be a minimum of 50 °F (10 °C) and a maximum of 90 °F (32 °C).

When insulated forms are used, the maximum temperature of the concrete mixture immediately before placement shall be 80 °F (25 °C).

When concrete is placed in contact with previously placed concrete, the temperature of the mixed concrete may be increased to 80 °F (25 °C) by the Contractor to offset anticipated heat loss.

(c) All Classes of Concrete. Aggregates and water shall be heated or cooled uniformly and as necessary to produce concrete within the specified temperature limits. No frozen aggregates shall be used in the concrete.

(d) Temperature. The concrete temperature shall be determined according to Illinois Modified AASHTO T 309.

1020.15 Heat of Hydration Control for Concrete Structures. The Contractor shall control the heat of hydration for concrete structures when the least dimension for a drilled shaft, foundation, footing, substructure, or superstructure concrete pour exceeds 5.0 ft (1.5 m). The work shall be according to the following.

(a) Temperature Restrictions. The maximum temperature of the concrete after placement shall not exceed 150 °F (66 °C). The maximum temperature differential between the internal concrete core and concrete 2 to 3 in. (50 to 75 mm) from the exposed surface shall not exceed 35 °F (19 °C). The Contractor shall perform temperature monitoring to ensure compliance with the temperature restrictions.

(b) Thermal Control Plan. The Contractor shall provide a thermal control plan a minimum of 28 calendar days prior to concrete placement for review by the Engineer. Acceptance of the thermal control plan by the Engineer shall not preclude the Contractor from specification compliance, and from preventing cracks in the concrete. At a minimum, the thermal control plan shall provide detailed information on the following requested items and shall comply with the specific specifications indicated for each item.

(1) Concrete mix design(s) to be used. Grout mix design if post-cooling with embedded pipe.

The mix design requirements in Articles 1020.04 and 1020.05 shall be revised to include the following additional requirements to control the heat of hydration.

a. The concrete mixture shall be uniformly graded and preference for larger size aggregate shall be used in the mix design. Article 1004.02(d)(2) and information in the "Portland Cement Concrete Level III Technician Course – Manual of Instructions for Design of Concrete Mixtures" shall be used to develop the uniformly graded mixture.

b. The following shall apply to all concrete except Class DS concrete or when self-consolidating concrete is desired. For central-mixed concrete, the Contractor shall have the option to develop a mixture with a minimum of 520 lbs/cu yd (309 kg/cu m) of cement and finely divided minerals summed together. For truck-mixed or shrink-mixed concrete, the Contractor shall have the option to develop a mixture with a minimum of 550 lbs/cu yd (326 kg/cu m) of cement and finely divided minerals summed together. A water-reducing or high range water-reducing admixture shall be used in the central mixed, truck-mixed or shrink-mixed concrete mixture. For any mixture to be placed underwater, the minimum

cement and finely divided minerals shall be 550 lbs/cu yd (326 kg/cu m) for central-mixed concrete, and 580 lbs/cu yd (344 kg/cu m) for truck-mixed or shrink-mixed concrete.

For Class DS concrete, CA 11 may be used. If CA 11 is used, the Contractor shall have the option to develop a mixture with a minimum cement and finely divided minerals of 605 lbs/cu yd (360 kg/cu m) summed together. If CA 11 is used and either Class DS concrete is placed underwater or a self-consolidating concrete mixture is desired, the Contractor shall have the option to develop a mixture with a minimum cement and finely divided minerals of 635 lbs/cu yd (378 kg/cu m) summed together.

c. The minimum portland cement content in the mixture shall be 375 lbs/cu yd (222 kg/cu m). When the total of organic processing additions, inorganic processing additions, and limestone addition exceed 5.0 percent in the cement, the minimum portland cement content in the mixture shall be 400 lbs/cu yd (237 kg/cu m). For a drilled shaft, foundation, footing, or substructure, the minimum portland cement may be reduced to as low as 330 lbs/cu yd (196 kg/cu m) if the concrete has adequate freeze/thaw durability. The Contractor shall provide freeze/thaw test results according to AASHTO T 161 Procedure A or B, and the relative dynamic modulus of elasticity of the mix design shall be a minimum of 80 percent. Freeze/thaw testing will not be required for concrete that will not be exposed to freezing and thawing conditions as determined by the Engineer.

d. The maximum cement replacement with fly ash shall be 40.0 percent. The maximum cement replacement with ground granulated blast-furnace slag shall be 65.0 percent. When cement replacement with ground granulated blast-furnace slag exceeds 35.0 percent, only Grade 100 shall be used.

e. The mixture may contain a maximum of two finely divided minerals. The finely divided mineral in portland-pozzolan cement or portland blast-furnace slag cement shall count toward the total number of finely divided minerals allowed. The finely divided minerals shall constitute a maximum of 65.0 percent of the total cement plus finely divided minerals. The fly ash portion shall not exceed 40.0 percent. The ground granulated blast-furnace slag portion shall not exceed 65.0 percent. The microsilica or high-reactivity metakaolin portion used together or separately shall not exceed 5.0 percent.

f. The time to obtain the specified strength may be increased to a maximum 56 days, provided the curing period specified in Article 1020.13 is increased to a minimum of 14 days.

The minimum grout strength for filling embedded pipe shall be as specified for the concrete, and testing shall be according to AASHTO T 106.

(2) The selected mathematical method for evaluating heat of hydration thermal effects, which shall include the calculated adiabatic temperature rise, calculated maximum concrete temperature, and calculated maximum temperature differential between the internal concrete core and concrete 2 to 3 in. (50 to 75 mm) from the exposed surface. The time when the maximum concrete temperature and maximum temperature differential will occur is required if the time frame will be more than seven days.

Acceptable mathematical methods include ACI 207.2R "Report on Thermal and Volume Change Effects on Cracking of Mass Concrete" as well as other proprietary methods. The Contractor shall perform heat of hydration testing on the cement and finely divided minerals to be used in the concrete mixture. The test shall be according to ASTM C 186 or other applicable test methods, and the result for heat shall be used in the equation to calculate adiabatic temperature rise.

The Contractor has the option to propose a higher maximum temperature differential between the internal concrete core and concrete 2 to 3 in. (50 to 75 mm) from the exposed surface, but the proposed value shall not exceed 50 °F (10 °C). In addition, based on strength gain of the concrete, multiple maximum temperature differentials at different times may be proposed. The proposed value shall be justified through a mathematical method.

(3) Proposed maximum concrete temperature or temperature range prior to placement.

Article 1020.14 shall apply except a minimum 40 °F (10 °C) concrete temperature will be permitted.

(4) Pre-cooling, post-cooling, and surface insulation methods that will be used to ensure the concrete will comply with the specified maximum temperature and specified or proposed temperature differential. For reinforcement that extends beyond the limits of the pour, the Contractor shall indicate if the reinforcement is required to be covered with insulation.

Refer to ACI 207.4R "Cooling and Insulating Systems for Mass Concrete" for acceptable methods that will be permitted. A copy of the ACI document shall be provided to the Engineer at the construction site. If embedded pipe is used for post-cooling, the material shall be polyvinyl chloride or polyethylene. The embedded pipe system shall be properly supported, and the Contractor shall subsequently inspect glued joints to ensure they are able to withstand free falling concrete. The embedded pipe system shall be leak tested after inspection of the glued joints, and prior to the concrete placement. The leak test shall be performed at maximum service pressure or higher for a minimum of 15 minutes. All leaks shall be repaired. The embedded pipe cooling water may be from natural sources such as streams and rivers, but shall be filtered to prevent system stoppages. When the embedded pipe is no longer needed, the surface connections to the pipe shall be removed to a depth of 4 in. (100 mm) below the surface of the concrete. The remaining pipe shall be

completely filled with grout. The 4 in. (100 mm) deep concrete hole shall be filled with nonshrink grout. Form and insulation removal shall be done in a manner to prevent cracking and ensure the maximum temperature differential is maintained. Insulation shall be in good condition as determined by the Engineer and properly attached.

(5) Dimensions of each concrete pour, location of construction joints, placement operations, pour pattern, lift heights, and time delays between lifts.

Refer to ACI 207.1R "Guide to Mass Concrete" for acceptable placement operations that will be permitted. A copy of the ACI document shall be provided to the Engineer at the construction site.

(6) Type of temperature monitoring system, the number of temperature sensors, and location of sensors.

A minimum of two independent temperature monitoring systems and corresponding sensors shall be used.

The temperature monitoring system shall have a minimum temperature range of 32 °F (0 °C) to 212 °F (100 °C), an accuracy of ± 2 °F (± 1 °C), and be able to automatically record temperatures without external power. Temperature monitoring shall begin once the sensor is encased in concrete, and with a maximum interval of one hour. Temperature monitoring may be discontinued after the maximum concrete temperature has been reached, post-cooling is no longer required, and the maximum temperature differential between the internal concrete core and the ambient air temperature does not exceed 35 °F (19 °C). The Contractor has the option to select a higher maximum temperature differential, but the proposed value shall not exceed 50 °F (28 °C). The proposed value shall be justified through a mathematical method.

At a minimum, a temperature sensor shall be located at the theoretical hottest portion of the concrete, normally the geometric center, and at the exterior face that will provide the maximum temperature differential. At the exterior face, the sensor shall be located 2 to 3 in. (50 to 75 mm) from the surface of the concrete. Sensors shall also be located a minimum of 1 in. (25 mm) away from reinforcement, and equidistant between cooling pipes if either applies. A sensor will also be required to measure ambient air temperature. The entrant/exit cooling water temperature for embedded pipe shall also be monitored.

Temperature monitoring results shall be provided to the Engineer a minimum of once each day and whenever requested by the Engineer. The report may be electronic or hard copy. The report shall indicate the location of each sensor, the temperature recorded, and the time recorded. The report shall be for all sensors and shall include ambient air temperature and entrant/exit cooling water temperatures. The temperature data in the report may be provided in tabular or graphical format, and the report shall indicate any corrective actions during the monitoring period. At the

completion of the monitoring period, the Contractor shall provide the Engineer a final report that includes all temperature data and corrective actions.

(7) Indicate contingency operations to be used if the maximum temperature or temperature differential of the concrete is reached after placement.

(c) Temperature Restriction Violations. If the maximum temperature of the concrete after placement exceeds 150 °F (66 °C), but is less than 158 °F (70 °C), the concrete will be accepted if no cracking or other unacceptable defects are identified. If cracking or unacceptable defects are identified, Article 105.03 shall apply. If the concrete temperature exceeds 158 °F (70 °C), Article 105.03 shall apply.

If a temperature differential between the internal concrete core and concrete 2 to 3 in. (50 to 75 mm) from the exposed surface exceeds the specified or proposed maximum value allowed, the concrete will be accepted if no cracking or other unacceptable defects are identified. If unacceptable defects are identified, Article 105.03 shall apply.

When the maximum 150 °F (66 °C) concrete temperature or the maximum allowed temperature differential is violated, the Contractor shall implement corrective action prior to the next pour. In addition, the Engineer reserves the right to request a new thermal control plan for acceptance before the Contractor is allowed to pour again.

(d) Inspection and Repair of Cracks. The Engineer will inspect the concrete for cracks after the temperature monitoring is discontinued, and the Contractor shall provide access for the Engineer to do the inspection. A crack may require repair by the Contractor as determined by the Engineer. The Contractor shall be responsible for the repair of all cracks. Protective coat or a concrete sealer shall be applied to a crack less than 0.007 in. (0.18 mm) in width. A crack that is 0.007 in. (0.18 mm) or greater shall be pressure injected with epoxy according to Section 590.

80279

PORTLAND CEMENT CONCRETE SIDEWALK (BDE)

Effective: January 1, 2012

Revise Article 424.07 of the Standard Specifications to read:

"**424.07 Expansion Joints.** Expansion joints shall be 1/2 in. (13 mm) thick and consist of preformed joint filler. The top of the joint filler shall be 1/4 in. (6 mm) below the surface of the sidewalk.

Expansion joints shall be placed in locations as follows.

(a) Expansion joints shall be placed between the sidewalk and all structures such as light poles, traffic signal poles, traffic poles and subway columns, which extend through the sidewalk.

(b) Transverse expansion joints shall be placed at maximum intervals of 50 ft (15 m) in the sidewalk. Where the sidewalk is constructed adjacent to pavement or curb having expansion joints, the expansion joints in the sidewalk shall be placed in line with the adjacent expansion joints as nearly as practicable.

(c) Expansion joints shall also be placed where the sidewalk abuts existing sidewalks, between driveway pavement and sidewalk, and between sidewalk accessibility ramps and curbs where the ramp abuts a curb."

80280

QUALITY CONTROL/QUALITY ASSURANCE OF CONCRETE MIXTURES (BDE)

Effective: January 1, 2012

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.

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 beam strength specimens may be cured in the same tank.

(2) Comparing Test Results. Differences between the Engineer's and the Contractor's split sample test results will not be considered extreme 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)
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, 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, or aggregate gradation split sample retest result is a failure; or if either the Engineer's or Contractor's strength 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, and jobsite air content; 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 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, and jobsite air content; 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 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/final revolution counter reading, at the jobsite, if the mixture is truck-mixed; time discharged at the jobsite; total amount of each admixture added at the jobsite; total amount of water added at the jobsite; and total amount of cement added at the jobsite if the air content needed adjustment.

(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 [1/]
Aggregates (Arriving at Plant)	Gradation [2/]	As needed to check source for each gradation number	T 2, T 11, T 27, and T 248
Aggregates (Stored at Plant in Stockpiles or Bins)	Gradation [2/]	2,500 cu yd (1,900 cu m) for each gradation number [3/]	T 2, T 11, T 27, and T 248
Aggregates (Stored at Plant in Stockpiles or Bins)	Moisture [4/]: Fine Aggregate	Once per week for moisture sensor, otherwise daily for each gradation number	Flask, Dunagan, Pychnometer Jar, or T 255
	Moisture [4/]: Coarse Aggregate	As needed to control production for each gradation number	Dunagan, Pychnometer Jar, or T 255
Mixture [5/]	Slump, Air Content, Unit Weight / Yield, and Temperature	As needed to control production	T 141 and T 119 T 141 and T 152 or T 196 T 141 and T 121 T 141 and T 309

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, using the Dunagan or Illinois Modified AASHTO T 255 test method. 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; or other tests at the plant to control mixture production.

SCHEDULE B

CONTRACTOR JOBSITE SAMPLING & TESTING [1/]			
Item	Measured Property	Random Sample Testing Frequency per Mix Design and per Plant [2/]	IL Modified AASHTO Test Method
Pavement, Shoulder, Base Course, Base Course Widening, Driveway Pavement, Railroad Crossing, Cement Aggregate Mixture II	Slump [3/ 4/]	1 per 500 cu yd (400 cu m) or minimum 1/day	T 141 and T 119
	Air Content [3/ 5/ 6/]	1 per 100 cu yd (80 cu m) or minimum 1/day	T 141 And T 152 or T 196
	Compressive Strength [7/ 8/] or Flexural Strength [7/ 8/]	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 [9/], Bridge Deck [9/], Bridge Deck Overlay [9/], Superstructure [9/], Substructure, Culvert, Miscellaneous Drainage Structures, Retaining Wall, Building Wall, Drilled Shaft Pile & Encasement Footing, Foundation, Pavement Patching, Structural Repairs	Slump [3/ 4/]	1 per 50 cu yd (40 cu m) or minimum 1/day	T 141 and T 119
	Air Content [3/ 5/ 6/]	1 per 50 cu yd (40 cu m) or minimum 1/day	T 141 And T 152 or T 196
	Compressive Strength [7/ 8/] or Flexural Strength [7/ 8/]	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 [3/]	1 per 250 cu yd (200 cu m) or minimum 1/day	T 141 and T 119
	Air Content [3/ 6/]	As needed to control production	T 141 And T 152 or T 196
	Compressive Strength [7/ 8/] or Flexural Strength [7/ 8/]	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 [1/]			
Curb, Gutter, Median, Barrier, Sidewalk, Slope Wall, Paved Ditch, Fabric Formed Concrete Revetment Mat [10/], Miscellaneous Items, Incidental Items	Slump [3/ 4/]	1 per 100 cu yd (80 cu m) or minimum 1/day	T 141 and T 119
	Air Content [3/ 5/ 6/]	1 per 50 cu yd (40 cu m) or minimum 1/day	T 141 And T 152 or T 196
	Compressive Strength [7/ 8/] or Flexural Strength [7/ 8/]	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
All	Temperature [3/]	As needed to control production	T 141 and T 309
Controlled Low-Strength Material (CLSM)	Flow, Air Content and Compressive Strength	As needed to control production	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.

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. 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. 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 conveyored. 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 or more, 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.

If the Contractor's or Engineer's air content or slump test result is not within the specification limits, all subsequent truck loads delivered shall be tested by the Contractor until the problem is corrected.

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 at least two cylinder or two beam breaks for field tests.

8/ In addition to the strength test, an air test, slump test, and temperature test shall be performed on the same sample. For mixtures pumped or conveyored, 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.

SCHEDULE C

ENGINEER QUALITY ASSURANCE INDEPENDENT SAMPLE TESTING		
Location	Measured Property	Testing Frequency [1/]
Plant	Gradation of aggregates stored in stockpiles or bins, Slump and Air Content	As determined by the Engineer.
Jobsite	Slump, Air Content and Strength	As determined by the Engineer.

ENGINEER QUALITY ASSURANCE SPLIT SAMPLE TESTING		
Location	Measured Property	Testing Frequency [1/]
Plant	Gradation of aggregates stored in stockpiles or bins [2/]	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 [2/] and Air Content [2/ 3/]	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.
	Strength [2/]	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.

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

REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES (BDE)

Effective: January 1, 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 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

SELF-CONSOLIDATING CONCRETE FOR PRECAST AND PRECAST PRESTRESSED PRODUCTS (BDE)

Effective: July 1, 2004
Revised: April 1, 2012

Description. This work shall consist of constructing precast and precast prestressed concrete products with self-consolidating concrete. The concrete shall be according to the special provision, "Portland Cement Concrete", except as modified herein.

Definition. Self-consolidating concrete is a flowable mixture that does not require mechanical vibration for consolidation.

Mix Design Criteria. Article 1020.04 shall apply, except as follows:

(a) If the maximum cement factor is not specified for the product, it shall not exceed 7.05 cwt/cu yd (418 kg/cu m).

(b) If the maximum allowable water/cement ratio is not specified for the product, it shall not exceed 0.44.

(c) The slump requirements shall not apply.

(d) The concrete mixture shall be uniformly graded, and information in the "Portland Cement Concrete Level III Technician Course – Manual of Instructions for Design of Concrete Mixtures" shall be used to develop the uniformly graded mix design. The coarse aggregate gradations shall be CA 11, CA 13, CA 14, CA 16, or a blend of these gradations. However, the final gradation when using a single coarse aggregate or combination of coarse aggregates shall have 100 percent pass the 1 in. (25 mm) sieve, and 95 percent pass the 3/4 in. (19 mm) sieve. The fine aggregate proportion shall be a maximum 50 percent by weight (mass) of the total aggregate used.

(e) The slump flow range shall be 22 in. (560 mm) minimum to 28 in. (710 mm) maximum.

(f) The visual stability index shall be a maximum of 1.

(g) The J-ring value shall be a maximum of 2 in. (50 mm).

(h) The L-box blocking ratio shall be a minimum of 80 percent.

(i) The hardened visual stability index shall be a maximum of 1.

Test Methods. Illinois Test Procedures SCC-1, SCC-2, SCC-3, SCC-4, SCC-6, SCC-8, (Option C) and Illinois Modified AASHTO T 22, 23, 121, 141, 152, 196, and 309 shall be used for testing of self-consolidating mixtures.

Mixing Portland Cement Concrete. In addition to Article 1020.11, the mixing time for central-mixed concrete shall not be reduced as a result of a mixer performance test. Truck-mixed concrete shall be mixed in a truck mixer for a minimum of 100 revolutions.

The batch sequence, mixing speed, and mixing time shall be appropriate to prevent cement balls and mix foaming for central-mixed and truck-mixed concrete.

Concrete Placement for Precast Products. The maximum distance of horizontal flow from the point of deposit shall not exceed 25 ft (7.6 m) for precast products. However, when the maximum distance of horizontal flow from the point of discharge exceeds 15 ft (4.6 m), the dynamic segregation index shall be a maximum 10.0 percent. If the maximum is exceeded, the maximum distance of horizontal flow from the point of deposit will not be allowed to exceed 15 ft (4.6 m).

Concrete Placement for Precast Prestressed Products. The maximum distance of horizontal flow from the point of deposit shall not exceed 15 ft (4.6 m) for precast prestressed products. In addition, the placement operation shall be moved as required to ensure the leading edge of the flowing concrete does not exceed 15 ft (4.6 m). For a bed of beams, a single beam shall be completely filled with concrete before placement of concrete in the next beam. For deck beams with void tubes installed in place prior to the pour, the concrete shall be placed on one side of the void tube until the concrete flows completely under the void tube to the other side. Once this has been completed, the concrete placement operation may be moved to the other side.

Consolidation. Concrete shall be rodded with a piece of lumber, conduit, or vibrator if the material has lost its fluidity prior to placement of additional concrete. The vibrator will be permitted if it can be used in a manner that does not cause coarse aggregate separation from the mortar as determined by the Engineer. Any other method for restoring the fluidity of the concrete shall be approved by the Engineer.

80132

STEEL COST ADJUSTMENT (BDE) (RETURN FORM WITH BID)

Effective: April 2, 2004
Revised: April 1, 2009

Description. Steel cost adjustments will be made to provide additional compensation to the Contractor, or a credit to the Department, for fluctuations in steel prices when optioned by the Contractor. The bidder shall indicate on the attached form whether or not this special provision will be part of the contract and submit the completed form with his/her bid. Failure to submit the form or failure to indicate contract number, company name, and sign and date the form shall make this contract exempt of steel cost adjustments for all items of steel. Failure to indicate "Yes" for any item of work will make that item of steel exempt from steel cost adjustment.

Types of Steel Products. An adjustment will be made for fluctuations in the cost of steel used in the manufacture of the following items:

Metal Piling (excluding temporary sheet piling)
Structural Steel
Reinforcing Steel

Other steel materials such as dowel bars, tie bars, mesh reinforcement, guardrail, steel traffic signal and light poles, towers and mast arms, metal railings (excluding wire fence), and frames and grates will be subject to a steel cost adjustment when the pay items they are used in has a contract value of $10,000 or greater.

Documentation. Sufficient documentation shall be furnished to the Engineer to verify the following:

(a) The dates and quantity of steel, in lb (kg), shipped from the mill to the fabricator.

(b) The quantity of steel, in lb (kg), incorporated into the various items of work covered by this special provision. The Department reserves the right to verify submitted quantities.

Method of Adjustment. Steel cost adjustments will be computed as follows:

$SCA = Q \times D$

Where: SCA = steel cost adjustment, in dollars
Q = quantity of steel incorporated into the work, in lb (kg)
D = price factor, in dollars per lb (kg)

$D = MPI_M - MPI_L$

Where: MPI_M = The Materials Cost Index for steel as published by the Engineering News-Record for the month the steel is shipped from the mill. The indices will be converted from dollars per 100 lb to dollars per lb (kg).

MPI_L = The Materials Cost Index for steel as published by the Engineering News-Record for the month prior to the letting. The indices will be converted from dollars per 100 lb to dollars per lb (kg).

The unit weights (masses) of steel that will be used to calculate the steel cost adjustment for the various items are shown in the attached table.

No steel cost adjustment will be made for any products manufactured from steel having a mill shipping date prior to the letting date.

If the Contractor fails to provide the required documentation, the method of adjustment will be calculated as described above; however, the MPI_M will be based on the date the steel arrives at the job site. In this case, an adjustment will only be made when there is a decrease in steel costs.

Basis of Payment. Steel cost adjustments may be positive or negative but will only be made when there is a difference between the MPI_L and MPI_M in excess of five percent, as calculated by:

$$\text{Percent Difference} = \{(MPI_L - MPI_M) \div MPI_L\} \times 100$$

Steel cost adjustments will be calculated by the Engineer and will be paid or deducted when all other contract requirements for the items of work are satisfied. Adjustments will only be made for fluctuations in the cost of the steel as described herein. No adjustment will be made for changes in the cost of manufacturing, fabrication, shipping, storage, etc.

The adjustments shall not apply during contract time subject to liquidated damages for completion of the entire contract.

Attachment

Item	Unit Mass (Weight)
Metal Piling (excluding temporary sheet piling)	
Furnishing Metal Pile Shells 12 in. (305 mm), 0.179 in. (3.80 mm) wall thickness)	23 lb/ft (34 kg/m)
Furnishing Metal Pile Shells 12 in. (305 mm), 0.250 in. (6.35 mm) wall thickness)	32 lb/ft (48 kg/m)
Furnishing Metal Pile Shells 14 in. (356 mm), 0.250 in. (6.35 mm) wall thickness)	37 lb/ft (55 kg/m)
Other piling	See plans
Structural Steel	See plans for weights (masses)
Reinforcing Steel	See plans for weights (masses)
Dowel Bars and Tie Bars	6 lb (3 kg) each
Mesh Reinforcement	63 lb/100 sq ft (310 kg/sq m)
Guardrail	
Steel Plate Beam Guardrail, Type A w/steel posts	20 lb/ft (30 kg/m)
Steel Plate Beam Guardrail, Type B w/steel posts	30 lb/ft (45 kg/m)
Steel Plate Beam Guardrail, Types A and B w/wood posts	8 lb/ft (12 kg/m)
Steel Plate Beam Guardrail, Type 2	305 lb (140 kg) each
Steel Plate Beam Guardrail, Type 6	1260 lb (570 kg) each
Traffic Barrier Terminal, Type 1 Special (Tangent)	730 lb (330 kg) each
Traffic Barrier Terminal, Type 1 Special (Flared)	410 lb (185 kg) each
Steel Traffic Signal and Light Poles, Towers and Mast Arms	
Traffic Signal Post	11 lb/ft (16 kg/m)
Light Pole, Tenon Mount and Twin Mount, 30 - 40 ft (9 – 12 m)	14 lb/ft (21 kg/m)
Light Pole, Tenon Mount and Twin Mount, 45 - 55 ft (13.5 – 16.5 m)	21 lb/ft (31 kg/m)
Light Pole w/Mast Arm, 30 - 50 ft (9 – 15.2 m)	13 lb/ft (19 kg/m)
Light Pole w/Mast Arm, 55 - 60 ft (16.5 – 18 m)	19 lb/ft (28 kg/m)
Light Tower w/Luminaire Mount, 80 - 110 ft (24 – 33.5 m)	31 lb/ft (46 kg/m)
Light Tower w/Luminaire Mount, 120 - 140 ft (36.5 – 42.5 m)	65 lb/ft (97 kg/m)
Light Tower w/Luminaire Mount, 150 - 160 ft (45.5 – 48.5 m)	80 lb/ft (119 kg/m)
Metal Railings (excluding wire fence)	
Steel Railing, Type SM	64 lb/ft (95 kg/m)
Steel Railing, Type S-1	39 lb/ft (58 kg/m)
Steel Railing, Type T-1	53 lb/ft (79 kg/m)
Steel Bridge Rail	52 lb/ft (77 kg/m)
Frames and Grates	
Frame	250 lb (115 kg)
Lids and Grates	150 lb (70 kg)

Return With Bid

ILLINOIS DEPARTMENT OF TRANSPORTATION

OPTION FOR STEEL COST ADJUSTMENT

The bidder shall submit this completed form with his/her bid. Failure to submit the form or properly complete contract number, company name, and sign and date the form shall make this contract exempt of steel cost adjustments for all items of steel. Failure to indicate "Yes" for any item of work will make that item of steel exempt from steel cost adjustment. After award, this form, when submitted shall become part of the contract.

Contract No.: _____

Company Name: _____

Contractor's Option:

Is your company opting to include this special provision as part of the contract plans for the following items of work?

Metal Piling	Yes	☐
Structural Steel	Yes	☐
Reinforcing Steel	Yes	☐
Dowel Bars, Tie Bars and Mesh Reinforcement	Yes	☐
Guardrail	Yes	☐
Steel Traffic Signal and Light Poles, Towers and Mast Arms	Yes	☐
Metal Railings (excluding wire fence)	Yes	☐
Frames and Grates	Yes	☐

Signature: _____ **Date:** _____

80127

SUBCONTRACTOR MOBILIZATION PAYMENTS (BDE)

Effective: April 2, 2005
Revised: April 1, 2011

To account for the preparatory work and operations necessary for the movement of subcontractor personnel, equipment, supplies, and incidentals to the project site and for all other work or operations that must be performed or costs incurred when beginning work approved for subcontracting according to Article 108.01 of the Standard Specifications, the Contractor shall make a mobilization payment to each subcontractor.

This mobilization payment shall be made at least 14 days prior to the subcontractor starting work. The amount paid shall be equal to 3 percent of the amount of the subcontract reported on form BC 260A submitted for the approval of the subcontractor's work.

The mobilization payment to the subcontractor is an advance payment of the reported amount of the subcontract and is not a payment in addition to the amount of the subcontract; therefore, the amount of the advance payment will be deducted from future progress payments.

This provision shall be incorporated directly or by reference into each subcontract approved by the Department.

80143

TEMPORARY EROSION AND SEDIMENT CONTROL (BDE)

Effective: January 1, 2012

Revise the first paragraph of Article 280.04(f) of the Standard Specifications to read:

"(f) Temporary Erosion Control Seeding. This system consists of seeding all erodible/bare areas to minimize the amount of exposed surface area. Seed bed preparation will not be required if the surface of the soil is uniformly smooth and in a loose condition. Light disking shall be done if the soil is hard packed or caked. Erosion rills greater than 1 in. (25 mm) in depth shall be filled and area blended with the surrounding soil. Fertilizer nutrients will not be required."

Delete the last sentence of Article 280.08(e) of the Standard Specifications.

80286

TRAFFIC CONTROL DEFICIENCY DEDUCTION (BDE)

Effective: August 1, 2011

Revise the third sentence of the third paragraph of Article 105.03(b) of the Standard Specifications to read:

"The daily monetary deduction will be $2,500."

80273

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 then clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the Illinois Department of Transportation and the Federal Highway Administration. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Except as otherwise noted below, the contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program. As approved by the Engineer, reimbursement will be made for training of persons in excess of the number specified herein. This reimbursement will be made even though the contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the contractor from receiving other reimbursement. Reimbursement for offsite training indicated above may only be made to the contractor where he does one or more of the following and the trainees are concurrently employed on a Federal-aid project; contributes to the cost of the training, provides the instruction to the trainee or pays the trainee's wages during the offsite training period.

No payment shall be made to the contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyman, is caused by the contractor and evidences a lack of good faith on the part of the contractor in meeting the requirement of this Training Special Provision. It is normally expected that a trainee will begin his training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in his work classification or until he has completed his training program.

It is not required that all trainees be on board for the entire length of the contract. A contractor will have fulfilled his responsibilities under this Training Special Provision if he has provided acceptable training to the number of trainees specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Trainees will be paid at least 60 percent of the appropriate minimum journeyman's rate specified in the contract for the first half of the training period, 75 percent for the third quarter of the training period, and 90 percent for the last quarter of the training period, unless apprentices or trainees in an approved existing program are enrolled as trainees on this project. In that case, the appropriate rates approved by the Departments of Labor or Transportation in connection with the existing program shall apply to all trainees being trained for the same classification who are covered by this Training Special Provision.

The contractor shall furnish the trainee a copy of the program he will follow in providing the training. The contractor shall provide each trainee with a certification showing the type and length of training satisfactorily complete.

The contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.

METHOD OF MEASUREMENT The unit of measurement is in hours.

BASIS OF PAYMENT This work will be paid for at the contract unit price of 80 cents per hour for TRAINEES. The estimated total number of hours, unit price and total price have been included in the schedule of prices.

20338

WARM MIX ASPHALT (BDE)

Effective: January 1, 2012

Description. This work shall consist of designing, producing and constructing Warm Mix Asphalt (WMA) in lieu of Hot Mix Asphalt (HMA) for N30, N50, and N70 mixtures at the Contractor's option. Work shall be according to Sections 406, 407, 408, 1030, and 1102 of the Standard Specifications, except as modified herein. In addition, any references to HMA in the Standard Specifications, or the special provisions shall be construed to include WMA.

WMA is an asphalt mixture which can be produced at temperatures lower than allowed for HMA utilizing approved WMA technologies. WMA technologies are defined as the use of additives or processes which allow a reduction in the temperatures at which HMA mixes are produced and placed. WMA is produced by the use of additives, a water foaming process, or combination of both. Additives include minerals, chemicals or organics incorporated into the asphalt binder stream in a dedicated delivery system. The process of foaming injects water into the asphalt binder stream, just prior to incorporation of the asphalt binder with the aggregate.

Approved WMA technologies may also be used in HMA provided all the requirements specified herein, with the exception of temperature, are met. However, asphalt mixtures produced at temperatures in excess of 275 °F (135 °C) will not be considered WMA when determining the grade reduction of the virgin asphalt binder grade.

Materials.

Add the following to Article 1030.02 of the Standard Specifications.

"(h) Warm Mix Asphalt (WMA) Technologies (Note 3)"

Add the following note to Article 1030.02 of the Standard Specifications.

"Note 3. Warm mix additives or foaming processes shall be selected from the current Bureau of Materials and Physical Research Approved List, "Warm-Mix Asphalt Technologies"."

Equipment.

Revise the first paragraph of Article 1102.01 of the Standard Specifications to read:

"**1102.01 Hot-Mix Asphalt Plant.** The hot-mix asphalt (HMA) plant shall be the batch-type, continuous-type, or dryer drum plant. The plants shall be evaluated for prequalification rating and approval to produce HMA according to the current Bureau of Materials and Physical Research Policy Memorandum, "Approval of Hot-Mix Asphalt Plants and Equipment". Once approved, the Contractor shall notify the Bureau of Materials and Physical Research to obtain approval of all plant modifications. The plants shall not be used to produce mixtures concurrently for more than one project or for private work unless permission is granted in writing by the Engineer. The plant units shall be so designed, coordinated and operated that they will

function properly and produce HMA having uniform temperatures and compositions within the tolerances specified. The plant units shall meet the following requirements."

Add the following to Article 1102.01(a) of the Standard Specifications.

"(13) Equipment for Warm Mix Technologies.

a. Foaming. Metering equipment for foamed asphalt shall have an accuracy of ± 2 percent of the actual water metered. The foaming control system shall be electronically interfaced with the asphalt binder meter.

b. Additives. Additives shall be introduced into the plant according to the supplier's recommendations and shall be approved by the Engineer. The system for introducing the WMA additive shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes."

Mix Design Verification.

Add the following to Article 1030.04 of the Standard Specifications.

"(d) 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. Additional mixture verification requirements include Hamburg Wheel testing according to Illinois Modified AASHTO T324 and tensile strength testing according to Illinois Modified AASHTO T283 which shall meet the criteria in Tables 1 and 2 respectively herein. The Contractor shall provide the additional material as follows:

a. Four gyratory specimens to be prepared in the Contractor's lab according to Illinois Modified AASHTO T324.

b. Sufficient mixture to conduct tensile strength testing according to Illinois Modified AASHTO T283.

Table 1. Illinois Modified AASHTO T324 Requirements [1/]

Asphalt Binder Grade	# Wheel Passes	Max Rut Depth in. (mm)
PG 76-XX	20,000	1/2 in. (12.5 mm)
PG 70-XX	15,000	1/2 in. (12.5 mm)
PG 64-XX	10,000	1/2 in. (12.5 mm)

PG 58-XX		

1/ Loose WMA shall be oven aged at 270 ± 5 °F (132 ± 3 °C) for two hours prior to gyratory compaction of Hamburg Wheel specimens.

Table 2. Tensile Strength Requirements

Asphalt Binder Grade	Tensile Strength psi (kPa)	
	Minimum	Maximum
PG 76-XX	80 (552)	200 (1379)
PG 70-XX		
PG 64-XX	60 (414)	200 (1379)"
PG 58-XX		

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 mix of a new mixture design, at the beginning of each production season, and at every plant utilized to produce mixtures, regardless of the mix."

Insert the following after the sixth paragraph of Article 1030.06(a) of the Standard Specifications:

"Warm mix technologies shall be as follows.

(1) 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 and tensile strength testing according to Illinois Modified AASHTO T283 (approximately 110 lb (50 kg) total).

(2) Upon completion of the start-up, WMA production shall cease. The Contractor may revert to HMA production provided a start-up has been previously completed for the current construction season for the mix design. WMA may resume once all the test results, including Hamburg Wheel results are completed and found acceptable by the Engineer."

Add the following after the first paragraph of Article 1030.05(d)(2)c. of the Standard Specifications:

"During production of each WMA mixture or HMA utilizing WMA technologies, the Engineer will request a minimum of one randomly located sample, identified by the Engineer, for Hamburg Wheel testing to determine compliance with the requirements specified in Table 1 herein."

Quality Control/Quality Assurance Testing.

Revise the table in Article 1030.05(d)(2)a. of the Standard Specifications to read:

Parameter	Frequency of Tests High ESAL Mixture Low ESAL Mixture	Frequency of Tests All Other Mixtures	Test Method See Manual of Test Procedures for Materials
Aggregate Gradation % passing sieves: 1/2 in. (12.5 mm), No. 4 (4.75 mm), No. 8 (2.36 mm), No. 30 (600 µm) No. 200 (75 µm) Note 1.	1 washed ignition oven test on the mix per half day of production Note 4.	1 washed ignition oven test on the mix per day of production Note 4.	Illinois Procedure
Asphalt Binder Content by Ignition Oven Note 2.	1 per half day of production	1 per day	Illinois-Modified AASHTO T 308
VMA Note 3.	Day's production ≥ 1200 tons: 1 per half day of production	N/A	Illinois-Modified AASHTO R 35
	Day's production < 1200 tons: 1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)		
Air Voids Bulk Specific Gravity of Gyratory Sample Note 5.	Day's production ≥ 1200 tons: 1 per half day of production	1 per day	Illinois-Modified AASHTO T 312
	Day's production < 1200 tons: 1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)		
Maximum Specific Gravity of Mixture	Day's production ≥ 1200 tons: 1 per half day of production	1 per day	Illinois-Modified AASHTO T 209

Parameter	Frequency of Tests High ESAL Mixture Low ESAL Mixture	Frequency of Tests All Other Mixtures	Test Method See Manual of Test Procedures for Materials
	Day's production < 1200 tons: 1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)		

Note 1. The No. 8 (2.36 mm) and No. 30 (600 µm) sieves are not required for All Other Mixtures.

Note 2. The Engineer may waive the ignition oven requirement for asphalt binder content if the aggregates to be used are known to have ignition asphalt binder content calibration factors which exceed 1.5 percent. If the ignition oven requirement is waived, other Department approved methods shall be used to determine the asphalt binder content.

Note 3. The G_{sb} used in the voids in the mineral aggregate (VMA) calculation shall be the same average G_{sb} value listed in the mix design.

Note 4. The Engineer reserves the right to require additional hot bin gradations for batch

Note 5. The WMA compaction temperature for mixture volumetric testing shall be 270 ± 5 °F (132 ± 3 °C) for quality control testing. The WMA compaction temperature for quality assurance testing will be 270 ± 5 °F (132 ± 3 °C) if the mixture is not allowed to cool to room temperature. If the mixture is allowed to cool to room temperature it shall be reheated to standard HMA compaction temperatures."

Construction Requirements.

Revise the second paragraph of Article 406.06(b)(1) of the Standard Specifications to read:

"The HMA shall be delivered at a temperature of 250 to 350 °F (120 to 175 °C). WMA shall be delivered at a minimum temperature of 215 °F (102 °C)."

Basis of Payment.

This work will be paid at the contract unit price bid for the HMA pay items involved. Anti-strip will not be paid for separately, but shall be considered as included in the cost of the work.

80288

WORKING DAYS (BDE)

Effective: January 1, 2002

The Contractor shall complete the work within **110** working days.

80071

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

ATTACHMENTS

A. Employment Preference for Appalachian Contracts (included in Appalachian contracts only)

I. GENERAL

1. These contract provisions shall apply to all word performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

Section I, paragraph 2;
Section IV, paragraphs 1, 2, 3, 4 and 7;
Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6 and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.

6. Selection of Labor: During the performance of this contract, the contractor shall not:

a. Discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or
b. Employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630 and 41 CFR 60 (and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.
b. The contractor will accept as his operating policy the following statement: "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job-training."

2. EEO Officer: The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for an must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.
d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employees referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish which such identified sources procedures whereby minority group applicants may be referred

to the contractor for employment consideration.
b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)
c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.
b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.
c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.
b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.
c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.
d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or quailifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

8. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.
b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.
c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

9. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

a. The records kept by the contractor shall document the following:
(1) The number of minority and non-minority group members and women employed in each work classification on the project;
(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;
(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and
(4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.
b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the

contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

III. NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of $10,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. General:

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

2. Classification:

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

(1) the work to be performed by the additional classification requested is not performed by a classification in the wage determination;

(2) the additional classification is utilized in the area by the construction industry;

(3) the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) with respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the question, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advised the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

3. Payment of Fringe Benefits:

a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as

appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any cost reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:

a. Apprentices:

(1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

(1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

(2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which cases such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV. 2. Any worker listed on a payroll at a helper wage rate, who is not a helper under a approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

5. Apprentices and Trainees (Programs of the U.S. DOT):

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

6. Withholding:

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainee's and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take

such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

7. Overtime Requirements:

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. Violation:

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. Withholding for Unpaid Wages and Liquidated Damages:

The SHA shall; upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

V. STATEMENTS AND PAYROLLS

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. Compliance with Copeland Regulations (29 CFR 3):

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

2. Payrolls and Payroll Records:

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.

c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for submitting payroll copies of all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;

(2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;

(3) that each laborer or mechanic has been paid not less that the applicable wage rate and fringe benefits or cash equivalent for the classification of worked performed, as specified in the applicable wage determination incorporated into the contract.

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U/S. C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such

actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR

1. On all federal-aid contracts on the national highway system, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than $1,000,000 (23 CFR 635) the contractor shall:

a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.

c. Furnish, upon the completion of the contract, to the SHA resident engineer on /Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractors' own organization (23 CFR 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S. C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more than $10,000 or imprisoned not more than 5 years or both."

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $100,000 or more).

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. Instructions for Certification - Primary Covered Transactions:

(Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.
b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.
d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
e. The terms "covered transaction," "debarred," "suspended," "ineligible,""lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.
f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.
g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded from Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.
i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

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Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from

covered transactions by any Federal department or agency;
b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and
d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

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2. Instructions for Certification - Lower Tier Covered Transactions:

(Applicable to all subcontracts, purchase orders and other lower tier transactions of $25,000 or more - 49 CFR 29)
a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.
d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
e. The prospective lower tie participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.
h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealing.
i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

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Certification Regarding Debarment, Suspension, Ineligibility And Voluntary Exclusion-Lower Tier Covered Transactions:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

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XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not

more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

MINIMUM WAGES FOR FEDERAL AND FEDERALLY ASSISTED CONSTRUCTION CONTRACTS

This project is funded, in part, with Federal-aid funds and, as such, is subject to the provisions of the Davis-Bacon Act of March 3, 1931, as amended (46 Sta. 1494, as amended, 40 U.S.C. 276a) and of other Federal statutes referred to in a 29 CFR Part 1, Appendix A, as well as such additional statutes as may from time to time be enacted containing provisions for the payment of wages determined to be prevailing by the Secretary of Labor in accordance with the Davis-Bacon Act and pursuant to the provisions of 29 CFR Part 1. The prevailing rates and fringe benefits shown in the General Wage Determination Decisions issued by the U.S. Department of Labor shall, in accordance with the provisions of the foregoing statutes, constitute the minimum wages payable on Federal and federally assisted construction projects to laborers and mechanics of the specified classes engaged on contract work of the character and in the localities described therein.

General Wage Determination Decisions, modifications and supersedes decisions thereto are to be used in accordance with the provisions of 29 CFR Parts 1 and 5. Accordingly, the applicable decision, together with any modifications issued, must be made a part of every contract for performance of the described work within the geographic area indicated as required by an applicable DBRA Federal prevailing wage law and 29 CFR Part 5. The wage rates and fringe benefits contained in the General Wage Determination Decision shall be the minimum paid by contractors and subcontractors to laborers and mechanics.

NOTICE

The most current **General Wage Determination Decisions** (wage rates) are available on the IDOT web site. They are located on the Letting and Bidding page at http://www.dot.state.il.us/desenv/delett.html.

In addition, ten (10) days prior to the letting, the applicable Federal wage rates will be e-mailed to subscribers. It is recommended that all contractors subscribe to the Federal Wage Rates List or the Contractor's Packet through IDOT's subscription service.

PLEASE NOTE: if you have already subscribed to the Contractor's Packet you will automatically receive the Federal Wage Rates.

The instructions for subscribing are at http://www.dot.state.il.us/desenv/subsc.html.

If you have any questions concerning the wage rates, please contact IDOT's Chief Contract Official at 217-782-7806.