

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

PREQUALIFICATION

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

REQUESTS FOR AUTHORIZATION TO BID

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

WHO CAN BID ?

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

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

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

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

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

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

IDOT is not responsible for any e-mail related failures.

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

Technical Questions about downloading these files may be directed to Tim Garman (217)524-1642 or garmantr@dot.il.gov.

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

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

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

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

WHO SHOULD BE CALLED IF ASSISTANCE IS NEEDED?

Questions Regarding	Call
Prequalification and/or Authorization to Bid	(217)782-3413
Preparation and submittal of bids	(217)782-7806
Mailing of plans and proposals	(217)782-7806
Electronic plans and proposals	(217)524-1642

ADDENDUMS AND REVISIONS TO THE PROPOSAL FORMS

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

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RETURN WITH BID

Proposal Submitted By
Name
Address
City

Letting August 5, 2005

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

NOTICE TO PROSPECTIVE BIDDERS

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

(SEE INSTRUCTIONS ON THE INSIDE OF COVER)

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



**Illinois Department
of Transportation**

Springfield, Illinois 62764

**Contract No. 83782
KANE County
Section 99-00243-00-PV
Route FAP 336 (Randall Road)
Project CMF-F-336(10)
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)

INSTRUCTIONS

ABOUT IDOT PROPOSALS: All proposals issued by IDOT are potential bidding proposals. Each proposal contains all Certifications and Affidavits, a Proposal Signature Sheet and a Proposal Bid Bond required for Prime Contractors to submit a bid after written **Authorization to Bid** has been issued by IDOT's Central Bureau of Construction.

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

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

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

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

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Preparation and submittal of bids	217/782-7806
Mailing of CD-ROMS	217/782-7806

RETURN WITH BID



PROPOSAL

TO THE DEPARTMENT OF TRANSPORTATION

1. Proposal of _____

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

**Contract No. 83782
KANE County
Section 99-00243-00-PV
Project CMF-F-336(10)
Route FAP 336 (Randall Road)
District 1 Construction Funds**

Project consists of PCC jointed pavement and full depth bituminous pavement reconstruction, full depth bituminous widening and resurfacing, poured-in-place concrete bicycle underpass and bituminous bike path, sidewalks, curb and gutter, storm sewers, water main, traffic signal modernization/interconnect and lighting located at the intersection of Randall Road and IL Route 64 from 3,839 ft north to 2,511 ft south of the intersection, 1,839 ft west to 1,426 ft east of the intersection and the Dean Street intersection.

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

RETURN WITH BID

3. **ASSURANCE OF EXAMINATION AND INSPECTION/WAIVER.** The undersigned further declares that he/she has carefully examined the proposal, plans, specifications, 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:

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

Bank cashier's checks or properly certified checks accompanying 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.

BD 354 (Rev. 11/2001)

RETURN WITH BID

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

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

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

Schedule of Combination Bids

Combination No.	Sections Included in Combination	Combination Bid	
		Dollars	Cents

7. **SCHEDULE OF PRICES.** The undersigned bidder submits herewith, in accordance with the rules and instructions, a schedule of prices for the items of work for which bids are sought. The unit prices bid are in U.S. dollars and cents, and all extensions and summations have been made. The bidder understands that the quantities appearing in the bid schedule are approximate and are provided for the purpose of obtaining a gross sum for the comparison of bids. If there is an error in the extension of the unit prices, the unit prices shall govern. Payment to the contractor awarded the contract will be made only for actual quantities of work performed and accepted or materials furnished according to the contract. The scheduled quantities of work to be done and materials to be furnished may be increased, decreased or omitted as provided elsewhere in the contract.
8. **CERTIFICATE OF AUTHORITY.** The undersigned bidder, if a business organized under the laws of another State, assures the Department that it will furnish a copy of its certificate of authority to do business in the State of Illinois with the return of the executed contract and bond. Failure to furnish the certificate within the time provided for execution of an awarded contract may be cause for cancellation of the award and forfeiture of the proposal guaranty to the State.

STATE JOB #- C-91-330-99
 PPS NBR - 1-10081-0001

ILLINOIS DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF PRICES
 CONTRACT NUMBER - 83782

ECMS002 DTGECM03 ECMR003 PAGE 1
 RUN DATE - 06/29/05
 RUN TIME - 183213

COUNTY NAME	CODE	DIST	SECTION NUMBER	PROJECT NUMBER	ROUTE
KANE	089	01	99-00243-00-PV	CMF-F-0336/010/000	FAP 336

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
A2003024	T-CELTIS OC PP 3	EACH	8.000 X		=		
A2004724	T-GLED TRI-I SM 3	EACH	6.000 X		=		
A2005024	T-GYMNOCLA DIO 3	EACH	5.000 X		=		
C2005824	S-RHUS AROMA GRO 2'	EACH	188.000 X		=		
D2002172	E-PICEA PUNGENS 6'	EACH	9.000 X		=		
D2002272	E-PICEA PUNG GLAU 6'	EACH	5.000 X		=		
D2002772	E-PINUS NIGRA 6'	EACH	4.000 X		=		
K1003680	MULCH	SQ YD	1,495.000 X		=		
XX000739	CURB STOP & BOX 1	EACH	9.000 X		=		
XX002856	RE-OPTIMIZE TR SIG SY	L SUM	1.000 X		=		
XX002956	PART BLDG REM & RECON	L SUM	1.000 X		=		
XX003273	SEDUM AUTUMN JOY 1G	EACH	68.000 X		=		
XX003489	HEMER HAPPY RETURN 1G	EACH	729.000 X		=		
XX003503	FLARED END SEC REM	EACH	21.000 X		=		
XX003553	VIDEO TRANS SYS	EACH	1.000 X		=		

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 KANE

ILLINOIS DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF PRICES
 CONTRACT NUMBER - 83782

ECMS002 DTGECM03 ECMR003 PAGE 2
 RUN DATE - 06/29/05
 RUN TIME - 183213

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
XX003661	ELCBL C COAXIAL	FOOT	85.000 X		=		
XX003885	IRRIGATION SYSTEM	L SUM	1.000 X		=		
XX004486	ASCLEP TUBEROSA 1G	EACH	61.000 X		=		
XX004558	RAILROAD FLAGMEN	UNIT	50,000.000 X		=		
XX004852	BIT DRIVEWAY PAVT SUP	SQ YD	2,988.000 X		=		
XX005078	CB TY C 2 DIA	EACH	32.000 X		=		
XX005178	HEMER CHICGO A DYLLILY	EACH	117.000 X		=		
XX005472	DRAINAGE STRUCTURE SP	EACH	1.000 X		=		
XX005723	VIDEO DET SY COMP INT	EACH	2.000 X		=		
XX005922	EC C CO 16 5-1/2 PAIR	FOOT	2,260.000 X		=		
XX005940	REMOTE CONTR VIDEO SY	EACH	1.000 X		=		
XX006001	GRASSES CAR MUS 1 GAL	EACH	58.000 X		=		
XX006056	BIT S RM REC PM 0.025	SQ FT	10,184.000 X		=		
XX006195	STABILIZED BIKE PATH	SQ YD	670.000 X		=		
XX006255	HES PCCPVT 10 JOINTED	SQ YD	3,609.000 X		=		

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 99-00243-00-PV
 KANE

ILLINOIS DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF PRICES
 CONTRACT NUMBER - 83782

ECMS002 DTGECM03 ECMR003 PAGE 3
 RUN DATE - 06/29/05
 RUN TIME - 183213

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
XX006256	CON S RM REC PM 0.025	SQ FT	6,693.000	X	=		
XX006257	REC REF PVT MARKER	EACH	727.000	X	=		
XX006258	STEEL CASING PIPE 18	FOOT	125.000	X	=		
XX006259	STEEL CASING PIPE 20	FOOT	368.000	X	=		
XX006260	STL CAS P AUG/JKD 16"	FOOT	60.000	X	=		
XX006261	STL CAS P AUG/JKD 20"	FOOT	632.000	X	=		
XX006262	STL CAS P AUG/JKD 24"	FOOT	250.000	X	=		
XX006263	STL CAS P AUG/JKD 30"	FOOT	25.000	X	=		
XX006264	D I WATER DIST MAIN 6	FOOT	10.000	X	=		
XX006265	DI WATER DIST MAIN 12	FOOT	2,756.000	X	=		
XX006266	CURB STOP & BOX 1.5"	EACH	1.000	X	=		
XX006267	LT P A 40MH 15MA FEST	EACH	8.000	X	=		
XX006268	UNDERPASS CONT INSTAL	EACH	1.000	X	=		
XX006269	MAINT EX TS INTERCONN	L SUM	1.000	X	=		
XX006270	S MAA & P 34 LT ARM15	EACH	1.000	X	=		

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ILLINOIS DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF PRICES
 CONTRACT NUMBER - 83782

ECMS002 DTGECM03 ECMR003 PAGE 4
 RUN DATE - 06/29/05
 RUN TIME - 183213

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
XX006271	S MAA & P 38 LT ARM15	EACH	1.000 X		=		
XX006272	S MAA & P 44 LT ARM15	EACH	2.000 X		=		
XX006273	S MAA & P 48 LT ARM15	EACH	1.000 X		=		
XX006274	S MAA & P 50 LT ARM15	EACH	1.000 X		=		
XX006275	S MAA & P 55 LT ARM15	EACH	2.000 X		=		
XX006276	SS CL A PRE PI T 3 60	FOOT	418.000 X		=		
XX006277	TEMP SEDIMENT TRAP	EACH	1.000 X		=		
XX006278	SS (PVC) T 1 6"	FOOT	20.000 X		=		
XX006279	SS (PVC) T 1 8"	FOOT	35.000 X		=		
XX006280	PER ERO BAR WIRE SUPP	FOOT	367.000 X		=		
XX006281	SS, D I, T 1 10"	FOOT	9.000 X		=		
XX006282	SS, D I, T 1 12"	FOOT	170.000 X		=		
XX006283	SS, D I, T 2 12"	FOOT	168.000 X		=		
XX006284	SS, D I, T 2 18"	FOOT	122.000 X		=		
XX006285	PERIMTR EROS BARR SPL	FOOT	2,395.000 X		=		

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ILLINOIS DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF PRICES
 CONTRACT NUMBER - 83782

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 RUN DATE - 06/29/05
 RUN TIME - 183213

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
XX006286	SPLIT FLW JUNC STRUC	EACH	1.000 X		=		
XX006287	PERFORATED RISER	L SUM	1.000 X		=		
XX006288	DRAIN STRUC T 3 (MOD)	EACH	1.000 X		=		
XX006289	F AND G, SPL (SPL1)	EACH	3.000 X		=		
XX006290	MAN T A 7 DIA	EACH	14.000 X		=		
XX006292	FRAX AMER AUTUMN APPL	EACH	6.000 X		=		
XX006293	GINKO BILOBA AUTUMN G	EACH	1.000 X		=		
XX006294	QUER BI SWMP WHT OAK	EACH	4.000 X		=		
XX006295	QUER ROB ENGLISH OAK	EACH	4.000 X		=		
XX006296	QUER RUB RED OAK	EACH	10.000 X		=		
XX006297	ULMUS MORTON TRIU ELM	EACH	6.000 X		=		
XX006298	ULMUS MORTN COMM ELM	EACH	4.000 X		=		
XX006299	ARONIA MELAN MOR IBBC	EACH	108.000 X		=		
XX006300	BERBER RBY CAR BARBRY	EACH	229.000 X		=		
XX006301	KERRIA JAPONICA JK	EACH	98.000 X		=		

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ILLINOIS DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF PRICES
 CONTRACT NUMBER - 83782

ECMS002 DTGECM03 ECMR003 PAGE 6
 RUN DATE - 06/29/05
 RUN TIME - 183213

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
XX006302	NEPETA WALK LW CATMIN	EACH	61.000 X		=		
XX006303	ROSA RUGOSA PNK PV RS	EACH	28.000 X		=		
XX006304	ROSA RUGOSA RD PVT RS	EACH	26.000 X		=		
XX006305	ROSA RUGOSA WHT PV RS	EACH	28.000 X		=		
XX006306	SPIREA MGIC CRPT SPIR	EACH	161.000 X		=		
XX006307	BOUTELOU SDE OAT GRAM	EACH	279.000 X		=		
XX006308	CAREX MUSK OEHME VPS	EACH	34.000 X		=		
XX006309	MISCANTHUS GRAZ JSG	EACH	18.000 X		=		
XX006310	MISCANTHUS STRICT PG	EACH	70.000 X		=		
XX006311	MOLINIA ARUNDINAC TMG	EACH	39.000 X		=		
XX006312	MOLINIA CAERULEA PMG	EACH	77.000 X		=		
XX006313	PANCIUM VIRGATUM BSG	EACH	97.000 X		=		
XX006314	SCHIZ SCOPARIUM LBS	EACH	80.000 X		=		
XX006315	SESLARIA AUTUMNAL AMG	EACH	112.000 X		=		
XX006316	SORGHASTRUM NUTANS IG	EACH	29.000 X		=		

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ILLINOIS DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF PRICES
 CONTRACT NUMBER - 83782

ECMS002 DTGECM03 ECMR003 PAGE 7
 RUN DATE - 06/29/05
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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
XX006317	SPORO HTER PRAR DRPSD	EACH	291.000 X				
XX006318	ALLIUM ORNAMENT ONION	EACH	71.000 X				
XX006319	ALLIUM TANG GLB LILLY	EACH	83.000 X				
XX006320	ECHINACEA PURP CNFLWR	EACH	114.000 X				
XX006321	REDBECKIA HIRTA B E S	EACH	114.000 X				
XX006322	SOLIDAGO NEM GOLDNROD	EACH	131.000 X				
XX006323	NARCISSUS MX DAFFODIL	EACH	3,760.000 X				
XX006324	PLANTING SOIL AMEND	SQ YD	1,495.000 X				
XX006325	PVC SCHEDULE 40 PIPE 2	FOOT	120.000 X				
XX006326	TYPE K COPPER PIPE 2	FOOT	70.000 X				
XX006327	WATER METER 2	EACH	2.000 X				
XX006328	RPZ BACKFLW PREVENT 2	EACH	2.000 X				
XX006329	RPZ ENCLOSURE 2	EACH	2.000 X				
X0300739	UNINTERRUPT POWER SUP	EACH	2.000 X				
X0301828	ENGINEERED BARRIER	SQ YD	434.000 X				

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 RUN DATE - 06/29/05
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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
X0321556	SANITARY MANHOLE ADJ	EACH	8.000	X		=	
X0321558	SAN MH ADJ NEW T1F CL	EACH	11.000	X		=	
X0322256	TEMP INFO SIGNING	SQ FT	540.000	X		=	
X0322671	STAB CONSTR ENTRANCE	SQ YD	700.000	X		=	
X0322925	ELCBL C TRACER 14 1C	FOOT	7,600.000	X		=	
X0323988	TEMP SOIL RETEN SYSTM	SQ FT	1,422.000	X		=	
X0632001	CLEAR PROT CTG F/CONC	SQ FT	4,835.000	X		=	
X0712400	TEMP PAVEMENT	SQ YD	4,000.000	X		=	
X0840000	SAN SEW REMOV 8	FOOT	543.000	X		=	
X3550215	BIT BC SUPER 5 3/4	SQ. YD	1,478.000	X		=	
X3550515	BIT BC SUPER 8 3/4	SQ YD	8,989.000	X		=	
X3550615	BIT BC SUPER 9 3/4	SQ YD	6,690.000	X		=	
X4066424	BC SC SUPER "D" N50	TON	474.000	X		=	
X4066548	P BCSC SUPER "F" N90	TON	5,529.000	X		=	
X4066614	BCBC SUP IL-19.0 N50	TON	200.000	X		=	

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				DOLLARS	CENTS	DOLLARS	CTS
X4066618	BCBC SUP IL-19.0 N90	TON	2,123.000 X		=		
X4066770	LEV BIND MM SUPER N70	TON	601.000 X		=		
X4080020	INCID BIT SUR SUP N50	TON	180.000 X		=		
X6700410	ENGR FLD OFF A SPL	CAL MO	20.000 X		=		
X7015000	CHANGEABLE MESSAGE SN	CAL MO	72.000 X		=		
X7800500	POLYUREA PM LT-SY SPL	SQ FT	1,807.000 X		=		
X7800510	POLYUREA PM SPL LN 4	FOOT	28,430.000 X		=		
X7800530	POLYUREA PM SPL LN 6	FOOT	7,720.000 X		=		
X7800540	POLYUREA PM SPL LN 8	FOOT	475.000 X		=		
X7800550	POLYUREA PM SPL LN 12	FOOT	1,883.000 X		=		
X7800580	POLYUREA PM SPL LN 24	FOOT	688.000 X		=		
X8050010	SERV INSTALL GRND MT	EACH	2.000 X		=		
X8710020	FOCC62.5/125 MM12SM12	FOOT	7,962.000 X		=		
X8730027	ELCBL C GROUND 6 1C	FOOT	1,798.000 X		=		
X8730250	ELCBL C 20 3C TW SH	FOOT	1,934.000 X		=		

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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
X8801310	SH P LED 1F 3S MAM	EACH	12.000	X	=		
X8801395	SH P LED 1F 5S BM	EACH	2.000	X	=		
X8801400	SH P LED 1F 5S MAM	EACH	8.000	X	=		
X8801415	SH P LED 2F 3S BM	EACH	1.000	X	=		
X8801437	SH P LED 2F 1-3,1-5BM	EACH	6.000	X	=		
X8801447	SH P LED 2F 5S BM	EACH	2.000	X	=		
X8810610	PED SH LED 1F BM	EACH	14.000	X	=		
X8810630	PED SH LED 3F BM	EACH	2.000	X	=		
Z0000990	AGG FOR TEMP ACCESS	TON	4,000.000	X	=		
Z0001050	AGG SUBGRADE 12	SQ YD	60,342.000	X	=		
Z0002600	BAR SPLICERS	EACH	298.000	X	=		
Z0007601	BLDG REMOV NO 1	L SUM	1.000	X	=		
Z0007602	BLDG REMOV NO 2	L SUM	1.000	X	=		
Z0013798	CONSTRUCTION LAYOUT	L SUM	1.000	X	=		
Z0013825	CONTR LOW-STRENG MATL	CU YD	1,000.000	X	=		

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				DOLLARS	CENTS	DOLLARS	CTS
Z0019600	DUST CONTROL WATERING	UNIT	400.000 X			=	
Z0022800	FENCE REMOVAL	FOOT	50.000 X			=	
Z0030260	IMP ATTN TEMP FRN TL3	EACH	4.000 X			=	
Z0030330	IMP ATTN REL FRD TL3	EACH	3.000 X			=	
Z0048665	RR PROT LIABILITY INS	L SUM	1.000 X			=	
Z0059600	SAN SEW T2 8	FOOT	394.000 X			=	
Z0060800	SAN SEW T3 6	FOOT	164.000 X			=	
Z0060900	SAN SEW T3 8	FOOT	204.000 X			=	
Z0076600	TRAINEES	HOUR	3,000.000 X	0	80	=	2,400.00
20100110	TREE REMOV 6-15	UNIT	251.000 X			=	
20100210	TREE REMOV OVER 15	UNIT	130.000 X			=	
20200100	EARTH EXCAVATION	CU YD	80,836.000 X			=	
20700400	POROUS GRAN EMB SPEC	CU YD	12,800.000 X			=	
20800150	TRENCH BACKFILL	CU YD	21,108.000 X			=	
20900320	POROUS GRAN BACK SPEC	TON	3,675.000 X			=	

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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
21001000	GEOTECH FAB F/GR STAB	SQ YD	32,139.000 X		=		
21101615	TOPSOIL F & P 4	SQ YD	53,961.000 X		=		
21101685	TOPSOIL F & P 24	SQ YD	4,886.000 X		=		
21301084	EXPLOR TRENCH 84	FOOT	300.000 X		=		
25000210	SEEDING CL 2A	ACRE	4.600 X		=		
25000400	NITROGEN FERT NUTR	POUND	891.000 X		=		
25000500	PHOSPHORUS FERT NUTR	POUND	891.000 X		=		
25000600	POTASSIUM FERT NUTR	POUND	891.000 X		=		
25001750	SEEDING CL 4 SPL	ACRE	0.500 X		=		
25100115	MULCH METHOD 2	ACRE	23.100 X		=		
25100630	EROSION CONTR BLANKET	SQ YD	8,815.000 X		=		
25200110	SODDING SALT TOLERANT	SQ YD	32,754.000 X		=		
25200200	SUPPLE WATERING	UNIT	865.000 X		=		
28000250	TEMP EROS CONTR SEED	POUND	1,422.000 X		=		
28000300	TEMP DITCH CHECKS	EACH	5.000 X		=		

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				DOLLARS	CENTS	DOLLARS	CTS
28000400	PERIMETER EROS BAR	FOOT	7,538.000 X		=		
28000500	INLET & PIPE PROTECT	EACH	2.000 X		=		
28000510	INLET FILTERS	EACH	14.000 X		=		
28100105	STONE RIPRAP CL A3	SQ YD	24.000 X		=		
28100107	STONE RIPRAP CL A4	SQ YD	403.000 X		=		
28100109	STONE RIPRAP CL A5	SQ YD	36.000 X		=		
28100111	STONE RIPRAP CL A6	SQ YD	251.000 X		=		
28200200	FILTER FABRIC	SQ YD	690.000 X		=		
40600200	BIT MATLS PR CT	TON	21.000 X		=		
40600300	AGG PR CT	TON	50.000 X		=		
40600980	BIT SURF REM BUTT JT	SQ YD	467.000 X		=		
42000501	PCC PVT 10 JOINTED	SQ YD	30,112.000 X		=		
42001300	PROTECTIVE COAT	SQ YD	52,030.000 X		=		
42300400	PCC DRIVEWAY PAVT 8	SQ YD	394.000 X		=		
42400200	PC CONC SIDEWALK 5	SQ FT	75,757.000 X		=		

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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
42400410	PC CONC SIDEWALK 8	SQ FT	300.000 X		=		
42400460	PC CONC SIDEWALK 8 SP	SQ FT	1,394.000 X		=		
44000007	BIT SURF REM 2	SQ YD	9,824.000 X		=		
44000030	BIT SURF REM VAR DP	SQ YD	16,064.000 X		=		
44000200	DRIVE PAVEMENT REM	SQ YD	195.000 X		=		
44000300	CURB REM	FOOT	72.000 X		=		
44000500	COMB CURB GUTTER REM	FOOT	17,631.000 X		=		
44000600	SIDEWALK REM	SQ FT	18,795.000 X		=		
44002020	CONC MEDIAN SURF REM	SQ FT	1,100.000 X		=		
44201771	CL D PATCH T4 10	SQ YD	79.000 X		=		
44201815	CL D PATCH T2 14	SQ YD	56.000 X		=		
44201819	CL D PATCH T3 14	SQ YD	117.000 X		=		
44201821	CL D PATCH T4 14	SQ YD	406.000 X		=		
44300300	AREA REF CR CON TR A	SQ YD	33,552.000 X		=		
48101500	AGGREGATE SHLDS B 6	SQ YD	268.000 X		=		

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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
48101600	AGGREGATE SHLDS B 8	SQ YD	127.000 X		=		
48202400	BIT SHLD SUPER 6	SQ YD	518.000 X		=		
50800205	REINF BARS, EPOXY CTD	POUND	35,680.000 X		=		
50900805	PEDESTRIAN RAIL	FOOT	97.000 X		=		
51000105	PIPE HANDRAIL	FOOT	170.000 X		=		
54003000	CONC BOX CUL	CU YD	254.000 X		=		
54213657	PRC FLAR END SEC 12	EACH	9.000 X		=		
54213663	PRC FLAR END SEC 18	EACH	4.000 X		=		
54213669	PRC FLAR END SEC 24	EACH	2.000 X		=		
54213675	PRC FLAR END SEC 30	EACH	2.000 X		=		
54213681	PRC FLAR END SEC 36	EACH	1.000 X		=		
54213687	PRC FLAR END SEC 42	EACH	1.000 X		=		
54213705	PRC FLAR END SEC 60	EACH	1.000 X		=		
54214713	PRCF END S EL EQRS 18	EACH	1.000 X		=		
54214719	PRCF END S EL EQRS 24	EACH	2.000 X		=		

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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
54214743	PRCF END S EL EQRS 48	EACH	1.000	X	=		
54215460	CIP RC END SEC 60	EACH	1.000	X	=		
54247110	GRATING-C FL END S 18	EACH	4.000	X	=		
54247130	GRATING-C FL END S 24	EACH	2.000	X	=		
54247150	GRATING-C FL END S 30	EACH	2.000	X	=		
54247170	GRATING-C FL END S 36	EACH	1.000	X	=		
54247180	GRATING-C FL END S 42	EACH	1.000	X	=		
54247210	GRATING-C FL END S 60	EACH	1.000	X	=		
54248110	GRT-C FL END S EQV 18	EACH	1.000	X	=		
54248130	GRT-C FL END S EQV 24	EACH	2.000	X	=		
54248180	GRT-C FL END S EQV 48	EACH	1.000	X	=		
550A0050	STORM SEW CL A 1 12	FOOT	943.000	X	=		
550A0070	STORM SEW CL A 1 15	FOOT	198.000	X	=		
550A0090	STORM SEW CL A 1 18	FOOT	122.000	X	=		
550A0120	STORM SEW CL A 1 24	FOOT	114.000	X	=		

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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
550A0140	STORM SEW CL A 1 30	FOOT	91.000	X	=		
550A0160	STORM SEW CL A 1 36	FOOT	153.000	X	=		
550A0210	STORM SEW CL A 1 60	FOOT	43.000	X	=		
550A0340	STORM SEW CL A 2 12	FOOT	3,757.000	X	=		
550A0360	STORM SEW CL A 2 15	FOOT	642.000	X	=		
550A0380	STORM SEW CL A 2 18	FOOT	1,130.000	X	=		
550A0410	STORM SEW CL A 2 24	FOOT	464.000	X	=		
550A0430	STORM SEW CL A 2 30	FOOT	821.000	X	=		
550A0450	STORM SEW CL A 2 36	FOOT	396.000	X	=		
550A0470	STORM SEW CL A 2 42	FOOT	247.000	X	=		
550A0490	STORM SEW CL A 2 54	FOOT	50.000	X	=		
550A0500	STORM SEW CL A 2 60	FOOT	1,365.000	X	=		
550A0750	STORM SEW CL A 3 36	FOOT	34.000	X	=		
550A0770	STORM SEW CL A 3 42	FOOT	1,075.000	X	=		
550A0780	STORM SEW CL A 3 48	FOOT	95.000	X	=		

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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
550A0800	STORM SEW CL A 3 60	FOOT	70.000 X		=		
550A2320	SS RG CL A 1 12	FOOT	344.000 X		=		
550A2330	SS RG CL A 1 15	FOOT	27.000 X		=		
550A2360	SS RG CL A 1 24	FOOT	36.000 X		=		
550A2380	SS RG CL A 1 30	FOOT	36.000 X		=		
550A2520	SS RG CL A 2 12	FOOT	631.000 X		=		
550A2530	SS RG CL A 2 15	FOOT	72.000 X		=		
550A2560	SS RG CL A 2 24	FOOT	36.000 X		=		
550A2580	SS RG CL A 2 30	FOOT	314.000 X		=		
550A2600	SS RG CL A 2 36	FOOT	19.000 X		=		
55034200	SS 1 RCEP S23 R14	FOOT	49.000 X		=		
55034300	SS 1 RCEP S30 R19	FOOT	100.000 X		=		
55034700	SS 1 RCEP S53 R34	FOOT	69.000 X		=		
55034800	SS 1 RCEP S60 R38	FOOT	417.000 X		=		
55035300	SS 2 RCEP S23 R14	FOOT	24.000 X		=		

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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
55035400	SS 2 RCEP S30 R19	FOOT	62.000	X	=		
55036900	SS 3 RCEP S53 R34	FOOT	140.000	X	=		
55100500	STORM SEWER REM 12	FOOT	2,847.000	X	=		
55100700	STORM SEWER REM 15	FOOT	1,368.000	X	=		
55100900	STORM SEWER REM 18	FOOT	1,876.000	X	=		
55101200	STORM SEWER REM 24	FOOT	439.000	X	=		
55101300	STORM SEWER REM 27	FOOT	426.000	X	=		
55101400	STORM SEWER REM 30	FOOT	520.000	X	=		
55101600	STORM SEWER REM 36	FOOT	1,759.000	X	=		
55101800	STORM SEWER REM 42	FOOT	525.000	X	=		
55102100	STORM SEWER REM 60	FOOT	26.000	X	=		
56102900	D I WATER MAIN 4	FOOT	40.000	X	=		
56103000	D I WATER MAIN 6	FOOT	703.000	X	=		
56103100	D I WATER MAIN 8	FOOT	40.000	X	=		
56103200	D I WATER MAIN 10	FOOT	999.000	X	=		

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				DOLLARS	CENTS	DOLLARS	CTS
56103300	D I WATER MAIN 12	FOOT	5,502.000 X		=		
56103400	D I WATER MAIN 16	FOOT	2,237.000 X		=		
56104600	WATER VALVES 2	EACH	2.000 X		=		
56104800	WATER VALVES 4	EACH	2.000 X		=		
56104900	WATER VALVES 6	EACH	6.000 X		=		
56105000	WATER VALVES 8	EACH	2.000 X		=		
56105100	WATER VALVES 10	EACH	5.000 X		=		
56105200	WATER VALVES 12	EACH	20.000 X		=		
56105300	WATER VALVES 16	EACH	6.000 X		=		
56106600	ADJ WATER MAIN 12	FOOT	30.000 X		=		
56108800	TAP VALVE & SLEEVE 6	EACH	1.000 X		=		
56109100	TAP VALVE & SLEEVE 12	EACH	1.000 X		=		
56200300	WATER SERV LINE 1	FOOT	305.000 X		=		
56200500	WATER SERV LINE 1 1/2	FOOT	20.000 X		=		
56201400	CORP STOPS 1	EACH	9.000 X		=		

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				DOLLARS	CENTS	DOLLARS	CTS
56201600	CORP STOPS 1 1/2	EACH	1.000 X		=		
56400100	FIRE HYDNTS TO BE MVD	EACH	1.000 X		=		
56400300	FIRE HYDNTS TO BE ADJ	EACH	2.000 X		=		
56400500	FIRE HYDNTS TO BE REM	EACH	13.000 X		=		
56400820	FIRE HYD W/AUX V & VB	EACH	31.000 X		=		
59100100	GEOCOMPOSITE WALL DR	SQ YD	265.000 X		=		
60100060	CONC HDWL FOR P DRAIN	EACH	1.000 X		=		
60107600	PIPE UNDERDRAINS 4	FOOT	5,929.000 X		=		
60107700	PIPE UNDERDRAINS 6	FOOT	253.000 X		=		
60202405	CB TA 4 DIA	EACH	176.000 X		=		
60205605	CB TA 5 DIA	EACH	23.000 X		=		
60206705	CATCH BASINS TB	EACH	1.000 X		=		
60220200	MAN TA 4 DIA	EACH	27.000 X		=		
60222900	MAN TA 5 DIA	EACH	43.000 X		=		
60224075	MAN TA 6 DIA	EACH	2.000 X		=		

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				DOLLARS	CENTS	DOLLARS	CTS
60228110	MAN SAN 4 DIA T1F CL	EACH	11.000 X		=		
60238800	INLETS TA	EACH	2.000 X		=		
60249110	VALVE VAULTS 4 DIA	EACH	11.000 X		=		
60249120	VALVE VAULTS 5 DIA	EACH	32.000 X		=		
60250200	CB ADJUST	EACH	1.000 X		=		
60252800	CB RECONST	EACH	6.000 X		=		
60257900	MAN RECONST	EACH	3.000 X		=		
60258000	MAN RECONST SPL	EACH	1.000 X		=		
60260050	SAN MAN RECONST	EACH	1.000 X		=		
60265700	VV ADJUST	EACH	16.000 X		=		
60266500	VV REMOVED	EACH	17.000 X		=		
60266600	VALVE BOX ADJ	EACH	1.000 X		=		
60266910	VALVE BOX REMOVED	EACH	8.000 X		=		
60402110	GRATES T7	EACH	1.000 X		=		
60402210	GRATES T8	EACH	25.000 X		=		

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				DOLLARS	CENTS	DOLLARS	CTS
60404805	FR & GRATES T11V	EACH	69.000	X	=		
60404950	FR & GRATES T24	EACH	119.000	X	=		
60405700	FR & GRATES SPEC	EACH	2.000	X	=		
60406000	FR & LIDS T1 OL	EACH	13.000	X	=		
60406100	FR & LIDS T1 CL	EACH	164.000	X	=		
60500040	REMOV MANHOLES	EACH	42.000	X	=		
60500050	REMOV CATCH BAS	EACH	85.000	X	=		
60500080	REMOV CB - MAIN FLOW	EACH	2.000	X	=		
60600605	CONC CURB TB	FOOT	68.000	X	=		
60603500	COMB CC&G TB6.06	FOOT	79.000	X	=		
60603800	COMB CC&G TB6.12	FOOT	7,295.000	X	=		
60605000	COMB CC&G TB6.24	FOOT	17,321.000	X	=		
60608300	COMB CC&G TM2.12	FOOT	2,282.000	X	=		
60618300	CONC MEDIAN SURF 4	SQ FT	1,174.000	X	=		
60619600	CONC MED TSB6.12	SQ FT	8,261.000	X	=		

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				DOLLARS	CENTS	DOLLARS	CTS
60624600	CORRUGATED MED	SQ FT	714.000	X	=		
63000000	SPBGR TY A	FOOT	1,406.000	X	=		
63000025	SPBGR ATTACH TO STR	FOOT	32.000	X	=		
63100167	TR BAR TRM T1 SPL TAN	EACH	4.000	X	=		
63200310	GUARDRAIL REMOV	FOOT	565.000	X	=		
66410200	CH LK FENCE SPL	FOOT	35.000	X	=		
66410300	CH LK FENCE REMOV	FOOT	680.000	X	=		
66900105	UNDERGR STOR TANK REM	EACH	1.000	X	=		
66900200	NON SPL WASTE DISPOSL	CU YD	2,405.000	X	=		
66900400	SPL WAST GRD WAT DISP	GALLON	188.000	X	=		
66900450	SPL WASTE PLNS/REPORT	L SUM	1.000	X	=		
66900530	SOIL DISPOSAL ANALY	EACH	6.000	X	=		
66901000	BACKFILL PLUGS	CU YD	60.000	X	=		
67100100	MOBILIZATION	L SUM	1.000	X	=		
70101800	TRAF CONT & PROT SPL	L SUM	1.000	X	=		

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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
70300100	SHORT-TERM PAVT MKING	FOOT	5,700.000 X		=		
70300210	TEMP PVT MK LTR & SYM	SQ FT	3,690.000 X		=		
70300220	TEMP PVT MK LINE 4	FOOT	158,310.000 X		=		
70300240	TEMP PVT MK LINE 6	FOOT	8,770.000 X		=		
70300260	TEMP PVT MK LINE 12	FOOT	1,120.000 X		=		
70300280	TEMP PVT MK LINE 24	FOOT	1,310.000 X		=		
70300520	PAVT MARK TAPE T3 4	FOOT	6,000.000 X		=		
70400100	TEMP CONC BARRIER	FOOT	2,055.000 X		=		
70400200	REL TEMP CONC BARRIER	FOOT	1,755.000 X		=		
72000100	SIGN PANEL T1	SQ FT	553.000 X		=		
72000200	SIGN PANEL T2	SQ FT	123.000 X		=		
72800100	TELES STL SIN SUPPORT	FOOT	560.000 X		=		
73100110	BASE TEL SIN SUPP, SP	EACH	41.000 X		=		
78300100	PAVT MARKING REMOVAL	SQ FT	12,000.000 X		=		
78300200	RAISED REF PVT MK REM	EACH	1,100.000 X		=		

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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
80400100	ELECT SERV INSTALL	EACH	3.000	X	=		
80700105	GROUND ROD 3/4 X 8	EACH	78.000	X	=		
81000500	CON T 1 1/2 GALVS	FOOT	13,065.000	X	=		
81000600	CON T 2 GALVS	FOOT	5,065.000	X	=		
81000700	CON T 2 1/2 GALVS	FOOT	270.000	X	=		
81000800	CON T 3 GALVS	FOOT	20.000	X	=		
81001000	CON T 4 GALVS	FOOT	290.000	X	=		
81001100	CON T 5 GALVS	FOOT	16.000	X	=		
81018400	CON P 1 1/2 GALVS	FOOT	991.000	X	=		
81018500	CON P 2 GALVS	FOOT	195.000	X	=		
81018700	CON P 3 GALVS	FOOT	105.000	X	=		
81018900	CON P 4 GALVS	FOOT	1,536.000	X	=		
81200200	CON EMB STR 3/4 PVC	FOOT	202.000	X	=		
81303000	JUN BX PE ES 4X4X3	EACH	10.000	X	=		
81400100	HANDHOLE	EACH	17.000	X	=		

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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
81400300	DBL HANDHOLE	EACH	7.000 X		=		
81500200	TR & BKFIL F ELECT WK	FOOT	18,651.000 X		=		
81702110	EC C XLP USE 1C 10	FOOT	10,884.000 X		=		
81702130	EC C XLP USE 1C 6	FOOT	19,994.000 X		=		
81702140	EC C XLP USE 1C 4	FOOT	31,448.000 X		=		
81702150	EC C XLP USE 1C 2	FOOT	280.000 X		=		
81702160	EC C XLP USE 1C 1/0	FOOT	560.000 X		=		
82102310	LUM SV HOR MT 310W	EACH	75.000 X		=		
82102400	LUM SV HOR MT 400W	EACH	12.000 X		=		
82107100	UNDERPAS LUM 70W HPS	EACH	10.000 X		=		
82500505	LIGHT CONTROLLER SPL	EACH	2.000 X		=		
83008600	LT P A 40MH 15MA	EACH	67.000 X		=		
83600200	LIGHT POLE FDN 24D	FOOT	840.000 X		=		
83600215	LIGHT POLE FDN 24D OS	FOOT	36.000 X		=		
83800105	BKWY DEV TR B 11.5BC	EACH	75.000 X		=		

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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
84200705	LIGHTING FDN REM PART	EACH	10.000	X	=		
85000200	MAIN EX TR SIG INSTAL	EACH	3.000	X	=		
85700200	FAC T4 CAB	EACH	1.000	X	=		
85700300	FAC T5 CAB	EACH	1.000	X	=		
86400100	TRANSCEIVER - FIB OPT	EACH	2.000	X	=		
87301215	ELCBL C SIGNAL 14 2C	FOOT	3,697.000	X	=		
87301225	ELCBL C SIGNAL 14 3C	FOOT	6,670.000	X	=		
87301245	ELCBL C SIGNAL 14 5C	FOOT	4,886.000	X	=		
87301255	ELCBL C SIGNAL 14 7C	FOOT	5,289.000	X	=		
87301305	ELCBL C LEAD 14 1PR	FOOT	1,330.000	X	=		
87301805	ELCBL C SERV 6 2C	FOOT	187.000	X	=		
87502250	TS POST PS 10	EACH	2.000	X	=		
87502310	TS POST PS 16	EACH	6.000	X	=		
87800100	CONC FDN TY A	FOOT	38.000	X	=		
87800200	CONC FDN TY D	FOOT	8.000	X	=		

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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
87800415	CONC FDN TY E 36D	FOOT	120.000	X	=		
87900200	DRILL EX HANDHOLE	EACH	1.000	X	=		
88200210	TS BACKPLATE LOU ALUM	EACH	20.000	X	=		
88500100	INDUCTIVE LOOP DETECT	EACH	6.000	X	=		
88600100	DET LOOP T1	FOOT	162.000	X	=		
88700200	LIGHT DETECTOR	EACH	7.000	X	=		
88700300	LIGHT DETECTOR AMP	EACH	2.000	X	=		
88800100	PED PUSH-BUTTON	EACH	16.000	X	=		
89000100	TEMP TR SIG INSTALL	EACH	2.000	X	=		
89502300	REM ELCBL FR CON	FOOT	4,330.000	X	=		
89502375	REMOV EX TS EQUIP	EACH	2.000	X	=		
89502380	REMOV EX HANDHOLE	EACH	27.000	X	=		
89502385	REMOV EX CONC FDN	EACH	18.000	X	=		

TOTAL \$

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

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NOTE:

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

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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. By execution of the Proposal Signature Sheet, the bidder indicates that each of the mandated assurances has 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 termination of the contract and the suspension or debarment of the bidder.

II. ASSURANCES

A. 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. The Department may terminate the contract if it is later determined that the bidder rendered a false or erroneous assurance, and the surety providing the performance bond shall be responsible for the completion of the contract.

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 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. The bidder assures the Department that the award and execution of the contract would not cause a violation of Section 50-10.

C. 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 \$150,700.00. Sixty percent of the salary is \$90,420.00.

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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.

D. 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.

E. 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.

F. Revolving Door Prohibition

1. The Illinois Procurement Code provides:

Section 50-30. Revolving door prohibition. Chief procurement officers, associate procurement officers, State purchasing officers, 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.

G. 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.

H. 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.

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I. 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

A. 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. The Department may terminate the contract if it is later determined that the bidder rendered a false or erroneous certification, and the surety providing the performance bond shall be responsible for completion of the contract.

B. 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 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, 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 shall contain a certification by the contractor that the contractor is not barred from being awarded a contract or subcontract under this Section. A contractor who makes a false statement, material to the certification, commits a Class 3 felony.

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

C. 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.

D. 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.

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(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.

E. 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.

F. 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.

G. Debt Delinquency

1. The Illinois Procurement Code provides:

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

The contractor or bidder certifies that it, or any affiliate, is not barred from being awarded a contract under 30 ILCS 500. Section 50-11 prohibits a person from entering into a contract with a State agency 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 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 contractor further acknowledges that the contracting State agency may declare the contract void if this certification is false or if the contractor, or any affiliate, is determined to be delinquent in the payment of any debt to the State during the term of the contract.

H. Sarbanes-Oxley Act of 2002

1. The Illinois Procurement Code provides:

Section 50-60(c).

The contractor 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 for a period of five years prior to the date of the bid or contract. The contractor acknowledges that the contracting agency shall declare the contract void if this certification is false.

I. ADDENDA

The contractor or bidder certifies that all relevant addenda have been incorporated in to this contract. Failure to do so may cause the bid to be declared unacceptable.

J. Section 42 of the Environmental Protection Act

The contractor certifies in accordance with 30 ILCS 500/50-12 that the bidder or contractor is not barred from being awarded a contract under this Section which prohibits the bidding on or entering into contracts with the State of Illinois or a State agency 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 contractor acknowledges that the contracting agency may declare the contract void if this certification is false.

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.

TO BE RETURNED WITH BID

IV. DISCLOSURES

A. The disclosures hereinafter made by the bidder are each a material representation of fact upon which reliance is placed should the Department enter into the contract with the bidder. The Department may terminate the contract if it is later determined that the bidder rendered a false or erroneous disclosure, and the surety providing the performance bond shall be responsible for completion of the contract.

B. Financial Interests and Conflicts of Interest

1. Section 50-35 of the Illinois Procurement Code provides that all bids of more than \$10,000 shall be accompanied by disclosure of the financial interests of the bidder. This disclosed information for the successful bidder, will be maintained as public information subject to release by request pursuant to the Freedom of Information Act.

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

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

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

C. Disclosure Form Instructions

Form A: For bidders that have previously submitted the information requested in Form A

The Department has retained the Form A disclosures submitted by all bidders responding to these requirements for the April 24, 1998 or any subsequent letting conducted by the Department. The bidder has the option of submitting the information again or the bidder may sign the following certification statement indicating that the information previously submitted by the bidder is, as of the date of signature, current and accurate. The Certification must be signed and dated by a person who is authorized to execute contracts for the bidding company. Before signing this certification, the bidder should carefully review its prior submissions to ensure the Certification is correct. If the Bidder signs the Certification, the Bidder should proceed to Form B instructions.

CERTIFICATION STATEMENT

I have determined that the Form A disclosure information previously submitted is current and accurate, and all forms are hereby incorporated by reference in this bid. Any necessary additional forms or amendments to previously submitted forms are attached to this bid.

(Bidding Company)

Name of Authorized Representative (type or print)

Title of Authorized Representative (type or print)

Signature of Authorized Representative

Date

Form A: For bidders who have NOT previously submitted the information requested in Form A

If the bidder is a publicly traded entity subject to Federal 10K reporting, the 10K Report may be submitted to meet the requirements of Form A. If a bidder is a privately held entity that is exempt from Federal 10K reporting, but has more than 400 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any person or entity holding any ownership share that is in excess of 5%. If a bidder is not subject to Federal 10K reporting, the bidder must determine if any individuals are required by law to complete a financial disclosure form. To do this, the bidder should answer each of the following questions. A "YES" answer indicates Form A must be completed. If the answer to each of the following questions is "NO", then the NOT APPLICABLE STATEMENT on the second page of 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 \$90,420.00? YES ___ NO ___
3. Does anyone in your organization receive more than \$90,420.00 of the bidding entity's or parent entity's distributive income? (Note: Distributive income is, for these purposes, any type of distribution of profits. An annual salary is not distributive income.) YES ___ NO ___
4. Does anyone in your organization receive greater than 5% of the bidding entity's or parent entity's total distributive income, but which is less than \$90,420.00? 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 on page 2 of Form A must be signed and dated by a person that is authorized to execute contracts for your company.

Form B: Identifying Other Contracts & Procurement Related Information Disclosure Form B must be completed for each bid submitted by the bidding entity. It must be signed by an individual who is authorized to execute contracts for the bidding entity. *Note: Signing the NOT APPLICABLE STATEMENT on Form A does not allow the bidder to ignore Form B. Form B must be completed, signed 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 signature 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.

D. Bidders Submitting More Than One Bid

Bidders submitting multiple bids may submit one set of forms consisting of all required Form A disclosures and one Form B for use with all bids. Please indicate in the space provided below the bid item that contains the original disclosure forms and the bid items which incorporate the forms by reference.

- The bid submitted for letting item _____ contains the Form A disclosures or Certification Statement and the Form B disclosures. The following letting items incorporate the said forms by reference:

RETURN WITH BID/OFFER

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form A Financial Information & Potential Conflicts of Interest Disclosure

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

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

DISCLOSURE OF FINANCIAL INFORMATION

1. Disclosure of Financial Information. The individual named below has an interest in the BIDDER (or its parent) in terms of ownership or distributive income share in excess of 5%, or an interest which has a value of more than \$90,420.00 (60% of the Governor's salary as of 7/1/01). (Make copies of this form as necessary and attach a separate Disclosure Form A for each individual meeting these requirements)

FOR INDIVIDUAL (type or print information)

NAME:

ADDRESS

Type of ownership/distributable income share:

stock sole proprietorship Partnership other: (explain on separate sheet): % or \$ value of ownership/distributable income share:

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

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

Yes ___ No ___

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

- 1. Are you currently an officer or employee of either the Capitol Development Board or the Illinois Toll Highway Authority? Yes ___ No ___
2. Are you currently appointed to or employed by any agency of the State of Illinois? If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds \$90,420.00, (60% of the Governor's salary as of 7/1/01) provide the name the State agency for which you are employed and your annual salary.

RETURN WITH BID/OFFER

- 3. If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds \$90,420.00, (60% of the Governor's salary as of 7/1/01) are you entitled to receive (i) more than 7 1/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of the salary of the Governor? Yes ___ No ___

- 4. If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds \$90,420.00, (60% of the Governor's salary as of 7/1/01) are you and your spouse or minor children entitled to receive (i) more than 15% in aggregate of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of 2 times the salary of the Governor? Yes ___ No ___

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

Yes ___ No ___

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

- 1. Is your spouse or any minor children currently an officer or employee of the Capitol Development Board or the Illinois Toll Highway Authority? Yes ___ No ___

- 2. Is your spouse or any minor children currently appointed to or employed by any agency of the State of Illinois? If your spouse or minor children is/are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds \$90,420.00, (60% of the Governor's salary as of 7/1/01) 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 \$90,420.00, (60% of the salary of the Governor as of 7/1/01) are you entitled to receive (i) more than 7 1/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of the salary of the Governor? Yes ___ No ___

4. If your spouse or any minor children are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds \$90,420.00, (60% of the Governor's salary as of 7/1/01) are you and your spouse or any minor children entitled to receive (i) more than 15% in the aggregate of the total distributable income from your firm, partnership, association or corporation, or (ii) an amount in excess of 2 times the salary of the Governor?

Yes ___ No ___

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

Yes ___ No ___

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

Yes ___ No ___

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

Yes ___ No ___

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

Yes ___ No ___

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

Yes ___ No ___

RETURN WITH BID/OFFER

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

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

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

APPLICABLE STATEMENT

This Disclosure Form A is submitted on behalf of the INDIVIDUAL named on previous page.

Completed by: _____
Name of Authorized Representative (type or print)

Completed by: _____
Title of Authorized Representative (type or print)

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

NOT APPLICABLE STATEMENT

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.

Name of Authorized Representative (type or print)

Title of Authorized Representative (type or print)

Signature of Authorized Representative _____ Date _____

RETURN WITH BID/OFFER

**ILLINOIS DEPARTMENT
OF TRANSPORTATION**

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

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

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

DISCLOSURE OF OTHER CONTRACTS AND PROCUREMENT RELATED INFORMATION

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

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

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

THE FOLLOWING STATEMENT MUST BE SIGNED

Name of Authorized Representative (type or print)	

Title of Authorized Representative (type or print)	
_____	_____
Signature of Authorized Representative	Date

RETURN WITH BID

SPECIAL NOTICE TO CONTRACTORS

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

CONSTRUCTION EMPLOYEE UTILIZATION PROJECTION

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



RETURN WITH BID

Contract No. 83782
KANE County
Section 99-00243-00-PV
Project CMF-F-336(10)
Route FAP 336 (Randall Road)
District 1 Construction Funds

PART I. IDENTIFICATION

Dept. Human Rights # _____ Duration of Project: _____

Name of Bidder: _____

PART II. WORKFORCE PROJECTION

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

TABLE A

Table A: TOTAL Workforce Projection for Contract. Columns include Job Categories, Total Employees (M, F), Minority Employees (Black, Hispanic, *Other Minor.), and Trainees (Apprentices, On the Job Trainees).

TABLE B

Table B: CURRENT EMPLOYEES TO BE ASSIGNED TO CONTRACT. Columns include Total Employees (M, F) and Minority Employees (M, F).

TABLE C

Table C: TOTAL Training Projection for Contract. Columns include Employees in Training, Total Employees (M, F), Minority Employees (Black, Hispanic, *Other Minor.), and On the Job Trainees.

FOR DEPARTMENT USE ONLY

*Other minorities are defined as Asians (A) or Native Americans (N). Please specify race of each employee shown in Other Minorities column. Note: See instructions on the next page

RETURN WITH BID

**Contract No. 83782
KANE County
Section 99-00243-00-PV
Project CMF-F-336(10)
Route FAP 336 (Randall Road)
District 1 Construction Funds**

PART II. WORKFORCE PROJECTION - continued

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

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

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

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

PART III. AFFIRMATIVE ACTION PLAN

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

Company _____ Telephone Number _____

Address _____

NOTICE REGARDING SIGNATURE

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

Signature: _____ Title: _____ Date: _____

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

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

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

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

RETURN WITH BID

ADDITIONAL FEDERAL REQUIREMENTS

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

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

RETURN WITH BID

**Contract No. 83782
KANE County
Section 99-00243-00-PV
Project CMF-F-336(10)
Route FAP 336 (Randall Road)
District 1 Construction Funds**

PROPOSAL SIGNATURE SHEET

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

(IF AN INDIVIDUAL) Firm Name _____
Signature of Owner _____
Business Address _____

(IF A CO-PARTNERSHIP) Firm Name _____
By _____
Business Address _____
Name and Address of All Members of the Firm: _____

(IF A CORPORATION) Corporate Name _____
By _____
Signature of Authorized Representative _____
Typed or printed name and title of Authorized Representative _____

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

(IF A JOINT VENTURE) Corporate Name _____
By _____
Signature of Authorized Representative _____
Typed or printed name and title of Authorized Representative _____

Attest _____
Signature _____
Business Address _____

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

RETURN WITH BID



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

Item No.
Letting Date

KNOW ALL MEN BY THESE PRESENTS, That We

as PRINCIPAL, and

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

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

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

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

In TESTIMONY WHEREOF, the said PRINCIPAL and the said SURETY have caused this instrument to be signed by their respective officers this day of A.D.,

PRINCIPAL SURETY
(Company Name)
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 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

PROPOSAL ENVELOPE



PROPOSALS

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

Item No.	Item No.	Item No.

Submitted By:

Name:
Address:
Phone No.

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

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

NOTICE

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

CONTRACTOR OFFICE COPY OF CONTRACT SPECIFICATIONS

NOTICE

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

**Contract No. 83782
KANE County
Section 99-00243-00-PV
Project CMF-F-336(10)
Route FAP 336 (Randall Road)
District 1 Construction Funds**



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., August 5, 2005. 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. 83782
KANE County
Section 99-00243-00-PV
Project CMF-F-336(10)
Route FAP 336 (Randall Road)
District 1 Construction Funds**

Project consists of PCC jointed pavement and full depth bituminous pavement reconstruction, full depth bituminous widening and resurfacing, poured-in-place concrete bicycle underpass and bituminous bike path, sidewalks, curb and gutter, storm sewers, water main, traffic signal modernization/interconnect and lighting located at the intesection of Randall Road and IL Route 64 from 3,839 ft north to 2.511 ft south of the intersection, 1,839 ft west to 1.426 ft east of the intersection and the Dean Street intersection.

- 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

Timothy W. Martin, Secretary

BD 351 (Rev. 01/2003)

SPECIAL PROVISIONS

FAP ROUTE 336 (RANDALL ROAD—C.H. 34) AT
FAP ROUTE 307 (ILLINOIS ROUTE 64—MAIN STREET)
SECTION NO. 99-00243-00-PV
PROJECT ~~CMF~~-F-0336010
JOB NO. C-91-330-99
CONTRACT NO. 83782

KANE COUNTY

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FOR
SUPPLEMENTAL SPECIFICATIONS
AND RECURRING SPECIAL PROVISIONS
Adopted March 1, 2005

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

ERRATA Standard Specifications for Road and Bridge Construction (Adopted 1-1-02) (Revised 3-1-05)

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BDE SPECIAL PROVISIONS
For The August 5, 2005 Letting

The following special provisions indicated by an "x" are applicable to this contract and will be included by the Project Development and Implementation Section of the BD&E. An * indicates a new or revised special provision for the letting.

<u>File Name</u>	<u>Pg.#</u>	<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
80099		Accessible Pedestrian Signals (APS)	April 1, 2003	
80141		Additional Award Criteria	June 1, 2004	
80108		Asbestos Bearing Pad Removal	Nov. 1, 2003	
72541		Asbestos Waterproofing Membrane and Asbestos Bituminous Concrete Surface Removal	June 1, 1989	June 30, 1994
80128	74	X Authority of Railroad Engineer	July 1, 2004	
* 80065	75	X Bituminous Base Course/Widening Superpave	April 1, 2002	Aug. 1, 2005
80050	81	X Bituminous Concrete Surface Course	April 1, 2001	April 1, 2003
80142	82	X Bituminous Equipment, Spreading and Finishing Machine	Jan. 1, 2005	
80066		Bridge Deck Construction	April 1, 2002	April 1, 2004
50261		Building Removal-Case I (Non-Friable and Friable Asbestos)	Sept. 1, 1990	Aug. 1, 2001
50481		Building Removal-Case II (Non-Friable Asbestos)	Sept. 1, 1990	Aug. 1, 2001
50491		Building Removal-Case III (Friable Asbestos)	Sept. 1, 1990	Aug. 1, 2001
50531	83	X Building Removal-Case IV (No Asbestos)	Sept. 1, 1990	Aug. 1, 2001
80118	86	X Butt Joints	April 1, 2004	April 1, 2005
80031		Calcium Chloride Accelerator for Portland Cement Concrete Patching	Jan. 1, 2001	
80077		Chair Supports	Nov. 1, 2002	Nov. 2, 2002
80051	87	X Coarse Aggregate for Trench Backfill, Backfill and Bedding	April 1, 2001	Nov. 1, 2003
80094	94	X Concrete Admixtures	Jan. 1, 2003	July 1, 2004
80112		Concrete Barrier	Jan. 1, 2004	April 2, 2004
* 80146	99	X Detectable Warnings	Aug. 1, 2005	
80102		Corrugated Metal Pipe Culverts	Aug. 1, 2003	July 1, 2004
80114	102	X Curing and Protection of Concrete Construction	Jan. 1, 2004	
80029	110	X Disadvantaged Business Enterprise Participation	Sept. 1, 2000	June 1, 2004
80144		Elastomeric Bearings	April 1, 2005	
31578	118	X Epoxy Coating on Reinforcement	April 1, 1997	Jan. 1, 2003
80041		Epoxy Pavement Marking	Jan. 1, 2001	Aug. 1, 2003
80055	119	X Erosion and Sediment Control Deficiency Deduction	Aug. 1, 2001	Nov. 1, 2001
80103	120	X Expansion Joints	Aug. 1, 2003	
* 80101	121	X Flagger Vests	April 1, 2003	Aug. 1, 2005
80079	122	X Freeze-Thaw Rating	Nov. 1, 2002	
80072		Furnished Excavation	Aug. 1, 2002	Nov. 1, 2004
80054	123	X Hand Vibrator	Nov. 1, 2003	
* 80147		X Illuminated Sign	Aug. 1, 2005	
80109		Impact Attenuators	Nov. 1, 2003	
80110	124	X Impact Attenuators, Temporary	Nov. 1, 2003	April 1, 2004
80104	126	X Inlet Filters	Aug. 1, 2003	
80080		Insertion Lining of Pipe Culverts	Nov. 1, 2002	Aug. 1, 2003
80067	128	X Light Emitting Diode (LED) Signal Head	April 1, 2002	Aug. 1, 2003
80081		Lime Gradation Requirements	Nov. 1, 2002	
80133		Lime Stabilized Soil Mixture	Nov. 1, 2004	April 1, 2005
80045		Material Transfer Device	June 15, 1999	March 1, 2001
80137		Minimum Lane Width with Lane Closure	Jan. 1, 2005	
80138	130	X Mulching Seeded Areas	Jan. 1, 2005	
80082	131	X Multilane Pavement Patching	Nov. 1, 2002	
80129		Notched Wedge Longitudinal Joint	July 1, 2004	
80069		Organic Zinc-Rich Paint System	Nov. 1, 2001	Aug. 1, 2003
80116	132	X Partial Payments	Sept. 1, 2003	
80013	133	X Pavement and Shoulder Resurfacing	Feb. 1, 2000	July 1, 2004
53600	134	X Pavement Thickness Determination for Payment	April 1, 1999	Jan. 1, 2004

<u>File Name</u>	<u>Pg.#</u>		<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
80022	139	X	Payment to Subcontractors	June 1, 2000	Sept. 1, 2003
80130	140	X	Personal Protective Equipment	July 1, 2004	
80134	141	X	Plastic Blockouts for Guardrail	Nov. 1, 2004	
80073			Polymer Modified Emulsified Asphalt	Nov. 1, 2002	
80119			Polyurea Pavement Marking	April 1, 2004	
80124	142	X	Portable Changeable Message Signs	Nov. 1, 1993	April 2, 2004
80139	143	X	Portland Cement	Jan. 1, 2005	
80083	144	X	Portland Cement Concrete	Nov. 1, 2002	
80036			Portland Cement Concrete Patching	Jan. 1, 2001	Jan. 1, 2004
419	145	X	Precast Concrete Products	July 1, 1999	Nov. 1, 2004
80120			Precast, Prestressed Concrete Members	April 1, 2004	
80084	146	X	Preformed Recycled Rubber Joint Filler	Nov. 1, 2002	
80015	147	X	Public Convenience and Safety	Jan. 1, 2000	
80121			PVC Pipeliner	April 1, 2004	April 1, 2005
80122			Railroad, Full-Actuated Controller	April 1, 2004	
3426I	148	X	Railroad Protective Liability Insurance	Dec. 1, 1986	May 1, 1988
80105			Raised Reflective Pavement Markers (Bridge)	Aug. 1, 2003	
80011	149	X	RAP for Use in Bituminous Concrete Mixtures	Jan. 1, 2000	April 1, 2002
80032			Remove and Re-Erect Steel Plate Beam Guardrail and Traffic Barrier Terminals	Jan. 1, 2001	Jan. 1, 2005
80085			Sealing Abandoned Water Wells	Nov. 1, 2002	
* 80131	153	X	Seeding and Sodding	July 1, 2004	Aug. 1, 2005
80132	156	X	Self-Consolidating Concrete for Precast Products	July 1, 2004	
80096			Shoulder Rumble Strips	Jan. 1, 2003	
80140	158	X	Shoulder Stabilization at Guardrail	Jan. 1, 2005	
80135			Soil Modification	Nov. 1, 2004	April 1, 2005
* 80070	159	X	Stabilized Subbase and Bituminous Shoulders Superpave	April 1, 2002	Aug. 1, 2005
80127	165	X	Steel Cost Adjustment	April 2, 2004	July 1, 2004
* 80143	168A	X	Subcontractor Mobilization Payments	April 2, 2005	
80086	169	X	Subgrade Preparation	Nov. 1, 2002	
80136			Superpave Bituminous Concrete Mixture IL-4.75	Nov. 1, 2004	
80010	170	X	Superpave Bituminous Concrete Mixtures	Jan. 1, 2000	April 1, 2004
80039			Superpave Bituminous Concrete Mixtures (Low ESAL)	Jan. 1, 2001	April 1, 2004
* 80075			Surface Testing of Pavements	April 1, 2002	Aug. 1, 2005
80145			Suspension of Slipformed Parapets	June 11, 2004	
80092	177	X	Temporary Concrete Barrier	Oct. 1, 2002	Nov. 1, 2003
80087	180	X	Temporary Erosion Control	Nov. 1, 2002	
80008			Temporary Module Glare Screen System	Jan. 1, 2000	
80106			Temporary Portable Bridge Traffic Signals	Aug. 1, 2003	
80098			Traffic Barrier Terminals	Jan. 1, 2003	
5729I	182	X	Traffic Control Deficiency Deduction	April 1, 1992	Jan. 1, 2005
20338	183	X	Training Special Provisions	Oct. 15, 1975	
80107	186	X	Transient Voltage Surge Suppression	Aug. 1, 2003	
80123	188	X	Truck Bed Release Agent	April 1, 2004	
* 80149			Variable Spaced Tining	Aug. 1, 2005	
80048	189	X	Weight Control Deficiency Deduction	April 1, 2001	Aug. 1, 2002
80090			Work Zone Public Information Signs	Sept. 1, 2002	Jan. 1, 2005
80125			Work Zone Speed Limit Signs	April 2, 2004	April 15, 2004
80126			Work Zone Traffic Control	April 2, 2004	Jan. 2, 2005
80097	191	X	Work Zone Traffic Control Devices	Jan. 1, 2003	Nov. 1, 2004
80071			Working Days	Jan. 1, 2002	

The following special provisions have been **deleted** from use:

80113 Curb Ramps for Sidewalk This special provision has been replaced by the BDE Special Provision, "Detectable Warnings".

43761 Driving Guardrail Posts This special provision has been made obsolete by revising Standard 630201 and issuing the BDE Special Provision, "Shoulder Stabilization at Guardrail".

80091 Underdrain Operations This special provision is no longer required and has been deleted.

The following special provisions are in the 2005 Supplemental Specifications and Recurring Special Provisions:

<u>File Name</u>	<u>Special Provision Title</u>	<u>New Location</u>	<u>Effective</u>	<u>Revised</u>
80052	Adjusting Frames and Grates	Sections 602, 603, and 1043	Aug. 1, 2001	Nov. 1, 2001
80093	Articulated Block Revetment Mat	Sections 285 and 1005	Jan. 1, 2003	
80078	Controlled Aggregate Mixing System	Sections 311, 351, and 481	Nov. 1, 2002	
80100	Epoxy Coatings for Steel Reinforcement	Section 1006	April 1, 2003	
80095	Precast Block Revetment Mat	Sections 285 and 1005	Jan. 1, 2003	
80074	Shoulder Inlets with Curb	Section 610	Aug. 1, 2002	
80117	Stone for Erosion Protection, Sediment Control, and Rockfill	Sections 281 and 1005	Jan. 1, 2004	
80088	Traffic Structures	Sections 1069 and 1077	Nov. 1, 2002	

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:

- Building Removal-Case I
- Building Removal-Case II
- Building Removal-Case III
- Building Removal-Case IV
- 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 *Standard Specifications for Road and Bridge Construction*, adopted January 1, 2002; the latest edition of the *Illinois Manual on Uniform Traffic Control Devices for Streets and Highways*; and the *Manual of Test Procedures for Materials* in effect on the date of invitation for bids; the latest edition of the *Standard Specifications for Water and Sewer Main Construction in Illinois*; the Illinois Urban Manual; and the Supplemental Specifications and Recurring Special Provisions indicated on the Check Sheet included herein which apply to and govern the construction of FAP Route 336 (Randall Road) at FAP Route 307 (Illinois Route 64), Section 99-00243-00-PV in Kane County, and in case of conflict with any part or parts of said Specifications, the said Special Provisions shall take precedence and shall govern.

LOCATION OF IMPROVEMENT

This improvement is located at the intersection of FAP Route 336 (Randall Road) and FAP Route 307 (Illinois Route 64), from 3,839 feet north to 2,511 feet south of the intersection, and 1,839 feet west to 1,426 feet east of the intersection, including improvement to the FAP Route 336 (Randall Road) and Dean Street intersection, for a total distance of 9,615 feet, within the City of St. Charles, Kane County, Illinois.

DESCRIPTION OF PROJECT

This improvement consists of P.C.C. jointed pavement and full-depth bituminous pavement reconstruction, full-depth bituminous widening and resurfacing, poured-in-place concrete bicycle underpass and bituminous bicycle path, sidewalk, curb and gutter, storm sewer, water main, traffic signal modernization and interconnect, lighting, pavement marking, landscaping, and other appurtenant work necessary to complete the project in accordance with the plans, Standard Specifications, and these Special Provisions.

COMPLETION DATES PLUS GUARANTEED WORKING DAYS

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

Interim completion dates have been set for this contract as noted below. Should the Contractor fail to complete the work on or before the interim completion dates stipulated or within such extended time as may have been allowed, liquidated damages as stated in Article 108.09 of the Standard Specifications shall be assessed.

Stage I	Completion Date	.....	August 18, 2006
Stage IA	Completion Date	.....	November 17, 2006
Stage II	Completion Date	.....	August 17, 2007
Stage III	Completion Date	.....	October 31, 2007

The Contractor shall complete all contract items and safely open all roadways to traffic by 11:59 p.m. on October 31, 2007, except as specified herein.

The Contractor will be allowed to complete all clean-up work and punch list items within 10 guaranteed working days after the completion date for opening the roadway to traffic. Under extenuating circumstances, the Engineer may direct that certain items of work not affecting the safe opening of the roadway to traffic may be completed within the guaranteed working days allowed for clean-up work and punch list items. Temporary lane closures for this work may be allowed at the discretion of the Engineer.

Article 108.09 of the Standard Specifications shall apply to both the completion dates and the number of working days.

FAP Route 336 (Randall Road) at
 FAP Route 307 (Illinois Route 64)
 Section No. 99-00243-00-PV
 Project No. F-0336010
 Kane County

STATUS OF UTILITIES TO BE ADJUSTED

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
Comcast Cable Communications Mr. Ted Wyman 630-600-6349	Aerial and Underground Cable TV	Various	Prior to and during construction
Commonwealth Edison Company Mr. Joseph Stacho Phone: 630-424-5704	Aerial Electrical	Randall Road North of Dean Street and Dean Street	Prior to construction
Nicor Gas Mr. Scott Stogsdill 630-983-8676	Underground Natural Gas	Various	Prior to and during construction
SBC Mr. Steve Palazzetti Phone: 847-888-6869	Underground Telephone	Various	Prior to and during construction
City of St. Charles Electric Mr. Thomas Bruhl 630-377-4401	Aerial and Underground Electric	Randall Road South of Dean Street and Illinois Route 64	Prior to construction

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.

COORDINATION WITH UTILITIES

The Contractor shall be responsible for obtaining from each utility company the working schedule for adjusting or relocating their respective facilities.

The Contractor shall be aware that relocation work by a utility company may not be able to proceed prior to specific items of work performed by the Contractor. All utilities will not be relocated prior to the beginning of the roadway project.

Utilities may have to be relocated concurrently with the roadway stage construction.

The County will schedule periodic meetings as deemed necessary to facilitate operations of the Contractor and utility companies so work can progress in a reasonable manner and duplication of work is minimized.

Articles 105.07 and 107.31 of the Standard Specifications and the Special Provision for Cooperation with Utilities shall apply.

SECTION 105.07 EXISTING UTILITIES

Existing utilities are shown on the plans according to information obtained from utility companies, the County, the City, and surveys. The Engineer does not guarantee the accuracy or completeness of this information.

The Contractor shall be aware of the location of all utilities and structures in the project area. The Contractor shall conduct construction operations to avoid damage to the above-mentioned utilities or structures.

Should any damage to utilities occur due to the Contractor's negligence, the Contractor shall be responsible for making all repairs in a manner acceptable to the Engineer. All costs associated with making the repairs shall be the responsibility of the Contractor.

The Contractor shall be aware of the locations of vehicle detector loops cut into the pavement. Any vehicle detector loop damaged by the Contractor's negligence shall be repaired by the Contractor in a manner acceptable to the Engineer. All costs associated with making the repairs shall be the responsibility of the Contractor.

The Contractor shall notify all utility owners of the proposed construction schedule, and shall coordinate construction operations with the utility owners so that relocation of utility lines and structures may proceed in an orderly manner. Notification shall be in writing with copies transmitted to the Engineer.

SECTION 105.09 PAVEMENT MARKING PAINT

In addition to the requirements of Article 105.09 of the Standard Specifications, the Contractor shall furnish, at their expense, white, pink or purple pavement marking paint in aerosol cans, for use by the Engineer. The Contractor and subcontractors shall only use these same colors for their own markings, therefore, **not** using J.U.L.I.E. utility colors.

SECTION 107 CONSTRUCTION SAFETY AND HEALTH STANDARDS

It is a condition of this contract and shall be made a condition of each subcontract entered into pursuant to this contract that the Contractor and any Subcontractor shall not require any laborer or mechanic employed in performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous to their health or safety, as determined under Federal Construction Safety and Health Standards.

SECTION 107 FINAL SIGN PLACEMENT ON CONSTRUCTION PROJECTS

All signs removed shall be reinstalled 16 to 18 feet off the edge of pavement where possible. In curb sections, this will vary and will be determined by the Kane County Division of Transportation.

All single-sign installations shall be installed with the bottom of the sign five (5) feet above edge of pavement in rural districts, and seven (7) feet above the edge of pavement in business, commercial or residential districts. On installations having two or more signs, the bottom of the lowest sign shall be four (4) feet above edge of pavement.

All signs replaced will be erected using new metal posts. They are to be driven into solid ground using pneumatic driver. This work will not be paid for separately but shall be considered included in the contract.

SECTION 107.09 PUBLIC SAFETY AND CONVENIENCE

The Contractor shall maintain entrances along the proposed improvement. Interference with traffic movements and inconvenience to owners of abutting property and the public shall be kept to a minimum. Any delays or inconveniences caused by the Contractor by complying with these requirements shall be considered as included in the contract, and no additional compensation will be allowed.

Contractors shall plan their work so that there will be no open holes in the pavement and that all barricades will be removed from the roadway during non-working hours, except where required for public safety.

SECTION 107 MAINTENANCE OF ROADWAY

Beginning on the date that the Contractor begins work on this project, the Contractor shall assume responsibility for the normal maintenance of all 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 required for this work will be provided by the Contractor as required by the Engineer.

The work involved in maintaining the existing pavement and shoulders as above specified will be paid for separately at the respective contract unit prices for the various items of work involved unless specified elsewhere in these Special Provisions. Traffic control and protection required for this work shall be paid for as specified in these Special Provisions.

If no such items of work have been provided for 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 as extra work, in accordance with Article 109.04 of the Standard Specifications.

SECTION 107 PROTECTION OF EXISTING DRAINAGE FACILITIES DURING CONSTRUCTION

All existing drainage structures are to be kept free of debris resulting from construction operations. All work and material necessary to prevent accumulation of debris in the drainage structures will be considered as incidental to the contract. Any debris in the drainage structures resulting from construction operations shall be removed at the Contractor's own expense, and no extra compensation will be allowed. Should reconstruction or adjustment of a drainage structure be required by the Engineer in the field, the necessary work and payment shall be done in accordance with Section 602 and Article 104.02 respectively of the Standard Specifications.

During construction, if the Contractor's forces encounter or otherwise becomes aware of any sewers, underdrains, or field drains within the right-of-way other than those shown on the plans, they shall inform the Engineer. The Engineer shall direct the work necessary to maintain or replace the facilities in service, and to protect them from damage during construction if maintained. Existing facilities to be maintained that are damaged because of non-compliance with this provision shall be replaced at the Contractor's own expense. Should the Engineer have directed the replacement of a facility, the necessary work and payment shall be done in accordance with Sections 550 and 601 and Article 104.02 respectively of the Standard Specifications.

SECTION 107 UNION PACIFIC RAILROAD

The Contractor shall coordinate and complete the Union Pacific Railroad Right of Entry Agreement prior to any work commencing within the Union Pacific Railroad right-of-way.

The local contact for the Union Pacific Railroad is:

Mr. Gary Wilwerding
Union Pacific Railroad
301 West Lake Street
Northlake, IL 60164
Phone: (708) 649-5210



November 3, 2004

UPRR Folder No. 2117-40

To the Contractor:

Before Union Pacific Railroad can permit you to perform work on its property for the reconstruction and widening of the existing Randall Road at-grade public road crossing, it will be necessary to complete two originals of the enclosed Right of Entry Agreement as follows:

1. Fill in the complete legal name of the contractor in the space provided on Page 1 of the Contractor's Right of Entry Agreement. If a corporation, give the state of incorporation. If a partnership, give the names of all partners.
2. Fill in the date construction will begin and be completed in Article 5, Paragraph A.
3. Fill in the name of the contractor in the space provided in the signature block at the end of the Contractor's Right of Entry Agreement. If the contractor is a corporation, the person signing on its behalf must be an elected corporate officer.
4. Return all copies of the Contractor's Right of Entry Agreement together with your Certificate of Insurance as required in Exhibit B-1, in the attached, self-addressed envelope.
5. Check made payable to the Union Pacific Railroad Company in the amount of \$500.00. If you require formal billing, you may consider this letter as a formal bill. In compliance with the Internal Revenue Services' new policy regarding their Form 1099, I certify that 13-6400825 is the Railroad Company's correct Federal Taxpayer Identification Number and that Union Pacific Railroad Company is doing business as a corporation.

After approval of the Right of Entry Agreement and insurance certificate, one fully executed counterpart of the agreement will be returned to you. In no event should you begin work until you have received your counterpart of the fully executed agreement.

Under Exhibit C of the enclosed Contractor's Right of Entry, you are required to procure Railroad Protective Liability Insurance (RPLI) for the duration of this project. As a service to you, Union Pacific is making this coverage available to you. If you decide that acquiring this coverage from the Railroad is of benefit to you, please contact Ms. Nancy Savage at (402) 271-2215.

If you have any questions concerning the agreement, please contact me at (402) 997-3620. Have a safe day!

Sincerely,

PAUL G. FARRELL

Senior Manager Contracts
Phone: 402-544-8620
e-mail: pgfarrell@up.com

Real Estate

UNION PACIFIC RAILROAD
1400 Douglas Street, Stop 1690
Omaha, Nebraska 68179-1690
fx. (402) 501-0340

Exhibit D

To New Public Road Crossing Agreement

SP-5

CONTRACTOR'S RIGHT OF ENTRY AGREEMENT

THIS AGREEMENT is made and entered into as of the _____ day of _____, 200____,
by and between **UNION PACIFIC RAILROAD COMPANY**, a Delaware corporation (the "Railroad");
and _____
(Name of Contractor)

a _____ corporation (the "Contractor").
(State of Incorporation)

RECITALS:

Contractor has been hired by *Kane County* to perform work relating to the reconstruction and widening of the existing Randall Road at-grade public road crossing (the "work"), with all or a portion of such work to be performed on property of Railroad in the vicinity of _____, which work is the subject of a contract dated _____ between Railroad and Kane County. *(Date of C&M Agreement)*

Contractor has requested Railroad to permit it to perform the work on the portion of Railroad's property shown on the print marked **Exhibit A**, attached hereto and hereby made a part hereof, and Railroad is agreeable thereto, subject to the following terms and conditions.

AGREEMENT:

NOW, THEREFORE, it is mutually agreed by and between the Railroad and Contractor, as follows:

ARTICLE 1 - DEFINITION OF CONTRACTOR

For purposes of this agreement, all references in this agreement to the Contractor shall include the Contractor's contractors, subcontractors, officers, agents and employees, and others acting under its or their authority.

ARTICLE 2 - RIGHT GRANTED; PURPOSE

The Railroad hereby grants to the Contractor the right, during the term hereinafter stated and upon and subject to each and all of the terms, provisions and conditions herein contained, to enter upon and have ingress to and egress from the property described in the Recitals for the purpose of performing any work described in the Recitals above. The right herein granted to Contractor is limited to those portions of Railroad's property specifically described herein, or as designated by the Railroad Representative named in Article 4.

ARTICLE 3 - TERMS AND CONDITIONS CONTAINED IN EXHIBITS A, B, C AND D

The terms and conditions contained in Exhibit A, Exhibit B, Exhibit C and Exhibit D, attached hereto, are hereby made a part of this agreement.

ARTICLE 4 - ALL EXPENSES TO BE BORNE BY CONTRACTOR; RAILROAD REPRESENTATIVE

A. The Contractor shall bear any and all costs and expenses associated with any work performed by the Contractor, or any costs or expenses incurred by the Railroad relating to this agreement.

B. The Contractor shall coordinate all of its work with the following Railroad representative or his or her duly authorized representative (the "Railroad Representative"):

Jim Nudera
Manager Track Maintenance
Union Pacific Railroad Company
327 West Spencer Street
West Chicago, IL 60185
Phone: 630-876-2755
FAX: 630-876-4644

C. The Contractor, at its own expense, shall adequately police and supervise all work to be performed by the Contractor and shall ensure that such work is performed in a safe manner as set forth in Section 7 of Exhibit B. The responsibility of the Contractor for safe conduct and adequate policing and supervision of the Contractor's work shall not be lessened or otherwise affected by the Railroad's approval of plans and specifications involving the work, or by the Railroad's collaboration in performance of any work, or by the presence at the work site of the Railroad Representative, or by compliance by the Contractor with any requests or recommendations made by the Railroad Representative.

ARTICLE 5 - TERM; TERMINATION.

A. The grant of right herein made to Contractor shall commence on the date of this agreement, and continue until _____, unless sooner terminated as herein provided, or at such time as Contractor has *(Expiration Date)* completed its work on Railroad's property, whichever is earlier. Contractor agrees to notify the Railroad Representative in writing when it has completed its work on Railroad property.

B. This agreement may be terminated by either party on ten (10) days written notice to the other party.

ARTICLE 6 - CERTIFICATE OF INSURANCE.

A. Before commencing any work, Contractor will provide Railroad with the insurance binders, policies, certificates and/or endorsements set forth in Exhibit C of this agreement.

B. All insurance correspondence, binders, policies, certificates and/or endorsements shall be directed to:

Union Pacific Railroad Company
1400 Douglas Street, MS1690
Omaha NE 68179-1690
Attn.: Senior Manager Contracts
UPRR Folder No.: 2117-40

ARTICLE 7 - DISMISSAL OF CONTRACTOR/SUBCONTRACTOR EMPLOYEE.

At the request of Railroad, Contractor shall remove from Railroad property any employee of Contractor or any subcontractor who fails to conform to the instructions of the Railroad Representative in connection with the work on Railroad's property, and any right of Contractor shall be suspended until such removal has occurred. Contractor shall indemnify Railroad against any claims arising from the removal of any such employee from Railroad property.

ARTICLE 8 - ADMINISTRATIVE FEE.

Contractor shall pay to Railroad FIVE HUNDRED DOLLARS (\$500.00) as reimbursement for clerical, administrative and handling expenses in connection with the processing of this agreement.

ARTICLE 9 - CROSSINGS.

No additional vehicular crossings (including temporary haul roads) or pedestrian crossings over Railroad's trackage shall be installed or used by Contractor without the prior written permission of Railroad.

ARTICLE 10 - EXPLOSIVES.

Explosives or other highly flammable substances shall not be stored on Railroad property without the prior written approval of the Railroad.

IN WITNESS WHEREOF, the parties hereto have duly executed this agreement in duplicate as of the date first herein written.

UNION PACIFIC RAILROAD COMPANY.

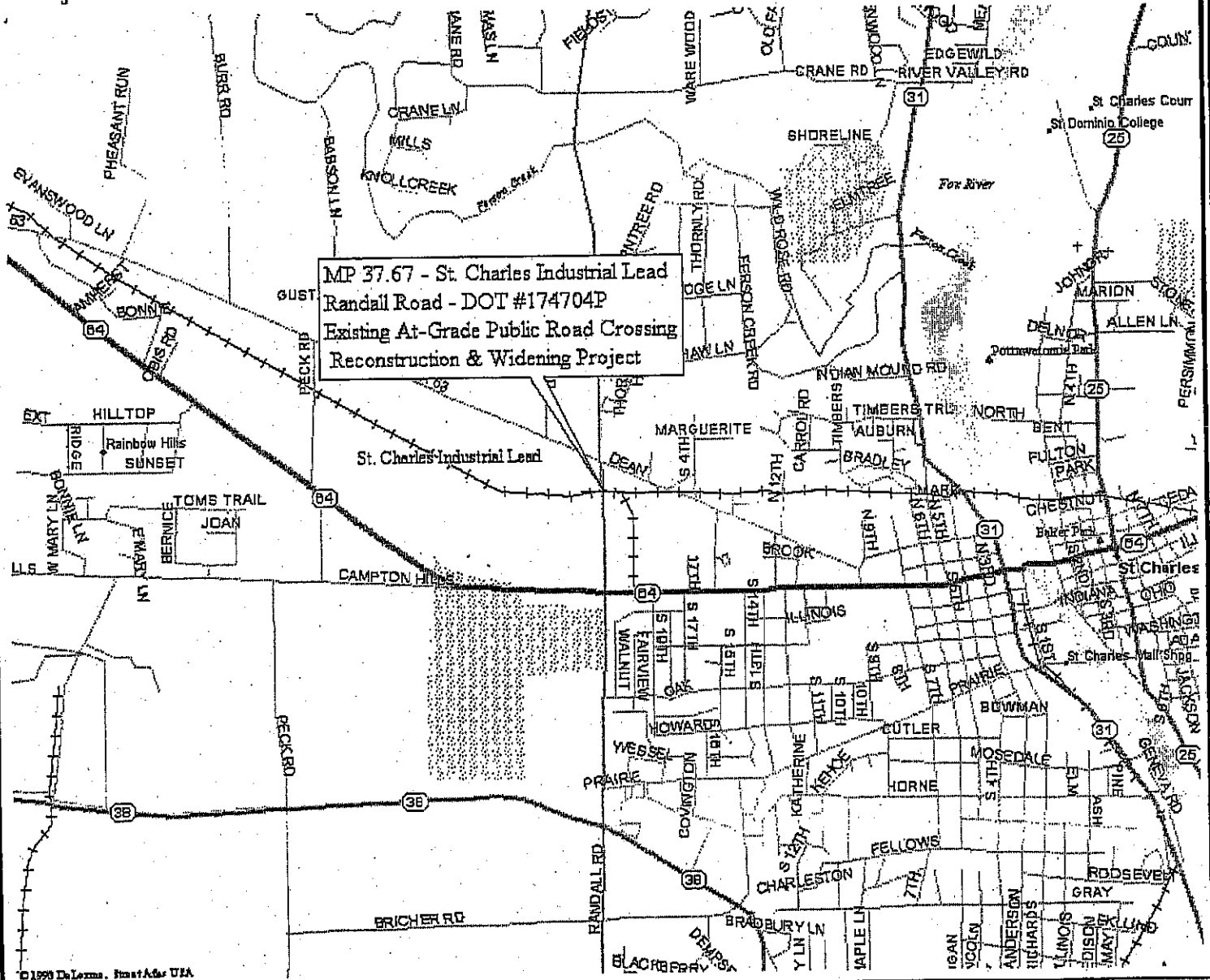
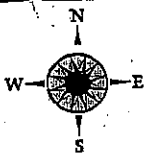
By: _____
PAUL G. FARRELL
Senior Manager Contracts

WITNESS:

(Name of Contractor)

By: _____
Title: _____

LOCATION PRINT ACCOMPANYING A CONTRACTOR'S RIGHT OF ENTRY AGREEMENT



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- RAILROAD WORK TO BE PERFORMED:**
1. Install 1-88 feet concrete crossing surface; unload 2-cars of ballast; relay 320-feet of rail; install 67 cross-ties; and other track materials.
 2. Install 3 AC/DC track circuits; LED flashing signals with gates; cantilevers; sidewalk gates; and new cabin.

EXHIBIT "A"
UNION PACIFIC RAILROAD COMPANY

ST. CHARLES INDUSTRIAL LEAD
MILE POST 37.67
GPS: N 41° 55.042', W 88° 20.394'
ST. CHARLES, KANE CO., IL.

To accompany a Contractor's Right of Entry Agreement with
KANE COUNTY

For the construction of a new at-grade public road crossing.

Folder No. 2117-40

Date: November 3, 2004

WARNING

IN ALL OCCASIONS, U.P. COMMUNICATIONS DEPARTMENT MUST BE CONTACTED IN ADVANCE OF ANY WORK TO DETERMINE EXISTENCE AND LOCATION OF FIBER OPTIC CABLE. PHONE: 1-(800) 336-9193

EXHIBIT B

To Contractor's Right of Entry Agreement

Terms And Conditions

Section 1. NOTICE OF COMMENCEMENT OF WORK - FLAGGING.

A. The Contractor agrees to notify the Railroad Representative at least ten (10) working days in advance of Contractor commencing its work and at least ten (10) working days in advance of proposed performance of any work by the Contractor in which any person or equipment will be within twenty-five (25) feet of any track, or will be near enough to any track that any equipment extension (such as, but not limited to, a crane boom) will reach to within twenty-five (25) feet of any track. No work of any kind shall be performed, and no person, equipment, machinery, tool(s), material(s), vehicle(s), or thing(s) shall be located, operated, placed, or stored within twenty-five (25) feet of any of Railroad's track(s) at any time, for any reason, unless and until a Railroad flagman is provided to watch for trains. Upon receipt of such ten (10)-day notice, the Railroad Representative will determine and inform the Contractor whether a flagman need be present and whether the Contractor need implement any special protective or safety measures. If flagging or other special protective or safety measures are performed by the Railroad, such services will be provided at Contractor's expense with the understanding that if the Railroad provides any flagging or other services, the Contractor shall not be relieved of any of its responsibilities or liabilities set forth herein. Contractor shall promptly pay to Railroad all charges connected with such services within thirty (30) days after presentation of a bill.

B. The rate of pay per hour for each man will be the prevailing hourly rate in effect for an eight hour day for the class of men used during regularly assigned hours and overtime in accordance with Labor Agreements and Schedules in effect at the time the work is performed. In addition to the cost of such labor, a composite charge for vacation, holiday, health and welfare, supplemental sickness, Railroad Retirement and unemployment compensation, supplemental pension, Employees Liability and Property Damage and Administration will be included, computed on actual payroll. The composite charge will be the prevailing composite charge in effect on the day of execution of this agreement. One and one-half times the current hourly rate is paid for overtime, Saturdays and Sundays; two and one-half times current hourly rate for holidays. Wage rates are subject to change, at any time, by law or by agreement between the Railroad and its employees, and may be retroactive as a result of negotiations or a ruling of an authorized Governmental Agency. Additional charges on labor are also subject to change. If the wage rate or additional charges are changed, the Contractor shall pay on the basis of the new rates and charges.

C. Reimbursement to the Railroad will be required covering the full eight hour day during which any flagman is furnished, unless he can be assigned to other Railroad work during a portion of such day, in which event reimbursement will not be required for the portion of the day during which the flagman is engaged in other Railroad work. Reimbursement will also be required for any day not actually worked by said flagman following his assignment to work on the project for which the Railroad is required to pay the flagman and which could not reasonably be avoided by the Railroad by assignment of such flagman to other work, even though the Contractor may not be working during such time. When it becomes necessary for the Railroad to bulletin and assign an employee to a flagging position in compliance with union collective bargaining agreements, the Contractor must provide the Railroad a minimum of five (5) days notice prior to the cessation of the need for a flagman. If five (5)-days notice of cessation is not given, the Contractor will still be required to pay flagging charges for the five (5)-day notice period required by union agreement to be given to the employee, even though flagging is not required for that period. An additional ten (10) days notice must then be given to the Railroad if flagging service are needed again after such five day cessation notice has been given Railroad.

Section 2. LIMITATION AND SUBORDINATION OF RIGHTS GRANTED

A. The foregoing grant of right is subject and subordinate to the prior and continuing right and obligation of the Railroad to use and maintain its entire property including the right and power of the Railroad to construct, maintain, repair, renew, use, operate, change, modify or relocate railroad tracks, roadways, signal, communication, fiber optics, or other wirelines, pipelines and other facilities upon, along or across any or all parts of its property, all or any of which may be freely done at any time or times by the Railroad without liability to the Contractor or to any other party for compensation or damages.

B. The foregoing grant is also subject to all outstanding superior rights (including those in favor of licensees and lessees of the Railroad's property, and others) and the right of the Railroad to renew and extend the same, and is made without covenant of title or for quiet enjoyment.

Section 3. NO INTERFERENCE WITH OPERATIONS OF RAILROAD AND ITS TENANTS.

A. The Contractor shall conduct its operations so as not to interfere with the continuous and uninterrupted use and operation of the railroad tracks and property of the Railroad, including without limitation, the operations of the Railroad's lessees, licensees or others, unless specifically authorized in advance by the Railroad Representative. Nothing shall be done or permitted to be done

by the Contractor at any time that would in any manner impair the safety of such operations. When not in use, Contractor's machinery and materials shall be kept at least fifty (50) feet from the centerline of the Railroad's nearest track, and there shall be no vehicular crossings of Railroad's tracks except at existing open public crossings.

B. Operations of the Railroad and work performed by the Railroad personnel and delays in the work to be performed by the Contractor caused by such railroad operations and work are expected by the Contractor, and Contractor agrees that the Railroad shall have no liability to Contractor, its subcontractors or any other person or entity for any such delays. The Contractor shall coordinate its activities with those of the Railroad and third parties so as to avoid interference with railroad operations. The safe operation of the Railroad takes precedence over any work to be performed by the Contractor.

Section 4. LIENS.

The Contractor shall pay in full all persons who perform labor or provide materials for the work to be performed by Contractor. The Contractor shall not create, permit or suffer any mechanic's or materialmen's liens of any kind or nature to be created or enforced against any property of the Railroad for any such work performed. The Contractor shall indemnify and hold harmless the Railroad from and against any and all liens, claims, demands, costs or expenses of whatsoever nature in any way connected with or growing out of such work done, labor performed, or materials furnished. If the Contractor fails to promptly cause any lien to be released of record, the Railroad may, at its election, discharge the lien or claim of lien at Contractor's expense.

Section 5. PROTECTION OF FIBER OPTIC CABLE SYSTEMS.

A. Fiber optic cable systems may be buried on the Railroad's property. Protection of the fiber optic cable systems is of extreme importance since any break could disrupt service to users resulting in business interruption and loss of revenue and profits. Contractor shall telephone the Railroad during normal business hours (7:00 a.m. to 9:00 p.m. Central Time, Monday through Friday, except holidays) at 1-800-336-9193 (also a 24-hour, 7-day number for emergency calls) to determine if fiber optic cable is buried anywhere on the Railroad's premises to be used by the Contractor. If it is, Contractor will telephone the telecommunications company(ies) involved, make arrangements for a cable locator and, if applicable, for relocation or other protection of the fiber optic cable. The Contractor shall not commence any work until all such protection or relocation (if applicable) has been accomplished.

B. In addition to other indemnity provisions in this Agreement, the Contractor shall indemnify, defend and hold the Railroad harmless from and against all costs, liability and expense whatsoever (including, without limitation, attorneys' fees, court costs and expenses) arising out of any act or omission of the Contractor, its contractor, agents and/or employees, that causes or contributes to (1) any damage to or destruction of any telecommunications system on Railroad's property, and/or (2) any injury to or death of any person employed by or on behalf of any telecommunications company, and/or its contractor, agents and/or employees, on Railroad's property. Contractor shall not have or seek recourse against Railroad for any claim or cause of action for alleged loss of profits or revenue or loss of service or other consequential damage to a telecommunication company using Railroad's property or a customer or user of services of the fiber optic cable on Railroad's property.

Section 6. PERMITS - COMPLIANCE WITH LAWS.

In the prosecution of the work covered by this agreement, the Contractor shall secure any and all necessary permits and shall comply with all applicable federal, state and local laws, regulations and enactments affecting the work including, without limitation, all applicable Federal Railroad Administration regulations.

Section 7. SAFETY.

A. Safety of personnel, property, rail operations and the public is of paramount importance in the prosecution of the work performed by the Contractor. The Contractor shall be responsible for initiating, maintaining and supervising all safety, operations and programs in connection with the work. The Contractor shall at a minimum comply with the Railroad's safety standards listed in Exhibit D, hereto attached, to ensure uniformity with the safety standards followed by the Railroad's own forces. As a part of the Contractor's safety responsibilities, the Contractor shall notify the Railroad if the Contractor determines that any of the Railroad's safety standards are contrary to good safety practices. The Contractor shall furnish copies of Exhibit D to each of its employees before they enter on the job site.

B. Without limitation of the provisions of paragraph A above, the Contractor shall keep the job site free from safety and health hazards and ensure that its employees are competent and adequately trained in all safety and health aspects of the job.

C. The Contractor shall have proper first aid supplies available on the job site so that prompt first aid services may be provided to any person injured on the job site. The Contractor shall promptly notify the Railroad of any U.S. Occupational Safety and Health Administration reportable injuries. The Contractor shall have a nondelegable duty to control its employees while they are on the job site or any other property of the Railroad, and to be certain they do not use, be under the influence of, or have in their possession any alcoholic beverage, drug or other substance that may inhibit the safe performance of any work.

D. If and when requested by the Railroad, the Contractor shall deliver to the Railroad a copy of the Contractor's safety plan for conducting the work (the "Safety Plan"). Railroad shall have the right, but not the obligation, to require the Contractor to correct any deficiencies in the Safety Plan. The terms of this agreement shall control if there are any inconsistencies between this agreement and the Safety Plan.

Section 8. INDEMNITY.

A. To the extent not prohibited by applicable statute, the Contractor shall indemnify, defend and hold harmless the Railroad, its affiliates, and its and their officers, agents and employees ("Indemnified Parties") from and against any and all loss, damage, injury, liability, claim, demand, cost or expense (including, without limitation, attorney's, consultant's and expert's fees, and court costs), fine or penalty (collectively, "Loss") incurred by any person (including, without limitation, any Indemnified Party, the Contractor, or any employee of the Contractor or of any Indemnified Party) arising out of or in any manner connected with (i) any work performed by the Contractor, or (ii) any act or omission of the Contractor, its officers, agents or employees, or (iii) any breach of this agreement by the Contractor.

B. The right to indemnity under this Section 8 shall accrue upon occurrence of the event giving rise to the Loss, and shall apply regardless of any negligence or strict liability of any Indemnified Party, except where the Loss is caused by the sole active negligence of an Indemnified Party as established by the final judgment of a court of competent jurisdiction. The sole active negligence of any Indemnified Party shall not bar the recovery of any other Indemnified Party.

C. The Contractor expressly and specifically assumes potential liability under this Section 8 for claims or actions brought by the Contractor's own employees. The Contractor waives any immunity it may have under worker's compensation or industrial insurance acts to indemnify the Railroad under this Section 8. Contractor acknowledges that this waiver was mutually negotiated by the parties hereto.

D. No court or jury findings in any employee's suit pursuant to any worker's compensation act or the Federal Employers' Liability Act against a party to this agreement may be relied upon or used by the Contractor in any attempt to assert liability against the Railroad.

E. The provisions of this Section 8 shall survive the completion of any work performed by the Contractor or the termination or expiration of this agreement. In no event shall this Section 8 or any other provision of this agreement be deemed to limit any liability the Contractor may have to any Indemnified Party by statute or under common law.

Section 9. RESTORATION OF PROPERTY.

In the event the Railroad authorizes the Contractor to take down any fence of the Railroad or in any manner move or disturb any of the other property of the Railroad in connection with the work to be performed by Contractor, then in that event the Contractor shall, as soon as possible and at Contractor's sole expense, restore such fence and other property to the same condition as the same were in before such fence was taken down or such other property was moved or disturbed. The Contractor shall remove all of Contractor's tools, equipment, rubbish and other materials from Railroad's property promptly upon completion of the work, restoring Railroad's property to the same state and condition as when Contractor entered thereon.

Section 10. WAIVER OF DEFAULT.

Waiver by the Railroad of any breach or default of any condition, covenant or agreement herein contained to be kept, observed and performed by the Contractor shall in no way impair the right of the Railroad to avail itself of any remedy for any subsequent breach or default.

Section 11. MODIFICATION - ENTIRE AGREEMENT.

No modification of this agreement shall be effective unless made in writing and signed by the Contractor and the Railroad. This agreement and the exhibits attached hereto and made a part hereof constitute the entire understanding between the Contractor and the Railroad and cancel and supersede any prior negotiations, understandings or agreements, whether written or oral, with respect to the work to be performed by the Contractor.

Section 12. ASSIGNMENT - SUBCONTRACTING.

The Contractor shall not assign or subcontract this agreement, or any interest therein, without the written consent of the Railroad. The Contractor shall be responsible for the acts and omissions of all subcontractors, and shall require all subcontractors to maintain the insurance coverage required to be maintained by the Contractor as provided in this agreement, and to indemnify the Contractor and the Railroad to the same extent as the Railroad is indemnified by the Contractor under this agreement.

EXHIBIT C

To Contractor's Right of Entry Agreement

Insurance Provisions

Contractor shall, at its sole cost and expense, procure and maintain during the life of this Agreement the following insurance coverage:

A. Commercial General Liability insurance. This insurance shall contain broad form contractual liability with a single limit of at least \$5,000,000 each occurrence or claim and an aggregate limit of at least \$10,000,000. Coverage must be purchased on a post 1998 ISO or equivalent form, including but not limited to coverage for the following:

- Bodily injury including death and personal injury
- Property damage
- Fire legal liability (Not less than the replacement value of the portion of the premises occupied)
- Products and completed operations

The policy shall also contain the following endorsements which shall be indicated on the certificate of insurance:

- "For purposes of this insurance, Union Pacific Railroad payments related to the Federal Employers Liability Act or a Union Pacific Wage Continuation Program or similar programs are deemed not to be either payments made or obligations assumed under any Workers Compensation, disability benefits, or unemployment compensation law or similar law."
- The exclusions for railroads (except where the Job site is more than fifty feet (50') from any railroad including but not limited to tracks, bridges, trestles, roadbeds, terminals, underpasses or crossings), and explosion, collapse and underground hazard shall be removed.
- Coverage for Contractor's (and Railroad's) employees shall not be excluded
- Waiver of subrogation

B. Business Automobile Coverage insurance. This insurance shall contain a combined single limit of at least \$5,000,000 per occurrence or claim, including but not limited to coverage for the following:

Bodily injury and property damage
Any and all motor vehicles including owned, hired and non-owned

The policy shall also contain the following endorsements which shall be indicated on the certificate of insurance:

- "For purposes of this insurance, Union Pacific Railroad payments related to the Federal Employers Liability Act or a Union Pacific Wage Continuation Program or similar programs are deemed not to be either payments made or obligations assumed under any Workers Compensation, disability benefits, or unemployment compensation law or similar law."
- The exclusions for railroads (except where the Job site is more than fifty feet (50') from any railroad including but not limited to tracks, bridges, trestles, roadbeds, terminals, underpasses or crossings), and explosion, collapse and underground hazard shall be removed.
- Motor Carrier Act Endorsement- Hazardous materials clean up (MCS-90) if required by law.

C. Workers Compensation and Employers Liability insurance including but not limited to:

- Contractor's statutory liability under the workers' compensation laws of the state(s) affected by this Agreement
- Employers' Liability (Part B) with limits of at least
\$500,000 each accident, \$500,000 disease policy limit
\$500,000 each employee

If Workers Compensation insurance will not cover the liability of Contractor in states that require participation in state workers' compensation fund, Contractor shall comply with the laws of such states. If Contractor is self-insured, evidence of state approval must be provided along with evidence of excess workers compensation coverage. Coverage shall include liability arising out of the U. S. Longshoremen's and Harbor Workers' Act, the Jones Act, and the Outer Continental Shelf Land Act, if applicable.

The policy shall also contain the following endorsement which shall be indicated on the certificate of insurance:

- Alternate Employer Endorsement

- D. **Umbrella or Excess Policies** In the event Contractor utilizes Umbrella or excess policies, these policies shall "follow form" and afford no less coverage than the primary policy.
- E. **Railroad Protective Liability** insurance naming only the Railroad as the insured with a combined single limit of \$2,000,000 per occurrence with a \$6,000,000 aggregate. The policy shall be broad form coverage for "Physical Damage to Property" (ISO Form CG 00 35 07 98 or equivalent). A binder stating the policy is in place must be submitted to the Railroad until the original policy is forwarded to the Railroad.

Other Requirements

- F. Punitive damage exclusion must be deleted, **which deletion shall be indicated on the certificate of insurance.**
- G. Contractor agrees to waive its right of recovery, and its insurers, through policy endorsement, agree to waive their right of subrogation against Railroad. Contractor further waives its right of recovery, and its insurers also waive their right of subrogation against Railroad for loss of its owned or leased property or property under its care, custody and control. Contractor's insurance shall be primary with respect to any insurance carried by Railroad. All waivers of subrogation **shall be indicated on the certificate of insurance.**
- H. All policy(ies) required above (excluding Workers Compensation) shall provide severability of interests and shall name Railroad as an additional insured. **Severability of interest and naming Railroad as additional insured shall be indicated on the certificate of insurance.**
- I. Prior to commencing the Work, Contractor shall furnish to Railroad original certificate(s) of insurance evidencing the required coverage, endorsements, and amendments. The certificate(s) shall contain a provision that obligates the insurance company(ies) issuing such policy(ies) to notify Railroad in writing of any cancellation or material alteration. **Upon request from Railroad, a certified duplicate original of any required policy shall be furnished.**
- J. Any insurance policy shall be written by a reputable insurance company acceptable to Railroad or with a current Best's Insurance Guide Rating of A- and Class VII or better, and authorized to do business in the state(s) in which the service is to be provided.
- K. Contractor **WARRANTS** that this Agreement has been thoroughly reviewed by Contractor's insurance agent(s)/broker(s), who have been instructed by Contractor to procure the insurance coverage required by this Agreement and acknowledges that Contractor's insurance coverage will be primary.
- L. The fact that insurance is obtained by Contractor or Railroad on behalf of Contractor shall not be deemed to release or diminish the liability of Contractor, including, without limitation, liability under the indemnity provisions of this Agreement. Damages recoverable by Railroad shall not be limited by the amount of the required insurance coverage.

EXHIBIT D

To Contractor's Right of Entry Agreement

Minimum Safety Requirements

The term "employees" as used herein refer to all employees of the Contractor as well as all employees of any subcontractor or agent of the Contractor.

I. Clothing

- A. All employees of the Contractor will be suitably dressed to perform their duties safely and in a manner that will not interfere with their vision, hearing, or free use of their hands or feet.

Specifically, the Contractor's employees must wear:

- (i) Waist-length shirts with sleeves.
- (ii) Trousers that cover the entire leg. If flare-legged trousers are worn, the trouser bottoms must be tied to prevent catching.
- (iii) Footwear that covers their ankles and has a defined heel. Employees working on bridges are required to wear safety-toed footwear that conforms to the American National Standards Institute (ANSI) and FRA footwear requirements.

- B. Employees shall not wear boots (other than work boots), sandals, canvas-type shoes, or other shoes that have thin soles or heels that are higher than normal.

- C. Employees must not wear loose or ragged clothing, neckties, finger rings, or other loose jewelry while operating or working on machinery.

II. Personal Protective Equipment

The Contractor shall require its employees to wear personal protective equipment as specified by Railroad rules, regulations, or recommended or requested by the Railroad Representative.

- (i) Hard hat that meets the American National Standard (ANSI) Z89.1 – latest revision. Hard hats should be affixed with the contractor's or subcontractor's company logo or name.
- (ii) Eye protection that meets American National Standard (ANSI) for occupational and educational eye and face protection, Z87.1 – latest revision. Additional eye protection must be provided to meet specific job situations such as welding, grinding, etc.
- (iii) Hearing protection, which affords enough attenuation to give protection from noise levels that will be occurring on the job site. Hearing protection, in the form of plugs or muffs, must be worn when employees are within:
 - 100 feet of a locomotive or roadway/work equipment
 - 15 feet of power operated tools
 - 150 feet of jet blowers or pile drivers
 - 150 feet of retarders in use (when within 10 feet, employees must wear dual ear protection – plugs and muffs)
 -
- (iv) Other types of personal protective equipment, such as respirators, fall protection equipment, and face shields, must be worn as recommended or requested by the Railroad Representative.

III. On Track Safety

The Contractor is responsible for compliance with the Federal Railroad Administration's Roadway Worker Protection regulations – 49CFR214, Subpart C and Railroad's On-Track Safety rules. Under 49CFR214, Subpart C, railroad contractors are responsible for the training of their employees on such regulations. In addition to the instructions contained in Roadway Worker Protection regulations, all employees must:

- (i) Maintain a distance of twenty-five (25) feet to any track unless the Railroad Representative is present to authorize movements.
- (ii) Wear an orange, reflectorized workwear approved by the Railroad Representative.

- (iii) Participate in a job briefing that will specify the type of On-Track Safety for the type of work being performed. Contractors must take special note of limits of track authority, which tracks may or may not be fouled, and clearing the track. The Contractors will also receive special instructions relating to the work zone around machines and minimum distances between machines while working or traveling.

IV. Equipment

- A. It is the responsibility of the Contractor to ensure that all equipment is in a safe condition to operate. If, in the opinion of the Railroad Representative, any of the Contractor's equipment is unsafe for use, the Contractor shall remove such equipment from the Railroad's property. In addition, the Contractor must ensure that the operators of all equipment are properly trained and competent in the safe operation of the equipment. In addition, operators must be:
- Familiar and comply with Railroad's rules on lockout/tagout of equipment.
 - Trained in and comply with the applicable operating rules if operating any hy-rail equipment on-track.
 - Trained in and comply with the applicable air brake rules if operating any equipment that moves rail cars or any other railbound equipment.
- B. All self-propelled equipment must be equipped with a first-aid kit, fire extinguisher, and audible back-up warning device.
- C. Unless otherwise authorized by the Railroad Representative, all equipment must be parked a minimum of twenty-five (25) feet from any track. Before leaving any equipment unattended, the operator must stop the engine and properly secure the equipment against movement.
- D. Cranes must be equipped with three orange cones that will be used to mark the working area of the crane and the minimum clearances to overhead powerlines.

V. General Safety Requirements

- A. The Contractor shall ensure that all waste is properly disposed of in accordance with applicable federal and state regulations.
- B. The Contractor shall ensure that all employees participate in and comply with a job briefing conducted by the Railroad Representative, if applicable. During this briefing, the Railroad Representative will specify safe work procedures, (including On-Track Safety) and the potential hazards of the job. If any employee has any questions or concerns about the work, the employee must voice them during the job briefing. Additional job briefings will be conducted during the work as conditions, work procedures, or personnel change.
- C. All track work performed by the Contractor meets the minimum safety requirements established by the Federal Railroad Administration's Track Safety Standards 49CFR213.
- D. All employees comply with the following safety procedures when working around any railroad track:
- (i) Always be on the alert for moving equipment. Employees must always expect movement on any track, at any time, in either direction.
 - (ii) Do not step or walk on the top of the rail, frog, switches, guard rails, or other track components.
 - (iii) In passing around the ends of standing cars, engines, roadway machines or work equipment, leave at least 20 feet between yourself and the end of the equipment. Do not go between pieces of equipment of the opening is less than one car length (50 feet).
 - (iv) Avoid walking or standing on a track unless so authorized by the employee in charge.
 - (v) Before stepping over or crossing tracks, look in both directions first.
 - (vi) Do not sit on, lie under, or cross between cars except as required in the performance of your duties and only when track and equipment have been protected against movement.
- E. All employees must comply with all federal and state regulations concerning workplace safety.

XX004558 RAILROAD FLAGMEN

This item is a plan allowance for compensation to the Union Pacific Railroad to provide Union Pacific Railroad flagmen as deemed necessary by the Union Pacific Railroad during roadway construction operations at the railroad crossing within the Union Pacific Railroad right-of-way. See the Union Pacific Railroad Contractor's Right of Entry Agreement Exhibit B, Notice of Commencement of Work - Flagging.

This work shall be paid for at the contract price per unit for RAILROAD FLAGMEN. A unit shall be valued at one dollar.

SECTION 107.09 KEEPING ROADS OPEN TO TRAFFIC

All roads shall remain open to traffic, except as provided for in the contract or as directed by the Engineer.

Two through lanes of traffic in each direction shall be maintained on Randall Road and Illinois Route 64 throughout construction, unless otherwise approved by the County, City, and State, and upon the recommendation of the Engineer.

If approved, the Contractor may reduce traffic to one lane due to construction only between the hours of 9:00 a.m. and 3:00 p.m. and per the Engineer's approval. The Contractor shall maintain two-way traffic during these restricted hours with the use of signs and flagmen as shown on the traffic control standards.

All lanes of traffic in each direction shall be maintained all evenings between 3:00 p.m. and 9:00 a.m. and all day if no construction activities are being carried out. These restricted lane closure time provisions may be waived at the Engineer's discretion.

CONSTRUCTION STAGING

This improvement shall be constructed in the stages as described herein and shown on plan.

Install changeable message boards (four total) on northbound and southbound Randall Road and eastbound and westbound Illinois Route 64 two weeks prior to construction to notify the motoring public concerning the upcoming roadway construction.

WORK ZONE 30 MPH CONSTRUCTION SPEED LIMIT signs shall be posted on Randall Road and Illinois Route 64 throughout construction.

Stage 1 Construction

Install the Stage 1 construction staging as per plan and applicable IDOT Standards. Construct the proposed temporary traffic signals as per plan and specifications.

Install the temporary erosion-control devices as per plan, standards, and as directed by the Engineer.

Remove designated trees.

Construct the proposed pedestrian underpass Station 11+25 Rt., approximately the western third, as per the plan and specifications.

Construct the proposed storm sewer, water main, and sanitary sewer as per plan within this stage.

Commence the construction of the proposed traffic signals.

Construct the proposed bituminous pavement section to the binder elevation as per this stage.

Construct the proposed Portland Cement Concrete pavement section as per this stage.

Construct the landscape restoration within this stage.

Install erosion-control devices as per plan and as directed by the Engineer.

Stage 1A Construction

Install the Stage 1A construction staging as per plan and applicable IDOT Standards. Adjust the temporary traffic signal heads to function with the new temporary lane configurations.

Install the temporary erosion-control devices as per plan, standards, and as directed by the Engineer.

Construct the proposed pedestrian underpass Station 11+25 centerline, approximately the center third, as per the plan and specifications.

Construct the proposed storm sewer, water main, and sanitary sewer as per plan within this stage.

Continue the construction of the proposed traffic signals.

Construct the proposed bituminous pavement section to the binder elevation as per this stage.

Construct the proposed Portland Cement Concrete pavement section as per this stage.

Construct the landscape restoration within this stage.

Install erosion-control devices as per plan and as directed by the Engineer.

Stage 2 Construction

Install the Stage 2 construction staging as per plan and applicable IDOT Standards. Adjust the temporary traffic signal heads to function with the new temporary lane configurations.

Install the temporary erosion-control devices as per plan, standards, and as directed by the Engineer.

Construct the proposed pedestrian underpass Station 11+25 LT., approximately the eastern third, as per the plan and specifications.

Construct the proposed storm sewer, water main, and sanitary sewer as per plan within this stage.

Continue the construction of the proposed traffic signals.

Construct the proposed bituminous pavement section to the binder elevation as per this stage.

Construct the proposed Portland Cement Concrete pavement section as per this stage.

Construct the landscape restoration within this stage.

Install erosion-control devices as per plan and as directed by the Engineer.

Stage 3 Construction

Install the Stage 3 construction staging as per plan and applicable IDOT Standards. Adjust the temporary traffic signal heads to function with the new temporary lane configurations.

Install the temporary erosion-control devices as per plan, standards, and as directed by the Engineer.

Complete the proposed storm sewer, water main, and sanitary sewer as per plan within this stage.

Complete the construction of the proposed traffic signals.

Construct the raised concrete median and combination curb and gutter as per plan.

Complete the proposed bituminous pavement section.

Complete the proposed Portland Cement Concrete pavement.

Complete the landscape restoration of the project.

Install erosion-control devices as per plan and as directed by the Engineer.

SECTION 201 PROTECTION OF TREES

Extra care shall be exercised when operating equipment around trees or shrubs, including protecting the tree trunks, branches, and roots from damage. All pruning, protection, and replacement in accordance with Section 201 of the Standard Specifications will not be paid for separately but shall be included in the contract.

20200100 EARTH EXCAVATION

This work shall be in accordance with Section 202 of the Standard Specifications insofar as applicable and the following provisions.

This work shall include removal of any existing bituminous pavement and existing concrete base course shown on the plans and cross sections or as directed by the Engineer.

All excess excavated soil not used as embankment, backfill, or topsoil shall be disposed of at off-site locations provided by the Contractor or taken to a location designated by the Engineer. Overhaul will not be paid for but shall be included in the unit price per cubic yard for Earth Excavation.

Embankment shall not be paid for separately but shall be included in the cost of Earth Excavation.

Excavation for the roadway has been computed on the basis of cut and fill to the final grade of the topsoil from existing pre-construction conditions. Excavation or embankment required for temporary pavement will be included in the item Temporary Pavement, 8".

Excavation required to provide for topsoil placement has not been included in the quantity for Earth Excavation but shall be included in the cost for Topsoil, Furnish and Place, 4".

Payment shall be based on actual volume of excavation completed without an adjustment in unit price due to an increase or decrease in plan quantity.

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

An estimated quantity of excavation for undercutting for Porous Granular Embankment, Special has been included in the quantity of Earth Excavation and is shown on the plans. Undercutting shall only be allowed at the discretion of the Engineer after it is determined that the provision of Section 301 of the Standard Specifications will not yield results to allow timely progress on the project.

SECTION 205 STORMWATER DETENTION FACILITY EMBANKMENT

This work shall be in accordance with Section 205 of the Standard Specifications insofar as applicable and the following provisions.

Earth embankment to be used in the creation of the berms at the stormwater detention facility shall be constructed of impermeable soils and shall be homogeneous material. All materials used in the construction of the stormwater detention facility embankment shall be approved by a certified/licensed geotechnical technician or geotechnical engineer.

The slope/berm stability shall also be approved by the geotechnical technician or geotechnical engineer.

The earth embankment at the stormwater detention facility shall be constructed on suitable soils. Unsuitable underlying soils will be removed prior to construction of the embankment.

Compaction of the earth embankment shall be made in layers using a "sheepsfoot" or other approved equipment to attain 95% standard laboratory density.

Berm topsoil placement and seeding shall occur in the time frame indicated in the specifications. Stability of the earth embankment berm shall be monitored until the facility has been vegetated to the satisfaction of the Engineer. The vegetation shall be established in advance of the stormwater detention facility becoming functional.

This work will not be paid for separately but shall be considered included in the cost of Earth Excavation.

20700400 POROUS GRANULAR EMBANKMENT, SPECIAL

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 1004.06 of the Standard Specifications except the gradation shall be as follows:

1. Crushed Stone, Crushed Blast Furnace Slag, and Crushed Concrete

<u>Sieve Size</u>	<u>Percent Passing</u>
*150 mm (6")	97+3
*100 mm (4")	90+10
50 mm (2")	45+25
75 µm (#200)	5+5

2. Gravel, Crushed Gravel and Pit Run Gravel

<u>Sieve Size</u>	<u>Percent Passing</u>
*150 mm (6")	97+3
*100 mm (4")	90+10
50 mm (2")	55+25
4.75 mm (#4)	30+20
75 µm (#200)	5+5

* For undercut greater than 450 mm (18"), the percent passing the 150 mm (6") sieve may be 90±10 and the 100 mm (4") sieve requirements eliminated.

The porous granular material shall be placed in one lift when the total thickness to be placed is 600 mm (24") 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 of the Standard Specifications to obtain the desired keying or interlock and compaction. The Engineer shall verify that adequate keying has been obtained.

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, special.

Full-depth undercut should occur at limits determined by the Engineer. A transition slope to the full depth of undercut shall be made outside the undercut limits at a taper of 1:1 below the proposed aggregate subgrade.

The Porous Granular Embankment, Special shall be used as field conditions warrant at the time of construction. Payment shall be based on actual volume of Porous Granular Embankment, Special installed without an adjustment in unit price due to an increase or decrease in plan quantity.

This work shall be paid for at the contract unit price per cubic yard for POROUS GRANULAR EMBANKMENT, SPECIAL.

20800150 TRENCH BACKFILL

This work shall be in accordance with Section 208 of the Standard Specifications insofar as applicable and the following provision.

Trench backfill shall be gradation FA 2.

20900320 POROUS GRANULAR BACKFILL, SPECIAL

This work shall be in accordance with Section 207 of the Standard Specifications insofar as applicable and the following provisions.

This work shall consist of furnishing, transporting, and placing backfill along the bike path tunnel as shown on the plans.

Materials shall meet the requirements of Article 207.02 of the Standard Specifications.

The backfill shall be placed in accordance with Article 207.03 of the Standard Specifications.

Porous Granular Backfill, Special will be measured for payment in tons according to Article 311.08(b).

This work will be paid for at the contract unit price per ton for POROUS GRANULAR BACKFILL, SPECIAL.

21001000 GEOTECHNICAL FABRIC FOR GROUND STABILIZATION

This work shall be in accordance with Section 210 of the Standard Specifications insofar as applicable and the following provision.

Geotechnical fabric for ground stabilization shall be placed at all locations requiring undercut and Porous Granular Embankment, Special and as required for Geotextile Retaining Walls.

Payment shall be based on actual area of fabric installed without adjustment in unit price due to an increase or decrease in plan quantity.

21101615 TOPSOIL FURNISH AND PLACE, 4"

This item shall be in accordance with Section 211 of the Standard Specifications insofar as applicable and the following provisions.

All topsoil, regardless of origin, shall be in accordance with Article 1081.05 and shall be approved by the Engineer prior to placement.

Plan quantities reflect 4" thick topsoil placement in all disturbed areas not otherwise paved. Excavation for the roadway has been computed on the basis of cut and fill to the final grade of the topsoil. The excavation required to accommodate a nominal 4" thick layer of topsoil has not been included in the pay item Earth Excavation but shall be considered included in this item.

TOPSOIL FURNISH AND PLACE, 4" will be paid for at the contract unit price per square yard.

21101685 TOPSOIL FURNISH AND PLACE, 24"

This item shall be in accordance with Section 211 of the Standard Specifications insofar as applicable and the following provisions.

All topsoil, regardless of origin, shall be in accordance with Article 1081.05 and shall be approved by the Engineer prior to placement.

This item shall be used in the landscaped medians along Randall Road. See the Landscaping specifications for topsoil treatment which will be paid for separately.

TOPSOIL FURNISH AND PLACE, 24" will be paid for at the contract unit price per square yard.

21301084 EXPLORATION TRENCH 84" DEPTH

This item shall consist of excavating a trench at the locations directed by the Engineer for the purpose of locating existing sewers or water mains within the construction limits of the proposed improvement.

The trench shall be deep enough to expose the sewers or water main, and the width of the trench shall be sufficient to allow proper investigation to determine if the sewers or water main need to be adjusted.

The exploration trench shall be backfilled with trench backfill meeting the requirements of the Standard Specifications, the cost of which shall be included in the item of Exploration Trench.

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 due to any adjustment in plan quantities.

This work shall be paid for at the contract unit price per foot for EXPLORATION TRENCH 84" DEPTH, and no extra compensation will be allowed for any delays, inconveniences, or damage sustained by the Contractor in performing the work.

EROSION CONTROL

This work shall be in accordance with Sections 250, 251, 252, 253, 280, 281, and 282 of the Standard Specifications and the Illinois Urban Manual insofar as applicable and the following provisions.

The Kane County Division of Transportation, United States Army Corps of Engineers, and the Kane-DuPage Soil and Water Conservation District (KDSWCD) have reviewed the Soil Erosion and Sedimentation Plans.

FAP Route 336 (Randall Road) at
FAP Route 307 (Illinois Route 64)
Section No. 99-00243-00-PV
Project No. F-0336010
Kane County

Major changes to the Soil Erosion and Sedimentation Plans should be avoided near the delineated jurisdictional Waters of the U.S. If field changes are made to these plans, the KDSWCD shall be notified at:

Kane-DuPage Soil and Water Conservation District
2315 Dean Street, Suite 100
St. Charles, Illinois 60175
Telephone: (630) 584-7961, Ext. 3
Fax: (630) 584-9534
After-hours answering machine: (630) 584-7961, Ext. 123

Recommendations from the KDSWCD during construction should be implemented. The Contractor, with the consent of the Engineer, may increase erosion-control measures to protect against sediment transport from the construction site.

Costs incurred by penalties, obtaining additional permits, or delays due to insufficient maintenance or construction of the erosion-control measures shall be at the Contractor's expense, with no additional compensation.

The Contractor shall comply with the following KDSWCD Standards:

- Unless otherwise indicated, all vegetative and structural erosion and sediment control practices will be constructed according to minimum standards and specifications in the Illinois Urban Manual revised February 2002.
- The KDSWCD must be notified one week prior to the pre-construction conference, one week prior to the commencement of land-disturbing activities, and one week prior to the final inspection.
- A copy of the approved erosion and sediment control plan shall be maintained on the site at all times.
- Prior to commencing land-disturbing activities in areas other than indicated on these plans (including but not limited to additional phases of development and off-site borrow or waste areas), a supplementary erosion-control plan shall be submitted to the owner for review by the KDSWCD.
- The Contractor is responsible for installation of any additional erosion-control measures necessary to prevent erosion and sedimentation as determined by the KDSWCD.
- During dewatering operations, water will be pumped into sediment basins or silt traps. Dewatering directing into field tiles or stormwater structures is prohibited. (Dewatering to the sewers that flow to the stormwater detention facility is permitted).
- The Contractor shall allow a KDSWCD, National Resource Conservation District (NRCS) or Army Corps of Engineers District representative the right to conduct on-site investigations throughout all active construction phases to determine whether all necessary soil erosion and sediment control practices have been installed and are functioning properly.

25000210 SEEDING, CLASS 2A

This work shall be in accordance with Section 250 of the Standard Specifications insofar as applicable and the following provisions.

Areas on the Erosion Control and Sedimentation Plans that indicate Seeding (Permanent) shall use Seeding, Class 2A.

Mulching shall be used in fall, winter, and early spring months (October 1 to April 1) or as directed by the Engineer. Mulching will be paid for at the contract the unit price per acre of Mulch, Method 2.

Areas with insufficient growth of the vegetation, as determined by the Engineer, shall be re-seeded and mulched at no additional compensation to the Contractor. Re-seeding shall take place within 24 hours of notification from the Engineer.

This work shall be measured and paid for at the contract unit price per acre of SEEDING, CLASS 2A. This price shall include preparation of the soil, seed mixture, and all material, equipment, and labor necessary to complete this item to the satisfaction of the Engineer.

25001750 SEEDING, CLASS 4 (SPECIAL)

This work shall be in accordance with Section 250 of the Standard Specifications insofar as applicable and the following provisions.

Areas on the Erosion Control and Sedimentation Plans that indicate Native Plantings shall use Seeding, Class 4 (Special).

Class 4B seed mixtures shall be used in the stormwater detention basin at an elevation below the one-foot mark above the permanent pool elevation. Class 4 seed mixture shall be used in all other situations.

Mulching shall be used in fall, winter, and early spring months (October 1 to April 1) or as directed by the Engineer. Mulching will be paid for at the contract unit price per acre of Mulch, Method 2.

Areas with insufficient growth of the vegetation, as determined by the Engineer, shall be re-seeded and mulched at no additional compensation to the Contractor. Re-seeding shall take place within 24 hours of notification from the Engineer.

This work shall be measured and paid for at the contract unit price per acre of SEEDING, CLASS 4 (SPECIAL). This price shall include preparation of the soil, seed mixture, and all material, equipment, and labor necessary to complete this item to the satisfaction of the Engineer.

25100115 MULCH, METHOD 2

This work shall be in accordance with Sections 251 of the Standard Specifications insofar as applicable and the following provision.

Procedure 3 and 4 of the Mulch Method, Type 2 can be used for this contract.

This work shall be measured and paid for at the contract unit price per acre for MULCH, METHOD 2. This price shall include mulch and all material, equipment, and labor necessary to complete this work.

25100630 EROSION CONTROL BLANKET

This work shall be in accordance with Section 251 of the Standard Specifications insofar as applicable and the following provisions.

The erosion control blanket shall be installed according to Section 251.04 of the Standard Specifications and shall be excelsior blanket exclusively.

The erosion control blanket shall be affixed to the earth as illustrated in the Illinois Urban Manual, Standard Drawing IL-530.

Failure of the erosion control blanket to prevent slope erosion shall be corrected within 24 hours or before any precipitation as predicted by the National Weather Service for St. Charles, Illinois, or as directed by the Engineer. Maintenance of the failed erosion control blanket shall include additional topsoil, seeding of the type specified for the area, and additional erosion control blanket (if necessary) at no additional compensation to the Contractor.

This work shall be measured in place and paid for at the contract unit price per square yard of EROSION CONTROL BLANKET. This price shall include earth staples, excelsior blanket, and all material, equipment, and labor necessary for a complete installation.

SECTION 253 PLANTING TREES AND SHRUBS

The Engineer will place marking flags furnished by the Contractor at locations of each tree and shrub before delivery of the plant material.

Under no circumstances should trees or shrubs be planted on the berms and slopes at the stormwater detention facility.

An estimated quantity of trees and shrubs has been shown in the plans. Payment shall be based on actual quantity of each item planted without a change in unit price as a result of adjustment in plan quantities.

SECTION 280 TEMPORARY EROSION CONTROL

Maintenance of the temporary erosion control systems in accordance with Article 280.05 of the Standard Specifications, including replacement if necessary, shall not be paid for but shall be included in the contract unit price for the installed system. Removal of temporary erosion control items shall occur only upon approval of the Engineer.

28000250 TEMPORARY EROSION CONTROL SEEDING

This work shall be in accordance with Section 280 of the Standard Specifications and Code 965 of the Illinois Urban Manual Practice Standard, insofar as applicable and the following provisions.

Lime, fertilizer, and seeding mixture necessary for this item shall be considered included in the unit price per pound of Temporary Erosion Control Seeding.

Mulching shall be used in fall, winter, and early spring months (October 1 to April 1) or as directed by the Engineer. Mulching will be paid for at the contract unit price per acre of MULCH, METHOD 2.

Areas with insufficient growth of the temporary vegetation, as directed by the Engineer, shall be reseeded and mulched at no additional compensation to the Contractor. Reseeding shall take place within 24 hours of notification from the Engineer.

This work shall be measured and paid for at the contract unit price per pound of TEMPORARY EROSION CONTROL SEEDING. This price shall include preparation of the soil, lime, fertilizer, seed mixture, and all material, equipment, and labor necessary to complete this item to the satisfaction of the Engineer.

28000300 TEMPORARY DITCH CHECKS

This work shall be in accordance with Section 280 of the Standard Specifications insofar as applicable and the following provisions.

Temporary ditch checks shall be installed according to Section 280 of the Standard Specifications and IDOT Highway Standard Detail 280001-02. The temporary ditch checks shall be constructed of urethane foam/geotextile materials. The use of straw bales will not be allowed for this work.

Failure of a temporary ditch check shall be corrected within 24 hours or before any precipitation as predicted by the National Weather Service for St. Charles, Illinois, or as directed by the Engineer. Maintenance of the failed temporary ditch check shall be performed at no additional compensation to the Contractor.

This work shall be measured and paid for at the contract unit price each for TEMPORARY DITCH CHECKS. This price shall include urethane foam/geotextile, stakes, and all material, equipment, and labor necessary for a complete installation and removal.

28000400 PERIMETER EROSION BARRIER

This work shall be in accordance with Section 280 of the Standard Specifications insofar as applicable and the following provisions.

Perimeter erosion barrier shall be installed as shown on the soil erosion and sedimentation plans. The Engineer may change the start or end locations due to field verification. The perimeter erosion barrier shall be used to eliminate silt-laden stormwater from flowing out of the construction site.

Maintenance shall be completed in accordance with Section 280.05 of the Standard Specifications. Failure of the perimeter erosion barrier shall be corrected within 24 hours or before any precipitation as predicted by the National Weather Service for St. Charles, Illinois, or as directed by the Engineer.

This work shall be measured and paid for at the contract unit price per foot for PERIMETER EROSION BARRIER. This price shall include all materials, excavation, equipment, and labor necessary for a complete installation and removal.

SECTION 280 PERIMETER EROSION BARRIER (SPECIAL)

This work shall be in accordance with Section 280 of the Standard Specifications insofar as applicable and the following provisions.

Perimeter Erosion Barrier (Special) shall be installed according to Section 280 of the Standard Specifications for Perimeter Erosion Barrier and the details in the plans.

The orange plastic snow fence shall be kept clean and vibrant throughout construction.

Maintenance shall be completed in accordance with Section 280.05 of the Standard Specifications. Failure of the perimeter erosion barrier (special) shall be corrected within 24 hours or before any precipitation as predicted by the National Weather Service for St. Charles, Illinois, or as directed by the Engineer.

This work shall be measured and paid for at the contract unit price per foot for PERIMETER EROSION BARRIER (SPECIAL). This price shall include all materials, excavation, equipment, and labor necessary for a complete installation and removal.

SECTION 280 PERIMETER EROSION BARRIER WITH WIRE SUPPORT

This work shall be in accordance with Section 280 of the Standard Specifications insofar as applicable and the following provisions.

Perimeter erosion barrier with wire support shall be installed according to Section 280 of the Standard Specifications for Perimeter Erosion Barrier, the Illinois Urban Manual (Standard Drawing IL-620W), and the details in the plans.

This work shall be measured and paid for at the contract unit price per foot for PERIMETER EROSION BARRIER WITH WIRE SUPPORT. This price shall include all materials, excavation, equipment, and labor necessary for complete installation and removal.

SECTION 280 TEMPORARY SEDIMENT TRAP

This work shall be in accordance with Section 280 of the Standard Specifications insofar as applicable and the following provisions.

Temporary sediment traps shall be installed according to Section 280 of the Standard Specifications for Sediment Basins and the IDOT Highway Standard Detail 280001-02. The temporary sediment trap shall be 15' by 25' minimum in dimension.

The temporary sediment trap shall be installed before construction begins on the current stage of work. The temporary sediment trap shall be functional until disturbed portions of the tributary drainage areas have established vegetation.

This work shall be measured and paid for at the contract unit price each for TEMPORARY SEDIMENT TRAP. The price shall include excavation, riprap, filter fabric, and all material, equipment, and labor necessary to complete this item. This price shall also include removal of the riprap, deposited sediment, and filter fabric.

28000500 INLET AND PIPE PROTECTION

This work shall be in accordance with Section 280 of the Standard Specifications insofar as applicable and the following provisions.

Inlet and pipe protection shall be installed according to Section 280, Inlet and Pipe Protection, and the IDOT Highway Standard Detail 280001-02. Inlet and pipe protection shall be of the silt filter fabric type. The use of straw bales will not be allowed for this work.

Failure of the inlet and pipe protection shall be corrected within 24 hours or before any chance of precipitation as predicted by the National Weather Service for St. Charles, Illinois, or as directed by the Engineer. Maintenance of the inlet and pipe protection (including removal and disposal of silt) shall be performed at no additional compensation to the Contractor.

This work shall be measured and paid for at the contract unit price each for INLET AND PIPE PROTECTION. This price shall include filter fabric, stakes, and all material, equipment, and labor necessary for complete installation and removal.

28000510 INLET FILTERS

This work shall be in accordance with Section 280 of the Standard Specifications and BDE Special Provision 38, Inlet Filters, insofar as applicable and the following provisions.

Inlet filters shall be as manufactured by Inlet and Pipe Protection, Inc., Naperville, Illinois (<http://www.inletfilters.com>) or approved equal.

Inlet filters shall fit the frame and grate specified on the plans.

Inlet filters shall be emptied of debris or repaired, if needed, within 24 hours after a precipitation event and before any precipitation as predicted by the National Weather Service for St. Charles, Illinois, or as directed by the Engineer. Maintenance of the inlet filter shall be performed at no additional compensation to the Contractor.

This work shall be measured and paid for at the contract unit price each for INLET FILTERS. This price shall include the inlet filter and all material, equipment, and labor necessary for complete installation and removal.

SECTION 281 STONE RIPRAP

This work shall be in accordance with Section 281 of the Standard Specifications and Practice Standard 910 and Construction Specification 61 of the Illinois Urban Manual, Practice Standard insofar as applicable and the following provisions.

Stone riprap shall be constructed to the dimensions shown on the plan and to Illinois Urban Manual, Standard Drawing IL-610.

The thickness of the stone riprap layer shall be according to the following table:

<u>Gradation</u>	<u>Minimum Thickness</u>	<u>Bedding Thickness</u>
3	15 inches	---
4	20 inches	6 inches
5	28 inches	8 inches
6	32 inches	10 inches

Filter fabric for use with riprap will be measured and paid for according to Section 282 of the Standard Specifications.

This work shall be measured and paid for at the contract unit price per square yard for STONE RIPRAP of the class specified. This price shall include excavation, riprap, and all material, equipment, and labor necessary to complete this work.

SECTION 301 UNDERCUT

Soft, unstable soils of varying depths may exist at locations within the roadway improvement which will require removal and replacement with Porous Granular Embankment, Special.

The actual extent of removal and replacement shall be determined by the Engineer in the field at the time of construction. Undercuts deeper than 12 inches below the subgrade shown on the typical sections should be justified based upon cone penetrometer testing. In all cases, the undercut shall extend 12 inches outside the bottom edges of the proposed subgrade, with the removal and re-use of the unsuitable materials as fill to be paid for as Earth Excavation. A contingency quantity of 10,681 cubic yards of undercut to be paid for as Earth Excavation has been added to the plan quantities, along with 10,681 cubic yards of Porous Granular Embankment, Special. Granular replacement material shall conform to the special provision for Porous Granular Embankment, Special included elsewhere herein.

In all other cut sections, once final elevations are obtained, a proof rolling procedure acceptable to the Engineer shall be followed in order to verify the stability of the subgrade prior to placement of the aggregate subgrade. Verification of subgrade stability shall be done through the use of a cone penetrometer in conjunction with the Illinois Department of Transportation's Subgrade Stability Manual.

STABILIZED BICYCLE PATH

This work shall be in accordance with Sections 351 and 406 of the Standard Specifications and BDE Special Provision 80010, insofar as applicable and the following provisions.

The base course shall be a nominal thickness of 6" of Aggregate Base Course, Type B and shall be placed in accordance with Section 351 of the Standard Specifications with the following revision.

Revise the following as the second sentence of Article 351.05(c): Water shall be added as required by the Engineer to compact the material to not less than 95% of the standard laboratory density.

The final layer shall be a nominal thickness of 3" of Bituminous Concrete Surface Course, Superpave, Mix C, N50 and shall be placed in accordance with Section 406 of the Standard Specifications and BDE Special Provision 80010.

This work will be paid for at the contract unit price per square yard for STABILIZED BICYCLE PATH, which price shall include all labor, equipment, and material including Aggregate Base Course, Bituminous Prime Coat, and Bituminous Concrete Surface Course to provide a complete and finished bicycle path. Aggregate shoulders adjacent to the bicycle path will be paid for separately.

40600200 BITUMINOUS MATERIALS (PRIME COAT)

Prime coat shall meet the specifications of Article 406.06(b) of the Standard Specifications with the following revisions and additions:

Prime coat shall be applied at a rate of 0.1 gallon per square yard. Bituminous material shall be SS-1, unless otherwise required by Article 403.07 of the Standard Specifications.

The Contractor will be required to present a weight ticket of the truckload prior to applying the prime coat. After application the truck shall then be weighed again in order to determine the net weight of prime coat that has been placed. Both tickets shall be stamped by the certified weighmaster.

The Contractor shall erect (to the Engineer's satisfaction) 36" by 36" minimum *FRESH OIL AHEAD* signs prior to the prime coat application, which signs shall remain until the prime coat has adequately cured.

This work shall be paid for at the contract unit price per ton for BITUMINOUS MATERIALS (PRIME COAT).

40600300 AGGREGATE (PRIME COAT)

This work shall be done in accordance with Article 406.06(b) of the Standard Specifications insofar as applicable and the following provisions.

The fine aggregate shall be mechanically spread at a uniform rate of 2 pounds per square yard.

SECTION 420 PORTLAND CEMENT CONCRETE PAVEMENT

All Portland Cement Concrete pavement shall have variably-spaced skewed tining as per the following provision.

Type A Final Finish of Portland Cement Concrete Pavement with Variably Spaced Tining (Revised 10/17/02)

Revise the third paragraph of Article 420.11(e)(1) to read as follows:

The metal comb shall consist of a single line of tempered spring steel tines variably spaced between 11/16 inch and 2-1/8 inches as shown in the table below, securely mounted in a suitable head. The tines shall be flat and of a size and stiffness sufficient to produce a groove of the specified dimensions in the plastic concrete without tearing of the pavement edge or surface. The Contractor shall modify the equipment or operations if an acceptable pavement or surface is not produced. The mechanically operated metal comb shall be attached to an exclusive piece of equipment which is mechanically self-propelled and capable of traversing the entire pavement width being placed in a single pass. The artificial turf carpet drag may be attached to this piece of equipment, provided a surface texture is produced satisfactory to the Engineer. The

tinging device shall be operated so as to produce a pattern of grooves 1/8 to 3/16 inch deep and 1/10 to 1/8 inch wide across the pavement. The tining device shall be operated at a 1:6 skew across the pavement. No other operation will be permitted with this equipment. Separate passes will be required for the turf-dragging operation and the tining operation.

Metal Comb Tine Spacing (Center to Center of Tines, Inches)

1-5/16	1-7/16	1-7/8	2-1/8	1-7/8	1-11/16	1-1/4	1-1/4	1-1/16
1-7/16	1-1/8	1-13/16	13/16	1-11/16	7/8	1-5/8	2-1/16	15/16
11/16	1-1/8	1-9/16	1-5/16	1-1/16	1	1	1-1/16	13/16
1-7/16	1-1/2	2-1/16	2	1-3/4	1-7/16	1-11/16	2-1/16	1-1/16
1-7/16	1-5/8	1-5/8	1-1/8	1-11/16	1-3/4	1-3/4	1-3/16	1-7/16
1-5/16	1-9/16	1-1/8	1-1/4	1-15/16	1-5/16	1-3/4	13/16	1-3/4
1-15/16	2-1/16	2	1-1/8	1	11/16	2-1/16	11/16	1-1/2
2	1-9/16	11/16	1-15/16	1-15/16	1-9/16	2	1-7/16	1-7/16
1-1/2	1-13/16	1-1/8	1-1/2	1-15/16	15/16	1-5/16		

This work will not be paid for separately but shall be included in the cost of the Portland Cement Concrete pavement.

SECTION 420 HIGH-EARLY-STRENGTH PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED)

This work shall be in accordance with Section 420 of the Standard Specifications and the Special Provision for Portland Cement Concrete Pavement insofar as applicable and the following provisions.

The High-Early-Strength Portland Cement Concrete Pavement shall have the same type joints and tining specified for Portland Cement Concrete Pavement (Jointed).

This work will be paid for at the contract unit price per square yard for HIGH-EARLY-STRENGTH PORTLAND CEMENT CONCRETE PAVEMENT 10" (JOINTED).

42001300 PROTECTIVE COAT

This work shall conform to the requirements of Articles 420.21 and 1023.01 of the Standard Specifications, except that the protective coat shall be applied in all cases regardless of the calendar date limitations contained in Article 420.21. The protective coating shall be applied to the exposed surfaces of P.C.C. sidewalk, P.C.C. driveway, combination concrete curb and gutter, concrete curb, concrete median, concrete median surface, and P.C.C. pavement.

Concrete curing shall be limited to methods in Article 1020.13(a)[1], [2], and [3].

PROTECTIVE COAT will be paid for at the contract unit price per square yard.

42300400 PORTLAND CEMENT CONCRETE DRIVEWAY PAVEMENT, 8 INCH

This work shall be in accordance with Section 423 of the Standard Specifications insofar as applicable and the following provisions.

Materials to be included and placed for this work shall consist of the following:

Three (3) inches of Subbase Granular Material, Type C, gradation CA 6
Eight (8) inches of Portland Cement Concrete Pavement.

This work shall be measured in place and the area computed in square yards, complete.

This work will be paid for at the contract unit price per square yard for PORTLAND CEMENT CONCRETE DRIVEWAY PAVEMENT, 8 INCH, which price shall include excavation, subbase, P.C.C. pavement, and all labor, equipment, and materials necessary to provide a complete and finished driveway.

SECTION 424 PORTLAND CEMENT CONCRETE SIDEWALK

This item shall be in accordance with Section 424 of the Standard Specifications insofar as applicable, the details in the plans, and the following provisions.

Curb ramps shall be placed at all location where sidewalk is in line with crosswalks or as directed by the Engineer and shall be constructed in accordance with the details in the plans and BDE Special Provision No. 80113.

The cost of colored concrete and domes for curb ramps shall be included in the unit price for Portland Cement Concrete Sidewalk.

All sidewalks shall be constructed on a minimum of four (4) inches of Aggregate Base Course, Type B. At locations where the sidewalk is adjacent to the curb and gutter, all voids from behind the curb and gutter to bottom of sidewalk shall be filled with Aggregate Base Course, Type B. The cost of the Aggregate Base Course, Type B shall be included in the cost for the proposed sidewalk.

The sidewalk shall be 5" thick, unless noted otherwise on the plans.

At locations where the proposed sidewalk is to be constructed across trenches, three (3) No. 5 ten-foot-long reinforcement bars shall be placed in the sidewalk centered over the trench. These reinforcement bars shall not be continuous through transverse expansion joints, but shall be stopped three inches short of same. The cost of these reinforcement bars, complete in place, shall be included in the cost for the proposed sidewalk.

The above work will be included in the contract unit price per square foot for PORTLAND CEMENT CONCRETE SIDEWALK of the thickness specified.

PCC SIDEWALK, 8 INCH SPECIAL will be paid for at the contract unit price per square foot, including the width of the integral curb. Reinforcement bars for PCC Sidewalk, 8" Special will not be paid for separately but shall be included in the cost of this item.

40600980 BITUMINOUS SURFACE REMOVAL - BUTT JOINT
44000007 BITUMINOUS SURFACE REMOVAL, 2"
44000030 BITUMINOUS SURFACE REMOVAL (VARIABLE DEPTH)

This work shall be in accordance with Sections 406 and 440 of the Standard Specifications insofar as applicable and shall consist of milling bituminous pavement to the depths, locations, and limits specified in the plans.

If the milling machine cuts too deep or tears out areas of the existing pavement which were to be saved, the voids shall be filled with leveling binder at the Contractor's expense.

Where specified as variable depth, milling depths will vary from 0" to a maximum of 4".

Temporary ramps at butt joints on roadways open to traffic shall be provided in accordance with 406.18 of the Standard Specifications. This work shall be measured and paid for as Incidental Bituminous Surfacing, Superpave, N50.

Penalty. Failure by the Contractor to provide a temporary bituminous ramp shall be grounds for assessment of a penalty of \$100 per day per ramp location for each calendar day thereafter that such facility remains incomplete after written notification from the Engineer. Such penalty shall be deducted from monies due or to become due the Contractor under the contract.

Bituminous concrete removed will be measured in place and the area computed in square yards without regard for the number of passes required to remove the surface material.

This item of work will be paid for according to Sections 406 and 440 of the Standard Specifications..

SECTION 440 SAW CUTTING

This work shall consist of the full-depth sawing of the existing pavement, curb and gutter, or other existing items with a sawing machine at the locations shown on the plans or as directed by the Engineer.

The Contractor shall machine-saw a perpendicular clean joint between the portion of the item to be removed and that to remain in place to prevent damage to the remaining item. If an additional quantity is damaged or removed, the additional work will not be measured for payment but shall be done at the Contractor's expense.

This item shall not be paid for separately but shall be included in the cost of the item being removed.

44300100 AREA REFLECTIVE CRACK CONTROL TREATMENT

This work shall be in accordance with Section 443 of the Standard Specifications insofar as applicable and the following provisions.

All crack control treatment shall be System A.

48101500 AGGREGATE SHOULDERS, TYPE B, 6"
48101600 AGGREGATE SHOULDERS, TYPE B, 8"

This work shall conform to the requirements of Section 481 of the Standard Specifications, with the exception that the material shall be limited to **crushed gravel, crushed stone, or crushed concrete**. The plasticity index requirements and the requirements for adding water at the central mixing plant will be waived.

50900805 PEDESTRIAN RAILING

This work shall consist of the furnishing of materials and the necessary labor and equipment to erect the completed railing of the type specified in the plans. This work shall be completed in accordance with Section 509 of the Standard Specifications.

The material for the chain link fabric, posts, railing, splices, anchor devices, and plates shall be as designated in the plans.

This work shall be paid for at the contract unit price per foot for PEDESTRIAN RAILING.

SECTION 542 GRATING FOR CONCRETE FLARED END SECTION

This work shall be in accordance with Section 542 of the Standard Specifications insofar as applicable and the following provisions.

Grating for the concrete flared end sections shall be constructed according to IDOT Standard Detail 542311, Grating for Concrete Flared End Section for 600 mm (24") thru 1350 mm (54") Pipe. Grating for concrete flared end sections not shown in the standard shall be constructed in a similar manner and shall be approved by the Engineer.

This work will be paid for at the contract unit price each for GRATING FOR CONCRETE FLARED END SECTION of the size specified. The price shall include all materials, equipment, and labor necessary to complete this work.

SECTION 550 STORM SEWERS

This work shall be in accordance with Section 550 of the Standard Specifications insofar as applicable and the following provisions.

Storm sewers shall be RCCP, Class IV, unless otherwise designated in the plans.

Storm sewer shall be backfilled in accordance with Article 550.07, Method 1 only.

RCCP storm sewers located less than 10 feet from proposed or existing water main as indicated in the plans shall have rubber gasket joints between pipe sections. Rubber gasket joints shall conform to ASTM Specification C-361.

Reinforced concrete pipe bends shall not be paid for separately but shall be paid per foot of storm sewer of the diameter specified.

Brick and mortar shall seal proposed connections into existing structures. These connections shall be included in the cost of the storm sewer.

Blind connections shall be core-drilled to the approximate outside diameter of the proposed pipe to be connected. Mortar (brick, if needed) shall be used to secure the proposed connection. The blind connection shall be included in the cost of the storm sewer.

All storm sewer will be paid for at the contract unit price per foot for STORM SEWERS of the type and diameter specified.

SECTION 550 STORM SEWERS, CLASS A, PRESSURE PIPE, TYPE 3, 60"

This work shall be in accordance with Section 550 of the Standard Specifications insofar as applicable and the following provisions.

The pipe shall be manufactured and constructed in accordance with ASTM C-361, Class D-25. The pipe shall include rubber gasket joints necessary for watertight construction.

Pipe bends will not be paid for separately but shall be included in the cost of this item.

This work will be paid for at the contract unit price per foot for STORM SEWERS, CLASS A, PRESSURE PIPE, TYPE 3, 60", including excavation, backfill, rubber gasket, and all materials, labor, and equipment necessary for a complete installation.

SECTION 550 STORM SEWERS, DUCTILE IRON

This work shall be in accordance with Section 550 of the Standard Specifications insofar as applicable and the following provisions.

Storm sewer pipe shall be cement-lined ductile iron Class 52 and shall conform to AWWA C-151 (ANSI A21.51), "Ductile Iron Pipe, Centrifugally Cast, for Water," latest revision. Joints between new pipe material shall be rubber-gasket push-on type and shall conform to the AWWA C-111 (ANSI A21.11), "Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings," latest revision. Joints between existing pipe material and the new ductile iron pipe shall be made by means of a mission coupling (ASTM C-594) or as directed by the Engineer. Bedding shall be in accordance with Section 208 of the Standard Specifications and special details.

This work will be paid for at the contract unit price per foot for STORM SEWERS, DUCTILE IRON of the type and diameter specified. This price shall include the ductile iron pipe, rubber gaskets, excavation, and all materials, labor, and equipment necessary for a complete installation.

SECTION 550 STORM SEWERS, PVC

This work shall be in accordance with Section 550 of the Standard Specifications insofar as applicable and the following provisions.

The pipe shall be polyvinyl chloride (PVC) meeting AWWA C900-97 using fittings acceptable to the Engineer.

Joints between existing pipe material and the new PVC pipe shall be made by means of a mission coupling or as directed by the Engineer. The mission coupling shall not be paid for separately but shall be considered included in the cost of this item.

This work will be paid for at the contract unit price per foot for STORM SEWERS, PVC of the type and diameter specified, which price shall include all material, labor, and equipment necessary for a complete installation.

SECTION 550 PERFORATED RISER

This work shall be in accordance with Section 550 of the Standard Specifications insofar as applicable and the following provisions.

The perforated riser shall be constructed according to the details shown in the plans.

Storm sewer pipe shall be cement-lined ductile iron Class 52 and shall conform to AWWA C-151 (ANSI A21.51), "Ductile Iron Pipe, Centrifugally Cast, for Water," latest revision. Joints between new pipe

material shall be rubber-gasket push-on type and shall conform the AWWA C-111 (ANSI A21.11), "Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings," latest revision. Joints between existing pipe material and the new ductile iron pipe shall be made by means of a mission coupling (ASTM C-594) or as directed by the Engineer. Bedding shall be in accordance with Section 208 of the Standard Specifications and special details.

The Orifice Plate, 2" shall be made of steel. The plate shall extend past the opening for the ductile iron pipe and conform to the curvature of the manhole structure with a 2" diameter hole or 2" x 2" square removed at the bottom of the plate. The plate shall be attached to the side of the structure utilizing drilled and grouted stainless steel bolts and nuts. The orifice plate must be able to be removed at a future date.

The coarse aggregate shall not be compacted but dumped and formed to the slopes indicated on the detail.

Estimated Material Quantities

Storm Sewer, Ductile Iron Pipe, 4"	18 Feet
Ductile Iron Pipe, 4" x 4" x 4" Tee	1 Each
Ductile Iron Caps, 4" (with Drilled Holes)	2 Each
Coarse Aggregate (CA 1)	6 Cu.Yd.
Orifice Plate, 2"	1 Each

This work shall be measured and paid for at the contract unit lump sum price for PERFORATED RISER. This price shall include excavation, ductile iron pipe, ductile iron tee, ductile iron caps, orifice plate, aggregate, and all equipment, labor and materials necessary to complete this item to the satisfaction of the Engineer.

SECTION 551 STORM SEWER REMOVAL

This work shall be in accordance with Section 551 of the Standard Specifications insofar as applicable and the following provisions.

At all existing storm sewer structures to remain where storm sewers have been removed, the resultant hole shall be securely sealed with concrete or brick masonry.

Trench backfill for this item will not be paid for separately but shall be included in the cost of this item.

Where proposed storm sewer is to be installed in a trench at the same location as that of storm sewer to be removed, excavation and trench backfill will not be paid for both the proposed storm sewer installation and removal of the existing storm sewer operations.

This work will be paid for at the contract unit price per foot for STORM SEWER REMOVAL of the diameter specified, measured as removed, including trench backfill.

X0840000 SANITARY SEWER REMOVAL, 8"

This work shall be in accordance with Section 551 of the Standard Specifications and the Supplemental Specifications for Sanitary Sewer Improvements insofar as applicable and the following provisions.

This work shall consist of the removal of portions of the existing sanitary sewer. This work shall be performed at locations shown on the plans or as directed by the Engineer.

Excavation for the removal of the sanitary sewer shall be backfilled with trench backfill. Trench backfill will not be measured for payment but shall be considered included in the contract unit price per foot for Sanitary Sewer Removal, 8"

This work will be paid for at the contract unit price per foot for SANITARY SEWER REMOVAL, 8", measured as removed, which price shall include all excavation, removal, and disposal of pipe and trench backfill. Emergency conveyance of sewage, if used, shall not be paid for but shall be considered included in the cost of this item.

SECTION 561 WATER MAIN AND RAW WATER DISTRIBUTION MAIN

This work shall be in accordance with Section 561 of the Standard Specifications, the "Supplemental Specifications for Water Main Improvements," the City of St. Charles Code Book, and the "Standard Specifications for Water and Sewer Main Construction in Illinois," insofar as applicable and the following provisions.

Water main pipe shall be ductile iron pipe Class 52, conforming to ANSI A-21.51 (AWWA C-151), centrifugally cast with standard thickness cement lining conforming with AWWA C-104. All water main shall be placed in a Type 3 laying condition, and electrical conductivity shall be provided with brass wedges.

All joints shall be mechanical or push-on in conformance with ANSI A-21.11 and AWWA C-111.

Bedding shall be in accordance with Section 208 of the Standard Specifications and special details. All water main, hydrant leads, and services must have a minimum cover of five (5) feet.

Pipe compound will not be permitted in any water main construction, including service connections.

Fire flows shall be calculated at a 20 psi residual pressure and shall be available for a minimum four (4) hour continuous duration for flows above 2,000 gpm and a two (2) hour continuous duration for flows below 2,000 gpm.

Thrust blocking shall be provided at all bends greater than 10 degrees, at all mechanical joint connections, and at all fire hydrants.

Thrust blocks shall be poured-in-place concrete or Megalug brand.

Mechanical joint fittings shall be restrained by a device which consists of multiple individually-activated gripping surfaces built into a mechanical joint follower gland. The device shall be manufactured from ductile iron conforming to ASTM 536.80. The restraining device shall be such that it can replace a standardized mechanical joint gland and can be used with any standard mechanical joint beel conforming to ANSI/AWWA C111/A21.11 and the ANSI/AWWA C153/A21 of the latest revision. The device shall utilize torque-sensitive, "twist-off nuts" that shall be incorporated in the design or the wedge-activation screws to ensure proper torque. The restrained device shall have a published working pressure rating 350 PSI in sizes through 16" and 250 PSI above 20". A 2.0 safety factor will be built into the working pressure rating. The restraint device for mechanical joints shall be Uni-Flange Series 1400 manufactured by the Ford Meter Box Company of Wabash, Indiana or 1100 or 3000 Series Megalug Manufacturer by EBAA Iron Sales, Inc. of Eastland, Texas.

Push-joint pipe restraint shall be Field Lok 350 gasket as manufactured by United States Pipe and Foundry Company of Birmingham, Alabama or Series 1700 Megalug by EBAA Iron Sales Inc. of Eastland, Texas or Series 1390 pipe restraint as manufactured by Ford Meter Box Co., Inc., of Wabash, Indiana.

All water shall be encased in a **double** polyethylene encasement. Each encasement shall be a loose eight (8) millimeter thick polyethylene tube in accordance with ANSI/AWWA C-105/A-21.5, Method A.

The pipeline shall be tested for leakage between points as designated by the Engineer. Tests shall be made with all the joints uncovered. Testing shall be in accordance with the requirements of ANSI/AWWA C-600-93

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Section 4. The test pressure shall be the greater of 150 psi or twice operating pressure. The Contractor is responsible for achieving the test pressure, even if testing against existing valves.

The Contractor shall give the City Engineer a minimum of 24 hours' advance notice of the time he contemplates making the test in order that the City of St. Charles Engineer or his designee is present to observe the test.

The utmost of care shall be taken during the filling operation to prevent any possible contamination to the existing water distribution system.

The Contractor shall furnish and install all the necessary equipment and apparatus, as determined by the City of St. Charles, for making the test.

Before being placed in service, all new water mains shall be cleaned and chlorinated with liquid chlorine, according to the AWWA publication, "A Standard Procedure for Disinfecting Water Mains - AWWA C-651.92," as amended. Two consecutive bacteria-free samples collected not less than 24 hours apart are required.

The Contractor shall give the Engineer at least 24 hours' notice ahead of the time he contemplates disinfection in order that the Engineer can be present and observe the work.

Following the chlorination, the Contractor will collect and submit for bacteriological analysis two sets of samples, each set to be collected on successive days. Mains will not be accepted or placed in service until satisfactory reports are obtained for two sets collected on successive days, and the Engineer has been provided with copies of all test results satisfactorily evidencing the mains to be ready for service.

The Contractor shall include the entire costs of disinfecting mains and appurtenances in the contract price for water mains.

Testing shall be completed prior to installation of water services.

All fittings shall be cement-lined ductile iron. Bedding wedges, nominal cover, marking tape, etc, required for water main shall also apply to fittings.

Where the proposed water main cannot maintain the required separation from the existing sanitary and storm sewers, the water main shall be placed in a casing pipe which extends ten feet to each side of the crossing.

The Contractor will be required to coordinate all water main shutdowns with the City of St. Charles. The City of St. Charles must be notified one week in advance of anticipated water main shutdowns so as to have time to properly notify residents and merchants.

Existing pipelines shall be properly supported during construction of the water main so that cracking and leakage or failure of the existing pipeline does not occur.

All of the above shall be included in and paid for at the contract unit price per foot for DUCTILE IRON WATER MAIN of the diameter specified or DUCTILE IRON RAW WATER DISTRIBUTION MAIN of the diameter specified, as applicable. Measurement shall be the actual measured length, including all fittings except valves.

SECTION 561 WATER VALVES

This work shall be done in accordance with Section 561 of the Standard Specifications, the Supplemental Specifications for Water Main Improvements, the City of St. Charles Code Book, and the "Standard Specifications for Water and Sewer Main Construction in Illinois," insofar as applicable, and the following provisions.

All water valves shall be resilient wedge gate valves, as manufactured by the Clow Corporation, Waterous Company, or approved equal. Gate valves shall conform to AWWA C-509 latest revision. Gate valves shall be epoxy-coated, non-rising stem, o-ring seal, open left with a 2" square operating nut.. All below-grade nuts and fasteners shall be 304 grade stainless steel.

This work shall be paid for at the contract unit price per each for WATER VALVES of the size specified.

SECTION 561 TAPPING VALVES AND SLEEVES

This work shall be in accordance with the Section 561 of the Standard Specifications, the Supplemental Specifications for Water Main Improvements, the City of St. Charles Code Book, and the "Standard Specifications for Water and Sewer Main Construction in Illinois," insofar as applicable and the following provisions.

Tapping valves shall be resilient wedge gate valves as specified in Water Valves.

Tapping sleeves for sizes up to 8" shall be stainless steel manufactured by Romac Industries, Inc., of Seattle, Washington, Model No. SST-945. Tapping sleeves for 10" and larger shall be Mueller Co. of Decatur, Illinois, Model No. H-615 or approved equal. All fasteners used to connect tapping sleeve to tapping valve shall be 304 grade stainless steel fasteners.

This work will be paid for at the contract unit price each for TAPPING VALVES AND SLEEVES of the size specified. This price shall include the cost of all materials, fittings, adaptors, joint materials, blocking, and all labor and equipment necessary to make a complete and finished installation.

SECTION 561 ABANDON WATER MAIN

This work shall be in accordance with the Section 561 of the Standard Specifications, the Supplemental Specifications for Water Main Improvements, the City of St. Charles Code Book, and the "Standard Specifications for Water and Sewer Main Construction in Illinois," insofar as applicable and the following provisions.

This item shall consist of abandoning existing water main at locations shown in the plans or as directed by the Engineer.

The termini of the abandoned water main shall be cut, capped, and blocked at locations shown on the plan or as directed by the Engineer.

This work shall also consist of removing, capping, and blocking the existing water main if it interferes with the installation of the proposed water main at locations as directed by the Engineer.

Existing water services shall be transferred to the proposed water mains as shown on the plans and as directed by the City Water Department or Engineer.

Abandoning the existing water main will not be paid for separately but shall be included in the cost of the various water main items and appurtenances.

561006600 ADJUSTING WATER MAIN 12"

This work shall be in accordance with the Section 561 of the Standard Specifications, the Supplemental Specifications for Water Main Improvements, the City of St. Charles Code Book, and the "Standard Specifications for Water and Sewer Main Construction in Illinois," insofar as applicable and the following provisions.

This work shall consist of adjusting existing water mains where they are in conflict with new improvements.

All adjustments in the line or grade of the existing water main shall be approved by the Engineer.

All materials, labor, and equipment necessary to adjust the water main shall be on hand before shutdown and cutting of the existing main. The Contractor shall take every precaution to hold the interruption of service to a minimum.

A minimum clearance of 18" shall be maintained between the adjusted main and the improvement for which the adjustment is made.

Adequate precautions shall be taken to prevent contaminants from entering the existing main. The inside surfaces of all new materials used in the adjustment shall be cleaned of all foreign material and swabbed with a solution of efficient bactericide before assembly. The adjusted section shall then be flushed utilizing available fire hydrants.

Pipe removed in this work shall be salvaged and delivered to the City yards and shall remain the property of the City, unless otherwise provided.

Trench backfill for this item will not be paid for separately but will be included in the price of this item.

An estimated length of water main adjustment has been shown in the plans. Payment shall be based on actual length of water main adjustment required without a change in unit price due to an increase or decrease in plan quantity.

This work will be paid for at the contract unit price per foot for ADJUSTING WATER MAIN 12". This price shall include the cost of all materials, pipe, fittings, adaptors, joint materials, blocking, trench backfill, removal and disposal of existing main, and all labor, material, and equipment necessary to make a complete and finished installation.

STEEL CASING PIPE, AUGERED AND JACKED

This work shall consist of furnishing and installing by augering and jacking steel casing pipe of the size specified and in conformance with the detailed plans.

The casing pipe material shall be welded and seamless steel pipe meeting ASTM A-139, Grade B. The casing pipe shall have an inside diameter as specified in the plans.

The Contractor may install larger-diameter pipe than called for above, if he believes it would be beneficial to pipe stability. The payment item shall remain the same. "Cascade" type spacers shall be used for installation of the water main or storm sewer.

Casing pipe shall be installed to the line and grade shown on the plans. If required, the outside of the casing shall be lubricated with bentonite clay. The lead pipe of the casing shall be provided with an approved tunneling shield. The work shall be kept dewatered until the carrier pipe has been installed and tested.

The work of installing the casing pipe shall be done by a Contractor who is fully experienced and equipped for this specialized construction and is approved by the Engineer and/or other supervisory authorities.

After completion of the casing pipe, the water main or storm sewer shall be installed through the same on "cascade" spacers in a manner which will provide for continuous and smooth installation of the water main or storm sewer without obstructions of any kind. Water main or storm sewer shall be jointed and installed from one end in a manner to keep the entire pipeline under compression during installation.

The casing pipe shall be sealed by constructing masonry bulkheads at each end to preclude entrance of foreign material into the casing which might prevent ready removal of the water main or storm sewer at some future date.

Jacking Pits. Jacking pits shall be tight sheeted and braced on all sides. Sheetting shall be of adequate strength to withstand all surcharge loads to be imposed on it and shall be cut off 4' above existing ground. In lieu of the 4' cut-off height on sheetting, the Contractor may erect a 4' high fence around the excavation. Lights and warning signs as necessary shall be erected around all jacking pits.

The reaction block for the jacking mechanism shall be adequately designed to distribute the loads to the soil without excessive soil deflection and in a manner to avoid any disturbance of adjacent structures or utilities.

Hydraulic jacks and jacking frame shall be designed to apply a uniform pressure over the entire circumferential area of the pipes being jacked.

Upon completion of the jacking operation, pipe bedding within the jacking pit shall be placed in accordance with the special plan details and/or Special Provisions.

Railroad Crossing. Railway crossings shall be in accordance with the easement, license and/or accepted grant of the railroad to the Owner and said conditions are made a part of these specifications by references. Additional requirements as set forth in the A.R.E.A. Committee I Specifications for pipeline crossings under railway tracks shall govern, except as otherwise shown on the plans or modified herein.

The railway company shall be notified a reasonable time prior to commencing construction. Flagmen may be required to protect train operations during the time the pipe is installed underneath the main line tracks. The railroad shall be consulted on this matter, and any costs involved shall be at the Contractor's expense.

The Contractor shall be responsible for the cost of special insurance required by the railroad and costs incurred in repairing damage to railroad property due to the Contractor's operations or negligence.

Alternate methods of construction meeting all conditions set forth herein will be considered and will be subject to the approval of the Engineer, the Owner, the railroad, and highway agencies involved.

Compensation for any alternate construction method will be at the contract unit price for casing pipe as set forth in the proposal. No extra compensation will be allowed for additional work incurred because of the alternative method of construction.

Casing pipe shall be measured for payment in feet along the centerline of the completed pipe from end to end of casing installed. Under no circumstance will the pay length exceed the staked length.

If the size of casing pipe specified is insufficient to accommodate the type of pipe and spacers the Contractor uses, the increased cost to furnish and provide the work necessary to install the larger-diameter casing pipe shall be provided by the Contractor at no increase in contract unit price for the casing pipe specified, regardless of diameter.

This work will be paid for at the contract unit price per foot for STEEL CASING PIPE, AUGERED AND JACKED of the diameter specified, measured in place, unless otherwise specified.

This price shall include the cost of all materials, pipe, fittings, joint materials, blocking, spacers, bulkheads, and all material, labor, and equipment necessary to make a completed and finished installation.

Water main or storm sewer installed within the casing pipe shall be paid for at the contract unit price for Water Main or Storm Sewer as set forth in these Special Provisions.

STEEL CASING PIPE

This work shall be in accordance with Section 4 of the Supplemental Specifications for Water Main Improvements insofar as applicable and the following provisions.

This work shall consist of placing steel casing pipe in trench to provide a sealed carrier pipe between other utilities and the water main.

The casing pipe material shall be welded and seamless steel pipe meeting ASTM A-139, Grade B. The casing pipe shall have an inside diameter as specified on the plans.

The Contractor may install larger-diameter pipe than called for above, if he believes it would be beneficial to pipe stability. The payment item shall remain the same. "Cascade" type spacers shall be used for installation of the water main.

If the size of casing pipe specified is insufficient to accommodate the type of pipe and spacers the Contractor uses, the increased cost to furnish and provide the work necessary to install the larger-diameter casing pipe shall be provided by the Contractor at no increase in contract unit price for the casing pipe specified, regardless of diameter.

This work will be paid for at the contract unit price per foot for STEEL CASING PIPE of the diameter specified, measured in place. The price shall include the cost of all materials, pipe, fittings, joint materials, blocking, spacers, bulkheads, and all work and equipment necessary to make a completed and finished installation.

Water or sewer main installed within the casing pipe shall be paid for separately, as set forth hereinbefore.

SECTIONS 562 AND 565 WATER SERVICE LINE CURB STOP AND BOX CORPORATION STOPS

This work shall be in accordance with the Sections 561, 562, and 565 of the Standard Specifications, the Supplemental Specifications for Water Main Improvements, the City of St. Charles Code Book, and the "Standard Specifications for Water and Sewer Main Construction in Illinois," insofar as applicable and the following provisions.

After the water mains have been tested and disinfected, the water service line shall be provided from the main to the outlet side of the curb stop. The copper service pipe shall be soft temper, Type K copper tubing meeting AWWA Specification 7S-CR. Approved fittings shall be of compression-type manufactured by the Ford Meter Box Co., Inc. of Wabash, Indiana, the Mueller Company of Decatur, Illinois, or approved equal.

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Corporation stop:

Ford No. FB 1000-4-Q (1"), Ford No. FB 1000-6-Q (1½")
Mueller No. B-25008
A.Y. McDonald 4701-Q

Curb stop:

Ford No. B-44-444-Q (1"), Ford No. B-44-666-Q (1½")
Mueller No. B-25155
A.Y. McDonald 6104-Q

Every water service line from the corporation to the curb stop shall be inspected by the Water Division Foreman or his designee. All inspections shall be open trench. Contractors requesting service line inspections shall contact the City Water Division 48 hours prior to requested inspection time.

Each curb stop shall be provided with a cast-iron service box Mueller No. H-10300 for water service line 1" and Mueller No. H-10304 or A.Y. McDonald 5623 for water service line larger than 1" or equal approved by the City, complete with lid. The service box shall be of sufficient length to permit the top to be installed approximately 3" above finish grade. Each service box shall be provided with a cap with the word *WATER* cast in the top.

Excavation and trench backfill shall not be paid for separately but shall be included in the price of these items.

This work will be paid for at the contract unit price per foot for WATER SERVICE LINE of the diameter specified; per each for CURB STOP AND BOX of the size specified; and per each for CORPORATION STOPS of the size specified. These prices shall include the cost of excavation, trench backfill, copper tubing, fittings, corporation stop, curb stop, cast-iron curb box, service clamps, tapping, blocking, and all material, labor, and equipment necessary for a complete and finished installation.

56400300 FIRE HYDRANTS TO BE ADJUSTED

This work shall be in accordance with Section 564 of the Standard Specifications insofar as applicable and the following provisions.

This work shall consist of adjusting fire hydrants to an elevation that will provide 18 to 24 inches between the hose nozzles and the proposed finished elevation.

Adjustment of the hydrants will be accomplished by inserting barrel spool and stem extension pieces into the hydrant. Materials used for this work shall conform to AWWA Standard C-502.

If an auxiliary valve has been installed to serve the hydrant, its valve box shall be adjusted so that its cover is flush with the proposed finished ground elevation.

The work shall be performed in a manner approved by the City.

This work will be paid for at the contract unit price each for FIRE HYDRANTS TO BE ADJUSTED, which price will be payment in full for all material, equipment, and labor required to make a completed installation including the adjusting of the auxiliary valve box.

56400500 FIRE HYDRANT TO BE REMOVED

This work shall be in accordance with Section 564 of the Standard Specifications insofar as applicable and the following provisions.

This work shall consist of the removal of existing fire hydrants and auxiliary valves at locations shown on the plans or as directed by the Engineer.

All hydrants for removal need to be disconnected with the auxiliary valve attached. Care must be provided so as not to damage the hydrants during the removal process. The hole formed by the removal of these items shall be backfilled.

All fire hydrants, including those with auxiliary valves, shall be delivered to Public Works, City of St. Charles. The removal of auxiliary valves will not be paid for separately but shall be included in the cost of this item.

Trench backfill for this item will not be paid for separately but shall be included in the cost of this item.

The removed fire hydrants shall be delivered to the City yard as directed by the Engineer. Delivery shall be included in the cost of this item.

This work will be paid for at the contract unit price each for FIRE HYDRANTS TO BE REMOVED, which price will be payment in full for all labor, equipment, and materials for a complete removal, including removal of the auxiliary valve, backfilling the resultant hole, and disposal or delivery of removed items.

56400820 FIRE HYDRANT WITH AUXILIARY VALVE AND VALVE BOX

This work shall consist of furnishing and installing fire hydrants at locations specified in the plans. This work shall conform to Division IV, Section 45 of the "Standard Specifications for Water and Sewer Main Construction in Illinois," City of St. Charles Code Book, details in the plans, and the following provisions.

Fire hydrants shall be either Clow Medallion Fire Hydrants, as manufactured by the Clow Valve Company of Oskaloosa, Iowa, or Mueller Super Centurion 200 Fire Hydrants, as manufactured by Mueller Company, Decatur, Illinois, or Waterous Pacer Model WB-67-250, or equal as approved by the City. Hydrants will have two 2½" hose nozzles and one 4½" steamer nozzle threaded for St. Charles thread. All threads shall be National Standard. All hydrants shall be for 6" pipe connection and shall have a 5" valve opening. Hydrants shall be of sufficient length to allow for 5' of cover over the hydrant lead. An auxiliary 6" valve and valve box shall be installed on each hydrant lead. Auxiliary valves shall be as specified previously for water valves. All hydrants shall have two coats of paint matching the City standard for color, commonly known as Tnemec-Chilean Red. Hydrants shall have installed "Hydrfinder Standard" hydrant locators as manufactured by the Radon Corporation of St. Charles, Illinois or approved equal.

Valve boxes on hydrant leads shall be buffalo-type, three-piece, Mueller No. H-10357, Clow F-2450, or approved equal. All valve boxes shall have a valve box stabilizer installed.

This work will be paid for at the contract unit price each for FIRE HYDRANT WITH AUXILIARY VALVE AND VALVE BOX, which price shall include all labor, equipment, and materials for complete installation including auxiliary valve and cast-iron valve box and adjusting the barrel length so as to provide 18 to 24 inches between the pump nozzle and ground.

60107600 PIPE UNDERDRAINS, 4"

This work shall be in accordance with Section 601 of the Standard Specifications and the detail in the plan insofar as applicable and the following provisions.

The pipe underdrains shall be perforated polyvinyl chloride (PVC) pipe meeting Article 1040.09 of the Standard Specifications.

Bedding material surrounding the pipe and within three (3) inches of the outside edge of the pipe shall be CA 16 aggregate and shall be completely wrapped in one layer of geotechnical fabric.

The pipe underdrains shall be installed at all locations as shown on the plans. The pipe underdrain inverts shall be at a depth of 3.5 feet below the top of curb at the catch basin, unless noted otherwise, so as to drain the pavement subgrade. The underdrain shall have a minimum slope of one percent (1%). The upstream end of the pipe shall be capped with a material matching the pipe material.

Pipe underdrains located within ten feet of existing or proposed water main (that is not in casing pipe) shall be water main quality PVC pipe meeting AWWA C900-97 and shall not have perforations. This work will be included in the cost of Pipe Underdrains, 4".

This work shall be measured for payment in feet of pipe installed.

This work shall be paid for at the contract unit price per foot for PIPE UNDERDRAINS, 4", which price shall include the cost of excavating, disposing of surplus material, furnishing and installing the pipe, fabric, and bedding, and backfilling with CA 16 trench backfill material.

60107700 PIPE UNDERDRAINS, 6"

This work shall be in accordance with Section 601 of the Standard Specifications insofar as applicable and the following provisions.

This work shall consist of furnishing and placing pipe underdrains along each side of the concrete bike path tunnel and outletting the pipe drains as shown on the plans.

Materials shall meet the requirements of Article 601.02 of the Standard Specifications.

The pipe underdrains shall be placed on each side of the bike path tunnel as shown on the plans to drain the geocomposite wall drain. The pipe underdrains shall be encased in an 18-inch square of CA 5 or CA 7 coarse aggregate surrounded by an impervious geomembrane.

Pipe underdrains will be measured for payment in feet, in place. Coarse aggregate will not be measured for payment and is included with the cost of pipe underdrains. The impervious geomembrane is included with the cost of the geocomposite wall drain.

PIPE UNDERDRAINS, 6" will be paid for at the contract unit price per foot.

SECTION 602 DRAINAGE STRUCTURES, TYPE 3 (MODIFIED)

This work shall be in accordance with Section 602 of the Standard Specifications insofar as applicable, the following provisions, and details in the plans.

The drainage structure shall be precast and reinforced according to the IDOT Highway Standard Detail 602101-01.

The 6" slot opening below the top of the structure may be precast or field-cut by the Contractor.

The steel grid deck shall consist of the fabrication, assembly, delivery, and installation as specified in the plans. The steel grid deck shall be fabricated and assembled similar to that shown for the steel grid deck for Drainage Structure, Special, although two angles as detailed in the plans shall be used in lieu of a WT and angle. The steel grid deck will not be paid for separately but shall be included in the cost of this item.

The 5" grid deck shall be A709 Grade 50 material with minimum section modulus of 4.2 in³/ft for the top of the steel and 5.2 in³/ft for the bottom of the steel. The deck shall be assembled between the bottom and top angles. After fabrication of the grid deck and angles, the assembly shall be hot-dipped galvanized in accordance with ASTM A385 and AASHTO M111.

All bolts, nuts, cap screws, washers, and lock washers shall be stainless steel.

This work shall be measured and paid for at the contract unit price each for DRAINAGE STRUCTURES, TYPE 3 (MODIFIED). This price shall include excavation, trench backfill, steel grid deck, anchor bolts, and all equipment, labor, and materials necessary for a complete installation.

XX005472 DRAINAGE STRUCTURE, SPECIAL

This work shall be in accordance with Sections 503, 508, and 602 of the Standard Specifications insofar as applicable, the following provisions, and details in the plans.

Class SI Portland Cement Concrete shall be used for this structure with epoxy-coated reinforcing bars.

The steel grid deck shall consist of fabrication, assembly, delivery, and installation as specified in the plans. The steel grid deck will not be paid for separately but shall be included in the cost of this item.

The 5" grid deck shall be A709 Grade 50 material with minimum section modulus of 4.2 in³/ft for the top of the steel and 5.2 in³/ft for the bottom of the steel. The deck shall be assembled between the WT and angle. After fabrication of the grid deck, WT and angle, the assembly shall be hot-dipped galvanized in accordance with ASTM A385 and AASHTO M111.

All bolts, nuts, cap screws, washers, and lock washers shall be stainless steel.

This work shall be measured and paid for at the contract unit price each for DRAINAGE STRUCTURES, SPECIAL. This price shall include excavation, trench backfill, concrete, reinforcing bars, steel, steel assembly, steel grid deck, cast-iron steps, anchor bolts, and all equipment, labor, and materials necessary for a complete installation.

SECTION 602 SPLIT-FLOW JUNCTION STRUCTURE

This work shall be in accordance with Sections 503, 508, and 602 of the Standard Specifications insofar as applicable, the following provisions, and details in the plans.

Class SI Portland Cement Concrete shall be used for this structure with epoxy-coated reinforcing bars.

The frames and lids will be paid for separately.

This work shall be measured and paid for at the contract unit price each for SPLIT FLOW JUNCTION STRUCTURE. The price shall include excavation, trench backfill, concrete, reinforcing bars, cast-iron steps, and all equipment, labor, and materials necessary for a complete installation.

SECTION 602 CLOSED LIDS

All frames with closed lids to be furnished as part of this contract for construction, adjustment, or reconstruction of any manhole or valve vault shall have cast into the lid one of the following words:

All lids to be used on drainage structures shall bear the word *STORM*.

All lids to be used on sanitary sewer structures shall bear the word *SANITARY* and shall be of the self-sealing and bolt-down type with concealed pick holes and O-ring seals.

All lids to be used on water system structures shall bear the word *WATER*.

**SECTION 602 CATCH BASINS
MANHOLES
INLETS
VALVE VAULTS**

This work shall be in accordance with Section 602 of the Standard Specifications insofar as applicable and the following provisions.

All new structures shall be constructed using precast reinforced concrete risers. Final adjustment shall be made using precast adjusting rings. A maximum of eight (8) inches of adjusting rings will be permitted. At locations where Type 8 grates are to be installed on a flat slab top, a minimum of four (4) inches of adjusting rings shall be used in order to allow for topsoil placement over the flat top. Cost of the above shall be included in the unit price for the various structures in the contract.

The framed lid, frame and grate, or grate will be paid for separately.

This work will be paid for at the contract unit price each for CATCH BASINS, MANHOLES, INLETS or VALVE VAULTS of the type, or type and diameter, or diameter specified, which price shall include sand cushion, steps, and flat slab tops, excavation, backfill, and all material, labor, and equipment necessary for a complete installation. The frames and grates or lids will be paid for separately.

SECTION 602 ADJUSTMENT AND RECONSTRUCTION OF STRUCTURES

This work shall be in accordance with Section 602 of the Standard Specifications insofar as applicable and the following provisions.

All adjustments shall be made by using precast reinforced concrete, high-density polyethylene plastic, or recycled rubber adjustment rings. A maximum of 8" of adjusting rings will be permitted.

When new frame and grates or lids are called for with the adjustment or reconstruction, the cost for furnishing and installing the new frame and grate or lid shall be paid for separately, unless noted otherwise. Existing frames and grates or lids shall be delivered to the City or County as directed by the Engineer. Delivery shall be included in the cost of the item being adjusted or reconstructed.

Structures which are to be reconstructed shall be reconstructed to the depth approved by the Engineer.

60228110 MANHOLES, SANITARY, 4'-DIAMETER, TYPE 1 FRAME, CLOSED LID

This work shall be in accordance with Section 602 of the Standard Specifications, the "Supplemental Specifications for Sanitary Sewer Improvements," the City of St. Charles Code Book, and the "Standard Specifications for Water and Sewer Main Construction in Illinois," insofar as applicable, the details in the plans, and the following provisions.

This work shall consist of providing and installing manholes with cast-iron steps together with the necessary cast-iron frames and lids on sewer lines where shown on the plans or directed by the Engineer.

Manholes shall be constructed using only precast reinforced concrete manhole sections.

All joints between manhole sections are to be tongue and groove and shall be sealed by means of an o-ring gasket or two continuous butyl joint sealant ropes at the inside and outside face, meeting the requirements of ASTM C-443.

Each pipe opening in the manhole shall have a flexible watertight pipe-to-manhole seal meeting ASTM C-923.

The frame and lid shall be of the self-sealing watertight gasket design. The lid shall have a concealed pickhole and have the word *SANITARY* cast in the top side. External frame chimney seal and Infi-Shield or approved equal shall be installed with the frame and lid.

The total height of the manhole structure shall be such that not more than eight (8) inches of adjusting rings are necessary to set the frame at the required finished elevation. All joints between the last manhole section and the frame are to be of watertight construction.

This work will be paid for at the contract unit price each for MANHOLES, SANITARY of the diameter specified and with the specified frame and lid, which price shall include cast-iron steps and all excavation, backfill, and all material, labor, and equipment necessary to make a complete installation.

60258000 MANHOLES TO BE RECONSTRUCTED (SPECIAL)

This work shall be in accordance with Section 602 of the Standard Specifications insofar as applicable and the following provisions.

Final adjustments shall be made by using precast reinforced concrete, high-density polyethylene plastic, or recycled rubber adjustment rings. A maximum of 8" of adjusting rings will be permitted.

The cost for furnishing and installing the new frame and lid shall be paid for separately. Existing frames and lids shall be delivered to the County as directed by the Engineer. Delivery shall be included in the cost of this item.

The manhole shall be reconstructed to the depth approved by the Engineer.

The existing concrete manhole is approximately 4' x 5' in plan and approximately 7.3' in depth. This work will require removal of an existing 30" diameter storm sewer and installation of a 42" storm sewer, at a lower invert, at the resultant opening. The Contractor shall take care in protecting the integrity of the structure.

This work will be paid for at the contract unit price each for MANHOLES TO BE RECONSTRUCTED (SPECIAL), which price shall include all material, labor, and equipment for a complete reconstruction. The new frame and lid will be paid for separately.

60260050 SANITARY MANHOLES TO BE RECONSTRUCTED

This work shall be in accordance with Section 602 of the Standard Specifications and Section 8 of the Supplemental Specifications for Sanitary Sewer Improvements insofar as applicable, the details in the plans, and the following provisions.

All adjustments shall be made by using precast reinforced concrete adjustment rings. A maximum of 8" of adjusting rings will be permitted. Chimney seals shall be provided at all locations.

When new frame and grates or lids are called for with the reconstruction, the cost for furnishing and installing the new frame and lid shall be included in the cost for reconstructing the structure. The new frame and lid shall be of self-sealing watertight gasket design. Existing frames and lids shall be delivered to the City as directed by the Engineer. Delivery shall be included in the cost of the item being reconstructed.

Structures which are to be reconstructed shall be reconstructed to the depth approved by the Engineer.

The pipe opening in the manhole shall have a gasket-type water-stop collar that provides a flexible watertight pipe-to-manhole seal meeting ASTM C-923.

This work will be paid for at the contract unit price each for SANITARY MANHOLES TO BE RECONSTRUCTED, which price shall include all labor, equipment, and materials, including excavation and backfill, for a complete reconstruction.

60266500 VALVE VAULTS TO BE REMOVED

This work shall be done in accordance with Section 605 of the Standard Specifications insofar as applicable and the following provisions.

This work shall consist of all work necessary to remove the existing valve vault at the locations shown on the plans or as directed by the Engineer. Valves shall be closed prior to backfilling of hole.

This work will be paid for at the contract unit price per each for VALVE VAULTS TO BE REMOVED.

60266910 VALVE BOXES TO BE REMOVED

This work shall consist of all work necessary to completely remove existing valve boxes, fill the resultant hole with compacted trench backfill, and to dispose of all removed materials. Trench backfill for this item will not be paid for separately but shall be included in the cost of this item. Valve boxes shall be delivered to the City yard as directed by the Engineer. Delivery shall be included in the cost of the item being removed.

This work will be paid for at the contract unit price each for VALVE BOXES TO BE REMOVED, which will be payment in full for all required work.

SECTION 604 FRAME AND GRATES SPECIAL

This work shall be in accordance with Section 604 of the Standard Specifications insofar as applicable, the following provisions, and details in the plans.

Structures indicating an (Special) frame and grate shall use Neenah Foundry Company R-3281-A with curb plate or Engineer-approved equal.

The frame and grate are to conform to a depressed B-6.12 combination curb and gutter through a driveway.

This item will be paid for at the contract unit price each for FRAME AND GRATES SPECIAL which price includes frames and grates and all equipment, material, and labor necessary for a complete installation.

SECTION 604 FRAME AND GRATES SPECIAL (SPL1)

This work shall be in accordance with Section 604 of the Standard Specifications insofar as applicable, the following provisions, and details in the plans.

Structures indicating an "SPL1" (Special 1) frame and grate shall use Neenah Foundry Company R-3501-P or Engineer-approved equal.

The frame and grate are to conform to an M-2.12 mountable curb and gutter.

This item will be paid for at the contract unit price each for FRAME AND GRATES SPECIAL (SPL1), which price includes frames and grates and all equipment, material, and labor necessary for a complete installation.

SECTION 606 COMBINATION CONCRETE CURB AND GUTTER AND CONCRETE CURB, TYPE B

This work shall be in accordance with Section 606 of the Standard Specifications insofar as applicable, the details in the plans, and the following provisions.

Combination concrete curb and gutter shall have nominal concrete flag thicknesses of 10" at Randall Road and Illinois Route 64 P.C.C. Pavement, 14" at Randall Road bituminous pavement, 13" at Illinois Route 64 bituminous pavement, and 10" at Dean Street pavement.

A formless curb machine shall be used to place all combination concrete curb and gutter except radii 30 feet or less and shall be used in accordance with Article 606.04 of the Standard Specifications.

One-inch transverse expansion joints shall be placed at all radius points of the proposed concrete curb and gutter and at approximate 100-foot intervals between the above, as determined by the Engineer. Providing and installing these joints shall be included in the cost for the curb and gutter.

Expansion joint filler material shall be 1" thick and shall be installed so as to be a minimum of ½" lower than the finished gutter sections.

All expansion and contraction joints shall be sealed in accordance with Section 420 of the Standard Specifications.

At locations where the proposed curb and gutter is to be constructed across trenches or within three feet of the close edge of any trench, two (2) No. 4 reinforcement bars shall be placed in the proposed gutter. These reinforcement bars shall not be continuous through transverse expansion joints, but shall be stopped 3" short of same. Cost of these reinforcement bars, complete in place, shall be included in the cost for the curb and gutter.

This work shall be paid for at the contract unit price per foot for COMBINATION CONCRETE CURB AND GUTTER of the type specified or CONCRETE CURB, TYPE B, as applicable, which price shall be payment in full for all necessary labor, materials, and equipment including excavation, Class SI concrete, and reinforcement for a complete installation.

60618300 CONCRETE MEDIAN SURFACE, 4 INCH

This work shall be in accordance with Section 606 of the Standard Specifications insofar as applicable and the following provisions.

The concrete median surface shall be constructed as shown in the plans and details and as directed by the Engineer.

The concrete median surface will be constructed over four (4) inches of Aggregate Base Course, Type B, which will not be paid for separately but will be included in the cost of the concrete median surface.

This work will be paid for at the contract unit price per square foot for CONCRETE MEDIAN SURFACE, 4 INCH, which price shall include aggregate base course and all materials, labor, and equipment necessary for a complete installation.

63100167 TRAFFIC BARRIER TERMINAL TYPE 1, SPECIAL (TANGENT)

This work shall be in accordance with Section 631 of the Standard Specifications and Check Sheet No. 40 of the Recurring Special Provisions insofar as applicable and the following provisions.

The terminal marker direct applied will not be paid for separately but shall be included in the cost of this item. This work will be paid for at the contract unit price per each TRAFFIC BARRIER TERMINAL TYPE 1, SPECIAL (TANGENT), which price includes the terminal marker direct applied and all material, labor, and equipment necessary for a complete installation.

66410200 CHAIN LINK FENCE (SPECIAL)

This work shall be in accordance with Section 664 of the Standard Specifications insofar as applicable and the following provisions.

This work shall consist of furnishing and installing chain link fence that match in-kind the existing Edward Hines Co. fence located on the east side of Randall Road north of Illinois Route 64, at locations shown on plan, and as directed by the Engineer. The Contractor shall verify compatibility of the proposed fence with the existing fence to remain prior to installation.

This work will be paid for at the contract unit price per foot for CHAIN LINK FENCE (SPECIAL), which price includes all fence, posts, concrete foundations, fittings, accessories, and all material, labor, and equipment necessary for a complete installation.

66410300 CHAIN LINK FENCE REMOVAL

This work shall be in accordance with Section 664 of the Standard Specifications insofar as applicable and the following provisions.

This work shall consist of the removal of existing chain link fence at locations shown on plan and as directed by the Engineer.

The existing fence shall be carefully removed and returned to the owners or properly disposed of as directed by the Engineer. Any part of the fence that is damaged as determined by the Engineer, during removal will be replaced in-kind at the Contractor's expense.

Temporary plastic snow barrier fence shall be erected where fence has been removed to secure the area prior to installation of the permanent chain link fence where directed by the Engineer, as applicable.

This work will include the removal of concrete pole foundations, fittings, gates, posts, rails, and accessories.

This work will be paid for at the contract unit price per foot for CHAIN LINK FENCE REMOVAL, which price shall include the cost of all material, labor, and equipment necessary for a complete removal and installation of temporary plastic snow barrier fence, as applicable.

SECTION 669 NON-SPECIAL WASTE WORKING CONDITIONS

This work shall be according to Article 669 of the "Standard Specifications for Road and Bridge Construction," adopted January 1, 2002, 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 prequalified in hazardous waste by the Department. Documentation includes but is 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. Implementation of this Special Provision will likely require the Contractor to subcontract for the execution of certain activities. It will be the Contractor's responsibility to assess the working conditions and adjust anticipated production rates accordingly.

The Contractor shall manage all contaminated materials as non-special waste as previously identified. This work shall include monitoring and potential sampling, analytical testing, and management of petroleum-contaminated material. During the preliminary site investigation (PSI), an underground storage tank (UST) was discovered at the Ameritech property (Site 1274-D, 2300 West Main Street) between Station 345+60 and Station 345+90 offset 50 to 65 feet LT.

The Contractor shall excavate and dispose of any soil classified as a non-special waste or groundwater classified as a special waste as directed by this project or the Engineer. Any excavation or disposal beyond what is required by this project or the Engineer shall be at the Contractor's expense. The PSI report, available through the District's Environmental Studies Unit, estimated the excavation quantity of non-special waste at the following location. The information available at the time of plan preparation determined the limits of the contamination and the quantities estimated were based on soil excavation for construction purposes only. The lateral distance is measured from centerline and the farthest distance is the offset distance or construction limit, whichever is less. The environmental firm shall continuously monitor for worker protection, and the Contractor shall manage and dispose of all soils excavated within the following areas as classified below. Any soil samples or analysis without the approval of the Engineer shall be at the Contractor's expense.

1. Station 37+50 to Station 38+10, 0 to 70 feet LT (Fox River Tire & Supply, Site 1274-3, 2010 West Main Street) – non-special waste. Contaminants of concern sampling parameters: Lead.
2. Station 350+60 to Station 352+50, 0 to 70 feet LT (Fox River Tire & Supply, Site 1274-3, 2010 West Main Street) – non-special waste. Contaminants of concern sampling parameters: PNAs, TCLP Lead, and Arsenic.
3. Station 350+50 to Station 351+70, 0 to 140 feet RT (Amoco Gasoline Station #18749, Site 1274-4, 2015 West Main Street) – non-special waste. Contaminants of concern sampling parameters: BETX, PNAs, TCLP Lead, and Arsenic.
4. Station 348+70 to Station 350+00, 0 to 215 feet RT (7-Eleven, Site 1247-5, 2101 West Main Street) – non-special waste. Contaminants of concern sampling parameters: BETX, PNAs, TCLP Lead, and Arsenic.
5. Station 28+80 to Station 30+75, 0 to 70 feet LT (Euclid Beverage, Site 1274-6, 248 North Randall Road) – non-special waste. Contaminants of concern sampling parameters: PNAs and TCLP Lead.
6. Station 35+65 to Station 37+50, 0 to 70 feet LT (Tri-City Auto, Site 1274-9, 110 North Randall Road) – non-special waste. Contaminants of concern sampling parameters: PNAs, TCLP Lead, and Arsenic.

Backfill plugs shall be placed within the following locations:

1. Station 350+50 to Station 352+00, 0 to 140 feet RT (Amoco Gasoline Station #18749, Site 1274-4, 2015 West Main Street). Contaminants of concern sampling parameters: BETX, PNAs, TCLP Lead, and Arsenic.
2. Station 348+50 to Station 350+50, 0 to 215 feet RT (7-Eleven, Site 1247-5, 2101 West Main Street). Contaminants of concern sampling parameters: BETX, PNAs, TCLP Lead, and Arsenic.
3. Station 28+80 to Station 30+75, 0 to 70 feet LT (Euclid Beverage, Site 1274-6, 248 North Randall Road) – non-special waste. Contaminants of concern sampling parameters: PNAs and TCLP Lead.
4. Station 35+50 to Station 37+50, 0 to 70 feet LT (Tri-City Auto, Site 1274-9, 110 North Randall Road) – non-special waste. Contaminants of concern sampling parameters: PNAs, TCLP Lead, and Arsenic.

Engineered Barrier. An engineered barrier shall be installed in storm sewer trenches between Station 37+50 to Station 38+10, offset 30 to 60 feet LT, to limit the exposure and control the migration of contamination from the contaminated soil that remains within the trench excavation. It shall be placed beneath the trench backfill material.

The engineered barrier shall consist of a geosynthetic clay liner system, geomembrane liner, or equivalent material as approved by the Engineer. A geosynthetic clay liner shall be composed of a bentonite clay liner approximately 0.25 inch thick. The engineered barrier shall have a permeability of less than 10^{-7} cm/sec. Installation of the geosynthetic clay liner system shall be in accordance with the manufacturer's recommendations, except that all laps shall face downslope.

The geomembrane liner shall have a minimum thickness of 30 mil. The geomembrane liner shall line the entire trench, and in accordance with the manufacturer's recommendations.

No equipment will be allowed on the engineered barrier until it is covered by a minimum of one foot of backfill. Any damage to the engineered barrier caused by the Contractor shall be repaired at the Contractor's expense in accordance with the manufacturer's recommendations and as directed by the Engineer.

Engineered barrier will be measured for payment in place and the area computed in square yards.

The engineered barrier will be paid for at the contract unit price per square yard for ENGINEERED BARRIER, which price will include the cost of all equipment, labor, and materials for placing of the engineered barrier.

SECTION 701 TRAFFIC CONTROL PLAN

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

Special attention is called to Articles 105.05, and 107.09, and to Sections 701 and 702 of the Standard Specifications, and to the following Highway Standards, Details, Recurring Special Provisions, and Special Provisions contained herein relating to traffic control.

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

Standards

701101, 701501, 701502, 701601, 701602, 701606, 701701, 702001

Details

Construction Staging Plans
Traffic Control and Protection for Side Roads, Intersections and Driveways (TC 10)
Pavement Marking Letters and Symbols for Traffic Staging (TC 16)

Special Provisions

Work Zone Traffic Control (Lump-Sum Payment)
Maintenance of Roadway
Keeping Roads Open to Traffic
Construction Staging
LRS 3 Construction Zone Traffic Control
LRS 4 Flaggers in Work Zones
BDE 57291 Traffic Control Deficiency Deduction
BDE 80125 Work Zone Speed Limit Signs
BDE 80097 Work Zone Traffic Control Devices

SECTION 701 WORK ZONE TRAFFIC CONTROL (LUMP-SUM PAYMENT)

The Standard Specification for Section 701, Work Zone Traffic Control shall apply, except as modified herein.

Specific traffic control plan details and special provisions have been prepared for this contract.

All traffic control (except pavement marking) indicated on the traffic control plan details and specified in the Special Provisions will be measured for payment on a lump-sum basis.

All traffic control and protection will be paid for at the contract lump-sum price for TRAFFIC CONTROL AND PROTECTION (SPECIAL). This price shall be payment in full for all labor, materials, transportation, handling, and incidental work necessary to furnish, install, maintain, and remove all traffic control devices required as indicated in the plans and as approved by the Engineer.

Short-term pavement marking and temporary pavement marking will be paid for separately.

SECTION 703 TEMPORARY PAVEMENT MARKING

This work shall be in accordance with Section 703 of the Standard Specifications insofar as applicable and the following provisions.

This item of work shall consist of placing pavement markings in accordance with the staging plans and as directed by the Engineer.

The markings are to be installed to properly channelize and maintain traffic control during construction of this project. Temporary paint pavement marking will not be applied to the final bituminous surface course.

This work will be paid for at the contract unit price per foot of applied line for TEMPORARY PAVEMENT MARKING LINE of the width specified, and per square foot for TEMPORARY PAVEMENT MARKING - LETTERS AND SYMBOLS.

SECTION 720 SIGN PANELS

This work shall be in accordance with Section 720 of the Standard Specifications insofar as applicable and the following provision.

All sign panels shall be Diamond grade VIP.

X0322256 TEMPORARY INFORMATION SIGNING

This work shall be in accordance with Section 720 of the Standard Specifications insofar as applicable and the following provisions.

This item is for furnishing and installing temporary information signs for identification of commercial driveways and side streets and miscellaneous informational signs required during construction staging as directed by the Engineer.

An estimated quantity of temporary information signing has been shown in the summary of quantities to establish a unit price only, and payment shall be based on the actual quantity of temporary information signing installed without a change in unit price due to any adjustment in plan quantities.

Installation, mounting hardware, sign posts, if required, and removal will be included in the unit price of this item.

This work shall be paid for at the contract unit price per square foot for TEMPORARY INFORMATION SIGNING, which price shall include all labor, materials, and equipment necessary for a complete installation and removal.

72800100 TELESCOPING STEEL SIGN SUPPORT

This work shall be in accordance with Section 728 of the Standard Specifications insofar as applicable and the following provisions.

The telescoping steel sign support shall be a 2" square, 10' long Telspar steel post or approved equal. The steel post shall be powder coated a Dark Bronze color.

73100110 BASE FOR TELESCOPING SIGN SUPPORT, SPECIAL

This work shall be in accordance with Section 731 of the Standard Specifications insofar as applicable and the following provisions.

The base for the telescoping sign support shall use the V-loc socket system by Tapco Traffic and Parking Control Co., Inc. or approved equal. The base shall be powder coated a Dark Bronze color.

This work will be paid for at the contract unit price each for BASE FOR TELESCOPING SIGN SUPPORT, SPECIAL, which price shall include all equipment, labor, and material necessary for a complete installation.

SECTION 781 RECESSED REFLECTIVE PAVEMENT MARKERS

This work shall be in accordance with Section 781 of the Standard Specifications insofar as applicable, the following provisions, and details in the plans.

It is the intent of these specifications to describe the labor and materials required for the reflectorized pavement markers in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Roads, Part III, Markings on the Illinois Department of Transportation."

The recessed reflective pavement markers shall be constructed by removing a 5" x 24" area of the bituminous/concrete pavement at a depth of $\frac{3}{4}$ ". This depressed area shall be tapered vertically from the full depth of $\frac{3}{4}$ inches to 0 inches in 30 inches at both ends for the two-way markers and at the approach end only for the one-way markers. The depressed area shall be oriented lengthwise and longitudinally with respect to the roadway.

A 3M 290 Series pavement marker or approved equivalent shall be placed and cemented with epoxy in the center of the $\frac{3}{4}$ " deep depressed area.

The recessed area shall be cleaned free of all loose material by means of sandblasting and also free of moisture before the placement of the pavement marker. All excess material resulting from the construction of the recessed area shall be completely removed from the surface of the roadway by means of a vacuum sweeper truck.

The recessed reflective pavement markers shall be located and spaced as per the details shown in the plans for raised reflective pavement markers.

This work shall be paid for at the contract unit price per each for RECESSED REFLECTIVE PAVEMENT MARKER, which price shall be payment in full for all labor, materials, and equipment necessary to complete the work described above.

78300100 PAVEMENT MARKING REMOVAL

This work shall be in accordance with Section 783 of the Standard Specifications insofar as applicable and the following provisions.

This work shall consist of removing existing and/or temporary pavement marking (excluding tape) that has been installed to control traffic and is in conflict with proposed markings required for traffic control during stage construction. Markings shall be removed as required by the plans or as directed by the Engineer.

Pavement markings that fall in areas that are to be removed or overlaid need not be removed if they do not conflict with redirected traffic movements.

The pavement markings shall be removed to the fullest extent possible from the pavement by a method that does not materially damage the surface or texture of the pavement. Any damage to the pavement caused by pavement marking removal shall be repaired by the Contractor at his expense by methods acceptable to the Engineer.

Residue from this pavement marking removal operation shall be promptly cleaned from the traffic lanes in a manner acceptable to the Engineer.

This work will be measured for payment in square feet of marking actually removed, regardless of the marking line width.

This work will be paid for at the contract unit price per square foot for PAVEMENT MARKING REMOVAL, which price shall be payment in full for all equipment, labor, and material required to perform this work.

X0321556 SANITARY MANHOLES TO BE ADJUSTED

X0321588 SANITARY MANHOLES TO BE ADJUSTED WITH NEW TYPE 1 FRAME, CLOSED LID

This work shall be in accordance with Section 602 of the Standard Specifications insofar as applicable and the following provisions.

This item consists of the adjustment of sanitary manhole frames and lids to proposed grade.

All adjustments shall be made by using precast reinforced concrete adjustment rings. A maximum of 8" of adjusting rings will be permitted.

This work will be paid for at the contract unit price each for SANITARY MANHOLES TO BE ADJUSTED, which price shall include resetting the frame with lid, excavation, and backfill.

When adjustment is specified and new frames and lids to be used, this work will be paid for at the contract unit price each for SANITARY MANHOLES TO BE ADJUSTED WITH NEW TYPE 1 FRAME, CLOSED LID, which price shall include the frame with lid, excavation, and backfill.

X0322671 STABILIZED CONSTRUCTION ENTRANCE

This work shall be in accordance with Sections 282 and 351 of the Standard Specifications and Code 930 of the Illinois Urban Manual, Practice Standard insofar as applicable, the following provisions, and the details in the plans.

The stabilized construction entrance shall be constructed according to the Illinois Urban Manual, Standard Drawing IL-630.

The Contractor has the option to install a wash rack. It is the Contractor's responsibility to maintain the roadway in a clean condition.

The locations of the stabilized construction entrances must be approved by the Engineer.

This work shall be measured and paid for at the contract unit price per square yard for STABILIZED CONSTRUCTION ENTRANCE. This price shall include excavation, aggregate, filter fabric, wash rack (if needed), and all material, equipment, and labor necessary for complete installation and removal when the entrance is not needed.

X0323988 TEMPORARY SOIL RETENTION SYSTEM

This work shall consist of designing, furnishing, installing, adjusting for stage construction when required, and subsequent removal of the temporary soil retention system according to the dimensions and details shown on the plans and in the approved design submittal.

The temporary soil retention system shall be designed by the Contractor, as a minimum, to retain the exposed surface area specified in the plans or as directed by the Engineer.

The design calculations and details for the temporary soil retention system proposed by the Contractor shall be submitted to the Engineer for approval. The calculations shall be prepared and sealed by an Illinois Licensed Structural Engineer. This approval will not relieve the Contractor of responsibility for the safety of the excavation. Approval shall be contingent upon acceptance by all involved utilities and/or railroads.

The Contractor shall verify locations of all underground utilities before installing any of the soil retention system components or commencing any excavation. Any disturbance or damage to existing structures, utilities, or other property caused by the Contractor's operation shall be repaired by the Contractor in a manner

satisfactory to the Engineer, at no additional cost to the Department. The soil retention system shall be installed according to the Contractor's approved design or as directed by the Engineer prior to commencing any related excavation. If unable to install the temporary soil retention system as specified in the approved design, the Contractor shall have the adequacy of the design reevaluated. Any reevaluation shall be submitted to the Engineer for approval prior to commencing the excavation adjacent to the area in question. The Contractor shall not excavate below the maximum excavation line shown in the approved design without the prior permission of the Engineer. The temporary soil retention system shall remain in place until the Engineer determines it is no longer required.

The temporary soil retention system shall be removed and disposed of by the Contractor when directed by the Engineer. When allowed, the Contractor may elect to cut off a portion of the temporary soil retention system, leaving the remainder in place. The remaining temporary soil retention system shall be removed to a depth which will not interfere with the new construction, and as a minimum, to a depth of 12 inches below the finished grade or as directed by the Engineer. Removed system components shall become the property of the Contractor.

When an obstruction is encountered, the Contractor shall notify the Engineer, and upon concurrence of the Engineer, the Contractor shall begin working to break up, push aside, or remove the obstruction. An obstruction shall be defined as any object (such as, but not limited to, boulders, logs, old foundations, etc.) where its presence was not obvious or specifically noted on the plans prior to bidding that cannot be driven or installed through or around with normal driving or installation procedures, but requires additional excavation or other procedures to remove or miss the obstruction.

The temporary soil retention system furnished and installed according to the Contractor's approved design or as directed by the Engineer will be measured for payment in place in square feet. The area measured shall be the vertical exposed surface area envelope of the excavation supported by temporary soil retention system.

Any temporary soil retention system cut off, left in place, or installed beyond those dimensions shown on the contract plans or the approved Contractor's design without the written permission of the Engineer shall not be measured for payment but shall be done at the Contractor's own expense.

This work will be paid for at the contract unit price per square foot for TEMPORARY SOIL RETENTION SYSTEM.

Payment for any excavation related solely to the installation and removal of the temporary soil retention system and/or its components shall not be paid for separately but shall be included in the unit bid price for Temporary Soil Retention System. Other excavation performed in conjunction with this work will not be included in this item but shall be paid for as specified elsewhere in this contract.

Obstruction mitigation shall be paid for according to Article 109.04 of the Standard Specifications.

X0632001 CLEAR PROTECTIVE COATING FOR CONCRETE

This work shall consist of the furnishing and application of an anti-graffiti coating to the surfaces designated on the plans.

The anti-graffiti protection system shall consist of a permanent, color stable, UV, stain, chemical and abrasion resistant coating. The removal of the graffiti from the protected surfaces shall be accomplished by applying a separate removal agent as recommended by the manufacturer of the permanent coating. The removal agent shall have the capability of completely removing all types of paints and stains. After graffiti removal there shall be no damage to the anti-graffiti coating or the surface to which it is applied. Additionally there shall be no evidence of ghosting, shadowing or staining of the protected surface.

The anti-graffiti protection system shall be a product that has been commercially available for a period of at least 5 years. Samples of the proposed material shall be supplied to the Engineer for testing. The Contractor shall apply the material to a test patch following the manufacturer's recommendation. After the manufacturer's recommended curing period the Engineer will apply various types of graffiti materials to the coating. After three days the removal agent shall be used to remove the graffiti. If after graffiti removal the anti-graffiti coating is clean and undamaged with no evidence of ghosting, shadowing or staining then the anti-graffiti coating is approved for use.

Prior to application of the anti-graffiti coating all designated surfaces shall be cleaned of all loose debris, previous coatings and all foreign matter by a method as recommended by the coating manufacturer and approved by the Engineer. All surfaces shall be thoroughly clean, dry and free of dust that might prevent penetration of the coating. New concrete should be thoroughly cured before application of the coating. Glossy, glazed and slick troweled surfaces should be lightly etched or abraded before application of the coating. Concrete surfaces shall be properly sealed according to the manufacturer's recommendations so that application of the system does not produce any noticeable long term change in the color of the surfaces being treated. A technical representative of the manufacturer shall be present to approve surface preparation and application of the anti-graffiti protection system.

Coatings shall not be applied in the rain, snow, fog or mist nor shall they be applied if these conditions are expected within twelve hours of application. Coatings shall not be applied when surface or air temperature is less than 5° C (40° F) nor greater than 38° C (100° F), or is expected to exceed these temperatures within twelve hours of application.

The manufacturer's product data sheets and application guides shall be submitted to the Engineer prior to coating application. All information contained in the data sheets and application guides shall be strictly followed. All coatings shall be applied in the presence of the Engineer. The wet film thickness will be measured by the Engineer and shall be according to the manufacturer's recommendation.

In a contrasting color, of the same anti-graffiti system, the name of the system used and the date of application shall be stenciled in letters not to exceed two inches high. The location of the stencil shall be near one end of the work at the bottom of the surface to be protected. For projects greater than 3,228 square feet, the stencil shall be periodically repeated once for every 3,228 square feet near the bottom at the locations designated by the Engineer.

The Contractor shall supply the Engineer with an initial quantity of the removal agent and written instructions for its use, as recommended by the Manufacturer for graffiti removal. The amount shall be furnished at the rate of one quart per 200 square feet of treated surface area.

This work will be measured in place per square foot of surface area upon which the anti-graffiti protection system has been applied and accepted by the Engineer. No surface area will be measured for payment for areas below final grade.

This work will be paid for at the contract unit price per square foot for CLEAR PROTECTIVE COATING FOR CONCRETE, which price shall be payment in full for the cleaning of designated surfaces, the application of the anti-graffiti coating, supplying the manufacturer's technical representative and supplying the initial quantity of cleaning agent.

X0712400 TEMPORARY PAVEMENT

This work shall be in accordance with Sections 406 and 420 of the Standard Specifications and BDE Special Provision 80010 insofar as applicable and the following provisions.

This work shall include placement and removal of temporary pavement at locations as shown on the Construction Staging Plans and as directed by the Engineer. The temporary pavement shall, at the Contractor's option, consist of eight (8) inches of Bituminous Concrete Binder Course, Superpave, IL 19, N50 placed on compacted soil or six (6) inches of Portland Cement Concrete Pavement placed on compacted soil as approved by the Engineer.

This item shall include any excavation or embankment required to bring the temporary pavement and temporary ditches to grade.

Excavation or embankment required due to this item will not be paid for separately but shall be included in the cost of this item.

This work will be paid for at the contract unit price per square yard for TEMPORARY PAVEMENT, which price shall be payment in full for all equipment, labor, and material including furnishing, transporting, placing, compacting, maintaining temporary bituminous concrete pavement or Portland cement concrete pavement, excavation, embankment, and removal as herein specified and as directed by the Engineer.

X4080020 INCIDENTAL BITUMINOUS SURFACING, SUPERPAVE, N50

This work shall be in accordance with Section 408 of the Standard Specifications insofar as applicable, the Special Provision for "Superpave Bituminous Concrete Mixtures," and the following provisions.

Revise Article 408.02 to read: "The bituminous mixture for the incidental bituminous surfacing shall meet the requirements of Bituminous Concrete Binder Course, Superpave, IL 19, N50."

This item is to be used as: temporary bituminous ramps during stage construction; temporary patches on all sewer or water main trenches; temporary bituminous ramps placed around protruding frames and lids prior to the placement of the final bituminous concrete surface course; or as directed by the Engineer.

This work will be paid for at the contract unit price per ton for INCIDENTAL BITUMINOUS SURFACING, SUPERPAVE, N50, which price shall include all material, labor, and equipment necessary for a complete installation.

X6700410 ENGINEER'S FIELD OFFICE, TYPE A (SPECIAL)

This item shall be in accordance with Section 670 of the Standard Specifications insofar as applicable and the following provisions.

Addition:

Revise paragraph (I) by adding this second sentence, "The automatic telephone answering system shall have the capability of answering the phone when unattended with a 30-minute minimum recording capability."

The building, fully equipped, will be paid for at the contract unit price per calendar month or fraction thereof for ENGINEER'S FIELD OFFICE, TYPE A (SPECIAL), which price shall include the above-noted additions.

Penalty. Failure by the Contractor to meet the specified occupancy date for any field office or field laboratory shall be grounds for assessment of a penalty of \$100 per day for each calendar day thereafter that such

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facility remains incomplete in any respect. Failure by the Contractor to equip, heat, cool, power, supply, or clean the field office shall be grounds for assessment of a penalty of \$100 per day for each calendar day that the field office remains incomplete after receipt of written notification from the Engineer. Such penalty shall be deducted from monies due or to become due the Contractor under the Contract.

This item will be paid for at the contract unit price per calendar month for ENGINEER'S FIELD OFFICE, TYPE A (SPECIAL).

X7015000 CHANGEABLE MESSAGE SIGN

This work shall be in accordance with the Special Provision for "Portable Changeable Message Sign" and the following.

Changeable message signs shall be placed at locations shown in the plans or directed by the Engineer. The message signs shall be placed outside traffic lanes but within existing public right-of-way and shall not obstruct visibility or pedestrian movements.

The message signs shall be placed 14 days in advance of initial start-up. The message signs shall be relocated and re-programmed as project work and staging progresses, as shown in the plans, or directed by the Engineer.

Furnishing, placing, and maintaining of Portable Changeable Message Signs shall be paid for per calendar month for each sign as CHANGEABLE MESSAGE SIGN. Relocating and re-programming the message signs shall not be paid for separately but shall be included in the cost of this item.

X7800500	POLYUREA PAVEMENT MARKING - LETTERS AND SYMBOLS, SPECIAL
X7800510	POLYUREA PAVEMENT MARKING SPECIAL - LINE 4"
X7800530	POLYUREA PAVEMENT MARKING SPECIAL - LINE 6"
X7800540	POLYUREA PAVEMENT MARKING SPECIAL - LINE 8"
X7800550	POLYUREA PAVEMENT MARKING SPECIAL - LINE 12"
X7800580	POLYUREA PAVEMENT MARKING SPECIAL - LINE 24"

This work shall be in accordance with Section 780 of the Standard Specifications insofar as applicable and the following provisions.

Approved polyurea products and manufacturers for this project shall be the following, unless approved as an acceptable substitute in writing by the County prior to the submittal of the bid.

3M Liquid Pavement Marking (LPM) Series 1200 - 4", 6", 8", 12", and 24" Pavement Marking Lines, Letters and Symbols, and Curb and Median Marking

This work shall consist of furnishing and applying polyurea-based liquid pavement marking lines, sizes, and colors as shown in the schedule contained herein or as directed by the Engineer and/or his authorized representative. All materials shall meet the following specifications:

1. The polyurea pavement marking material shall consist of a 100 percent solid two-part system formulated and designed to provide a simple volumetric mixing ratio of two components (must be two or three volumes of Part A to one volume of Part B). No volatile or polluting solvents or fillers will be allowed.
2. Pigment Content. Determine the pigment content by weight of component A by low ashing ASTM D-3723. The pigment content shall not vary more than +2 percent from the pigment content of the

original qualified paint. White pigment must be titanium dioxide meeting ASTM D-476 Type II, Rutile. Yellow pigment must be an organic yellow and contain no heavy metals.

3. Upon heating to application temperature, the material shall not exude fumes which are toxic or injurious to persons or property.
4. Daylight Reflectance. The daylight directional reflectance of the cured polyurea material (without reflective media) shall not be less than 80 percent (white) and 50 percent (yellow) relative to magnesium oxide when tested using a color spectrophotometer with a 45° circumferential/zero degree geometry, illuminant C, and 2° observer angle. The color instrument shall measure the visible spectrum from 380 to 720 nm with a wavelength measurement interval and spectral bandpass of 10 nm. In addition, the color of the yellow polyurea shall visually match Color Number 33538 of Federal Standard 595a to the satisfaction of the Department.
5. Weathering Resistance. The polyurea pavement marking material, when mixed in the proper ratio and applied at 14 to 16 mils wet-film thickness to an aluminum alloy panel and allowed to cure for 72 hours at room temperature, shall be subjected to accelerated weathering for 75 hours. The accelerated weathering shall be completed by using the light and water exposure apparatus (fluorescent UV - condensation type) testing in accordance with ASTM G-53 using a cycle which consists of 4 hours UV exposure at 122° F and 4 hours of condensation at 104° F. At the end of the exposure period, the material shall show no substantial change in color or gloss.
6. Dry Time. The polyurea pavement marking material, when mixed in the proper ratio and applied at 14 to 16 mils wet-film thickness and with the proper saturation of reflective media, shall exhibit a no-tracking time of five minutes or less when tested according to ASTM D-711.
7. Adhesion. The catalyzed polyurea pavement marking materials when applied to a 4" x 4" x 2" concrete block, shall have a degree of adhesion which results in a 100 percent concrete failure in the performance of this test. The concrete block shall be brushed on one side and have a minimum strength applied to the brushed surface and allowed to cure for 72 hours at room temperature. A 2" square cube is then affixed to the surface of the polyurea by means of an epoxy glue. After the glue has cured for 24 hours, the polyurea specimen is placed on a dynamic testing machine in such a fashion so that the specimen block is in a fixed position and the 2" cube (glued to the polyurea surface) is attached to the dynamometer head. Slowly apply upward pressure until the epoxy system fails. Record the location of the break and the amount of concrete failure.
8. Hardness. The polyurea pavement marking materials, when tested according to ASTM D-2240 shall have a shore D hardness of between 70 and 100. Films shall be cast on a rigid substrate at 14 to 16 mils in thickness and allowed to cure at room temperature for 72 hours before testing.
9. Abrasion. The abrasion resistance shall be evaluated according to ASTM D-4060 using a Taber Abrader with a 1,000-gram load and CS 17 wheels. The duration of the test shall be 1,000 cycles. The loss shall be calculated by difference and be less than 82 mgs. The tests shall be run on cured samples of polyurea material which have been applied at a film thickness of 14 to 16 mils to code S-16 stainless steel plates. The films shall be allowed to cure at room temperature for at least 72 hours before testing.
10. The combination of microcrystalline ceramic elements and glass beads shall meet the following requirements:
 - a. Composition. The elements shall be composed of a titania opacified ceramic core having clear and/or yellow-tinted microcrystalline ceramic beads embedded to the outer surface.

- b. Index of Reflection. All microcrystalline reflective elements embedded to the outer surface must have an index of refraction of 1.9 when tested by the immersion method.
 - c. Acid Resistance. A sample of microcrystalline ceramic beads supplied by the manufacturer shall show resistance to corrosion of the surface after exposure to a 1% solution (by weight) of sulfuric acid. Adding 5.7 ml of concentrated acid into the water shall make the 1% acid solution. This test shall be performed as follows: Take a 1" x 2" sample and adhere it to the bottom of a glass tray and place just enough acid solution to completely immerse the sample. Cover the tray with a piece of glass to prevent evaporation, and allow the sample to be exposed for 24 hours under these conditions. Then decant the acid solution (do not rinse, touch, or otherwise disturb the bead surfaces), and dry the sample while adhered to the glass tray in a 150° F oven for approximately 15 minutes. Microscope examination (20x) shall show no white (corroded) layer on the entire surface.
 - d. The second drop glass beads shall meet the requirements of Article 1095-07 Type A.
11. Packaging. Microcrystalline ceramic reflective elements and glass beads may be delivered in approved moisture-proof bags or weather-resistant bulk boxes.

Moisture-proof bags shall consist of at least five-ply paper construction, unless otherwise specified. Each bag shall contain 50 pounds net and shall be legibly marked with the manufacturer, specifications and type, lot number, and the month and year the microcrystalline ceramic reflective elements and/or glass beads were packaged. The letters and numbers used in the stencils shall be a minimum of ½ inch in height.

Bulk weather-resistant boxes must conform to Federal Specification PPP-8-640D Class II or latest revision. Boxes are to be weather-resistant, triple-wall, fluted, corrugated fiberboard. Cartons shall be strapped with two metal straps. Straps shall surround the outside perimeter of the carton. The first strap shall be located approximately 2 inches from the bottom of the carton, and the second strap shall be placed approximately in the middle of the carton. All cartons shall be shrink-wrapped for protection from moisture. Cartons must be lined with a minimum 4 mil polyester bag and meet ICC requirements. Cartons shall be approximately 38" x 38", contain 2,000 pounds of microcrystalline ceramic reflective and/or glass beads, and be supported on a wooden pallet with fiber straps. Each carton shall be legibly marked with the manufacturer, specifications and type, lot number, and the month and year the microcrystalline ceramic reflective elements and/or glass beads were packaged. The letters and numbers used in the stencils shall be a minimum of ½ inch in height.

- 12. The material shall be shipped to the job site in substantial containers and shall be plainly marked with the manufacturer's name and address, the name and color of the material, date of manufacture, and batch number.
- 13. Prior to approval and use of the polyurea marking materials, the manufacturer shall submit a notarized certification of an independent laboratory, together with the results of all tests stating these materials meet the requirements as set forth herein. The certification test report shall state the lot tested, manufacturer's name, brand name of polyurea, and date of manufacture. The certification shall be accompanied by one-pint samples each of Part A and Part B. Samples shall be sent in the appropriate volumes for complete mixing of Part A and Part B.

After approval by the Local Agency, certification by the polyurea manufacturer shall be submitted for each batch used. New independent laboratory-certified test results and samples for testing by the Local Agency shall be submitted anytime the manufacturing process of paint formulation is changed.

All costs of testing (other than tests conducted by the Local Agency) shall be borne by the manufacturer.

14. Acceptance samples shall consist of one-pint samples of Part A and Part B of each lot of paint. Samples shall be sent in the appropriate volumes for complete mixing of Part A and Part B. The samples shall be submitted to the Department for testing, together with a manufacturer's certification. The certification shall state the formulation for the lot represented is essentially identical to that used for qualification testing. All acceptance samples shall be taken by a representative of the Illinois Department of Transportation. The polyurea pavement marking materials shall not be used until tests are completed and they have met the requirements as set forth herein.
15. The manufacturer shall retain the test sample for a minimum of 18 months.
16. Application Equipment. The polyurea pavement marking compounds shall be applied through equipment specifically designed to apply two-component liquid materials and reflective elements in a continuous and skip-line pattern. The two-component liquid materials shall be applied through airless impingement mixing guns. The guns must accommodate plural-component material systems that have a volumetric ratio of 2:1 and/or 3:1. This equipment shall produce the required amount of heat at the mixing head and gun tip and maintain those temperatures within the tolerances specified. The guns must have the capacity to deliver materials from approximately 1.5 to 3 gallons per minute to compensate for a typical range of application speeds of 6-8 mph. The accessories such as spray tip, mix chamber, and rod diameter must be selected according to the manufacturer's specifications to achieve proper mixing and an acceptable spray pattern. The application equipment shall be maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc. This equipment shall also have as an integral part of the gun carriage, a high-pressure air spray capable of cleaning the pavement immediately prior to making application. The equipment shall be capable of spraying both yellow and white polyurea according to the manufacturer's recommended proportions and be mounted on a truck of sufficient size and stability with an adequate power supply to produce lines of uniform dimensions and prevent application failure. The truck shall have at least two polyurea tanks each of 110 gallons minimum capacity and be equipped with hydraulic systems and agitators. It shall be capable of placing stripes on the left and right sides and placing two lines on a three-line system simultaneously with either line a solid or intermittent pattern, in yellow or white, and applying the appropriate reflective media in accordance with the manufacturer's recommendations. All guns shall be in full view of operations at all times. The equipment shall have a metering device to register the accumulated installed quantities for each gun each day. Each vehicle shall include at least one operator who shall be a technical expert in equipment operations and polyurea application techniques. Certification of equipment shall be provided at the pre-construction conference. The mobile applicator shall include the following features:
 - a. The mobile applicator shall provide individual material reservoirs or space for the storage of Part A and Part B of the resin composition.
 - b. The applicator shall be equipped with heating equipment of sufficient capacity to maintain the individual resin components at the manufacturer's recommended temperature $\pm 5^{\circ}$ F for spray application.
 - c. The applicator shall be equipped with glass bead and/or reflective element dispensing equipment. The applicator shall be capable of applying the glass beads and/or reflective elements at a rate and combination indicated by the manufacturer.
 - d. The application equipment shall be equipped with metering devices or pressure gauges on the proportioning pumps as well as stroke counters to monitor volumetric usage. Metering devices

or pressure gauges and stroke counters shall be visible to the Engineer and/or his authorized representative.

- e. The applicator shall be equipped with all the necessary spray equipment, mixers, compressors, and other appurtenances to allow for the placement of reflectorized pavement markings in a simultaneous sequence of operations.

17. Application. The application surface shall be cleaned by a method approved by the Engineer to remove all dirt, grease, glaze, or any other material that would reduce the adhesion of the markings with minimum or no damage to the pavement. New PCC pavements, curbs, and medians shall be blast-cleaned to remove all latents.

Markings shall be applied to the cleaned surfaces on the same calendar day. If this cannot be accomplished, the surface shall be re-cleaned prior to applying the markings. No markings shall be applied until the Engineer and/or his authorized representative approves the cleaning.

Widths, lengths, and shapes of the cleaned surface shall be of sufficient size to include the full area of the specified pavement marking to be placed.

The cleaning operation shall be a continuous moving operation process with minimum interruption to traffic.

The pavement markings shall be applied to the cleaned road surface, during conditions of dry weather and subsequently dry pavement surfaces at a minimum uniform wet thickness of 15 mils in accordance with the manufacturer's installation instructions and at the widths and patterns shown on the contract plans. The application of and combination of reflective media (glass beads and/or reflective elements) shall be applied at a rate specified by the manufacturer. At the time of installation the pavement surface temperature and the ambient temperature shall be above 40° F and rising. The pavement markings shall not be applied if the pavement shows any visible signs of moisture or it is anticipated that damage-causing moisture such as rain showers may occur during the installation and set periods. The Engineer and/or his authorized representative shall determine the atmospheric conditions and pavement surface conditions that produce satisfactory results.

Using the application equipment, the pavement markings shall be applied in the following manner as a simultaneous operation:

The surface is air-blasted to remove any dirt and residue, if present.

The resin, mixed and heated in accordance with the manufacturer's recommendations, is sprayed onto the pavement surface.

Unless directed by the Engineer and/or his authorized representative, lines shall not be laid directly over a longitudinal crack or joint. The edge of the centerline or lane line shall be offset a minimum distance of 2 inches from a longitudinal crack or joint. Edge lines shall be approximately 2 inches from the edge of pavement. The finished center and lane lines shall be straight, with the lateral deviation of a 10-foot line not to exceed 1 inch.

18. Notification. The Contractor shall notify the Engineer and/or his authorized representative **72 hours** prior to the placement of the marking so that an inspector can be present during the operation. At the time of this notification the Contractor shall indicate the manufacturer and lot numbers of polyurea and reflective media that he intends to use. The Engineer and/or his authorized representative will

ensure that the approved lot numbers appear on the material package. Failure to comply with this provision may be cause for rejection.

The Contractor shall provide an accurate temperature-measuring device(s) that shall be capable of measuring the pavement temperature prior to application of the material, the material temperature at the gun tip, and the material temperature prior to mixing.

19. Inspection. The polyurea pavement markings will be inspected following installation, but no later than **November 1**, and inspected following a winter performance period that extends 180 days from **November 1** in accordance with the provisions of Article 780.10 of the "Standard Specifications for Road and Bridge Construction." The polyurea unit shall be equipped with measuring devices to measure actual number of lineal feet of marking.
20. On roads with new pavement, all pavement marking shall be placed in accordance with the previous locations and configurations for overlays or according to the plans for reconstruction. The locations of lines, letters and symbols on existing pavement shall be placed in the same locations as the existing markings, unless otherwise directed by the Engineer and/or his authorized representative. The Contractor shall be required to begin layout and installation of new pavement marking on newly resurfaced roadways within **14 calendar days** of the notification from the Engineer and/or his authorized representative. In the event that the Contractor cannot begin the layout and installation of the pavement marking at such a time that would permit him/her to complete the installation within **14 days** of notification as stated above, the Contractor shall install temporary paint pavement marking (on the pavement surface) to comply with locations and types that are specified for permanent pavement marking. The Contractor shall be required to replace the temporary paint pavement marking with the proposed permanent pavement marking by the specified completion date. All costs associated with the installation of temporary paint pavement marking shall be considered included in the contract cost and shall not be paid separately.
21. Polyurea pavement marking shall only be recessed on Randall Road and Dean Street. Polyurea pavement marking **will not** be recessed on Illinois Route 64.

Polyurea pavement marking that is to be recessed shall be placed in a previously constructed recessed area that shall configure to the approximate width and area of the proposed polyurea pavement marking.

This recessed area shall be constructed by removing the bituminous/concrete surface to a minimum depth of **25 mils ±5 mils**. The width of the recessed area for all polyurea pavement marking lines shall be **1.0 inch** wider (**0.5 inch** wider on each side) than the epoxy line (e.g., 5.0-inch-wide recessed area for a 4-inch-wide epoxy line). The groove edge shall be positioned 2 inches or more from the edge of concrete joints or asphalt seams along edges or centerlines or as directed by the Engineer and/or his authorized representative. Use free-floating, independent grinding heads for a consistent, uniform groove depth. Grind the groove with portable or mobile equipment that has a cutting head(s) designed to provide a textured pavement surface that is free of sharp ridges. Grind the pavement in accordance with the equipment and pavement marking manufacturer's written guidelines for grooving pavement surfaces. If necessary, supplement grooving with sandblasting to achieve the proper surface texture.

If water-cooled cutting or grinding equipment is used, flush immediately with a high-pressure power washer to remove any build-up of cement dust/water slurry. NOTE: If this is not done, the slurry may harden in the groove.

Verify the specified groove depth at the start of the grooving operation and periodically throughout the day's operation. Regrind areas where any groove depth measurement does not meet the minimum specified depth. Repair rejected grooves as directed by the Engineer.

For new pavement, construction of the recessed area shall begin no less than **24 hours** after construction of the new pavement is completed, unless otherwise directed by the Engineer and/or his authorized representative.

A micrometer or depth gauge shall be used to verify the depth of new grooves. Grooves shall be checked frequently as a new alignment is cut to make adjustments early in the process. Calculate an average of 5 depths measured over a 50-foot distance—the average shall be within the required depth tolerance. If the average does not equal the required values, make adjustments to the cutting equipment, and check the next 50 feet using a similar method.

The recessed area shall be cleaned free of all loose material by means of sandblasting and also be free of moisture before the placement of the polyurea pavement marking. All excess material resulting from the construction of the recessed area shall be completely removed from the surface of the roadway by means of a vacuum sweeper truck.

Method of Measurement. Quantities for payment for this work shall be computed in square feet by adding an additional 1.0 inch to the intended pavement marking line width and multiplying that by the measured length for all pavement marking lines. For letters and symbols, quantities for payment shall be computed in square feet in accordance with Article 780.12 (Table 1).

Basis of Payment. This work shall be paid for at the contract unit price per square foot for BITUMINOUS SURFACE REMOVAL FOR RECESSED PAVEMENT MARKING, 0.025 INCH DEPTH or CONCRETE SURFACE REMOVAL FOR RECESSED PAVEMENT MARKING, 0.025 INCH DEPTH, which price shall be payment in full for all labor, materials, and equipment necessary to complete the work described above.

- 22. The Contractor shall be required to maintain a minimum initial retro-reflectivity for all polyurea pavement marking that he/she applies, as follows:

4", 6", 8", 12", 24" Pavement Marking Lines,
 Letters and Symbols, and
 Curb and Median Marking

<u>Material</u>	<u>Color</u>	<u>Retro-reflectivity</u> <u>(millicandelas/m²/lux)</u>
Polyurea	White	1,000
Polyurea	Yellow	900

The Engineer will measure the retro-reflectivity a minimum of **12 hours** after and within **14 days** of the application. The Engineer will take a minimum of 10 readings per color line, evenly spaced, on a 0.6-mile roadway section on all roadways specified in the schedule of quantities for polyurea pavement marking or as determined by the Engineer. The Engineer will average all of the readings for each color line within the 0.6-mile section of roadway to determine the retro-reflectivity. The Contractor shall be required to replace all polyurea pavement marking that is not meeting the minimum retro-reflectivity requirements at no additional expense to this contract.

23. Method of Measurement. The lines shall be measured for payment in feet of polyurea pavement marking lines applied and accepted, measured in place. Double yellow lines will be measured as two separate lines. Letters and symbols shall be computed in square feet per Table 1 of Article 780.12 for quantity and type provided.

Basis of Payment. This work will be paid for at the contract unit prices per foot of applied line for POLYUREA PAVEMENT MARKING, SPECIAL - LINE, of the width specified or per square foot for POLYUREA PAVEMENT MARKING - LETTERS AND SYMBOLS, SPECIAL, as applicable.

XX003503 FLARED END SECTION REMOVAL

The work shall be in accordance with Section 551 of the Standard Specifications insofar as applicable and the following provisions.

This work consists of the removal and disposal of flared end sections at locations shown on plan and as directed by the Engineer.

This work will be paid for at the contract unit price each for FLARED END SECTION REMOVAL, regardless of material or size, which price will include all labor, material, and equipment for a complete removal.

XX004852 BITUMINOUS DRIVEWAY PAVEMENT, SUPERPAVE

This work consists of the construction of bituminous driveway pavements on a prepared subgrade in accordance with Sections 355 and 406 of the Standard Specifications and special provisions for "Superpave Bituminous Concrete Mixtures and Bituminous Base Course/Widening Superpave" insofar as applicable and as detailed on the plans.

Materials to be included and placed for this work shall consist of the following:

- 3 inches of Subbase Granular Material, Type C, gradation CA 6
- 6 inches of Bituminous Base Course Superpave
- 2¼ inches of Bituminous Concrete Binder Course, Superpave, IL-19, N50
- 1¼ inches of Bituminous Concrete Surface Course, Superpave, Mix C, N50

This work shall be measured in place and the area computed in square yards, complete.

This work will be paid for at the contract unit price per square yard for BITUMINOUS DRIVEWAY PAVEMENT, SUPERPAVE, which price shall include excavation, subbase, bituminous materials, and all labor, equipment, and materials to provide a complete and finished driveway.

Z0000990 AGGREGATE FOR TEMPORARY ACCESS

The Contractor shall maintain ingress and egress to all abutting properties during construction operations. Temporary driveways, temporary sidewalks, and temporary roads shall be constructed of aggregate to the dimensions determined by the Engineer.

This work shall be done in accordance with Articles 107.09, 301.04, and 1004.04 of the Standard Specifications with the exception that the materials shall be limited to **crushed gravel, crushed stone, or crushed concrete**. The plasticity index requirements and the requirements for adding water at the central mixing plant will be waived.

After the temporary driveways, temporary sidewalks, and temporary roads have served their purpose, the suitable aggregate shall be removed, and at the direction and approval of the Engineer, utilized for other purposes such as embankment construction or other driveway aprons.

This work will be paid for at the contract unit price per ton for AGGREGATE FOR TEMPORARY ACCESS, which price shall be payment in full for furnishing, transporting, placing, maintaining and removing, reusing, or disposing of the aggregate, as herein specified and as directed by the Engineer.

Payment for aggregate will be determined by weight tickets and will be paid for its initial use only, regardless of the number of times the aggregate is moved.

Z0001050 AGGREGATE SUBGRADE, 12"

This work shall be done in accordance with the applicable portions of Section 207 of the Standard Specifications. The material shall conform with Article 1004.06 of the Standard Specifications except as follows:

1. Crushed Stone, Crushed Blast Furnace Slag, and Crushed Concrete

<u>Sieve Size</u>	<u>Percent Passing</u>
*150 mm (6")	97±3
*100 mm (4")	90±10
50 mm (2")	45±25
75 µm (#200)	5±5

2. Gravel, Crushed Gravel and Pit Run Gravel

<u>Sieve Size</u>	<u>Percent Passing</u>
*150 mm (6")	97±3
*100 mm (4")	90±10
50 mm (2")	55±25
4.75 mm (#4)	30±20
75 µm (#200)	5±5

3. Crushed Concrete with Bituminous Materials**

<u>Sieve Size</u>	<u>Percent Passing</u>
*150 mm (6")	97±3
100 mm (*4")	90±10
50 mm (2")	45±25
4.75 mm (#4)	20±20
75 µm (#200)	5±5

* For undercut greater than 450 mm (18") the percent passing the 150 mm (6") sieve may be 90±10 and the 100 mm (4") sieve requirements eliminated.

** The bituminous material shall be separated and mechanically blended with the crushed concrete so that the bituminous material does not exceed 40% of the final product. The top size of the bituminous material in the final product shall be less than 100 mm (4") and shall not contain steel slag or any material that is considered expansive by the Department.

The aggregate subgrade shall be placed in two lifts consisting of a 225 mm (9") and variable nominal thickness lower lift and a 75 mm (3") nominal thickness top lift of capping aggregate having a gradation of CA.6. Reclaimed Asphalt Pavement (RAP) meeting Article 1004.07 of the Standard Specifications and having

100% passing the 75 mm (3") sieve and well-graded down through fines may also be used as capping aggregate. RAP shall not contain steel slag or other expansive material. The results of the Department's tests on the RAP material will be the determining factor for consideration as expansive. A vibratory roller meeting the requirements of Article 1101.01 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 600 mm (24") or less.

Method of Measurement.

- a. Contract Quantities. Contract quantities shall be in accordance with Article 202.07.
- b. Measured Quantities. Aggregate subgrade will be measured in place and the area computed in square yards.

Basis of Payment. This work will be paid for at the contract unit price per square yard for AGGREGATE SUBGRADE, 12", which price shall include the capping aggregate.

Z0013798 CONSTRUCTION LAYOUT

The Contractor shall be required to furnish and place construction layout stakes for this project. The County will locate and reference the centerline of survey and will establish bench marks along the line of the improvement outside construction limits. Locating and referencing the centerline of survey shall consist of locating and referencing control points such as point of curvature, point of tangent, and sufficient points on tangent to provide a line of sight. Control points set by the County will be identified in the field to the Contractor, and the field notes shall be kept in the office of the Project Engineer.

The Contractor shall provide experienced construction-layout forces and set all additional stakes for this project, which are needed to establish offset stakes, reference points, slope stakes, pavement and curb line and grade, stakes for culverts, sewers, and drainage structures, paved gutters, walls, monuments, fence, right-of-way lines, traffic signals, and any other horizontal or vertical controls, including supplementary bench marks, necessary to secure a correct layout of the work. Grading slope stakes shall be set at sufficient intervals (not to exceed 100 feet) to accurately outline the slopes. Stakes for line and grade of pavement and/or curb shall be set at sufficient station intervals (not to exceed 50 feet) to assure substantial conformance to plan line and grade. Staking of right-of-way lines shall consist of placing tall stakes, properly identified and readily discernible, at points of change in width or direction of the right-of-way and at points along the line so that at least two of the stakes can be seen distinctly from any point of the line. Right-of-way lines shall be staked at locations where construction is to be performed, prior to beginning construction. The Contractor will not be required to set additional stakes to locate a utility line which is not included as a pay item in the contract or to determine the property line between properties.

The Contractor shall be responsible for having the finished work substantially conform to the lines, grades, elevations, and dimensions called for in the plans. Any inspection or checking of the Contractor's layout by the County Engineer and the acceptance of all or any part of it shall not relieve the Contractor of his responsibility to secure the proper dimensions, grades, and elevations of the several parts of the work. The Contractor shall exercise care in the preservation of stakes and bench marks and shall have them reset at his expense when any are damaged, lost, displaced, or removed. The Contractor shall use competent personnel and suitable equipment for the layout work required. The Contractor shall not engage the services

of any person or persons in the employ of the Kane County Division of Transportation for the performance of any of the work covered by this item.

Responsibility of the County

1. The County will locate and reference the centerline of all roads and streets. The centerline of private entrances and short street intersection returns may not be located or referenced by the County. Locating and referencing the centerline of survey will consist of locating and referencing the control points of the centerline such as PC's, PT's, as many POT's as are necessary to provide a line of sight.
2. Bench marks will be established along the project outside of construction lines and at each major structure over 20 feet in span length, and not exceeding 1,000-foot intervals horizontally and 20 feet vertically.
3. Stakes set for 1 and 2 above will be identified in the field to the Contractor and the field notes kept in the Resident Engineer's office for reference by him.
4. The County will check both horizontal and vertical clearances at all grade separations.
5. The County will make random checks of the Contractor's staking to determine if the work is in substantial conformance with the plans. Where the Contractor's work will tie into the work that is being or will be done by others, checks will be made to determine if the work is in conformance with the proposed overall grade and horizontal alignment.
6. The County will set all stakes for utility adjustments and for building fences along the right-of-way line by parties other than the Contractor.
7. Immediately after the Contractor has staked the drainage structures, County forces will check the staking, either visually or by instrument, to determine if the structures fit the waterways in horizontal alignment and vertical elevation. If it is necessary to redesign the drainage structure, the County will furnish a revised design and re-stake the structure.
8. The County will make all measurements and take all cross sections from which the various pay items are to be measured, such as cross sections for all borrow pits and channel change, additional measurements needed to determine the amount of special excavation and classified excavation and all measurements on which the depth of subbase, bases, or bituminous/concrete pavement are to be verified.
9. Where the Contractor in setting construction stakes discovers discrepancies, the County will check to determine their nature and make whatever revisions are necessary in the plans, including the re-sectioning of the area involved, and all additional re-staking necessary.
10. The County will check the Contractor's horizontal layout staking of all structures over 20 feet in span length. The County will accept responsibility for the accuracy of these stakes after the County completes their check, provided they are protected by the Contractor to the extent that no displacement occurs. The County will not be responsible for transferring the lines to the work.
11. The County will accept responsibility for the accuracy of specific stakes that are covered by random instrument checks and recorded, provided no displacement occurs.
12. It is not the responsibility of the County to check the correctness of the Contractor's stakes, except as provided herein; however, any errors that are apparent shall be immediately called to the

Contractor's attention, and he shall be required to make the necessary correction before the stakes are used for construction.

13. On the jobs where the plan quantities for excavation are to be used as the final pay quantities, it will be necessary for the County to make sufficient checks to determine if the work has been completed in substantial conformance with the plan cross sections.
14. All measurements necessary to determine the final pay quantities must be made by the County independently of the Contractor's station stakes and any bench marks established by the Contractor.
15. If requested, the County will furnish a schedule showing the proposed centerline profile grade elevations at intervals of 25 feet.

Responsibility of the Contractor

1. The Contractor will set all other stakes necessary to establish limits and elevations of the work and shall define right-of-way for the project.
2. The right-of-way shall be considered to be defined when stakes readily discernible, having been placed at points of change in width or direction of the right-of-way line and at points along the line so that at least two such right-of-way stakes can be seen from any point on the line.
3. The Contractor will not be required to set additional stakes to locate a utility line or to determine the property line between properties.
4. Field notes shall be kept in standard survey field notebooks, and these books shall become the property of the Kane County Division of Transportation at the completion of the project.
5. It is not considered the responsibility of the Contractor to make a detailed check of the accuracy of the plans; however, it is expected that the Contractor will advise the County promptly of known errors in the plans.

Measurement and Payment. This work will be paid for at the contract lump-sum price for CONSTRUCTION LAYOUT, which price shall be payment in full for all services, materials, labor, equipment, tools, and incidentals to complete this item.

The item described herein above supersedes the provisions of Article 105.09 of the Standard Specifications.

Z0019600 DUST CONTROL WATERING

This work shall consist of the exclusive control of dust resulting from construction operations and is not intended for use in the compaction of earth embankments.

Dust shall be controlled by the uniform application of sprinkled water and shall be applied only when directed by and in a manner meeting the approval of the Engineer.

All equipment used for this work shall meet with the Engineer's approval and shall be equipped with adequate measuring devices for metering the exact amount of water discharged. All water used shall be properly documented by ticket or other approved means. Water may not be obtained from a fire hydrant without approval of the City.

FAP Route 336 (Randall Road) at
FAP Route 307 (Illinois Route 64)
Section No. 99-00243-00-PV
Project No. F-0336010
Kane County

This work will be measured in units of gallons of water applied. One unit will be the equivalent of 1,000 gallons of water applied.

This work will be paid for at the contract unit price per unit as DUST CONTROL WATERING.

Z0022800 FENCE REMOVAL

This work shall consist of the removal of existing fence at locations shown on plan and as directed by the Engineer.

The existing fence shall be carefully removed and returned to the owners or properly disposed of as directed by the Engineer. Any part of the fence that is damaged, as determined by the Engineer, during removal will be replaced in-kind at the Contractor's expense.

This work will include the removal of concrete pole foundations, fittings, gates, posts, rails, and accessories, as applicable.

This work will be paid for at the contract unit price per foot for FENCE REMOVAL, which price shall include the cost of all material, labor, and equipment necessary for a complete removal.

SANITARY SEWER

This work shall be in accordance with the Supplemental Specifications for Sanitary Sewer Improvements, the City of St. Charles Code Book, the "Standard Specifications for Water and Sewer Main Construction in Illinois," insofar as applicable, the details in the plans, and the following provisions.

Sanitary sewer pipe shall be cement-lined ductile iron Class 52 and shall conform to AWWA C-151 (ANSI A21.51), "Ductile Iron Pipe, Centrifugally Cast, for Water," latest revision. Joints between new pipe material shall be rubber-gasket push-on type and shall conform to AWWA C-111 (ANSI A21.11), "Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings," latest revision. Joints between existing pipe material and the new ductile iron pipe shall be made by means of a mission coupling (ASTM C-594) or as directed by the Engineer. Bedding shall be in accordance with Section 208 of the Standard Specifications and special details.

Sanitary sewer shall be backfilled in accordance with Article 550.07, Method 1 only.

Testing shall be in accordance with the "Standard Specifications for Water and Sewer Main Construction in Illinois" Sections 31.1.11 and 31.1.11A through 31.1.11D. The sewer shall meet the requirements of infiltration and exfiltration of water, exfiltration of air under pressure, and television inspection.

All tests must be conducted in the presence of representatives of the City of St. Charles and the Engineer. Written certification of test conformance shall be provided by an Illinois Licensed Professional Engineer.

All sewer mains shall be fully tested.

Existing pipelines shall be properly supported during construction of the sanitary sewer so that cracking and leakage or failure of the existing pipeline does not occur.

Sanitary sewer cleanout risers shall not be paid for separately but shall be included in the cost of this item.

This work will be paid for at the contract unit price per foot for SANITARY SEWER of the type and diameter specified. This price shall include the cost of all pipe, fittings, adaptors, joint materials, bedding, and all other material, work, and equipment necessary to make a complete installation.

PROJECT Randall Road Improvements, Dean St. south to Bricher Rd., Kane County, IL



CLIENT Hampton, Lenzini and Renwick, Inc., Elgin, Illinois

BORING 1 DATE STARTED 10-9-00 DATE COMPLETED 10-9-00 JOB L-50,251

ELEVATIONS

GROUND SURFACE 771.7

END OF BORING 751.7

WATER LEVEL OBSERVATIONS

▽ WHILE DRILLING Dry

▽ AT END OF BORING Dry

▽ 24 HOURS

Randall Road
Sta. 10+45; 44' RT

DISTANCE BELOW SURFACE IN FEET	LENGTH RECOVERY	SAMPLE		N	WC	Qu	γ _{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
		NO.	TYPE							
0										FILL - Brown CLAY LOAM, trace to little topsoil, moist A-6
		1	SS	5-3-2	13.8	3.75*	122.7	2.0	769.7	
		2	SS	1-1-1	17.9	1.0*	112.3	3.5	768.2	FILL - Brown CLAY LOAM, very moist A-4/A-6
		3	SS	3-4-4	13.4	2.0*	122.3			
5		4	SS	3-6-7	18.6	2.0*	112.2	8.0	763.7	FILL - Brown and gray CLAY LOAM, trace gravel, moist A-6
		5	SS	3-6-10	19.7	3.5*	109.7			FILL - Brown and black CLAY, trace organic, moist A-6/A-7-6
10		6	SS	3-6-16	13.0	3.25*		10.5	761.2	Very tough brown CLAY LOAM, trace gravel, moist A-6
		7	SS	100/0"				13.5	758.2	Boulder Obstruction
15		8	SS	7-8-8	14.4	5.1 B 4.25*		14.5	757.2	Hard brown CLAY, trace gravel, moist A-6
		9	SS	8-12-28	17.2	3.7 B 4.25*		18.0	753.7	* Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer. B = Bulge Failure at 15% Strain
20										Very tough to hard gray CLAY, trace gravel, moist A-6

DISTANCE BELOW SURFACE IN FEET

302 50251.GPJ TSC_ALL.GDT 8/10/01

Division lines between deposits represent approximate boundaries between soil types **SP-73**

AUTHORITY OF RAILROAD ENGINEER (BDE)

Effective: July 1, 2004

Revise Article 105.02 of the Standard Specifications to read:

"105.02 Authority of Railroad Engineer. Whenever the safety of railroad traffic is concerned, the Railroad Engineer will have jurisdiction over safety measures to be taken and his/her decision as to the methods, procedures, and measures used shall be final, and any and all Contractors performing work near or about the railroad shall be governed by such decision. Instructions to the Contractor by the Railroad Engineer will be given through the Engineer. Work ordered as specified herein will be classified and paid for according to Article 104.02. Work performed for the Contractor's convenience will not be paid for separately but shall be considered as included in the contract."

80128

BITUMINOUS BASE COURSE / WIDENING SUPERPAVE (BDE)

Effective: April 1, 2002

Revised: August 1, 2005

Description. This work shall consist of constructing bituminous base course Superpave and bituminous concrete base course widening Superpave according to Sections 355 and 356 respectively, of the Standard Specifications and the special provision, "Quality Control/Quality Assurance of Bituminous Concrete Mixtures" except as modified herein.

Revise Article 355.02(d) of the Standard Specifications to read:

"(d) RAP Material (Note 3)"

Revise Note 2 of Article 355.02 of the Standard Specifications to read:

"Note 2. Unless otherwise specified on the plans, the bituminous material shall be performance graded (PG) asphalt cement (AC) , PG58-22. When more than 15 percent RAP is used, a softer PG binder may be required as determined by the Engineer. When the pavement has a structural number (D_t) of 3.00 or less, the low temperature grade of the asphalt cement shall be lowered one grade (i.e. PG58-28 replaces PG58-22)."

Add the following to the end Article 355.02 of the Standard Specifications:

"Note 3. RAP shall meet the requirements of the special provision "RAP for Use in Bituminous Concrete Mixtures"."

Revise Article 355.05 of the Standard Specifications to read:

"355.05 Mixture Design. The Contractor shall submit mix designs for approval, for each required mixture. Mix designs shall be developed by Level III personnel who have completed the course, "Superpave Mix Design Upgrade". The mixtures shall be designed according to the respective Illinois Modified AASHTO references listed below:

- AASHTO MP 2 Standard Specification for Superpave Volumetric Mix Design
- AASHTO R 30 Standard Practice for Mixture Conditioning of Hot-Mix Asphalt (HMA)
- AASHTO PP 28 Standard Practice for Designing Superpave HMA
- AASHTO T 209 Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
- AASHTO T 312 Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyrotory Compactor

AASHTO T 308 Determining the Asphalt Content of Hot Mix Asphalt (HMA) by the Ignition Method

(a) Job Mix Formula (JMF). The JMF shall be according to the following limits:

<u>Ingredient</u>	<u>Percent by Dry Weight</u>
Aggregate.....	93.0 to 96.0
Asphalt Cement.....	4.0 to 7.0
Dust/AC Ratio	1.4

When RAP material is being used, the JMF shall be according to the following limits:

<u>Ingredient</u>	<u>Percent by Dry Weight</u>
Virgin Aggregate(s)	46.0 to 96.0
RAP Material(s) (Note 1).....	0 to 50
Mineral Filler (if required)	0 to 5.0
Asphalt Cement.....	4.0 to 7.0
Dust/AC Ratio	1.4

Note 1. If specified on the plans, the maximum percentage of RAP shall be as specified therein.

It is recommended that the selected combined aggregate gradation not pass through the restricted zones specified in Illinois Modified AASHTO MP 2.

Bituminous concrete binder course Superpave mixture IL-25.0 or IL-19.0 meeting the requirements of the special provision, "Superpave Bituminous Concrete Mixtures" may also be used. The minimum compacted lift thickness specified therein shall apply.

(b) Volumetric Requirements.

Design Compactive Effort	Design Air Voids Target (%)
N _{DES} = 50	2.0

(c) Determination of Need for Anti-Stripping Additive. The mixture designer shall determine if an additive is needed in the mix to prevent stripping. The determination will be made on the basis of tests performed according to Illinois Modified AASHTO T 283 using 4 in. Marshall bricks. To be considered acceptable by the Engineer as a mixture not susceptible to stripping, the ratio of conditioned to unconditioned split tensile strengths (TSR) shall be equal to or greater than 0.75. Mixtures, either with or without an additive, with TSR values less than 0.75 will be considered unacceptable.

If it is determined that an additive is required, the additive may be hydrated lime, slaked quicklime, or a liquid additive, at the Contractor's option. The liquid additive shall be

selected from the Department's list of approved additives and may be limited to those which have exhibited satisfactory performance in similar mixes.

Dry hydrated lime shall be added at a rate of 1.0 to 1.5 percent by weight of total dry aggregate. Slurry shall be added in such quantity as to provide the required amount of hydrated lime solids by weight of total dry aggregate. The exact rate of application for all anti-stripping additives will be determined by the Engineer. The method of application shall be according to Article 406.12 of the Standard Specifications."

Revise Article 355.06 of the Standard Specifications to read:

"355.06 Mixture Production. The asphalt cement shall be transferred to the asphalt tanks and heated to a temperature of 120 °C (250 °F) to 175 °C (350 °F). If the loading temperature exceeds 175 °C (350 °F), the asphalt shall not be used until it has cooled to 175 °C (350 °F). Wide variations in temperature which affect the amount of asphalt delivered will not be permitted.

When a hot-mix plant conforming to Article 1102.01 is used, the aggregate shall be dried and heated in the revolving dryer to a temperature of 120 °C (250 °F) to 175 °C (350 °F).

The aggregate and bituminous material used in the bituminous aggregate mixture shall be measured separately and accurately by weight or by volume. When the aggregate is in the mixer, the bituminous material shall be added and mixing continued for a minimum of 30 seconds and until a homogeneous mixture is produced in which all particles of the aggregate are coated. The mixing period, size of the batch and the production rate shall be approved by the Engineer.

The ingredients shall be heated and combined in such a manner as to produce a mixture which, when discharged from the mixer, shall be workable and vary not more 10 °C (20 °F) from the temperature set by the Engineer.

When RAP material(s) is used in the bituminous aggregate mixture, the virgin aggregate(s) shall be dried and heated in the dryer to a temperature that will produce the specified resultant mix temperature when combined with the RAP material.

The heated virgin aggregates and mineral filler shall be combined with RAP material in such a manner as to produce a bituminous mixture which when discharged from the mixer shall not vary more than 15 °C (30 °F) from the temperature set by the Engineer. The combined ingredients shall be mixed for a minimum of 35 seconds and until a homogeneous mixture as to composition and temperature is obtained. The total mixing time shall be a minimum of 45 seconds consisting of dry and wet mixing. Variation in wet and dry mixing times may be permitted, depending on the moisture content and amount of salvaged material used. The mix temperature shall not exceed 175 °C (350 °F). Wide variations in the mixture temperature will be cause for rejection of the mix.

- (a) Personnel. The QC Manager and Level I Technician shall have successfully completed the Department's "Superpave Field Control Course".
- (b) Required Tests. Testing shall be conducted to control the production of the bituminous mixture using the test methods identified and performed at a frequency not less than indicated in the following table.

Parameter	Frequency of Tests Non-Class I Mixtures	Test Method
Aggregate Gradation Hot bins for batch and continuous plants. Individual cold-feeds or combined belt-feed for drier-drum plants. (% passing sieves: 12.5 mm (1/2 In.), 4.75 mm (No. 4), 75 µm (No. 200))	1 gradation per day of production. The first day of production shall be washed ignition oven test on the mix. Thereafter, the testing shall alternate between dry gradation and washed ignition oven test on the mix. The dry gradation and the washed ignition oven test results shall be plotted on the same control chart.	Illinois Procedure (See Manual of Test Procedures for Materials).
Asphalt Content by ignition oven (Note 1.)	1 per day	Illinois-Modified AASHTO T 308
Air Voids		
Bulk Specific Gravity of Gyratory Sample	1 per day	Illinois-Modified AASHTO T 312
Maximum Specific Gravity of Mixture	1 per day	Illinois-Modified AASHTO T 209

Note 1. The Engineer may waive the ignition oven requirement for AC content if the aggregates to be used are known to have ignition AC content calibration factors which exceed 1.5 percent. If the ignition oven requirement is waived, other Department approved methods shall be used to determine AC content.

During production, the ratio of minus 75 µm (#200) sieve material to total asphalt cement shall be not less than 0.6 nor more than 1.6, and the moisture content of the mixture at discharge from the mixer shall not exceed 0.5 percent. If at any time the ratio of minus 75 µm (#200) material to asphalt or moisture content of the mixture falls outside the stated limits, production of the mix shall cease. The cause shall be determined and corrective action satisfactory to the Engineer shall be initiated prior to resumption of production.

During production, mixture containing an anti-stripping additive will be tested by the Engineer for stripping according to Illinois Modified AASHTO T 283. If the mixture fails to meet the TSR criteria for acceptance, no further mixture will be accepted until the Contractor takes such action as is necessary to furnish a mixture meeting the criteria.

(c) Control Charts/Limits. Control charts/limits shall be according to QC/QA requirements for Non-Class I Mixtures, except air voids and density shall be plotted on the control charts within the following control limits:

Individual Test Control Limits	
Voids	±1.2%
Density ^{1/}	93.0 – 97.4% of G _{mm}

1/ Except when placed as first lift over unimproved subgrade. When the exception applies, the first lift over unimproved subgrade shall be compacted to an average density of not less than 95 percent nor greater than 102 percent of the target density obtained on the growth curve.

Revise Article 355.08 of the Standard Specifications to read:

"355.08 Placing. The bituminous mixture shall be placed with a spreading and finishing machine. The minimum compacted thickness of each lift shall be according to the following table:

Nominal Maximum Aggregate Size of Mixture	Minimum Compacted Lift Thickness
CA 10 - 19 mm (3/4 in.)	57 mm (2 1/4 in.)
CA 6 – 25 mm (1 in.)	76 mm (3 in.)

The maximum compacted thickness of each lift shall be 100 mm (4 in.). If the Contractor elects to substitute an approved vibratory roller for one of the required rollers, the maximum compacted thickness of the each lift, excluding the top lift, may be increased to 150 mm (6 in.) provided the required density is obtained.

The surface of each lift shall be clean and dry before succeeding lifts are placed."

Revise Article 355.13 of the Standard Specifications to read:

"355.13 Basis of Payment. This work will be paid for at the contract unit price per square meter (square yard) for BITUMINOUS BASE COURSE SUPERPAVE of the thickness specified."

Revise Article 356.02 of the Standard Specifications to read:

"356.02 Materials. The materials for the bituminous concrete mixture shall meet the requirements of Article 355.02, be designed according to Article 355.05 and produced according to Article 355.06. Bituminous concrete binder course Superpave mixture IL-25.0 or IL-19.0 meeting the requirements of the special provision, "Superpave Bituminous Concrete Mixtures" may also be used. The minimum compacted lift thickness specified therein shall apply."

Revise the first paragraph of Article 356.06 of the Standard Specifications to read:

"356.06 Base Course Widening. The bituminous concrete mixture shall be transported according to Article 406.14."

Revise the second sentence of the fifth paragraph of Article 356.06 of the Standard Specifications to read:

"The minimum compacted thickness of each lift shall be according to the table shown in Article 355.08."

Revise the first paragraph of Article 356.11 of the Standard Specifications to read:

"356.11 Basis of Payment. Where the Department requires that bituminous concrete be used, this work will be paid for at the contract unit price per square meter (square yard) for BITUMINOUS CONCRETE BASE COURSE WIDENING SUPERPAVE of the thickness specified."

80065

BITUMINOUS CONCRETE SURFACE COURSE (BDE)

Effective: April 1, 2001
Revised: April 1, 2003

Replace the fourth paragraph of Article 406.23(b) of the Standard Specifications with the following:

"Mixture for cracks, joints, flangeways, leveling binder (machine method), leveling binder (hand method) and binder course in excess of 103 percent of the quantity specified by the Engineer will not be measured for payment.

Surface course mixture in excess of 103 percent of adjusted plan quantity will not be measured for payment. The adjusted plan quantity for surface course mixtures will be calculated as follows:

Adjusted Plan Quantity = C x quantity shown on the plans or as specified by the Engineer.

where C = metric: $C = \frac{G_{mb} \times 24.99}{U}$ English: $C = \frac{G_{mb} \times 46.8}{U}$

and where:

- G_{mb} = average bulk specific gravity from approved mix design.
- U = Unit weight of surface course shown on the plans in kg/sq m/25 mm (lb/sq yd/in.), used to estimate plan quantity.
- 24.99 = metric constant.
- 46.8 = English constant.

If project circumstances warrant a new surface course mix design, the above equations shall be used to calculate the adjusted plan quantity for each mix design using its respective average bulk specific gravity."

80050

BITUMINOUS EQUIPMENT, SPREADING AND FINISHING MACHINE (BDE)

Effective: January 1, 2005

Revise the fourth paragraph of Article 1102.03 of the Standard Specifications to read:

“The paver shall be equipped with a receiving hopper having sufficient capacity for a uniform spreading operation. The hopper shall be equipped with a distribution system to uniformly place a non-segregated mixture in front of the screed. The distribution system shall have chain curtains, deflector plates, and /or other devices designed and built by the paver manufacturer to prevent segregation during distribution of the mixture from the hopper to the paver screed. The Contractor shall submit a written certification that the devices recommended by the paver manufacturer to prevent segregation have been installed and are operational. Prior to paving, the Contractor, in the presence of the Engineer, shall visually inspect paver parts specifically identified by the manufacturer for excessive wear and the need for replacement. The Contractor shall supply a completed check list to the Engineer noting the condition of the parts. Worn parts shall be replaced. The Engineer may require an additional inspection prior to placement of the surface course or at other times throughout the work.”

80142

BUILDING REMOVAL - CASE IV (NO ASBESTOS) (BDE)

Effective: September 1, 1990

Revised: August 1, 2001

BUILDING REMOVAL: This item shall consist of the removal and disposal of two building(s), together with all foundations, retaining walls, and piers, down to a plane 300 mm (1 ft.) below the ultimate or existing grade in the area (complete removal will be required in areas where proposed water main and storm sewer are to be installed) and also all incidental and collateral work necessary to complete the removal of the building(s) in a manner approved by the Engineer. Any holes, such as basements, shall be filled with a suitable granular material. The building(s) are identified as follows:

BUILDING NUMBER: 205

PIN 09-29-400-036 Easement Parcel No. 0008TE-2

Leased to: St. Charles School No. 303 Bus Garage
205 N. Randall Road
St. Charles, IL 60174

Stage I Removal: Stage I removal of this facility includes the removal of the existing single-level administration facility (~3,600 sf) located to the east of the bus maintenance facility. This work shall not begin prior to June 13, 2005. Contact Robert J. Vann, the City of St. Charles Building/Zoning Commissioner (phone 630-377-4406) a minimum of one week prior to beginning work.

Conditions:

The maintenance facility must remain operational during the Stage I removal.

Coordination is required to ensure no unacceptable disruptions of service, security, and/or operations of the maintenance facility occur.

Stage I removal requires selective demolition of the attached administrative facility to accommodate timely installation of both storm and sanitary services for the road project.

Structure:

The administrative facility roof framing consists of steel wide flange beams extending in the east-west direction. Each roof beam shall be cut flush with the remaining load-bearing concrete masonry wall of the maintenance facility.

All roofing, wall framing, flooring, and concrete slab on grade shall be removed flush with the east wall of the remaining facility.

New 10" concrete masonry units shall be provided and installed in door, window, and duct openings in the remaining east wall of the maintenance facilities.

Building Utilities: All utilities shall be field-verified prior to any removals.

The existing electrical transformer is located just west of the administrative building and just north of the maintenance facility. The service entrance and disconnect are located on the north wall of the maintenance bay. The service panels are located on the interior of the east wall of the maintenance bays which services the entire facility. The electrical services for the administration building shall be disconnected at these panels. Electrical service must remain operational for the maintenance facility.

Electrical pedestals/outlets are located along the east fence line of the bus parking. The east line of pedestals require disconnection and removal. This removal is incidental to Building Removal.

The existing gas service entrance and meter are located just west of the administrative building and just north of the maintenance facility. The gas services for the administration wing of the facility shall be disconnected. Gas service must remain operational for the maintenance facility.

The existing water service entrance and meter are located at the southwest corner of the administrative building. The water services for the administration wing of the facility shall be disconnected, and the meter and service entrance shall be relocated to the southeast corner of the maintenance facility. City coordination is required. Water service must remain operational for the maintenance facility.

The sanitary sewer service appears to be extend from the administrative building to the east. The sewer services for the administration wing of the facility shall be disconnected, and capped. Sewer service must remain operational for the maintenance facility.

The existing phone service appears to have two separate entrances. One service entrance is located just west of the administrative building and just north of the maintenance facility. A second service is located on the east wall of the administrative building. All telephone system coordination and removals shall remain the responsibility of the occupant. Phone service must be maintained for the maintenance facility.

Stage II Removal: Stage two removal of the facility is to occur once the occupants vacate the maintenance facility. Stage II includes the removal of the remaining single-story maintenance facility (~6,650 sf).

BUILDING NUMBER: 225

PIN 09-29-400-037 Easement Parcel No. 0008TE-1

Leased to: Payline West Inc.
225 N. Randall Road
St. Charles, IL 60174

Discontinuance of Utilities: The Contractor shall arrange for the discontinuance of all utility services that serve the building(s) according to the respective requirements and regulations of the City, County, or utility companies involved. The Contractor shall disconnect and seal, in an approved manner, all service outlets that serve any building(s) he/she is to remove.

Signs: Immediately upon execution of the contract and prior to the wrecking of any structures, the Contractor shall be required to paint or stencil, in contrasting colors of an oil-base paint, on all four sides of each residence and two opposite sides of other structures, the following sign:

PROPERTY ACQUIRED FOR
HIGHWAY CONSTRUCTION
TO BE DEMOLISHED BY THE

VANDALS WILL BE PROSECUTED

The signs shall be positioned in a prominent location on the structure so that they can be easily seen and read and at a sufficient height to prevent defacing. The Contractor shall not paint signs nor start demolition of any building(s) prior to the time that the State becomes the owner of the respective building(s).

Basis of Payment: This work will be paid for at the contract lump sum unit price for:

XX002956 PARTIAL BUILDING REMOVAL AND RECONSTRUCTION LSUM for the Stage I Removal of 205

Z0007601 BUILDING REMOVAL NO. 1 LSUM for the removal of 225

Z0007602 BUILDING REMOVAL NO. 2 LSUM for the Stage II Removal of 205

numbers as listed above, which price shall be payment in full for complete removal of the buildings and structures, including any necessary backfilling material as specified herein.

The lump sum unit price(s) for this work shall represent the cost of demolition. Any salvage value shall be reflected in the contract unit price for this item.

Notifications: The "Demolition/Renovation Notice" form, which can be obtained from the IEPA office, shall be completed and submitted to the address listed below at least 10 days prior to commencement of any demolition activity.

Asbestos Demolition/Renovation Coordinator
Illinois Environmental Protection Agency
Division of Air Pollution Control
P. O. Box 19276
Springfield, Illinois 62794-9276
(217)785-1743

Notices shall be updated if there is a change in the starting date or the amount of asbestos changes by more than 20 percent.

Submittals:

- A. All submittals and notices shall be made to the Engineer except where otherwise specified herein.
- B. Prior to starting work, the Contractor shall submit proof of written notification and compliance with the "Notifications" paragraph.

50531

BUTT JOINTS (BDE)

Effective: April 1, 2004

Revised: April 1, 2005

Revise Article 406.18 of the Standard Specifications to read:

"406.18 Butt Joints. Butt joints shall be constructed according to the details shown on the plans. The surface removal shall be performed according to Section 440. Construction of butt joints shall not begin prior to beginning general operations on the project.

When butt joints are to be constructed under traffic, temporary ramps shall be constructed and maintained at both the upstream and downstream ends of the surface removal areas immediately upon completion of the surface removal operation. The temporary ramps shall be constructed by the following methods.

- (a) Temporary Bituminous Ramps. Temporary bituminous ramps shall have a minimum taper rate of 1:40 (V:H). The bituminous material used shall meet the approval of the Engineer. Cold-milled bituminous tailings will not be acceptable.
- (b) Temporary Rubber Ramps. Temporary rubber ramps shall only be used on roadways with permanent posted speeds of 55 mph or less. The ramps shall have a minimum taper rate of 1:30 (V:H). The leading edge of the rubber ramp shall have a maximum thickness of 6 mm (1/4 in.) and the trailing edge shall match the height of the adjacent pavement \pm 6 mm (1/4 in.).

The rubber material shall conform to the following.

Property	Test Method	Requirement
Durometer Hardness, Shore A	ASTM D 2240	80 \pm 10
Tensile Strength	ASTM D 412	5500 kPa (800 psi) min.
Elongation, percent	ASTM D 412	100 min.
Specific Gravity	ASTM D 297	1.1-1.3
Brittleness	ASTM D 746	-40 °C (-40 °F)

The rubber ramps shall be installed according to the manufacturer's specifications and fastened with the anchors provided. Rubber ramps that fail to stay in place or create a traffic hazard shall be replaced immediately with temporary bituminous ramps at the Contractor's expense.

The temporary ramps shall be removed just prior to placing the proposed surface course. If work is suspended for the winter season prior to completion of surface course construction, precut butt joints shall be filled to the elevation of the existing pavement surface with compacted bituminous concrete surface course or binder course."

80118

COARSE AGGREGATE FOR TRENCH BACKFILL, BACKFILL AND BEDDING (BDE)

Effective: April 1, 2001
Revised: November 1, 2003

Revise Article 208.02 of the Standard Specifications to read:

"208.02 Materials. Materials shall be according to the following Articles of Section 1000 – Materials:

- (a) Fine Aggregate (Note 1).....1003.04
- (b) Coarse Aggregate (Note 2)1004.06

Note 1. The fine aggregate shall be moist to the satisfaction of the Engineer.

Note 2. The coarse aggregate shall be wet to the satisfaction of the Engineer."

Revise the first sentence of the second paragraph of subparagraph (b) in Article 208.03 of the Standard Specifications to read:

"Any material meeting the requirements of Articles 1003.04 or 1004.06 which has been excavated from the trenches shall be used for backfilling the trenches."

Add the following to the end of Article 542.02 of the Standard Specifications:

- "(bb) Fine Aggregate (Note 1).....1003.04
- (cc) Coarse Aggregate (Note 2)1004.06

Note 1. The fine aggregate shall be moist to the satisfaction of the Engineer.

Note 2. The coarse aggregate shall be wet to the satisfaction of the Engineer."

Revise the first and second sentences of the second paragraph of subparagraph (a) of Article 542.04 of the Standard Specifications to read:

"The unstable and unsuitable material shall be removed to a depth determined by the Engineer and for a width of one diameter (or equivalent diameter) of the pipe on each side of the pipe culvert, and replaced with aggregate. Rock shall be removed to an elevation 300 mm (1 ft) lower than the bottom of the pipe or to a depth equal to 40 mm/m (1/2 in./ft) of ultimate fill height over the top of the pipe culvert, whichever is the greater depth, and for a width as specified in (b) below, and replaced with aggregate."

Revise the second paragraph of subparagraph (c) of Article 542.04 of the Standard Specifications to read:

"Well compacted aggregate, at least 100 mm (4 in.) in depth below the pipe culvert, shall be placed the entire width of the trench and for the length of the pipe culvert, except well compacted impervious material shall be used for the outer 1 m (3 ft) at each end of the pipe. When the trench has been widened by the removal and replacement of unstable or unsuitable material, the foundation material shall be placed for a width not less than the above specified widths on each side of the pipe. The aggregate and impervious material shall be approved by the Engineer and shall be compacted to the Engineer's satisfaction by mechanical means."

Revise subparagraph (e) of Article 542.04 of the Standard Specifications to read:

"(e) Backfilling. As soon as the condition of the pipe culvert will permit, the entire width of the trench shall be backfilled with aggregate to a height of at least the elevation of the center of the pipe. The aggregate shall be placed longitudinally along the pipe culvert, except at the outer 1 m (3 ft) at each end of the culvert which shall be backfilled with impervious material. The elevation of the backfill material on each side of the pipe shall be the same. The space under the pipe shall be completely filled. The aggregate and impervious material shall be placed in 200 mm (8 in.) layers, loose measurement. When using PVC, PE, or corrugated metal pipe, the aggregate shall be continued to a height of at least 300 mm (1 ft) above the top of the pipe and compacted to a minimum of 85 percent of standard lab density by mechanical means. When reinforced concrete pipes are used and the trench is within 600 mm (2 ft) of the pavement structure, the backfill shall be compacted to a minimum of 85 percent of standard lab density by mechanical means.

When using PVC, PE, or corrugated metal pipe a minimum of 300 mm (1 ft) of cover from the top of the pipe to the top of the subgrade will be required.

The installed pipe and its embedment shall not be disturbed when using movable trench boxes and shields, sheet pile, or other trench protection.

The remainder of the trench shall be backfilled with select material, from excavation or borrow, free from large or frozen lumps, clods or rock, meeting the approval of the Engineer. The material shall be placed in layers not exceeding 200 mm (8 in.) in depth, loose measurement and compacted to 95 percent of the standard laboratory density. Compaction shall be obtained by use of mechanical tampers or with approved vibratory compactors. Before compacting, each layer shall be wetted or dried to bring the moisture content within the limits of 80 to 110 percent of optimum moisture content determined according to AASHTO T 99 (Method C). All backfill material shall be deposited in the trench or excavation in such a manner as not to damage the culvert. The filling of the trench shall be carried on simultaneously on both sides of the pipe.

The Contractor may, at his/her expense, backfill the entire trench with aggregate in lieu of select material. The aggregate shall be compacted to the satisfaction of the Engineer by mechanical means.

The backfill material for all trenches and excavations made in the subgrade of the proposed improvement, and for all trenches outside of the subgrade where the inner edge of the trench is within 600 mm (2 ft) of the edge of the proposed pavement, curb, gutter, curb and gutter, stabilized shoulder, or sidewalk shall be according to Section 208. The trench backfill material shall be compacted to a minimum of 85 percent of standard lab density by mechanical means.

The Contractor may, at his/her expense, backfill the entire trench with controlled low strength material meeting the approval of the Engineer.

When the trench has been widened for the removal and replacement of unstable or unsuitable material, the backfilling with aggregate and impervious material, will be required for a width of at least the specified widths on each side of the pipe. The remaining width of each layer may be backfilled with select material. Each 200 mm (8 in.) layer for the entire trench width shall be completed before beginning the placement of the next layer."

Revise subparagraph (b) of Article 542.05 of the Standard Specifications to read:

"(b) Embankment. Embankment extending to an elevation of 300 mm (1 ft) over the top of the pipe shall be constructed according to Article 542.04(f), except the material up to the elevation of the center of the pipe and extending to a width of at least 450 mm (18 in.) on each side of the pipe, exclusive of the outer 1 m (3 ft) at each end of the pipe, shall consist of aggregate. At the outer 1 m (3 ft) at each end of the culvert, impervious material shall be used."

Add the following paragraph after the first paragraph of Article 542.10 of the Standard Specifications:

"Trench backfill will be measured for payment according to Article 208.03."

Add the following paragraph after the third paragraph of Article 542.11 of the Standard Specifications:

"Trench backfill will be paid for according to Article 208.04."

Add the following to of Article 550.02 of the Standard Specifications:

"(m) Fine Aggregate (Note 2).....	1003.04
(n) Coarse Aggregate (Note 3)	1004.06

Note 2. The fine aggregate shall be moist to the satisfaction of the Engineer.

Note 3. The coarse aggregate shall be wet to the satisfaction of the Engineer."

Revise the first two sentences of the third paragraph of Article 550.04 of the Standard Specifications to read:

"Well compacted, aggregate bedding material at least 100 mm (4 in.) in depth below the pipe, shall be placed for the entire width of the trench and length of the pipe. The aggregate shall be compacted to the satisfaction of the Engineer by mechanical means."

Revise Article 550.07 of the Standard Specifications to read:

"550.07 Backfilling. As soon as the condition of the pipe will permit, the entire width of the trench shall be backfilled with aggregate to a height of at least the elevation of the center of the pipe. The aggregate shall be placed longitudinally along the pipe. The elevation of the backfill material on each side of the pipe shall be the same. The space under the pipe shall be completely filled. The aggregate backfill material shall be placed in 200 mm (8 in.) layers, loose measurement and compacted to the satisfaction of the Engineer by mechanical means. When using PVC pipe, the aggregate shall be continued to a height of at least 300 mm (12 in.) above the top of the pipe.

The installed pipe and its embedment shall not be disturbed when using movable trench boxes and shields, sheet pile, or other trench protection.

The remainder of the trench and excavation shall be backfilled to the natural line or finished surface as rapidly as the condition of the sewer will permit. The backfill material shall consist of suitable excavated material from the trench or of trench backfill as herein specified. All backfill material shall be deposited in the trench or excavation in such a manner as not to damage the sewer and shall be compacted to the satisfaction of the Engineer by mechanical means. The filling of the trench shall be carried on simultaneously on both sides of the pipe.

The backfill material for trenches and excavation made in the subgrade of the proposed improvement, and for all trenches outside of the subgrade where the inner edge of the trench is within 600 mm (2 ft) of the edge of the proposed pavement, curb, gutter, curb and gutter, stabilized shoulder or sidewalk shall be according to Section 208. The backfill material shall be compacted to 85 percent of standard lab density by mechanical means.

All backfill material up to a height of 300 mm (1 ft) above the pipe shall be deposited in uniform layers not exceeding 200 mm (8 in.) thick, loose measurement. The material in each layer shall be compacted to the satisfaction of the Engineer by mechanical means. The

backfilling above this height shall be done according to Method 1, 2 or 3 as described below, with the following exceptions.

When trench backfill or excavated material meeting the requirements of Section 208 is required above the first 300 mm (1 ft) of the pipe, the layers shall not exceed 200 mm (8 in.). Gradations CA6 or CA10 shall not be used with Method 2 or Method 3.

Method 1. The material shall be deposited in uniform layers not exceeding 300 mm (1 ft) thick, loose measurement, and each layer shall be compacted to the satisfaction of the Engineer by mechanical means.

Method 2. The material shall be deposited in uniform layers not exceeding 300 mm (1 ft) thick, loose measurement, and each layer shall be either inundated or deposited in water.

Method 3. The trench shall be backfilled with loose material, and settlement secured by introducing water through holes jetted into the backfill to a point approximately 600 mm (2 ft) above the top of the pipe. The holes shall be spaced as directed by the Engineer but shall be no farther than 2 m (6 ft) apart.

The water shall be injected at a pressure just sufficient to sink the holes at a moderate rate of speed. The pressure shall be such that the water will not cut cavities in the backfill material nor overflow the surface. If water does overflow the surface, it shall be drained into the jetted holes by means of shallow trenches.

Water shall be injected as long as it will be absorbed by the backfill material and until samples taken from test holes in the trench show a satisfactory moisture content. The Contractor shall bore the test holes not more than 15 m (50 ft) apart and at such other locations in the trench designated by the Engineer. As soon as the watersoaking has been completed, all holes shall be filled with soil and compacted by ramming with a tool approved by the Engineer.

Backfill material which has been watersoaked shall be allowed to settle and dry for at least 10 days before any surface course or pavement is constructed on it. The length of time may be altered, if deemed desirable, by the Engineer. Where the inner edge of the trench is within 600 mm (2 ft) of the edge of the proposed pavement, curb, gutter, curb and gutter, stabilized shoulder or sidewalk, the provisions of this paragraph shall also apply.

At the end of the settling and drying period, the crusted top of the backfill material shall be scarified and, if necessary, sufficient backfill material added, as specified in Method 1, to complete the backfilling operations.

The method used for backfilling and compacting the backfill material shall be the choice of the Contractor. If the method used does not produce results satisfactory to the Engineer, the Contractor will be required to alter or change the method being used so the resultant backfill will be satisfactory to the Engineer. Should the Contractor be required to alter or change the

method being used, no additional compensation will be allowed for altering or changing the method.

The Contractor may, at his/her expense, backfill the entire trench with controlled low strength material meeting the approval of the Engineer.

When sheeting and bracing have been used, sufficient bracing shall be left across the trench as the backfilling progresses to hold the sides firmly in place without caving or settlement. This bracing shall be removed as soon as practicable. Any depressions which may develop within the area involved in the construction operation due to settlement of the backfilling material shall be filled in a manner approved by the Engineer.

When the Contractor constructs the trench with sloped or benched sides according to Article 550.04, backfilling for the full width of the excavation shall be as specified, except no additional compensation will be allowed for trench backfill material required outside the vertical limits of the specified trench width.

Whenever excavation is made for installing sewer pipe across earth shoulders or private property, the topsoil disturbed by excavation operations shall be replaced as nearly as possible in its original position, and the whole area involved in the construction operations shall be left in a neat and presentable condition.

When using any PVC pipe, the pipe shall be backfilled with aggregate to 300 mm (1 ft) over the top of the pipe and compacted to a minimum of 85 percent of standard lab density by mechanical means.

When reinforced concrete pipes are used and the trench is within 600 mm (2 ft) of the pavement structure, the backfill shall be compacted to a minimum of 85 percent of standard lab density by mechanical means.

Deflection Testing for Storm Sewers. All PVC storm sewers will be tested for deflection not less than 30 days after the pipe is installed and the backfill compacted.

For PVC storm sewers with diameters 600 mm (24 in.) or smaller, a mandrel drag shall be used for deflection testing. For PVC storm sewers with diameters over 600 mm (24 in.), deflection measurements other than by a mandrel drag shall be used.

Where the mandrel is used, the mandrel shall be furnished by the Contractor and pulled by hand through the pipeline with a suitable rope or cable connected to each end. Winching or other means of forcing the deflection gauge through the pipeline will not be allowed.

The mandrel shall be of a shape similar to that of a true circle enabling the gauge to pass through a satisfactory pipeline with little or no resistance. The mandrel shall be of a design to prevent it from tipping from side to side and to prevent debris build-up from occurring between the channels of the adjacent fins or legs during operation. Each end of the core of the mandrel shall have fasteners to which the pulling cables can be attached. The mandrel shall have 9,

various sized fins or legs of appropriate dimension for various diameter pipes. Each fin or leg shall have a permanent marking that states its designated pipe size and percent of deflection allowable.

The outside diameter of the mandrel shall be 95 percent of the base inside diameter, where the base inside diameter is:

For all PVC pipe (as defined using ASTM D 3034 methodology):

If the pipe is found to have a deflection greater than specified, that pipe section shall be removed, replaced, and retested."

Revise subparagraph (c) of Article 1003.04 of the Standard Specifications to read:

"(c) Gradation. The fine aggregate gradation shall be as follows:

Backfill, bedding and trench backfill for pipe culverts and storm sewers	FA 1, FA 2, FA 6, or FA 21
Porous granular embankment and backfill, french drains, and sand backfill for underdrains	FA 1, FA 2, or FA20 (Note 1)

Note 1: For FA 1, FA 2, and FA 20 the percent passing the 75 µm (No. 200) sieve shall be 2 ± 2 ."

Revise the title of Article 1004.06 of the Standard Specifications to read:

"Coarse Aggregate for Blotter, Embankment, Backfill, Trench Backfill, French Drains, and Bedding."

Add the following to the end of subparagraph (c) of Article 1004.06 of the Standard Specifications:

"Backfill, bedding, and trench backfill for pipe culverts and storm sewers	CA 6, CA 10, and CA 18"
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80051

CONCRETE ADMIXTURES (BDE)

Effective: January 1, 2003

Revised: July 1, 2004

Revise Article 1020.05(b) of the Standard Specifications to read:

- "(b) Admixtures. Except as specified, the use of admixtures to increase the workability or to accelerate the hardening of the concrete will be permitted only when approved in writing by the Engineer. The Department will maintain an Approved List of Concrete Admixtures. When the Department permits the use of a calcium chloride accelerator, it shall be according to Article 442.02, Note 5.

When the atmosphere or concrete temperature is 18 °C (65 °F) or higher, a retarding admixture meeting the requirements of Article 1021.03 shall be used in the Class BD Concrete and portland cement concrete bridge deck overlays. The amount of retarding admixture to be used will be determined by the Engineer. 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 Class BD Concrete. The amount of high range water-reducing admixture will be determined by the Engineer. At the option of the Contractor, a water-reducing admixture may be used. Type I cement shall be used.

For Class PC and PS Concrete, a retarding admixture may be added to the concrete mixture when the concrete temperature is 18 °C (65 °F) or higher. Other admixtures may be used when approved by the Engineer, or if specified by the contract. If an accelerating admixture is permitted by the Engineer, it shall be the non-chloride type.

At the Contractor's option, admixtures in addition to an air-entraining admixture may be used for Class PP-1 concrete. The accelerator shall be the non-chloride type. If a water-reducing or retarding admixture is used, the cement factor may be reduced a maximum 18 kg/cu m (0.30 hundredweight/cu yd). If a high range water-reducing admixture is used, the cement factor may be reduced a maximum 36 kg/cu m (0.60 hundredweight/cu yd). Cement factor reductions shall not be cumulative when using multiple admixtures. An accelerator shall always be added prior to a high range water-reducing admixture, if both are used.

If Class C fly ash or ground granulated blast-furnace slag is used in Class PP-1 concrete, a water-reducing or high range water-reducing admixture shall be used. However, the cement factor shall not be reduced if a water-reducing, retarding, or high range water-reducing admixture is used. In addition, an accelerator shall not be used.

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. For Class PP-3 concrete, the non-chloride accelerator shall be calcium nitrite.

For Class PP-2 or PP-3 concrete, the Contractor has the option to use a water-reducing admixture. A retarding admixture shall not be used unless approved by the Engineer. A water-reducing, retarding, or high range water-reducing admixture shall not be used to reduce the cement factor.

When the air temperature is less than 13 °C (55 °F) for Class PP-1 or PP-2 concrete, the non-chloride accelerator shall be calcium nitrite.

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. 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 according to Article 1103.04, but a retarding admixture shall not be used unless approved by the Engineer. A water-reducing, retarding, or high range water-reducing admixture shall not be used to reduce the cement factor.

If the Department specifies a calcium chloride accelerator for Class PP-1 concrete, the maximum chloride dosage shall be 1.0 L (1.0 quart) of solution per 45 kg (100 lb) of cement. The dosage may be increased to a maximum 2.0 L (2.0 quarts) per 45 kg (100 lb) of cement if approved by the Engineer. If the Department specifies a calcium chloride accelerator for Class PP-2 concrete, the maximum chloride dosage shall be 1.3 L (1.3 quarts) of solution per 45 kg (100 lb) of cement. The dosage may be increased to a maximum 2.6 L (2.6 quarts) per 45 kg (100 lb) of cement if approved by the Engineer.

For Class PV, MS, SI, RR, SC and SH concrete, at the option of the Contractor, or when specified by the Engineer, a water-reducing admixture or a retarding admixture may be used. The amount of water-reducing admixture or retarding admixture permitted will be determined by the Engineer. The air-entraining admixture and other admixtures shall be added to the concrete separately, and shall be permitted to intermingle only after they have separately entered the concrete batch. The sequence, method and equipment for adding the admixtures shall be approved by the Engineer. The water-reducing admixture shall not delay the initial set of the concrete by more than one hour. Type I cement shall be used.

When a water-reducing admixture is added, a cement factor reduction of up to 18 kg/cu m (0.30 hundredweight/cu yd), from the concrete designed for a specific slump without the admixture, will be permitted for Class PV, MS, SI, RR, SC and SH concrete. When an approved high range water-reducing admixture is used, a cement factor reduction of up to 36 kg/cu m (0.60 hundredweight/cu yd), from a specific water cement/ratio without the admixture, will be permitted based on a 14 percent minimum water reduction. This is applicable to Class PV, MS, SI, RR, SC and SH concrete. A cement factor below 320 kg/cu m (5.35 hundredweight/cu yd) will not be permitted for Class PV, MS, SI, RR, SC and SH concrete. A cement factor reduction will not be

allowed for concrete placed underwater. Cement factor reductions shall not be cumulative when using multiple admixtures.

For use of admixtures to control concrete temperature, refer to Articles 1020.14(a) and 1020.14(b).

The maximum slumps given in Table 1 may be increased to 175 mm (7 in.) when a high range water-reducing admixture is used for all classes of concrete except Class PV and PP."

Revise Section 1021 of the Standard Specifications to read:

"SECTION 1021. CONCRETE ADMIXTURES

1021.01 General. Admixtures shall be furnished in liquid form ready for use. The admixtures may be delivered in the manufacturer's original containers, bulk tank trucks or such containers or tanks as are acceptable to the Engineer. Delivery shall be accompanied by a ticket which clearly identifies the manufacturer and trade name of the material. Containers shall be readily identifiable to the satisfaction of the Engineer as to manufacturer and trade name of the material they contain.

Prior to inclusion of a product on the Department's Approved List of Concrete Admixtures, the manufacturer shall submit a report prepared by an independent laboratory accredited by the AASHTO Accreditation Program. The report shall show the results of physical tests conducted no more than five years prior to the time of submittal, according to applicable specifications.

Tests shall be conducted using materials and methods specified on a "test" concrete and a "reference" concrete, together with a certification that no changes have been made in the formulation of the material since the performance of the tests. Per the manufacturer's option, the cement content for all required tests shall either be according to applicable specifications or 335 kg/cu m (5.65 cwt/cu yd). Compressive strength test results for six months and one year will not be required.

In addition to the report, the manufacturer shall submit AASHTO T 197 water content and set time test results on the standard cement used by the Department. The test and reference concrete mixture shall contain a cement content of 335 kg/cu m (5.65 cwt/cu yd). The manufacturer may select their lab or an independent lab to perform this testing. The laboratory is not required to be accredited by the AASHTO Accreditation Program.

Prior to the approval of an admixture, the Engineer may conduct all or part of the applicable tests on a sample that is representative of the material to be furnished. The test and reference concrete mixtures tested by the Engineer will contain a cement content of 335 kg/cu m (5.65 cwt/cu yd). For freeze-thaw testing, the Department will perform the test according to Illinois Modified AASHTO T 161, Procedure B.

The manufacturer shall include in the submittal the following information according to ASTM C 494; the average and manufacturing range of specific gravity, the average and manufacturing range of solids in the solution, and the average and manufacturing range of pH. The submittal shall also include an infrared spectrophotometer trace no more than five years old.

When test results are more than seven years old, the manufacturer shall re-submit the infrared spectrophotometer trace and the report prepared by an independent laboratory accredited by the AASHTO Accreditation Program.

All admixtures, except chloride-based accelerators, shall contain no more than 0.3 percent chloride by mass (weight).

1021.02 Air-Entraining Admixtures. Air-entraining admixtures shall conform to the requirements of AASHTO M 154.

If the manufacturer certifies that the air-entraining admixture is an aqueous solution of Vinsol resin that has been neutralized with sodium hydroxide (caustic soda), testing for compliance with the requirements may be waived by the Engineer. In the certification, the manufacturer shall show complete information with respect to the formulation of the solution, including the number of parts of Vinsol resin to each part of sodium hydroxide. Before the approval of its use is granted, the Engineer will test the solution for its air-entraining quality in comparison with a solution prepared and kept for that purpose.

1021.03 Retarding and Water-Reducing Admixtures. The admixture shall comply with the following requirements:

- (a) The retarding admixture shall comply with the requirements of AASHTO M 194, Type B (retarding) or Type D (water-reducing and retarding).
- (b) The water-reducing admixture shall comply with the requirements of AASHTO M 194, Type A.
- (c) The high range water-reducing admixture shall comply with the requirements of AASHTO M 194, Type F (high range water-reducing) or Type G (high range water-reducing and retarding).

When a Type F or Type G high range water-reducing admixture is used, water-cement ratios shall be a minimum of 0.32.

Type F or Type G admixtures may be used, subject to the following restrictions:

For Class MS, SI, RR, SC and SH concrete, the water-cement ratio shall be a maximum of 0.44.

The Type F or Type G admixture shall be added at the jobsite unless otherwise directed by the Engineer. The initial slump shall be a minimum of 40 mm (1 1/2 in.)

prior to addition of the Type F or Type G admixture, except as approved by the Engineer.

When a Type F or Type G admixture is used, retempering with water or with a Type G admixture will not be allowed. An additional dosage of a Type F admixture, not to exceed 40 percent of the original dosage, may be used to retemper concrete once, provided set time is not unduly affected. A second retempering with a Type F admixture may be used for all classes of concrete except Class PP and SC, provided that the dosage does not exceed the dosage used for the first retempering, and provided that the set time is not unduly affected. No further retempering will be allowed.

Air tests shall be performed after the addition of the Type F or Type G admixture.

1021.04 Set Accelerating Admixtures. The admixture shall comply with the requirements of AASHTO M 194, Type C (accelerating) or Type E (water reducing and accelerating)"

80094

DETECTABLE WARNINGS (BDE)

Effective: August 1, 2005

Replace Articles 424.08 – 424.12 of the Standard Specifications with the following:

424.08 Curb Ramps. Curb ramps shall be constructed according to the Americans with Disabilities Act Accessibility Guidelines (ADAAG), the Illinois Accessibility Code, and as shown on the plans.

Curb ramps shall be constructed to the same thickness as the adjacent sidewalk with a minimum thickness of 100 mm (4 in.).

424.09 Detectable Warnings. Detectable warnings shall consist of a surface of truncated domes meeting the requirements of the ADAAG and the details shown on the plans.

Detectable warnings shall be installed at curb ramps, medians and pedestrian refuge islands, at-grade railroad crossings, transit platform edges, and other locations where pedestrians are required to cross a hazardous vehicular way. Detectable warnings shall also be installed at alleys and commercial entrances when permanent traffic control devices are present. The installation shall be an integral part of the walking surface and only the actual domes shall project above the walking surface.

The product or method used for installing detectable warnings shall come with the following documents which shall be given to the Engineer prior to use.

- (a) Manufacturer's certification stating the product is fully compliant with the ADAAG.
- (b) Manufacturer's five year warranty.
- (c) Manufacturer's specifications stating the required materials, equipment, and installation procedures.

Products that are colored shall be colored their entire thickness.

The materials, equipment, and installation procedures used shall be according to the manufacturer's specifications.

424.10 Backfill. After the concrete has been cured, the spaces along the edges of the sidewalk and ramps shall be backfilled with approved material. The material shall be compacted until firm and the surface neatly graded.

424.11 Disposal of Surplus Material. Surplus or waste material shall be disposed of according to Article 202.03.

424.12 Method of Measurement. This work will be measured for payment in place and the area computed in square meters (square feet). Curb ramps will be measured for payment as sidewalk. No deduction will be made for detectable warnings located within the ramp.

Detectable warnings will be measured for payment in place and the area computed in square meters (square feet).

Earth excavation will be measured for payment according to Article 202.07.

424.13 Basis of Payment. This work will be paid for at the contract unit price per square meter (square foot) for PORTLAND CEMENT CONCRETE SIDEWALK, of the thickness specified.

Detectable warnings will be paid for at the contract unit price per square meter (square foot) for DETECTABLE WARNINGS.

Earth excavation will be paid for according to Article 202.08."

80146

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CURING AND PROTECTION OF CONCRETE CONSTRUCTION (BDE)

Effective: January 1, 2004

Revise the second and third sentences of the eleventh paragraph of Article 503.06 of the Standard Specifications to read:

"Forms on substructure units shall remain in place at least 24 hours. The method of form removal shall not result in damage to the concrete."

Delete the twentieth paragraph of Article 503.22 of the Standard Specifications.

Revise the "Unit Price Adjustments" table of Article 503.22 of the Standard Specifications to read:

"UNIT PRICE ADJUSTMENTS"	
Type of Construction	Percent Adjustment in Unit Price
For concrete in substructures, culverts (having a waterway opening of more than 1 sq m (10 sq ft)), pump houses, and retaining walls (except concrete pilings, footings and foundation seals):	
When protected by: Protection Method II	115%
Protection Method I	110%
For concrete in superstructures:	
When protected by: Protection Method II	123%
Protection Method I	115%
For concrete in footings:	
When protected by: Protection Method I, II or III	107%
For concrete in slope walls:	
When protected by: Protection Method I	107%"

Delete the fourth paragraph of Article 504.05(a) of the Standard Specifications.

Revise the second and third sentences of the fifth paragraph of Article 504.05(a) of the Standard Specifications to read:

"All test specimens shall be cured with the units according to Article 1020.13."

Revise the first paragraph of Article 504.06(c)(6) of the Standard Specifications to read:

"Curing and Low Air Temperature Protection. The curing and protection for precast, prestressed concrete members shall be according to Article 1020.13 and this Article."

Revise the first sentence of the second paragraph of Article 504.06(c)(6) of the Standard Specifications to read:

“For curing, air vents shall be in place, and shall be so arranged that no water can enter the void tubes during the curing of the members.”

Revise the first sentence of the third paragraph of Article 504.06(c)(6) of the Standard Specifications to read:

“As soon as each member is finished, the concrete shall be covered with curing material according to Article 1020.13.”

Revise the eighth paragraph of Article 504.06(c)(6) of the Standard Specifications to read:

“The prestressing force shall not be transferred to any member before the concrete has attained the compressive strength of 28,000 kPa (4000 psi) or other higher compressive release strength specified on the plans, as determined from tests of 150 mm (6 in.) by 300 mm (12 in.) cylinders cured with the member according to Article 1020.13. Members shall not be shipped until 28-day strengths have been attained and members have a yard age of at least 4 days.”

Delete the third paragraph of Article 512.03(a) of the Standard Specifications.

Delete the last sentence of the second paragraph of Article 512.04(d) of the Standard Specifications.

Revise the "Index Table of Curing and Protection of Concrete Construction" table of Article 1020.13 of the Standard Specifications to read:

"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) ^{1/2/}	3	1020.13(c)
Driveway			
Median			
Curb			
Gutter	1020.13(a)(1)(2)(3)(4)(5) ^{4/ 5/}	3	1020.13(c) ^{16/}
Curb and Gutter			
Sidewalk			
Slope Wall			
Paved Ditch			
Catch Basin			
Manhole	1020.13(a)(1)(2)(3)(4)(5) ^{4/}	3	1020.13(c)
Inlet			
Valve Vault			
Pavement Patching	1020.13(a)(1)(2)(3)(4)(5) ^{2/}	3 ^{12/}	1020.13(c)
Pavement Replacement	1020.13(a)(1)(2)(3)(4)(5) ^{1/2/}	3	442.06(h) and 1020.13(c)
Railroad Crossing	1020.13(a)(3)(5)	1	1020.13(c)
Piles	1020.13(a)(3)(5)	7	1020.13(e)(1)(2)(3)
Footings			
Foundation Seals	1020.13(a)(1)(2)(3)(4)(5) ^{4/6/}	7	1020.13(e)(1)(2)(3)
Substructure	1020.13(a)(1)(2)(3)(4)(5) ^{17/}	7	1020.13(e)(1)(2)(3)
Superstructure (except deck)	1020.13(a)(1)(2)(3)(5) ^{8/}	7	1020.13(e)(1)(2)
Deck	1020.13(a)(5)	7	1020.13(e)(1)(2) ^{17/}
Retaining Walls	1020.13(a)(1)(2)(3)(4)(5) ^{17/}	7	1020.13(e)(1)(2)
Pump Houses	1020.13(a)(1)(2)(3)(4)(5) ^{1/}	7	1020.13(e)(1)(2)
Culverts	1020.13(a)(1)(2)(3)(4)(5) ^{4/6/}	7	1020.13(e)(1)(2) ^{18/}
Other Incidental Concrete	1020.13(a)(1)(2)(3)(5)	3	1020.13(c)
Precast Concrete: ^{11/}			
Bridge Beams			
Piles			
Bridge Slabs	1020.13(a)(3)(5) ^{9/10/}	As required.	^{13/} 504.06(c)(6), 1020.13(e)(2) ^{19/}
Nelson Type Structural Member			
All Other Precast Items	1020.13(a)(3)(4)(5) ^{2/9/10/}	As required.	^{14/} 504.06(c)(6), 1020.13(e)(2) ^{18/}
Precast, Prestressed Concrete: ^{11/}			
All Items	1020.13(a)(3)(5) ^{9/10/}	Until strand tensioning is released. ^{15/}	504.06(c)(6), 1020.13(e)(2) ^{18/}

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 footings, foundation seals or the bottom slab of culverts is permissible when approved by the Engineer, provided the water temperature can be maintained at 7 °C (45 °F) 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 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), and meets the material requirements of Article 1022.07.
- 9/ Steam curing (heat and moisture) is acceptable and shall be accomplished by the method specified in Article 504.06(c)(6).
- 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, with a maximum curing period of three days.
- 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(e)(1).
- 17/ When Article 1020.13(e)(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(e)(1).
- 18/ For culverts having a waterway opening of 1 sq m (10 sq ft) or less, the culverts may be protected according to Article 1020.13(e)(3).
- 19/ The seven day protection period in the first paragraph of Article 1020.13(e)(2) shall not apply. The protection period shall end when curing is finished. For the third paragraph of Article 1020.13(e)(2), the decrease in temperature shall be according to Article 504.06(c)(6)."

Add the following to Article 1020.13(a) of the Standard Specifications:

"(5) Wetted Cotton Mat Method. After the surface of concrete has been textured or finished, it shall be covered immediately with dry 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 1.2 m (4 ft) 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)."

Revise the first paragraph of Article 1020.13(c) of the Standard Specifications to read:

"Protection of Portland Cement Concrete, Other Than Structures, From Low Air Temperatures. When the official National Weather Service forecast for the construction area predicts a low of 0 °C (32 °F), or lower, or if the actual temperature drops to 0 °C (32 °F), or lower, concrete less than 72 hours old shall be provided at least the following protection:"

Delete Article 1020.13(d) and Articles 1020.13(d)(1),(2),(3),(4) of the Standard Specifications.

Revise the first five paragraphs of Article 1020.13(e) of the Standard Specifications to read:

"Protection of Portland Cement Concrete Structures From Low Air Temperatures. When the official National Weather Service Forecast for the construction area predicts a low below 7 °C (45 °F), or if the actual temperature drops below 7 °C (45 °F), 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. If winter construction is specified, the Contractor shall proceed with the construction, including concrete, excavation, pile driving, 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 by the Contractor at his/her own expense."

Add the following at the end of the third paragraph of Article 1020.13(e)(1) of the Standard Specifications:

"The Contractor shall provide means for checking the temperature of the surface of the concrete during the protection period."

Revise the second sentence of the first paragraph of Article 1020.13(e)(2) of the Standard Specifications to read:

"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."

Delete the last sentence of the first paragraph of Article 1020.13(e)(3) of the Standard Specifications.

Add the following Article to Section 1022 of the Standard Specifications:

"1022.06 Cotton Mats. Cotton mats shall consist of a cotton fill material, minimum 400 g/sq m (11.8 oz/sq yd), covered with unsized cloth or burlap, minimum 200 g/sq m (5.9 oz/sq yd), and be tufted or stitched to maintain stability.

Cotton mats shall be in a condition satisfactory to the Engineer. Any tears or holes in the mats shall be repaired.

Add the following Article to Section 1022 of the Standard Specifications:

"1022.07 Linseed Oil Emulsion Curing Compound. Linseed oil emulsion curing compound shall be composed of a blend of boiled linseed oil and high viscosity, heavy bodied linseed oil emulsified in a water solution. The curing compound shall meet the requirements of a Type I, II, or III according to Article 1022.01, except the drying time requirement will be waived. The oil phase shall be 50 ± 4 percent by volume. The oil phase shall consist of 80 percent by mass (weight) boiled linseed oil and 20 percent by mass (weight) Z-8 viscosity linseed oil. The water phase shall be 50 ± 4 percent by volume."

Revise Article 1020.14 of the Standard Specifications to read:

1020.14 Temperature Control for Placement. Temperature control for concrete placement shall conform to the following requirements:

- (a) Temperature Control other than Structures. The temperature of concrete immediately before placing, shall be not less than 10 °C (50 °F) nor more than 32 °C (90 °F). Aggregates and/or water shall be heated or cooled as necessary to produce concrete within these temperature limits.

When the temperature of the plastic concrete reaches 30 °C (85 °F), an approved retarding admixture shall be used or the approved water reducing admixture in use shall have its dosage increased by 50 percent over the dosage recommended on the Department's Approved List of Concrete Admixtures for the temperature experienced. The amount of retarding admixture to be used will be determined by the Engineer. This requirement may be waived by the Engineer when fly ash compensated mixtures are used.

Plastic concrete temperatures up to 35 °C (96 °F), as placed, may be permitted provided job site conditions permit placement and finishing without excessive use of water on and/or overworking of the surface. The occurrence within 24 hours of unusual surface distress shall be cause to revert to a maximum 32 °C (90 °F) plastic concrete temperature.

Concrete shall not be placed when the air temperature is below 5 °C (40 °F) and falling or below 2 °C (35 °F), without permission of the Engineer. When placing of concrete is authorized during cold weather, the Engineer may require the water and/or the aggregates to be heated to not less than 20 °C (70 °F) nor more than 65 °C (150 °F). The aggregates may be heated by either steam or dry heat prior to being placed in the mixer. The apparatus used shall heat the mass uniformly and shall be so arranged as to preclude the possible occurrence of overheated areas which might damage the materials. No frozen aggregates shall be used in the concrete.

For pavement patching, refer to Article 442.06(e) for additional information on temperature control for placement.

- (b) Temperature Control for Structures. The temperature of concrete as placed in the forms shall be not less than 10 °C (50 °F) nor more than 32 °C (90 °F). Aggregates and/or water shall be heated or cooled as necessary to produce concrete within these temperature limits. When insulated forms are used, the temperature of the concrete mixture shall not exceed 25 °C (80 °F). If the Engineer determines that heat of hydration might cause excessive temperatures in the concrete, the concrete shall be placed at a temperature between 10 °C (50 °F) and 15 °C (60 °F), per the Engineer's instructions. When concrete is placed in contact with previously placed concrete, the temperature of the concrete may be increased as required to offset anticipated heat loss.

Concrete shall not be placed when the air temperature is below 7 °C (45 °F) and falling or below 4 °C (40 °F), without permission of the Engineer. When placing of concrete is

authorized during cold weather, the Engineer may require the water and/or the aggregates to be heated to not less than 20 °C (70 °F) nor more than 65 °C (150 °F). The aggregates may be heated by either steam or dry heat prior to being placed in the mixer. The apparatus used shall heat the mass uniformly and shall be so arranged as to preclude the possible occurrence of overheated areas which might damage the materials. No frozen aggregates shall be used in the concrete.

When the temperature of the plastic concrete reaches 30 °C (85 °F), an approved retarding admixture shall be used or the approved water reducing admixture in use shall have its dosage increased by 50 percent over the dosage recommended on the Department's Approved List of Concrete Admixtures for the temperature experienced. The amount of retarding admixture to be used will be determined by the Engineer. This requirement may be waived by the Engineer when fly ash compensated mixtures are used.

- (c) Temperature. The concrete temperature shall be determined according to ASTM C 1064."

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DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE)

Effective: September 1, 2000

Revised: June 1, 2004

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. 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. 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 DBE Directory or most recent addendum.

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 federally-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the 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 firms performing work called for in this contract is eligible to be credited toward fulfillment of the Department's overall goal.

CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. This contract includes a specific DBE utilization goal established by the Department. The goal has been included because the Department has determined that the work of this contract has subcontracting opportunities that may be suitable for performance by DBE companies. This determination is based on an assessment of the type of work, the location of the work, and the availability of DBE companies to do a part of the work. The assessment indicates that, in the absence of unlawful discrimination, and in an arena of fair and open competition, DBE companies can be expected to perform 15 % 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 award this contract to a bidder who makes a good faith effort to meet this goal of DBE participation in the performance of the work. A bidder makes a good faith effort for award consideration if either of the following is done in accordance with the procedures set forth in this Special Provision:

- (a) The bidder documents that firmly committed DBE participation has been obtained to meet the goal; or
- (b) The bidder documents that a good faith effort has been made to meet the goal, even though the effort did not succeed in obtaining enough DBE participation to meet the goal.

DBE LOCATOR REFERENCES. Bidders may consult the DBE Directory as a reference source for DBE companies certified by the Department. In addition, the Department maintains a letting and item specific DBE locator information system whereby DBE companies can register their interest in providing quotes on particular bid items advertised for letting. Information concerning DBE companies willing to quote work for particular contracts may be obtained by contacting the Department's Bureau of Small Business Enterprises at telephone number (217)785-4611, or by visiting the Department's web site at www.dot.state.il.us.

BIDDING PROCEDURES. Compliance with the bidding procedures of this Special Provision is required prior to the award of the contract and the failure of the as-read low bidder to comply will render the bid nonresponsive.

- (a) In order to assure the timely award of the contract, the as-read low bidder must submit a Disadvantaged Business Utilization Plan on Department form SBE 2026 within seven (7) working days after the date of letting. To meet the seven (7) day requirement, the bidder may send the Plan by certified mail or delivery service within the seven (7) working day period. If a question arises concerning the mailing date of a Plan, the mailing date will be established by the U.S. Postal Service postmark on the original certified mail receipt from the U.S. Postal Service or the receipt issued by a delivery service. It is the responsibility of the as-read low bidder to ensure that the postmark or receipt date is affixed within the seven (7) working days if the bidder intends to rely upon mailing or delivery to satisfy the submission day requirement. The Plan is to be submitted 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). It is the responsibility of the bidder to obtain confirmation of telefax delivery. The Department will not accept a Utilization Plan if it does not meet the seven (7) day submittal requirement, and the bid will be declared nonresponsive. In the event the bid is declared nonresponsive due to a failure to submit a Plan or failure to comply with the bidding procedures set forth herein, the Department may elect to cause the forfeiture of the penal sum of the bidder's proposal guaranty, and may deny authorization to bid the project if re-advertised for bids. The Department reserves the right to invite any other bidder to submit a Utilization Plan at any time for award consideration or to extend the time for award.
- (b) The Utilization Plan shall indicate that the bidder either has obtained sufficient DBE participation commitments to meet the contract goal or has not obtained enough DBE participation commitments in spite of a good faith effort to meet the goal. The Utilization Plan shall further provide the name, telephone number and telefax number of a

responsible official of the bidder designated for purposes of notification of 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. The signatures on these forms must be original signatures. All elements of information indicated on the said form shall be provided, including but not limited to the following:

- (1) The name and address of each DBE to be used;
- (2) A description, including pay item numbers, of the commercially useful work to be done by each DBE;
- (3) The price to be paid to each DBE for the identified work specifically stating 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) A commitment statement signed by the bidder and each DBE evidencing availability and intent to perform commercially useful work on the project; and
- (5) If the bidder is a joint venture comprised of DBE firms and non-DBE firms, the plan must also include a clear identification of the portion of the work to be performed by the DBE partner(s).

(d) The contract will not be awarded until the Utilization Plan submitted by the bidder is approved. The Utilization Plan will be approved by the Department if the Plan commits sufficient commercially useful DBE work performance to meet the contract goal. The Utilization Plan will not be approved by the Department if the Plan does not commit sufficient DBE performance to meet the contract goal unless the bidder documents that it made a good faith effort to meet the goal. The good faith procedures of Section VIII of this special provision apply. If the Utilization Plan is not approved because it is deficient in a technical matter, unless waived by the Department, the bidder will be notified and will be allowed no less than a five (5) working day period in order to cure the deficiency.

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% 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 firm does not count toward the DBE goals.
- (b) DBE as a joint venture Contractor: 100% 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% 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 firm does not count toward the DBE goal.
- (d) DBE as a trucker: 100% 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 full value of all such DBE trucks operated using DBE employed drivers. Goal credit will be limited to the value of the reasonable fee or commission received by the DBE if trucks are leased from a non-DBE company.
- (e) DBE as a material supplier:
 - (1) 60% goal credit for the cost of the materials or supplies purchased from a DBE regular dealer.
 - (2) 100% goal credit for the cost of materials or supplies obtained from a DBE manufacturer.
 - (3) 100% credit for the value of reasonable fees and commissions for the procurement of materials and supplies if not a regular dealer or manufacturer.

GOOD FAITH EFFORT PROCEDURES. If the bidder cannot obtain sufficient DBE commitments to meet the contract goal, the bidder must document in the Utilization Plan the good faith efforts made in the attempt 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 could reasonably be expected to obtain sufficient DBE participation. The Department will consider the quality, quantity and intensity of the kinds of efforts that the bidder has made. Mere *pro forma* efforts are not good faith efforts; rather, the bidder is expected to have taken those 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 prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Prime contractors 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 contractor'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 contractor'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 Contractor 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 a good faith effort has not been made, the Department will notify the bidder of that preliminary determination by contacting the responsible company official designated in the Utilization Plan. The preliminary determination shall include a statement of reasons why good faith efforts have not been found, and may include additional good faith efforts that the bidder could take. The notification will designate a five (5) working day period during which the bidder shall take additional efforts. The bidder is not limited by a statement of additional efforts, but may take other action beyond any stated additional efforts in order to obtain additional DBE commitments. The bidder shall submit an amended Utilization Plan if additional DBE commitments to meet the contract goal are secured. If additional DBE commitments sufficient to meet the contract goal are not secured, the bidder shall report the final good faith efforts made in the time allotted. All additional efforts taken by the bidder will be considered as part of the bidder's good faith efforts. If the bidder is not able to meet the goal after taking additional efforts, the Department will make a pre-final determination of the good faith efforts of the bidder and will notify the designated responsible company official of the reasons for an adverse determination.
- (c) The bidder may request administrative reconsideration of a pre-final determination adverse to the bidder within the five (5) working days after 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 pre-final determination shall become final if a request is not made and delivered. A request may provide additional written documentation and/or argument concerning the issue of whether an adequate good faith effort was made to meet the contract goal. In addition, the request shall be considered a consent by the bidder to

extend the time for award. The request will be forwarded to the Department's Reconsideration Officer. The Reconsideration Officer will extend an opportunity to the bidder to meet in person in order to consider all issues of whether the bidder made a good faith effort to meet the goal. After the review by the Reconsideration Officer, the bidder will be sent a written decision within ten (10) working days after receipt of the request for reconsideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. A final decision by the Reconsideration Officer that a good faith effort was made shall approve the Utilization Plan submitted by the bidder and shall clear the contract for award. A final decision that a good faith effort was not made shall render the bid nonresponsive.

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 Plan and award of the contract, the Utilization Plan and individual DBE Participation Statements become part of the contract. If the contractor did not succeed in obtaining enough DBE participation to achieve the advertised contract goal, and the Utilization Plan was approved and contract awarded based upon a determination of good faith, the total dollar value of DBE work calculated in the approved Utilization Plan as a percentage of the awarded contract value shall become the amended contract goal.

- (a) No amendment to the Utilization Plan may be made without prior written approval from the Department's Bureau of Small Business Enterprises. All requests for amendment to the Utilization Plan shall be submitted to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764. Telephone number (217) 785-4611. Telefax number (217) 785-1524.
- (b) All work indicated for performance by an approved DBE shall be performed, managed and supervised by the DBE executing the Participation Statement. The Contractor shall not terminate for convenience a DBE listed in the Utilization Plan and then perform the work of the terminated DBE with its own forces, those of an affiliate or those of another subcontractor, whether DBE or not, without first obtaining the written consent of the Bureau of Small Business Enterprises to amend the Utilization Plan. If a DBE listed in the Utilization Plan is terminated for reasons other than convenience, or fails to complete its work on the contract for any reason, the Contractor shall make good faith efforts to find another DBE to substitute for the terminated DBE. The good faith efforts shall be directed at finding another DBE to perform at least the same amount of work under the contract as the DBE that was terminated, but only to the extent needed to meet the contract goal or the amended contract goal. The Contractor shall notify the Bureau of Small Business Enterprises of any termination for reasons other than convenience, and shall obtain approval for inclusion of the substitute DBE in the Utilization Plan. If good faith efforts following a termination of a DBE for cause are not successful, the Contractor

shall contact the Bureau and provide a full accounting of the efforts undertaken to obtain substitute DBE participation. The Bureau will evaluate the good faith efforts in light of all circumstances surrounding the performance status of the contract, and determine whether the contract goal should be amended.

- (c) 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 therefor to the DBE by the Contractor, but not later than thirty (30) 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 Report on Department form SBE 2115 to the District Engineer. If full and final payment has not been made to the DBE, the Report shall indicate whether a disagreement as to the payment required exists between the Contractor and the DBE or if the Contractor believes that the work has not been satisfactorily completed. If the Contractor does not have the full amount of work indicated in the Utilization Plan performed by the DBE companies indicated in the Plan, the Department will deduct from contract payments to the Contractor the amount of the goal not achieved as liquidated and ascertained damages.
- (d) 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.

80029

EPOXY COATING ON REINFORCEMENT (BDE)

Effective: April 1, 1997

Revised: January 1, 2003

For work outside the limits of bridge approach pavement, all references to epoxy coating in the Highway Standards and Standard Specifications for reinforcement, tie bars and chair supports will not apply for pavement, shoulders, curb, gutter, combination curb and gutter and median.

31578

EROSION AND SEDIMENT CONTROL DEFICIENCY DEDUCTION (BDE)

Effective: August 1, 2001

Revised: November 1, 2001

When the Engineer is notified or determines an erosion and/or sediment control deficiency(s) exists, he/she will direct the Contractor in writing to correct the deficiency. The Contractor shall then correct the deficiency within 24 hours. The deficiency may be any lack of repair, maintenance, or implementation of erosion and/or sediment control devices included in the contract, or any failure to comply with the conditions of the National Pollutant Discharge Elimination System (NPDES) Storm Water Permit for Construction Site Activities.

If the Contractor fails to correct the deficiency(s) within 24 hours, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency exists. The time period will begin with the initial written notification to the Contractor and end with the Engineer's acceptance of the corrected work. The per calendar day deduction will be either \$1000.00 or 0.05 percent of the awarded contract value, whichever is greater.

If the Contractor fails to respond, the Engineer may correct the deficiencies and deduct the cost from monies due or which may become due the Contractor. This corrective action shall in no way relieve the Contractor of his/her contractual requirements or responsibilities.

80055

EXPANSION JOINTS (BDE)

Effective: August 1, 2003

Add the following paragraph after the second paragraph of Article 420.10(e) of the Standard Specifications:

"After the dowel bars are oiled, plastic expansion caps shall be secured to the bars maintaining a minimum expansion gap of 50 mm (2 in.) between the end of the bar and the end of the cap. The caps shall fit snugly on the bar and the closed end shall be watertight. For expansion joints formed using dowel bar basket assemblies, the caps shall be installed on the alternating free ends of the bars. For expansion joints formed using a construction header, the caps shall be installed on the exposed end of each bar once the header has been removed and the joint filler material has been installed."

80103

FLAGGER VESTS (BDE)

Effective: April 1, 2003

Revised: August 1, 2005

Revise the first sentence of Article 701.04(c)(1) of the Standard Specifications to read:

"The flagger shall be stationed to the satisfaction of the Engineer and be equipped with a fluorescent orange, fluorescent yellow/green or a combination of fluorescent orange and fluorescent yellow/green vest meeting the requirements of the American National Standards Institute specification ANSI/ISEA 107-1999 for Conspicuity Class 2 garments and approved flagger traffic control signs conforming to Standard 702001 and Article 702.05(e)."

Revise Article 701.04(c)(6) of the Standard Specifications to read:

"(6) Nighttime Flagging. Flaggers shall be illuminated by an overhead light source providing a minimum vertical illuminance of 108 lux (10 fc) measured 300 mm (1 ft) out from the flagger's chest. The bottom of any luminaire shall be a minimum of 3 m (10 ft) above the pavement. Luminaire(s) shall be shielded to minimize glare to approaching traffic and trespass light to adjoining properties.

The flagger vest shall be a fluorescent orange or fluorescent orange and fluorescent yellow/green vest meeting the requirements of the American National Standards Institute specification ANSI/ISEA 107-1999 for Conspicuity Class 3 garments."

80101

FREEZE-THAW RATING (BDE)

Effective: November 1, 2002

Revise the first sentence of Article 1004.02(f) of the Standard Specifications to read:

“When coarse aggregate is used to produce portland cement concrete for base course, base course widening, pavement, driveway pavement, sidewalk, shoulders, curb, gutter, combination curb and gutter, median, paved ditch or their repair using concrete, the gradation permitted will be determined from the results of the Department’s Freeze-Thaw Test.”

80079

HAND VIBRATOR (BDE)

Effective: November 1, 2003

Add the following paragraph to Article 1103.17(a) of the Standard Specifications:

"The vibrator shall have a non-metallic head for areas containing epoxy coated reinforcement. The head shall be coated by the manufacturer. The hardness of the non-metallic head shall be less than the epoxy coated reinforcement, resulting in no damage to the epoxy coating. Slip-on covers will not be allowed."

80054

IMPACT ATTENUATORS, TEMPORARY (BDE)

Effective: November 1, 2003
Revised: April 1, 2004

Description. This work shall consist of furnishing, installing, maintaining, and removing temporary impact attenuators of the category and test level specified.

Materials. Materials shall meet the requirements of the impact attenuator manufacturer and the following:

Item	Article/Section
(a) Fine Aggregate (Note 1)	1003.01
(b) Steel Posts, Structural Shapes, and Plates	1006.04
(c) Rail Elements, End Section Plates, and Splice Plates	1006.25
(d) Bolts, Nuts, Washers and Hardware	1006.25
(e) Hollow Structural Tubing	1006.27(b)
(f) Wood Posts and Wood Blockouts.....	1007.01, 1007.02, 1007.06
(g) Preservative Treatment	1007.12
(h) Rapid Set Mortar (Note 2)	

Note 1. Fine aggregate shall be FA-1 or FA-2, Class A quality. The sand shall be unbagged and shall have a maximum moisture content of five percent.

Note 2. Rapid set mortar shall be obtained from the Department's approved list of Packaged, Dry, Rapid Hardening Cementitious Materials for Concrete Repairs. For a rapid set mortar mixture, one part packaged rapid set cement shall be combined with two parts fine aggregate, by volume or a packaged rapid set mortar shall be used. Mixing of the rapid set mortar shall be according to the manufacturer's instructions.

CONSTRUCTION REQUIREMENTS

General. Impact Attenuators shall meet the testing criteria contained in National Cooperative Highway Research Program (NCHRP) Report 350 for the test level specified and shall be on the Department's approved list.

Installation. Regrading of slopes or approaches for the installation shall be as shown on the plans.

Attenuator bases, when required by the manufacturer, shall be constructed on a prepared subgrade according to the manufacturer's specifications. The surface of the base shall be slightly sloped or crowned to facilitate drainage.

Impact attenuators shall be installed according to the manufacturer's specifications and include all necessary transitions between the impact attenuator and the item to which it is attached.

When water filled attenuators are used between November 1 and April 15, they shall contain anti-freeze according to the manufacturer's recommendations.

Markings. Sand module impact attenuators shall be striped with alternating reflectorized Type AA or Type AP fluorescent orange and reflectorized white horizontal, circumferential stripes. There shall be at least two of each stripe on each module.

Other types of impact attenuators shall have a terminal marker applied to their nose and reflectors along their sides.

Maintenance. All maintenance of the impact attenuators shall be the responsibility of the Contractor until removal is directed by the Engineer.

Relocate. When relocation of temporary impact attenuators is specified, they shall be removed, relocated and reinstalled at the new location. The reinstallation requirements shall be the same as those for a new installation.

Removal. When the Engineer determines the temporary impact attenuators are no longer required, the installation shall be dismantled with all hardware becoming the property of the Contractor.

Surplus material shall be disposed of according to Article 202.03. Anti-freeze, when present, shall be disposed of/recycled according to local ordinances.

When impact attenuators have been anchored to the pavement, the anchor holes shall be repaired with rapid set mortar. Only enough water to permit placement and consolidation by rodding shall be used and the material shall be struck-off flush.

Method of Measurement. This work will be measured for payment as each, where each is defined as one complete installation.

Basis of Payment. This work will be paid for at the contract unit price per each for IMPACT ATTENUATORS, TEMPORARY (FULLY REDIRECTIVE, NARROW); IMPACT ATTENUATORS, TEMPORARY (FULLY REDIRECTIVE, WIDE); IMPACT ATTENUATORS, TEMPORARY (SEVERE USE, NARROW); IMPACT ATTENUATORS, TEMPORARY (SEVERE USE, WIDE); or IMPACT ATTENUATORS, TEMPORARY (NON-REDIRECTIVE) of the test level specified.

Relocation of the devices will be paid for at the contract unit price per each for IMPACT ATTENUATORS, RELOCATE (FULLY REDIRECTIVE); IMPACT ATTENUATORS, RELOCATE (SEVERE USE); or IMPACT ATTENUATORS, RELOCATE (NON-REDIRECTIVE); of the test level specified.

Regrading of slopes or approaches will be paid for according to Section 202 and/or Section 204 of the Standard Specifications.

80110

125

INLET FILTERS (BDE)

Effective: August 1, 2003

Add the following to Article 280.02 of the Standard Specifications:

“(k) Inlet Filters..... 1081.15(h)”

Add the following paragraph after the first paragraph of Article 280.04(c) of the Standard Specifications:

“When specified, drainage structures shall be protected with inlet filters. Inlet filters shall be installed either directly on the drainage structure or under the grate of the drainage structure resting on the lip of the frame. The fabric bag shall hang down into the drainage structure. Prior to ordering materials, the Contractor shall determine the size and shape of the various drainage structures being protected.”

Revise Article 280.07(d) of the Standard Specifications to read:

“(d) Inlet and Pipe Protection. This work will be paid for at the contract unit price per each for INLET AND PIPE PROTECTION.

Protection of drainage structures with inlet filters will be paid for at the contract unit price per each for INLET FILTERS.”

Add the following to Article 1081.15 of the Standard Specifications:

“(h) Inlet Filters. An inlet filter shall consist of a steel frame with a two piece geotextile fabric bag attached with a stainless steel band and locking cap that is suspended from the frame. A clean, used bag and a used steel frame in good condition meeting the approval of the Engineer may be substituted for new materials. Materials for the inlet filter assembly shall conform to the following requirements:

(1) Frame Construction. Steel shall conform to Article 1006.04.

Frames designed to fit under a grate shall include an overflow feature that is welded to the frame's ring. The overflow feature shall be designed to allow full flow of water into the structure when the filter bag is full. The dimensions of the frame shall allow the drainage structure grate to fit into the inlet filter assembly frame opening. The assembly frame shall rest on the inside lip of the drainage structure frame for the full variety of existing and proposed drainage structure frames that are present on this contract. The inlet filter assembly frame shall not cause the drainage structure grate to extend higher than 6 mm (1/4 in.) above the drainage structure frame.

- (2) Grate Lock. When the inlet is located in a traffic lane, a grate lock shall be used to secure the grate to the frame. The grate lock shall conform to the manufacturer's requirements for materials and installation.
- (3) Geotextile Fabric Bag. The sediment bag shall be constructed of an inner filter bag and an outer reinforcement bag.
- a. Inner Filter Bag. The inner filter bag shall be constructed of a polypropylene geotextile fabric with a minimum silt and debris capacity of 0.06 cu m (2.0 cu ft). The bag shall conform to the following requirements:

Inner Filter Bag		
Material Property	Test Method	Minimum Avg. Roll Value
Grab Tensile Strength	ASTM D 4632	45 kg (100 lb)
Grab Tensile Elongation	ASTM D 4632	50%
Puncture Strength	ASTM D 4833	29 kg (65 lb)
Trapezoidal Tear	ASTM D 4533	20 kg (45 lb)
UV Resistance	ASTM D 4355	70% at 500 hours
Actual Open Size	ASTM D 1420	212 μ m (No. 70 sieve US)
Permittivity	ASTM D 4491	2.0/sec
Water Flow Rate	ASTM D 4491	5900 Lpm/sq m (145 gpm/sq ft)

- b. Outer Reinforcement Bag. The outer reinforcement bag shall be constructed of polyester mesh material that conforms to the following requirements:

Outer Reinforcement Bag		
Material Property	Test Method	Value
Content	ASTM D 629	Polyester
Weight	ASTM D 3776	155 g/sq m (4.55 oz/sq yd) \pm 15%
Whales (holes)	ASTM D 3887	7.5 \pm 2 holes/25 mm (1 in.)
Chorses (holes)	ASTM D 3887	15.5 \pm 2holes/25 mm (1 in.)
Instronball Burst	ASTM D 3887	830 kPa (120 psi) min.
Thickness	ASTM D 1777	1.0 \pm 0.1 mm (0.040 \pm 0.005 in.)

- (4) Certification. The manufacturer shall furnish a certification with each shipment of inlet filters, stating the amount of product furnished, and that the material complies with these requirements."

80104

LIGHT EMITTING DIODE (LED) SIGNAL HEAD (BDE)

Effective: April 1, 2002
Revised: August 1, 2003

Add the following paragraph to the end of Article 802.03 of the Standard Specifications:

"The warranty for light emitting diode (LED) modules, including the maintained minimum luminous intensities, shall cover a minimum of 60 months from the date of delivery."

Revise Article 880.01 of the Standard Specifications to read:

"880.01 Description. This work shall consist of furnishing and installing a conventional signal head, optically programmed signal head or light emitting diode (LED) signal head."

Revise Article 880.02(a) of the Standard Specifications to read:

"(a) Signal Heads.....1078.01"

Revise the first sentence of the first paragraph of Article 880.03 of the Standard Specifications to read:

"The signal head shall be installed on a post, bracket, span wire or mast arm as shown on the plans."

Revise the first paragraph of Article 880.04 of the Standard Specifications to read:

"880.04 Basis of Payment. This work will be paid for at the contract unit price each for SIGNAL HEAD, OPTICALLY PROGRAMMED SIGNAL HEAD, or SIGNAL HEAD, LED of the type specified and of the material type when specified."

Revise Article 1078.01 of the Standard Specifications to read:

"1078.01 Signal Head, Optically Programmed Signal Head and Light Emitting Diode (LED) Signal Head."

Add the following to Article 1078.01(c) of the Standard Specifications:

"(3) The LED signal section shall be according to the following:

- a. General Requirements. The LED signal head shall meet the requirements of the Institute of Transportation Engineers (ITE) interim LED purchase specification, "Vehicle Traffic Control Signal Heads, Part 2: LED Vehicle Traffic Signal Modules", or applicable successor ITE specifications, except as modified herein. The LEDs utilized in the modules shall not be Aluminum Gallium Arsenide (AlGaAs) material technology.

- b. Physical and Mechanical Requirements. The power supply for the LED module shall be integrated with the unit.
- c. Photometric Requirements. The candlepower values for yellow 300 mm (12 in.) circular modules shall be equal to the corresponding values for green 300 mm (12 in.) circular modules as listed in Table 1 of Section 4 of the aforementioned ITE specification based on normal use in traffic signal operation over the operating temperature range.

The illuminated portion of the arrow module shall be uniformly and completely dispersed with the LEDs.

- d. Electrical Requirements. When applicable to the particular module type, the LED signal module shall be EPA Energy Star qualified. For yellow 300 mm (12 in.) circular and arrow modules, the wattage requirements shall be as follows:

Module Type	Maximum Watts (W) at 74 °C (165 °F)	Nominal Watts (W) at 25 °C (77 °F)
300 mm (12 in.) Yellow Circular	25	22
300 mm (12 in.) Yellow Arrow	12	10

The individual LEDs shall be wired such that a catastrophic loss or the failure of one LED will result in the loss of not more than 5 percent of the signal module light output.

- e. Warranty. The LED modules shall be warrantied according to Article 802.03. The maintained minimum intensities for 300 mm (12 in.) arrow modules throughout the warranty period under the operating temperature and voltage range, and at the end of the warranty period shall not be less than the following values:

Module Type	Maintained Minimum Intensities (cd/sq m)
Red Arrow	5,000
Yellow Arrow	11,000
Green Arrow	11,000"

80067

MULCHING SEEDED AREAS (BDE)

Effective: January 1, 2005

Delete Article 251.02(a) of the Standard Specifications.

Add the following to Article 251.02 of the Standard Specifications:

“(h) Compost 1081.05(b)”

Delete Article 251.03(b)(1) of the Standard Specifications.

Add the following to Article 251.03 of the Standard Specifications:

“(d) Method 4. This method shall consist of applying compost combined with a performance additive designed to bind/stabilize the compost. The compost/performance additive mixture shall be applied to the surface of the slope using a pneumatic blower at a depth of 50 mm (2 in.)”

Revise the first sentence of the first paragraph of Article 251.06(b) of the Standard Specifications to read:

“Mulch Methods 1, 2, 3, and 4 will be measured for payment in hectares (acres) of surface area mulched.”

Revise Article 251.07 of the Standard Specifications to read:

“**251.07 Basis of Payment.** This work will be paid for at the contract unit price per hectare (acre) for MULCH, METHOD 1; MULCH, METHOD 2; MULCH, METHOD 3; or MULCH, METHOD 4; and at the contract unit price per square meter (square yard) for EROSION CONTROL BLANKET or HEAVY DUTY EROSION CONTROL BLANKET.”

Add the following after the second paragraph of Article 1081.05(b) of the Standard Specifications:

“Chemical Compost Binder. Chemical compost binder shall be a commercially available product specifically recommended by the manufacturer for use as a compost stabilizer.

The compost binder shall be nonstaining and nontoxic to vegetation and the environment. It shall disperse evenly and rapidly and remain in suspension when agitated in water.

Prior to use of the compost binder, the Contractor shall submit a notarized certification by the manufacturer stating that it meets these requirements. Chemical compost binder shall be packaged, stored, and shipped according to the manufacturer’s recommendations with the net quantity plainly shown on each package or container.”

MULTILANE PAVEMENT PATCHING (BDE)

Effective: November 1, 2002

Pavement broken and holes opened for patching shall be completed prior to weekend or holiday periods. Should delays of any type or for any reason prevent the completion of the work, temporary patches shall be constructed. Material able to support the average daily traffic and meeting the approval of the Engineer shall be used for the temporary patches. The cost of furnishing, placing, maintaining, removing and disposing of the temporary work, including traffic control, shall be the responsibility of the Contractor.

80082

PARTIAL PAYMENTS (BDE)

Effective: September 1, 2003

Revise Article 109.07 of the Standard Specifications to read:

"109.07 Partial Payments. Partial payments will be made as follows:

- (a) **Progress Payments.** At least once each month, the Engineer will make a written estimate of the amount of work performed in accordance with the contract, and the value thereof at the contract unit prices. The amount of the estimate approved as due for payment will be vouchered by the Department and presented to the State Comptroller for payment. No amount less than \$1000.00 will be approved for payment other than the final payment.

The failure to perform any requirement, obligation, or term of the contract by the Contractor shall be reason for withholding any progress payments until the Department determines that compliance has been achieved. Furthermore, progress payments may be reduced by liens filed pursuant to Section 23(c) of the Mechanics Lien Act, 770 ILCS 60/23(c).

- (b) **Material Allowances.** At the discretion of the Department, payment may be made for materials, prior to their use in the work, when satisfactory evidence is presented by the Contractor. Satisfactory evidence includes justification for the allowance (to expedite the work, meet project schedules, regional or national material shortages, etc.), documentation of material and transportation costs, and evidence that such material is properly stored on the project or at a secure location acceptable and accessible to the Department.

Material allowances will be considered only for nonperishable materials when the cost, including transportation, exceeds \$10,000 and such materials are not expected to be utilized within 60 days of the request for the allowance. For contracts valued under \$500,000, the minimum \$10,000 requirement may be met by combining the principal (material) product of no more than two contract items. An exception to this two item limitation may be considered for any contract regardless of value for items in which material (products) are similar except for type and/or size.

Material allowances shall not exceed the value of the contract items in which used and shall not include the cost of installation or related markups. Amounts paid by the Department for material allowances will be deducted from estimates due the Contractor as the material is used. Two-sided copies of the Contractor's cancelled checks for materials and transportation must be furnished to the Department within 60 days of payment of the allowances or the amounts will be reclaimed by the Department."

PAVEMENT AND SHOULDER RESURFACING (BDE)

Effective: February 1, 2000

Revised: July 1, 2004

Revise Article 406.20 of the Standard Specifications to read:

"406.20 Resurfacing Sequence. The resurfacing operations shall satisfy the following requirements:

- (a) Before paving in a lane, the adjacent lane and its shoulder must be at the same elevation.
- (b) Each lift of resurfacing shall be completed, including shoulders, before the next lift is begun.
- (c) Elevation differences between lanes shall be eliminated within twelve calendar days.

Revise the first paragraph of Article 406.23 of the Standard Specifications to read:

"406.23 Method of Measurement. This work will be measured for payment according to the following:"

Revise the first sentence of the ninth paragraph of Article 406.23 of the Standard Specifications to read:

"When a Superpave Binder and Surface Course mixture is used on shoulders and is placed simultaneously with the traffic lane as specified in Section 482, the quantity of bituminous mixture placed on the traffic lane that will be paid for will be limited to a calculated tonnage based upon actual mat width and length, plan thickness or a revised thickness authorized by the Engineer, and design mix weight per millimeter (inch) of thickness."

Delete the tenth paragraph of Article 406.23 of the Standard Specifications.

Revise the second paragraph of Article 482.06 of the Standard Specifications to read:

"On pavement and shoulder resurfacing projects, the resurfacing sequence shall be according to Article 406.20. When the Superpave mixture option is used, the shoulders may be placed, at the Contractor's option, simultaneously with the adjacent traffic lane for both the binder and surface courses, provided the specified density, thickness and cross slope of both the pavement and shoulder can be satisfactorily obtained."

80013

PAVEMENT THICKNESS DETERMINATION FOR PAYMENT (BDE)

Effective: April 1, 1999

Revised: January 1, 2004

Description. This work shall consist of determining pavement thickness for payment for full depth bituminous concrete and all pcc pavements. Pavement pay items that individually contain at least 840 sq m (1000 sq yd) of contiguous pavement will be subject to this Special Provision with the following exclusions: temporary pavements; variable width pavement; radius returns and side streets less than 125 m (400 ft) in length; and turn lanes of constant width less than 125 m (400 ft) in length. The areas of pavement excluded from the pay adjustment as described in this Special Provision will be cored according to Article 407.10 of the Standard Specifications. Temporary pavements are defined as pavements constructed and removed under this contract.

Materials. Rapid set materials shall be obtained from the Department's approved list of Packaged, Dry, Rapid Hardening Cementitious Materials For Concrete Repairs. Coarse aggregate may be added to the mortar if allowed by the manufacturer's instructions on the package. Mixing shall be according to the manufacture's recommendations.

Equipment. Cores shall be taken utilizing an approved coring machine. The cores shall have a diameter of 50 mm (2 in.). The cores shall be measured utilizing an approved measuring device.

CONSTRUCTION REQUIREMENTS

Tolerance in Thickness. Determination of the pavement thickness shall be performed after the pavement surface tests and all corrective grinding are complete according to Article 407.09 of the Standard Specifications. Adjustments made in the contract unit price for pavement thickness will be in addition to and independent of those made for the Profile Index.

The pavement will be divided into approximately equal lots of not more than 1500 m (5000 ft) in length. When the length of a continuous strip of pavement is less than 1500 m (5000 ft), these short lengths of pavement, ramps, turn lanes, and other short sections of continuous pavement shall be grouped together to form lots of approximately 1500 m (5000 ft) in length. Short segments between structures will be measured continuously with the structure segments omitted. Each lot will be subdivided into ten equal sublots. The width of a subplot and lot will be the width from the pavement edge to the adjacent lane line, from one lane line to the next, or between pavement edges for single-lane pavements.

Fifty millimeter (Two inch) cores shall be taken from the pavement by the Contractor at random locations selected by the Engineer. When computing the thickness of a lot, one core will be taken per subplot. Core locations will be specified by the Engineer prior to beginning the coring operations.

The Contractor and the Engineer shall witness the coring operations, the measurement, and recording of the cores. Core measurements will be determined immediately upon removal from

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the core bit and prior to moving to the next core location. Upon concurrence of the length, the core samples may be discarded.

Patching Holes. Upon completion of coring, all core holes shall be filled with a rapid set mortar or concrete. Only enough water to permit placement and consolidation by rodding shall be used, and the material shall be struck-off flush with the adjacent pavement.

For a rapid set mortar mixture, one part packaged rapid set cement shall be combined with two parts fine aggregate, by volume; or a packaged rapid set mortar shall be used. For a rapid set concrete mixture, a packaged rapid set mortar shall be combined with coarse aggregate according to the manufacturer's instructions or a packaged rapid set concrete shall be used. Mixing of a rapid set mortar or concrete shall be according to the manufacturer's instructions.

Deficient Sublot. When the thickness of the core in a sublot is deficient by more than ten percent of plan thickness, the Contractor will have the option of taking three additional cores selected at random by the Engineer within the same sublot at the Contractor's expense. The thickness of the additional three cores will be averaged with the original core thickness. When the average thickness shows the sublot to be deficient by ten percent or less, no additional action is necessary. If the Contractor chooses not to take additional cores, the pavement in the sublot shall be removed and replaced at the Contractor's expense. When additional cores are taken and the average thickness of the additional cores show the sublot to be deficient by more than ten percent, the pavement in that sublot shall be removed and replaced at the Contractor's expense. When requested in writing by the Contractor, the Engineer, at his/her option, may permit in writing such thin pavement to remain in place. For Bituminous Concrete Pavement (Full Depth) allowed to remain in place, additional lift(s) may be placed, at the Contractor's expense, to bring the deficient pavement to plan thickness when the Engineer determines grade control conditions will permit such lift(s). The material thickness(es), areas to be overlaid, and method of placement used for additional lift(s) will be approved by the Engineer. When the thin pavement is removed and replaced or additional lifts are placed, the replacement pavement will be retested for thickness at the Contractor's expense. When the thin pavement is left in place and no additional lift(s) are placed, no payment will be made for the deficient pavement sublot. The thickness of the original core taken in the sublot will be used in determining the payment for the entire lot and no adjustment to the pay factor will be made for any corrective action taken.

Deficient Lot. After analyzing the cores, the Percent Within Limits will be calculated. A lot of pavement represented by the Percent Within Limits (PWL) of 60 percent or less, shall be removed and replaced at the Contractor's expense. When requested in writing by the Contractor, the Engineer, at his/her option, may permit in writing such pavement to remain in place. For Bituminous Concrete Pavement (Full Depth), allowed to remain in place, additional lift(s) may be placed, at the Contractor's expense, to bring the deficient pavement to plan thickness when the Engineer determines grade control conditions will permit such lift(s). The material, thickness(es), areas to be overlaid and method of placement used for the additional lift(s) will be approved by the Engineer. After either corrective action, the Contractor shall core the lot according to the "Coring Procedures" at no additional cost to the Department. The PWL will then be recalculated for the lot, however, the pay factor for the lot will be a maximum of 100 percent. When requested in writing by the Contractor, the Engineer, at his/her option, may

permit in writing, the lot to remain in place. When the lot is left in place and no additional lifts are placed the pay factor for the lot will be based on the calculated PWL.

Right of Discovery. When the Engineer has reason to believe the random core selection process will not accurately represent the true conditions of the work, he/she may order cores in addition to those specified. The additional cores shall be taken at specific locations determined by the Engineer. The Engineer will provide notice to the Contractor containing an explanation of the reasons for his/her action. These additional cores and locations will be determined prior to commencement of coring operations. When the additional cores show the pavement to be deficient by more than ten percent, additional cores shall be taken at locations determined by the Engineer to determine the limits of the deficient pavement area. The deficient pavement area will be defined as the area between two acceptable cores. An acceptable core is a core with a thickness of 90 percent or more of plan thickness. The defined pavement area shall be removed and replaced at the Contractor's expense. When requested by the Contractor, the Engineer, at his/her option, may permit in writing such thin pavement to remain in place. On Bituminous Concrete Pavement (Full Depth) allowed to remain in place, additional lift(s) may be placed to bring the deficient pavement to plan thickness when the Engineer determines that grade control conditions will permit such lift(s). The material, thickness(es), areas to be overlaid and method of placement for the additional lift(s) will be approved by the Engineer. When the thin pavement is removed and replaced or additional lifts are placed, the replacement pavement will be retested for thickness at the Contractor's expense. When the thin pavement is left in place and no additional lift(s) are placed, no payment will be made for the deficient pavement. When the additional cores show the pavement to be deficient by ten percent or less the additional cores will be paid for according to Article 109.04. When the additional cores show the pavement to be deficient by more than ten percent the additional cores taken in the deficient area shall be at the Contractor's expense.

Profile Index Adjustment. After any section of pavement is removed and replaced or any additional lifts are added, the corrected areas shall be tested for pavement smoothness and any necessary Profile Index adjustments and/or corrections will be made based on these final profile readings. Such surface testing shall be performed at the Contractor's expense.

Core Analysis. Cores will be analyzed according to the following:

(a) Definition:

- x_i = Individual values (core lengths) under consideration
- n = Number of individual values under consideration
(10 per lot)

- \bar{x} = Average of the values under consideration
- LSL = Lower Specification Limit (LSL = 0.98 plan thickness for pavement)
- Q_L = Lower Quality Index
- S = Sample Standard Deviation
- PWL = Percent Within Limits

Determine \bar{x} for the lot to the nearest two decimal places.

Compute the sample standard deviation to the nearest three decimal places using:

$$S = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}} \quad \text{where} \quad \sum (x_i - \bar{x})^2 = (x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + \dots + (x_{10} - \bar{x})^2$$

Determine the Lower Quality Index to the nearest two decimal places using:

$$Q_L = \frac{(\bar{x} - LSL)}{S}$$

Determine the percentage that will fall above the Lower Specification Limit (LSL) by going to the attached Table and utilizing calculated Q_L . Read the appropriate PWL value from the Table. For Q_L values less than zero the value shown in the table must be subtracted from 100 to obtain PWL.

Pay Adjustment. The following pay adjustment equation will be used to determine (to the nearest two decimal places) the pay factor for each lot.

Pay Factor (PF) in percent = $55 + 0.5 (\text{PWL})$

If \bar{x} for a lot is less than the plan thickness, the maximum pay factor for that lot will be 100 percent.

Total Payment. The payment will be based on the appropriate pay items in Sections 407, 420, and 421. The final payment will be adjusted according to the following equation:

Total Payment = $\text{TPF}[\text{CUP} (\text{TOTPAVT} - \text{DEFFPAVT})]$

TPF = Total Pay Factor

CUP = Contract Unit Price

TOTPAVT = Area of Pavement Subject to Coring

DEFFPAVT = Area of Deficient Pavement

The TPF for the entire pavement will be the average of the PF for all the lots, however, not more than 102 percent of plan quantity will be paid.

Deficient pavement is defined as an area of pavement represented by a subplot deficient by more than 10 percent which is left in place with no additional thickness added.

All work involved in determining the total payment will be included in the contract unit prices of the pay items involved.

53600

Percent Within Limits

Quality Index (Q)*	Percent in Limits (PWL)	Quality Index (Q)*	Percent in Limits (PWL)	Quality Index (Q)*	Percent in Limits (PWL)	Quality Index (Q)*	Percent in Limits (PWL)	Quality Index (Q)*	Percent in Limits (PWL)	Quality Index (Q)*	Percent in Limits (PWL)	Quality Index (Q)*	Percent in Limits (PWL)
0.00	50.00	.040	65.07	0.80	78.43	1.20	88.76	1.60	95.45	2.00	98.83	2.40	99.88
0.01	50.38	0.41	65.43	0.81	78.72	1.21	88.97	1.61	95.58	2.01	98.88	2.41	99.90
0.02	50.77	0.42	65.79	0.82	79.02	1.22	89.17	1.62	95.70	2.02	98.92	2.42	99.91
0.03	51.15	0.43	66.15	0.83	79.31	1.23	89.38	1.63	95.81	2.03	98.97	2.43	99.91
0.04	51.54	0.44	66.51	0.84	79.61	1.24	89.58	1.64	95.93	2.04	99.01	2.44	99.92
0.05	51.92	0.45	66.87	0.85	79.90	1.25	89.79	1.65	96.05	2.05	99.06	2.45	99.93
0.06	52.30	0.46	67.22	0.86	80.19	1.26	89.99	1.66	96.16	2.06	99.10	2.46	99.94
0.07	52.69	0.47	67.57	0.87	80.47	1.27	90.19	1.67	96.27	2.07	99.14	2.47	99.94
0.08	53.07	0.48	67.93	0.88	80.76	1.28	90.38	1.68	96.37	2.08	99.18	2.48	99.95
0.09	53.46	0.49	68.28	0.89	81.04	1.29	90.58	1.69	96.48	2.09	99.22	2.49	99.95
0.10	53.84	0.50	68.63	0.90	81.33	1.30	90.78	1.70	96.59	2.10	99.26	2.50	99.96
0.11	54.22	0.51	68.98	0.91	81.61	1.31	90.98	1.71	96.69	2.11	99.29	2.51	99.96
0.12	54.60	0.52	69.32	0.92	81.89	1.32	91.15	1.72	96.78	2.12	99.32	2.52	99.97
0.13	54.99	0.53	69.67	0.93	82.16	1.33	91.33	1.73	96.88	2.13	99.36	2.53	99.97
0.14	55.37	0.54	70.01	0.94	82.43	1.34	91.52	1.74	96.97	2.14	99.39	2.54	99.98
0.15	55.75	0.55	70.36	0.95	82.71	1.35	91.70	1.75	97.07	2.15	99.42	2.55	99.98
0.16	56.13	0.56	70.70	0.96	82.97	1.36	91.87	1.76	97.16	2.16	99.45	2.56	99.98
0.17	56.51	0.57	71.04	0.97	83.24	1.37	92.04	1.77	97.25	2.17	99.48	2.57	99.98
0.18	56.89	0.58	71.38	0.98	83.50	1.38	92.22	1.78	97.33	2.18	99.50	2.58	99.99
0.19	57.27	0.59	71.72	0.99	83.77	1.39	92.39	1.79	97.42	2.19	99.53	2.59	99.99
0.20	57.65	0.60	72.06	1.00	84.03	1.40	92.56	1.80	97.51	2.20	99.56	2.60	99.99
0.21	58.03	0.61	72.39	1.01	84.28	1.41	92.72	1.81	97.59	2.21	99.58	2.61	99.99
0.22	58.40	0.62	72.72	1.02	84.53	1.42	92.88	1.82	97.67	2.22	99.61	2.62	99.99
0.23	58.78	0.63	73.06	1.03	84.79	1.43	93.05	1.83	97.75	2.23	99.63	2.63	100.00
0.24	59.15	0.64	73.39	1.04	85.04	1.44	93.21	1.84	97.83	2.22	99.66	2.64	100.00
0.25	59.53	0.65	73.72	1.05	85.29	1.45	93.37	1.85	97.91	2.25	99.68	≥ 2.65	100.00
0.26	59.90	0.66	74.04	1.06	85.53	1.46	93.52	1.86	97.98	2.26	99.70		
0.27	60.28	0.67	74.36	1.07	85.77	1.47	93.67	1.87	98.05	2.27	99.72		
0.28	60.65	0.68	74.69	1.08	86.02	1.48	93.83	1.88	98.11	2.28	99.73		
0.29	61.03	0.69	75.01	1.09	86.26	1.49	93.98	1.89	98.18	2.29	99.75		
0.30	61.40	0.70	75.33	1.10	86.50	1.50	94.13	1.90	98.25	2.30	99.77		
0.31	61.77	0.71	75.64	1.11	86.73	1.51	94.27	1.91	98.31	2.31	99.78		
0.32	62.14	0.72	75.96	1.12	86.96	1.52	94.41	1.92	98.37	2.32	99.80		
0.33	62.51	0.73	76.27	1.13	87.20	1.53	94.54	1.93	98.44	2.33	99.81		
0.34	62.88	0.74	76.59	1.14	87.43	1.54	94.68	1.94	98.50	2.34	99.83		
0.35	63.25	0.75	76.90	1.15	87.66	1.55	94.82	1.95	98.56	2.35	99.84		
0.36	63.61	0.76	77.21	1.16	87.88	1.56	94.95	1.96	98.61	2.36	99.85		
0.37	63.98	0.77	77.51	1.17	88.10	1.57	95.08	1.97	98.67	2.37	99.86		
0.38	64.34	0.78	77.82	1.18	88.32	1.58	95.20	1.98	98.72	2.38	99.87		
0.39	64.71	0.79	78.12	1.19	88.54	1.59	95.33	1.99	98.78	2.39	99.88		

*For Q values less than zero, subtract the table value from 100 to obtain PWL.

PAYMENTS TO SUBCONTRACTORS (BDE)

Effective: June 1, 2000

Revised: September 1, 2003

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 no later than 30 days from the receipt of each payment made to the Contractor.

State law addresses the timing of payments to be made to subcontractors. Section 7 of the Prompt Payment Act, 30 ILCS 540/7, generally requires that when a Contractor receives any payment from the Department, the Contractor is required to make corresponding, proportional payments to each subcontractor performing work within 15 calendar days after receipt of the state payment. Section 7 of the State Prompt Payment Act further provides that interest in the amount of 2% per month, in addition to the payment due, shall be paid to any subcontractor 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 throughout the contracting chain.

This Special Provision establishes the required federal contract clause, and adopts the 15 calendar day requirement of the Act for purposes of compliance with the federal regulation regarding payments to subcontractors. This contract is subject to the following payment obligations.

As progress payments are made to the Contractor in accordance with Article 109.07 of the Standard Specifications for Road and Bridge Construction, the Contractor shall make a corresponding partial payment within 15 calendar days to each subcontractor in proportion to the work satisfactorily completed by each subcontractor. The proportionate amount of partial payment due to each subcontractor 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 shall be paid in full within 15 calendar days after the subcontractor's work has been satisfactorily completed. The Contractor shall hold no retainage from the subcontractors.

This Special Provision does not create any rights in favor of any subcontractor against the State of Illinois or authorize any cause of action against the State of Illinois on account of any payment, nonpayment, delayed payment or interest claimed by application of the State Prompt Payment Act. The Department will neither determine the reasonableness of any cause for delay of payment nor enforce any claim to payment, including interest. Moreover, the Department will not approve any delay or postponement of the 15 day requirement. State law creates 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 in accordance with the Public Construction Bond Act, 30 ILCS 550.

80022

PERSONAL PROTECTIVE EQUIPMENT (BDE)

Effective: July 1, 2004

All personnel, excluding flaggers, working outside of a vehicle (car or truck) within 7.6 m (25 ft) of pavement open to traffic shall wear a fluorescent orange, fluorescent yellow/green or a combination of fluorescent orange and fluorescent yellow/green vest meeting the requirements of the American National Standards Institute specification ANSI/ISEA 107-1999 for Conspicuity Class 2 garments. Other types of garments may be substituted for the vest as long as the garments have manufacturers tags identifying them as meeting the ANSI Class 2 requirement.

80130

PLASTIC BLOCKOUTS FOR GUARDRAIL (BDE)

Effective: November 1, 2004

Add the following to Article 630.02 of the Standard Specifications:

“(h) Plastic Blockouts (Note 1.)

Note 1. Plastic blockouts, 150 mm (6 in.) deep, may be used in lieu of 150 mm (6 in.) deep wood block-outs for steel plate beam guardrail. The plastic blockouts shall be on the Department’s approved list.”

80134

PORTABLE CHANGEABLE MESSAGE SIGNS (BDE)

Effective: November 1, 1993
Revised: April 2, 2004

Description. This work shall consist of furnishing, placing, and maintaining changeable message sign(s) at the locations(s) shown on the plans or as directed by the Engineer.

The sign(s) shall be trailer mounted. The message panel shall be at least 2.1 m (7 ft) above the pavement, present a level appearance, and be capable of displaying up to eight characters in each of three lines at a time. Character height shall be 450 mm (18 in.).

The message panel shall be of either a bulb matrix or disc matrix design controlled by an onboard computer capable of storing a minimum of 99 programmed messages for instant recall. The computer shall be capable of being programmed to accept messages created by the operator via an alpha-numeric keyboard and able to flash any six messages in sequence. The message panel shall also be capable of being controlled by a computer from a remote location via a cellular linkage. The Contractor shall supply the modem, the cellular phone, and the necessary software to run the sign from a remote computer at a location designated by the Engineer. The Contractor shall promptly program and/or reprogram the computer to provide the messages as directed by the Engineer.

The message panel shall be visible from 400 m (1/4 mile) under both day and night conditions. The letters shall be legible from 250 m (750 ft).

The sign shall include automatic dimming for nighttime operation and a power supply capable of providing 24 hours of uninterrupted service.

The Contractor shall provide all preventive maintenance efforts s(he) deems necessary to achieve uninterrupted service. If service is interrupted for any cause and not restored within 24 hours, the Engineer will cause such work to be performed as may be necessary to provide this service. The cost of such work shall be borne by the Contractor or deducted from current or future compensation due the Contractor.

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

Basis of Payment. When portable changeable message signs are shown on the Standard, this work will not be paid for separately but shall be considered as included in the cost of the Standard.

For all other portable changeable message signs, this work will be paid for at the contract unit price per calendar month for each sign as CHANGEABLE MESSAGE SIGN.

80124

PORTLAND CEMENT (BDE)

Effective: January 1, 2005

Replace the first sentence of the second paragraph of Article 1001.01 of the Standard Specifications with the following:

"For portland cement according to ASTM C 150, the addition of up to 5.0 percent limestone by mass (weight) to the cement will not be permitted. Also, the total of all organic processing additions shall not exceed 1.0 percent by mass (weight) of the cement and the total of all inorganic processing additions shall not exceed 4.0 percent by mass (weight) of the cement."

80139

PORTLAND CEMENT CONCRETE (BDE)

Effective: November 1, 2002

Add the following paragraph after the fourth paragraph of Article 1103.01(b) of the Standard Specifications:

"The truck mixer shall be approved before use according to the Bureau of Materials and Physical Research's Policy Memorandum, "Approval of Concrete Plants and Delivery Trucks"."

Add the following paragraph after the first paragraph of Article 1103.01(c) of the Standard Specifications:

"The truck agitator shall be approved before use according to the Bureau of Materials and Physical Research's Policy Memorandum, "Approval of Concrete Plants and Delivery Trucks"."

Add the following paragraph after the first paragraph of Article 1103.01(d) of the Standard Specifications:

"The nonagitator truck shall be approved before use according to the Bureau of Materials and Physical Research's Policy Memorandum, "Approval of Concrete Plants and Delivery Trucks"."

Revise the first sentence of the first paragraph of Article 1103.02 of the Standard Specifications to read:

"The plant shall be approved before production begins according to the Bureau of Materials and Physical Research's Policy Memorandum, "Approval of Concrete Plants and Delivery Trucks"."

80083

PRECAST CONCRETE PRODUCTS (BDE)

Effective: July 1, 1999

Revised: November 1, 2004

Product Approval. Precast concrete products shall be produced according to the Department's current Policy Memorandum, "Quality Control/Quality Assurance Program for Precast Concrete Products". The Policy Memorandum applies to precast concrete products listed under the Products Key of the "Approved List of Certified Precast Concrete Producers".

Precast Concrete Box Culverts. Add the following sentence to the end of the fourth paragraph of Article 540.06:

"After installation, the interior and exterior joint gap between precast concrete box culvert sections shall not exceed 38 mm (1 1/2 in.)."

Portland Cement Replacement. For precast concrete products using Class PC concrete or other mixtures, portland cement replacement with fly ash or ground granulated blast-furnace (GGBF) slag shall be governed by the AASHTO or ASTM standard specification referenced in the Standard Specifications.

For all other precast concrete products using Class PC concrete or other mixtures, portland cement replacement with fly ash or GGBF slag shall be approved by the Engineer. Class F fly ash shall not exceed 15 percent by mass (weight) of the total portland cement and Class F fly ash. Class C fly ash shall not exceed 20 percent by mass (weight) of the total portland cement and Class C fly ash. GGBF slag shall not exceed 25 percent by mass (weight) of the total portland cement and GGBF slag.

Concrete mix designs, for precast concrete products, shall not consist of portland cement, fly ash and GGBF slag.

Ready-Mixed Concrete. Delete the last paragraph of Article 1020.11(a) of the Standard Specifications.

Shipping. When a precast concrete product has attained the specified strength, the earliest the product may be loaded, shipped, and used is on the fifth calendar day. The first calendar day shall be the date casting was completed.

Acceptance. Products which have been lot or piece inspected and approved by the Department prior to July 1, 1999, will be accepted for use on this contract.

419.doc

PREFORMED RECYCLED RUBBER JOINT FILLER (BDE)

Effective: November 1, 2002

Revise Article 503.02(c) of the Standard Specifications to read:

“(c) Preformed Expansion Joint Filler.....1051”

Revise Article 637.02(d) of the Standard Specifications to read:

“(d) Preformed Expansion Joint Filler.....1051”

Add the following Article to Section 1051 of the Standard Specifications:

“1051.10 Preformed Recycled Rubber Joint Filler. Preformed recycled rubber joint filler shall consist of ground tire rubber, free of steel and fabric, combined with ground scrap or waste polyethylene. It shall not have a strong hydrocarbon or rancid odor and shall meet the physical property requirements of ASTM D 1752. Water absorption by volume shall not exceed 5.0 percent.”

80084

PUBLIC CONVENIENCE AND SAFETY (BDE)

Effective: January 1, 2000

Add the following paragraph after the fourth paragraph of Article 107.09 of the Standard Specifications:

"On weekends, excluding holidays, roadways with Average Daily Traffic of 25,000 or greater, all lanes shall be open to traffic from 3:00 P.M. Friday to midnight Sunday except where structure construction or major rehabilitation makes it impractical."

80015

1457

RAILROAD PROTECTIVE LIABILITY INSURANCE (BDE)

The contractor will be required to carry Railroad Protective Liability and Property Damage Liability Insurance in accordance with Article 107.11 of the Standard Specifications. The limits of liability shall be in accordance with Article 107.11 of the Standard Specifications unless otherwise noted. A separate policy is required for each railroad indicated below unless otherwise noted.

<u>NAMED INSURED & ADDRESS</u>	<u>NUMBER & SPEED OF PASSENGER TRAINS</u>	<u>NUMBER & SPEED OF FREIGHT TRAINS</u>
Union Pacific Railroad 1416 Dodge Street Omaha, NE 68179	0	2 @ 10 m.p.h.

FOR FREIGHT/PASSENGER INFORMATION CONTACT: Gary Wilwerding PHONE: (708) 649-5210

FOR INSURANCE INFORMATION CONTACT: Paul Farrell PHONE: (402) 544-8620

FOR FREIGHT/PASSENGER INFORMATION CONTACT: _____ PHONE: _____

FOR INSURANCE INFORMATION CONTACT: _____ PHONE: _____

Basis of Payment: The costs for providing insurance, as noted above, will be paid for at the contract unit price per Lump Sum for RAILROAD PROTECTIVE LIABILITY INSURANCE.

APPROVAL OF INSURANCE: The ORIGINAL and one CERTIFIED copy of each required policy shall be submitted to ENGINEER OF DESIGN, ILLINOIS DEPARTMENT OF TRANSPORTATION, 2300 SOUTH DIRKSEN PARKWAY, SPRINGFIELD, ILLINOIS 62764 for approval. The contractor will be advised when the Department has received approval of the insurance from the railroad(s). Before any work begins on railroad right-of-way, the Contractor shall submit to the Resident Engineer evidence that the required railroad protective liability insurance has been approved by the railroad(s). The Contractor shall also provide the Resident Engineer with expiration date of each required policy.

34261

RAP FOR USE IN BITUMINOUS CONCRETE MIXTURES (BDE)

Effective: January 1, 2000

Revised: April 1, 2002

Revise Article 1004.07 to read:

"1004.07 RAP Materials. RAP is reclaimed asphalt pavement resulting from cold milling or crushing of an existing dense graded hot-mix asphalt pavement. RAP must originate from routes or airfields under federal, state or local agency jurisdiction. The Contractor shall supply documentation that the RAP meets these requirements.

- (a) Stockpiles. The Contractor shall construct individual, sealed RAP stockpiles meeting one of the following definitions. No additional RAP will be allowed on top of the pile after the pile has been sealed.
- (1) Homogeneous. Homogeneous RAP stockpiles shall consist of RAP from Class I/ Superpave, or equivalent mixtures only and represent the same aggregate quality, but shall be at least C quality or better, the same type of crushed aggregate (either crushed natural aggregate, ACBF slag, or steel slag), similar gradation and similar AC content. If approved by the Engineer, combined single pass surface/binder millings may be considered "homogenous", with a quality rating dictated by the lowest coarse aggregate quality present in the mixture. Homogenous stockpiles shall meet the requirements of Article 1004.07(d). Homogeneous RAP stockpiles not meeting these requirements may be processed (crushing and screening) and retested.
 - (2) Conglomerate. Conglomerate RAP stockpiles shall consist of RAP from Class I/ Superpave, or equivalent mixtures only. The coarse aggregate in this RAP shall be crushed aggregate only and may represent more than one aggregate type and/or quality but shall be at least C quality or better. This RAP may have an inconsistent gradation and/or asphalt cement content prior to processing. All conglomerate RAP shall be processed prior to testing by crushing to where all RAP shall pass the 16 mm (5/8 in.) or smaller screen. Conglomerate RAP stockpiles shall not contain steel slag or other expansive material as determined by the Department. Conglomerate RAP stockpiles shall meet the requirements of Article 1004.07(d).
 - (3) Conglomerate "D" Quality (DQ). Conglomerate DQ RAP stockpiles shall consist of RAP containing coarse aggregate (crushed or round) that is at least D quality or better. This RAP may have an inconsistent gradation and/or asphalt content. Conglomerate DQ RAP stockpiles shall not contain steel slag or other expansive material as determined by the Department. Conglomerate DQ RAP shall meet the requirements of Article 1004.07(d).

Reclaimed Superpave Low ESAL IL-9.5L surface mixtures shall only be placed in conglomerate DQ RAP stockpiles due to the potential for rounded aggregate.

(4) Other. RAP stockpiles that do not meet the requirements of the stockpile categories listed above shall be classified as "Other". "Other" RAP stockpiles shall not be used in any of the Department's bituminous mixtures.

- (b) Use. The allowable use of a RAP stockpile shall be set by the lowest quality of coarse aggregate in the RAP stockpile. Class I/Superpave surface mixtures are designated as containing Class B quality coarse aggregate only. Superpave Low ESAL IL-19.0L binder and IL-9.5L surface mixtures are designated as Class C quality coarse aggregate only. Class I/Superpave binder mixtures, bituminous base course mixtures, and bituminous base course widening mixtures are designated as containing Class C quality coarse aggregate only. Bituminous stabilized subbase and BAM shoulders are designated as containing Class D quality coarse aggregate only. Any mixture not listed above shall have the designated quality determined by the Department.

RAP containing steel slag or other expansive material, as determined by the Department, shall be homogeneous and will be approved for use in Class I/Superpave (including Low ESAL) surface mixtures only. RAP stockpiles for use in Class I/Superpave mixtures (including Low ESAL), base course, base course widening and Class B mixtures shall be either homogeneous or conglomerate RAP stockpiles except conglomerate RAP stockpiles shall not be used in Superpave surface mixture Ndesign 50 or greater. RAP for use in bituminous aggregate mixtures (BAM) shoulders and BAM stabilized subbase shall be from homogeneous, conglomerate, or conglomerate DQ stockpiles.

Additionally, RAP used in Class I/Superpave surface mixtures shall originate from milled or crushed mixtures only, in which the coarse aggregate is of Class B quality or better. RAP stockpiles for use in Class I/Superpave (including Low ESAL) binder mixes as well as base course, base course widening and Class B mixtures shall originate from milled or processed surface mixture, binder mixture, or a combination of both mixtures uniformly blended to the satisfaction of the Engineer, in which the coarse aggregate is of Class C quality or better.

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

- (d) Testing. All RAP shall be sampled and tested either during or after stockpiling.

For testing during stockpiling, washed extraction samples shall be run at the minimum frequency of one sample per 450 metric tons (500 tons) for the first 1800 metric tons (2,000 tons) and one sample per 1800 metric tons (2,000 tons) thereafter. A minimum of five tests shall be required for stockpiles less than 3600 metric tons (4,000 tons).

For testing existing stockpiles, the Contractor shall submit a plan for approval to the District proposing a satisfactory method of sampling and testing the RAP pile either in-situ or by restockpiling. The sampling plan shall meet the minimum frequency required above and detail the procedure used to extract representative samples throughout the pile for testing.

Before extraction, each field sample shall be split to 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.

All of the extraction results shall be compiled and averaged for asphalt content and gradation. Individual extraction test results, when compared to the averages, will be accepted if within the tolerances listed below.

Parameter	Homogeneous / Conglomerate	Conglomerate "D" Quality
25 mm (1 in.)		± 5%
12.5 mm (1/2 in.)	± 8%	± 15%
4.75 mm (No. 4)	± 6%	± 13%
2.36 mm (No. 8)	± 5%	
1.18 mm (No. 16)		± 15%
600 μm (No. 30)	± 5%	
75 μm (No. 200)	± 2.0%	± 4.0%
AC	± 0.4%	± 0.5%

If more than 20 percent of the individual sieves are out of the gradation tolerances, or if more than 20 percent of the asphalt content test results fall outside the appropriate tolerances, the RAP will not be allowed to be used in the Department's bituminous concrete mixtures unless the RAP representing the failing tests is removed from the stockpile to the satisfaction of the Engineer. 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)".

- (e) Designs. At the Contractor's option, bituminous concrete mixtures may be constructed utilizing RAP material meeting the above detailed requirements. The amount of RAP included in the mixture shall not exceed the percentages specified in the plans.

RAP designs shall be submitted for volumetric verification. If additional RAP stockpiles are tested and found that no more than 20 percent of the results, as defined under "Testing" herein, are outside of the control tolerances set for the original RAP stockpile

and design, and meets all of the requirements herein, the additional RAP stockpiles may be used in the original mix design at the percent previously verified.

- (f) Production. The coarse aggregate in all RAP used shall be equal to or less than the nominal maximum size requirement for the bituminous mixture being produced.

To remove or reduce agglomerated material, a scalping screen, 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 control tolerances or QC/QA test results require corrective action, the Contractor shall cease production of the mixture containing RAP and either switch to the virgin aggregate design or submit a new RAP design.

80011

SEEDING AND SODDING (BDE)

Effective: July 1, 2004
 Revised: August 1, 2005

Revise Class 1A and 2A seeding mixtures shown in Table 1 of Article 250.07 of the Standard Specifications to read:

"Table 1 - SEEDING MIXTURES		
Class – Type	Seeds	kg/hectare (lb/acre)
1A Salt Tolerant Lawn Mixture 7/	Bluegrass	70 (60)
	Perennial Ryegrass	20 (20)
	Audubon Red Fescue	20 (20)
	Rescue 911 Hard Fescue	20 (20)
	Fults Salt Grass*	70 (60)
2A Salt Tolerant Roadside Mixture 7/	Alta Fescue or Ky 31	70 (60)
	Perennial Ryegrass	20 (20)
	Audubon Red Fescue	20 (30)
	Rescue 911 Hard Fescue	20 (30)
	Fults Salt Grass 1/	70 (60)"

Revise Note 7 of Article 250.07 of the Standard Specifications to read:

"Note 7. In Districts 1 through 6, the planting times shall be April 1 to June 15 and August 1 to November 1. In Districts 7 through 9, the planting times shall be March 1 to June 1 and August 1 to November 15. Seeding may be performed outside these dates provided the Contractor guarantees a minimum of 75 percent uniform growth over the entire seeded area(s) after one growing season. The guarantee shall be submitted to the Engineer in writing prior to performing the work. After one growing season, areas not sustaining 75 percent uniform growth shall be interseeded or reseeded, as determined by the Engineer, at the Contractor's expense."

Add the following sentence to Article 252.04 of the Standard Specifications:

"Sod shall not be placed during the months of July and August."

Revise the first paragraph of Article 252.08 of the Standard Specifications to read:

"252.08 Sod Watering. Within two hours after the sod has been placed, water shall be applied at a rate of 25 L/sq m (5 gal/sq yd). Additional water shall be applied every other day at a rate of 15 L/sq m (3 gal/sq yd) for a total of 15 additional waterings. During periods exceeding 26 °C (80 °F) or subnormal rainfall, the schedule of additional waterings may be altered with the approval of the Engineer."

Revise Article 252.09 of the Standard Specifications to read:

"252.09 Supplemental Watering. During periods exceeding 26 °C (80 °F) or subnormal rainfall, supplemental watering may be required after the initial and additional waterings. Supplemental watering shall be performed when directed by the Engineer. Water shall be applied at the rate specified by the Engineer within 24 hours of notice."

Revise the first and third paragraphs of Article 252.12 of the Standard Specifications to read:

"252.12 Method of Measurement. Sodding will be measured for payment in place and the area computed in square meters (square yards). To be acceptable for final payment, the sod shall be growing in place for a minimum of 30 days in a live, healthy condition. When directed by the Engineer, any defective or unacceptable sod shall be removed, replaced and watered by the Contractor at his/her own expense."

"Supplemental watering will be measured for payment in units of 1000 L (1000 gal) of water applied on the sodded areas. Waterings performed in addition to those required by Article 252.08 or after the 30 day establishment period will be considered as supplemental watering."

Replace the first paragraph of Article 252.13 of the Standard Specifications with the following:

"252.13 Basis of Payment. Sodding will be paid for at the contract unit price per square meter (square yard) for SODDING or SODDING, SALT TOLERANT according to the following schedule.

- (a) Initial Payment. Upon placement of sod, 25 percent of the pay item will be paid.
- (b) Final Payment. Upon acceptance of sod, the remaining 75 percent of the pay item will be paid."

Revise Article 1081.03(b) of the Standard Specifications to read:

"(b) Salt Tolerant Sod.

Variety	Percent by Weight
Buffalo Grass	30%
Buchloe Dactyloides	
Amigo Fineleaf Tall Fescue	20%
Audubon Red Fescue	15%
Rescue 911 Hard Fescue	15%
Rugby Kentucky Bluegrass	5%
Fults Pucinnellia Distans	15%"

Revise Table II of Article 1081.04(c)(6) of the Standard Specifications to read:

TABLE II						
Variety of Seeds	Hard Seed Percent Maximum	Purity Percent Minimum	Pure, Live Seed Percent Minimum	Weed Percent Maximum	Secondary Noxious Weeds No. per kg (oz) Max. Permitted*	Remarks
Alfalfa	20	92	89	0.50	211 (6)	1/
Brome Grass	-	90	75	0.50	175 (5)	-
Clover, Alsike	15	92	87	0.30	211 (6)	2/
Clover, Crimson	15	92	83	0.50	211 (6)	-
Clover, Ladino	15	92	87	0.30	211 (6)	-
Clover, Red	20	92	87	0.30	211 (6)	-
Clover, White Dutch	30	92	87	0.30	211 (6)	3/
Audubon Red Fescue	0	97	82	0.10	105 (3)	-
Fescue, Alta or Ky. 31	-	97	82	1.00	105 (3)	-
Fescue, Creeping Red	-	97	82	1.00	105 (3)	-
Fults Salt Grass	0	98	85	0.10	70 (2)	-
Kentucky Bluegrass	-	97	80	0.30	247 (7)	5/
Lespedeza, Korean	20	92	84	0.50	211 (6)	3/
Oats	-	92	88	0.50	70 (2)	4/
Orchard Grass	-	90	78	1.50	175 (5)	4/
Redtop	-	90	78	1.80	175 (5)	4/
Ryegrass, Perennial, Annual	-	97	85	0.30	175 (5)	4/
Rye, Grain, Winter	-	92	83	0.50	70 (2)	4/
Rescue 911 Hard Fescue	0	97	82	0.10	105 (3)	-
Timothy	-	92	84	0.50	175 (5)	4/
Vetch, Crown	30	92	67	1.00	211 (6)	3/ & 6/
Vetch, Spring	30	92	88	1.00	70 (2)	4/
Vetch, Winter	15	92	83	1.00	105 (3)	4/
Wheat, hard Red Winter	-	92	89	0.50	70 (2)	4/

80131

155

SELF-CONSOLIDATING CONCRETE FOR PRECAST PRODUCTS (BDE)

Effective: July 1, 2004

Definition. Self-consolidating concrete is a flowable mixture that does not require mechanical vibration for consolidation.

Usage. Self-consolidating concrete may be used for precast concrete products. The design and testing of a self-consolidating concrete mixture shall be according to Section 1020 of the Standard Specifications except as modified herein.

Materials. Materials shall conform to the following requirements:

- (a) Self-Consolidating Admixtures. The self-consolidating admixture system shall consist of either a high range water-reducing admixture only or a high range water-reducing admixture combined with a separate viscosity modifying admixture. The one or two component admixture system shall be capable of producing a flowable concrete that does not require mechanical vibration.

The high range water-reducing admixture shall comply with the requirements of AASHTO M 194, Type F.

The viscosity modifying admixture will be evaluated according to the test methods and mix design proportions referenced in AASHTO M 194, except the following physical requirements shall be met:

- (1) For initial and final set times, the allowable deviation of the test concrete from the reference concrete shall not be more than 1.0 hour earlier or 1.5 hours later.
 - (2) For compressive and flexural strengths, the test concrete shall be a minimum of 90 percent of the reference concrete at 3, 7 and 28 days.
 - (3) The length change of the test concrete shall be a maximum 135 percent of the reference concrete. However, if the length change of the reference concrete is less than 0.030 percent, the length change of the test concrete shall be a maximum 0.010 percentage units greater than the reference concrete.
 - (4) The relative durability factor of the test concrete shall be a minimum 80 percent.
- (b) Fine Aggregate. A fine aggregate used alone in the mix design shall not have an expansion greater than 0.30 percent per ASTM C 1260. For a blend of two or more fine aggregates, the resulting blend shall not have an expansion greater than 0.30 percent.

The aggregate blend expansion will be calculated as follows:

$$\text{Aggregate Blend Expansion} = (a/100 \times A) + (b/100 \times B) + (c/100 \times C) + \dots\text{etc.}$$

Where: a, b, c, ... = percent of aggregate blend
A, B, C, ... = aggregate expansion according to ASTM C 1260

Mix Design Criteria. The slump requirements of Article 1020.04 of the Standard Specifications shall not apply. In addition, the allowable coarse aggregate gradations shall be CA 11, CA 13, CA 14, CA 16, or a blend of these gradations. The fine aggregate proportion shall be a maximum 50 percent by mass (weight) of the total aggregate used.

Trail Batch. A minimum 1 cu m (1 cu yd) trial batch shall be produced. The mixture will be evaluated for air content, slump flow, visual stability index, compressive strength, passing ability, and static/dynamic segregation resistance.

The trial batch shall be scheduled and performed in the presence of the Engineer. Testing shall be performed per the Department's test method or as approved by the Engineer.

For the trial batch, the air content shall be within the top half of the allowable specification range. The slump flow range shall be 510 mm (20 in.) minimum to 710 mm (28 in.) maximum. The visual stability index shall be a maximum of 1. Strength shall be determined at 28 days. At the Contractor's option, strength may be determined for additional days.

Passing ability and static/dynamic segregation resistance shall be determined by tests selected by the Contractor and approved by the Engineer. The visual stability index shall not be used as the sole criteria for evaluating static segregation resistance.

After an acceptable mixture has been batched and tested, the mixture shall also be evaluated for robustness. Robustness shall be evaluated by varying the dosage of the self-consolidating admixture system and water separately. Additional trial batches may be necessary to accomplish this.

When necessary, the trial batches shall be disposed of according to Article 202.03 of the Standard Specifications.

Quality Control. Once testing is completed and acceptable results have been attained, production test frequencies and allowable test ranges for slump flow, visual stability index, passing ability, and static/dynamic segregation resistance shall be proposed. The production test frequencies and allowable test ranges will be approved by the Engineer.

The slump flow range shall be ± 50 mm (± 2 in.) of the target value, and within the overall range of 510 mm (20 in.) minimum to 710 mm (28 in.) maximum. The visual stability index shall be a maximum of 1. The approved test ranges for passing ability and static/dynamic segregation resistance will be based on recommended guidelines determined by the Engineer.

80132

157

SHOULDER STABILIZATION AT GUARDRAIL (BDE)

Effective: January 1, 2005

Revise the last sentence of the second paragraph of Article 630.06 of the Standard Specifications to read:

"The void around each post shall be backfilled with earth or aggregate and capped with 75 mm (3 in.) of bituminous mixture or grout."

Replace the last sentence of the third paragraph of Article 630.06 of the Standard Specifications with the following:

"Guardrail posts shall be driven through holes cored in the completed shoulder stabilization. The void around each post shall be backfilled with earth or aggregate and capped with 75 mm (3 in.) of bituminous mixture or grout."

Add the following paragraph to the end of Article 630.06 of the Standard Specifications:

"When driving guardrail posts through existing shoulders, shoulder stabilization, or other paved areas, the posts shall be driven through cored holes. The void around each post shall be backfilled with earth or aggregate and capped with 75 mm (3 in.) of bituminous mixture or grout."

80140

STABILIZED SUBBASE AND BITUMINOUS SHOULDERS SUPERPAVE (BDE)

Effective: April 1, 2002

Revised: August 1, 2005

Description. This work shall consist of constructing stabilized subbase and bituminous shoulders Superpave according to Sections 312 and 482 respectively, of the Standard Specifications and the special provision, "Quality Control/Quality Assurance of Bituminous Concrete Mixtures" except as modified herein.

Revise Article 312.03(b) of the Standard Specifications to read:

"(b) RAP Material (Note 3)"

Revise Note 2 of Article 312.03 of the Standard Specifications to read:

"Note 2. Gradation CA 6, CA 10, or CA 12 shall be used."

Revise Note 3 of Article 312.03 of the Standard Specifications to read:

"Note 3. RAP shall meet the requirements of the special provision "RAP for Use in Bituminous Concrete Mixtures". RAP containing steel slag shall be permitted for use in top-lift surface mixtures only."

Revise Note 4 of Article 312.03 of the Standard Specifications to read:

"Note 4. Unless otherwise specified on the plans, the bituminous material shall be performance graded asphalt cement, PG58-22. When more than 15 percent RAP is used, a softer PG binder may be required as determined by the Engineer."

Revise Article 312.06 of the Standard Specifications to read:

"312.06 Mixture Design. The Contractor shall submit mix designs for approval, for each required mixture. Mix designs shall be developed by Level III personnel who have completed the course, "Superpave Mix Design Upgrade". The mixtures shall be designed according to the respective Illinois Modified AASHTO references listed below:

- AASHTO MP 2 Standard Specification for Superpave Volumetric Mix Design
- AASHTO R 30 Standard Practice for Mixture Conditioning of Hot-Mix Asphalt (HMA)
- AASHTO PP 28 Standard Practice for Designing Superpave HMA
- AASHTO T 209 Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures

- AASHTO T 312 Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyrotory Compactor
- AASHTO T 308 Determining the Asphalt Content of Hot Mix Asphalt (HMA) by the Ignition Method

(a) Job Mix Formula (JMF). The JMF shall be according to the following limits:

<u>Ingredient</u>	<u>Percent by Dry Weight</u>
Aggregate.....	94.0 to 96.0
Asphalt Cement.....	4.0 to 6.0*
Dust/AC Ratio	1.4

*Upper limit may be raised for the lower or top lifts if the Contractor elects to use a highly absorptive coarse and/or fine aggregate requiring more than six percent asphalt. The additional asphalt shall be furnished at no cost to the Department.

When RAP material is being used, the JMF shall be according to the following limits:

<u>Ingredient</u>	<u>Percent by Dry Weight</u>
Virgin Aggregate(s)	46.0 to 96.0
RAP Material(s) (Note 1).....	0 to 50
Mineral Filler (if required)	0 to 5.0
Asphalt Cement.....	4.0 to 7.0
Dust/AC Ratio	1.4

Note 1. If specified on the plans, the maximum percentage of RAP shall be as specified therein.

It is recommended that the selected combined aggregate gradation not pass through the restricted zones specified in Illinois Modified AASHTO MP 2.

(b) Volumetric Requirements.

Design Compactive Effort	Design Air Voids Target (%)
$N_{DES} = 30$	2.0

(c) Determination of Need for Anti-Stripping Additive. The mixture designer shall determine if an additive is needed in the mix to prevent stripping. The determination will be made on the basis of tests performed according to Illinois Modified AASHTO T 283 using 4 in. Marshall bricks. To be considered acceptable by the Engineer as a mixture not susceptible to stripping, the ratio of conditioned to unconditioned split tensile strengths (TSR) shall be equal to or greater than 0.75. Mixtures, either with or without an additive, with TSR values less than 0.75 will be considered unacceptable.

If it is determined that an additive is required, the additive may be hydrated lime, slaked quicklime, or a liquid additive, at the Contractor's option. The liquid additive shall be selected from the Department's list of approved additives and may be limited to those which have exhibited satisfactory performance in similar mixes.

Dry hydrated lime shall be added at a rate of 1.0 to 1.5 percent by weight of total dry aggregate. Slurry shall be added in such quantity as to provide the required amount of hydrated lime solids by weight of total dry aggregate. The exact rate of application for all anti-stripping additives will be determined by the Engineer. The method of application shall be according to Article 406.12 of the Standard Specifications."

Revise Article 312.08 of the Standard Specifications to read:

"312.08 Mixture Production. When a hot-mix plant conforming to Article 1102.01 is used, the aggregate shall be dried and heated in the revolving dryer to a temperature of 120 °C (250 °F) to 175 °C (350 °F).

The aggregate and bituminous material used in the bituminous aggregate mixture shall be measured separately and accurately by weight or by volume. When the aggregate is in the mixer, the bituminous material shall be added and mixing continued for a minimum of 35 seconds and until a homogeneous mixture is produced in which all particles of the aggregate are coated. The mixing period, size of the batch and the production rate shall be approved by the Engineer.

The ingredients shall be heated and combined in such a manner as to produce a mixture which, when discharged from the mixer, shall be workable and vary not more 10 °C (20 °F) from the temperature set by the Engineer.

When RAP material(s) is used in the bituminous aggregate mixture, the virgin aggregate(s) shall be dried and heated in the dryer to a temperature that will produce the specified resultant mix temperature when combined with the RAP material.

The heated virgin aggregates and mineral filler shall be combined with RAP material in such a manner as to produce a bituminous mixture which when discharged from the mixer shall not vary more than 15 °C (30 °F) from the temperature set by the Engineer. The combined ingredients shall be mixed for a minimum of 35 seconds and until a homogeneous mixture as to composition and temperature is obtained. The total mixing time shall be a minimum of 45 seconds consisting of dry and wet mixing. Variation in wet and dry mixing times may be permitted, depending on the moisture content and amount of salvaged material used. The mix temperature shall not exceed 175 °C (350 °F). Wide variations in the mixture temperature will be cause for rejection of the mix.

- (a) Personnel. The QC Manager and Level I Technician shall have successfully completed the Department's "Superpave Field Control Course".

- (b) Required Tests. Testing for stabilized subbase and bituminous shoulders shall be conducted to control the production of the bituminous mixture using the test methods identified and performed at a frequency not less than indicated in the following table.

Parameter	Frequency of Tests Non-Class I Mixtures	Test Method
Aggregate Gradation Hot bins for batch and continuous plants. Individual cold-feeds or combined belt-feed for drier-drum plants. (% passing sieves: 12.5 mm (1/2 In.), 4.75 mm (No. 4), 75 µm (No. 200))	1 gradation per day of production. The first day of production shall be washed ignition oven test on the mix. Thereafter, the testing shall alternate between dry gradation and washed ignition oven test on the mix. The dry gradation and the washed ignition oven test results shall be plotted on the same control chart.	Illinois Procedure (See Manual of Test Procedures for Materials).
Asphalt Content by ignition oven (Note 1.)	1 per day	Illinois-Modified AASHTO T 308
Air Voids		
Bulk Specific Gravity of Gyratory Sample	1 per day	Illinois-Modified AASHTO T 312
Maximum Specific Gravity of Mixture	1 per day	Illinois-Modified AASHTO T 209

Note 1. The Engineer may waive the ignition oven requirement for AC content if the aggregates to be used are known to have ignition AC 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 AC content.

During production, the ratio of minus 75 µm (#200) sieve material to total asphalt cement shall be not less than 0.6 nor more than 1.6, and the moisture content of the mixture at discharge from the mixer shall not exceed 0.5 percent. If at any time the ratio of minus 75 µm (#200) material to asphalt or moisture content of the mixture falls outside the stated limits, production of the mix shall cease. The cause shall be determined and corrective action satisfactory to the Engineer shall be initiated prior to resumption of production.

During production, mixture containing an anti-stripping additive will be tested by the Engineer for stripping according to Illinois Modified AASHTO T 283. If the mixture fails to meet the TSR criteria for acceptance, no further mixture will be accepted until the Contractor takes such action as is necessary to furnish a mixture meeting the criteria.

(c) Control Charts/Limits. Control charts/limits shall be according to QC/QA requirements for Non-Class I Mixtures except air voids and density shall be plotted on the control charts within the following control limits:

Individual Test Control Limits	
Voids	±1.2%
Density ^{1/}	93.0 – 97.4% of G _{mm}

1/ Except when placed as first lift over unimproved subgrade. When the exception applies, the first lift over unimproved subgrade shall be compacted to an average density of not less than 95 percent nor greater than 102 percent of the target density obtained on the growth curve.

Replace Article 312.10 of the Standard Specifications with the following:

312.10 Placing. After the subgrade has been compacted and is acceptable to the Engineer, the bituminous aggregate mixture shall be spread upon it with a mechanical spreader. The maximum compacted thickness of each lift shall be 150 mm (6 in.) provided the required density is obtained. The minimum compacted thickness of each lift shall be according to the following table:

Nominal Maximum Aggregate Size of Mixture	Minimum Compacted Lift Thickness
CA 12 – 12.5 mm (1/2 in.)	38 mm (1 1/2 in.)
CA 10 - 19 mm (3/4 in.)	57 mm (2 1/4 in.)
CA 6 – 25 mm (1 in.)	76 mm (3 in.)

The surface of each lift shall be clean and dry before succeeding lifts are placed.”

Revise Article 482.02 of the Standard Specifications to read:

482.02 Materials. Materials shall meet the requirements of Article 312.03. For the top lift, the aggregate used shall meet the gradation requirements for a CA 10 or CA 12. Blending of aggregates to meet these gradation requirements will be permitted.”

Revise the first paragraph of Article 482.04 of the Standard Specifications to read:

482.04 General. For pavement and shoulder resurfacing projects, Superpave binder and surface course mixtures may be used in lieu of bituminous aggregate mixture for the resurfacing of shoulders, at the option of the Contractor, or shall be used when specified on the plans.”

Revise Article 482.04(c) of the Standard Specifications to read:

“(c) Mixture Production312.08”

Revise Article 482.05 of the Standard Specifications to read:

"482.05 Composition of Bituminous Aggregate Mixture. The composition of the mixture shall be according to Article 312.06, except that the amount of asphalt cement used in the top lift shall be increased up to 0.5 percent more than that required in the lower lifts. For resurfacing projects when the Superpave binder and surface course mixtures option is used, the asphalt cement used in the top lift shall not be increased. Superpave mixtures used on the top lift of such shoulders shall meet the gradation requirements of the special provision "Superpave Bituminous Concrete Mixtures".

For shoulder and strip construction, the composition of the Superpave binder and surface course shall be the same as that specified for the mainline pavement."

In the following locations of Section 482 of the Standard Specifications, change "Class I" to "Superpave":

- the second paragraph of Article 482.04
- the first sentence of the second paragraph of Article 482.06
- the first sentence of the fourth paragraph of Article 482.06
- the second sentence of the fourth paragraph of Article 482.06
- the first sentence of the third paragraph of Article 482.08(b)

Revise the first paragraph of Article 482.06 of the Standard Specifications to read:

"482.06 Placing. This work shall be according to Article 312.10 as modified herein. The mechanical spreader for the top lift of shoulders shall meet the requirements of Article 1102.03 when the shoulder width is 3 m (10 ft) or greater."

Revise Article 482.09 of the Standard Specifications to read:

"482.09 Basis of Payment. When bituminous shoulders are constructed along the edges of the completed pavement structure, this work will be paid for at the contract unit price per square meter (square yard) for BITUMINOUS SHOULDERS SUPERPAVE of the thickness specified. The specified thickness shall be the thickness shown on the plans at the edge of the pavement.

On pavement and shoulder resurfacing projects, the shoulder resurfacing will be paid for at the contract unit price per metric ton (ton) for BITUMINOUS SHOULDERS SUPERPAVE.

The construction of shoulder strips for resurfacing pavements will be paid according to the special provision, "Superpave Bituminous Concrete Mixtures".

80070

STEEL COST ADJUSTMENT (BDE)

Effective: April 2, 2004

Revised: July 1, 2004

Description. At the bidder's option, a steel cost adjustment will be made to provide additional compensation to the Contractor or a credit to the Department for fluctuations in steel prices. The bidder must indicate on the attached form whether or not steel cost adjustments will be part of this contract. This attached form shall be submitted with the bid. Failure to submit the form shall make this contract exempt of steel cost adjustments.

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), frames and grates, and other miscellaneous items will be subject to a steel cost adjustment when the pay item 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) Evidence that increased or decreased steel costs have been passed on to the Contractor.
- (b) The dates and quantity of steel, in kg (lb), shipped from the mill to the fabricator.
- (c) The quantity of steel, in kg (lb), 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 kg (lb)
D = price factor, in dollars per kg (lb)

$$D = CBP_M - CBP_L$$

Where: CBP_M = The average of the Consumer Buying Price indices for Shredded Auto Scrap (Chicago) and No. 1 Heavy Melt (Chicago) as published by the

American Metal Market (AMM) for the day the steel is shipped from the mill. The indices will be converted from dollars per ton to dollars per kg (lb).

CBP_L = The average of the Consumer Buying Price indices for Shredded Auto Scrap (Chicago) and No. 1 Heavy Melt (Chicago) as published by the AMM for the day the contract is let. The indices will be converted from dollars per ton to dollars per kg (lb).

The unit masses (weights) 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 CBP_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 CBP_L and CBP_M in excess of five percent, as calculated by:

$$\text{Percent Difference} = \{(CBP_L - CBP_M) \div CBP_L\} \times 100$$

Steel cost adjustments will be calculated by the Engineer and will be paid or deducted when all other contract requirements for the steel items 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.

Attachment

Item	Unit Mass (Weight)
Metal Piling (excluding temporary sheet piling)	
Furnishing Metal Pile Shells 305 mm (12 in.), 3.80 mm (0.179 in.) wall thickness)	34 kg/m (23 lb/ft)
Furnishing Metal Pile Shells 305 mm (12 in.), 6.35 mm (0.250 in.) wall thickness)	48 kg/m (32 lb/ft)
Furnishing Metal Pile Shells 356 mm (14 in.), 6.35 mm (0.250 in.) wall thickness)	55 kg/m (37 lb/ft)
Other piling	See plans
Structural Steel	See plans for weights
Reinforcing Steel	See plans for weights
Dowel Bars and Tie Bars	3 kg (6 lb) each
Mesh Reinforcement	310 kg/sq m (63 lb/100 sq ft)
Guardrail	
Steel Plate Beam Guardrail, Type A w/steel posts	30 kg/m (20 lb/ft)
Steel Plate Beam Guardrail, Type B w/steel posts	45 kg/m (30 lb/ft)
Steel Plate Beam Guardrail, Types A and B w/wood posts	12 kg/m (8 lb/ft)
Steel Plate Beam Guardrail, Type 2	140 kg (305 lb) each
Steel Plate Beam Guardrail, Type 6	570 kg (1260 lb) each
Traffic Barrier Terminal, Type 1 Special (Tangent)	330 kg (730 lb) each
Traffic Barrier Terminal, Type 1 Special (Flared)	185 kg (410 lb) each
Steel Traffic Signal and Light Poles, Towers and Mast Arms	
Traffic Signal Post	16 kg/m (11 lb/ft)
Light Pole, Tenon Mount and Twin Mount, 9 m – 12 m (30 - 40 ft)	21 kg/m (14 lb/ft)
Light Pole, Tenon Mount and Twin Mount, 13.5 m – 16.5 m (45 - 55 ft)	31 kg/m (21 lb/ft)
Light Pole w/Mast Arm, 9 m – 15.2 m (30 - 50 ft)	19 kg/m (13 lb/ft)
Light Pole w/Mast Arm, 16.5 m – 18 m (55 - 60 ft)	28 kg/m (19 lb/ft)
Light Tower w/Luminaire Mount, 24 m – 33.5 m (80 - 110 ft)	46 kg/m (31 lb/ft)
Light Tower w/Luminaire Mount, 36.5 m – 42.5 m (120 - 140 ft)	97 kg/m (65 lb/ft)
Light Tower w/Luminaire Mount, 45.5 m – 48.5 m (150 - 160 ft)	119 kg/m (80 lb/ft)
Metal Railings (excluding wire fence)	
Steel Railing, Type SM	95 kg/m (64 lb/ft)
Steel Railing, Type S-1	58 kg/m (39 lb/ft)
Steel Railing, Type T-1	79 kg/m (53 lb/ft)
Steel Bridge Rail	77 kg/m (52 lb/ft)
Frames and Grates	
Frame	115 kg (250 lb)
Lids and Grates	70 kg (150 lb)

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SUBCONTRACTOR MOBILIZATION PAYMENTS (BDE)

Effective: April 2, 2005

To account for the preparatory work and operations necessary for the movement of subcontractor personnel, equipment, supplies, and incidentals to the project site and for all other work or operations that must be performed or costs incurred when beginning work approved for subcontracting in accordance with Article 108.01 of the Standard Specifications, the Contractor shall make a mobilization payment to each subcontractor.

This mobilization payment shall be made at least 14 days prior to the subcontractor starting work. The amount paid shall be equal to 3 percent of the amount of the subcontract reported on form BC 260A submitted for the approval of the subcontractor's work.

This provision shall be incorporated directly or by reference into each subcontract approved by the Department.

80143

108 A

Return With Bid

**ILLINOIS DEPARTMENT
OF TRANSPORTATION**

**OPTION FOR
STEEL COST ADJUSTMENT**

The bidder shall submit this form with his/her bid. Failure to submit the form shall make this contract exempt of steel 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 plans?

Yes

No

Signature: _____ **Date:** _____

80127

SUBGRADE PREPARATION (BDE)

Effective: November 1, 2002

Revise the tenth paragraph of Article 301.03 of the Standard Specifications to read:

"Equipment of such weight, or used in such a way as to cause a rut in the finished subgrade of 13 mm (1/2 in.) or more in depth, shall be removed from the work or the rutting otherwise prevented."

80086

SUPERPAVE BITUMINOUS CONCRETE MIXTURES (BDE)

Effective: January 1, 2000

Revised: April 1, 2004

Description. This work shall consist of designing, producing and constructing Superpave bituminous concrete mixtures using Illinois Modified Strategic Highway Research Program (SHRP) Superpave criteria. This work shall be according to Sections 406 and 407 of the Standard Specifications and the special provision, "Quality Control/Quality Assurance of Bituminous Concrete Mixtures", except as follows.

Materials.

- (a) Fine Aggregate Blend Requirement. The Contractor may be required to provide FA 20 manufactured sand to meet the design requirements. For mixtures with $N_{design} \geq 90$, at least 50 percent of the required fine aggregate fraction shall consist of either stone sand, slag sand, or steel slag sand meeting the FA/FM 20 gradation.
- (b) Reclaimed Asphalt Pavement (RAP). If the Contractor is allowed to use more than 15 percent RAP, as specified in the plans, a softer performance-graded binder may be required as determined by the Engineer.

RAP shall meet the requirements of the special provision, "RAP for Use in Bituminous Concrete Mixtures".

RAP will not be permitted in mixtures containing polymer modifiers.

RAP containing steel slag will be permitted for use in top-lift surface mixtures only.

- (c) Bituminous Material. The asphalt cement (AC) shall be performance-graded (PG) or polymer modified performance-graded (SBS-PG or SBR-PG) meeting the requirements of Article 1009.05 of the Standard Specifications for the grade specified on the plans.

The following additional guidelines shall be used if a polymer modified asphalt is specified:

- (1) The polymer modified asphalt cement shall be shipped, maintained, and stored at the mix plant according to the manufacturer's requirements. Polymer modified asphalt cement shall be placed in an empty tank and shall not be blended with other asphalt cements.
- (2) The mixture shall be designed using a mixing temperature of 163 ± 3 °C (325 ± 5 °F) and a gyratory compaction temperature of 152 ± 3 °C (305 ± 5 °F).
- (3) Pneumatic-tired rollers will not be allowed unless otherwise specified by the Engineer. A vibratory roller meeting the requirements of Article 406.16 of the

Standard Specifications shall be required in the absence of the pneumatic-tired roller.

Laboratory Equipment.

- (a) Superpave Gyrotory Compactor. The superpave gyrotory compactor (SGC) shall be used for all QC/QA testing.
- (b) Ignition Oven. The ignition oven shall be used to determine the AC content. The ignition oven shall also be used to recover aggregates for all required washed gradations.

The Engineer may waive the ignition oven requirement for AC content if the aggregates to be used are known to have ignition AC 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 AC content.

Mixture Design. The Contractor shall submit mix designs, for approval, for each required mixture. Mix designs shall be developed by Level III personnel who have successfully completed the course, "Superpave Mix Design Upgrade". Articles 406.10 and 406.13 of the Standard Specifications shall not apply. The mixtures shall be designed according to the respective Illinois Modified AASHTO references listed below.

AASHTO MP 2	Standard Specification for Superpave Volumetric Mix Design
AASHTO R 30	Standard Practice for Mixture Conditioning of Hot-Mix Asphalt (HMA)
AASHTO PP 28	Standard Practice for Designing Superpave HMA
AASHTO T 209	Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
AASHTO T 312	Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyrotory Compactor
AASHTO T 308	Determining the Asphalt Content of Hot Mix Asphalt (HMA) by the Ignition Method

- (a) Mixture Composition. The ingredients of the bituminous mixture shall be combined in such proportions as to produce a mixture conforming to the composition limits by weight. The gradation mixture specified on the plans shall produce a mixture falling within the limits specified in Table 1.

Sieve Size	IL-25.0 mm		IL-19.0 mm		IL-12.5 mm ^{4/}		IL-9.5 mm ^{4/}	
	min	max	min	max	min	max	min	max
37.5 mm (1 1/2 in.)		100						
25 mm (1 in.)	90	100		100				
19 mm (3/4 in.)		90	82	100		100		
12.5 mm (1/2 in.)	45	75	50	85	90	100		100
9.5 mm (3/8 in.)						89	90	100
4.75 mm (#4)	24	42 ^{2/}	24	50 ^{2/}	28	65	28	65
2.36 mm (#8)	16	31	20	36	28	48 ^{3/}	28	48 ^{3/}
1.18 mm (#16)	10	22	10	25	10	32	10	32
600 μm (#30)								
300 μm (#50)	4	12	4	12	4	15	4	15
150 μm (#100)	3	9	3	9	3	10	3	10
75 μm (#200)	3	6	3	6	4	6	4	6

1/ Based on percent of total aggregate weight.

2/ The mixture composition shall not exceed 40 percent passing the 4.75 mm (#4) sieve for binder courses with Ndesign ≥ 90.

3/ The mixture composition shall not exceed 40 percent passing the 2.36 mm (#8) sieve for surface courses with Ndesign ≥ 90.

4/ The mixture composition for surface courses shall be according to IL-12.5 mm or IL-9.5 mm, unless otherwise specified by the Engineer.

One of the above gradations shall be used for leveling binder as specified in the plans and according to Article 406.04 of the Standard Specifications.

It is recommended that the selected combined aggregate gradation not pass through the restricted zones specified in Illinois Modified AASHTO MP 2.

- (b) Dust/AC Ratio for Superpave. The ratio of material passing the 75 μm (#200) sieve to total asphalt cement shall not exceed 1.0 for mixture design (based on total weight of mixture).
- (c) Volumetric Requirements. The target value for the air voids of the hot mix asphalt (HMA) shall be 4.0 percent at the design number of gyrations. The VMA and VFA of the HMA design shall be based on the nominal maximum size of the aggregate in the mix and shall conform to the requirements listed in Table 2.

TABLE 2. VOLUMETRIC REQUIREMENTS					
Ndesign	Voids in the Mineral Aggregate (VMA), % minimum				Voids Filled with Asphalt (VFA), %
	IL-25.0	IL-19.0	IL-12.5	IL-9.5	
50	12.0	13.0	14.0	15	65 - 78
70					
90					
105					65 - 75

- (d) Determination of Need for Anti-Stripping Additive. The mixture designer shall determine if an additive is needed in the mix to prevent stripping. The determination will be made on the basis of tests performed according to Illinois Modified T 283 using 4 in. Marshall bricks. To be considered acceptable by the Department as a mixture not susceptible to stripping, the ratio of conditioned to unconditioned split tensile strengths (TSRs) shall be equal to or greater than 0.75. Mixtures, either with or without an additive, with TSRs less than 0.75 will be considered unacceptable.

If it is determined that an additive is required, the additive may be hydrated lime, slaked quicklime, or a liquid additive, at the Contractor's option. The liquid additive shall be selected from the Department's list of approved additives and may be limited to those which have exhibited satisfactory performance in similar mixes.

Dry hydrated lime shall be added at a rate of 1.0 to 1.5 percent by weight of total dry aggregate. Slurry shall be added in such quantity as to provide the required amount of hydrated lime solids by weight of total dry aggregate. The exact rate of application for all anti-stripping additives will be determined by the Department. The method of application shall be according to Article 406.12 of the Standard Specifications.

Personnel. The QC Manager and Level I Technician shall have successfully completed the Department's "Superpave Field Control Course".

Required Plant Tests. Testing shall be conducted to control the production of the bituminous mixture. The Contractor shall use the test methods identified to perform the following mixture tests at a frequency not less than that indicated in Table 3.

TABLE 3. REQUIRED PLANT TESTS for SUPERPAVE		
Parameter	Frequency of Tests	Test Method
Aggregate Gradation Hot bins for batch and continuous plants Individual cold-feeds or combined belt-feed for drier drum plants. (% passing sieves: 12.5 mm (1/2 in.), 4.75 mm (No. 4), 2.36 mm (No. 8), 600 µm (No. 30), 75 µm (No. 200))	1 dry gradation per day of production (either morning or afternoon sample). and 1 washed ignition oven test on the mix per day of production (conduct in afternoon if dry gradation is conducted in the morning or vice versa). NOTE. The order in which the above tests are conducted shall alternate from the previous production day (example: a dry gradation conducted in the morning will be conducted in the afternoon on the next production day and so forth). The dry gradation and washed ignition oven test results shall be plotted on the same control chart.	Illinois Procedure (See Manual of Test Procedures for Materials).
Asphalt Content by Ignition Oven (Note 1.)	1 per half day of production	Illinois Modified AASHTO T 308
Air Voids	Bulk Specific Gravity of Gyratory Sample	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	Illinois Modified AASHTO T 209

Note 1. The Engineer may waive the ignition oven requirement for AC content if the aggregates to be used are known to have ignition AC 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 AC content.

During production, the ratio of minus 75 µm (#200) sieve material to total asphalt cement shall be not less than 0.6 nor more than 1.2 and the moisture content of the mixture at discharge from the mixer shall not exceed 0.5 percent. If at any time the ratio of minus 75 µm (#200) material to asphalt or moisture content of the mixture falls outside the stated limits, production of the mix shall cease. The cause shall be determined and corrective action satisfactory to the Engineer shall be initiated prior to resuming production.

During production, mixtures containing an anti-stripping additive will be tested by the Department for stripping according to Illinois Modified T 283. If the mixture fails to meet the TSR

criteria for acceptance, no further mixture will be accepted until the Contractor takes such action as is necessary to furnish a mixture meeting the criteria.

Construction Requirements

Lift Thickness.

- (a) Binder and Surface Courses. The minimum compacted lift thickness for constructing bituminous concrete binder and surface courses shall be according to Table 4:

Mixture	Thickness, mm (in.)
IL-9.5	32 (1 1/4)
IL-12.5	38 (1 1/2)
IL-19.0	57 (2 1/4)
IL-25.0	76 (3)

- (b) Leveling Binder. Mixtures used for leveling binder shall be as follows:

Nominal, Compacted, Leveling Binder Thickness, mm (in.)	Mixture
≤ 32 (1 1/4)	IL-9.5
32 (1 1/4) to 50 (2)	IL 9.5 or IL-12.5

Density requirements shall apply for leveling binder when the nominal, compacted thickness is 32 mm (1 1/4 in.) or greater for IL-9.5 mixtures and 38 mm (1 1/2 in.) or greater for IL-12.5 mixtures.

- (c) Full-Depth Pavement. The compacted thickness of the initial lift of binder course shall be 100 mm (4 in.). The compacted thickness of succeeding lifts shall meet the minimums specified in Table 4 but not exceed 100 mm (4 in.).

If a vibratory roller is used for breakdown, the compacted thickness of the binder lifts, excluding the top lift, may be increased to 150 mm (6 in.) provided the required density is obtained.

- (d) Bituminous Patching. The minimum compacted lift thickness for constructing bituminous patches shall be according to Table 4.

Control Charts/Limits. Control charts/limits shall be according to QC/QA Class I requirements, except density shall be plotted on the control charts within the following control limits:

TABLE 6. DENSITY CONTROL LIMITS		
Mixture	Parameter	Individual Test
12.5 mm / 9.5 mm	Ndesign \geq 90	92.0 – 96.0%
12.5 mm / 9.5 mm	Ndesign $<$ 90	92.5 – 97.4%
19.0 mm / 25.0 mm	Ndesign \geq 90	93.0 – 96.0%
19.0 mm / 25.0 mm	Ndesign $<$ 90	93.0 – 97.4%

Basis of Payment. On resurfacing projects, this work will be paid for at the contract unit price per metric ton (ton) for BITUMINOUS CONCRETE SURFACE COURSE, SUPERPAVE, of the friction aggregate mixture and Ndesign specified, LEVELING BINDER (HAND METHOD), SUPERPAVE, of the Ndesign specified, LEVELING BINDER (MACHINE METHOD), SUPERPAVE, of the Ndesign specified, and BITUMINOUS CONCRETE BINDER COURSE, SUPERPAVE, of the mixture composition and Ndesign specified.

On resurfacing projects in which polymer modifiers are required, this work will be paid for at the contract unit price per metric ton (ton) for POLYMERIZED BITUMINOUS CONCRETE SURFACE COURSE, SUPERPAVE, of the friction aggregate mixture and Ndesign specified, POLYMERIZED LEVELING BINDER (HAND METHOD), SUPERPAVE, of the Ndesign specified, POLYMERIZED LEVELING BINDER (MACHINE METHOD), SUPERPAVE, of the Ndesign specified, and POLYMERIZED BITUMINOUS CONCRETE BINDER COURSE, SUPERPAVE, of the mixture composition and Ndesign specified.

On full-depth pavement projects, this work will be paid for at the contract unit price per square meter (square yard) for BITUMINOUS CONCRETE PAVEMENT, (FULL-DEPTH), SUPERPAVE, of the thickness specified.

On projects where widening is constructed and the entire pavement is then resurfaced, the binder for the widening will be paid for at the contract unit price per square meter (square yard) for BITUMINOUS CONCRETE BINDER COURSE, SUPERPAVE, of the mixture composition, Ndesign, and thickness specified. The surface and binder used to resurface the entire pavement will be paid for according to the paragraphs above for resurfacing projects.

80010

176

TEMPORARY CONCRETE BARRIER (BDE)

Effective: October 1, 2002
Revised: November 1, 2003

Revise Section 704 of the Standard Specifications to read:

"SECTION 704. TEMPORARY CONCRETE BARRIER

704.01 Description. This work shall consist of furnishing, placing, maintaining, relocating and removing precast concrete barrier at temporary locations as shown on the plans or as directed by the Engineer.

704.02 Materials. Materials shall meet the requirements of the following Articles of Section 1000 - Materials:

Item	Article/Section
(a) Portland Cement Concrete	1020
(b) Reinforcement Bars (Note 1).....	1006.10(a)(b)
(c) Connecting Pins and Anchoring Pins.....	1006.09
(d) Connecting Loop Bars (Note 2)	
(e) Rapid Set Mortar (Note 3)	

Note 1. Reinforcement bars shall be Grade 400 (Grade 60).

Note 2. Connecting loop bars shall be smooth bars conforming to the requirements of ASTM A 36.

Note 3. Rapid set materials shall be obtained from the Department's approved list of Packaged, Dry, Rapid Hardening Cementitious Materials for Concrete Repairs. For a rapid set mortar mixture, one part packaged rapid set cement shall be combined with two parts fine aggregate, by volume or a packaged rapid set mortar shall be used. Mixing of the rapid set mortar shall be according to the manufacturer's instructions.

CONSTRUCTION REQUIREMENTS

704.03 General. Precast concrete barrier produced after October 1, 2002 shall meet National Cooperative Highway Research Program (NCHRP) Report 350, Category 3, Test Level 3 requirements and have the F shape. Precast concrete barrier shall be constructed according to the Bureau of Materials and Physical Research's Policy Memorandum "Quality Control/Quality Assurance Program for Precast Concrete Products", applicable portions of Sections 504 and 1020, and to the details shown on the plans.

Precast units shall not be removed from the casting beds until a flexural strength of 2,000 kPa (300 psi) or a compressive strength of 10,000 kPa (1400 psi) is attained. When the

concrete has attained a compressive strength according to Article 1020.04, and not prior to four days after casting, the units may be loaded, shipped and used.

704.04 Installation. F shape barrier units shall be seated on bare, clean pavement or paved shoulder and pinned together in a smooth, continuous line at the exact locations provided by the Engineer. The barrier unit at each end of the installation shall be secured to the pavement or paved shoulder using six anchoring pins and protected with an impact attenuator as shown on the plans.

F shape and New Jersey shape barrier units shall not be mixed in the same run.

Barrier units or attachments damaged during transportation or handling, or by traffic during the life of the installation, shall be repaired or replaced by the Contractor at his/her expense. The Engineer will be the sole judge in determining which units or attachments require repair or replacement.

The temporary barriers shall be removed when no longer required by the contract. After removal, all anchoring holes in the pavement or paved shoulder shall be filled with a rapid set mortar. Only enough water to permit placement and consolidation by rodding shall be used and the material shall be struck-off flush.

704.05 New Jersey Shape Barrier. New Jersey shape barrier produced prior to October 1, 2002 according to earlier Department standards, may be used until January 1, 2008.

Barrier units or attachments damaged during transportation or handling, or by traffic during the life of the installation, shall be repaired or replaced by the Contractor at his/her expense. The Engineer will be the sole judge in determining which units or attachments require repair or replacement.

F shape and New Jersey shape barrier units shall not be mixed in the same run.

The barrier unit at each end of the installation shall be secured to the pavement or paved shoulder using six dowel bars and protected with an impact attenuator as shown on the plans.

The temporary barriers shall be removed when no longer required by the contract. After removal, all anchoring holes in the pavement or paved shoulder shall be filled with a rapid set mortar. Only enough water to permit placement and consolidation by rodding shall be used and the material shall be struck-off flush.

704.06 Method of Measurement. Temporary concrete barrier will be measured for payment in meters (feet) in place along the centerline of the barrier. When temporary concrete barrier is relocated within the limits of the jobsite, the relocated barrier will be measured for payment in meters (feet) in place along the centerline of the barrier.

704.07 Basis of Payment. When the Contractor furnishes the barrier units, this work will be paid for at the contract unit price per meter (foot) for TEMPORARY CONCRETE BARRIER or RELOCATE TEMPORARY CONCRETE BARRIER.

When the Department furnishes the barrier units, this work will be paid for at the contract unit price per meter (foot) for TEMPORARY CONCRETE BARRIER, STATE OWNED or RELOCATE TEMPORARY CONCRETE BARRIER, STATE OWNED.

Impact attenuators will be paid for separately." |

80092

TEMPORARY EROSION CONTROL (BDE)

Effective: November 1, 2002

Revise the fifth sentence of the third paragraph of Article 280.04(a) of the Standard Specifications to read:

"This work may be constructed of hay or straw bales, extruded UV resistant high density polyethylene panels, erosion control blanket, mulch barrier, aggregate barriers, excavation, seeding, or mulch used separately or in combination, as approved, by the Engineer."

Add the following paragraphs after the fifth paragraph of Article 280.04(a) of the Standard Specifications.

"A ditch check constructed of extruded, UV resistant, high density polyethylene panels, "M" pins and erosion control blanket shall consist of the following materials:

Extruded, UV resistant, high density polyethylene panels shall have a minimum height of 250 mm (10 in.) and minimum length of 1.0 m (39.4 in.). The panels shall have a 51 mm (2 in.) lip along the bottom of the panel. Each panel shall have a single rib thickness of 4 mm (5/32 in.) with a 12 mm (1/2 in.) distance between the ribs. The panels shall have an average apparent opening size equal to 4.75 mm (No. 4) sieve, with an average of 30 percent open area. The tensile strength of each panel shall be 26.27 kN/m (1800 lb/ft) in the machine direction and 7.3 kN/m (500 lb/ft) in the transverse direction when tested according to ASTM D 4595.

"M" pins shall be at least 76 mm (3 in.) by 686 mm (27 in.), constructed out of deformed grade C1008 D3.5 rod (0.211 in. diameter). The rod shall have a minimum tensile strength of 55 MPa (8000 psi).

Erosion control blanket shall conform to Article 251.04.

A section of erosion control blanket shall be placed transverse to the flowline direction of the ditch prior to the construction of the polyethylene ditch check. The length of the section shall extend from the top of one side of the ditch to the top of the opposite side of the ditch, while the width of the section shall be one roll width of the blanket. The upstream edge of the erosion control blanket shall be secured in a 100 mm (4 in.) trench. The blanket shall be secured in the trench with 200 mm (8 in.) staples placed at 300 mm (1 ft) intervals along the edge before the trench is backfilled. Once the upstream edge of the blanket is secured, the downstream edge shall be secured with 200 mm (8 in.) staples placed at 300 mm (1 ft) intervals along the edge. The polyethylene ditch check shall be installed in the middle of the erosion control blanket, with the lip of each panel facing outward.

The ditch check shall consist of two panels placed back to back forming a single row. Placement of the first two panels shall be at the toe of the backslope or sideslope, with the panels extending across the bottom of the ditch. Subsequent panels shall extend both across the bottom of the ditch and up the opposite sideslope, as well as up the original backslope or sideslope at the distance determined by the Engineer.

The M pins shall be driven through the panel lips to secure the panels to the ground. M pins shall be installed in the center of the panels with adjacent panels overlapping the ends a minimum of 50 mm (2 in.). The pins shall be placed through both sets of panels at each overlap. They shall be installed at an interval of three M pins per one meter (39 in.) length of ditch check. The panels shall be wedged into the M pins at the top to ensure firm contact between the entire bottom of the panels and the soil."

80087

TRAFFIC CONTROL DEFICIENCY DEDUCTION (BDE)

Effective: April 1, 1992

Revised: January 1, 2005

To ensure a prompt response to incidents involving the integrity of work zone traffic control, the Contractor shall provide a telephone number where a responsible individual can be contacted 24 hours-a-day.

When the Engineer is notified, or determines a traffic control deficiency exists, he/she will notify and direct the Contractor to correct the deficiency within a specified time. The specified time, which begins upon notification to the Contractor, will be from 1/2 hour to 12 hours based upon the urgency of the situation and the nature of the deficiency. The Engineer shall be the sole judge.

A deficiency may be any lack of repair, maintenance, or non-compliance with the traffic control plan. A deficiency may also be applied to situations where corrective action is not an option such as the use of non-certified flaggers for short term operations; working with lane closures beyond the time allowed in the contract; or failure to perform required contract obligations such as traffic control surveillance.

If the Contractor fails to correct a deficiency within the specified time, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency exists. The calendar day(s) will begin with notification to the Contractor and end with the Engineer's acceptance of the correction. The daily monetary deduction will be either \$1,000 or 0.05 percent of the awarded contract value, whichever is greater. For those deficiencies where corrective action was not an option this monetary deduction will be immediate.

In addition, if the Contractor fails to respond, the Engineer may correct the deficiency and the cost thereof will be deducted from monies due or which may become due the Contractor. This corrective action will in no way relieve the Contractor of his/her contractual requirements or responsibilities.

5729I

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 6. In the event the contractor subcontracts a portion of the contract work, he shall determine how many, if any, of the trainees are to be trained by the subcontractor, provided however, that the contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The contractor shall also insure that this Training Special Provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within the reasonable area of recruitment. Prior to commencing construction, the contractor shall submit to the Illinois Department of Transportation for approval the number of trainees to be trained in each selected classification and training program to be used. Furthermore, the contractor shall specify the starting time for training in each of the classifications. The contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeyman status is a primary objective of this Training Special Provision. Accordingly, the contractor shall make every effort to enroll minority trainees and women (e.g. by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent such persons are available within a reasonable area of recruitment. The contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the contractor and approved by the Illinois Department of Transportation and the Federal Highway Administration. The Illinois Department of Transportation and the Federal Highway Administration shall approve a program, if it is reasonably calculated to meet the equal employment opportunity obligations of the contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved by not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the Illinois Department of Transportation and the Federal Highway Administration. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Except as otherwise noted below, the contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program. As approved by the Engineer, reimbursement will be made for training of persons in excess of the number specified herein. This reimbursement will be made even though the contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the contractor from receiving other reimbursement. Reimbursement for offsite training indicated above may only be made to the contractor where he does one or more of the following and the trainees are concurrently employed on a Federal-aid project; contributes to the cost of the training, provides the instruction to the trainee or pays the trainee's wages during the offsite training period.

No payment shall be made to the contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyman, is caused by the contractor and evidences a lack of good faith on the part of the contractor in meeting the requirement of this Training Special Provision. It is normally expected that a trainee will begin his training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in his work classification or until he has completed his training program.

It is not required that all trainees be on board for the entire length of the contract. A contractor will have fulfilled his responsibilities under this Training Special Provision if he has provided acceptable training to the number of trainees specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Trainees will be paid at least 60 percent of the appropriate minimum journeyman's rate specified in the contract for the first half of the training period, 75 percent for the third quarter of the training period, and 90 percent for the last quarter of the training period, unless apprentices or trainees in an approved existing program are enrolled as trainees on this project. In that case, the appropriate rates approved by the Departments of Labor or Transportation in connection with the existing program shall apply to all trainees being trained for the same classification who are covered by this Training Special Provision.

The contractor shall furnish the trainee a copy of the program he will follow in providing the training. The contractor shall provide each trainee with a certification showing the type and length of training satisfactorily complete.

The contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.

METHOD OF MEASUREMENT The unit of measurement is in hours.

BASIS OF PAYMENT This work will be paid for at the contract unit price of 80 cents per hour for TRAINEES. The estimated total number of hours, unit price and total price have been included in the schedule of prices.

20338

TRANSIENT VOLTAGE SURGE SUPPRESSION (BDE)

Effective: August 1, 2003

Revise the first paragraph of Article 1074.03(a)(4) of the Standard Specifications to read:

"(4) Transient Voltage Surge Suppression. The cabinet shall be provided with transient voltage surge suppression. Transient surge suppression unit leads shall be kept as short as possible and ground shall be made directly to the cabinet wall or ground plate as near as possible to the object being grounded. All transient surge suppression units shall be tested and certified as meeting this specification by an independent testing laboratory. One copy of each of the full testing report shall be submitted to the Engineer."

Revise Article 1074.03(a)(4)a. of the Standard Specifications to read:

- "a. Surge Suppressor. The suppressor protecting the solid state controller, conflict monitor, and detection equipment shall consist of two stages: stage one which shall include a controller cabinet AC power protection assembly and stage two which shall include AC circuit protection.

The design of the stage one suppressor shall be modular and it shall be installed in such a way that it may be removed and replaced with the intersection under power and in flashing operation. It shall have a permanently mounted and wired base and a removable circuit package. The stage one suppressor shall have two LED failure indicators for power 'on' and suppression 'failure' and shall meet the following properties:

Stage One Suppressor	
Properties	Criteria
"Plug-in" suppression module	12 pin connector assembly
Clamp voltage	250 V at 20,000 A typical
Response time	Less than 5 nanoseconds
Maximum continuous service current	15 A at 120 VAC 60 Hz
High frequency noise attenuation	At least 50 dB at 100,000 Hz
Operating temperature	-40 °C (-40 °F) to 85 °C (185 °F)

If the controller assembly includes a system telemetry module or remote intersection monitor, the status of the stage one suppressor shall be continuously and remotely monitored by an appropriate alarm circuit.

The stage two, high speed, solid state, transient suppressor shall protect the system from transient over voltage without affecting power at the load. It shall suppress transients of either polarity and from either direction (source or load). The suppressor shall have a visual "on" indicator lamp when the unit is operating normally. It shall also have a UL plastic enclosure, a four position terminal strip for

power connection, and it shall utilize silicon avalanche diode technology. The stage two suppressor shall meet the following properties:

Stage Two Suppressor	
Properties	Criteria
Nominal service voltage	120 V at 50/60 Hz
Maximum voltage protection level	± 330 V
Minimum voltage protection level	± 220 V $\pm 5\%$
Minimum surge current rating	700 A
Stand by power	Less than 0.5 Watts
Hot to neutral leakage current at 120 V RMS	Less than 5μ A
Maximum response time	5 nanoseconds
Operating and Storage temperature	-20 °C (-4 °F) to 50 °C (122 °F)

80107m

187

TRUCK BED RELEASE AGENT (BDE)

Effective: April 1, 2004

Add the following sentence after the third sentence of the first paragraph of Article 406.14 of the Standard Specifications.

"In addition to the release agent, the Contractor may use a light scatter of manufactured sand (FA 20 or FA 21) evenly distributed over the bed of the vehicle."

80123

WEIGHT CONTROL DEFICIENCY DEDUCTION (BDE)

Effective: April 1, 2001

Revised: August 1, 2002

The Contractor shall provide accurate weights of materials delivered to the contract for incorporation into the work (whether temporary or permanent) and for which the basis of payment is by weight. These weights shall be documented on delivery tickets which shall identify the source of the material, type of material, the date and time the material was loaded, the contract number, the net weight, the tare weight when applicable and the identification of the transporting vehicle. For aggregates, the Contractor shall have the driver of the vehicle furnish or establish an acceptable alternative to provide the contract number and a copy of the material order to the source for each load. The source is defined as that facility that produces the final material product that is to be incorporated into the contract pay items.

The Department will conduct random, independent vehicle weight checks for material sources according to the procedures outlined in the Documentation Section Policy Statement of the Department's Construction Manual and hereby incorporated by reference. The results of the independent weight checks shall be applicable to all contracts containing this Special Provision. Should the vehicle weight check for a source result in the net weight of material on the vehicle exceeding the net weight of material shown on the delivery ticket by 0.50% (0.70% for aggregates) or more, the Engineer will document the independent vehicle weight check and immediately furnish a copy of the results to the Contractor. No adjustment in pay quantity will be made. Should the vehicle weight check for a source result in the net weight of material shown on the delivery ticket exceeding the net weight of material on the vehicle by 0.50% (0.70% for aggregates) or more, the Engineer will document the independent vehicle weight check and immediately furnish a copy of the results to the Contractor. The Engineer will adjust the net weight shown on the delivery ticket to the checked delivered net weight as determined by the independent vehicle weight check.

The Engineer will also adjust the method of measurement for all contracts for subsequent deliveries of all materials from the source based on the independent weight check. The net weight of all materials delivered to all contracts containing this Special Provision from this source, for which the basis of payment is by weight, will be adjusted by applying a correction factor "A" as determined by the following formula:

$$A = 1.0 - \left(\frac{B-C}{B} \right); \text{ Where } A \leq 1.0; \left(\frac{B-C}{C} \right) > 0.50\% \text{ (0.70\% for aggregates)}$$

Where A = Adjustment factor
B = Net weight shown on delivery ticket
C = Net weight determined from independent weight check

The adjustment factor will be applied as follows:

$$\text{Adjusted Net Weight} = A \times \text{Delivery Ticket Net Weight}$$

The adjustment factor will be imposed until the cause of the deficient weight is identified and corrected by the Contractor to the satisfaction of the Engineer. If the cause of the deficient weight is not identified and corrected within seven (7) calendar days, the source shall cease delivery of all materials to all contracts containing this Special Provision for which the basis of payment is by weight.

Should the Contractor elect to challenge the results of the independent weight check, the Engineer will continue to document the weight of material for which the adjustment factor would be applied. However, provided the Contractor furnishes the Engineer with written documentation that the source scale has been calibrated within seven (7) calendar days after the date of the independent weight check, adjustments in the weight of material paid for will not be applied unless the scale calibration demonstrates that the source scale was not within the specified Department of Agriculture tolerance.

At the Contractor's option, the vehicle may be weighed on a second independent Department of Agriculture certified scale to verify the accuracy of the scale used for the independent weight check.

80048

WORK ZONE TRAFFIC CONTROL DEVICES (BDE)

Effective: January 1, 2003

Revised: November 1, 2004

Add the following to Article 702.01 of the Standard Specifications:

"All devices and combinations of devices shall meet the requirements of the National Cooperative Highway Research Program (NCHRP) Report 350 for their respective categories. The categories are as follows:

Category 1 includes small, lightweight, channelizing and delineating devices that have been in common use for many years and are known to be crashworthy by crash testing of similar devices or years of demonstrable safe performance. These include cones, tubular markers, flexible delineators and plastic drums with no attachments. Category 1 devices shall be crash tested and accepted or may be self-certified by the manufacturer.

Category 2 includes devices that are not expected to produce significant vehicular velocity change but may otherwise be hazardous. These include drums and vertical panels with lights, barricades and portable sign supports. Category 2 devices shall be crash tested and accepted for Test Level 3.

Category 3 includes devices that are expected to cause significant velocity changes or other potentially harmful reactions to impacting vehicles. These include crash cushions, truck mounted attenuators and other devices not meeting the definitions of Category 1 or 2. Category 3 devices shall be crash tested and accepted for either Test Level 3 or the test level specified.

Category 4 includes portable or trailer-mounted devices such as arrow boards, changeable message signs, temporary traffic signals and area lighting supports. Currently, there is no implementation date set for this category and it is exempt from the NCHRP 350 compliance requirement.

The Contractor shall provide a manufacturer's self-certification letter for each Category 1 device and an FHWA acceptance letter for each Category 2 and Category 3 device used on the contract. The letters shall state the device meets the NCHRP 350 requirements for its respective category and test level, and shall include a detail drawing of the device."

Delete the third, fourth and fifth paragraphs of Article 702.03(b) of the Standard Specifications.

Delete the third sentence of the first paragraph of Article 702.03(c) of the Standard Specifications.

Revise the first sentence of the first paragraph of Article 702.03(e) of the Standard Specifications to read:

"Drums shall be nonmetallic and have alternating reflectorized Type AA or Type AP fluorescent orange and reflectorized white horizontal, circumferential stripes."

Add the following to Article 702.03 of the Standard Specifications:

"(h) Vertical Barricades. Vertical barricades may be used in lieu of cones, drums or Type II barricades to channelize traffic."

Delete the fourth paragraph of Article 702.05(a) of the Standard Specifications.

Revise the sixth paragraph of Article 702.05(a) of the Standard Specifications to read:

"When the work operations exceed four days, all signs shall be post mounted unless the signs are located on the pavement or define a moving or intermittent operation. When approved by the Engineer, a temporary sign stand may be used to support a sign at 1.2 m (5 ft) minimum where posts are impractical. Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 30 m (100 ft) to avoid obstacles, hazards or to improve sight distance, when approved by the Engineer. "ROAD CONSTRUCTION AHEAD" signs will also be required on side roads located within the limits of the mainline "ROAD CONSTRUCTION AHEAD" signs."

Delete all references to "Type 1A barricades" and "wing barricades" throughout Section 702 of the Standard Specifications.

80097

STORM WATER POLLUTION PREVENTION PLAN

The following plan is established and incorporated in the project to direct the Contractor in the placement of temporary erosion-control systems and to provide a storm sewer water pollution prevention plan for compliance under NPDES.

The purpose of this plan is to minimize erosion within the construction site and to limit sediments from leaving the construction site by utilizing proper temporary erosion-control systems and providing ground cover within a reasonable amount of time.

Certain erosion-control facilities shall be installed by the Contractor at the beginning of construction. Other items shall be installed by the Contractor as directed by the Engineer on a case-by-case situation, depending on the Contractor's sequence of activities, time of year, and expected weather conditions.

The Contractor shall install permanent erosion-control systems and seeding within a time frame specified herein and as directed by the Engineer, therefore minimizing the amount of area susceptible to erosion and reducing the amount of temporary seeding. The Engineer will determine if any temporary erosion-control systems shown in the plan can be deleted and if any additional temporary erosion-control systems which are not included in this plan shall be added. The Contractor shall perform all work as directed by the Engineer and as shown in the Illinois Urban manual or the IDOT Standard 280001.

Section 280, Temporary Erosion Control, of the Standard Specifications additionally supplements this plan.

Site Description

Description of Construction Activity

1. This improvement along Randall Road, Illinois Route 64 (Main Street), and Dean Street consists of P.C.C. jointed pavement and full-depth bituminous pavement reconstruction, full-depth bituminous widening and resurfacing, poured-in-place concrete bicycle underpass and bituminous bicycle path, sidewalk, curb and gutter, storm sewer, water main, traffic signal modernization and interconnect, lighting, pavement marking, landscaping, and other appurtenance work necessary to complete the project.

Description of Intended Sequence for Major Construction Activities which will Disturb Soils for Major Portions of the Construction Site

1. Installation of temporary erosion control measures for each of the construction sequences
2. Pavement removal
3. Excavation of the proposed stormwater detention storage facility
4. Excavation for proposed pavement construction and widening
5. Installation of water main, storm sewer, and sanitary sewer
6. Construction of pavement, curb and gutter and sidewalk, and final grading with temporary seeding
7. Permanent seeding and sodding
8. Removal of temporary erosion-control measures after final site stabilization

Area of Construction Site

The total area of the construction site is estimated to be 34 acres, of which 32 acres will be disturbed by excavation, grading, and other activities.

Other Reports, Studies, and Plans which Aid in the Development of the Storm Water Pollution Prevention Plan as Referenced Documents

1. Information on the soils and terrain within the site was obtained from topographic surveys and soil borings that were utilized for the development of the proposed temporary erosion-control systems.
2. Project plan documents, specifications, special provisions, and plan drawings indicating drainage patterns and approximate slopes anticipated after grading activities were utilized for the proposed placement of the temporary erosion-control systems.
3. The Urban Manual has been referenced for many erosion control measures.

Drainage Tributaries and Sensitive Areas Receiving Runoff from this Construction Site

1. All stormwater within this project is tributary to railroad ditches located within the project site.

Controls—Erosion Controls and Sediment Control

Description of Stabilization Practices at the Beginning of Construction

1. The drawings, specifications, and special provisions will ensure that existing vegetation is preserved where attainable, and disturbed portions of the site will be stabilized. Stabilization practices include: temporary seeding, permanent seeding, mulching, protection of trees, preservation of mature vegetation, and other appropriate measures as directed by the Engineer. 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 ceased.
 - a. Areas of existing vegetation (wood and grasslands) outside the proposed construction limits shall be identified by the Engineer for preserving and shall be protected from construction activities.
 - b. Dead, diseased, or unsuitable vegetation within the site shall be removed as directed by the Engineer, along with required tree removal.
 - c. As soon as reasonable access is available to all locations where water drains away from the project, temporary ditch checks, inlet and pipe protection, and perimeter erosion barrier shall be installed as called out in this plan and directed by the Engineer.
 - d. Bare and sparsely vegetated ground in high erodible areas as determined by the Engineer shall be temporarily seeded at the beginning of construction where no construction activities are expected within seven days.
 - e. Immediately after tree removal is completed, areas which are highly erodible as determined by the Engineer shall be temporarily seeded when no construction activities are expected within seven days.
 - f. At locations where a significant amount of water drains into the construction zone from outside areas (adjacent landowners), temporary ditch checks will be utilized to locally divert water, reduce flow rates, and collect outside siltation inside the right-of-way line.

2. Establishment of these temporary erosion-control measures will have additional benefits to the project. Desirable grass seed will become established in these areas and will spread seeds onto the construction site until permanent seeding/sowing and overseeding can be completed.

This plan has been prepared to comply with the provisions of the NPDES Permit Number ILR10, issued by the Illinois Environmental Protection Agency for storm water discharges from construction-site activities.

Description of Stabilization Practices During Construction

1. During construction, areas outside the construction limits as outlined previously herein shall be protected. The Contractor shall not use this area for staging (except as described on the plans and directed by the Engineer), parking of vehicles or construction equipment, storage of materials, or other construction-related activities.
 - a. Within the construction limits, areas which may be susceptible to erosion as determined by the Engineer shall remain undisturbed until full-scale construction is underway to prevent unnecessary soil erosion.
 - b. Earth stockpiles shall be temporarily seeded if they are to remain unused for more than 14 days.
 - c. As construction proceeds, the Contractor shall institute the following as directed by the Engineer:
 - (1) Place temporary erosion-control facilities at locations shown on the plans.
 - (2) Temporarily seed erodible bare earth on a weekly basis to minimize the amount of erodible surface area within the contract limits.
 - (3) Construct roadside ditches and provide temporary erosion-control systems.
 - (4) Temporarily divert water around proposed culvert locations.
 - (5) Build necessary embankment at culvert locations and then excavate and place culvert.
 - (6) Continue building up the embankment to the proposed grade while at the same time placing permanent erosion control such as riprap ditch lining and conducting final shaping to the slopes.
 - d. Excavated areas and embankment shall be permanently seeded immediately after final grading. If not, they shall be temporarily seeded if no construction activity in the area is planned for seven days.
 - e. Construction equipment shall be stored and fueled only at designated locations. All necessary measures shall be taken to contain any fuel or other pollutant in accordance with EPA water-quality regulations. Leaking equipment or supplies shall be immediately repaired or removed from the site.
 - f. The Resident Engineer shall inspect the project daily during construction activities. Inspection shall also be done weekly and after rains of $\frac{1}{2}$ inch or greater or equivalent snowfall and during the winter shutdown period. The project shall additionally be inspected by the construction field engineer on a bi-weekly basis to determine that erosion-control efforts are in place and effective and if other erosion-control work is necessary.
 - g. Sediment collected during construction of the various temporary erosion-control systems shall be disposed of on the site on a regular basis as directed by the Engineer.

- h. The temporary erosion-control systems shall be removed as directed by the Engineer after use is no longer needed or no longer functioning. The cost of this removal shall be included in the unit bid price for various temporary erosion-control pay items.

Description of Structural Practices after Final Grading

1. Temporary erosion-control systems shall be left in place with proper maintenance until permanent erosion control is in place and working properly and all proposed turf areas are seeded and established.
2. Once permanent erosion-control systems as proposed in the plans are functional and established, temporary items shall be removed, cleaned up, and disturbed turf reseeded.

Maintenance After Construction

1. Construction is complete after acceptance by *Kane County* final inspection. Maintenance up to this date will be by the Contractor.

Miscellaneous

1. Temporary erosion-control seeding shall be applied at a rate of 100 lbs/acre.
2. Straw bales, hay bales, perimeter erosion barrier, and silt fences will not be permitted for temporary or permanent ditch checks. Ditch checks shall be urethane foam/geotextile (silt wedges), and/or any other material approved by the erosion and sediment-control coordinator.
4. Sediment collected during construction by the various temporary erosion-control systems shall be disposed of on the site on a regular basis, as directed by the Engineer.
5. All erosion-control products furnished shall be specifically recommended by the manufacturer for the use specified in the erosion-control plan. Prior to the approval and use of the product, the Contractor shall submit to the Engineer a notarized certification by the producer stating the intended use of the product and that the physical properties required for this application are met or exceeded. The Contractor shall provide manufacturer installation procedures to facilitate the Engineer in construction inspection.

All items shall be constructed as shown on the plans or detailed by IDOT Standard 280001 or Illinois Urban Manual and as directed by the Engineer. Maintenance and cleaning of the erosion-control items shall be included in the respective erosion-control pay item.



Route FAP 336 (Randall Road)

Marked _____

Section 99-00243-00-PV

Project No. F-0336(008)

County Kane

This plan has been prepared to comply with the provisions of the NPDES Permit Number ILR10, issued by the Illinois Environmental Protection Agency 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.

James R. Longini
Signature
Project Manager
Title

2/03/05
Date

1. Site Description

a. The following is a description of the construction activity which is the subject of this plan:

This improvement along Randall Road, Illinois Route 64 (Main Street) and Dean Street consists of P.C.C. jointed pavement and full-depth bituminous pavement reconstruction, full-depth bituminous widening and resurfacing, poured-in-place concrete bicycle underpass and bituminous bicycle path, sidewalk, curb and gutter, storm sewer, water main, traffic signal modernization and interconnect, lighting, pavement marking, landscaping, and other appurtenance work necessary to complete the project.

b. The following is a description of the intended sequence of major activities which will disturb soils for major portions of the construction site, such as grubbing, excavation and grading:

Installation of temporary erosion-control measures for each of the construction sequences, pavement removal, excavation of the proposed stormwater detention storage facility, excavation for proposed pavement construction and widening, installation of water main, storm sewer and sanitary sewer, construction of pavement, curb and gutter and sidewalk, final grading, permanent seeding and sodding, and removal of temporary erosion-control measures after final site stabilization

c. The total area of the construction site is estimated to be 34 acres.

The total area of the site that it is estimated will be disturbed by excavation, grading or other activities is 32 acres.

- d. The estimated runoff coefficients of the various areas of the site after construction activities are completed are contained in the project drainage study which is hereby incorporated by reference in this plan. Information describing the soils at the site is contained either in the Soils Report for the project, which is hereby incorporated by reference, or in an attachment to this plan.
- e. The design/project report, hydraulic report, or plan documents, hereby incorporated by reference, contain site map(s) indicating drainage patterns and approximate slopes anticipated after major grading activities, areas of major soil disturbance, the location of major structural and nonstructural 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 a surface water.
- f. The names of receiving water(s) and aerial extent of wetland acreage at the site are in the design/project report or plan documents that are incorporated by reference as a part of this plan.

2. Controls

This section of the plan addresses the various controls that will be implemented for each of the major construction activities described in 1.b. above. For each measure discussed, the contractor that will be responsible for its implementation is indicated. Each such contractor has signed the required certification on forms which are attached to and a part of this plan:

a. Erosion and Sediment Controls

- (1) **Stabilization Practices.** Provided below is a description of interim and permanent stabilization practices, including site-specific scheduling of the implementation of the practices. Site plans will ensure that existing vegetation is preserved where attainable and disturbed portions of the site will be stabilized. Stabilization practices may include: temporary seeding, permanent seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures. Except as provided in 2.a.(1)(a) and 2.b., 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 14 days after the construction activity in that portion of the site has temporarily or permanently ceased on all disturbed portions of the site where construction activity will not occur for a period of 21 or more calendar days.
 - (a) Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceases is precluded by snow cover, stabilization measures shall be initiated as soon as practicable thereafter.

Description of Stabilization Practices:

The plans, specifications, and special provisions will ensure that existing vegetation is preserved where attainable, and disturbed portions of the site will be stabilized. Stabilization practices shall include temporary seeding, permanent seeding, mulching, sodding, and tree protection. Stabilization measures shall be installed as soon as practicable in disturbed portions of the site. Bare and sparsely-vegetated, erodible areas within the project site shall be temporarily seeded at the commencement of construction, if no grading or other disturbance is expected within 14 days.

- (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 silt fences, earth dikes, drainage swales, sediment traps, check dams, 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.

Description of Structural Practices:

Where water would drain away from the project site, perimeter erosion barrier shall be installed per plan and as directed by the Engineer. Rock outlet protection will be furnished at the outfalls of storm sewer and culvert by providing end sections and stone riprap with filter fabric to prevent scouring at the end of the pipes and prevent downstream erosion. Ditch checks and inlet and pipe protection shall be installed per plan and as directed by the Engineer. The proposed stormwater detention storage basin will be over excavated to provide both temporary and permanent sediment stilling basins and sediment trap. Stabilized entrances will be constructed to minimize the tracking of soil from within the site to the roadway.

b. 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.

- (1) Such practices may include: 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 Section 10-300 (Design Considerations) in Chapter 10 (Erosion and Sedimentation Control) of the Illinois Department of Transportation Drainage Manual. If practices other than those discussed in Section 10-300 are selected for implementation or if practices are applied to situations different from those covered in Section 10-300, the technical basis for such decisions will be explained below.
- (2) Velocity dissipation devices will be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g., maintenance of hydrologic conditions, such as the hydroperiod and hydrodynamics present prior to the initiation of construction activities).

Description of Storm Water Management Controls:

All pavement drainage inlets shall be connected to structures with a sump (catch basins). The predominance of the roadway drainage system will outlet to the proposed stormwater detention storage facility that is also designed to retain the first 3/4" of stormwater runoff from the new, directly connected impervious areas.

c. Other Controls

- (1) Waste Disposal. No solid materials, including building materials, shall be discharged into Waters of the State, except as authorized by a Section 404 permit.
- (2) The provisions of this plan shall ensure and demonstrate compliance with applicable State and/or local waste disposal, sanitary sewer or septic system regulations.

d. Approved State or Local Plans

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, 1995. 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 or site permits or 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 permit ILR10 incorporated by reference and are enforceable under this permit even if they are not specifically included in the plan.

Description of procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials:

All management practices, controls, and other provision in this plan are in accordance with IDOT Standard Specifications for Road and Bridge Constructions, IDOT Highway Standards, Illinois Urban Manual.

3. Maintenance

The following is a description of procedures that will be used to maintain, in good and effective operating conditions, vegetation, erosion and sediment control measures and other protective measures identified in this plan:

During construction, the Contractor shall clean and grade the work area to eliminate concentration of runoff, cover the open ends of pipes in trenches at the close of each working day, maintain or replace erosion and sediment control devices in a timely manner.

Prior to any landscaping or restoration work, the Contractor shall remove and dispose of silt retained by the silt traps, inlet protection, and ditch checks.

4. Inspections

Qualified personnel shall inspect disturbed areas of the construction site which have not been finally stabilized, structural control measures, and locations where vehicles enter or exit the site. Such inspections shall be conducted at least once every seven (7) calendar days and within 24 hours of the end of a storm that is 0.5 inches or greater or equivalent snowfall.

- a. Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion-control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles enter or exit the site shall be inspected for evidence of off site sediment tracking.
- b. Based on the results of the inspection, the description of potential pollutant sources identified in section 1 above and pollution-prevention measures identified in section 2 above shall be revised as appropriate as soon as practicable after such inspection. Any changes to this plan resulting from the required inspections shall be implemented within 7 calendar days following the inspection.
- c. A report summarizing the scope of the inspection, name(s), and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of this storm water pollution prevention plan, and actions taken in accordance with Section 4.b. shall be made and retained as part of the plan for at least three (3) years after the date of the inspection. The report shall be signed in accordance with Part VI. G of the general permit.
- d. 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 or Resident Technician shall complete and file an "Incidence of Noncompliance" (ION) report for the identified violation. The Resident Engineer or Resident Technician shall use forms provided by the Illinois Environmental Protection Agency 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 noncompliance shall be signed by a responsible authority in accordance with Part VI. G of the general permit.

The report of noncompliance 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

5. Non-Storm Water Discharges

Except for flows from fire-fighting activities, sources of non-storm water that are combined with storm water discharges associated with the industrial activity addressed in this plan must be described below. Appropriate pollution-prevention measures as described below will be implemented for the non-storm water component(s) of the discharge:

The only known sources of non-storm water discharges within the project will be from construction activities related to sod watering, dust control watering, and water main flushing.



This certification statement is a part of the Storm Water Pollution Prevention Plan for the project described below, in accordance with NPDES Permit No. ILR10, issued by the Illinois Environmental Protection Agency on May 14, 1998.

Project Information:

Route	<u>FAP 333 (Randall Road)</u>	Marked	<u></u>
Section	<u>99-00243-00-PV</u>	Project No.	<u>F-0336(008)</u>
County	<u>Kane</u>		

I certify under penalty of law that I understand the terms of the general National Pollutant Discharge Elimination System (NPDES) permit (ILR 10) that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Signature

Date

Title

Name of Firm

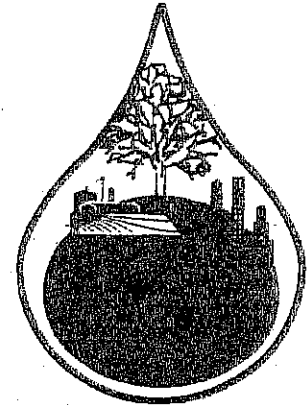
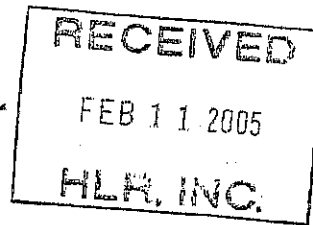
Street Address

City State

Zip Code

Telephone Number

Kane - DuPage Soil & Water
Conservation District



February 9, 2005

Randal G. Newkirk
Hampton, Lenzini and Renwick, Inc.
380 Shepard Drive
Elgin, Illinois 60123-7010

Ref: USACE # 200300929

Dear Randy:

I received your revised soil erosion and sedimentation control plan submittal for the Randall Road from Red Haw Lane to Prairie Street project in St. Charles, Illinois. Thank you for incorporating our comments into the plan, it will improve the quality of protection for the natural resources, both on and off site. This letter and a set of stamped plans located at the construction office on site, will serve to certify that the erosion and sediment control plans meet Technical Standards.

I will visit the site several times during the course of construction to assess compliance with the specifications and will be glad to address specific issues that may arise during the course of construction.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Willobee".

Mark Willobee, CPESC
District Manager/Resource Conservationist
Kane-DuPage Soil and Water Conservation District

CC: Jaimee Hammit USACE



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
200300929

November 2, 2004

<SENT VIA FACSIMILE>

SUBJECT: Soil Erosion and Sediment Control Plans for Proposed
Impacts to 0.08 acre of Wetland for Roadway Improvements to
Randall Road from Prairie Street to Red Haw Lane in Saint
Charles, Kane County, Illinois (SW 1/4 of Section 28 and SE 1/4
of Section 29, T40N R8E)

Mr. Paul Rogowski
Kane County Division of Transportation
41W011 Burlington Road
Saint Charles, Illinois 60175

Dear Mr. Rogowski:

The U.S. Army Corps of Engineers, Chicago District, has received your notification for authorization under the Regional Permit Program and has assigned 200300929 as its reference number. This number will be used on all future correspondence regarding your notification.

Following a preliminary evaluation of your project, the District has determined that your soil erosion and sediment control plans must be reviewed by the County Soil and Water Conservation District (SWCD) listed below.

Kane/DuPage SWCD
Attn: Mark Willobee
545 S. Randall Road
St. Charles, IL 60174
(630) 584-7961

Please contact the SWCD as soon as possible to obtain information on the application process required to review your plans. The submission of your plans to this agency and a determination that these meet technical standards is required in accordance with General Condition 4 of the Regional Permit Program.

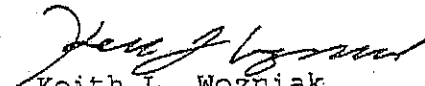
You are advised not to undertake any activity in connection with the proposed activity in any water of the United States until authorization under the RPP has been obtained. Any work related to the proposed project undertaken on upland is done so

-2-

at your own risk and will not prejudice the processing of your notification.

If you have any questions, please contact Ms. Jaimee Hammit of my staff by telephone at (312) 846-5537 or email at jaimee.w.hammit@usace.army.mil.

Sincerely,



Keith L. Wozniak
Chief, West Section
Regulatory Branch

Copy Furnished:

Kane County SWCD (Mark Willobee)
Hampton, Lenzini and Renwick, Inc. (James Lenzini)

LIGHTING SPECIFICATIONS

81400100 HANDHOLE

This work shall be done in accordance with Section 814 and Article 1088.10 of the Standard Specifications and the following:

The first sentence of the second paragraph of Article 1088.10(c) shall be revised as follows:

The outside cover shall contain a recessed ring or handle for lifting and a cast-in-place legend *TRAFFIC SIGNALS* or *KDOT LIGHTING* when used for traffic signals or highway lighting, respectively.

82102310 LUMINAIRE, SODIUM VAPOR, HORIZONTAL MOUNT, 310 WATT

82102400 LUMINAIRE, SODIUM VAPOR, HORIZONTAL MOUNT, 400 WATT

This work shall be done in accordance with Section 821 of the Standard Specifications and the following:

The luminaires shall have a factory-applied polyester powder paint finish. The color shall be dark bronze. A 2 inch x 4 inch color sample shall be submitted for approval.

The following six (6) Luminaire Performance Tables represent the various pavement widths and configurations that are included on this project. Submittals shall include calculations for each of the configurations using the same 310-watt luminaire to satisfy the performance requirements. If a single luminaire cannot satisfy the requirements for all configurations, it will be rejected.

The 400-watt luminaire shall be from the same manufacturer as the 310-watt luminaire and be the same model or series as the 310-watt luminaire. The 400-watt luminaire will not be used in the calculations.

**STATE OF ILLINOIS
IDOT DISTRICT 1
LUMINAIRE PERFORMANCE TABLE**

Randall Road—Six-Lane Section

GIVEN CONDITIONS		
ROADWAY DATA	Pavement Width	76.0 Feet
	Number of Lanes	6 @ 12.7 Feet
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
LIGHT POLE DATA	Mounting Height	40.0 Feet
	Mast Arm Length	15.0 Feet
	Pole Setback from Edge of Pavement	6.0 Feet
LUMINAIRE DATA	Lamp Type	310-Watt HPS
	Lamp Lumens	37,000
	I.E.S. Vertical Distribution	Medium
	I.E.S. Control of Distribution	Cutoff
	I.E.S. Lateral Distribution	Type II or Type III
	Total Light Loss Factor	0.70
LAYOUT DATA	Spacing	220 Feet
	Configuration	Opposite
	Luminaire Overhang over Edge of Pavement	9.0 Feet

NOTE: Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

PERFORMANCE REQUIREMENTS		
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NOTE: These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

ILLUMINATION	Average Horizontal Illumination, E_{AVE}	1.30	F_c
	Uniformity Ratio, E_{AVE}/E_{MIN}	3.0:1	
LUMINANCE	Average Luminance, L_{AVE}	0.90	Cd/m^2
	Uniformity Ratio, L_{AVE}/L_{MIN}	3.0:1	
	Uniformity Ratio, L_{MAX}/L_{MIN}	5.0:1	
	Max. Veiling Luminance Ratio, L_V/L_{AVE}	0.30:1	

**STATE OF ILLINOIS
IDOT DISTRICT 1
LUMINAIRE PERFORMANCE TABLE**

Randall Road—Eight-Lane Section

GIVEN CONDITIONS		
ROADWAY DATA	Pavement Width	100.0 Feet
	Number of Lanes	8 @ 12.5 Feet
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
LIGHT POLE DATA	Mounting Height	40.0 Feet
	Mast Arm Length	15.0 Feet
	Pole Setback from Edge of Pavement	6.0 Feet
LUMINAIRE DATA	Lamp Type	310-Watt HPS
	Lamp Lumens	37,000
	I.E.S. Vertical Distribution	Medium
	I.E.S. Control of Distribution	Cutoff
	I.E.S. Lateral Distribution	Type II or Type III
	Total Light Loss Factor	0.70
LAYOUT DATA	Spacing	180 Feet
	Configuration	Opposite
	Luminaire Overhang over Edge of Pavement	9.0 Feet

NOTE: Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

PERFORMANCE REQUIREMENTS		
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NOTE: These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

ILLUMINATION	Average Horizontal Illumination, E_{AVE}	1.30	Fc
	Uniformity Ratio, E_{AVE}/E_{MIN}	3.0:1	
LUMINANCE	Average Luminance, L_{AVE}	0.90	Cd/m ²
	Uniformity Ratio, L_{AVE}/L_{MIN}	3.0:1	
	Uniformity Ratio, L_{MAX}/L_{MIN}	5.0:1	
	Max. Veiling Luminance Ratio, L_V/L_{AVE}	0.30:1	

**STATE OF ILLINOIS
IDOT DISTRICT 1
LUMINAIRE PERFORMANCE TABLE**

Randall Road—Nine-Lane Section

GIVEN CONDITIONS		
ROADWAY DATA	Pavement Width	114.3 Feet
	Number of Lanes	9 @ 12.7
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
LIGHT POLE DATA	Mounting Height	40.0 Feet
	Mast Arm Length	15.0 Feet
	Pole Setback from Edge of Pavement	6.0 Feet
LUMINAIRE DATA	Lamp Type	310-Watt HPS
	Lamp Lumens	37,000
	I.E.S. Vertical Distribution	Medium
	I.E.S. Control of Distribution	Cutoff
	I.E.S. Lateral Distribution	Type II or Type III
	Total Light Loss Factor	0.70
LAYOUT DATA	Spacing	160 Feet
	Configuration	Opposite
	Luminaire Overhang over Edge of Pavement	9.0 Feet

NOTE: Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

PERFORMANCE REQUIREMENTS		
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NOTE: These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

ILLUMINATION	Average Horizontal Illumination, E_{AVE}	1.30	Fc
	Uniformity Ratio, E_{AVE}/E_{MIN}	3.0:1	
LUMINANCE	Average Luminance, L_{AVE}	0.90	Cd/m ²
	Uniformity Ratio, L_{AVE}/L_{MIN}	3.0:1	
	Uniformity Ratio, L_{MAX}/L_{MIN}	5.0:1	
	Max. Veiling Luminance Ratio, L_V/L_{AVE}	0.30:1	

**STATE OF ILLINOIS
IDOT DISTRICT 1
LUMINAIRE PERFORMANCE TABLE**

Randall Road—Three-Lane Section

GIVEN CONDITIONS		
ROADWAY DATA	Pavement Width	36.0 Feet
	Number of Lanes	3 @ 12.0 Feet
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
LIGHT POLE DATA	Mounting Height	40.0 Feet
	Mast Arm Length	15.0 Feet
	Pole Setback from Edge of Pavement	6.0 Feet
LUMINAIRE DATA	Lamp Type	310-Watt HPS
	Lamp Lumens	37,000
	I.E.S. Vertical Distribution	Medium
	I.E.S. Control of Distribution	Cutoff
	I.E.S. Lateral Distribution	Type II or Type III
	Total Light Loss Factor	0.70
LAYOUT DATA	Spacing	165 Feet
	Configuration	Single Side
	Luminaire Overhang over Edge of Pavement	9.0 Feet

NOTE: Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

PERFORMANCE REQUIREMENTS		
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NOTE: These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

ILLUMINATION	Average Horizontal Illumination, E_{AVE}	1.30	F_c
	Uniformity Ratio, E_{AVE}/E_{MIN}	3.0:1	
LUMINANCE	Average Luminance, L_{AVE}	0.90	Cd/m^2
	Uniformity Ratio, L_{AVE}/L_{MIN}	3.0:1	
	Uniformity Ratio, L_{MAX}/L_{MIN}	5.0:1	
	Max. Veiling Luminance Ratio, L_v/L_{AVE}	0.30:1	

**STATE OF ILLINOIS
IDOT DISTRICT 1
LUMINAIRE PERFORMANCE TABLE**

Main Street (Illinois Route 64)—Five-Lane Section

GIVEN CONDITIONS		
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ROADWAY DATA	Pavement Width	62.5 Feet
	Number of Lanes	5 @ 12.5 Feet
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
LIGHT POLE DATA	Mounting Height	40.0 Feet
	Mast Arm Length	15.0 Feet
	Pole Setback from Edge of Pavement	9.0 Feet
LUMINAIRE DATA	Lamp Type	310-Watt HPS
	Lamp Lumens	37,000
	I.E.S. Vertical Distribution	Medium
	I.E.S. Control of Distribution	Cutoff
	I.E.S. Lateral Distribution	Type II or Type III
	Total Light Loss Factor	0.70
LAYOUT DATA	Spacing	225 Feet
	Configuration	Opposite
	Luminaire Overhang over Edge of Pavement	6.0 Feet

NOTE: Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

PERFORMANCE REQUIREMENTS		
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NOTE: These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

ILLUMINATION	Average Horizontal Illumination, E_{AVE}	1.30	F_c
	Uniformity Ratio, E_{AVE}/E_{MIN}	3.0:1	
LUMINANCE	Average Luminance, L_{AVE}	0.90	Cd/m^2
	Uniformity Ratio, L_{AVE}/L_{MIN}	3.0:1	
	Uniformity Ratio, L_{MAX}/L_{MIN}	5.0:1	
	Max. Veiling Luminance Ratio, L_V/L_{AVE}	0.30:1	

**STATE OF ILLINOIS
IDOT DISTRICT 1
LUMINAIRE PERFORMANCE TABLE**

Main Street (Illinois Route 64)—Seven-Lane Section

GIVEN CONDITIONS		
ROADWAY DATA	Pavement Width	89.6 Feet
	Number of Lanes	7 @ 12.8 Feet
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
LIGHT POLE DATA	Mounting Height	40.0 Feet
	Mast Arm Length	15.0 Feet
	Pole Setback from Edge of Pavement	9.0 Feet
LUMINAIRE DATA	Lamp Type	310-Watt HPS
	Lamp Lumens	37,000
	I.E.S. Vertical Distribution	Medium
	I.E.S. Control of Distribution	Cutoff
	I.E.S. Lateral Distribution	Type II or Type III
	Total Light Loss Factor	0.70
LAYOUT DATA	Spacing	185 Feet
	Configuration	Opposite
	Luminaire Overhang over Edge of Pavement	6.0 Feet

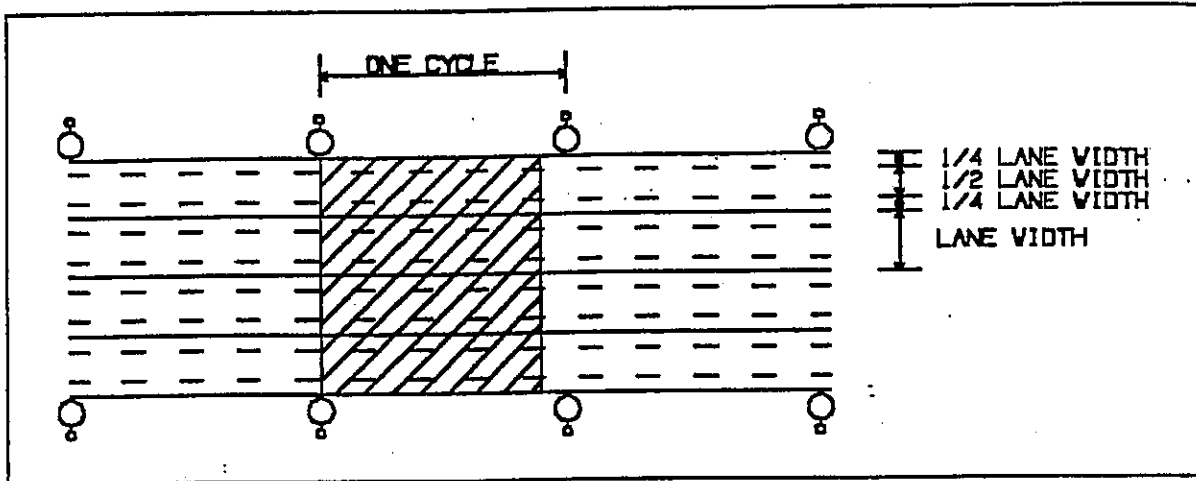
NOTE: Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

PERFORMANCE REQUIREMENTS		
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NOTE: These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

ILLUMINATION	Average Horizontal Illumination, E_{AVE}	1.30	F_c
	Uniformity Ratio, E_{AVE}/E_{MIN}	3.0:1	
LUMINANCE	Average Luminance, L_{AVE}	0.90	Cd/m^2
	Uniformity Ratio, L_{AVE}/L_{MIN}	3.0:1	
	Uniformity Ratio, L_{MAX}/L_{MIN}	5.0:1	
	Max. Veiling Luminance Ratio, L_V/L_{AVE}	0.30:1	

CALCULATION AREA



MEASUREMENT PARAMETERS

1. Observer eye height: 1.45 meters above grade.
2. Line of sight of observer: Downward one degree below horizontal; parallel to edge edges of each lane (2 lines per lane).
3. Lighting system to be measured: Smooth and level, at least 10 mounting heights long.
4. Number of points per line: At least 10, not more than 5 meters (16.4 Ft.) apart.
5. Area covered by calculation: All points between two luminaires on one side of roadway (see above figure).
6. Calculation point location to contributing luminaires: At least one luminaire behind, and at least three ahead of calculation point (P).

GENERAL NOTES

1. Unless otherwise indicated, luminaire tilt shall be zero degrees.
2. Calculations shall be performed in conformance with I.E.S. recommended procedures.

82107100 UNDERPASS LUMINAIRE, 70-WATT, HIGH PRESSURE SODIUM VAPOR

This work shall be done in accordance with Section 821 of the Standard Specifications and the following:

Article 821.02 specifies the materials to be used, including Article 1067.01, for the luminaire. Article 1067.01(e) shall be replaced with the following:

(e) Underpass Luminaire

- (1) General. The underpass luminaire shall be suitable for lighting a bicycle underpass at an approximate mounting height of 7.5 feet from a position attached to a wall of the underpass over a recessed junction box.

The luminaire shall provide a S-N-IV distribution, be optically sealed, mechanically strong, and easy to maintain. The reflector, wiring terminals, and ballast components shall be readily accessible. When closed for operation, the optical assembly and the ballast assembly shall be sealed against the entry of moisture, dirt, and insects. It shall not be necessary to remove more than the cover, reflector, and lens to mount the luminaire.

The unit shall be heavy duty, suitable for highway use, and shall have no indentations or crevices in which dirt, salt, or other corrosives may collect.

All removable components and hardware, except for the ballast tray, shall be held captive.

(2) High Pressure Sodium

- a. General. The underpass luminaire shall be complete with all supports, hardware, and mounting accessories.
- b. Cast Aluminum Housing. The luminaire housing shall be made of heavy-duty die-cast aluminum with the back and sides continuous without seams or welds. The housing shall be free of burrs and protrusions. The lens frame shall be die-cast aluminum of sufficient structural strength to hold the refractor firmly in place. The door shall be attached to the housing with stainless-steel hinges and hardware. It shall be secured in the closed position by two spring-loaded, toggle-action latches or two captive stainless-steel threaded fasteners.
 1. Refractor. The refractor shall be made of molded prismatic, thermal, shock-resistant, borosilicate glass
 2. Reflector. The reflector shall be hydroformed, specular aluminum with bonded finish for corrosion resistance, durability, and ease of cleaning.
 3. Lamp Holder. The lamp holder shall be according to Article 1067.01(a) for a 70-watt high pressure sodium lamp.
 4. Ballast. The ballast shall be according to Article 1067.01(a)5 for 120-volt operation.
 5. Color. The color of the housing shall be gray.
 6. Mounting. All hardware shall be stainless steel.
 7. Fuse. The luminaire shall have a factory-installed single fuse for 120-volt operation.

(3) Luminance Performance

The following two (2) Luminance Performance Tables represent the day-and-night requirements for the lighting for the bicycle underpass. Submittals shall include calculations for each of the configurations using the same 70-watt underpass luminaire to satisfy the performance requirements.

**STATE OF ILLINOIS
IDOT DISTRICT 1
LUMINAIRE PERFORMANCE TABLE**

Bicycle Underpass Day Calculations

GIVEN CONDITIONS		
ROADWAY DATA	Pavement Width	16.0 Feet
	Number of Lanes	2
	I.E.S. Surface Classification	N/A
	Q-Zero Value	N/A
LIGHT POLE DATA	Mounting Height	7.50 Feet
	Mast Arm Length	0.0 Foot
	Pole Setback from Edge of Pavement	0.0 Foot
LUMINAIRE DATA	Lamp Type	70-Watt HPS
	Lamp Lumens	6,400
	I.E.S. Vertical Distribution	Short
	I.E.S. Control of Distribution	Non-cutoff
	I.E.S. Lateral Distribution	Type IV
	Total Light Loss Factor	0.70
LAYOUT DATA	Spacing	19.0
	Configuration	Opposite
	Luminaire Overhang over Edge of Pavement	0.0

NOTE: Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

PERFORMANCE REQUIREMENTS

NOTE: These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

ILLUMINATION	Average Horizontal Illumination, E_{AVE}	10.0	F_c
	Uniformity Ratio, E_{AVE}/E_{MIN}	3.0:1	

**STATE OF ILLINOIS
IDOT DISTRICT 1
LUMINAIRE PERFORMANCE TABLE**

Bicycle Underpass Night Calculations

GIVEN CONDITIONS		
ROADWAY DATA	Pavement Width	16.0 Feet
	Number of Lanes	2
	I.E.S. Surface Classification	N/A
	Q-Zero Value	N/A
LIGHT POLE DATA	Mounting Height	7.50 Feet
	Mast Arm Length	0.0 Foot
	Pole Setback from Edge of Pavement	0.0 Foot
LUMINAIRE DATA	Lamp Type	70-Watt HPS
	Lamp Lumens	6,400
	I.E.S. Vertical Distribution	Short
	I.E.S. Control of Distribution	Non-cutoff
	I.E.S. Lateral Distribution	Type IV
	Total Light Loss Factor	0.70
LAYOUT DATA	Spacing	19.0 Feet
	Configuration	Single Side
	Luminaire Overhang over Edge of Pavement	0.0

NOTE: Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

PERFORMANCE REQUIREMENTS

NOTE: These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

ILLUMINATION	Average Horizontal Illumination, E_{AVE}	4.0	F_c
	Uniformity Ratio, E_{AVE}/E_{MIN}	3.0:1	

82500505 LIGHTING CONTROLLER, SPECIAL

This work shall be done in accordance with Section 825 of the Standard Specifications and the following provisions:

The cabinet shall be a single-door enclosure meeting the requirements of Article 1074.03 for a Type IV traffic signal cabinet. The cabinet surface shall be smooth, free of marks and scratches, and provide an unpainted aluminum finish.

The components shall meet the requirements of Article 1068.01(e) insofar as applicable and the details in the plans.

**83008600 LIGHT POLE, ALUMINUM, 40 FT. M.H., 15 FT MAST ARM
LIGHT POLE, ALUMINUM, 40 FT. M.H., 15 FT. MAST ARM WITH FESTOON OUTLET**

This work shall be done in accordance with Section 830 of the Standard Specifications, the details in the plans, and the following provisions:

The poles, mast arms, and all components shall have a factory-applied polyester powder paint finish. The color shall be dark bronze. A 2 inch x 4 inch color sample shall be submitted for approval.

83800205 BREAKAWAY DEVICE, TRANSFORMER BASE, 15-INCH BOLT CIRCLE

This work shall be done in accordance with Section 838 of the Standard Specifications and the following provisions:

The transformer base and door shall have a factory-applied polyester powder paint finish. The color shall be dark bronze. A 2 inch x 4 inch color sample shall be submitted for approval.

UNDERPASS CONTROL INSTALLATION, SPECIAL

This work shall be done in accordance with Section 825 of the Standard Specifications and the following provisions:

The cabinet shall be a single-door enclosure of the approximate size shown on the plans or as needed to contain the components specified on the plans. The cabinet shall be furnished with mounting hardware for installation on the wing wall as shown on the plans. The cabinet surface shall be smooth, free of marks and scratches, and provide a polished aluminum finish.

The components shall meet the requirements of Article 1068.01(e) insofar as applicable and the details in the plans.

TRAFFIC SIGNAL SPECIFICATIONS

Effective: January 1, 2002

Revised: May 22, 2002

These Traffic Signal Special Provisions and the "District 1 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. 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 Section 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.

SECTION 800 ELECTRICAL

INSPECTION OF ELECTRICAL SYSTEMS.

Add the following to Section 802.01 of the Standard Specifications:

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. 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.

DAMAGE TO TRAFFIC SIGNAL SYSTEM.

Revise Section 802.02 of the Standard Specifications to read:

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

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 items such as foundation, conduit, handhole, trench and backfill, etc. All roadway surfaces such as shoulders, medians, sidewalks, pavement, etc. shall be replaced in kind. All damage to mowed lawns shall be replaced with an approved sod, and all damage to unmowed fields shall be seeded. Restoration of the work area shall be incidental to the contract without any extra compensation allowed to the Contractor.

SUBMITTALS.

Revise Section 802.04 of the Standard Specifications to read:

The Contractor shall provide:

- a. All material approval requests shall be submitted a minimum of seven (7) days prior to the delivery of equipment to the job site, or within 30 consecutive calendar days after the contract is awarded, or within 15 consecutive calendar days after the preconstruction meeting, whichever is first.
- b. Seven (7) copies of a letter from the Traffic Signal Contractor listing the manufacturer's name and model numbers of the proposed equipment and stating that the proposed equipment meets all contract requirements. The letter will be reviewed by the Traffic Design Engineer to determine whether the equipment to be used is approvable. The letters will be stamped as approved or not approved accordingly and returned to the Contractor.
- c. One (1) copy of material catalog cuts.
- d. Seven (7) copies of mast arm poles and assemblies.
- e. 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 as required in items b, c and d.
- f. Exceptions, Deviations and Substitutions. In general, exceptions to and deviations from the requirements of the Contract Documents will not be allowed. It is the Contractor's responsibility to note any deviations from Contract requirements at the time of submittal and to make any requests for deviations in writing to the Engineer. In general, substitutions will not be acceptable. Requests for substitutions must demonstrate that the proposed substitution is superior to the material or equipment required by the Contract Documents. No exceptions, deviations or substitutions will be permitted without the approval of the Engineer.

MAINTENANCE AND RESPONSIBILITY.

Revise Section 802.07 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. The Contractor shall supply the engineer and the Department's Electrical Maintenance Contractor a 24-hour emergency contact name and telephone number.

- b) When the project has a pay item for "Maintenance of Existing Traffic Signal Installation", "Temporary Traffic Signal Installation(s)" and/or "Maintenance of Existing Flashing Beacon Installation", the Contractor must notify both the Area Traffic Signal Maintenance and Operations Engineer at (847) 705-4139 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) 705-4139 and the Department's Electrical Maintenance Contractor, at which time arrangements will be made to adjust the traffic controller timing to compensate for the absence of detection. See additional requirements in these specifications under Inductive Loop Detector.
- d) The Contractor is advised that the existing and/or temporary traffic signal installation must remain in operation during all construction stages, except for the most essential down time. Any shutdown of the traffic signal installation, which exceeds fifteen (15) minutes, must have prior approval of the Engineer. Approval to shutdown the traffic signal installation will only be granted during the period extending from 10:00 a.m. to 3:00 p.m. on weekdays. Shutdowns shall not be allowed during inclement weather or holiday periods.
- e) The Contractor shall be fully responsible for the safe and efficient operation of the traffic signals. Any inquiry, complaint or request by the Department, the Department's Electrical Maintenance Contractor or the public, shall be investigated and repairs begun within one hour. Failure to provide this service will result in liquidated damages of \$500 per day per occurrence. In addition, the Department reserves the right to assign any work not completed within this timeframe to the Electrical Maintenance Contractor. All costs associated to repair this uncompleted work shall be the responsibility of the Contractor. Failure to pay these costs to the Electrical Maintenance Contractor within one month after the incident will result in additional liquidated damages of \$500 per month per occurrence. Unpaid bills will be deducted from the cost of the Contract. The District's Electrical Maintenance Contractor may inspect any signaling device on the Department's highway system at any time without notification.

TRAFFIC SIGNAL INSPECTION (TURN-ON).

Revise Section 802.10 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) 705-4139 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 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. 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 (280 mm X 430 mm) 11" x 17" of the cabinet wiring diagrams.
7. The controller manufacturer shall provide a printer at the turn-on to supply a printed form, not to exceed (280 mm X 430 mm) 11" x 17" for recording the traffic signal controller's timings; backup timings; coordination splits, offsets, and cycles; TBC Time of Day, Week and Year Programs; Traffic Responsive Program; Detector Phase Assignment, Type and Detector Switching; and any other functions programmable from the keyboard. The form shall include a location, date, manufacturer's name, controller model and software version. The form shall be approved by the Engineer and a minimum of three (3) copies must be furnished at each turn-on. The manufacturer must provide all programming information used within the controller at the time of turn-on.

Acceptance of the traffic signal equipment by the Department shall be based upon inspection results at the traffic signal "turn on." If approved, traffic signal acceptance shall be verbal at the "turn on" inspection followed by written correspondence from the Engineer. The Contractor shall be responsible for all traffic signal equipment and associated maintenance thereof until Departmental acceptance is granted.

All equipment and/or parts to keep the traffic signal installation operating shall be furnished by the Contractor. No spare traffic signal equipment is available from the Department.

All punch list work shall be completed within two (2) weeks after the final inspection. The Contractor shall notify the Electrical Maintenance Contractor to inspect all punch list work. Failure to meet these time constraints shall result in liquidated damage charges of \$500 per month per incident.

All cost of work and materials required to comply with the above requirements shall be included in the pay item bid prices, under which the subject materials and signal equipment are paid, and no additional compensation will be allowed. Materials and signal equipment not complying with the above requirements shall be subject to removal and disposal at the Contractor's expense.

LOCATING UNDERGROUND FACILITIES.

Revise Section 803.00 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 1 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 the local Counties or Municipalities may need to be contacted, in the City of Chicago contact D.I.G.G.E.R. at (312) 744-7000 and for all other locations contact J.U.L.I.E. at 1-800-892-0123.

ELECTRIC SERVICE INSTALLATION.

Revise Section 805.00 of the Standard Specifications to read:

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

Materials.

- a. General. The completed control panel shall be constructed in accordance with UL Std. 508, Industrial Control Panel, and carry the UL label. Wire terminations shall be UL listed.

b. Enclosures.

1. Pole Mounted Cabinet. The cabinet shall be UL 50, NEMA Type 4X, unfinished single door design, fabricated from minimum 2.03 mm (0.080-inch) 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 350 mm (14-inches) high, 225 mm (9-inches) wide and 200 mm (8-inches) 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 3.175 mm (0.125-inch) thick, the top 6.350 mm (0.250-inch) thick and the bottom 12.70 mm (0.500-inch) 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 1.91 mm (.075-inch) 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 1000 mm (40-inches high), 400 mm (16-inches) wide and 375 mm (15-inches) 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 <math>< 5n</math> 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, otherwise noted on the plans, 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 3.0 meters (10') in length, and 20mm (3/4") in diameter. Ground rod resistance measurements to ground shall be 25 ohms or less. If necessary additional rods shall be installed to meet resistance requirements at no additional cost to the contract.

Installation

- a. General. The Contractor shall confirm the orientation of the traffic service installation and its door side with the engineer, prior to installation. All conduit entrances into the service installation shall be sealed with a pliable waterproof material.
- b. Pole Mounted. Brackets designed for pole mounting shall be used. All mounting hardware shall be stainless steel. Mounting height shall be as noted on the plans or as directed by the Engineer.
- c. Ground Mounted. The service installation shall be mounted plumb and level on the foundation and fastened to the anchor bolts with hot-dipped galvanized or stainless steel nuts and washers. The space between the bottom of the enclosure and the top of the foundation shall be caulked at the base with silicone.

Basis of Payment. The service installation shall be paid for at the contract unit price each for SERVICE INSTALLATION of the type specified which shall be payment in full for furnishing and installing the service installation complete. The type A foundation which includes the ground rod shall be paid for separately. SERVICE INSTALLATION, POLE MOUNTED shall include the 20mm (3/4") 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 807.00 of the Standard Specifications to read:

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

The grounding electrode system shall include a ground rod installed with each traffic signal controller concrete foundation and all mast arm and post concrete foundations. An additional ground rod will be required at locations where measured resistance exceeds 25 ohms. Ground rods are included in the applicable foundation paid item and will not be paid for separately.

Testing shall be according to Section 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 Section 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 equipment grounding conductor is paid for separately and shall be continuous. The Earth shall not be used as the equipment grounding conductor.
 - 2) Equipment grounding conductors shall be bonded, using a Listed grounding connector, to all traffic signal mast arm poles, traffic signal posts, pedestrian posts, pull boxes, handhole frames and covers and other metallic enclosures throughout the traffic signal wiring system, except where noted herein. A Listed electrical joint compound shall be applied to all conductors terminations, connector threads and contact points.
 - 3) All metallic and non-metallic raceways containing traffic signal circuit runs shall have a continuous equipment grounding conductor, except raceways containing only detector loop lead-in circuits, circuits under 50 volts and/or fiber optic cable will not be required to include an equipment grounding conductor.
- c) The grounding electrode conductor shall be similar to the equipment grounding conductor in color coding (green) and size. The grounding electrode conductor is used to connect the ground rod to the equipment grounding conductor and is bonded to ground rods via exothermic welding, listed pressure connectors, listed clamps or other approved listed means.

HANDHOLES.

Add the following to Section 814.00 of the Standard Specifications:

All handholes shall be concrete, poured in place, with inside dimensions of 549 mm (21-1/2") 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 15.875 mm (7/16") 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 300 mm (12 inches).

All conduits shall enter the handhole at a depth of (760 mm) 30" except for the conduits for detector loops when the handhole is less than (1.52 m) 5' from the detector loop.

Steel cable hooks shall be coated with hot-dipped galvanization in accordance with AASHTO Specification M111. Hooks shall be a minimum of 9.525 mm (3/8") diameter and extend into the handhole at least 150 mm (6 inches). Hooks shall be placed a minimum of 300 mm (12 inches) below the lid or lower if additional space is required.

FIBER OPTIC TRACER CABLE.

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

Add to Section 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. 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. The tracer cable will be allowed to be spliced at the handholes only. All tracer cable splices shall be kept to a minimum and shall incorporate maximum lengths of cable supplied by the manufacturer. 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. Blow torches or other devices which oxidize copper cable shall not be allowed for soldering operations. The splice shall be covered with WCSMW 30/100 heat shrink tube, minimum length (100 mm) 4" and with a minimum (25 mm) 1" coverage over the XLP insulation, underwater grade.

Revise Section 817.05 of the Standard Specifications to read:

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

GROUNDING CABLE.

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

Add to Section 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 XLP jacket.

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

Revise Section 817.05 of the Standard Specifications to read:

Basis of Payment. Grounding cable shall be measured in place for payment in (meter) foot. 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/other 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 to Section 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" polyethylene (black, blue, red). The jacket shall be black 0.045 PVC or polyethylene.

Revise Section 817.05 of the Standard Specifications to read:

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

MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION.

Revise Section 850.00 of the Standard Specifications to read:

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 on staff electricians with IMSA Level II certification 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, telephone service installations, communication cables and conduits to adjacent intersections.

The maintenance shall be according to District 1 revised Article 802.07 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 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, 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. 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 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 these Specifications.

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 State. 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.

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

TRAFFIC ACTUATED CONTROLLER.

Add the following to Section 857.00 of the Standard Specifications:

Controllers shall be NEMA TS2 Type 1 Eagle M41, unless specified otherwise on the plans or elsewhere on these specifications. Only controllers supplied by the District 1-approved closed loop equipment manufacturer will be allowed. The controller shall be the most recent model and software version supplied by the manufacturer at the time of the approval. 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 overlap phase.

The controller shall provide a background timer which will prevent phases from being skipped during program changes.

MASTER CONTROLLER.

Revise Sections 860.02 - Materials and 860.03 - Installation of the Standard Specifications to read:

Only controllers supplied by the District-approved closed loop equipment manufacturer will be allowed. Only NEMA TS2 Type 1 Eagle closed loop system 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 Specification 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.

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.

The cabinet shall be provided with a Siecor CAC 3000, or equivalent, Outdoor Network Interface for termination of the telephone service. It shall be mounted to the inside of the cabinet in a location suitable to provide access for termination of the telephone service at a later date. The CAC 3000 shall be equipped with a standard Three-Electrode Heavy Duty Gas Tube Surge Arrestor.

The cabinet shall provide a caller identification unit with 50 number memory.

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.

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 suitable media (CD, 3 1/2" or 5 1/4" floppy disks as requested 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 his use in monitoring the system.

The Contractor shall be required to setup graphic displays and all software parameters for every intersection to be interconnected under this Contract, including complete viewing and control capabilities from IDOT remote monitor.

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 1 staff.

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 1 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).

FIBER OPTIC CABLE.

Revise Section 871.00 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 fiber specified.

The control cabinet distribution enclosure shall be 3M Model 8173 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. 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 (4m) 13.0' 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 an approved water blocking tape.

Basis of Payment. The work shall be paid for at the contract unit price for FIBER OPTIC CABLE IN CONDUIT, NO. 62.5/125, MM12F SM12F, per (meter) foot for the cable in place, including distribution enclosure and all connectors.

CONCRETE FOUNDATIONS.

Add the following to Section 878.03 of the Standard Specifications:

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

Concrete Foundations, Type "A" for Traffic Signal Posts shall provide anchor bolts with the bolt pattern specified within the "District 1 Standard Traffic Signal Design Details." All Type "A" foundations shall be a minimum depth of 1.22 m (48").

Concrete Foundations, Type "D" for Traffic Signal Cabinets shall be a minimum of 1.22 m (48") long and 790 mm (31") wide. All Type "D" foundations shall be a minimum depth of 1.22 m (48"). The concrete apron shall be 910 mm X 1220 mm X 130 mm (36"x48"x5"). 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 following requirements:

DESIGN TABLE FOR 750 mm (30-INCH) DIAMETER FOUNDATION
FOR ALL MAST ARMS 4.26M (14 FEET) TO 16.76M (55 FEET)
AND ALL COMBINATION POLES (DESIGN DEPTH IS 4.57 m [15 FEET])

	TYPE OF SOIL DESCRIPTION	DESIGN DEPTH OF FOUNDATION		TYPE OF SOIL DESCRIPTION	DESIGN DEPTH OF FOUNDATION
1.	SOFT CLAY	5.33 m(17' - 6")	*4.	LOOSE SAND	3.05 m(10' - 0")
2.	MEDIUM CLAY	3.81 m(12' - 6")	*5.	MEDIUM SAND	2.74 m(9' - 0")
3.	STIFF CLAY	2.59 m(8' - 6")	*6.	DENSE SAND	2.44 m(8' - 0")

* WATER TABLE ASSUMED BELOW DEPTHS SPECIFIED

No foundation is to be poured until the Resident Engineer gives his/her approval as to the depth of the foundation. Foundations used for Roadway Lighting shall provide an extra 65 mm (2-1/2 inch) duct.

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 Contractor shall have the proposed loop locations marked and contact the Area Traffic Signal Maintenance and Operations Engineer (847) 705-4139 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.

Loop detectors shall be installed according to the requirements of the "District 1 Standard Traffic Signal Design Details". Saw-cuts (homeruns on preformed detector loops) from the loop to the edge of pavement shall be made perpendicular to the edge of pavement 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 250W175C 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 6.3 mm (1/4") deep x 100 mm (4") saw cut to mark location of each loop lead-in.

Loop sealant shall be a two-component thixotropic chemically cured polyurethane either Chemque Q-Seal 295, Percol Elastic Cement A/C Grade or an approved equal. The sealant shall be installed 3 mm (1/8") below the pavement surface, if installed above the surface the overlap shall be removed immediately.

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

- (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 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 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 17.2 mm (11/16") outside diameter (minimum), 9.5 mm (3/8") inside diameter (minimum) Class A oil resistant synthetic cord reinforced hydraulic hose with 1,720 kPa (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.

Basis of Payment. This work shall be paid for at the contract unit price per meter (foot) for DETECTOR LOOP, TYPE 1 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 887.00 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 1 Standard Traffic Signal Design Details." The Confirmation Beacon shall consist of a 150 watt Par 38 flood lamp 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 4E-5 of the "Manual On Uniform Traffic Control Devices." The stopped pre-empted movements shall be signalized by a continuous indication.

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

Basis of Payment. The work shall be paid for at the contract unit price each for furnishing and installing LIGHT DETECTOR and LIGHT DETECTOR AMPLIFIER. Furnishing and installing the confirmation beacon shall be incidental to the cost of the Light Detector. The preemption detector amplifier shall be paid for on a basis of (1) one each per intersection controller and shall provide operation for all movements required in the pre-emption phase sequence.

TEMPORARY TRAFFIC SIGNAL INSTALLATION.

Revise Section 890.00 of the Standard Specifications to read:

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.

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 TS1 or 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 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) 100 mm (4 inch) diameter holes to run the electric cables through. The 100 mm (4 inch) diameter holes shall have a bushing installed to protect the electric cables and shall be sealed after the electric cables are installed.

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

All traffic signal sections and pedestrian signal sections shall be 300 mm (12 inches). 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 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.

The existing system interconnect is 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 incidental to the item Temporary Traffic Signal Installation.

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 \pm 0.002, or as otherwise required by the Engineer, and provide compatible operation with other light systems currently being operated in the District. All labor and material required to install and maintain the Emergency Vehicle Preemption installation shall be incidental to the item Temporary Traffic Signal Installation.

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. Minor cross streets shall have vehicular detection provided by Microwave Vehicle Sensors or Video Vehicle Detection System as shown on the plans or as directed by the Engineer. The microwave vehicle sensor or video vehicle detection system shall be approved by IDOT before 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.

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.

The energy charges for the operation of the 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.

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.

Maintenance shall meet the requirements of the Traffic Specifications and District Specifications for "Maintenance of Existing Traffic Signal Installation." Maintenance of temporary signals and of the existing signals shall be incidental to the cost of this item. When temporary traffic signals are to be installed at locations where existing signals are presently operating, the Contractor shall be fully responsible for the maintenance of the existing signal installation as soon as he begins any physical work on the Contract or any portion thereof. Maintenance responsibility of the existing signals shall be incidental to the item Temporary Traffic Signal Installation(s). 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 (847) 705-4139 for an inspection of the installation(s).

Temporary Traffic Signals for bridge projects shall follow the State Standards, Standard Specifications, District 1 Traffic Signal Specifications and any plans for Bridge Temporary Traffic Signals included in the plans. The installation shall meet the above requirements for "Temporary Traffic Signal Installation". In addition all electric cable shall be aerially suspended, at a minimum height of 5.5m (18 feet), on temporary wood poles (Class 5 or better) of 13.7 m (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. Microwave vehicle sensors or video vehicle detection may be used in place of the detector loops 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. The price of which shall include all costs for the modifications required for traffic staging, changes in signal phasing as required in the Contract plans, microwave vehicle sensors, video vehicle detection system, any maintenance or adjustment to the microwave vehicle sensors/video vehicle detection system, all material required, the installation and complete removal of the temporary traffic signal.

REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT.

Add the following to Section 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 by them outside the right-of-way at their 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. He 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 he 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 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.

SECTION 1000 MATERIALS

PEDESTRIAN PUSH-BUTTON.

Add the following to Section 1074.02 (b) and (d) of the Standard Specifications to read:

(b) Push-button assemblies shall be a cast aluminum alloy Pelco Push-button station, or an approved equivalent.

(d) The assembly shall provide ADA push-buttons with one of the following signs: SF-1017, 1018 or 1020 - 5" x 7¾" (127 mm x 197 mm).

CONTROLLER CABINET AND PERIPHERAL EQUIPMENT.

Revise Section 1074.03 of the Standard Specifications to read:

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.

- 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.
- Controller Harness – Provide a TS2 Type 2 "A" wired harness in addition to the TS2 Type 1 harness.
- Surge Protection – EDCO Model 1210 IRS with failure indicator.
- BIU – Containment screw required.
- Transfer Relays – Solid state or mechanical flash relays are acceptable.
- Switch Guards – All switches shall be guarded.
- Heating – Two (2) porcelain light receptacles with cage protection controlled by both a wall switch and a thermostat.
- Plan & Wiring Diagrams – 12" x 16" (3.05mm x 4.06mm) moisture sealed container attached to door.
- Detector Racks – Fully wired and labeled for four (4) channels of emergency vehicle pre-emption and sixteen channel (16) of vehicular operation.
- Field Wiring Labels – All field wiring shall be labeled.
- Field Wiring Termination – Approved channel lugs required.
- Power Panel – Provide a nonconductive shield.
- Circuit Breaker – The circuit breaker shall be sized for the proposed load but shall not be rated less than 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 equivalent.

TRAFFIC ACTUATED CONTROLLER AND CABINET INTERCONNECTED WITH RAILROADS.

Add the following to Section 1074.03 of the Standard Specifications to read:

Cabinets shall be new and NEMA TS2 Type 1 design. In addition to the aforementioned District One equipment specifications, the following shall apply to railroad interconnected equipment:

Railroad interconnected controllers and cabinets shall be assembled only by an approved traffic signal equipment supplier. The equipment shall be tested and approved in the equipment suppliers District One facility prior to field installation.

Pedestrian clearance during railroad pre-emption shall be limited to a flashing don't walk interval in length to the vehicle yellow clearance interval and shall time concurrently with the vehicle yellow clearance.

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

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

A method of supervising the 3 conductor cable interconnecting the traffic and railroad facilities shall provide flashing operation during failed cable conditions. Upon detection of a failed railroad interconnect the controller shall provide one (1) track clearance green interval and shall enter flashing operation at end of track clearance yellow interval. Such flashing operation must be manually reset. The supervision circuit shall, within reason, be capable of detecting failure of the supervision circuit components themselves, and shall provide fail-safe operation upon such failure.

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

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

A test switch shall be provided in the railroad circuit to initiate pre-emption. See cabinet specifications.

ELECTRIC CABLE.

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

MAST ARM ASSEMBLY AND POLE.

Add the following to Section 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.

This work shall consist of furnishing and installing a galvanized steel or extruded aluminum shroud for protection of the mast arm pole base plate similar to the dimensions detailed in the "District 1 Standard Traffic Signal Design Details." The shroud shall be of sufficient strength to deter pedestrian and vehicular damage. The shroud shall allow air to circulate throughout the mast arm but not allow manifestation of insects or critters. The shroud shall be constructed, installed and designed not to be hazardous to probing fingers and feet. All mounting hardware shall be stainless steel. The shroud shall not be paid for separately but shall be included in the cost of the mast arm assembly and pole.

TRAFFIC SIGNAL POST.

Add the following to Section 1077.03 (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.

SIGNAL HEADS.

Add the following to Section 1078 of the Standard Specifications to read:

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) or galvanized. A corrosive resistant anti-seize lubricant shall be applied to all metallic mounting bracket joints, and shall be visible to the inspector at the signal turn-on. Post top mounting collars are required on all posts, and shall be constructed of the same material as the brackets.

Pedestrian signal heads shall be furnished with the international symbolic "Walking Person" and "Upraised Palm" lenses. Egg crate sun shields are not permitted.

Signal heads shall be positioned according to the "District 1 Standard Traffic Signal Design Details."

SIGNAL HEAD, BACKPLATE.

Delete 1st sentence of 1078.03 of the Standard Specifications and add "All backplates shall be aluminum and louvered".

INDUCTIVE LOOP DETECTOR.

Add the following to Section 1079.01 of the Standard Specifications:

Contracts requiring new cabinets shall provide for card mounted detector amplifiers. Loop amplifiers shall provide LCD displays with loop frequency, inductance, and change of inductance readings.

ILLUMINATED SIGN, LIGHT EMITTING DIODE.

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

General. 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.

Display. 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. The message shall be highly visible, anywhere and under any lighting conditions, within a 15 degree cone centered about the optic axis. The sign face shall be 24 inches (600 mm) by 24 inches (600 mm). 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 3/4 (5mm) 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.

Housing. 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, L.E.D.

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 1 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 contaminants. The Contractor shall assure a solid strong weld. The welds shall be smooth and thoroughly cleaned of flux and spatter. The grounding installation shall not affect the proper seating of the cover when closed.

The grounding cable shall be paid for separately.

Method of Measurement. Units measured for payment will be counted on a per handhole basis, regardless of the type of handhole and its location.

Basis of Payment. This work shall be paid for at the contract unit price each for GROUNDING EXISTING HANDHOLE FRAME AND COVER which shall be payment in full for grounding the handhole complete.

RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM

This work shall consist of providing a revised Signal Coordination and Timing (SCAT) Report and implementing optimized timings to an existing previously optimized closed loop traffic signal system. This work is required due to the addition of a signalized intersection to an existing system or a modification of an existing signalized intersection which affects the quality of an existing system's operation. **MAINTENANCE OF THE SUBJECT INTERSECTION SHALL NOT BE ACCEPTED BY THE DEPARTMENT UNTIL THIS WORK IS COMPLETED.**

After the new signalized intersection is added or the existing signal is modified, the traffic signal system shall be re-optimized by an approved Consultant 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 Area Traffic Signal Operations Engineer at (708) 705-4139 for a listing of approved Consultants.

A listing of existing signal equipment, interconnect information and existing phasing/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 floppy disks, copies containing software runs for the existing optimized system and a timing database that includes intersection displays will be made for the Consultant. The Consultant shall consult with the Area Traffic Signal Operations Engineer prior to optimizing the system to determine if any extraordinary conditions exist that would affect traffic flows in the vicinity of the system; in which case, the Consultant may be instructed to wait until the conditions return to normal or to follow specific instructions regarding the re-optimization.

Traffic counts shall be taken at the subject intersection a minimum of 30 days after the traffic signals are approved for operation by the Area Traffic signal Operations Engineer. Seven day/twenty-four hour automatic traffic recorder counts will be required and manual turning movement counts shall be conducted from 6:30 a.m. to 9:30 a.m., 11:00 a.m. to 1:00 p.m. and 3:30 p.m. to 6:30 p.m. on typical weekday from midday Monday to midday Friday, and if necessary, on the weekend. Additional manual turning movement counts may be necessary if heavy traffic flows exist during off peak hours. The turning movement counts shall identify cars, heavy vehicles, buses, and pedestrian movements.

A Capacity Analysis shall be conducted at the subject intersection to determine its level of service and degree of saturation. Appropriate signal timings shall be developed for the subject intersection and existing timings shall be utilized for the rest of the intersections in the system with minor adjustments if necessary. Changes to the cycle lengths and offsets for the entire system may be required due to the addition/modification of the subject intersection. Both volume and occupancy shall be considered when developing the re-optimized timing program. Signal system optimization analyses shall be conducted utilizing SYNCHRO, PASSER II, TRANSYT 7F, SIGNAL 2000 or other appropriate approved computer software.

If the system is being re-optimized due to the addition of a signalized intersection, all the intersections shall be re-addressed according to the current standard of District One. The proposed signal timing plan shall be forwarded to IDOT for review prior to implementation. The timing plan shall include a traffic responsive program and a time-of-day program which may be used as a back-up system. After downloading the system timings, the Consultant shall make fine tuning adjustments to the timing in the field to alleviate observed adverse operating conditions and to enhance operations.

The Consultant shall furnish to IDOT an original and two copies of the revised SCAT Report for the re-optimized system. The report shall contain the following: turning movement and automatic traffic recorder counts, capacity analyses for each count period, computer optimization analysis for each count period, proposed implementation plans and summaries including system description, analysis methodology, method of effectiveness comparison results and special recommendations and/or observations. The new report shall follow the format of the old report and shall incorporate all data from the old report which remains unchanged. Copies of the entire database including intersection displays and any other displays which the system software allows shall be furnished to IDOT and to IDOT's Traffic Signal Maintenance Contractor.

Basis of Payment. This work shall be paid for at the contract unit price per lump sum for RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM, which price shall be payment in full for performing all work described herein.

UNIT DUCT.

All installations of Unit Duct shall be incidental to the contract and not paid for separately. Polyethylene unit duct shall be used for detector loop raceways to the handholes. On temporary traffic signal installations with detector loops, polyethylene unit duct shall be used for detector loop raceways from the saw-cut to (3 m) 10' up the wood pole, unless otherwise shown on the plans. Unit duct shall meet the requirements of NEC Article 343.

SIGNAL HEAD, LIGHT EMITTING DIODE.

a) General:

- 1) Signal Head, Light Emitting Diode (LED), 1 Face, (All Section Quantities), (All Mounting Types) shall meet the requirements of Sections 880 and 881 and Articles 1078.01 and 1078.02 of the "Standard Specifications for Road and Bridge Construction", adopted January 1, 2002, with the following modifications:
- 2) All signal and pedestrian heads shall be 300 mm (12") glossy black polycarbonate. Connecting hardware and mounting brackets shall be polycarbonate (black) or galvanized. A corrosive resistant anti-seize lubricant shall be applied to all metallic mounting bracket joints, and shall be visible to the inspector at the signal turn-on. Post top mounting collars are required on all posts, and shall be constructed of the same material as the brackets.
- 3) The optical unit of all traffic signal and pedestrian head sections shall be light emitting diodes (LEDs) instead of incandescent bulbs. Each signal head shall conform fully to the "Interim Purchase Specification of the Institute of Transportation Engineers (ITE) for LED Vehicle Traffic Signal Modules" published July, 1998, or applicable successor ITE specification.
- 4) The lens of each signal indication 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 applied to provide abrasion resistance.
- 5) Each pedestrian signal LED module shall provide the ability to actuate the outlined upraised hand and the outlined walking person on one 12-inch (300mm) section. Two (2) 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. "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).
- 6) 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.
- 7) In the event of a power outage, light output from the LED modules shall cease instantaneously.
- 8) In addition to conforming with the requirements for circular LED signal modules, LED arrow indication modules shall meet existing specifications stated in the ITE Standard: "Vehicle Traffic Control Signal Heads," section 9.01. 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. The LEDs shall be spread evenly across the illuminated portion of the arrow area.
- 9) 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 Section 4.1.1 of the Interim Purchase Specification of the ITE for LED Vehicle Traffic Signal Modules 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.

- 10) Each module shall consist of an assembly that utilizes LEDs as the light source in lieu of an incandescent lamp for use in traffic signal sections.
- 11) 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.
- 12) 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.

b) Electrical

- 1) Maximum power consumption for LED modules is per Table 1.
- 2) LED modules will have EPA Energy Star compliance ratings, if applicable to that shape, size and color.
- 3) The modules shall operate from a 60 HZ \pm 3 HZ AC line over a voltage ranging from 95 volts to 135 volts. The fluctuations of line voltage shall have no visible effect on the luminous intensity of the indications.
- 4) Operating voltage of the modules shall be 120 VAC. All parameters shall be measured at this voltage.
- 5) The LED signal module shall have a power factor of 0.90 or greater.
- 6) Total harmonic distortion (current and voltage) induced into an AC power line by a LED signal module shall not exceed 20 percent.
- 7) The signal module on-board circuitry shall include voltage surge protection to withstand high-repetition noise transients as stated in Section 2.1.6 of NEMA Standard TS-2, 1992.
- 8) The LED circuitry shall prevent perceptible flicker to the unaided eye over the voltage range specified above.
- 9) All wiring and terminal blocks shall meet the requirements of Section 13.02 of the ITE Publication: Equipment and Material Standards, Chapter 2 (Vehicle Traffic Control Signal Heads).
- 10) The modules shall be operationally compatible with currently used controller assemblies (solid state load switches, flashers, and conflict monitors).
- 11) 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.
- 12) The modules and associated on-board circuitry must meet Class A emission limits referred in Federal Communications Commission (FCC) Title 47, SubPart B, Section 15 regulations concerning the emission of electronic noise.

c) Photometric Requirements

- 1) The minimum initial luminous intensity values for the modules shall be as stated in Table 2 and/or Table 4 at 25°C.
- 2) The modules shall meet or exceed the illumination values as shown in Table 3 and/or Table 4, 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 Table 5, throughout the useful life over the operating temperature range.

d) Environmental Requirements

- 1) The LED signal module shall be rated for use in the operating temperature range of -40°C (-40°F) to +74°C (+165°F). The modules shall meet all specifications throughout this range.
- 2) The LED signal module shall be protected against dust and moisture intrusion per the requirements of NEMA Standard 250-1991 for Type 4 enclosures to protect all internal components.

e) Construction

- 1) The LED signal module shall be a single, self-contained device, not requiring on-site assembly for installation. The power supply for the module shall be integral to the unit.
- 2) The circuit board and power supply shall be contained inside the module.
- 3) The assembly and manufacturing process for the LED signal assembly shall be designed to assure all internal components are adequately supported to withstand mechanical shock and vibration from high winds and other sources.

f) Materials

- 1) Material used for the lens and signal module construction shall conform to ASTM specifications for the materials.
- 2) Enclosures containing either the power supply or electronic components of the signal module shall be made of UL94VO flame retardant materials. The lens of the signal module is excluded from this requirement.

g) Traffic Signal and Pedestrian LED Module Identification

- 1) Each module shall have the manufacturer's name, trademark, model number, serial number, date of manufacture (month-year), and lot number as identification permanently marked on the back of the module.
- 2) The following operating characteristics shall be permanently marked on the back of the module: rated voltage and rated power in Watts and Volt-Ampere.

- 3) 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 25.4 mm (one inch) in diameter. Additionally, the color shall be written out in 12.7mm (½ in) letters next to the symbol.
- 4) If a specific mounting orientation is required, each module shall have prominent and permanent marking(s) for correct indexing and orientation within a signal housing. The markings shall consist of an up arrow, or the word "UP" or "TOP".

h) Traffic Signal LED Module

- 1) Modules can be manufactured under this specification for the following faces:
 - a 300 mm (12-inch) circular, multi-section
 - b 300 mm (12-inch) arrow, multi-section
 - c 300 mm (12-inch) pedestrian, 2 sections
- 2) The maximum weight of a module shall be 1.8 kg (4 lbs.).
- 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.

i) Retrofit Traffic Signal Module

- 1) The following specification requirements apply to the Retrofit module only. All general specifications apply unless specifically superceded in this section.
 - 2) Retrofit modules can be manufactured under this specification for the following faces:
 - a 300 mm (12-inch) circular, multi-section
 - b 300 mm (12-inch) arrow, multi-section
 - c 300 mm (12-inch) pedestrian, 2 sections
 - 3) The module shall fit into existing traffic signal section housings built to the specifications detailed in ITE Publication: Equipment and Material Standards, Chapter (Vehicle Traffic Control Signal Heads).
 - 4) 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.
 - 5) The maximum weight of a Retrofit module shall be 1.8 kg (4 lbs.).
 - 6) 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.
 - 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.
- j) Two secured, color coded, 600 V, 20 AWG minimum, jacketed wires, conforming to the National Electric Code, rated for service at +105°C, are to be provided for electrical connection for each LED signal module. Conductors for modules, including Retrofit modules, shall be 39.4-inches (1m) in length, with quick disconnect terminals attached.

k) Lens

- 1) The lens of the module shall be tinted and integral to the unit, convex with a smooth outer surface and made of plastic.
- 2) 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.
- 3) The LED signal module lens shall be UV stabilized and shall be capable of withstanding ultraviolet (direct sunlight) exposure for a minimum period of 60 months without exhibiting evidence of deterioration.
- 4) The polymeric lens shall have a surface coating or chemical surface treatment to provide front surface abrasion resistance.

l) The following specification requirements apply to the 12-inch (300 mm) arrow module only. All general specifications apply unless specifically superceded in this section.

- 1) The arrow module shall meet specifications stated in Section 9.01 of the ITE Publication: Equipment and Material Standards, Chapter 2 (Vehicle Traffic Control Signal Heads) for arrow indications.
- 2) The LEDs shall be spread evenly across the illuminated portion of the arrow area.

m) The following specification requirements apply to the 12-inch (300 mm) PV module only. All general specifications apply unless specifically superceded in this section.

- 1) The module shall be a module designed and constructed to be installed in a programmed visibility (PV) signal housing without modification to the housing.
- 2) The LEDs shall be spread evenly across the module.

Basis of Payment. This item shall be paid for at the contract unit price each for 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.

The type specified will indicate the number of signal faces, the number of signal sections, and the method of mounting.

Pedestrian head(s) shall be paid for at the contract unit price each for PEDESTRIAN SIGNAL HEAD, LED, of the type specified and of the particular kind of material when specified.

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 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.

When installed in an existing signal head, this item shall be paid for at the contract unit price each for 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 faces and the method of mounting.

TABLES

Table 1 Maximum Power Consumption (in Watts)

Temperature	Red		Yellow		Green	
	25°C	74°C	25°C	74°C	25°C	74°C
300 mm (12-inch) circular	11	17	22	25	15	15
300 mm (12-inch) arrow	9	12	10	12	11	11
Pedestrian Indication	Hand-Portland Orange		Person-White			
	6.2		6.3			

Table 2 Minimum Initial Intensities for Circular Indications (in cd)

Angle(v,h)	300 mm (12-inch)		
	Red	Yellow	Green
2.5, ±2.5	399	798	798
2.5, ±7.5	295	589	589
2.5, ±12.5	166	333	333
2.5, ±17.5	90	181	181
7.5, ±2.5	266	532	532
7.5, ±7.5	238	475	475
7.5, ±12.5	171	342	342
7.5, ±17.	105	209	209
7.5, ±22.5	45	90	90
7.5, ±27.5	19	38	38
12.5, ±2.5	59	119	119
12.5, ±7.5	57	114	114
12.5, ±12.5	52	105	105
12.5, ±17.5	40	81	81
12.5, ±22.5	26	52	52
12.5, ±27.5	19	38	38
17.5, ±2.5	26	52	52
17.5, ±7.5	26	52	52
17.5, ±12.5	26	52	52
17.5, ±17.5	26	52	52
17.5, ±22.5	24	48	48
17.5, ±27.5	19	38	38

Table 3 Maintained Minimum Intensities for Circular Indications (in cd)

Angle(v,h)	300 mm (12-inch)		
	Red	Yellow	Green
2.5, ±2.5	339	678	678
2.5, ±7.5	251	501	501
2.5, ±12.5	141	283	283
2.5, ±17.5	77	154	154
7.5, ±2.5	226	452	452
7.5, ±7.5	202	404	404
7.5, ±12.5	145	291	291
7.5, ±17.	89	178	178
7.5, ±22.5	38	77	77
7.5, ±27.5	16	32	32
12.5, ±2.5	50	101	101
12.5, ±7.5	48	97	97
12.5, ±12.5	44	89	89
12.5, ±17.5	34	69	69
12.5, ±22.5	22	44	44
12.5, ±27.5	16	32	32
17.5, ±2.5	22	44	44
17.5, ±7.5	22	44	44
17.5, ±12.5	22	44	44
17.5, ±17.5	22	44	44
17.5, ±22.5	20	41	41
17.5, ±27.5	16	32	32

Table 4 Minimum Initial & Maintained Intensities for Arrow and Pedestrian Indications (in cd/m²)

	Red	Yellow	Green
Arrow Indication	5,500	11,000	11,000

Table 5 Chromaticity Standards (CIE Chart) Section 8.04 of

Red	Y: not greater than 0.308, or less than 0.998 - x
Yellow	Y: not less than 0.411, nor less than 0.995 - x,
Green	Y: Not less than 0.506 - .519x, nor less than 0.150 + 1.068x, nor more than 0.730 - x

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MAINTAIN EXISTING TRAFFIC SIGNAL INTERCONNECT.

Revise Section 890.00 of the Standard Specifications and the District Special Provision for Temporary Traffic Signal Installation to read:

The existing system interconnect is to be maintained as part of the temporary traffic signal installations specified for on the plans.

This temporary system interconnect shall consist of a series of wireless transceivers installed into temporary and existing controller cabinets as per the manufacturer's recommendations and the notes or details in the plans.

Only approved wireless equipment will be allowed to provide the temporary system interconnect and any equipment proposed by the Contractor shall first be field-tested in the actual on-site environment to demonstrate its capabilities to the satisfaction of the Engineer prior to being installed for use.

Basis of Payment: This work shall be paid for at the contract unit lump sum price for MAINTAIN EXISTING TRAFFIC SIGNAL INTERCONNECT, which price shall include all labor and equipment required to install and maintain the temporary interconnect system as part of the proposed temporary traffic signal installations.

VIDEO DETECTION SYSTEM (COMPLETE INTERSECTION)

This specification sets forth the minimum requirements for a system that monitors vehicles on a roadway via processing of video images and provides detector outputs to a traffic controller or similar device. This work shall consist of furnishing and installing an Autoscope Solo Pro video vehicle detection system at one signalized intersection, including all necessary hardware, cable, and accessories necessary to complete the installation in accordance with the manufacturer's specifications.

In order for the Traffic Engineering to manipulate detection zones and view the video signal over an ISDN phone line, the Video Detection System (Complete Intersection) must be connected to the Video Transmission System.

Whenever the Video Detection System (Complete Intersection) and the Video Transmission System are installed at separate signalized intersections, fiber-optic video/data transmitters and receivers will be required and shall be included in the cost of these items.

The system shall consist of integrated machine vision processor sensors (MVPs), an electrical interface panel, and a detector interface card. The quantity of MVP sensors included with this pay item shall be as shown on the plans. The system shall also include a tench-inch color VGA monitor with BNC connector for video input. A simple multi-camera video switching unit shall be provided to select video input to the monitor. Vehicle detection zones shall be user-defined through interactive graphics by lacing lines and/or boxes in an image on a VGA monitor. The system shall calculate traffic parameters in real-time and provide local non-volatile data storage for later downloading and analysis.

I. Introduction

The video vehicle detection system shall be easily configurable and expandable to meet traffic-management applications such as intersection control, traffic monitoring, incident management, and traffic data collection. The system shall be composed of the following components:

- A machine vision processor (MVP) sensor that provides vehicle detection, JPEG video compression, and communications with other subsystems.
- Detector Interface Card (Mini-Hub TS-2).
- A Windows-based communications and Windows-based applications software for setup and system configuration as well as any continued monitoring and data collection, if required.
- System communications that shall operate over any appropriate serial communications links provided by the systems integrator.
- An integrated color camera, zoom lens, and machine vision processor all in one unit; direct, real-time iris and shutter speed control; with single-frame JPEG image compression.
- The system shall also have easily configured IP addressing for the MVP sensor field network.

II. **MVP Sensor**

The MVP sensor shall combine an integrated high-speed, color imaging CCD array with zoom lens optics, image-processing hardware, and a general-purpose CPU bundled into a sealed enclosure. The sensor shall be equipped with a sun shield to reflect solar heat and to shield the CCD array and faceplate from direct exposure to the sun. The sensor shall also be equipped with a faceplate heater to prevent accumulated ice, snow, or condensation from obscuring the view of the camera. The general-purpose CPU shall directly control the optics and camera electronics.

The lens shall be pre-focused at the factory and shall not require field adjustment. The zoom optics shall maintain focus throughout the operating range from 7 to 74 degrees horizontal field of view (5 to 58 degrees vertical field of view). At an operator's request, the MVP sensor shall temporarily switch to surveillance mode operation which allows the operator to zoom the lens.

The MVP sensor shall provide color analog video output at 30 frames per second and shall process a minimum of twenty (20) detector zones placed anywhere in the field of view of the sensor. The analog video output shall provide graphics overlay that indicates the current real-time detection state.

MVP Sensor External Interfaces

The external interfaces to the MVP sensor shall include the following:

Network Communications Port

There shall be a field network communications port to configure and provide general communications and data retrieval. The MVP sensor shall use a full- or half-duplex, RS-485, 4-wire electrical network to facilitate communications with a Windows computer. This port shall be used to update the embedded software and to interact with applications software for the various detection requests supported by the MVP sensor.

Detector I/O Port

The MVP sensor detector port shall use a dedicated, RS-485, 2-wire, half-duplex interface between the MVP sensor and a detector interface card also known as a detector port master (DPM) (e.g. Mini-Hub TS2). The real-time state of traffic controller phase inputs shall be transmitted to the MVP sensor. The detector port master interface card shall subsequently translate the detection states to a traffic signal controller.

Differential Video

The MVP sensor shall output full motion, differential analog video over a single, twisted pair.

Power

The MVP sensor shall operate on 24 VAC at 50/60 Hz or 24 VDC. The camera and processor electronics and power supply shall consume a maximum of 25 watts. The integrated faceplate heater shall consume a maximum of 5 watts.

MVP Sensor Vehicle Detection Requirements

The MVP sensor shall be able to be programmed with a variety of detector types which can perform the following functions:

- Presence/passage detection of moving and stopped vehicles.
- Detection based on the direction of travel.
- Measure vehicle speed and length and provide five (5) classes of vehicles based on length.
- Detect incident shock waves using effective detection algorithms.
- Generate alarm status based on the detection of shock waves, wrong-way vehicles, stopped vehicles, red-light runners, or other operator-defined traffic conditions.
- Combine the output of multiple detectors with logical operators and modify the combined state based on delay or extension timers.

Detection Zone Programming

A VGA monitor shall display the detection zones superimposed on images of traffic scenes. A mouse and keyboard shall be used to place, size, and orient detection zones and edit previously defined detector configurations. It shall also be possible to download detector configurations from the computer to the MVP sensor and upload the current detector configuration that is running in the MVP sensor.

Count Detection Performance

Using an MVP sensor installed for optimal viewing, the system shall be able to accurately count vehicles with at least 96% accuracy under normal operating conditions (day and night) and at least 93% accuracy under artifact conditions. Artifact conditions are combinations of weather and lighting conditions that result from shadows, fog, rain, snow, etc. The volume count shall be accumulated for all traveled lanes and accumulated over time intervals that contain a minimum of one hundred (100) vehicles to ensure statistical significance.

Demand Presence Detection Performance

The system shall be able to accurately provide demand presence detection. The demand presence accuracy shall be based on the ability to enable a protected turning movement on an intersection stop line when a demand exists. The probability of not detecting a vehicle for demand presence shall be less than 1% error under all operating conditions. In the presence of artifact conditions, the MVP sensor shall minimize extraneous (false) protected movement calls to less than 7%.

Speed Detection Performance

The MVP sensor shall accurately measure average speed of multiple vehicles with more than 98% accuracy under all operating conditions for approaching and receding traffic. The MVP sensor shall accurately measure individual vehicle speeds with more than 95% accuracy under all operating conditions for vehicles approaching the sensor and 90% accuracy for vehicles receding from the sensor.

MVP Sensor Enclosure

The MVP sensor and lens assembly shall be housed in an environmental enclosure that provides the following capabilities:

- The enclosure shall be waterproof and dust-tight to NEMA-4 specifications and shall have the option to be pressurized with dry nitrogen to 5 ± 1 psi.
- The enclosure shall allow the MVP sensor to operate satisfactorily over an ambient temperature range from -34 degrees C to +60 degrees C while exposed to precipitation as well as direct sunlight.
- The enclosure shall allow the image sensor horizon to be rotated during field installation.
- A faceplate heater shall prevent the formation of ice and condensation in cold weather.

MVP Sensor Electrical

All video connections from the sensor shall be isolated from earth ground. The video output, communication, and power stages of the sensor shall include transient protection to prevent damage to the sensor. The MVP sensor shall meet CE, FCC, and UL requirements for safety and EMI.

Communications Panel Requirements

The communications interface panel shall provide a terminal block for terminating power as well as terminations for two twisted-pair wires for network communications to the MVP sensor, one twisted-pair for video output from the MVP sensor, and one twisted-pair for detector port communications. The panel shall also provide two sets of terminations for two twisted-pair wires for a point-to-point field network. The communications interface panel shall also provide transient protection and a DB9 connector for an optional traffic signal controller interface.

III. Detector Interface Card (Mini-Hub TS2)

The system shall use a defined communication protocol (detector port protocol) between the MVP sensors and the Mini-Hub TS2. The protocol shall be used to communicate TS1 input pins, TS1 output pins, TS2 detector states, and TS2 phase states. The detector interface card shall be the master of the detector port (DPM), and the MVP sensors shall be the slaves. The DPM shall issue a command for a single or up to eight (8) MVP sensors to respond. The DPM shall exchange input and output state data with the MVP sensor every 100 ms. The DPM interface card shall subsequently translate the detection states to a traffic signal controller. Each input or output pin of an interface card shall have one associated LED output to reflect its input or output state.

IV. Basis of Payment

This item will be paid for at the contract unit price each for VIDEO DETECTION SYSTEM (COMPLETE INTERSECTION), which price shall be payment in full for furnishing all associated equipment required, installing the system at one signalized intersection, and placing the system in operation to the satisfaction of the Engineer.

REMOTE-CONTROLLED VIDEO SYSTEM

This pay item shall include providing and installing a remote-controlled video system at a location designed in the plans. The remote-controlled video system shall be a PELCO Spectra II Series Discreet Dome System or approved equal. This pay item shall include a color camera (minimum 16x or 22x optical zoom), dome assembly, all mounting hardware, connectors, cables, and related equipment necessary to complete the installation in accordance with the manufacturer's specifications.

In order for the Traffic Engineer to control the camera remotely and view the video signal over an ISDN phone line, the Remote-Controlled Video System must be connected to the Video Transmission System.

Whenever the Remote-Controlled Video System and the Video Transmission System are installed at separate signalized intersections, fiber-optic video/data transmitters and receivers will be required and shall be included in the cost of this item.

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.

VIDEO TRANSMISSION SYSTEM

General

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 telephone video transmitter(s) and an ISDN communication link.

This pay item is to be used when the system components described below are being installed in an intersection traffic signal cabinet. The intersection traffic signal cabinet may be either new or existing and may be either Type IV or Type V, as directed by the Engineer, based upon camera and equipment requirements.

System Components

The system shall consist of telephone video transmitter(s) (ADPRO Fast Vu or approved equal), ISDN Modem(s) (Adtran ISU 128 or approved equal), and related connection cables.

Telephone Video Transmitter

1. The telephone video transmitter shall provide an initial image transmission time of 0.4-2.5 seconds via an ISDN communication link. Subsequent updates shall typically be less than 0.5 second, depending on scene changes and communication rates.
2. The telephone video transmitter shall support NTSC/RS170 image resolutions up to 752 x 480.
3. The telephone video transmitter shall have a minimum of twenty video input channels, each accepting a one-volt peak-to-peak signal. Each video input shall be interchangeable between 75 ohm or high impedance.

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4. The telephone video transmitter shall have at least one video output designed to drive a 75-ohm load.
5. The telephone video transmitter shall have a minimum of twenty external alarm inputs that trigger an alarm and store images from the corresponding video channel. The inputs shall be programmable to trigger on contact opening or closure.
6. The telephone video transmitter shall have a minimum of twenty open collector control outputs that correspond to the control inputs of the receiver.
7. The telephone video transmitter shall support PSTN, ISDN, and cellular phone and RF communication links.
8. The telephone video transmitter shall communicate via an RS-232 interface, 8 data bits, no parity, either asynchronously or synchronously, with baud rates up to 115.2 kbps and 192 kbps, respectively.
9. The telephone video transmitter shall be configured with an RS-485 port that shall be used to control pan/tilt/zoom telemetry stations.
10. A hand-held device used for in-field programming shall be included with the telephone video transmitter.
11. The telephone video transmitter shall operate within 90-130 volts AC, 18 VA (max) at 110 volts.

ISDN Modem

1. The ISDN modem shall support error-free data transmission up to 128 kbps on two B channels without data compression.
2. The ISDN modem shall support Multilink PPP, ITU-T V.120, Asynchronous BONDING and Fallback protocols.
3. The ISDN modem shall be configurable via a front-panel keyboard interface.

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 all associated equipment required, installing the system complete and in place, and placing the system in operation to the satisfaction of the Engineer.

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ELECTRIC CABLE IN CONDUIT, COAXIAL

This work shall consist of furnishing and installing a Belden 8281 RG-59U Type Coaxial Cable or approved equal. The cable shall be a 75-ohm coaxial cable with 20 AWG solid bare-copper conductor, tinned copper double-braided shield (95% min.), and black polyethylene jacket. The nominal outside diameter shall be 0.304 inch. 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.

ELECTRIC CABLE IN CONDUIT, COMMUNICATION, NO. 16, 5½ PAIR

This work shall consist of furnishing and installing a Belden YC46223 communications cable or approved equal in existing and/or new conduit. This Belden cable has a color code that matches the MVP cable currently in use by the County. The cable shall consist of 16 AWG stranded bare-copper twisted-pair conductors with PVC insulation and PVC jacket with nylon ripcord. The nominal outside diameter shall be 0.502 inch.

The communications cable, No. 16 5½ pair, shall be spliced to the MVP cable in the base of the signal mast arm pole on which the MVP is mounted. The MVP cable shall be provided by the MVP manufacturer. The communications cable shall be provided by the Contractor. The conductors from the two cables shall be spliced using the 3M Scotchlock gel-filled splice tabs (part number 314). Each splice shall be individually protected with shrink tubing. The individual splices shall also be bundled together and protected with shrink tubing. The cost of all work associated with splicing the cables shall be considered incidental to the cost of the communications cable, No. 16, 5½ pair.

Basis of Payment. This work will be paid for at the contract unit price per foot for ELECTRIC CABLE IN CONDUIT, COMMUNICATION NO. 16, 5½ PAIR, which price shall be payment in full for furnishing, installing, and making all electrical connections necessary for proper operation.

UNINTERRUPTIBLE POWER SUPPLY (UPS)

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

UPS (Inverter Unit)

The UPS shall produce a fully regenerated, conditioned, regulated pure sine wave 120-volt AC (+/-4%) power output in all operational modes to all traffic control equipment.

The electronic control circuit shall constantly sample the AC input. The UPS shall provide a steady 120v AC from an input source as low as 85 volts and as high as 135 volts AC before using the inverter/battery to provide 120 volts to the load.

The switching to battery/inverter will occur in less than 4 milliseconds after utility voltage fluctuations or deviations travel outside preset parameters. The inverter's output shall be pure clean sine wave with an efficiency of 94% at 100% load. The inverter circuit shall be capable of high duty cycle operation.

The UPS shall be rated at Unity power factor (1000 watts) for continuous operation. The UPS shall be capable of providing an overload output rating of 150% of rated output for 10 minutes at Unity power factor (1500 watts).

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

The UPS front panel shall have the following: A/C Input/Output circular connector, battery connector, multi-function dial timer, LCD display for counting power interruptions, real-time voltage meter and amp/watt meter, circular connector containing dry contact closure for UPS Fail, On Battery, Flash, Low Battery, and Alarm. The front panel shall also have LED indicators for AC/Battery power present, UPS Fault, Overload, Low Battery and Ground Fault.

The UPS shall interface with the traffic signal controller or master controller to provide an alarm indicating battery operation. This alarm must be sent over the normal fiber optic/dial-up communication channels, and must appear as an Aries software Priority One event at the Kane County Division of Transportation facilities.

The connector shall be rated for 150 amps DC.

Bypass Switch

The bypass switch shall consist of one main manual switch, which provides a means of placing the UPS into a bypassed position without interruption of the power to the intersection. A second switch provides a means of isolating the AC utility from the UPS. This provides a means of testing the

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UPS/Battery back-up by turning off the AC utility to the UPS with the UPS in normal operation. Both of these switches shall be rated 20 amps at 600 volts.

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

Batteries

This system shall be comprised of four (4) or six (6) 12-volt batteries, as shown on the plans. Batteries shall be Optima Spiral Cell, blue top, deep cycle batteries, with a 55 Ah capacity, or an approved equal. The battery cable shall consist of a quick release connector rated at 150 amps. The connector shall have recessed pins and be polarized to prevent accidental cross connecting of the battery string to the UPS.

Cabinet

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

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

When installed, the cabinet for the UPS shall rest on the traffic signal cabinet foundation and shall also be secured to the traffic signal cabinet's right side (opposite the door hinge).

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

Basis of Payment:

This item shall be paid for at the contract unit price each for furnishing and installing the UNINTERRUPTIBLE POWER SUPPLY (UPS). The price shall include the UPS/Inverter unit, bypass switch, batteries (four or six, according to the plans), cabinet, wiring harnesses, and all associated equipment and materials necessary for proper operation.

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STEEL COMBINATION MAST ARM ASSEMBLY AND POLE

Traffic signal steel combination mast arm assembly and pole shall be in accordance with the special provision for MAST ARM ASSEMBLY AND POLE and will include the lighting arm(s) of the number and length specified and at the mounting height noted.

All exposed surfaces including the bases and bolt covers/shrouds shall have a factory-applied polyester powder paint finish over the galvanization finish.

The color shall be DARK BRONZE.

A 2" x 4" color sample shall be submitted for approval.

The cost for painting these items shall not be paid for separately but shall be included in the unit price of the various traffic signal items.

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SECTION 1077. POST AND FOUNDATION

All posts and bases shall be steel and hot-dipped galvanized with a factory-applied polyester powder paint finish over the galvanization.

The color shall be DARK BRONZE.

A 2" x 4" color sample shall be submitted for approval.

The cost for painting these items shall not be paid for separately but shall be included in the unit price of the various traffic signal items.

GENERAL LANDSCAPING

SUMMARY

This work shall consist of supplying all materials, labor and equipment to plant shrubs, trees, and groundcovers. This work shall be performed in accordance with Section 253 (Planting Woody Plants) of the Standard Specifications unless modified herein.

This work shall consist of supplying all materials, labor and equipment to plant perennials, grasses, and bulbs. This work shall be performed in accordance with Section 254 (Planting Perennial Plants) of the Standard Specifications unless modified herein.

This work shall consist of purchase, transportation, storage, preparation and planting of balled and burlapped (B&B) trees and shrubs, container shrubs, perennials, grasses, ground covers and bulbs. Work also consists of purchase, transportation and placement of planting soil amendment and mulch, two (2) year guarantee and replacement, watering, and all related work necessary to assure healthy and well established plant material as shown on the plans and as directed by the Engineer.

RELATED WORK

Drawings and general provisions of contract, including General and Supplementary Conditions and all other Divisions of the Project Manual, apply to this Section.

WORK INCLUDES:

Preparation and fine grading of soil prior to planting.

Installation of planting soil amendment.

Installation of soil amendments.

Planting of trees and shrubs indicated on the drawings including:

1. deciduous shrubs
2. coniferous evergreens
3. shade trees

Planting of ground cover and plants, to include the following:

1. bulbs, corms, tubers.
2. perennials
3. grasses

Furnishing and installation of miscellaneous landscaping materials.

Initial maintenance of all plants.

REFERENCES:

ANSI Z60.1-1990 American Standard for Nursery Stock; 1996

Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction adopted January 1, 2002.

SUBMITTALS:

Permits: Contractor shall be responsible for obtaining all required permits.

Contractor shall be responsible for location of all utilities prior to the installation of plant material. Notification of J.U.L.I.E. is required for all planting locations (800) 892-0123.

Certificates of Inspection: Certified product analysis and any certificates required by law to accompany shipments.

Product data: Submit three (3) sets of manufacturers technical data.

Planting soil amendment: Submit soil analysis report including:

1. Location of proposed source and proposed stripping depth.
2. Report of detailed soil analysis: Show percentage of each constituent, pH, and other pertinent soil characteristics. Include recommendations of quantity of each soil amendment and fertilizer to achieve optimum soil conditions.

Planting Schedule: Indicate beginning and ending dates of planting for each material.

Maintenance Instruction: Written instructions for the Owner's maintenance of landscaping and irrigation system. Include initial maintenance recommendation, 24 month and long term recommendations. Submit prior to acceptance of landscaping and irrigation system.

The Contractor shall submit a list of nurseries supplying plant material for the project within 21 days of award of the project.

QUALITY ASSURANCE:

General: Comply with government regulations applicable to landscaping.

Employ qualified, experienced landscape personnel.

No substitutions permitted of plant materials without prior approval by Owner. Provide the materials indicated. If specified plants are found to be unavailable, the Contractor must submit, to the Owner, a list of 15 nurseries or suppliers that have been contacted in the plant search, along with a list of proposed substitutions and their sources. All plant substitutions must be approved in writing by the Owner.

Provide plant materials complying with ANSI Z60.1.

All plants shall be obtained from reputable nurseries, in hardiness zones of comparable local climate range of St. Charles, Illinois and approved by the Owner or Authorized Representative. All trees and shrubs shall be dug prior to leafing out (bud break) in the spring or when plants have gone dormant in the fall, except for the following species which are only to be dug prior to leafing out in the spring: (The Owner reserves the right to expand this list upon submittal of the Planting Schedule.)

1. Quercus spp. (Oaks)
2. Ulmus spp. (Elms)

Inspection:

1. The Owner retains the right to inspect planting materials at any time for compliance with the contract documents including but not limited to latent defects and lack of protection or maintenance and to reject defective material.
2. All plant inspections shall take place during normal working hours. The Contractor shall be responsible for giving timely notice to the related parties and making all necessary arrangements for inspection.
3. Immediately and legally dispose of rejected materials off the site.

DELIVERY, STORAGE AND HANDLING:

Packaged Materials: Deliver in original unopened containers displaying weight, guaranteed chemical analysis and supplier's name or furnish in bulk with appropriate certificates. Protect from deterioration.

Plants: Schedule delivery to avoid storage on site. If planting does not occur on the same day as delivery, store in a location protected from sun and weather.

1. Do not shock trees and shrubs by pruning before delivery.
2. Cover to protect stock during transport. Plant material transported without cover shall be automatically rejected.
3. Bind stock to protect branches, bark and overall shape during transport.
4. Balled and burlapped stock: Provide freshly dug stock unless otherwise approved.
5. Do not drop stock. Load and unload with care.
6. Deliver stock only after soil has been prepared and all below-ground irrigation system components have been installed. Schedule harvesting and delivery in quantities suitable for immediate planting upon arrival. Plant immediately. If planting cannot be accomplished immediately, provide shade, protect from wind, protect balls or roots from drying by covering at all times with moist saw dust, wood chips, shredded bark, peat moss, or other similar mulching material.

PROJECT CONDITIONS:

Schedule and coordinate with work of other sections and local seasons.

Utilities: Locate and avoid damage to underground utilities.

1. Excavation: Notify the Owner of any unforeseen conditions affecting plant growth (buried debris, etc.).
2. In order to protect existing trees, excavation in root zones may require the use of an air spade.

Planting Time:

1. For each type of landscape work required, place or install materials during normal planting seasons of the project locale.
 - a. Spring: March 15 through June 30
 - b. Fall: October 1 through November 30
2. For the select tree species requiring digging prior to leafing out in the spring and the affected plants underneath and adjacent: Plant during the spring planting season unless otherwise approved.
3. Frost-sensitive materials: Plant after last frost and well before frost season.
4. Plant only in thawed ground.
5. Dates are dependent on species of plant material and weather. May begin or end prior or after above dates as approved by Owner.

WARRANTIES:

General: Warranties shall be in addition to and not a limitation of other rights the Owner may have against the Contractor under the contract documents.

Upon notification from the Owner of substantial completion and acceptance, the Contractor shall guarantee all plant material be in healthy and flourishing condition for two (2) years, regardless of the time of the year or the conditions under which the plant material was installed.

During this guarantee period, when so directed by the Owner, the Contractor shall repair and replace at his own expense all defective or unsatisfactory landscape plant materials (those that are dead, dying, diseased or lacking vigor).

Replace immediately unsatisfactory landscape materials (those dead or lacking vigor) with healthy and vigorous materials. Plant only during next occurring specified planting season. At the direction of the Owner, either replace materials in borderline condition or extend the warranty covering such materials for one full growing season. Another inspection will be conducted at the end of the extended warranty period, if any, to determine acceptance or rejection.

INITIAL MAINTENANCE:

Initial Maintenance: The Contractor is responsible for maintenance of each area until it has been accepted by the Owner and the warranty period is formally started. Begin maintenance immediately upon delivery to the site and as each plant and each portion is planted, and continue until substantial completion of all plant materials.

Work subject to Initial Maintenance: Perform maintenance work for all of the Work installed under this Contract.

Initial Maintenance of Plant Materials: Maintain all plantings in a healthy and vigorous condition. Watering is required. Initial Maintenance of new planting consists of providing all labor, transport and materials to accomplish watering, pruning, cultivating, replanting, weeding, mulching, tightening and repairing of supports repair of wrapping, cleaning, and furnishing and applying sprays as are necessary to keep the plants free of insects and disease. Initial Maintenance shall be performed according to the objectives and procedures specified in the Landscape Maintenance Section of this Specification.

Initial Maintenance of Temporary Sod: Maintain by regular watering and mowing.

Initial Maintenance Review: Initial Maintenance review shall take place simultaneously with substantial completion review of the Landscape Plantings. If planting areas are found to be defective, make necessary replacements, as specified, continue initial maintenance for ten days, and request another inspection. If there are any deficiencies in the maintenance, the Contractor will be notified of these deficiencies in writing and the work shall be subject to review before acceptance of Landscape Plantings.

PRODUCTS

PLANTING SOIL AMENDMENT:

All planter beds shall be filled with soil amendment to a depth of 6". Soil amendment shall consist of a premium soil conditioner, amendment and mulch blend consisting of ground southern yellow pine bark, composted rice hulls, organic compost, nutrient additives and supplements. Recommended planting soil amendment shall be Midwest Till-in-Mix/Mulch as provided by Midwest Trading Horticultural Supplies, Inc., St. Charles, Illinois. Planting soil amendment shall be adjusted with soil amendments to adjust pH (quantity determined by soil test) and thoroughly mixed by hand or by mechanical means prior to placement.

PH ADJUSTMENT:

Adjustments to soil pH shall be pursuant to soil test recommendations to achieve a slightly acid soil.

1. Sulfur: Sulfur shall be granular sulfur as specified by the Owner, according to the soil test recommendations and to the types of plantings in the area requiring amendments.
2. Limestone: Ground limestone (calcium carbonate) if required, shall have the following analysis:
 - a. At least 50% shall pass a No. 200 United States mesh sieve. At least 90% shall pass a No. 100 United States mesh sieve. 100% shall pass a No. 10 United States Standards mesh sieve. Total carbonates shall not be less than 80% or 44.8% calcium oxide equivalent; for purposes of calculation total carbonates shall be considered as calcium carbonates
 - b. Gypsum: Pelletized gypsum, consisting of calcium sulfate, calcium, sulfur, and water soluble binder, with a maximum moisture content of one percent, and 95% finished pellet size passing between #4 and #14 mesh, gray in color, such as Cal-Sul, as manufactured by American Pelletizing Corporation, Des Moines, Iowa; or equivalent.

Organic Compost: Organic compost consisting of leaf and grass clippings composted a minimum of one year as supplied by Midwest Trading, St. Charles, Illinois (847) 742-1840, or approved equal.

Commercial Fertilizers: Complete fertilizer, uniform in composition, free flowing and suitable for application with approved equipment. Type and application rates shall be determined by testing agency's soil test, but may contain the following percentages by weight: 10% nitrogen, 10% phosphorous, and 10% potash.

1. Super Phosphate: If recommended by testing lab, apply a soluble mixture of treated minerals, 20% available phosphoric acid, rate to be determined by testing lab.

TREES AND SHRUBS

Provide nursery or plantation grown stock unless specifically indicated otherwise.

1. General: Well-branched and well-formed, sound, fibrous, healthy and free from disease, sun-scald, windburn, abrasion and harmful insects or insect eggs. Plant material shall have healthy, normal, and unbroken root systems.

2. Deciduous trees and shrubs: Symmetrically developed of uniform habit of growth with straight trunks or stems and are free from objectionable disfigurements.
3. Coniferous evergreen shrubs: Well-developed symmetrical tops with typical spread of branches for each particular species or variety.
4. Provide stock complying in all respects with ANSI Z60.1 and in sizes indicated, measured in accordance with ANSI Z60.1. Larger sizes with larger roots and root containment may be furnished if approved by the Owner.
 - a. Do not spread or compress branches when measuring. Measure main body of branches, do not measure extreme tip to tips of single branches.
 - b. Pruning to size is not acceptable.
 - c. Up to 4 inches caliper, measure caliper at 5 inches above ground.
5. Tag each specimen of each variety of tree or shrub to indicate common and botanical name. Untagged specimens will be automatically rejected.

Shade and ornamental trees: Balled and burlapped (B & B).

Deciduous shrubs: Balled and burlapped (B & B).

Equally sized container-grown stock will also be accepted.

Coniferous evergreens: Balled and burlapped (B & B). Equally sized container-grown stock will also be accepted.

All Roses shall be Grade #1.

GROUND COVER AND PERENNIAL PLANTS

General: Provide field-grown or acclimatized container-grown plants from a commercial nursery, healthy, vigorous, of sizes indicated, and in accordance with ANSI Z60.1, Section 6, Young Plants.

Perennials: Field-grown plants. Root system shall fill the pot.

BULBS, CORMS AND TUBERS

General: Provide bulbs, corms, or tubers, free of rot or disease, of types and sizes indicated in accordance with ANSI Z60.1, Section 1, Bulbs, Corms and Tubers.

MISCELLANEOUS LANDSCAPE MATERIALS

Organic mulch: Free of deleterious materials, suitable for top dressing of plantings and consisting of the following:

1. Shredded hardwood bark.
2. Fine southern yellow pine bark fines.

Anti-desiccant: Film-forming emulsion, permeable to transpiration yet retarding to excessive moisture loss.

Products: The following products, provided they comply with requirements of the contract documents, will be among those considered acceptable:

1. Wilt-Pruf, Wilt-Pruf Products, Inc.

Staking and guying materials: (per Owner's request only)

Stakes: Pressure-preservative treated lumber of sizes indicated; sound, straight and free of splits and knots larger than 1/4 of the least nominal dimension of the piece. Sharpen end and chamfer sides of driven end to prevent splitting from off-center hammer strikes.

1. Wire: Galvanized mid steel wire, minimum 12 gage; provide double strands.
2. Hose: Rubber or plastic garden hose.
3. Turnbuckles: Aluminum or galvanized steel.
4. Warning flaps: Fluorescent orange plastic surveyor's tape.

Tree wrap tape: Nurseryman's standard protective tape.

Sod: Source to be approved by the Owner.

EXECUTION

PREPARATION

Layout: Layout planting locations, mark with stakes, adjust locations if requested and obtain the Owners approval of locations before proceeding. Contractor shall obtain bulb locations from the Landscape Architect prior to planting.

Preparation of Planting Soil Amendment:

1. Protection of Existing Facilities: Protect all existing service lines and related structures encountered in work. Report any uncharted or incorrectly charted lines to the Owner for further direction.
2. Prepare Soil Amendment: Prepare soil mix off the site. Mix specified soil amendments at rates according to soil test recommendations. Mix pH adjusters with dry amendment prior to adding any fertilizers. Fertilize according to soil test recommendation, and with superphosphate as specified.
3. Preparation of Planter beds: Clean planters of all trash and debris before placement of soil amendment. Remove and legally dispose of debris off site.
4. Confirmation of Grades: Confirm grades prior to the start of work and at each interval requiring a change of operation. Depth of soil amendment mix shall be 12" minimum. Rough grades shall be within 1/10 foot of specified finish grades.
5. Structure Adjustments: Perform or coordinate final adjustments of any utility structure.
6. Soil Amendments:
 - a. Gypsum: Apply gypsum at the rate of 40 pounds per 1,000 square feet and work into top 12" of soil mix, being careful not to disturb the soil separator and under-drainage layer.
 - b. Organic Compost: Apply 2" organic compost in all perennial and groundcover areas and work into top 6" of soil mix.

7. **Finish Grading:** Rake smooth and finish grade all planted areas. Crown of berms shall be raked smooth so that they form a compound, bell-shaped curve, not a point. Any undulations or irregularities on the surface shall be raked to smooth planes prior to planting. All areas shall slope to drain as indicated on drawings. Elevations in landscape areas after planting shall be $\pm .10$ foot of the finished grades shown on the Drawings. Grade disturbed by irrigation installation shall be restored to finish grade and raked smooth. Promptly plant and mulch all areas of amended soils to alleviate clay conditions (to avoid a cement or adobe crust formation).
8. **Final Grades:** Final grades of all planting areas, including beds and pits, after settling, shall be as shown on the Drawings. Required final grades and elevations shall be as shown; or where none are indicated, final grades and elevations shall be even lines or planes between elevations shown, or between elevations shown and tops of paving or curb elevations shown. Verify grades established during final grading as being true to finish grades shown, and maintain such areas until the effective date to begin any operations.

Excavation for Trees and Shrubs

1. **Pits, beds, and trenches:** Excavate with sides vertical, bottom flat but with high center for drainage. Deglaze sides and loosen bottom.
2. **Minimum dimensions of individual pits (unless prevented by planter wall) are as follows:**
 - a. **Diameter:**
 - (1) Ball or root spreads up to 2 feet: twice root spread.
 - (2) Ball or root spreads 2 to 4 feet: two feet greater than root spread.
 - (3) Ball or root spreads over 4 feet: 1-1/2 times root spread.
 - b. Contractor shall ensure that root ball fits in planter without shaving or trimming.
 - c. **Depth:** Allow 9 inches of compacted planting soil beneath roots or ball and to set collar 1 inch below finish grade.
3. **Remove all excavated subsoil from the site and dispose of legally. Do not backfill excavation with subsoil.**

PLANTING TREES AND SHRUBS:

Setting layer: Place and compact a layer of planting soil, of thickness indicated, in bottom of excavation.

Balled and Burlapped Stock: Set plants in excavation with top of ball to match adjacent finished grade. Add soil as required under ball to achieve plumb.

1. **Remove burlap from top and sides of ball; retain burlap on bottom of ball. Untie all cords binding burlap to trunk. Remove all burlap and wire baskets from top 1/3 of the root ball.**
2. **Place backfill in 2 to 3 inch-thick layers. Work each layer by hand to compact backfill and eliminate voids. Maintain plumb during backfilling.**
3. **When backfilling is approximately 2/3 complete, saturate backfill with water and repeat until no more can be absorbed.**
4. **Place and compact remainder of backfill and water again.**

Container-Grown Plants: Place and backfill as specified for balled and burlapped stock and as follows:

1. Immediately before placing, remove container.
2. Set and plumb plants. Place initial backfill and remove sides of container, taking care to avoid damage to root systems.

Form watering basin around trunk with backfill holding at least 5 gallons for shrubs and 10 gallons for trees. Apply a moisture retaining mulch.

Antidesiccant: Spray-apply, covering all portions of plant in accordance with manufacturer's instructions. If in full leaf, spray deciduous trees or shrubs at nursery just before and 2 weeks after transplanting.

Pruning: Remove dead or broken branches, Prune to retain typical growth habit of plants with as much height and spread as practicable. Make cuts with sharp instruments and flush with trunk or adjacent branch. Do not remove leaders from trees.

STAKING AND GUYING OF TREES (PER OWNER REQUEST ONLY):

Protection of tree trunks:

1. Inspect and, if necessary, treat trunks for physical damage or insect infestation.
2. Wrap trunks of trees of 2 inches and greater caliper using wrapping tape. Wrap from base to first branches.

Guy and stake trees the same day as planting (per Owner request only).

Staking:

1. Tree stakes: Use minimum 2-by-2 size wood stakes of length required to extend from 6 feet above grade to 18 inches below bottom of tree excavation.
2. Ties: Provide length of rubber or plastic hose to prevent wire loop from contracting tree trunk. Adjust to provide firm but not rigid support.

Guying: Place guys equally spaced around trunk, with top of guy 6 to 7 feet above grade, and at 45 degree angle to vertical. Provide length of rubber or plastic hose to prevent wire loop from contracting tree trunk. Provide one turnbuckle per guy. Adjust to provide firm but not rigid support.

Ground stakes: Anchor guys for trees, of less than 6 inches caliper, using sharpened 2-by-4's not less than 30 inches long. Drive stakes at approximately 45 degree angle, with tops flush with, or slightly below, grade. Securely tie warning flaps at the 1/3 and 2/3 points of each guy wire.

Tree Support Schedule (per Owner request only): Stake trees greater than 2 inches in caliper located adjacent to pavement or other obstructions which prevent the installation of guy wires; number of stakes and ties as specified for guys.

PLANTING GROUND COVER AND SMALL PLANTS:

Individual Plants:

1. Space plants as indicated on drawings or in schedule.

2. Open holes sized to accommodate roots, place plants at proper elevation and backfill with planting soil, working carefully to avoid damage to roots and to leave no voids. Build up a small water basin of planting soil around each plant.

Water well immediately after planting. Do not wash soil onto crowns of plants.

Protection: Provide daily watering, straw mulch, or both, as necessary to protect plants from sun and wind until plants are fully recovered from transporting shock. Remove straw mulch when plants have attained healthy growth.

Weed Killer: At the Owner's request, apply a pre-emergence weed killer, replace plants adversely affected.

INSTALLATION OF MISCELLANEOUS MATERIALS:

Mulching: Mulch all plantings immediately after planting, as planting progresses, the same day as planted. Mulch all tree and shrub planting beds with 3" layer of specified shredded hardwood bark and mulch with 2" fine southern yellow pine bark fines for all perennials, grasses, and ground covers. Mulch all planters in their entirety. Do not bury trunks, stems, leafy stems, or vines under mulch material.

Sod: As a temporary cover between the fall and spring planting season, install sod within each planter. Watering and mowing will be required to maintain the sod in a healthy and vigorous growing condition as directed by the Owner. Upon installation of the spring plant material, the sod will be removed, hauled from the site and legally discarded. The irrigation installation shall be coordinated with the sod removal.

PLANTING BULBS:

Bulbs shall be planted at the depth recommended by the grower. Bulb booster fertilizer shall be applied as recommended by the manufacturer at the time of installation. Bulb fertilization shall be included in the cost of planting various types of bulbs specified.

FERTILIZER NUTRIENTS FOR SODDING, SALT TOLERANT:

Apply 210 kg of fertilizer per hectare (180 lb/acre) at the ratio of 1:1:1 as follows:

- | | | |
|----|---------------------------------|-----------------------|
| 1. | Nitrogen Fertilizer Nutrients | 70 kg/ha (60 lb/acre) |
| 2. | Phosphorus Fertilizer Nutrients | 70 kg/ha (60 lb/acre) |
| 3. | Potassium Fertilizer Nutrients | 70 kg/ha (60 lb/acre) |

CLEANUP AND PROTECTION

Cleanup

1. Excess and waste material shall be removed daily.
2. When planting in an area has been completed, the area shall be cleared of all debris, soil piles, and containers.
3. At least one paved pedestrian access route and one paved vehicular access route to each building shall be kept clean at all times. Other paving shall be cleaned when work in adjacent areas is completed.

Repairs

1. Any damage to existing landscape, paving, or other such features as a result of work related to this contract shall be repaired.

Protection

1. Protect landscape work and materials from damage due to landscape operations, operations by other Subcontractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Trees, shrubs, groundcovers, perennials, grasses, and bulbs shall be measured as individual units installed at the planting locations indicated and shall be paid for at the contract unit price each and such price shall include all labor, materials and equipment necessary to perform the work as herein specified.

PLANTING SOIL AMENDMENT shall be measured and paid for at the contract unit price per square yard and shall include all labor, materials, and equipment necessary to perform the work as herein specified.

MULCH shall be measured and paid for at the contract unit price per square yard and shall include all labor, materials, and equipment necessary to perform the work as herein specified. Traffic control and protection shall be considered incidental to the contract unit price. This item will not be paid by load tickets.

Fertilizer shall be measured for payment by weight in accordance with Section 250 of the Standard Specifications in pounds of actual nutrients used. This work will be paid for at the contract unit price per pound for NITROGEN FERTILIZER NUTRIENT, PHOSPHORUS FERTILIZER NUTRIENT, POTASSIUM FERTILIZER NUTRIENT, which price must be payment in full for furnishing and applying all materials and for all labor, tools, equipment, and incidentals necessary to complete the work as specified.

SODDING, SALT TOLERANT will be measured for payment in place and the area computed in square yards. To be acceptable the sod must be growing in place for a minimum of 45 days in a live, healthy condition and knitted to soil. This item will be paid for at the contract unit price per square yard for SODDING, SALT TOLERANT, which price must include all labor, material and equipment necessary to furnish, install and maintain the sod. The unit price must also include pins, stakes, watering and reworking of crusted topsoil as required.

Soil additives, organic compost, and fertilizer nutrients that comprise the prepared backfill, as well as the excavation, mulch, bracing, wrapping, and care of the plants shall be considered incidental to the contract and shall not be paid for separately.

GENERAL IRRIGATION

SUMMARY

This work includes design and installation of the irrigation system as indicated on the drawings and as specified herein.

All labor, material, equipment, permits and services to construct the approved shop drawings in accordance with sections 561, 562, 563, and 565 of the Illinois Department of Transportation Standard Specification for Road and Bridge Construction and the Standard Construction Details, except as herein modified.

Products, trade and brand names listed in these specifications are not to be construed as a proprietary specification. All products, trade names, brand names and other elements listing a specific product or company shall be considered the basis for consideration of other products on "or approved equal" basis. The Contractor is free to suggest other manufacturer's provided the performance is not affected.

Contractor shall provide all design details, calculations, plans, and shop drawings, and all labor, material, equipment, and services necessary for completion of the landscape irrigation systems in a serviceable, fully operational manner, including, but not limited to, providing the following:

1. Excavation and backfilling.
2. Pavement removal, excavation and shoring of the existing water main at water tap locations. Contractor shall backfill and restore pavement cut to original condition, including concrete pavement and bituminous surface.
3. Provide and install curb stop valve and copper water supply from tap to backflow preventer.
4. Provide and install backflow preventer with concrete pad and enclosure.
5. Provide and install galvanized steel sleeving.
6. Irrigation piping system including, but not limited to drip lines, solenoid control valves, isolation valves, valve boxes and automatic controls. Remote control valves shall be controlled by individual, battery operated controllers.
7. System testing.
8. Owner personnel training.
9. Piping and equipment identification.
10. Plumbing permits and inspection fees.
11. Valve tags and charts.
12. Supports, sleeves, fittings, valves, meters, and accessories.
13. Testing of system and making it operative.
14. Restoration of surfaces, including landscape and pavements.

The Contractor shall supply irrigation system design details, calculations, plans, and shop drawings to the Owner for review and approval prior to acceptance.

The Contractor shall coordinate with the City of St. Charles Water Department to perform any high pressure water main tap. The Contractor shall be responsible for all excavations and any required shoring at depths exceeding 48".

QUALITY ASSURANCE

Manufacturer's Qualifications: Firms regularly engaged in manufacturing irrigation systems materials and products, of types and sizes required, whose products have been in satisfactory use in similar service for not less than five (5) years.

Installer's Qualifications: Firms who have successfully completed execution of a minimum of five (5) contracts involving the installation of irrigation and piping work similar in size and scope to that required for this project. Such experience should be able to be demonstrated through references.

Codes and Standards:

1. Codes: All plumbing work shall be installed within applicable provisions of the City of St. Charles building codes.
2. All devices and their installation must be approved by the City of St. Charles Department of Public Works.
3. Standards: Items listed to conform to ASTM, ANSI, or other standards shall meet all manufacturing or installation requirements of such standards.

SUBMITTALS

Shop Drawings: Contractor shall prepare shop drawings for approval by the Engineer prior to commencement of any work on this item.

Product Data: Submit manufacturer's technical product data and installation instructions for irrigation system materials and products.

Record Drawings: At project closeout, submit record drawings of installed irrigation system piping and products.

Maintenance Data: Submit maintenance data and parts lists for irrigation system materials and products. Include these data, product data, shop drawings and record drawings in maintenance manual.

UTILITIES AND PROTECTION

Contractor shall acquaint himself/herself with all site conditions. Should utilities not shown on the plans be found during excavations, contractor shall promptly notify the Owner for instructions as to further action. Failure to do so will make Contractor liable for any and all damage there to arising from his/her operations subsequent to discovery of such utilities not shown on plan.

PERMITS AND FEES

Obtain all permits and pay required fees to any governmental agency having jurisdiction over the work. Inspections required by local ordinances during the course of construction shall be arranged as required. On completion of the work, satisfactory evidence shall be furnished to Owner to show that all work has been installed in accordance with the ordinances and code requirements.

DRAWINGS, SPECIFICATIONS AND DETAIL SHEETS

Consider drawings and specifications as being compatible and therefore work called for by one and not the other shall be furnished and installed as though called for by both. When discrepancies exist between scale and dimension or between the work to be accomplished by each trade, they shall be called to the Owner's attention immediately. The Owner's decision regarding such discrepancies shall be final and binding.

Where diagrams have been made to show piping connections, etc., Contractor is cautioned that these diagrams must not be used for obtaining lineal runs or number and type of fittings.

All measurements shall be verified at the site. Drawings may not be exactly to scale.

PIPING ARRANGEMENT

Suggestions for changes in location of piping, etc., advisable in the opinion of the Contractor, shall be submitted to the Owner for approval before proceeding with the work, with written assurance that such changes will not cause any extra cost on their part or alteration of design requirements.

GUARANTEE

Guarantee all work done for one (1) year from date of acceptance against all defects in material, equipment and workmanship. Guarantee shall cover repair of damage to any part of the premises resulting from leaks, or other defects in material, equipment and workmanship to the satisfaction of the Owner. Repairs, if required, shall be done promptly, at no cost to the Owner.

Guarantee will include spring start-up and winterizing of system within the one (1) year time and development of approved water application schedule. Winter damage due to improper winterization is the responsibility of the Contractor.

All repairs and servicing required under the guarantee period shall be made under the observation of the maintenance crew to help train them in the proper operation and repair of the system.

PRODUCTS

MATERIALS

General:

1. Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings and capacities as required and determined by the Contractor for proper operation of the drip irrigation system.
2. All materials throughout the system shall be new and in perfect condition.

Sleeving: Sleeving for irrigation piping under pavements shall be heavy walled, galvanized steel conduit suitable for either pushing, jacking, or directional boring installation. Sizes shall be as indicated on the drawings and bid form. Actual sizes installed shall be dependent upon mainline pipe size determined by Contractor or as indicated on the Drawings.

Piping: Provide pipes of one of the following materials of weight/class indicated. Provide pipe fittings and accessories of same material and weight/class as pipes, with joining method as indicated.

1. Polyvinyl Chloride (PVC): Sized as shown on the drawings. All PVC pipe shall be continuously and permanently marked with manufacturer's name, material and schedule or type. Pipe shall conform to U.S. Department of Commerce Commercial Standard CS 256-63, or latest revision. All PVC pipe shall be SDR 21.
2. Fittings: Schedule 40, polyvinyl chloride (PVC) weight as manufactured by Spears or approved equal. Solvent weld or insert fittings are acceptable. No saddle type clamping or fittings shall be used. Fittings to conform to ASTM D-2466.

Valves:

1. Gate/Drain Valves: Shall be sized for mains. The valves shall be all bronze solid wedge, screw bonnet.

2. Quick Coupling Valves: Shall be as noted on drawings and shall be 1" brass with locking top, and located up stream of all remote control valves.
3. Remote Control Valves: Electrically operated, DC battery powered solenoid valves with controller units installed in valve boxes of appropriate size and type for valves specified with manual shut-off valve to match pipe size.

Dripperline and Integral Drinkerline Components:

1. Techline CV low volume drinkerline with integral and evenly spaced pressure compensating, check valve drippers welded to the inside of the tubing at specified intervals. Techline CV discharge rate of 0.6 GPH evenly spaced at 18" centers. The drinkerline shall be Techline CV pressure compensating drinkerline as manufactured by Netafim Irrigation, Inc.
2. Techline CV shall consist of 17mm, nominal sized one-half inch (1/2") low-density linear polyethylene tubing with pressure compensating, continuously self-cleaning, integral drippers with internal check valve at a specified spacing of 18" on center or blank tubing without drippers. The tubing shall be brown in color and conform to an outside diameter (O.D.) of 0.66 inches and an inside diameter (I.D.) of 0.56 inches. Individual pressure compensating drippers shall be welded to the inside wall of the tubing as an integral part of the tubing assembly. These drippers shall be constructed of a 2-piece plastic drinker housing containing a continuously self-flushing silicone diaphragm capable of flushing any dirt or debris that may enter the drinker, extending the full length of the drinker. The drinker shall have a built-in check valve that will hold the pressure exerted by a 4-1/2' column of water (2-psi) to ensure that tubing will not drain water on zone shutdown, or allow outside contaminants to enter the drinkerline through reverse siphonage. The drinker shall have its water inlet located in the center of the tubing to ensure it draws water from the center of the water stream thereby ensuring the drinker is always drawing water from the cleanest part of the stream of water flowing through the tubing. The drinker shall also have a built-in physical root barrier whereby the water shall exit the drinker from one location and shall exit the tubing from a second location. This physical barrier shall create an air gap inside the tubing.
3. Each drinker shall have the ability to independently regulate discharge rates, with an inlet pressure of fourteen point seven to seventy (14.7 - 70) pounds per square inch (psi), at a constant flow and with a manufacturer's coefficient of variability (Cv) of 0.03 or less. Recommended operating pressure shall be between 20-50 psi. The drinker discharge rate shall be 0.6 gallons per hour (GPH) utilizing a combination turbulent flow/reduced pressure compensation cell mechanism and a diaphragm. The drippers shall be capable of continuously cleaning themselves while in operation. The drinkerline shall be available with 18" spacing between drippers unless otherwise indicated. For subsurface installation, Techline CV pipe depth shall be 6" maximum unless otherwise specified. Maximum system pressure shall be 50-psi. Filtration shall be 120 mesh or finer. Bending radius shall be 7".
4. Techline CV Fittings: All Techline CV connections shall be made with approved Techline CV insert fittings.
5. Soil Staples (TLS6): Techline CV installation shall be held in place with Techline Soil Staples spaced evenly every 3' to 5' on center, and with two staples on each change of location.

TechFilter:

1. Techfilter is the incorporation of a disc filter and a chemical root intrusion preventer (trifluralin) with a required amount of Techline CV drinkerline. Techfilter shall be 2" with drinker flow rates

of 0.6 GPH for Techline CV spaced at 18" on center. The mesh rating is 120, and maximum system pressure is 140-psi.

2. The filter shall be a multiple disc filter with trifluralin incorporated into the replaceable disk ring assembly inside the filter housing. The disc filter body shall be molded of black plastic with male pipe threads for both inlet and outlet. The disc filter shall be capable of periodic servicing and replacement of the chemically treated disk ring set by unscrewing a threaded cap or unlatching the band.
3. The Techline CV drippers shall have the ability to independently regulate discharge rates, with an inlet pressure of fourteen point seven to seventy (14.7-70) pounds per square inch (psi), at a constant flow and with a manufacturer's coefficient of variability (Cv) of 0.03 or less. Recommended operating pressure shall be between 20-50 psi. The dripper discharge rate shall be 0.6 gallons per hour (GPH) utilizing a combination turbulent flow/reduced pressure compensation cell mechanism and a diaphragm to maintain uniform discharge rates. The drippers shall continuously clean themselves while in operation. The dripperline shall spaced 18" between drippers unless otherwise specified. Techline pipe depth shall be 6" unless otherwise specified. Maximum system pressure shall be 50-psi.
4. When water passes through the filter, a very low concentration of trifluralin (parts per billion) is transmitted throughout the Techline CV piping network. This provides for precise and even distribution of trifluralin throughout the piping network and effectively inhibits root growth into the dripper outlets.
5. The trifluralin-treated filter ring set shall be replaced every two (2) years, or two hundred (200) hours of operation, whichever occurs first.

Line Flushing Valve:

1. Line Flushing Valves are used to reduce sediment build-up in Techline CV and to pass sediment or debris that has not been captured by the disc filter.
2. The Line Flushing Valve shall be constructed of brown molded plastic with one of the following end configurations:
 - a. ½" MPT
 - b. Insert inlet w/collar
3. The Line Flushing Valve shall automatically operate at the beginning of the irrigation cycle as the system begins to pressurize, and flush approximately one gallon of water at 57-psi maximum, or 1.5-psi minimum. *Note:* Permanent damage could occur to the Line Flushing Valve if incoming pressure exceeds 57-psi. Netafim Pressure Regulators are recommended even with pressure regulating remote control valves, since these valves may allow full line pressure for a brief period of time before pressure regulation occurs.
4. Line Flushing Valves are to be installed below grade, as detailed, in a valve box to allow for periodic inspection and are to be installed in one of two ways:
 - a. Vertically: Dome portion facing upward, installed on a 90 degree elbow.
 - b. Horizontally: Dome portion facing sideways.
5. One (1) Line Flushing Valve shall be installed for every fifteen (15) GPM of zone flow, and shall be installed at a point farthest away from the source (typically on an exhaust header) as possible.

Pressure Regulator – In-line low flow Pressure Regulator:

1. The purpose of the Pressure Regulator is to control downstream pressure at or below the specified system operating pressure. Unregulated pressures in excess of the recommended operating ranges can diminish and disable line flushing valves or cause the integrity of the Techline/Techlite fittings connection to weaken and/or fail.
2. The Pressure Regulator shall be a Netafim spring-operated, in-line piston-type regulator. The body shall be molded of black plastic with $\frac{3}{4}$ " female/female pipe threaded inlet and outlet. Directional arrows shall show flow direction of water.
3. The Pressure Regulator shall be able to respond immediately to any inlet pressure variation. The regulator shall be capable of regulating downstream pressure to 15-psi, 20-psi, 25-psi, 35-psi, or 45-psi. The Pressure Regulator shall operate in a flow range of 0.25-4.4 GPM. Maximum pressure at inlet shall be 145-psi.

Aquanet DC Valve:

1. The Aquanet DC valve is a "latching solenoid" valve designed to be turned on and off using a momentary 12VDC pulse. The valve is extremely debris resistant through the use of large ports and non-continuous porting of water above the diaphragm. It is an FPT x FPT valve.
2. The valve shall be a 9-14 VDC (12 VDC nominal) electronically actuated, diaphragm-operated, remote control valve. The body and bonnet shall be molded of glass reinforced nylon plastic. The bonnet screws shall be serviceable with a Phillips screwdriver. The diaphragm assembly shall be molded from chemically altered EPDM for added resistance against chlorine and other chemicals for fertigation and chemigation applications. The valve shall operate so that water is only allowed above the diaphragm on the closing cycle. The valve shall have 2 mm metering orifices to operate in very dirty water applications.
3. The motorized actuator shall be 9-14 VDC (12 VDC nominal). The motorized actuator shall be encapsulated in a watertight compartment. It shall be equipped with a 3-position manually operated dial on top of the valve to allow, OFF, AUTO, or ON operation. A flow control handle shall be mounted on the bottom of the valve body and have a 170 degree turn from full open to full close.
4. Wiring to the motorized actuator shall be color-coded to indicate polarity. The black wire shall be Common and the red wire shall be Power.
5. The $1\frac{1}{2}$ " and 2" valve shall be constructed to allow for the addition of an optional, field installed pressure regulating module that shall have a pressure regulation range of 5-70 psi (0.5-7.0 bar).
6. The $\frac{3}{4}$ " and 1" valve shall have an operational pressure range of 3-150 psi, (0.2-10 bar) with a maximum operating pressure rating to 150-psi (10 bar). Flow range shall be 0.1-28 GPM (0.025-7 m³/h).
7. The $1\frac{1}{2}$ " and 2" valve shall have an operational pressure range of 6-150 psi, (0.4 - 10.0 bar) with a maximum operating pressure rating of 200-psi (14 bar). Flow range shall be 1-175 GPM (0.1-34 m³/h).
8. The valve shall be able to be operate with a wire run length back to a controller and a 13.5 VDC pulse of 3,150' with #12 gauge, 1,950' with #14 gauge, 1,250' with #16 gauge, 780' with #18 gauge and 495' with #20 gauge.

Miracle DC Controller:

1. The controller is a battery operated irrigation controller for use in areas without existing power. Power is provided through a 9VDC alkaline or lithium ion battery, 6VDC storage battery, or 4 "C" cell batteries. The controller operates with 12 VDC, 2-wire, latching or DC-pulse type valves.
2. The controller shall be a 6, 9, or 12-station controller. It shall have 3 independent irrigation programs with Programs A and B tied to the sensor. It shall be capable of up to four start times per day and each station shall be able to run from 1 minute to 9 hours, 59 minutes in one-minute increments. It shall have a programmable 99 day rain delay, as well as a seasonal adjust feature that allows for station run times to be changed globally from 10% to 200% in 10% increments to adjust for seasonal or weather changes. It shall have a 7-day calendar or interval schedule. It shall be able to perform self-diagnostic testing of individual stations to detect, skip over and notify of short circuits in the valve or valve wiring. The controller shall have a power conserving "sleep" mode that turns off the display 5 minutes after the last input. It shall come with a sheltered location cabinet. It shall have an operating temperature range of 20°F to 122°F (-10°C to +50°C). It shall be able to measure battery strength and will not send an "on" signal to the valves if there is not enough battery life to send an "off" signal to the valves.
3. The controller shall have (or be capable of) a rain/soil moisture sensor input. The rain sensor input shall be normally open. Sensor type shall be dry contact (closed = <3KΩ, open = >100KΩ).
4. The controller shall perform a diagnostic check when the battery is installed to ensure each zone has been sent an "off" signal. The controller shall send a 13.5 VDC (4,700 μF capacitor) signal for 100 milliseconds to actuate solenoids/relays when operated either manually or automatically.

Miracle Professional Cabinet:

1. The Miracle Professional Cabinet provides commercial quality, waterproof housing, for the Miracle controller. It shall be locking and gray in color.
2. The Miracle Professional Cabinet shall be constructed of molded gray plastic. It shall have a waterproof seal around the entire inside of the cabinet. It shall be constructed in a manner where the Miracle controller will fit in the top portion, with a bottom panel for wires. It shall be a locking, vandal-resistant cabinet.
3. The Miracle Professional Cabinet shall house the Miracle controller in a dry, locking environment.

Reduced Pressure Backflow Prevention Units: Reduced pressure backflow prevention units shall be provided as indicated on drawings and shall comply with local codes.

Backflow Preventer Enclosures: units shall be "GuardShack" enclosure units as manufactured by BPD I or approved equal. Units shall be painted green and mounted on concrete or pre-formed bases with provision for padlocking. Size of enclosure shall be determined by the Contractor.

Solvent Cement: Compatible with PVC pipe and or proper consistence ASTM D-2564.

Sleeves for Irrigation Pipe: Under all walks and paving and where indicated on drawings: galvanized heavy walled steel conduit. Conduit shall be two (2) times the O.D. of sleeved pipe.

Valve Boxes: Valve boxes shall be of appropriate size and type for valves specified or as otherwise indicated on the drawings. All valve boxes in roadways or sidewalks shall be cast iron construction with locking lid. All valve boxes to have 6" pea gravel; with blocking, and wrapped with filter fabric.

Quick Coupler Valves: Quick coupler system shall include a 1" NPT Quick Coupler with yellow vinyl cover Model HQ-44RC-AW as manufactured by Hunter Industries or approved equal. System shall also include a 10" round handhole with locking cover to house and protect quick coupler and any additional irrigation accessories such as hose swivels, couplers, locks, and keys required to irrigate using a 3/4" hose. Engineer shall approve entire system prior to construction.

Drains: Air hose connections of approved design shall be provided for winterizing at several locations so that the entire system can be drained by blowing it out with compressed air. The compressor shall be capable of varying pressures.

EXECUTION

GENERAL INSPECTION

Examine areas and conditions under which irrigation system's materials and products are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

INSTALLATION OF IDENTIFICATION

General: Maintain all warning signs, shoring, barricades, flares and red lanterns as required by safety orders of the Division of Industrial safety and local ordinances.

INSTALLATION OF SLEEVING

Sleeving shall be installed at least 36 inches below the pavement grade.

Care shall be taken by the Contractor to not damage underground utilities during installation of sleeving.

Sleeving shall extend from parkway to median planter and shall extend a minimum of 24 inches into each median planter.

IRRIGATION WATER CONNECTION

Contractor shall coordinate with the City of St. Charles to arrange for schedules for creating water connections under pressure.

Contractor shall excavate to expose water main and provide shoring if excavation is over 4-feet in depth.

After installation of water tap, Contractor shall install 2-inch copper supply line to water meter and backflow preventer and back down into ground. Water meter shall be installed above ground and shall be included within protective enclosure.

Contractor shall install backflow preventer enclosure unit per manufacturer's recommendations.

INSTALLATION OF PIPING AND FITTINGS

Excavating and Trenching:

1. The Contractor shall perform all excavations as required for the installation of the work included under this section, including shoring of earth banks to prevent cave-ins. The contractor shall trench, each day, only as much as required for that day's work.

2. Trenches shall be made wide enough to allow minimum of two (2") inches between parallel pipe lines. Trenches for pipelines shall be made of sufficient depth to provide minimum cover from finish grade as follows:
 - a. 15" minimum cover over main lines.
 - b. 4" – 6" cover over dripperline manifolds.
 - c. Dripperlines shall be installed to a max. depth of 6".

Pipe and Assembly:

1. Install remote valves where shown and group together where practical. Place valves no closer than six (6") inches to planter edges. Locate all valve boxes in planting beds unless otherwise directed or noted.
2. No pipe shall be laid when, in the opinion of the Owner, trench or weather conditions are unsuitable. When pipe laying is not in progress, the open ends of the installed pipe shall be closed by approved means to prevent entrance of trench water and other foreign material into the line(s). Enough backfill shall be placed in the center sections of the pipe to prevent floating. Any pipe that has floated shall be removed from the trench and re-laid.
3. PVC pipe and fittings shall be solvent welded using solvents and methods as recommended by the manufacturer of the pipe, except where screwed connections are required. Pipe and fittings shall be thoroughly cleaned of dirt, dust and moisture before applying solvent with a non-synthetic bristle brush.
4. Pipe may be assembled and welded on the surface. Snake pipe from side to side in the trench to allow for expansion and contraction.
5. Make all connections between plastic pipe and metal valves or steel pipe with threaded fittings using plastic male adapters.

Dripperline Installation:

1. Install all dripperline as indicated on approved shop drawings. Use only Teflon tape on all threaded connections.
2. Install all dripperline accessories, valves, relief valves, and other needed equipment in accordance with manufacturer's specifications and requirements.
3. Clamp Techline CV fittings with Oetiker clamps when operating pressure exceeds specific dripperline fitting requirements.
4. When installing Techline CD dripperline on-surface, install soil staples as listed below:
 - a. Sand Soil - One staple every three (3') feet and two (2) staples on each change of direction (tee, elbow, or cross).
 - b. Loam Soil - One staple every four (4') feet and two (2) staples on each change of direction (tee, elbow, or cross).
 - c. Clay Soil - One staple every five (5') feet and two (2) staples on each change of direction (tee, elbow, or cross).
5. Cap or plug all openings as soon as lines have been installed to prevent the entrance of materials that would obstruct the pipe. Leave in place until removal is necessary for completion of installation.

6. Thoroughly flush all water lines before installing valves and other hydrants.
7. Test in accordance with Paragraph on Hydrostatic Tests.

Backfilling and Compacting:

1. After the system is operating, and required tests and inspections have been completed, backfill excavations and trenches with clean soil free of rubbish.
2. Backfill for all trenches, regardless of type of pipe covered, shall be compacted to minimum ninety (90%) percent density.
3. Compact trenches in areas to be planted by thoroughly flooding the backfill.
4. Dress off all areas to finish grades.

FIELD QUALITY CONTROL

Hydrostatic Test:

1. Request the presence of the Owner at least forty-eight (48) hours in advance of testing.
2. Testing to be accomplished at the expense of the Contractor, and in the presence of the Owner.
3. Center load piping with small amount of backfill to prevent arching or slipping under pressure.
4. Apply a continuous and static water pressure of sixty (60) PSI when welded plastic joints have cured at least twenty-four (24) hours and with the risers capped as follows:
 - a. Main lines and sub mains to be tested for one (1) hour.
 - b. Lateral lines to be tested for one (1) hour.
5. Repair leaks resulting from tests.
6. The lines shall then be retested until satisfactory.

INSTRUCTIONS

After completion and testing of the system, the Contractor will instruct the Owner's personnel in the proper operation and maintenance of the system.

PROTECTION

Contractor shall be responsible for work until finally inspected, tested and accepted. After delivery, and before and after installation, protect work against theft, injury or damage. Protect open ends of work with temporary covers or plugs during construction, to prevent entry of obstruction material.

CLEANUP

Remove from the site all debris resulting from work of this section.

WINTER SHUT DOWN AND BLOW-OUT

Contractor shall be responsible for first season shut down and blow-out and shall coordinate with Owner's maintenance and operations staff to instruct them in the procedure for future years.

The Contractor shall provide Heavy Duty case hardened locks for all controller boxes. All locks, including those for the RPZ enclosures, shall be fixed to a universal key. Four (4) copies of the key shall be provided to the City of St. Charles.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

IRRIGATION SYSTEM will be paid for at the contract lump sum unit price which price shall be payment in full for all labor, material, equipment, and services necessary for providing the landscape irrigation systems in a serviceable, fully operational manner, including, but not limited to, excavation and backfilling, trenching, and pavement patching, connecting to the water supply pipe inside each planter, piping system including irrigation supply line, quick coupler valves, solenoid control valves, isolation valves, valve boxes and automatic controls, irrigation controller and enclosure, system testing and, owner personnel training, piping and equipment identification, plumbing permits and inspection fees, valve tags and charts, and all supports, fittings, valves, and accessories.

CONDUIT IN TRENCH, 4" DIA. GALVANIZED STEEL shall be measured and paid for at the contract unit price per lineal foot where unit price includes all labor, material, and equipment necessary to install sleeving as defined in these specifications and as indicated on the drawings.

2" PVC SCHEDULE 40 PIPE shall be measured and paid for at the contract unit price per lineal foot where unit price includes all labor, material, and equipment necessary to install irrigation supply pipe as defined in these specifications and as indicated on the drawings.

2" TYPE K COPPER PIPE shall be measured and paid for at the contract unit price per lineal foot where unit price includes all labor, material, and equipment necessary to install irrigation supply pipe as defined in these specifications and as indicated on the drawings.

2" RPZ BACKFLOW PREVENTER shall be measured and paid for at the contract unit price per each where unit price includes all labor, material, and equipment necessary to install RPZ unit as defined in these specifications and as indicated on the drawings.

2" RPZ ENCLOSURE shall be measured and paid for at the contract unit price per each where unit price includes all labor, material, and equipment necessary to install RPZ enclosure and concrete pad as defined in these specifications and as indicated on the drawings.

2" WATER METER shall be measured and paid for at the contract unit price per each where unit price includes all labor, material, and equipment necessary to install water meter as defined in these specifications and as indicated on the drawings.

WATER VALVES shall be measured and paid for at the contract unit price per each where unit price includes all labor, material, and equipment necessary to install water valve as defined in these specifications and as indicated on the drawings.

PAY ITEM A2003024	CELTIS OCCIDENTALIS 'PRAIRIE PRIDE' - 3" CAL.
PAY ITEM <u>XX006292</u>	FRAXIUS AMERICANA 'AUTUMN APPLAUSE' - 3" CAL.
PAY ITEM <u>XX006293</u>	GINKGO BILOBA 'AUTUMN GOLD' - 3" CAL.
PAY ITEM A2004724	GLEDITSIA TRIACANTHOS INERMIS 'SHADEMASTER' - 3" CAL.
PAY ITEM A2005024	GYMNOCLADUS DIOICA - 3" CAL.
PAY ITEM <u>XX006294</u>	QUERCUS BICOLOR - 3" CAL.
PAY ITEM <u>XX006295</u>	QUERCUS ROBUR - 3" CAL.
PAY ITEM <u>XX006296</u>	QUERCUS RUBRA - 3" CAL.
PAY ITEM <u>XX006297</u>	ULMUS X 'MORTON GLOSSY' - 3" CAL.
PAY ITEM <u>XX006298</u>	ULMUS X 'MORTON STALWART' - 3" CAL.
PAY ITEM D2002772	PINUS NIGRA - 6' HT.
PAY ITEM D2002172	PICEA PUNGENS - 6' HT.
PAY ITEM D2002272	PICEA PUNGENS 'GLAUCA' - 6' HT.
PAY ITEM <u>XX006299</u>	ARONIA MELANOCARPA 'MORTON' - 30" HT.
PAY ITEM <u>XX006300</u>	BERBERIS THUNBERGII 'BAILONE' - 24" HT.
PAY ITEM <u>XX006301</u>	KERRIA JAPONICA - 30" HT.
PAY ITEM <u>XX006302</u>	NEPETA X FAASSENII 'WALKERS LOW' - 24" HT.
PAY ITEM C2005824	RHUS AROMATICA 'GRO-LOW' - 24" HT.
PAY ITEM <u>XX006303</u>	ROSA RUGOSA 'FOXI PAVEMENT' - 18" HT.
PAY ITEM <u>XX006304</u>	ROSA RUGOSA 'SCARLET PAVEMENT' - 18" HT.
PAY ITEM <u>XX006305</u>	ROSA RUGOSA 'SNOW PAVEMENT' - 18" HT.
PAY ITEM <u>XX006306</u>	SPIREA X BUMALDA 'MAGIC CARPET' - 24" HT.
PAY ITEM <u>XX006318</u>	ALLIUM SCHOENOPRASUM 'FORESCATE' - 1 GAL.
PAY ITEM <u>XX006319</u>	ALLIUM TANGUTICUM 'SUMMER BEAUTY' - 1 GAL.
PAY ITEM <u>XX004486</u>	ASCLEPIAS TUBEROSA - 1 GAL. (Butter Fly Weed)
PAY ITEM <u>XX006320</u>	ECHINACEA PALLIDA - 1 GAL.
PAY ITEM <u>XX005178</u>	HEMEROCALLIS 'CHICAGO APACHE' - 1 GAL.
PAY ITEM <u>XX003489</u>	HEMEROCALLIS 'HAPPY RETURNS' - 1 GAL. Happy Returns Day Lily
PAY ITEM <u>XX006321</u>	RUDBECKIA HIRTA - 1 GAL.
PAY ITEM <u>XX003273</u>	SEDUM 'AUTUMN JOY' - 1 GAL.
PAY ITEM <u>XX006322</u>	SOLIDAGO NEMORALIS - 1 GAL.
PAY ITEM <u>XX006307</u>	BOUTELOUA CURTIPENDULA - 1 GAL.
PAY ITEM <u>XX006001</u>	CAREX MUSKINGUMENSIS - 1 GAL.
PAY ITEM <u>XX006308</u>	CAREX MUSKINGUMENSIS 'OEHME' - 1 GAL.
PAY ITEM <u>XX006309</u>	MISCANTHUS SINENSIS 'GRAZIELLA' - 1 GAL.
PAY ITEM <u>XX006310</u>	MISCANTHUS SINENSIS 'STRICTUS' - 1 GAL.
PAY ITEM <u>XX006311</u>	MOLINIA ARUNDINACEA 'TRANSPARENT' - 1 GAL.
PAY ITEM <u>XX006312</u>	MOLINIA CAERULEA 'MOORHEXE' - 1 GAL.
PAY ITEM <u>XX006313</u>	PANICUM VIRGATUM 'HEAVY METAL' - 1 GAL.
PAY ITEM <u>XX006314</u>	SCHIZACHYRIUM SCOPARIUM - 1 GAL.
PAY ITEM <u>XX006315</u>	SESLARIA AUTUMNALIS - 1 GAL.
PAY ITEM <u>XX006316</u>	SORGHASTRUM NUTANS - 1 GAL.
PAY ITEM <u>XX006317</u>	SPOROBULUS HETEROLEPIS - 1 GAL.
PAY ITEM <u>XX006323</u>	NARCISSUS SPP. - 14+ CM
PAY ITEM <u>XX006324</u>	PLANTING SOIL AMENDMENT

<u>PAY ITEM 25200110</u>	<u>SODDING, SALT TOLERANT</u>
<u>PAY ITEM K1003680</u>	<u>MULCH</u>
<u>PAY ITEM 25000400</u>	<u>NITROGEN FERTILIZER NUTRIENT</u>
<u>PAY ITEM 25000500</u>	<u>PHOSPHOROUS FERTILIZER NUTRIENT</u>
<u>PAY ITEM 25000600</u>	<u>POTASSIUM FERTILIZER NUTRIENT</u>
<u>PAY ITEM XX003885</u>	<u>IRRIGATION SYSTEM</u>
<u>PAY ITEM 81001000</u>	<u>CONDUIT IN TRENCH, 4" DIA. GALVANIZED STEEL</u>
<u>PAY ITEM XX006325</u>	<u>2" PVC SCHEDULE 40 PIPE</u>
<u>PAY ITEM XX006326</u>	<u>2" TYPE K COPPER PIPE</u>
<u>PAY ITEM XX006328</u>	<u>2" RPZ BACKFLOW PREVENTER</u>
<u>PAY ITEM XX006329</u>	<u>2" RPZ ENCLOSURE</u>
<u>PAY ITEM XX006327</u>	<u>2" WATER METER</u>
<u>PAY ITEM 56104600</u>	<u>WATER VALVES 2"</u>

HAMPTON, LENZINI AND RENWICK, INC.

**SUPPLEMENTAL SPECIFICATIONS
FOR
WATER MAIN IMPROVEMENTS**

SECTION 1. GENERAL REQUIREMENTS

1.1 SCOPE. This work shall consist of furnishing and installing water mains, valves, fire hydrants, service stubs, and other required appurtenances of the size, class, and type shown on the plans or specified.

1.2 MATERIAL INSPECTION AND CERTIFICATION. The manufacturer of any materials to be incorporated in the improvement shall, upon request, furnish a sworn statement that all of the tests and inspections have been made and that the product involved has been manufactured in compliance with the applicable specifications thereto. Said statement shall be furnished the Engineer at time of shipment of materials.

Upon request of the Engineer, manufacturers shall furnish all facilities necessary to test their product for compliance with the appropriate specifications. All testing of materials shall be done by the manufacturer and witnessed by the Engineer.

1.3 MATERIAL DELIVERY. Proper implements, tools, and facilities shall be provided and used by the Contractor for unloading and distributing materials along the line of the work.

All pipe, fittings, valves, hydrants, and accessories shall be carefully lowered to the ground by means of a derrick, ropes, or other suitable equipment in a manner to prevent damage. Under no circumstances shall water main materials be dropped or dumped.

1.4 RESPONSIBILITY FOR SAFE STORAGE. The Contractor shall be responsible for the safe storage of material furnished by or to him, accepted by him and intended for the work.

1.5 UNDERGROUND STRUCTURES. The Contractor shall proceed with caution in the excavation and preparation of the trench so the exact locations of underground structures may be determined. When required by the Engineer, the Contractor shall make such excavations as necessary to determine the location of existing underground structures. Adequate protection and maintenance of all underground structures and other obstructions encountered in the progress of the work shall be furnished by the Contractor. Any structures which are disturbed or otherwise damaged by the Contractor shall be restored in an approved manner.

1.6 UNDERGROUND UTILITIES. The Engineers have endeavored to locate subsurface obstructions from field surveys and available records. Known structures are shown on the plans or notice given of their presence. While the work was carefully done, the accuracy of the information cannot be guaranteed. Invert elevations of sanitary and storm sewers have been obtained from the field surveys and, where possible, elevations are shown on the plans. Wherever the Contractor deems it necessary to determine the exact location of existing pipe, valves, or other underground structures, the Contractor may make any examinations he determines desirable in advance of the work. No added compensation will be paid for this type of exploration.

In excavating trenches and laying pipe, all existing utilities including water pipes and services, sewer pipes and services, gas pipes and services, electric or telephone transmission pole lines, cables or conduits shall be protected, supported, maintained in service and restored to the condition in which they were found, all at no extra remuneration. Where any utility facility, including service connections, is endangered or damaged by the work, the utility management shall be notified by the Contractor and

the Contractor shall cooperate with the utility and pay the cost of protection and repairs if damage occurs.

- 1.7 EXCAVATION.** All of the water mains, fire hydrants, gate valves, and house services shall be installed in open-cut trenches to the depth and in the locations shown on the plan except as otherwise provided herein. The Contractor shall do all excavation of whatever substances encountered to the required depths. In the event excavation is carried to a depth greater than required, the trench shall be brought back to the required grade with a granular material approved by the Engineer.

Excavated materials shall be deposited along the side of trench nearest the center of the public right of way unless required for good reason to be placed elsewhere. Care shall be taken to preserve property corners, trees, shrubbery, and existing improvements which are not to be removed. All excavated material shall be piled in a manner that will not endanger the work and will avoid obstruction of sidewalks, driveways, gutters, and natural watercourses.

When a firm foundation is not found to exist for the bottom of the trench at the required depth due to soft, spongy, or other unsuitable soil, such unsuitable soil shall be removed for the full width of the trench or tunnel and replaced with well-compacted crushed stone approved by the Engineer.

Where rock in either ledge or boulder formation is encountered, it shall be removed below grade and replaced with a well-compacted cushion of crushed stone having a thickness under the pipe of not less than 150 mm (6").

When trees, existing walks, water mains, sewers, sewer and water house services, public utilities, or any other obstacle not to be removed are encountered in the trenching work, the excavation shall be made in tunnel without damage to said obstacle.

Surplus excavated material and construction debris shall be disposed of by the Contractor. Such materials shall be loaded and trucked away from the site as soon as practical and in a manner to eliminate the storage of such surplus in the streets and parkways of the improvement.

- 1.8 DEWATERING TRENCH.** The Contractor shall provide and use effective and satisfactory methods to lower the ground water table to a safe plane below the bottom of the work. No pipe shall be laid or jointed unless the trench is completely dewatered.

Water pumped or drained from the work shall be disposed of in a manner that will not damage adjacent private property, other work under construction, street pavements, or other municipal property. No water shall be discharged into sanitary sewers. No water containing settleable solids shall be discharged into storm sewers.

- 1.9 BRACING AND SHEETING.** Open cut trenches shall be sheeted and braced as required to prevent shifting of installed pipe, prevent damage to structures and adjacent property and avoid delays to the improvement. Trenches in pavements or in close proximity to improved streets or roadways shall be sheeted or braced in a substantial and effective manner. Sheeting may be removed after the backfill has been completed to such elevation as to permit its safe removal. Sheeting and bracing left in place must be removed for a distance of 900 mm (3') below the established street grade.

- 1.10 TRENCH JETTING.** When required by the Engineer, water shall be introduced into the backfill by jetting methods to a point approximately 600 mm (2') above the top of the water pipe to accelerate settlement of backfill. The jetting shall continue at intervals of approximately 1.8 meters (6') for the entire length of the trench.

- 1.11 SITE CLEAN-UP.** During construction, the Contractor shall keep the site of the work and adjacent premises free from material, debris, and rubbish. The Contractor shall furnish men and equipment

as necessary to remove objectionable material, debris, and rubbish from completed portions of the work.

Upon completion of the work, the Contractor shall clean up the entire improvement site to the satisfaction of the Owner. All roadway ditches filled or partly filled with excavated material shall be cleaned out and regraded to an acceptable gradient.

Surplus materials around trees, bushes, fences, etc., shall be removed by hand and disposed of. All trenches shall be filled and graded as necessary.

- 1.12 TREE PROTECTION.** All trees within the limits of the improvement that are not scheduled for removal shall be protected by wooden tree guards. Tree guards shall be a minimum of 1.8 meters (6') high and of a minimum 50 mm (2") nominal thickness. All tree guards shall be securely strapped to the trees.

Any tree damaged in the course of the work shall be properly pruned or trimmed and painted with an approved commercial tree dressing.

- 1.13 BASIS OF PAYMENT.** The preceding paragraphs apply to all items to be incorporated into the improvement. Their cost shall be incidental to and included in the contract unit prices for the various construction items as set forth in the following sections.

SECTION 2. WATER MAIN

- 2.1 DESCRIPTION.** This work shall consist of furnishing and installing water mains of the required material, size, and class together with the necessary fittings, jointing materials, and blocking, complete as specified herein, and in conformance with the detailed plans.

- 2.2 MATERIALS.** Unless otherwise specified, all materials shall conform to the current AWWA Standards listed below.

- (a) C-104 Cement-Mortar Lining for Cast Iron Pipe and Fittings
- (b) C-106 Cast Iron Pipe Centrifugally Cast in Metal Molds
- (c) C-110 Gray Iron and Ductile-iron Fittings
- (d) C-111 Rubber Gasket Joints for Cast Iron Pressure Pipe and Fittings
- (e) C-151 Ductile-iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds

Water mains shall be constructed of the materials shown on the plans or specified. Where alternate materials are provided, water mains shall be constructed of the pipe material selected by the Owner at the time of contract award.

- 2.3 CAST-IRON PIPE.** All cast-iron pipe, unless otherwise specified, shall be Class 150 centrifugally cast pipe designed for maximum working pressure of 1,035 kPa (150 psi) and of a thickness class as specified. All pipe shall be made in standard 4.8 m (16'), 5.5 m (18') or 6.1 m (20') lengths and shall have a standard thickness cement lining on the inside.

- 2.4 CAST AND DUCTILE-IRON FITTINGS.** Unless otherwise specified, all fittings shall be mechanical or push-on joint with sockets at all openings. Fittings shall be designed for a minimum working

pressure of 1,725 kPa (250 psi) and be cement-lined. The cost of all fittings shall be incidental to the Water Main unit price.

Fittings set forth on the plans are for guidance purposes only and are considered a minimum requirement. The Contractor shall provide all fittings required to make a completed installation.

2.5 DUCTILE-IRON PIPE. All ductile-iron pipe, unless otherwise specified, shall be designed for a maximum working pressure of 1,035 kPa (150 psi) and of a thickness class as specified. All pipe shall be made in standard 5.5 m (18') or 6.1 m (20') lengths and shall have a standard thickness cement lining on the inside.

2.6 STEEL RODS, TURNBUCKLES, BOLTS, and WASHERS. Steel rods shall be S.A.E. 1020 or other steel meeting the approval of the Engineer. Turnbuckles shall be drop-forged and conform in dimensions and weights to the latest "Manual of the American Institute of Steel Construction". Bolts shall be U.S. Standard. Washers may be cast, malleable, or cut steel.

CONSTRUCTION METHOD

2.7 EXCAVATION AND FOUNDATION. Unless otherwise specified, the trench shall be excavated to a depth which will provide 1.7 m (5-1/2') of cover between the top of the water main and the established finished roadway grade or natural ground, whichever is deeper. The trench for the water main shall be excavated with vertical walls and be at least 225 mm (9") and not more than 380 mm (15") wider than the external diameter of the water main.

Pipe bedding shall normally be Type 3 unless the Special Provision requires Type 4 or 5. The above bedding types will be as follows:

- (a) **Type 2.** The pipe shall be laid on a flat bottom trench. Backfill shall be select materials tamped in place as specified under Article 2.9.
- (b) **Type 3.** The pipe shall be laid on a minimum of 100 mm (4") compacted selected materials extending the full width of the trench bottom. The remaining backfill shall be select materials tamped in place.
- (c) **Type 4.** The pipe shall be laid on a bedding of compacted sand or crushed stone extending the full width of the trench bottom. The bedding shall be placed to a minimum depth of 1/8 the pipe diameter or 100 mm (4"), whichever is greater. The remaining backfill shall be select materials tamped in place as specified under Article 2.9.
- (d) **Type 5.** The pipe shall be laid on a minimum 100 mm (4") compacted thickness bedding of sand or crushed stone extending the full width of the trench bottom. The bedding material shall then be placed in 150 mm (6") compacted lifts to the top of the pipe for the full width of the trench. The remaining backfill shall be select materials placed as specified under Article 2.9.

Prior to laying pipe, the trench bottom or bedding material shall be shaped to provide continuous support for the pipe barrel. Under no circumstances will the pipe be laid on blocks or wedges. Where pipe with a bell or coupling is used, cross trenches shall be excavated to prevent non-uniform loading at joints. The cross trenches shall not be more than 50 mm (2") wider than the width of the bell or hub.

If the excavation is carried to a depth deeper than necessary, the foundation shall be brought to the proper elevation by placing bedding material.

- 2.8 LAYING WATER MAIN.** All pipe and fittings shall be carefully examined for cracks and other defects just prior to lowering into the trench for installation in final position. Defective pipe or fittings shall be marked and laid aside so as to not be mistakenly used in the improvement. All defective materials shall be removed from the project site upon conclusion of the work day on which they are discovered.

Before lowering pipe and fittings into the trench, all dirt and foreign matter shall be removed from the pipe interior. After lowering the pipe into the trench and prior to joining the pipe, the bottom man shall check the joint being made to assure both ends are free of foreign materials picked up during the lowering operation.

As each length of pipe is placed in the trench, the spigot end shall be centered in the bell of the previously installed pipe and forced home. The pipe shall then be installed to the line and grade established by the Engineer. A tolerance of 50 mm (2") in both horizontal and vertical alignment shall be allowed per pipe length on straight runs. The pipe shall be secured in place by tamping approved backfill material around the pipe except at the bell end. Every precaution shall be taken to prevent foreign material from entering the open end of the installed pipe prior to installing the next pipe.

If, for any reason there is a stoppage in the pipe-laying operation, the open end of the last installed pipe shall be sealed by means of a watertight plug. If, upon commencement of work there is water in the trench, the plug shall remain in place until the trench is completely dewatered.

Proper implements, tools, and facilities satisfactory to the Engineer shall be provided and used by the Contractor for efficient execution of the work. All pipe, fittings, and accessories shall be handled by suitable equipment in a manner to prevent damage to the materials. Under no circumstances shall pipe or accessories be dropped or dumped into the trench.

- 2.9 BACKFILLING.** All trenches and excavation shall be backfilled to the natural line or finished surface as soon as conditions will permit. The backfill material shall consist of the excavated material or trench backfill, except no materials will be allowed which may have any detrimental effect on the pipe, fittings, or other appurtenances.

Except at locations where trench backfill is required, backfill up to a level of 300 mm (1') over the top of the pipe shall be with selected earthen materials no larger than 75 mm (3") in its greatest dimension. In the event this material is not readily available at all locations, the Contractor shall provide suitable conditioned soil or an approved material for this purpose. Select material shall be placed in equal layers on both sides of the pipe and compacted. Each layer of material so placed shall not exceed 150 mm (6") in depth until the top of the pipe is covered. Additional select material required to cover the pipe to a compacted depth of 300 mm (1') may be placed in one lift. All select materials shall be compacted to the satisfaction of the Engineer. No frozen material shall be used as selected backfill. The remaining backfill required for the trench may be placed by mechanical means. Backfill so placed shall be deposited in the trench in a manner to avoid impact and uneven loading of the water main. Large chunks of earth shall be broken up or placed on top of the spoil bank. Debris and rock having any dimension greater than 150 mm (6") shall be considered unsuitable for backfilling and disposed of in an approved manner. After settlement has taken place, the trenches shall be refilled and graded to a finished condition acceptable to the Engineer and the municipality.

- 2.10 MECHANICAL JOINTS.** Mechanical joints shall be installed according to the manufacturer's specifications. The pipe bells, spigot ends of pipe, and pipe gaskets shall be clean and free from particles of sand, dirt, or other objectionable matter during jointing. Pipe bolts shall be drawn up uniformly by turning diametrically opposite bolt nuts simultaneously in a manner that the joint gland and rubber gasket are brought to bearing and final seating without warp or eccentricity.

- 2.11 PUSH-ON JOINTS.** Push-on joints shall be installed according to the manufacturer's specifications. The pipe bells, spigot ends of pipe, and pipe gaskets shall be clean and free from particles of sand,

dirt, or other objectionable matter during jointing. Pipe shall be assembled by means of a ratchet jack type tool or other approved method. Jointing by the so-called "stabbing" of the pipe spigot into the coupling will not be permitted.

Field cut pipe shall be conditioned so that it may be used to make up the next joint. The outside of the cut end shall be tapered back 3 mm (1/8") at an angle of about 30 degrees with the centerline of the pipe by means of a coarse file or portable grinder to remove any sharp, rough edges which otherwise might injure the gasket.

- 2.12 THRUST BLOCKING AND ANCHORAGE.** All cast-iron tees and bends shall be anchored in poured concrete thrust blocks which shall be keyed into solid ground under the respective fittings to a depth of not less than 75 mm (3") and shall extend to solid ground backing in the direction of the thrust, unless otherwise shown, or specified on the plans. Concrete blocking shall extend to a point above the horizontal pipe diameter and in a manner to secure the pipelines from lateral thrust displacement and ensure ability to caulk or tighten all the joints. Concrete blocking shall consist of SI concrete with minimum moisture content to enable tamping in place and molding. Blocking dimensions will be as shown on the plans or as determined in the field by the Engineer. Fittings at ends of pipelines shall be blocked or harnessed with suitable ties to the pipeline in a manner to permanently anchor the same in place. Plugs shall be blocked in a manner which will facilitate their removal and subsequent extension of the water mains.

Metal harnesses of adequate strength to prevent movement may be used instead of concrete blocking, if permitted by the Engineer. Steel rods or clamps shall be galvanized or otherwise rustproof treated, as approved by the Engineer. The cost of metal harnesses shall be incidental to the construction and included in the contract unit price for pipe.

- 2.13 CONNECTIONS TO EXISTING WATER MAINS.** Before making any connection to existing water mains, the Contractor shall have all necessary tools, materials, pipe, and fittings on hand, and sufficient experienced workmen available to preclude any unnecessary delay in making the connection due to adverse conditions or mishap. The actual work of cutting into a main or removal of a fitting shall not be done until all measurements, necessary pipe assembly, and other specified provisions have been completed.

If the connection requires shutting down the existing main, the Contractor shall make the necessary arrangements with the municipal water department to accomplish same. In addition, all users to be affected shall be notified 24 hours in advance of water main shutdown.

Temporary blocking capable of withstanding the service pressure shall be provided for all existing valves, fittings, and pipe that could be affected by the new connection.

The cost of making connections to existing water mains shall be considered as incidental to and included in the contract unit price for water main unless otherwise specified.

- 2.14 HOUSE SANITARY SEWER AND WATER SERVICES.** At all locations where the water main crosses house services, adequate precautions shall be taken by the Contractor to prevent unnecessary and lengthy shutdown of the service. Wherever possible, the water main shall be constructed so as to not damage the services or interfere with their future operation. Any service that is damaged shall be repaired with new material in such a manner that future operation will not be impaired. All work in connection with house services shall conform to the ordinances and requirements of the municipality in which the improvement is being made.

Change or adjustment in the line or grade of the pipeline to clear obstructions shall be approved by the Engineer. All materials and work required for this purpose and for tunneling, repairing, and

reinforcing sewer crossings shall be furnished by the Contractor and shall be incidental to and included in the contract unit price for water main, unless otherwise specified.

In those instances where house services require adjustment, the work shall be done under the requirements of the Standard Specifications and paid for as specified.

2.15 HYDROSTATIC TEST. All newly laid water main, fittings, valves, and hydrants shall meet the requirements of the following hydrostatic tests before being accepted by the municipality.

- (a) **Pressure Test.** After completion of the water main, as previously outlined, the main shall be filled with water and the air allowed to escape through hydrants, air release valves, blow-offs, etc. When the main is free of air, the water pressure shall be raised to 860 kPa (125 psi) by the addition of water through a force pump and other apparatus. The test pressure shall be **maintained** for a one-hour period by the addition of water through the pump.

The pipeline, all valves, fittings, and hydrants shall be carefully examined during the pressure test to determine if there are any defective pipe, fittings, hydrants, or leaking joints. All defective materials shall be removed and replaced with sound material and all leaks repaired. The test shall then be repeated until the required results are achieved.

- (b) **Leakage Test.** After satisfactory completion of the pressure test, a leakage test shall be conducted. The water pressure in the main shall be raised to a minimum pressure of 825 kPa (120 psi), unless otherwise specified, by the addition of water to the main. The test pressure shall be **maintained** in the main for a two (2) hour period. The allowable amount of make-up water to maintain the specified test pressure shall not exceed the following rates for each 300 m (1,000') of pipe.

LEAKAGE IN LPH (GPH) FOR EACH 300 m (1,000') OF PIPE

Test Pressure kPa (psi)	Pipe Size - Millimeters (Inches)								
	150 mm (6")	200 mm (8")	250 mm (10")	300 mm (12")	350 mm (14")	400 mm (16")	450 mm (18")	500 mm (20")	600 mm (24")
690 (100)	1.7 (0.45)	2.3 (0.60)	2.8 (0.75)	3.4 (0.90)	4.0 (1.05)	4.5 (1.20)	5.1 (1.35)	5.7 (1.50)	6.8 (1.80)
760 (110)	1.8 (0.47)	2.4 (0.63)	3.0 (0.79)	3.6 (0.94)	4.2 (1.10)	4.8 (1.26)	5.3 (1.41)	5.9 (1.57)	7.2 (1.89)
825 (120)	1.9 (0.49)	2.5 (0.66)	3.1 (0.82)	3.7 (0.99)	4.4 (1.15)	5.0 (1.31)	5.6 (1.48)	6.2 (1.64)	7.5 (1.97)
895 (130)	1.9 (0.51)	2.6 (0.68)	3.2 (0.85)	3.9 (1.03)	4.5 (1.20)	5.2 (1.37)	5.8 (1.54)	6.5 (1.71)	7.8 (2.05)
965 (140)	2.0 (0.53)	2.7 (0.71)	3.4 (0.89)	4.0 (1.06)	4.7 (1.24)	5.4 (1.42)	6.1 (1.60)	6.7 (1.78)	8.1 (2.13)
1,035 (150)	2.1 (0.55)	2.8 (0.74)	3.5 (0.92)	4.2 (1.10)	4.9 (1.29)	5.6 (1.47)	6.2 (1.65)	7.0 (1.84)	8.4 (2.21)

In order to make the above tests, the Contractor shall furnish all apparatus, piping, hose, pump, and pressure tank, gauges properly calibrated, a clean barrel or drum to hold water, and a 20-liter (five-gallon) graduated container calibrated into liters (tenths of a gallon or into one-half (1/2) pints). The municipality in which the work is being done reserves the right to use their own tanks and gauges when considered necessary to check the Contractor's equipment for accuracy.

The above specified tests shall be made on sections not exceeding 600 m (2,000') in length. Mains which fail to meet the requirements of the initial test shall be repaired and retested until all the

requirements have been met. All tests shall be made through 25 mm (1") corporation cocks tapped into the main.

The cost of all labor, materials, and equipment necessary to make the tests shall be incidental to and included in the contract unit price for water main.

2.16 WATER MAIN DISINFECTION. Prior to chlorination and after completion of the pressure test, each pipeline construction section shall be flushed at a minimum water velocity of 0.8 mps (2.5 fps) in a manner and for such length of time as the Engineer may require to effectively clear the mains, valves, hydrant leads, and fittings. Temporary flushing risers shall be provided at the termini of all water mains to assure flushing of the dead ends. All mains and accessories shall be chlorinated under the supervision of the municipality by the use of either chlorine gas or H.T.H. hypochlorite compound as directed. A solution of proper chlorine concentration shall be prepared with clean tap water and pumped into the section of main to be chlorinated by means of 25 mm (1") corporation cocks inserted in the top of the new main. In order that the sterilization solution will make proper contact with all interior surfaces, corporation cocks shall be inserted in the top of the new main at the beginning of each pipeline extension and at the ends of any such extension where means of bleeding off water is not available. Chlorine solution shall be applied at both ends of such extension.

The valve controlling water flow from the existing distribution system into the new work shall be opened sufficiently to assure a slow rate of flow into the new pipeline. After regulating the flow from observations at the bleed-off point, the chlorine shall be pumped into the new main at a uniformly proportionate rate until the water in the pipeline has a chlorine content of 50 to 100 ppm and until a heavy chlorine concentration at the bleed-off point is evident.

The Contractor shall exercise every precaution to prevent the chlorine solution from backing up or flowing beyond the limits of the new pipeline extension into the existing distribution system. All valves and hydrants within the limits of the section being chlorinated shall be operated during the application of the chlorine solution. All terminal valves except the feed-in valve shall be kept closed.

On completion of the chlorination process, the feed-in valve shall be tightly shut off and the treated water retained in the line at least 24 hours or longer as may be directed by the Engineer. After 24-hour retention in the pipeline, the residual chlorine at the extremities of the section shall be not less than 25 ppm.

Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipelines as directed by the Engineer until the replacement water is chlorine-free or has a residual of less than 0.2 ppm, whereafter samples for testing and analysis shall be taken from a sterile metal pipe connection with sampling cock attached to the 25 mm (1") corporation cocks in the new line. Quality of water shall meet the requirements of the Illinois Environmental Protection Agency for drinking water for at least two (2) consecutive days, with a minimum of 24 hours between samples, before placing the new pipeline or section in service.

Should the initial chlorine treatment fail the approved laboratory analysis of the sampled water, chlorination shall be repeated until approved water quality is obtained from the new pipeline extensions or sections.

The cost of all labor, materials, and equipment necessary to flush and chlorinate the water main shall be incidental to and included in the contract unit price for Water Main.

2.17 RELATION TO SEWERS. Insofar as applicable, the provisions set forth in paragraph 212 F of the Technical Policy Statements of the Division of Public Water Supplies, Illinois Environmental Protection Agency, are made a part hereof by reference and shall be adhered to in maintaining horizontal and

vertical clearances with sewers paralleling or crossing the pipelines to be installed under this contract. The following horizontal and vertical separations are to be maintained.

- A. **Horizontal Separation.** Whenever possible, a water main must be laid at least ten feet horizontally from any existing or proposed drain or sewer line.

Should local conditions exist which would prevent a lateral separation of 3.1 m (10'), a water main may be laid closer than 3.1 m (10') to a storm or sanitary sewer, provided that the water main invert is at least 460 mm (18") above the crown of the sewer and is either in a separate trench or in the same trench on an undisturbed earth shelf location to one side of the sewer.

If it is impossible to obtain proper horizontal and vertical separation as described above, both the water main and sewer must be constructed of slip-on or mechanical joint cast or ductile-iron pipe, prestressed concrete pipe, or PVC pipe meeting water main standards and, before backfilling, be pressure tested to the maximum possible expected surcharge head to assure watertightness.

- B. **Vertical Separation.** Whenever water mains must cross house sewers, storm sewers, or sanitary sewers, the water main shall be laid at such an elevation that the invert of the water main is 460 mm (18") above the crown of the sewer measured as the normal distance between the two pipes.

The vertical separation must be maintained for that portion of the water main located within 3.1 m (10') horizontally of any sewer crossed.

If it is impossible to obtain the proper vertical separation as described above, or if it is necessary for the water main to pass under a sewer, both the water main and sewer must be constructed of slip-on or mechanical joint cast-iron pipe, prestressed concrete pipe, or PVC pipe meeting water main standards. All pipe must extend on each side of the crossing until the normal distance from the water main to the sewer is at least 3.1 m (10').

In making such crossings, center a length of water main pipe over the sewer to be crossed so the joints will be equidistant from the sewer and as remote therefrom as possible. Where a water main must cross under a sewer, a vertical separation of 460 mm (18") between the invert of the sewer and the crown of the water main shall be maintained, along with means to support the larger-sized sewer lines to prevent their settling and breaking the water main.

- C. **Water Service Lines.** The horizontal and vertical separation between water service lines and all sanitary sewers, storm sewers, or any drain must be the same as for water mains, as detailed in A and B above, except that when minimum horizontal and vertical separation cannot be maintained, water pipe of the types described in A and B above must be used for both water and sewer service lines.

2.18 METHOD OF MEASUREMENT. Water main shall be measured for payment in meters (feet) along the centerline of the completed water main from center to center of fittings.

2.19 BASIS OF PAYMENT. The work as outlined in Section 2 will be paid for at the contract unit price per meter (foot) for WATER MAIN of the diameter and class specified, measured in place unless otherwise specified. This price shall include the cost of all materials, pipe, fittings, adaptors, joint materials, blocking, and all work and equipment necessary to make a complete and finished installation.

SECTION 3. WATER MAIN ADJUSTMENT

- 3.1 DESCRIPTION.** This work shall consist of adjusting existing water mains where they are in conflict with new improvements. The work shall be in accordance with Section 2, Water Main, insofar as applicable, and the detailed plans.
- 3.2 MATERIALS.** All materials used in adjusting water mains shall be new cast or ductile iron and in conformance with the current AWWA Standards set forth in Section 2.2.
- 3.3 CONSTRUCTION.** All adjustments in the line or grade of the existing water main shall be approved by the Engineer.

All materials, labor, and equipment necessary to adjust the water main shall be on hand before shutdown and cutting of the existing main. The Contractor shall take every precaution to hold the interruption of service to a minimum.

A minimum clearance of 460 mm (18") shall be maintained between the adjusted main and the improvement for which the adjustment is made.

Adequate precautions shall be taken to prevent contaminants from entering the existing main. The inside surfaces of all new materials used in the adjustment shall be cleaned of all foreign material and swabbed with a solution of efficient bactericide before assembly. The adjusted section shall then be flushed utilizing available fire hydrants.

Pipe removed in this work shall be salvaged and delivered to the municipal yards and shall remain the property of the municipality unless otherwise provided.

- 3.4 BASIS OF PAYMENT.** The work as outlined in Section 3 will be paid for at the contract unit price each for WATER MAIN TO BE ADJUSTED. This price shall include the cost of all materials, pipe, fittings, adaptors, joint materials, blocking, removal and disposal of existing main, and all work and equipment necessary to make a complete and finished installation.

SECTION 4. CASING PIPE

- 4.1 DESCRIPTION.** This work shall consist of furnishing and installing casing pipe of the required material, size, and class as specified and in conformance with the detailed plans.
- 4.2 MATERIALS.** Casing pipe shall be either steel pipe with welded steel joints, reinforced concrete pipe, or galvanized corrugated metal pipe as specified or as approved by the Engineer where optional materials are permitted by the plans and specifications. Material used shall be new and conform to the following Standard Specifications unless otherwise specified. Mill rejects will not be allowed.

- | | |
|-------------------------|---|
| (a) ASTM A-139, Grade B | Welded and Seamless Steel Pipe |
| (b) API 5L, Grade B | Line Pipe |
| (c) ASTM C-76 | Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe |
| (d) AASHTO M-36 | Zinc-Coated (Galvanized) Corrugated Iron or Steel Culverts and Underdrains. |
| (e) AASHTO M-167 | Structural Plate Pipe, Pipe Arches, and Arches |

CONSTRUCTION METHOD

4.3 INSTALLATION. Casing pipe of the type specified shall be installed in accordance with the following:

- (a) **Auger and Jacking.** Steel casing pipe and corrugated metal pipe of the size and thickness specified. Steel casing pipe shall be butt-joined and welded all around. Corrugated metal pipe shall be jointed by means of internal connecting bands.
- (b) **Tunnel and Jacking.** Concrete pipe and corrugated metal pipe of the size and thickness specified. Concrete pipe joints shall be composed of rubber "O" rings with a minimum 13 mm (1/2") cushioning spacer placed between each pipe. Cushioning material shall be of either braided jute or plywood. Upon completion of the push, all internal joint spaces shall be filled with Portland Cement mortar. At the option of the Contractor, the outside joint may be filled with bentonite clay. Corrugated metal pipe shall be joined as in (a) above.

Casing pipe shall be installed to the line and grade shown on the plans. If required, the outside of the casing shall be lubricated with bentonite clay. The lead pipe of the casing shall be provided with an approved tunneling shield. The work shall be kept dewatered until the carrier pipe has been installed and tested.

The work of installing the casing pipe shall be done by a Contractor who is fully experienced and equipped for this specialized construction and is approved by the Engineer and/or other supervisory authorities.

4.4 WATER MAIN INSTALLATION. After completion of the casing pipe, the water main shall be installed through the same on guide rails or on pipe skids in a manner which will provide for continuous and smooth installation of the water main without obstructions of any kind. Water main shall be jointed and installed from one end in a manner to keep the entire pipeline under compression during installation.

After completion of installation and testing of the water main, the annular space between the casing and the water main shall be filled with dry sand blown in by approved methods. The casing pipe shall be sealed by constructing masonry bulkheads at each end to preclude entrance of foreign material into the casing which might prevent ready removal of the water main at some future date.

4.5 JACKING PITS. Jacking pits shall be tight sheeted and braced on all sides. Sheeting shall be of adequate strength to withstand all surcharge loads to be imposed on it and shall be cut off 1.2 m (4') above existing ground. In lieu of the 1.2 m (4') cut-off height on sheeting, the Contractor may erect a 1.2 m (4') high fence around the excavation. Lights and warning signs as necessary shall be erected around all jacking pits.

The reaction block for the jacking mechanism shall be adequately designed to distribute the loads to the soil without excessive soil deflection and in a manner to avoid any disturbance of adjacent structures or utilities.

Hydraulic jacks and jacking frame shall be designed to apply a uniform pressure over the entire circumferential area of the pipes being jacked.

Upon completion of the jacking operation, pipe bedding within the jacking pit shall be placed in accordance with the special plan details and/or Special Provisions.

4.6 RAILROAD CROSSING. Railway crossings shall be in accordance with the easement, license and/or accepted grant of the railroad to the Owner and said conditions are made a part of these specifications by references. Additional requirements as set forth in the A.R.E.A. Committee I

Specifications for pipeline crossings under railway tracks shall govern, except as otherwise shown on the plans or modified herein.

The railway company shall be notified a reasonable time prior to commencing construction. Flagmen may be required to protect train operations during the time the pipe is installed underneath the main line tracks. The railroad shall be consulted on this matter, and any costs involved shall be at the Contractor's expense and incidental to the construction.

The Contractor shall be responsible for the cost of special insurance required by the railroad and costs incurred in repairing damage to railroad property due to the Contractor's operations or negligence. All to be incidental to and included in the contract unit price.

- 4.7 HIGHWAY CROSSING.** Highway crossings shall be in accordance with the permit issued by the responsible highway department, and said permit is made a part of these specifications by references.

The Contractor shall be responsible for obtaining the Highway Bond required by the highway department, the cost of which shall be incidental to and included in the contract unit price for the items of this section.

- 4.8 ALTERNATE METHODS OF CONSTRUCTION.** Alternate methods of construction meeting all conditions set forth herein will be considered and will be subject to the approval of the Engineer, the Owner, the railroad, and highway agencies involved.

Compensation for any alternate construction method will be at the contract unit price for casing pipe as set forth in the proposal. No extra compensation will be allowed for additional work incurred because of the alternative method of construction.

COMPENSATION

- 4.9 METHOD OF MEASUREMENT.** Casing pipe shall be measured for payment in meters (feet) along the centerline of the completed pipe from end to end of casing installed. Under no circumstance will the pay length exceed the staked length.

- 4.10 BASIS OF PAYMENT.** The work as outlined in Section 4 will be paid for at the contract unit price per meter (foot) for CASING PIPE, AUGER AND JACK or CASING PIPE, TUNNEL AND JACK of the diameter and thickness specified, measured in place unless so otherwise specified.

The price shall include the cost of all materials, pipe, fittings, joint materials, blocking, skids, sand, bulkheads, and all work and equipment necessary to make a completed and finished installation.

Water main installed within the casing pipe shall be paid for at the contract unit price for WATER MAIN as set forth under Section 2.

SECTION 5. WATER MAIN INSTALLED BY BORING & JACKING

- 5.1 DESCRIPTION.** This work shall consist of boring a hole of sufficient size to install the proposed water main under pavement and structures as shown on the plans or authorized by the Engineer.

- 5.2 BORING.** The Contractor shall furnish an auger of sufficient size and power to excavate a hole through whatever earthen material is encountered. If rock material of such density that the auger cannot break through is encountered, the auger shall be withdrawn and the rock grubbed out by hand, or another location for the boring shall be selected.

Ends of the boring shall be limited to a maximum distance of 1.8 m (6') from the pavement edge or back of curb as the case may be. The boring shall be within 0.3 m (1') both vertically and horizontally of that shown on the plan or staked by the Engineer. Errors in alignment shall be resolved by either boring another hole or tunneling back along the misaligned boring a sufficient distance to correct the error.

The provisions of Section 4.5 shall apply to this section insofar as applicable.

- 5.3 WATER MAIN INSTALLATION.** After completion of the boring, the water main shall be installed through same from one end and in a manner to keep the entire pipeline under compression during installation. A suitable cap shall be placed over the end of pipe first entering the boring to preclude entrance of dirt and other objectionable foreign materials.
- 5.4 BACKFILLING.** After completion of the water main installation, the annular space between the boring walls and the water main shall be filled with dry sand blown in by approved methods. Abandoned borings shall also be filled by the same method.
- 5.5 METHOD OF MEASUREMENT.** Boring and jacking shall be measured in meters (feet) along the centerline and from end-to-end of completed boring. In no case shall the pay length of boring be in excess of pavement width or back-to-back of curb plus 3.6 m (12'), unless so otherwise specified.
- 5.6 BASIS OF PAYMENT.** The work as outlined in Section 5 will be paid for at the contract unit price per meter (foot) for BORING AND JACKING for water main of the size specified. This price shall include the cost of all materials, equipment, and the work necessary to make a complete and finished installation.

Payment will be made only for the boring that is utilized. Inaccurate bores will be at the Contractor's expense.

Water main installed within the bore shall be paid for at the contract unit price for WATER MAIN, as set forth under Section 2.

SECTION 6. VALVES

- 6.1 DESCRIPTION.** This work shall consist of furnishing and installing valves of the required material, size, and class together with the necessary fittings, jointing materials, and blocking completed as specified herein and in conformance with the detailed plans.
- 6.2 MATERIALS.** All materials shall conform to the current AWWA Standards as set forth below, unless otherwise specified.
- (a) C-500 Gate Valves for Ordinary Water Works Service
 - (b) C-504 Rubber-Seated Butterfly Valves
 - (c) C-509 Resilient Seated Gate Valves for Water Systems

Valves shall be of the make allowed in the municipality in which the improvement is being installed and as set forth in special provisions.

- 6.3 GATE VALVES.** All gate valves shall be of the standard cast-iron body, bronze mounted, double gate type. All gate valves shall close by turning the stems in a clockwise direction. Stems shall be non-rising type with 50 mm (2") square operating nut, unless otherwise specified or shown on the plans. All valves shall be mechanical joint with either stuffing box and packing gland or "O" ring stem seal as specified in the Special Provisions or as approved by the Engineer.

6.4 BUTTERFLY VALVES. Butterfly valves shall be Class 150 B. Valve bodies shall be either cast iron or cast steel or fabricated steel. Valve shafts shall be solid one piece 18-8 stainless steel, Type 302, 303, 304, or 316. Valves shall be 90-degree seating with valve seats of natural gum rubber compound and shall be provided with adjustable mechanical stop to prevent overtravel of the valve disc in the open and closed position. Disc materials shall be as called for in the Special Provisions.

Valves shall be equipped with totally enclosed worm gear reducer and bevel gear attachment with 50 mm (2") square operating nut. Operators shall be capable of seating and unseating the valves under the most adverse conditions (opening against the full design pressure and velocity as specified into a dry system downstream). Operators shall be equipped with a device to hold the valve in a fixed position for an extended period of time.

Where shown or specified on the plans, butterfly valves shall be furnished with handwheel operators and right-hand or left-hand reducers as indicated so that the operators are in the position shown. Valves which are constructed with segmental retainers or means of adjusting the valve seat for tightness, shall be installed so that such retainers or adjusting means is in the position as indicated on the drawings. All valve operators shall close the valve by turning in a clockwise direction.

6.5 RESILIENT SEATED GATE VALVES. All materials shall conform to the current AWWA Standard C-509, Resilient Seated Gate Valves for Water Systems. All gate valves shall be designed for a 1,380 kPa (200 psi) working pressure and tested to a minimum 2,415 kPa (350 psi) hydrostatic pressure. All valves shall have bronze non-rising stems with "O" ring seals. The valves shall close by turning a 50 mm (2") square operating nut in a clockwise direction. All valves shall be furnished with mechanical joints.

6.6 INSERTING VALVES. Inserting valves shall be Mueller or approved equal. The valve shall be installed under pressure, without interruption of service and consist of a two-part cast-iron sleeve and valve body. Valve mechanism shall conform to AWWA Standard Specifications for Gate Valves and shall be cast-iron body, bronze mounted, double disc gate type. Valve stems shall be non-rising type with 50 mm (2") square operating nut and have stuffing box and packing gland or "O" ring seal as specified in the Special Provisions. Valves shall close by turning the stem in a clockwise direction and be designed for a maximum working pressure of 1,035 kPa (150 psi).

6.7 TAPPING SLEEVES AND VALVE. Tapping sleeves and valves shall be Mueller or approved equal and have mechanical joints sized for the existing cast-iron pipe. Tapping valves shall conform to AWWA Standard Specifications for Gate Valves, insofar as applicable, and shall be of the standard cast-iron body, bronze mounted, double disc gate type. Valve stems shall be non-rising type with 50 mm (2") square operating nut and have stuffing box and packing gland or "O" ring seal as specified in the Special Provisions. Valves shall close by turning the stems in a clockwise direction. The valve shall have an American Standard 555 N (125-pound) flange on the inlet end and a standard mechanical joint hub on the outlet end. Valve seat opening shall permit full diameter cuts to be made.

6.8 AIR RELEASE VALVES. Air release valves shall be "APCO 200A" or approved equal. Valves shall be furnished with 25 mm (1") threaded inlet connection and 13 mm (1/2") threaded outlet.

6.9 VALVE BOXES. Valve boxes shall be cast iron of the quality, pattern, and workmanship of Clow No. F-2450 or equal. The valve boxes shall consist of a base, center section, top section, and cover and shall extend 1.2 m to 1.8 m (50" to 70").

Base Section:

Valve sizes 150 mm (6") and 200 mm (8")	.....	Clow F-2465 No. 6 or equal
Valve sizes 250 mm (10") and larger	.....	Clow F-2484 No. 160 or equal
Center Section	.....	Clow F-2460 No. 64 or equal
Top Section	.....	Clow F-2455 No. 56 or equal
Cover	.....	Clow F-2494 or equal

INSTALLATION

- 6.10 MAIN LINE VALVE INSTALLATION.** Mechanical joint valves shall be installed in the pipelines at the locations shown on the plans.

Valves shall be housed in Standard Type A valve vaults or cast-iron valve boxes in accordance with the requirements shown on the plans and proposal. Where valve boxes are used, the same shall be set vertically and be centered over the operating nuts of the valves with the cover of the valve box set flush with the adjoining ground level.

Where valves are provided with valve vaults, the valves shall be centered in the vaults. On pipelines of 200 mm (8") or less in diameter, the connecting pipe nipples shall be not over 1.8 m (6') in length for cast or ductile-iron mains.

When cast-iron valve boxes are required, their cost shall be incidental to and included in the contract unit price for the type of valve being installed.

When valve vaults are required, they shall be paid for at the contract unit price for VALVE VAULT.

- 6.11 AIR RELEASE VALVE INSTALLATION.** Air release valves shall be installed as called for on the plan at high points in the water main to preclude entrapment of air in the main.

The air release valve shall be connected to the main by means of a 25 mm (1") Mueller corporation cock installed in the top of main, together with a pipe nipple, tee, 13 mm (1/2") smooth nose sample cock, outlet pipe with check valve, fittings, and bronze screen as shown on the plan.

The air release valve shall be housed in a standard valve vault which shall be filled with crushed limestone, commercial grade number 2, to the spring line of the water main passing through the vault. The outlet of the exhaust piping leading from the valve shall be at an elevation approximating the top of the vault masonry and shall be located to one side of the vault to permit ease of entry into the vault.

The cost of the vault shall be paid for as a VALVE VAULT with the crushed stone, tapping the main, and other equipment listed herein being paid for at the contract unit price for the air release valve.

COMPENSATION

- 6.12 BASIS OF PAYMENT.** The work as outlined in Section 6 will be paid for at the contract unit price each for GATE VALVE, BUTTERFLY VALVE, INSERTING VALVE, TAPPING SLEEVE AND VALVE and AIR RELEASE VALVE of the size, and class specified. This price shall include the cost of all materials, fittings, adaptors, joint materials, main tapping, blocking, and all work and equipment necessary to make a complete and finished installation.

SECTION 7. FIRE HYDRANTS

- 7.1 DESCRIPTION.** This work shall consist of furnishing and installing fire hydrants as specified herein and in conformance with the detailed plans.
- 7.2 MATERIALS.** All fire hydrants shall conform to AWWA Standard C-502 unless otherwise specified and shall be of the make allowed in the municipality the improvement is being installed in and as set forth in the Special Provisions.
- 7.3 INSTALLATION.** Fire hydrants shall be connected with the water mains by means of cast- or ductile-iron pipe having an internal diameter of 150 mm (6") and of the type and quality specified. The joint at the hydrant shall be a mechanical joint or a flanged bolted connection in conformity with the standard adopted and in use by each specific municipality.

Each hydrant shall rest on a substantial concrete block foundation with a surface area sufficient to prevent settlement of said hydrant.

There shall be placed for a depth of at least 380 mm (15") below the drip valve to a plane 300 mm (12") above the drip valve crushed stone conforming to gradation CA-3. Approximately one-third (1/3) cubic meters (yards) of crushed stone shall be placed for each hydrant. On top of said crushed stone shall be placed a sheet of 6 mil thickness VisQueen (polyethylene) to prevent infiltration of the earth backfill into the crushed stone. Hardwood or masonry blocking shall be placed between each hydrant and the undisturbed earth end of the trench to prevent the hydrant from being blown off of the connection pipe during testing and until the backfill is sufficiently compacted to serve such purposes. Each hydrant shall be set in a true vertical position and at such height so that the center of the hose or steamer connection will be 460 mm to 600 mm (18" to 24") above finished grade at the hydrant or as shown on the plan. Minimum length of hydrants shall be for 1.8 m (6') depth of trench. The top of the valve box for the auxiliary hydrant valve shall be set 13 mm (1/2") above finished grade of the parkway where the hydrant is located.

Care shall be used where hydrant connections are to be made to be sure that the trench depth is such that the hydrant will be at the proper grade when connected to said main without the use of special offset fittings.

If hydrant extension sections are required to achieve the specified hydrant exposure, their cost shall be incidental to and included in the contract unit price for fire hydrants.

7.4 BASIS OF PAYMENT. The work as outlined in Section 7 will be paid for at the contract unit price each for FIRE HYDRANTS as specified. This price shall include the cost of fittings, joint materials, blocking, drainage bed, and all materials, work, and equipment necessary to make a complete and finished installation.

Where auxiliary gate valves and cast-iron valve boxes are called for on the plans, the cost for furnishing and installing same shall be incidental to and included in the contract unit price for fire hydrants. Auxiliary gate valves and cast-iron valve boxes shall be in accordance with Section 6 of this Supplemental Specification, insofar as applicable.

Hydrant leads shall be paid for at the contract unit price for 150 mm (6") water main of the class specified.

SECTION 8. COPPER WATER SERVICE STUBS

8.1 DESCRIPTION. This work shall consist of furnishing and installing copper water tubing, corporation stops, curb stops, and curb boxes of the size specified and in conformance with the detailed plans.

8.2 MATERIALS. All materials shall conform to the following standards unless so otherwise specified.

(a) Copper Water Tubing, Type K, AWWA Specification 7S-CR

<u>Nominal Pipe Size</u>	<u>Outside Diameter</u>	<u>kg per m (lb. per foot)</u>
20 mm (3/4")	22 mm (0.875")	0.954 kg (0.641#)
25 mm (1")	29 mm (1.125")	1.249 kg (0.839#)
30 mm (1 1/4")	35 mm (1.375")	1.548 kg (1.040#)
40 mm (1 1/2")	41 mm (1.625")	2.024 kg (1.360#)
50 mm (2")	54 mm (2.125")	3.066 kg (2.060#)

(b) Corporation stops shall be Mueller or equal #H-15010.

- (c) Curb stops shall be Mueller or equal #H-15200 inverted key, round way, combined cap, and tee.
- (d) Curb boxes shall be adjustable cast-iron type, 75 mm (3") shaft Mueller or equal, size 7, #H-10346.
- (e) Terminal markers, 50 mm x 50 mm (2" x 2") post 1.2 m (4') long with white painted top.

8.3 INSTALLATION. Copper services shall be installed in open cut trenches 1.7 m (5-1/2') feet below the centerline elevation of the proposed roadway and shall extend at right angles from the street main to the terminal point. Maximum trench width for installation of the copper services shall be 460 mm (18").

All taps shall be made after completion of the hydrostatic test and disinfection of the water main and shall be at an angle of 45 degrees above the horizontal diameter of the water main.

From the connection with the corporation stop, the service line shall be bent down in a manner to form a reverse curve from the top of the stop to the bottom of the service trench and in a manner to provide a reasonable amount of slack or extra length in the service line. The corporation stop and service shall then be blocked up with CA-3 coarse aggregate in a manner to relieve all stress in the connection with the water main. No splicing of the water service beneath the roadway will be allowed. All fittings shall be flanged compression type.

A cast-iron adjustable curb box shall be centered on and set vertically over the curb stop at the terminal end of each service with the cover of said box set flush with the finished parkway surface. Next to the cast-iron box shall be set a 1.2 m (4') long 50 mm x 50 mm (2" x 2") post with one foot painted white and exposed above the ground.

All work in connection with the house water service stubs shall conform to the ordinances and regulation of the municipality in which the improvement is located.

8.4 RECORD OF LOCATIONS. The Contractor shall reference and keep an accurate record of the location of both ends of each house service installed. Said measurement shall be made as directed by the Engineer, and the complete record shall be given to the Engineer upon completion of the work.

COMPENSATION

8.5 METHOD OF MEASUREMENT. House water services shall be measured for payment in meters (feet) of copper at the unit price each for corporation stops and at the unit price each for curb stops and cast-iron boxes. The pay length of copper shall be determined by measuring from the point of connection with the main to the center of the curb stop.

8.6 BASIS OF PAYMENT. The work as outlined in Section 8 will be paid for at the contract unit price per meter (foot) for COPPER WATER SERVICE of the diameter specified, at the contract unit price each for CORPORATION STOP of the size specified, and at the contract unit price each for CURB STOP AND BOX of the size specified. These prices shall include the cost of all copper tubing, fittings, corporation stop, curb stop, cast-iron curb box, service clamps, if necessary, tapping, blocking, and all materials, work, and equipment necessary to make a complete and finished installation.

HAMPTON, LENZINI AND RENWICK, INC.

**SUPPLEMENTAL SPECIFICATIONS
FOR
SANITARY SEWER IMPROVEMENTS**

SECTION 1. GENERAL REQUIREMENTS

- 1.1 SCOPE.** This work shall consist of furnishing and installing sanitary sewers, house services, and other required appurtenances of the size, material, and class as shown on the plans or specified.
- 1.2 MATERIAL INSPECTION AND CERTIFICATION.** The manufacturer of any materials to be incorporated in the improvement shall, upon request, furnish a sworn statement that all of the tests and inspections have been made and that the product involved has been manufactured in compliance with the applicable specifications. Said statement shall be furnished the Engineer at time of shipment of materials.

Upon request of the Engineer, manufacturers shall furnish all facilities necessary to test their product for compliance with the appropriate specification. All testing of materials shall be done by the manufacturer and witnessed by the Engineer.

- 1.3 MATERIAL DELIVERY.** Proper implements, tools, and facilities shall be provided and used by the Contractor for unloading and distributing materials along the line of the work.

All sewer, pipe, and fittings shall be carefully lowered to the ground, with suitable equipment, in a manner to prevent damage. Pipe materials shall not be dropped, dumped, or dragged.

Any pipe or fitting damaged in transportation or handling, shall be rejected and immediately removed from the job site.

- 1.4 RESPONSIBILITY FOR SAFE STORAGE.** The Contractor shall be responsible for the safe storage of material furnished by or to him and intended for the work. He shall take all necessary precautions to prevent damage to materials, equipment, and work.

- 1.5 UNDERGROUND STRUCTURES.** The Contractor shall proceed with caution in the excavation and preparation of the trench so that exact locations of underground structures may be determined. When required by the Engineer, the Contractor shall make such excavations as necessary to determine the location of existing underground structures.

Adequate protection and maintenance of all underground structures and other obstructions encountered in the progress of the work shall be furnished by the Contractor. Any structures which are disturbed or otherwise damaged by the Contractor shall be restored in an approved manner.

- 1.6 UNDERGROUND UTILITIES.** The Engineers have endeavored to locate subsurface utilities from field surveys and available records. Known utilities are shown on the plans or notice given of their presence. While the work was carefully done, the accuracy of the information cannot be guaranteed. Wherever necessary to determine the exact location of existing pipes, valves, or other underground structures, the Contractor may make any examinations that he determines desirable in advance of the work. No added compensation will be paid for this type of exploration.

In excavating trenches and laying pipe, all existing utilities including water pipes and services, sewer pipes and services, gas pipes and services, electric or telephone transmission pole lines, cable or conduits shall be protected, supported, maintained in service, and restored to the condition in which

they were found, all at no extra remuneration. Where any utility facility is endangered or damaged by the work, the utility management shall be notified by the Contractor, and the Contractor shall cooperate with the utility and pay the cost of protection and repairs if damage occurs.

- 1.7 EXCAVATING.** All sanitary sewers and house services shall be installed in open-cut trenches to the depth and in the locations shown on the plan except as otherwise provided herein. The Contractor shall do all excavation of whatever substances encountered to the required depths. In the event excavation is carried to a depth greater than required, the trench shall be brought back to the required grade with a granular stone base material approved by the Engineer.

Excavated materials shall be deposited along the side of the trench nearest the center of the public right-of-way, unless required for good reason to be placed elsewhere. Care shall be taken to preserve property corners, trees, shrubbery, and existing improvements which are not to be removed. All excavated material shall be piled in a manner that will not endanger the work and will avoid obstruction of sidewalks, driveways, manholes, valves, fire hydrants, gutters, and natural watercourses.

Where rock in either ledge or boulder formation is encountered, it shall be removed below grade and replaced with a well compacted cushion of crushed stone having a thickness under the pipe of not less than 200 mm (8").

Where trees, existing walks, water mains, sewers, sewer and water house services, public utilities, or any other obstacle not to be removed are encountered in the trenching work, the excavation shall be made in tunnel without damage to said obstacle.

Surplus excavated material and construction debris shall be disposed of by the Contractor. Such materials shall be loaded and trucked away from the site of the work as soon as practical and in a manner to eliminate the storage of such surplus in the streets and parkways of the improvement.

- 1.8 DEWATERING TRENCH.** The Contractor shall provide and use effective and satisfactory methods to lower the groundwater table to a safe plane below the bottom of the work. No pipe shall be laid or jointed unless the trench is completely dewatered.

Water pumped or drained from the work shall be disposed of in a manner that will not damage adjacent private property, other work under construction, street pavements, or other municipal property. No water shall be discharged into sanitary sewers. No water containing settleable solids shall be discharged into storm sewers.

- 1.9 BRACING AND SHEETING.** Open-cut trenches shall be sheeted and braced as required to prevent shifting of installed sewers, prevent damage to structures and adjacent property, and avoid delays to the improvement. Trenches in pavements or in close proximity to improved streets or roadways shall be sheeted or braced in a substantial and effective manner. Sheeting may be removed after the backfill has been completed to such elevation as to permit its safe removal. Sheeting and bracing left in place must be removed for a distance of 900 mm (3') below the established street grade.

- 1.10 TRENCH JETTING.** When required by the Engineer, water shall be introduced into the backfill by jetting methods to a point approximately 600 mm (2') above the top of the sewer pipe to accelerate settlement of backfill. The jetting shall continue at intervals of approximately 1.8 m (6') for the entire length of the trench.

- 1.11 SITE CLEAN-UP.** During construction, the Contractor shall keep the site of the work and adjacent premises free from material, debris, and rubbish. The Contractor shall furnish men and equipment as necessary to remove objectionable material, debris, and rubbish from completed portions of the work.

Upon completion of the work, the Contractor shall clean up the entire improvement site to the satisfaction of the Owner. All roadway ditches filled or partly filled with excavated material shall be cleaned and regraded to an acceptable gradient. Surplus materials around hydrants, trees, bushes, fences, etc., shall be removed by hand and disposed of off site. All trenches shall be filled and graded as necessary.

- 1.12 TREE PROTECTION.** All trees within the limits of the improvement that are not scheduled for removal shall be protected by wooden tree guards. Tree guards shall be a minimum of 1.8 m (6') high and of a minimum 50 mm (2") nominal thickness. All tree guards shall be securely strapped to the trees.

Any tree damaged in the course of the work shall be properly pruned or trimmed and painted with an approved commercial tree dressing.

- 1.13 BASIS OF PAYMENT.** The preceding paragraphs apply to all items to be incorporated into the improvement. Their cost shall be incidental to and included in the contract unit prices for the various construction items as set forth in the following sections.

SECTION 2. SANITARY SEWERS

- 2.1 DESCRIPTION.** This work shall consist of furnishing and installing sanitary sewers of the required material, size, and strength together with the necessary fittings and jointing materials complete as specified herein and in conformance with the detailed plans.

- 2.2 MATERIALS.** Unless otherwise specified, all materials shall conform to the standards listed below.

(a)	ASTM C-14	Concrete Sewer Pipe
(b)	ASTM C-76	Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
(c)	ASTM C-361	Reinforced Concrete Low-Head Pressure Pipe
(d)	ASTM C-425	Compression Joints for Vitrified Clay Bell and Fittings
(e)	ASTM C-428	Asbestos-Cement Nonpressure Sewer Pipe
(f)	ASTM C-443	Joints for Circular Concrete Sewer and Culvert Pipe, Using Flexible, Watertight, Rubber-Type Gaskets
(g)	ASTM C-507	Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe
(h)	ASTM C-700	Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated
(i)	ASTM D-1788	Rigid Acrylonitrile-Butadiene-Styrene (ABS) Plastics
(j)	ASTM D-1869	Rubber Rings for Asbestos-Cement Pipe
(k)	ASTM D-2321	Recommended Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe
(l)	ASTM D-2680	Acrylonitrile-Butadiene-Styrene (ABS) Composite Sewer Piping
(m)	ASTM D-2751	Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings
(n)	AWWA C-104	Cement-Mortar Lining for Cast-iron Pipe and Fittings
(o)	AWWA C-106	Cast-iron Pipe Centrifugally Cast in Metal Molds
(p)	AWWA C-110	Cast-iron and Ductile-iron Fittings
(q)	AWWA C-111	Rubber Gasket Joints for Cast-iron Pressure Pipe and Fittings
(r)	AWWA C-151	Ductile-iron Pipe, Centrifugally Cast in Metal Molds, or Sand-Lined Molds
(s)	ASTM D-3034	Polyvinyl Chloride (PVC) Sewer Pipe
(t)	ASTM D-3212	Gasket-Type Joints for PVC Pipe

Sanitary sewers shall be constructed of the materials shown on the plans or specified. Where alternate materials are provided, sanitary sewers shall be constructed of the pipe material selected by the Owner at the time of contract award.

- 2.3 CONCRETE SEWER PIPE.** All concrete sewer pipe shall be of the size and class shown on the plans or specified.

Pipe shall be manufactured with tongue-and-groove joints designed for use with an "O" ring gasket. The tongue of each pipe shall be constructed with a preformed groove of sufficient depth to hold the gasket securely in place while making the joint and provide proper compression in the gasket when pipe joining is completed. The gasket shall be the sole element depended upon to make the joint watertight.

Pipe shall be manufactured in lengths of not more than 4.9 m (16') and not less than 2.3 m (7½') except where special short lengths are required. Lifting holes will not be permitted in the pipe.

When house service connections are required in concrete pipe, a formed taper opening of sufficient diameter to securely hold a service bell section shall be constructed in the pipe wall. The formed opening shall be of a depth to allow 6 mm to 13 mm (¼" to ½") of concrete to remain on the inside of the pipe. This thin section of concrete shall be left in place until actual service connection is made in the field.

- 2.4 CLAY SEWER PIPE.** All clay sewer pipe shall be extra strength and of the size shown on the plans or specified.

House sewer stubs shall be sealed utilizing clay plugs manufactured with a joint similar to the main line sewer. Design and installation of the plug or cap shall be such that its removal will not cause damage to the pipe or stub in which it is installed.

- 2.5 POLYVINYL CHLORIDE (PVC) SEWER PIPE.** All PVC sewers shall have SDR-26 wall thickness and cell classification 12454-B. Installation shall be in accordance with ASTM D-2321. Sewer size shall be as shown on the plans or specified.

All sewer fittings shall be factory-manufactured and of a strength equal to the main line sewer.

House sewer stubs shall be sealed utilizing end caps or plugs manufactured with a joint similar to the main line sewer. Design and installation of the plug or cap shall be such that its removal will not cause damage to the pipe or stub in which it is installed.

Couplings shall have the same strength as the pipe which they join. The rubber gasket shall be of the oil-resistant type.

- 2.6 CAST & DUCTILE-IRON SEWER PIPE.** All cast or ductile-iron sewer pipe shall be of the size and class shown on the plans or specified.

The interior surface of iron pipe and fittings shall be lined with cement mortar, finished so that the Hazen-Williams friction factor will not be less than 140.

- 2.7 TRUSS SEWER PIPE.** All truss sewer pipe shall be as manufactured by Armco Steel Corporation and of the size shown on the plans or specified.

Pipe 100 mm and 150 mm (4" and 6") nominal internal diameter shall be of solid wall design. Pipe 200 mm through 375 mm (8" through 15") nominal internal diameter shall be of truss wall design.

All fittings shall be of solid, truss, or combination wall design. Caps shall be of solid ABS material and be of such design that installation of the cap and its removal will not damage the pipe or stub in which it is installed. All pipe couplings shall be of solid wall design and have the same joint as the pipe line.

All joints shall be chemical-welded and be made up in accordance with the manufacturer's recommended procedures.

All field fabrication shall be in accordance with the manufacturer's recommendations.

CONSTRUCTION METHOD

- 2.8 EXCAVATION AND FOUNDATION.** The trench shall be excavated so the flow line of the finished sewer will be at the depth and grade established by the Engineer. The Contractor shall be responsible for the excavation of all materials encountered to these depths.

The trench for the sanitary sewer shall be excavated with vertical walls and be at least 300 mm (12") and not more than 460 mm (18") wider than the external diameter of the sewer pipe.

The pipe shall be bed in a foundation of crushed gravel or crushed stone meeting a CA-6 gradation. The bedding shall be of the class specified in the Special Provisions and shall be placed to the dimensions shown on the plan details. Bedding beneath the pipe shall be compacted by mechanical means prior to placing the pipe.

Prior to laying pipe, the bedding material shall be shaped to provide continuous support for the pipe barrel. Under no circumstances will pipe be laid on blocks or wedges. Where pipe with a bell or hub is used, cross trenches shall be excavated to prevent non-uniform loading at joints. The cross trenches shall not be more than 50 mm (2") wider than the width of the bell or hub. If the excavation is carried to a depth deeper than necessary, the foundation shall be brought to the proper elevation by placing additional bedding material.

Where a firm foundation is not encountered at the established grade due to soft, spongy, or other unsuitable soil, additional material will be removed for the full trench width as directed by the Engineer or shown on the plans. The trench foundation will then be brought to grade by placing stone underlay as specified hereinafter.

- 2.9 LAYING SEWER PIPE.** Pipelaying shall commence at the lowest point of the sewer and progress upstream toward the high end.

Before the pipe is lowered into the trench, it shall be cleaned and inspected to ensure no broken or defective pipe is installed. If any defective pipe is found after being installed, it shall be removed and replaced with a new pipe.

All pipe shall be laid with the spigot ends pointing in the direction of flow and to the line and grade established by the Engineer to form a straight and uniform invert. During handling, the pipe shall be protected against damage.

Prior to jointing pipe, the ends to be joined shall be thoroughly cleaned of foreign material and lubricated or primed as recommended by the pipe manufacturer. The pipe shall then be joined and adjusted in a manner to obtain the degree of watertightness required.

Care shall be taken when joining pipe to ensure that the joints are not damaged. Pipe shall be pushed together by applying a steady and uniform pressure to the bell end of the pipe being laid. Under no conditions will pipe be jointed by stabbing one pipe into the other or by shoving the pipe home with a backhoe bucket. All pipe 375 mm (15") in diameter or larger shall be assembled by use of a "come-along", cable and winch assembly, or other means approved by the Engineer.

If a "come-along" is utilized, it shall be secured sufficiently far back on the sewer to assure that no pipe is disjointed in the jointing operation.

After installing a pipe, additional bedding material shall be placed and compacted to provide continuous barrel support throughout the length of the sewer.

Line and grade of sewers shall be established by means of centerline batter boards or laser beam unless other means are approved by the Engineer prior to construction. Batter boards shall be set at intervals of not greater than 7.5 m (25'). A visual check of batter boards shall be maintained by sighting over a series of not less than three consecutive batter boards in line and on the same gradient. Any work built to incorrect grade shall be removed and rebuilt to the correct grade.

Open ends of sewers shall be effectively sealed off upon stoppage of work to prevent groundwater, sand, dirt, or other foreign matter from entering the sewer.

- 2.10 BACKFILLING.** All trenches and excavations shall be backfilled immediately after the pipe is laid. Under no circumstances shall water be permitted to rise in unbackfilled trenches after the pipe has been placed.

Backfill up to a level of 0.3 m (1') over the top of the pipe shall be with selected earthen materials no larger than 75 mm (3") in its greatest dimension. In the event this material is not readily available at all locations, the Contractor shall provide suitably conditioned soil or an approved material for this purpose. Select material shall be placed in equal layers on both sides of the pipe and compacted. Each layer of material so placed shall not exceed 150 mm (6") in depth until the top of the pipe is covered. Additional select material required to cover the pipe to a compacted depth of 0.3 m (1') may be placed in one lift. All select materials shall be compacted to 85% standard laboratory density. No frozen material shall be used as selected backfill.

The remaining backfill required for the trench may be placed by mechanical means. Backfill so placed shall be deposited in the trench in a manner to avoid impact and uneven loading of the sewer pipe. Large chunks of earth shall be broken up or placed on top of the spoil bank. Debris and rock having any dimension greater than 150 mm (6") shall be considered unsuitable for backfilling and disposed of in an approved manner. During mechanical placement of backfill, care shall be exercised to assure that pipes are not disjointed due to the kneading action of the backfill being placed.

- 2.11 HOUSE SERVICE WYES.** Sewer wyes shall be provided for each lot fronting on the improvement or at the locations indicated on the plan.

The Contractor shall maintain an accurate record of the location of all wye branches by measuring the distance between the wye branch and the centerline of barrel of the nearest downstream manhole.

The recorded measurements shall be furnished the Engineer on completion of each day's work for permanent record of the governing agency. In the event the Contractor is negligent in making the required measurements, the wye locations will be determined by television inspection at the Contractor's expense, including engineering supervision.

- 2.12 CONNECTING TO EXISTING FACILITIES.** Before making any connection to an existing sewer or manhole, the Contractor shall take all necessary precautions to avoid a disruption or failure of the existing facility.

If a connection is being made to an existing manhole, the Contractor shall place a protective bulkhead above the manhole invert to prevent damage to the invert and clogging of the sewer.

The cost of making connections to existing facilities shall be considered as incidental to and included in the contract unit price for sanitary sewers unless otherwise specified.

2.13 MANHOLE INVERTS. All sewer pipe shall be laid through manholes so as to provide a smooth and uniform invert.

The Contractor may provide pre-manufactured inverts or cut the top half out of the pipe after installation. All cutting on the job shall be done with a power-driven saw. Sawing of pipe shall be done prior to completing the manhole invert and poured benches.

Where wye or tee connections are required in a manhole, the Contractor shall provide fittings or butt-joint to the through pipe. If a butt joint is utilized, the spigot end of the lateral pipe shall be saw cut at an angle to provide a close proximity of inverts being joined. After the invert of the manhole is poured, the wall of the main sewer shall be broken out by hand methods to fit the opening of the lateral sewer and form a smooth transition.

At manholes where the main sewer turns, the Contractor shall provide long radius bends or elbows as required to carry the sewer through the manhole. The Contractor may provide pre-cut or job-cut sections as outlined above.

2.14 SEWER TESTING. The Engineer, with the assistance of the Contractor, shall test and inspect for alignment and infiltration all sanitary sewers and related structures installed within the improvement.

The Contractor shall notify the Engineer when the work is ready for testing and inspection. Personnel for reading meters, gauges, and other measuring devices will be furnished by the Engineer. All other labor, equipment, and materials shall be furnished by the Contractor.

Whenever possible, infiltration tests shall be made when the groundwater level is above the top of the sewer. The tests shall be made by measuring the infiltration flow of water over or through a gauging device set in the invert of the sewer a known distance from a temporary bulkhead or other limiting point of infiltration.

The gauging device shall be in place 24 hours prior to making the test. If the groundwater level at the time of test is below the top of the sewer, the sewer shall be tested for infiltration by pumping water into the ground over the length of sewer being tested so as to raise the groundwater level to at least 0.6 m (2') above the top of the sewer. This condition shall be maintained for the time necessary to perform the infiltration test.

If the Contractor is unable to raise the groundwater to the level specified above, or, if in the opinion of the Engineer the trench soil has a low degree of imperviousness, the sewer shall be tested by means of an exfiltration or air test as set forth below.

The exfiltration test will be conducted on each manhole within the project prior to testing the sewer. The sewer shall be tested in sections not exceeding 600 m (2,000') in length or as determined by providing a minimum 0.6 (2') head of water at the upper manhole and a 1.2 m (4') water depth at the midpoint of the section being tested, whichever is shorter.

Manholes shall be tested by plugging both the inlet and outlet and filling the manhole to a depth of 1.8 m (6') or top of concrete, whichever is less. After filling the manhole, a minimum one (1) hour soaking period will be required prior to start of the actual test. After one (1) hour, the manhole shall be refilled to the specified level and after an additional one (1) hour period, the difference in surface elevation measured and converted into gallons per hour of manhole leakage. Each manhole in the project is to be tested in this manner when an exfiltration test is conducted.

After completion of manhole testing, sections of the pipe line shall be tested in lengths as determined above. The lower end of the section to be tested shall be adequately plugged and the line filled with water to the specified level. The water shall stand in the pipe a minimum of four (4) hours prior to

testing to allow maximum absorption into the pipeline material and trapped air to escape. The water in the upper manhole shall then be raised to the predetermined level, and after one (1) hour the difference in surface elevation measured and converted into liters (gallons) per hour of line leakage.

Manhole and line leakage in progressive 600 m (2,000') increments shall then be added to determine compliance with the allowable amount of leakage.

The amount of infiltration or exfiltration for any section of sewer shall not exceed the following limits in liters (gallons) per day per millimeter (inch) of pipe diameter per kilometer (mile) of sewer:

- (a) Infiltration 18.5 liters/day (200 gpd)
- (b) Exfiltration 22.2 liters/day (240 gpd)

In computing the length of sewer contributing infiltration or exfiltration, the length of any house connection will be included. Sewer shall be tested in sections not exceeding 600 m (2,000') in length in the upper reaches of the system with nominal 600 m (2,000') sections added as the testing progresses downstream. If any section of sewer is known to have excessive infiltration or exfiltration, it shall be tested by itself regardless of how short the section may be. When infiltration or exfiltration occurs in excess of the allowable amount, defects shall be located and repaired at the expense of the Contractor.

In place of the infiltration or exfiltration test specified above, the Contractor may use a low pressure air test to determine the adequacy of the sewer. If the air test is used, the sewer line to be tested shall be flushed and cleaned prior to testing to remove all debris and to wet the interior surface of the pipe. Plugs shall be inserted in the sewer to isolate the sewer, including laterals. All plugs shall be well braced to prevent blowout during the test procedure. No personnel shall be in manholes or pits where plugs are installed when pressure is on the pipeline.

Air shall be added to the sewer section being tested until the internal pressure of the line is raised to approximately 28 kPa (4.0 psi) gauge. After obtaining this pressure, the pressure in the line will be allowed to stabilize. Once pressure stabilization has been achieved, the line pressure can be reduced to 24 kPa (3.5 psi) gauge and the test started. A pressure drop of no more than 7 kPa (1.0 psi) gauge for the computed test time will be allowed for the section of sewer being tested. Any sewer section with a pressure drop of more than 7 kPa (1.0 psi) gauge will be considered as failing the test.

All required test time for the sewer air pressure test shall be computed by the Engineer in accordance with the requirements of ASTM C828-78.

Alignment of the sewer will be checked by directing a light beam through the sewer pipe between manholes as directed by the Engineer. If the light is not visible between manholes, or if an extreme bend in the line is apparent, the Contractor shall reconstruct the sewer or the unacceptable portion thereof as directed by the Engineer. A light with sufficient intensity and all personnel required shall be furnished by the Contractor.

2.15 TELEVISION INSPECTION OF COMPLETED SEWERS. All sewers which fail to meet two successive tests as outlined under Article 2.14 shall be inspected by closed-circuit television to determine the specific location, nature, and extent of the defective sewer. In addition, any sewer that is installed in nonconformity with the plans and specifications or the established line and grade shall be subject to television inspection.

The Engineer, with the approval of the Owner, will arrange for the TV inspection of sections of the sewer not meeting the requirements of the plans and specifications as outlined above.

All corrective work required as a result of the TV inspection shall be done by the Contractor without delay. Upon completion of the corrective work, the sewer shall be retested, and further inspection of the work made as necessary.

The entire cost of closed-circuit television inspection, including the Engineer's supervisory cost, shall be paid for by the Contractor. If the costs are not paid for directly by the Contractor, they shall be deducted from the contract amounts due for completed work.

Television inspection will not be required on sewers which, upon testing and visual inspection, are found to be in conformance with the plans and specifications.

2.16 RELATION TO WATER MAINS. Insofar as applicable, the provisions set forth in the *Illinois Standards for Sewage Works*, Illinois Environmental Protection Agency, are made a part hereof by reference and shall be adhered to in maintaining horizontal and vertical clearances with water mains paralleling or crossing the sewer lines to be installed under this contract. The following horizontal and vertical separations are to be maintained.

A. Horizontal and Vertical Separation. Whenever possible, a sewer must be at least ten feet horizontally from any existing or proposed water main.

Should location conditions exist which would prevent a lateral separation of 3.1 m (10'), a sewer may be closer than 3.1 m (10') to a water main provided that the water main invert is at least 460 mm (18") above the crown of the sewer and is either in a separate trench or in the same trench on an undisturbed earth shelf located to one side of the sewer.

If it is impossible to obtain proper horizontal and vertical separation as described above, both the water main and sewer must be constructed of slip-on or mechanical joint cast-iron pipe, asbestos-cement pressure pipe, or prestressed concrete pipe and be pressure tested to assure watertightness before backfilling.

B. Water-Sewer Line Crossings. Sewers crossing water mains shall be laid to provide a minimum vertical distance of 460 mm (18") between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to prevent damage to the water main.

When it is impossible to obtain proper horizontal and vertical separation as stipulated above, one of the following methods must be specified.

1. The sewer shall be designed and constructed equal to water pipe and shall be pressure tested to assure watertightness prior to backfilling.
2. Either the water main or the sewer line may be encased in a watertight carrier pipe which extends 3.1 m (10') on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved for use in water main construction as set forth in the "Technical Policy Statements" of the Agency's Division of Public Water Supplies.

C. Sewer Manhole Separation from Water Main. No water pipe shall pass through or come into contact with any part of a sewer manhole.

2.17 METHOD OF MEASUREMENT. Sanitary sewers of the different types and diameters will be measured by the meter (foot) in place including that portion passing through manholes.

- 2.18 BASIS OF PAYMENT.** The work as outlined in Section 2 will be paid for at the contract unit price per meter (foot) for SANITARY SEWER of the diameter, class, and type measured as specified. This price shall include the cost of all pipe, wyes, fittings, adaptors, joint materials, bedding, blocking, and all other materials, work, and equipment necessary to make a complete installation.

Stone underlay authorized by the Engineer will be measured and paid for as provided in Section 6 - Stone Underlay.

SECTION 3. CASING PIPE

- 3.1 DESCRIPTION.** This work shall consist of furnishing and installing casing pipe of the required material, size, and class as specified and in conformance with the detailed plans.

- 3.2 MATERIALS.** Casing pipe shall be either steel pipe with welded steel joints, reinforced concrete pipe, or galvanized corrugated metal pipe as specified or as approved by the Engineer where optional materials are permitted by the plans and specifications. Material used shall be new and conform to the following standard specifications unless otherwise specified. Mill rejects will not be allowed.

- | | | |
|-----|--------------|---|
| (a) | ASTM A-139 | Grade B Welded and Seamless Steel Pipe |
| (b) | API 5L | Grade B Line Pipe |
| (c) | ASTM C-76 | Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe |
| (d) | AASHTO M-36 | Zinc Coated (Galvanized) Corrugated Iron or Steel Culverts, and Underdrains |
| (e) | AASHTO M-167 | Structural Plate for Pipe, Pipe Arches, and Arches |

CONSTRUCTION METHOD

- 3.3 INSTALLATION.** Casing pipe of the type specified shall be installed in accordance with the following.

- (a) **Auger and Jacking.** Steel casing pipe and corrugated metal pipe of the size and thickness specified. Steel casing pipe shall be butt-joined and welded all around. Corrugated metal pipe shall be jointed by means of internal connecting bands.
- (b) **Tunnel and Jacking.** Concrete pipe and corrugated metal pipe of the size and thickness specified. Concrete pipe joints shall be composed of rubber "O" rings with a minimum 13 mm ($\frac{1}{2}$ ") cushioning spacer placed between each pipe. Cushioning material shall be of either braided jute or plywood. Upon completion of the push, all internal joint spaces shall be filled with Portland cement mortar. At the option of the Contractor, the outside joint may be filled with bentonite clay. Corrugated metal pipe shall be joined as in (a) above.

Casing pipe shall be installed to the line and grade shown on the plans. If required, the outside of the casing shall be lubricated with bentonite clay. The lead pipe of the casing shall be provided with an approved tunneling shield. The work shall be kept dewatered until the carrier pipe has been installed and tested.

The work of installing the casing pipe shall be done by a Contractor who is fully experienced and equipped for this specialized construction and is approved by the Engineer and other supervisory authorities.

The casing size and thickness shown on the plans or specified is the minimum acceptable. If the Contractor elects to use a casing of greater size or thickness, the additional cost of providing same will be incidental to and included in the contract unit price for this item.

- 3.4 SANITARY SEWER INSTALLATION.** After completion of the casing pipe, the sanitary sewer shall be installed through the casing on guide rails or on pipe skids in a manner which will provide for continuous and smooth installation of the sanitary sewer without obstructions of any kind. Sewer pipe shall be jointed and installed from one end in a manner to keep the entire pipe line under compression during the installation.

After completion of installation and testing of the sanitary sewer, the annular space between the casing and the sanitary sewer shall be filled with dry sand blown in by approved methods. The casing pipe shall be sealed by constructing masonry bulkheads at each end to preclude entrance of foreign material into the casing.

- 3.5 JACKING PITS.** Jacking pits shall be tight sheeted and braced on all sides. Sheet piling shall be of adequate strength to withstand all surcharge loads to be imposed on it and shall be cut off 1.2 m (4') above existing ground to preclude persons falling into the excavation. In lieu of the 1.2 m (4') cut-off height on sheet piling, the Contractor may erect a 1.2 m (4') high fence around the excavation. Lights and warning signs as necessary shall be erected around all jacking pits.

The reaction block for the jacking mechanism shall be adequately designed to distribute the loads to the soil without excessive soil deflection and in a manner to avoid any disturbance of adjacent structures or utilities.

Hydraulic jacks and jacking frame shall be designed to apply a uniform pressure over the entire circumferential area of the pipes being jacked.

Upon completion of the jacking operation, pipe bedding within the jacking pit shall be in accordance with the special plan details and/or Special Provisions.

- 3.6 RAILROAD CROSSING.** Railroad crossings shall be in accordance with the easement, license and/or accepted grant of the railroad to the Owner and said conditions are made a part of these specifications by reference. Additional requirements, as set forth in the A.R.E.A. Committee I Specifications for Pipe Line Crossings Under Railway Tracks, shall govern, except as otherwise shown on the plans or modified herein.

The railway company shall be notified a reasonable time in advance prior to commencing construction. Flagmen may be required to protect train operations during the time the pipe is installed underneath the main line tracks. The Railroad shall be consulted in this matter, and any costs involved shall be at the Contractor's expense and incidental to the construction.

The Contractor shall be responsible for the cost of special insurance required by the Railroad and costs incurred in repairing damage to Railroad property due to the Contractor's operations or negligence. All to be incidental to and included in the contract unit price.

- 3.7 HIGHWAY OR STREET CROSSINGS.** Highway or street crossings shall be in accordance with the permit issued by the responsible highway department, and said permit is made a part of these specifications by reference.

The Contractor shall be responsible for obtaining any highway or street bond required by the Highway Department. The cost of the bond shall be incidental to and included in the contract unit price for the items of this section.

- 3.8 ALTERNATE METHODS OF CONSTRUCTION.** Alternate methods of construction meeting all conditions set forth herein will be considered and shall be subject to the approval of the Engineer, Owner, Railroad, and Highway agencies involved.

Compensation for any alternate construction method will be at the contract unit price for casing pipe as set forth in the Proposal. No extra compensation will be allowed for additional work incurred because of the alternative method of construction.

COMPENSATION

- 3.9 METHOD OF MEASUREMENT.** Casing pipe shall be measured for payment in meters (feet) along the centerline of the completed pipe from end to end of casing installed. Under no circumstance will the pay length exceed the staked length.
- 3.10 BASIS OF PAYMENT.** The work as outlined in Section 3 will be paid for at the contract unit price per meter (foot) for CASING PIPE, AUGER and JACK or CASING PIPE, TUNNEL and JACK of the diameter and thickness specified, measured in place unless otherwise specified. The price shall include the cost of all materials, pipe, fittings, joint materials, blocking, skids, sand, bulkheads, and all work and equipment necessary to make a complete and finished installation.

Sanitary sewer installed within the casing pipe shall be paid for at the contract unit price for SANITARY SEWER as set forth under Section 2.

SECTION 4. SANITARY SEWER INSTALLED BY BORING AND JACKING

- 4.1 DESCRIPTION.** This work shall consist of boring a hole of sufficient size to install the proposed sanitary sewer under pavements and structures as shown on the plans or authorized by the Engineer.
- 4.2 BORING.** The Contractor shall furnish an auger of sufficient size and power to excavate a hole through whatever earthen material is encountered. If rock material of such density that the auger cannot break through is encountered, the auger shall be withdrawn and the rock grubbed out by hand, or another location for the boring shall be selected.

Ends of the boring shall be limited to a maximum distance of 1.8 m (6') from the pavement edge or back of curb, as the case may be. The boring shall be made so the sanitary sewer installed within the hole will be to the line and grade established by the Engineer. Errors in alignment shall be resolved by either boring another hole or tunneling back along the misaligned boring a sufficient distance to correct the error.

The provisions of Section 3.5 shall apply to this section insofar as applicable.

- 4.3 SANITARY SEWER INSTALLATION.** After completion of the boring, the sanitary sewer shall be installed through the bore from one end and in a manner to keep the entire pipe line under compression during installation. A suitable cap shall be placed over the end of pipe first entering the boring to preclude entrance of dirt and other objectionable foreign materials.
- 4.4 BACKFILLING.** After completion of the sanitary sewer installation, the annular space between the boring walls and the sanitary sewer shall be filled with dry sand blown in by approved methods. Abandoned borings shall also be filled by the same method.

COMPENSATION

- 4.5 METHOD OF MEASUREMENT.** Boring and jacking shall be measured in meters (feet) along the centerline and from end to end of completed boring. In no case shall the pay length of boring be in excess of pavement width or back-to-back of curb width plus 3.6 m (12'), unless otherwise specified.

- 4.6 BASIS OF PAYMENT.** The work as outlined in Section 4 will be paid for at the contract unit price per meter (foot) for BORING and JACKING for sanitary sewer of the size specified. This price shall include the cost of all materials, equipment, and the work necessary to make a complete and finished installation.

Payment will be made only for the boring that is utilized. Inaccurate bores will be at the Contractor's expense.

Sanitary sewer installed within the boring shall be paid for at the contract unit price for SANITARY SEWER as set forth under Section 2.

SECTION 5. HOUSE SERVICES

- 5.1 DESCRIPTION.** This work shall consist of furnishing and installing sanitary sewer house services of the type and size specified and in conformance with the detailed plans.

- 5.2 MATERIALS AND INSTALLATION.** All work and materials in connection with this section shall be in conformance with Section 2, Sanitary Sewers insofar as applicable.

House services shall be of the same material as the main line sewer unless otherwise specified. In the case of concrete main line sewers, the materials to be utilized for house services shall be specified.

House services shall extend from the main line sewer wye branch or service riser at approximate right angles and ascend on a uniform slope of not less than 2% to the street right-of-way line or as otherwise shown on the plans. House service stubs shall be provided for each lot fronting on the improvement at the locations indicated on the plan.

The depth of the house service at the front lot line shall not be less than 2.6 m (8-ductile-iron') except where the main line sewer is of insufficient depth. When there is not adequate depth, the house service shall be installed at a uniform slope of 1%.

House service risers shall be installed on all wyes that are deeper than 3.1 m (10'). Risers shall extend upward to an elevation that is approximately 3.1 m (10') below finished grade and be installed as shown on the detailed plan or as otherwise specified.

- 5.3 SERVICE RISER BLOCKING.** All wyes where risers are required shall be blocked and supported by placement of low grade concrete to the dimensions shown on the plans.

Concrete shall be mixed using three (3) parts bedding material, two (2) parts sand, and one (1) part cement. Only enough water will be added to make a damp mix that can be thoroughly tamped in place.

- 5.4 SERVICE LOCATION MARKERS AND RECORDS.** The end of all house service or riser stubs shall be monumented by placing a 50 mm x 50 mm (2" x 2") wooden marker vertically above the end of each installation. The marker shall extend from the invert of the stub to an elevation approximately 0.3 m (1') below finished ground grade.

The Contractor shall maintain an accurate record of the exact location of the end of all house service or riser stubs installed. Each stub end shall be accurately tied to two (2) existing monuments by measuring the horizontal distance between the monuments and a point directly above the end of the stub. The recorded measurements shall be furnished the Engineer on completion of each sewer line

for permanent record of the governing agency. In the event the Contractor is negligent in making the required measurements, final payment will be withheld until stub ends are accurately located.

COMPENSATION

- 5.5 METHOD OF MEASUREMENT.** House services and house service risers shall be measured in meters (feet) along the service centerline and from the main line wye bell to the end of the completed service or riser. In the event the riser and service are installed at the same time, the riser measurement shall terminate at the bell end of the last pipe prior to the bend connection with the service. All pipe laid beyond the dimensional limitations set forth on the plans will be at the Contractor's expense.
- 5.6 BASIS OF PAYMENT.** The work as outlined in Section 5 will be paid for at the contract unit price per meter (foot) for HOUSE SERVICE or HOUSE SERVICE RISER of the diameter, class, and type measured as specified. This price shall include the cost of all pipe, fittings, adaptors, joint materials, bedding, blocking, and all other materials, work, and equipment necessary to make a complete installation.

SECTION 6. STONE UNDERLAY

- 6.1 DESCRIPTION.** This work shall consist of furnishing and placing crushed stone in those locations where soft, spongy, or other unsuitable material is encountered.
- 6.2 MATERIALS.** Aggregate shall be crushed stone or crushed gravel conforming to gradation CA-1.
- 6.3 EXCAVATION.** The unsuitable material will be excavated for the full width of the trench and to a depth of 200 mm (8") deeper than bedding material unless otherwise specified. Excavated material shall be handled in a manner that will place it in the uppermost area of the backfilled trench.
- 6.4 STONE PLACEMENT.** Stone shall be placed to the required depth in the trench in a manner that is not injurious to sewer pipe already installed. After striking the stone off, it shall be compacted by mechanical means prior to placing sewer bedding material.

In the event the Contractor undercuts the trench to a greater depth than specified, he shall provide the stone required for the area so undercut.

COMPENSATION

- 6.5 METHOD OF MEASUREMENT.** Stone underlay shall be measured in meters (feet) along the centerline of the trench in which installed.
- Measurement for stone underlay will be made only in those locations where the Engineer directs that it be utilized. If the Contractor elects to use underlay in other areas or to greater depths than specified, he shall do so at his own expense.
- 6.6 BASIS OF PAYMENT.** The work as outlined in Section 6 will be paid for at the contract unit price per meter (foot) for STONE UNDERLAY of the depth specified. This price shall cover excavation and disposal of unsuitable material, furnishing and placing crushed stone, and the required compaction.

SECTION 7. TIGHT SHEETING

- 7.1 DESCRIPTION.** This work shall consist of providing continuous tight sheeting on both sides of the trench in those locations shown on the plan or where directed by the Engineer.
- 7.2 MATERIALS.** Sheeting can be either metal or wood, but in either case, shall be of sufficient strength to withstand all loads to be imposed on it. The Contractor will be responsible for providing material of adequate strength and design to carry imposed loads.
- 7.3 INSTALLATION.** Sheeting shall be installed by driving each sheet before trench excavation or as excavation progresses. Sheets shall be driven so as to form tight joints with each other and, if necessary, keyed tight with wedges. Sheeting shall be tongued and grooved where necessary to obtain the required results.

All sheeting shall extend from the pipe invert to a point 0.9 m (3') above the existing ground line. Sheeting shall remain in place until the backfilling operation has progressed to a point where the possibility of a cave-in is eliminated and shall then be withdrawn for re-use. In the event the condition of the trench requires the sheeting to be driven to a depth below the pipe invert, the sheeting shall be cut off at an elevation 0.3 m (1') above the top of the pipe with the bottom portion of sheeting being left in place.

Wales and cross struts of adequate size shall be installed at spacings necessary to properly carry all loads imposed on the sheeting. Increase in trench width required due to the bracing shall be considered as part of this item and shall be included in the unit price. Design of all bracing and sheeting will be the responsibility of the Contractor.

All bracing and sheeting shall be removed in a manner that will not be injurious to the pipe or its supporting materials.

COMPENSATION

- 7.4 METHOD OF MEASUREMENT.** Tight sheeting shall be measured in meters (feet) based on the measured centerline length of trench in which it is installed. The unit price per meter (foot) of trench shall include the cost of installing sheeting and removing same from both sides of the trench.
- 7.5 BASIS OF PAYMENT.** The work as outlined in Section 7 will be paid for at the contract unit price per meter (foot) for TIGHT SHEETING. This price shall include all costs of furnishing, installing, and removing tight sheeting as described herein.

SECTION 8. SANITARY MANHOLES

- 8.1 DESCRIPTION.** This work shall consist of providing and installing manholes with cast-iron steps together with the necessary cast-iron frames and lids on sewer lines where shown on the plans or directed by the Engineer. The work shall be in conformance with Section 602 of the Standard Specifications insofar as applicable and the following provisions.
- 8.2 MATERIALS.** Manholes shall be constructed using only precast reinforced concrete manhole sections.
- 8.3 JOINTS.** All joints between manhole sections are to be tongue-and-groove and shall be sealed by means of an "O" ring gasket or a 25 mm (1") butyl joint sealant in rope form meeting the requirements of ASTM C-443.

Each pipe opening in the manhole shall have a flexible watertight pipe to manhole seal meeting ASTM C-923 similar in design to either the flexible manhole sleeve as manufactured by Lock Joint Pipe/Interpace Corporation or the "Press Wedge II" seal by Press-Seal Gasket Corporation.

- 8.4 FRAME AND LID.** The frame and lid shall be of self-sealing design and of the bolt-down type. The lid shall have a concealed pickhole and have the word SANITARY cast in the top side.

The total length of the manhole structure shall be such that not more than 150 mm (6") of adjusting rings are necessary to set the frame at the required finished elevation. All joints between the last manhole section and the frame are to be of watertight construction.

- 8.5 BASIS OF PAYMENT.** This work will be paid for at the contract unit price each for MANHOLES, TYPE A, SANITARY of the diameter specified and with the specified frame and lid, which price shall include cast-iron steps and all excavation, backfill, and other work as necessary to make a completed installation.

**REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS**

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ATTACHMENTS

- A. Employment Preference for Appalachian Contracts
(included in Appalachian contracts only)

I. GENERAL

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

- Section I, paragraph 2;
- Section IV, paragraphs 1, 2, 3, 4 and 7;
- Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6 and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.

6. Selection of Labor: During the performance of this contract, the contractor shall not:

- a. Discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or
- b. Employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION

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 advise 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

listed on the wage determination unless the Administrator of the

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

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 the submission of copies of payrolls by all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;

(2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;

(3) that each laborer or mechanic has been paid not less than the applicable wage rate and fringe benefits or cash equivalent for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U/S. C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for

inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR

1. On all federal-aid contracts on the national highway system, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than \$1,000,000 (23 CFR 635) the contractor shall:

- a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.
- b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.
- c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635).

- a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.
- b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a

whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract.

Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S. C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification,

distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS

18 U.S.C. 1020 reads as follows:

“Whoever, being an officer, agent or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more than \$10,000 or imprisoned not more than 5 years or both.”

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$100,000 or more).

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of

any communication from the Director, Office of Federal Activities, EPA indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. Instructions for Certification - Primary Covered Transactions:

(Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms “covered transaction,” “debarred,” “suspended,” “ineligible,” “lower tier covered transaction,” “participant,” “person,” “primary covered transaction,” “principal,” “proposal,” and “voluntarily excluded,” as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled

"Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded from Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

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.

2. Instructions for Certification - Lower Tier Covered Transactions:

(Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
- b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
- c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.
- d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
- e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
- f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
- g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.
- h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealing.
- i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily

excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

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.

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

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.il.gov/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.il.gov/desenv/subsc.html>.

If you have any questions concerning the wage rates, please contact IDOT's Chief Contract Official at 217-782-7806.