

**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](mailto: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](mailto: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?**

<b>Questions Regarding</b>	<b>Call</b>
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.

# 2P

RETURN WITH BID

Proposal Submitted By
Name
Address
City

**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. 62108  
COOK County  
Section (0203.1&0312-708W)R-3  
Routes FAI 94 & FAP 332  
Project ACNHI-ACNHF-000S(471)  
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)

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## 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

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.

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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. 62108  
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**4.97 km of construction of additional lanes, bridge replacement and interchange reconstruction eastbound along I-94 and southbound along IL 394, from south of 159th Street to south of Thornton-Lansing Road located in Lansing and South Holland.**

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.

ILLINOIS DEPARTMENT OF TRANSPORTATION  
 SCHEDULE OF PRICES  
 CONTRACT  
 NUMBER - 62108

State Job # - C-91-014-01  
 PPS NBR - 1-73514-0901  
 County Name - COOK- -  
 Code - 31 - -  
 District - 1 - -  
 Section Number - (0203.1&0312-708W)R-3

Project Number  
 ACNHI-ACNHF-000S/471/000

Route  
 FAI 94  
 FAP 332

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX030144	CB 1.2X0.9 SPL T20F&G	EACH	25.000				
MX030170	CB 1.2X1.5 SPL T22F&G	EACH	3.000				
MX030236	REMOV STL SHT PILING	SQ M	185.000				
MX030257	ERECT F B G-EX 1250KN	EACH	2.000				
MX030258	ERECT F B G-EX 1500KN	EACH	12.000				
MX030272	ERECT F B G-EX 750KN	EACH	12.000				
MX030301	CON ATS 100 GALVS PVC	METER	3.000				
MX030355	NOISE AB WALL GRD MT	SQ M	2,181.000				
MX030356	NOISE AB WALL STR MT	SQ M	6,408.000				
MX030504	TEMP PAVT INTERSTATE	SQ M	1,581.000				
MX030507	STORM SEW/CUL GROUTED	CU M	92.000				
MX030523	ERECT FB FIXED 1500KN	EACH	12.000				
MX030573	ERECT F B F 2250KN	EACH	12.000				
MX032160	CON EN RC 100 PVC 2X1	METER	280.000				
MX032161	CON EN RC 100 PVC 2X2	METER	55.000				



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MX032178	TEMP INFO SIGNING	SQ M	135.460				
MX032651	MULCH PLACEMENT 100	SQ M	8,370.000				
MX032708	STRP SEAL EXP JT ASSY	METER	44.700				
MX033141	BR JOINT SYS EXPAN 25	METER	15.400				
MX033183	SOIL STABILIZERS	KG	2,256,428.000				
MX033276	TEMP SOIL RETEN SYSTM	SQ M	1,380.500				
MX033290	SED CONT SILT FENCE	METER	2,877.000				
MX033291	SED CON SILT FEN MAIN	METER	1,239.000				
MX033292	SED CON STAB CONST EN	SQ M	900.000				
MX033303	SED CON STAB CON EN M	SQ M	900.000				
MX033387	CON ATS 25 RGS PVC	METER	3.000				
MX033533	ERECT MOD EX JT 160	METER	14.700				
MX033555	PT PVT MK LIN 125 SP	METER	155.000				
MX033557	CON T 3-100 R GALVS	METER	30.500				
MX033558	CON ATS 3-100 GAL PVC	METER	208.400				

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MX033565	CON EC RC 30 CNC 4X2	METER	283.900				
MX033569	CON EMB 100 CNM 1X1	METER	4.000				
MX033570	CON EN RC 100 PVC 3X2	METER	27.000				
MX033571	ERECT F B G-EX 2000KN	EACH	10.000				
MX033572	ERECT F B G-EX 8000KN	EACH	1.000				
MX033573	SLIP ON FB CK VLV 375	EACH	1.000				
MX033574	RAP 75MM	SQ M	1,119.000				
MX033575	REM MCHSTAB EARTH WALL	SQ M	202.000				
MX033576	CON T 2-100 GALVS PVC	METER	15.100				
MX033577	CON ATS 2-100 RGS PVC	METER	210.800				
MX033579	CON ES1-100 30CNC 4X2	METER	1,371.600				
MX033580	ORNAMENTAL FENCE	METER	20.000				
MX033581	BAR SUP ST NOIS AB WL	METER	1,314.000				
MX355150	BIT BC SUPER 150	SQ M	33.000				
MX406012	BC SC SUPER "C" N50	M TON	5.000				

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MX406078	P BCSC SUPER "F" N105	M TON	104.000				
MX406210	BCBC SUP IL-25.0 N105	M TON	42.000				
MX407440	BIT C PVT FD SUP 290	SQ M	258.000				
MX482460	BIT SHLD SUPER 330	SQ M	492.000				
MX602310	CB 1.2X0.9 T20F&G	EACH	7.000				
MX637150	CONC BAR 1F 1065HT SP	METER	1,061.000				
MX704200	REM TEMP CONC BARRIER	METER	8,937.400				
MZ001045	AGG SUBGRADE 225	SQ M	1,119.000				
MZ001050	AGG SUBGRADE 300	SQ M	5,852.000				
MZ008810	DRIL SHAFT/SOIL 610	METER	25.000				
MZ008830	DRIL SHAFT/SOIL 915	METER	49.000				
MZ008860	DRIL SHAFT/SOIL 1220	METER	298.100				
MZ008876	DRIL SHAFT/SOIL 1676	METER	130.100				
MZ008990	DRIL SHAFT/SOIL 1980	METER	12.900				
MZ013825	CONTR LOW-STRENG MATL	CU M	61.800				

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MZ022800	FENCE REMOVAL	METER	1,784.000				
MZ039300	PERMANENT CASING	METER	286.400				
MZ047300	PROTECTIVE SHIELD	SQ M	803.000				
MZ064800	SELECTIVE CLEARING	UNIT	93.000				
MZ065755	SLOT DR 300 W/VAR SL	METER	239.500				
M2010110	TREE REMOV 6-15	UNIT	210.000				
M2010210	TREE REMOV OVER 15	UNIT	188.000				
M2010500	TREE REMOV HECTARES	HA	0.700				
M2011000	TEMPORARY FENCE	METER	5,436.500				
M2020010	EARTH EXCAVATION	CU M	75,782.000				
M2021200	REM & DISP UNS MATL	CU M	7,930.000				
M2040800	FURNISHED EXCAV	CU M	43,031.000				
M2070220	POROUS GRAN EMBANK	CU M	207.000				
M2070400	POROUS GRAN EMB SPEC	CU M	1,381.000				
M2070420	POROUS GRAN EMB SUBGR	CU M	100.000				

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M2080150	TRENCH BACKFILL	CU M	5,272.000				
M2090410	SAND BACKFILL	CU M	25.000				
M2101000	GEOTECH FAB F/GR STAB	SQ M	86,042.000				
M2113150	TOPSOIL F & P 150	SQ M	48,613.000				
M2113300	TOPSOIL F & P 300	SQ M	16,528.000				
M2114100	COMPOST F & P 100	SQ M	124,980.000				
M2500210	SEEDING CL 2A	HA	3.800				
M2500310	SEEDING CL 4	HA	10.800				
M2500314	SEEDING CL 4B	HA	1.400				
M2500400	NITROGEN FERT NUTR	KG	1,463.000				
M2500500	PHOSPHORUS FERT NUTR	KG	1,463.000				
M2500600	POTASSIUM FERT NUTR	KG	1,463.000				
M2500750	MOWING	HA	2.000				
M2510115	MULCH METHOD 2	HA	17.200				
M2510630	EROSION CONTR BLANKET	SQ M	132,604.000				

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M2520110	SODDING SALT TOLERANT	SQ M	16,528.000				
M2520200	SUPPLE WATERING	UNIT	4,621.000				
M2800250	TEMP EROS CONTR SEED	KG	1,770.000				
M2810107	STONE RIPRAP CL A4	SQ M	2,404.000				
M2820200	FILTER FABRIC	SQ M	2,920.000				
M3111300	SUB GRAN MAT B 300	SQ M	86,042.000				
M3120100	STAB SUB-BASE 100	SQ M	5,821.000				
M3120150	STAB SUB-BASE 150	SQ M	86,042.000				
M4060200	BIT MATLS PR CT	M TON	1.600				
M4202285	PCC PVT 280 JOINTED	SQ M	3,227.000				
M4205000	BR APPR PAVT	SQ M	278.000				
M4205050	BR APPROACH PAVT SPL	SQ M	1,293.000				
M4205200	PROTECTIVE COAT	SQ M	12,910.000				
M4210360	CON REINF PCC PVT 360	SQ M	53,913.000				
M4214360	PVT REINFORCEMENT 360	SQ M	53,913.000				

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M4217072	LUG SYSTEM COMP 7.2	EACH	1.000				
M4217108	LUG SYSTEM COMP 10.8	EACH	2.000				
M4217144	LUG SYSTEM COMP 14.4	EACH	1.000				
M4218000	PROTECTIVE COAT	SQ M	54,838.000				
M4230200	PCC DRIVEWAY PAVT 200	SQ M	214.000				
M4240125	PC CONC SIDEWALK 125	SQ M	52.000				
M4400045	BIT SURF REM 45	SQ M	877.000				
M4402000	PAVEMENT REM	SQ M	76,288.000				
M4402010	DRIVE PAVEMENT REM	SQ M	26.000				
M4402030	GUTTER REM	METER	822.000				
M4402040	COMB CURB GUTTER REM	METER	30.000				
M4402050	SIDEWALK REM	SQ M	6.000				
M4402060	APPROACH SLAB REM	SQ M	1,214.000				
M4402530	PAVED SHLD REMOVAL	SQ M	10,588.000				
M4402540	PAVT BREAKING	SQ M	5,601.000				

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M4812280	AGGREGATE SHLDS B 280	SQ M	242.000				
M4812360	AGGREGATE SHLDS B 360	SQ M	1,104.000				
M4820150	BIT SHOULDERS 150	SQ M	210.000				
M4830150	PCC SHOULDERS 150	SQ M	2,410.000				
M4830280	PCC SHOULDERS 280	SQ M	2,223.000				
M4830360	PCC SHOULDERS 360	SQ M	25,745.000				
M4832000	PROTECTIVE COAT	SQ M	30,377.000				
M5010522	PIPE CULVERT REMOV	METER	77.500				
M5020100	STRUCTURE EXCAVATION	CU M	4,089.000				
M5020200	COFFERDAM EXCAVATION	CU M	470.000				
M5030115	NEOPRENE EXPAN JT 65	METER	14.000				
M5030125	NEOPRENE EXPAN JT 100	METER	52.100				
M5030350	CONC STRUCT	CU M	2,621.200				
M5030360	CONC SUP-STR	CU M	2,448.100				
M5030380	RUSTICATION FINISH	SQ M	150.000				



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M5030390	BR DECK GROOVING	SQ M	9,376.000				
M5030400	SEAL COAT CONC	CU M	134.000				
M5030450	PROTECTIVE COAT	SQ M	10,916.000				
M5041219	F&E P P CON I-BM 1219	METER	587.000				
M5050305	ERECT STRUCT STEEL	L SUM	1.000				
M5050405	F & E STRUCT STEEL	KG	2,474.000				
M5080105	REINFORCEMENT BARS	KG	87,995.000				
M5080205	REINF BARS, EPOXY CTD	KG	625,290.000				
M5110100	SLOPE WALL 100	SQ M	2,836.000				
M5120100	F MET PILE SHELL 305	METER	2,388.000				
M5120160	F STL PILE HP310X79	METER	4,192.000				
M5120180	F STL PILE HP360X108	METER	3,201.200				
M5120315	DRIVE STL PILE	METER	7,393.200				
M5120340	DRIV & FILLING SHELLS	METER	2,388.000				
M5120460	TEST PIL ST HP310X79	EACH	7.000				

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M5120480	TEST PIL ST HP360X108	EACH	10.000				
M5120900	TEMP SHT PILING	SQ M	530.000				
M5403000	CONC BOX CUL	CU M	139.400				
M542E112	PRC FL-END SEC 300	EACH	4.000				
M542E128	PRC FL-END SEC 600	EACH	2.000				
M542G035	GRAT-C FL END S 600	EACH	2.000				
M5502840	SS 1 RCP CL 4 300	METER	317.500				
M5502850	SS 1 RCP CL 4 375	METER	31.500				
M5503050	SS 2 RCP CL 3 300	METER	508.500				
M5503060	SS 2 RCP CL 3 375	METER	253.000				
M5503090	SS 2 RCP CL 3 600	METER	178.000				
M5503260	SS 3 RCP CL 4 300	METER	60.000				
M5510025	STORM SEWER REM 300	METER	1,871.500				
M5510035	STORM SEWER REM 375	METER	563.500				
M5510045	STORM SEWER REM 450	METER	400.000				

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M5510055	STORM SEWER REM 525	METER	39.000				
M5510060	STORM SEWER REM 600	METER	341.500				
M5510070	STORM SEWER REM 750	METER	120.500				
M5870020	BRIDGE SEAT SEALER	SQ M	167.200				
M6010085	GEO FAB-FRENCH DRAIN	SQ M	1,804.500				
M6010610	PIPE UNDERDRAINS 150	METER	8,603.500				
M6010710	PIPE UNDERDRN 150 SP	METER	241.000				
M6020105	CB A 1.2M D T1F OL	EACH	7.000				
M6020140	CB A 1.2M D T8G	EACH	4.000				
M6020405	CB A 1.5M D T1F OL	EACH	1.000				
M6021410	MAN A 1.2D T1F CL	EACH	4.000				
M6021610	MAN A 1.5D T1F CL	EACH	3.000				
M6060010	CLASS SI CONC OUTLET	CU M	3.435				
M6060070	CONC CURB TB	METER	74.400				
M6060260	CONC GUTTER TA	METER	64.200				

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M6060270	CONC GUTTER TA MOD	METER	119.000				
M6060500	COMB CC&G TB15.30	METER	29.000				
M6063620	CONC MEDIAN SURF 150	SQ M	18.000				
M6300100	SPBGR TY A	METER	2,823.240				
M6300130	SPBGR TY D	METER	388.620				
M6320030	GUARDRAIL REMOV	METER	1,042.000				
M6370275	CONC BAR 2F 1065HT	METER	1,532.000				
M6370805	CONC BAR TRANS	METER	188.000				
M6371050	BARRIER BASE	METER	2,781.000				
M6380205	CONC GLARE SCREEN SPL	METER	14.500				
M6380600	MOD GLARE SCRNSYS	METER	4,280.000				
M6420015	SHOULDER RUMBLE STRIP	METER	12,341.000				
M6640120	CH LK FENCE 1.8	METER	1,164.500				
M6641620	CH LK GATE 1.8X3.7 DB	EACH	2.000				
M6641650	CH LK GATE 1.8X5.5 DB	EACH	3.000				

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M7030240	TEMP PVT MK LINE 150	METER	711.000				
M7030520	PAVT MARK TAPE T3 100	METER	17,980.000				
M7030530	PAVT MARK TAPE T3 125	METER	749.000				
M7030550	PAVT MARK TAPE T3 200	METER	4,679.000				
M7030560	PAVT MARK TAPE T3 300	METER	436.000				
M7031000	WORK ZONE PAVT MK REM	SQ M	3,665.000				
M7040100	TEMP CONC BARRIER	METER	1,815.300				
M7040210	REL TEMP CONC BAR SPL	METER	6,390.000				
M7200100	SIGN PANEL T1	SQ M	24.090				
M7200200	SIGN PANEL T2	SQ M	19.440				
M7200300	SIGN PANEL T3	SQ M	316.420				
M7240310	REMOV SIGN PANEL T1	SQ M	0.750				
M7240320	REMOV SIGN PANEL T2	SQ M	6.840				
M7240330	REMOV SIGN PANEL T3	SQ M	61.820				
M7240730	RELOC SIGN PANEL T3	SQ M	7.200				

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M7290100	METAL POST TY A	METER	12.300				
M7300100	WOOD SIN SUPPORT	METER	128.700				
M7330010	OVHD SIN STR-SPAN T1A	METER	25.200				
M7330020	OVHD SIN STR-SPAN T2A	METER	78.000				
M7330235	OSS CAN 2CA 0.90X1.68	METER	16.300				
M7330255	OSS CAN 3CA 0.90X2.14	METER	23.900				
M7330400	OVHD SIN STR BR MT	METER	7.000				
M7330500	OVHD SIN STR WALKWAY	METER	94.500				
M7340200	DRILL SHAFT CONC FDN	CU M	109.500				
M7800105	THPL PVT MK LINE 100	METER	3,656.000				
M7800120	THPL PVT MK LINE 200	METER	476.000				
M7800125	THPL PVT MK LINE 300	METER	60.000				
M7800410	PREF PL PM TB LN 125	METER	711.000				
M7800605	EPOXY PVT MK LN 100	METER	11,312.000				
M7800610	EPOXY PVT MK LN 125	METER	1,215.000				

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M7800620	EPOXY PVT MK LN 200	METER	302.000				
M7800625	EPOXY PVT MK LN 300	METER	49.000				
M7802000	POLYUREA PM T1 LTR&SY	SQ M	28.000				
M7802010	POLYUREA PM T1 LN 100	METER	17,270.000				
M7802012	POLYUREA PM T1 LN 125	METER	3,699.000				
M7802020	POLYUREA PM T1 LN 200	METER	7,289.000				
M7802030	POLYUREA PM T1 LN 300	METER	2,039.000				
M7830100	PAVT MARKING REMOVAL	SQ M	1,745.000				
M8120100	CON EMB STR 25 GALVS	METER	6.000				
M8120130	CON EMB STR 65 GALVS	METER	36.000				
M8120230	CON EMB STR 50 PVC	METER	2,238.000				
M8120270	CON EMB STR 100 PVC	METER	256.000				
M8120280	CON EMB STR 100 R GAL	METER	16.000				
M8130195	JBX SS AS 300X300X150	EACH	3.000				
M8131400	JBX NM ES 525X275X200	EACH	34.000				

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M8150200	TR & BKFIL F ELECT WK	METER	668.100				
M8360100	LIGHT POLE FDN 600	METER	62.000				
TWY00010	ROADWAY EXC COMMON	CU M	14,005.000				
TWY00020	ROADWAY EXC UNCOMMON	CU M	1,685.000				
TWY00040	STRUCT EXC COMMON	CU M	154.000				
TWY00050	EMBANKMENT ZONE A	CU M	8,645.000				
TWY00060	EMBANKMENT ZONE B	CU M	7,960.000				
TWY00070	POROUS GRAN BACKFILL	CU M	124.000				
TWY00080	SELECTED SUBGRADE	CU M	739.000				
TWY00140	RIPRAP HAND-LAID	SQ M	164.000				
TWY00160	GRANULAR SUBBASE	CU M	522.000				
TWY00180	PC CONC PAVT 300	SQ M	1,747.000				
TWY00220	BIT MATERIAL TACK	LITER	85.000				
TWY00250	BIT CONC SHOULDER 150	SQ M	1,517.000				
TWY00370	STUD TYPE SHEAR CONN	EACH	6,093.000				



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TWY00380	F&E STRUCT STL MISC	KG	111.000				
TWY00400	REINF STEEL EPOXY CTD	KG	30,531.000				
TWY00410	FURNISH STEEL PILES	METER	425.000				
TWY00420	DRIVING STEEL PILES	METER	199.000				
TWY00440	TEST PILES	METER	31.000				
TWY00470	SCUPPER	EACH	2.000				
TWY00499	BR DECK GROOVING	SQ M	494.000				
TWY00500	APPLY CONC SEALANT	SQ M	698.000				
TWY00520	BRIDGE APPROACH SLAB	SQ M	102.000				
TWY00540	GEOCOMPOSITE WALL DR	SQ M	20.000				
TWY00630	REINF CONC PIPE 600	METER	57.500				
TWY00690	COARSE AGGR BACKFILL	CU M	200.000				
TWY00770	SUB SUR PVT DR FF 150	METER	368.500				
TWY00795	OUTLET SUB DR 150	METER	16.500				
TWY01270	GDRL ANCHOR INSTL T4	EACH	2.000				

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TWY01470	BARRIER DELINEATOR	EACH	2.000				
TWY01580	WOOD SIGN SUPPORT	METER	5.000				
TWY01640	ROW FENCING TYPE 1	METER	383.000				
TWY01650	CORN POST ROW FEN T1	EACH	6.000				
TWY01660	PULL POST ROW FEN T1	EACH	1.000				
TWY01670	END POST ROW FEN T1	EACH	1.000				
TWY01680	ROW FENCE REMOVAL	METER	325.000				
TWY01690	ROADWAY DELINEATORS	EACH	30.000				
TWY01700	EPOXY PVT MK LN 100	METER	914.000				
TWY04106	END POST/STR ROW F T1	EACH	1.000				
TWY04136	AGG SHLD W/FILT FAB	M TON	303.000				
TWY04137	ER E BRGASYT1800/1000	EACH	12.000				
TWY04138	STR SUBDRAIN FF 150	METER	21.000				
TWY04139	ERECT STR STL GDR SPN	L SUM	1.000				
TWY04140	AGG BASE CSE	CU M	66.000				

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TWY04141	CONC PIPE ES 600	EACH	2.000				
TWY04142	BR EXP JT CL PJS 100	METER	10.700				
TWY04143	F & I SIGN TYPE 2	SQ M	1.440				
TWY04144	HPC BR/DR STR DK-HPC	CU M	126.400				
TWY04145	CONC BR & DR STR SD	CU M	38.900				
TWY04146	CONC BR & DR STR SP	CU M	89.900				
TWY04147	BR EXP JT CL NS AB100	METER	10.500				
TWY04148	CLEARING	HA	2.000				
TWY04149	BIT BASE CSE 100	SQ M	102.000				
TWY04150	GUARDRAIL ANCHR IN T3	EACH	2.000				
TWY04151	S-VEH GATE ROW FEN T1	EACH	1.000				
X0301229	ACCID INVESTIGAT SITE	CAL MO	16.000				
X0320333	ROADWAY CLEANING SPL	EACH	18.000				
X0322917	PRO SS CONN TO EX MAN	EACH	18.000				
X0323082	DRAINAGE SCUPPR DS-33	EACH	3.000				

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X0323426	SED CONT DR ST INL CL	EACH	331.000				
X0323830	DRAINAGE SCUPPR DS-11	EACH	15.000				
X0324044	EROS CON TEMP P SL DR	EACH	10.000				
X0324045	SED CON STAB CON EN R	EACH	4.000				
X0324587	NOIS AB WAL A-ROD ASY	EACH	46.000				
X0324698	APPLY DUST SUP AGENTS	UNIT	8,884.000				
X0325130	TUBULAR TRAF SGN POST	EACH	6.000				
X0325176	CONC FILL STEEL POST	EACH	7.000				
X0504200	CONCRETE HEADWALL	EACH	1.000				
X0976500	END SECTIONS REMOVED	EACH	6.000				
X4210390	LUG SYSTEM COMPL SPL	EACH	1.000				
X6020166	DR STR T1 SP 2T20F&G	EACH	4.000				
X7011015	TR C-PROT EXPRESSWAYS	L SUM	1.000				
X7013820	TR CONT SURVEIL EXPWY	CAL DA	240.000				
X7015000	CHANGEABLE MESSAGE SN	CAL MO	8.000				

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Z0002600	BAR SPLICERS	EACH	464.000				
Z0013798	CONSTRUCTION LAYOUT	L SUM	1.000				
Z0029999	IMPACT ATTENUATOR REM	EACH	5.000				
Z0030030	IMP ATTEN FRD NAR TL3	EACH	2.000				
Z0030070	IMP ATTEN SU NAR TL3	EACH	2.000				
Z0030240	IMP ATTN TEMP NRD TL2	EACH	2.000				
Z0030250	IMP ATTN TEMP NRD TL3	EACH	27.000				
Z0030260	IMP ATTN TEMP FRN TL3	EACH	1.000				
Z0030350	IMP ATTN REL NRD TL3	EACH	4.000				
Z0048665	RR PROT LIABILITY INS	L SUM	1.000				
Z0076600	TRAINEES	hour	500.000		0.800		400.000
28000300	TEMP DITCH CHECKS	EACH	64.000				
28000500	INLET & PIPE PROTECT	EACH	43.000				
28000510	INLET FILTERS	EACH	103.000				
50100300	REM EXIST STRUCT N1	EACH	1.000				

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50100400	REM EXIST STRUCT N2	EACH	1.000				
50100500	REM EXIST STRUCT N3	EACH	1.000				
50104400	CONC HDWL REM	EACH	3.000				
50200900	COFFERDAM PIER 4	EACH	1.000				
50300100	FLOOR DRAINS	EACH	6.000				
50300310	ELAST BEARING ASSY T1	EACH	24.000				
50300320	ELAST BEARING ASSY T2	EACH	8.000				
50300440	ERECT ELAS BRG ASY T1	EACH	36.000				
50300460	ERECT ELAS BRG ASY T3	EACH	9.000				
50500505	STUD SHEAR CONNECTORS	EACH	24,442.000				
51203200	TEST PILE MET SHELLS	EACH	3.000				
51500100	NAME PLATES	EACH	4.000				
60100060	CONC HDWL FOR P DRAIN	EACH	28.000				
60207605	CB TC T8G	EACH	12.000				
60250200	CB ADJUST	EACH	9.000				

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60255500	MAN ADJUST	EACH	6.000				
60256400	MAN ADJ NEW T8G	EACH	2.000				
60257900	MAN RECONST	EACH	2.000				
60258200	MAN RECON NEW T1F CL	EACH	10.000				
60300105	FR & GRATES ADJUST	EACH	28.000				
60500040	REMOV MANHOLES	EACH	22.000				
60500050	REMOV CATCH BAS	EACH	27.000				
60500060	REMOV INLETS	EACH	58.000				
60900315	TY D INLET BOX 609006	EACH	3.000				
60900515	CONC THRUST BLOCKS	EACH	3.000				
63100045	TRAF BAR TERM T2	EACH	3.000				
63100070	TRAF BAR TERM T5	EACH	5.000				
63100085	TRAF BAR TERM T6	EACH	8.000				
63100167	TR BAR TRM T1 SPL TAN	EACH	8.000				
63301990	REM RE-E T B TERM T1	EACH	2.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION  
 SCHEDULE OF PRICES  
 CONTRACT  
 NUMBER - 62108

State Job # - C-91-014-01  
 PPS NBR - 1-73514-0901  
 County Name - COOK- -  
 Code - 31 - -  
 District - 1 - -  
 Section Number - (0203.1&0312-708W)R-3

Project Number  
 ACNHI-ACNHF-000S/471/000

Route  
 FAI 94  
 FAP 332

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
63302000	REM RE-E T B TERM T2	EACH	1.000				
63302700	REM RE-E T B TERM T6	EACH	1.000				
63500105	DELINEATORS	EACH	142.000				
67100100	MOBILIZATION	L SUM	1.000				
70101800	TRAF CONT & PROT SPL	L SUM	1.000				
70102550	TR CONT-PROT TEMP DET	EACH	1.000				
72600100	MILEPOST MKR ASSEMBLY	EACH	1.000				
73600100	REMOV OH SIN STR-SPAN	EACH	2.000				
73602000	REM OVHD SN STR-BR MT	EACH	1.000				
73700100	REM GR-MT SIN SUPPORT	EACH	6.000				
73700300	REM CONC FDN-OVHD	EACH	4.000				
78100100	RAISED REFL PAVT MKR	EACH	1,773.000				
78100105	RAISED REF PVT MKR BR	EACH	142.000				
78200100	MONODIR PRIS BAR REFL	EACH	946.000				
78200420	GUARDRAIL MKR TYPE B	EACH	87.000				



ILLINOIS DEPARTMENT OF TRANSPORTATION  
 SCHEDULE OF PRICES  
 CONTRACT  
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State Job # - C-91-014-01  
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 ACNHI-ACNHF-000S/471/000

Route  
 FAI 94  
 FAP 332

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
78200530	BAR WALL MKR TYPE C	EACH	247.000				
78201000	TERMINAL MARKER - DA	EACH	7.000				

**CONTRACT NUMBER**

**62108**

**THIS IS THE TOTAL BID**

**\$ \_\_\_\_\_**

**NOTES:**

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

## RETURN WITH BID

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

#### I. GENERAL

**A.** Article 50 of the 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.

## RETURN WITH BID

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.

## RETURN WITH BID

### **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.

## RETURN WITH BID

(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**

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

## 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:

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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. \_\_\_\_\_

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

**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.



**Contract No. 62108  
 COOK County  
 Section (0203.1&0312-708W)R-3  
 Project ACNHI-ACNHF-000S(471)  
 Routes FAI 94 & FAP 332  
 District 1 Construction Funds**

**PART I. IDENTIFICATION**

Dept. Human Rights # \_\_\_\_\_ Duration of Project: \_\_\_\_\_

Name of Bidder: \_\_\_\_\_

**PART II. WORKFORCE PROJECTION**

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

TABLE A

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

TABLE B

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

TABLE C

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

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. 62108  
COOK County  
Section (0203.1&0312-708W)R-3  
Project ACNHI-ACNHF-000S(471)  
Routes FAI 94 & FAP 332  
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. 62108  
COOK County  
Section (0203.1&0312-708W)R-3  
Project ACNHI-ACNHF-000S(471)  
Routes FAI 94 & FAP 332  
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. 62108  
COOK County  
Section (0203.1&0312-708W)R-3  
Project ACNHI-ACNHF-000S(471)  
Routes FAI 94 & FAP 332  
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 an undisclosed, future letting. All bids will be gathered, sorted, publicly opened and read at the Department of Transportation's District One Office, Schaumburg, IL 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. 62105  
COOK County  
Section (0203.1&0304)R-6  
Project ACNHI-805(65)160  
Route FAI 80/94  
District 1 Construction Funds**

**1.53 km of construction of continuously reinforced concrete pavement, jointed PCC pavement, earthwork, shoulders and striping along I-80/94 for the eastbound and westbound inside lanes (mainline) east of Tollway Oasis to west of IL Route 83 (Torrence Avenue) in Lansing, South Holland and Thornton.**

- 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)

INDEX  
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.

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

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RECURRING SPECIAL PROVISIONS

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

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## STATE OF ILLINOIS

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### SPECIAL PROVISIONS

The following Special Provisions supplement the "Standard Specifications for Road and Bridge Construction," adopted January 1, 2002; The Illinois State Toll Highway Authority (ISTHA) Standard Specifications dated September, 2000; Revisions to the September, 2000 ISTHA Standard Specifications (Supplemental Specifications) dated January 2003; the latest edition of the "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, and the Supplemental Specifications and Recurring Special Provisions indicated on the Check Sheet included herein which apply to and govern the construction of F.A.I. Route 94 (I-94) and F.A.P. Route 332 (IL 394), Section: (0203.1 & 0312-708W) R-3, Project: ACNHI-ACNHF-000S(471), in Cook County and in case of conflict with any part or parts of said Specifications, the said Special Provisions shall take precedence and shall govern.

F.A.I. Route 94 (I-94) & F.A.P. Route 332 (IL 394)  
Section (0203.1 & 0312-708W) R-3  
Project ACNHI-ACNHF-000S(471)  
Cook County

#### LOCATION OF PROJECT

This project begins at a point on the centerline of F.A.I. Route 94 (I-94) approximately 130 meters south of 159<sup>th</sup> Street and extends in a southerly direction through the Villages of South Holland and Lansing in Cook County for a total distance of 4.3 kilometers, ending at a point on the centerline of F.A.P. Route 332 (IL 394) approximately 857 meters south of Thornton-Lansing Road.

#### DESCRIPTION OF WORK

This is an add lane, bridge replacement and interchange reconstruction project and the work to be performed under this contract consists of earth excavation, embankment construction, pavement and paved shoulder removal, construction of continuously reinforced concrete pavement and portland cement concrete shoulders, structure removal, structure excavation, furnishing and driving piles, furnishing and installing steel reinforcement, construction of cast-in-place concrete structures, furnishing and erecting structural steel, furnishing and erecting portland cement concrete beams, temporary sheet piling, temporary soil retention systems, construction of storm sewers and drainage structures, erosion control, traffic control, polyurea pavement marking, installation of sign panels, portland cement concrete jointed pavement, erecting structural steel furnished in a fabrication contract, installation of noise abatement wall,



construction of overhead sign structures, electrical conduit and junction boxes embedded in structures, and all incidental and collateral work necessary to complete the project as shown on the plans and as described herein.

**STATUS OF UTILITIES TO BE ADJUSTED**

Effective: January 30, 1987                      Revised: July 1, 1994

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

<u>Name of Utility</u>	<u>Type</u>	<u>Location</u>	<u>Estimated Dates for Start and Completion of Relocation or Adjustments</u>
Com Ed	Electric	<ul style="list-style-type: none"> <li>• Perpendicular crossing on IL 394 at station 39+323</li> <li>• Perpendicular crossing on I-94 at station 19+182</li> <li>• Perpendicular crossing on I-94 at station 19+950</li> </ul>	
Qwest	Fiber Optic Cable	<ul style="list-style-type: none"> <li>• Canadian National Railroad</li> <li>• Perpendicular crossing on I-94 at station 19+188</li> <li>• Perpendicular crossing on I-94 at station 19+925</li> </ul>	
South Holland	Water	<ul style="list-style-type: none"> <li>• SN 016-C012</li> <li>• Perpendicular crossing on I-94 at station 18+707</li> <li>• Perpendicular crossing on I-94 at station 19+938</li> <li>• Perpendicular crossing on IL 394 at station 39+358</li> </ul>	
Sprint	Fiber Optic Cable	Canadian National Railroad	Utility to remain in place. Contractor to perform his/her work operations in a manner so as not to disturb this facility.

MCI	Cable	Canadian National Railroad	
SBC	Telephone	<ul style="list-style-type: none"> <li>• Perpendicular crossing on I-94 at station 19+185</li> <li>• Perpendicular crossing on I-94 at station 19+950</li> <li>• Perpendicular crossing on IL 394 at station 39+411</li> </ul>	
Nicor	Gas	<ul style="list-style-type: none"> <li>• SN 016-C012</li> <li>• Perpendicular crossing on I-94 at station 18+934</li> <li>• Perp. crossing on IL 394 at approx. station 39+400</li> </ul>	

The above represents the best information available to the Department and is included for the convenience of the bidder. Watermain conflicts by the proposed box culvert are shown on the Drainage and Utilities plan and profile. The applicable portions of Articles 105.07 and 107.31 of the Standard Specifications shall apply.

**WORK RESTRICTIONS**

The Contractor shall not proceed with any construction operations, which would require permanent (24 hour per day) lane closures, lane shifts, and / or shoulder closures on the expressway, arterial routes and local streets prior to March 4, 2006.

The Engineer's written approval shall be obtained by the Contractor before proceeding with any work that interferes with traffic prior to the above date. Off-road work may proceed prior to the above date if approved by the Engineer.

The Contractor, the Erosion and Sediment Control Manager, and all sub-contractors are required to attend an Erosion and Sediment Control/Environmental Training meeting. The Department will present this meeting at a location to be determined by the Department. No work shall be performed on the contract before this meeting has taken place and all erosion control and environmental issues have been completed to the satisfaction of the Engineer.

TOLLWAY PERMIT AND BOND  
Effective: January 13, 1989

The Contractor will be required to obtain a permit from the Illinois State Toll Highway Authority (ISTHA) in accordance with Article 107.04 of the Standard Specifications prior to initiating any lane closures on the Tollway or doing any work on the ISTHA right of way. As part of the permit, the Contractor will be required to post a surety bond with the ISTHA. The Contractor will furnish a copy of the authorized permit to the Engineer.

PROGRESS SCHEDULE

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

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

Format. The electronic schedule format shall contain the following:

- a. Project Name: (Optional).
- b. Template: Construction.
- c. Type: SureTrak: Native file format for stand-alone contracts.
- d. Planning Unit: Days (calendar working).
- e. Number/Version: Original or updated number.
- f. Start Date: Not later than ten days after execution of the contract.
- g. Must Finish Date: Completion date for completion date contracts.
- h. Project Title: Contract number.
- i. Company Name: Contractor's name.

Calendars.

- a. Completion Date Contracts. The base calendar shall show the proposed working days of the week and the proposed number of work hours per day.
- b. Working Days Contracts. The base calendar shall show the distribution of working days according to the following table:

MONTH	WORKING DAYS
MAY	15
JUNE	17
JULY	17
AUGUST	17
SEPTEMBER	16
OCTOBER	16
NOVEMBER	14

The number of days shown above shall not be exceeded. The proposed number of hours to be worked per day shall also be shown. No work shall be shown during the period of December 1 and April 30.

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

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

- a. Activity Identification (ID) Numbers. The Contract shall utilize numerical designations to identify each activity. Numbering of activities shall be in increments of not less than ten digits.
- b. A description of the work represented by the activity (maximum forty-five characters). The use of descriptions referring to a percentage of a multi-element item (i.e., construct deck 50%) shall not be used. Separate activities shall be included to represent different elements of multi-element items (i.e., forms, reinforcing, concrete, etc.). Multiple activities with the same work description shall include a location as part of the description.
- c. Proposed activity duration shall be shown in whole days. The Contractor shall provide production rates to justify the activity duration. Schedule duration shall be contiguous and not interruptible.

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

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

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

Tabular Reports.

- a. The following tabular reports will be required with each schedule submission:
  1. Classic Gantt
  2. Pert with Time Scale
- b. The heading of each tabular report shall include, but not be limited to, the project name, contract number, Contractor name, report date, data date, report title and page number.
- c. Each of the tabular reports shall also contain the following minimum information for each activity.
  1. Activity ID
  2. Activity Description
  3. Original Duration (calendar day/working day)
  4. Remaining Duration (calendar day/working day)
  5. Activity Description
  6. Early Start Date
  7. Late Start Date
  8. Early Finish Date
  9. Late Finish Date
  10. Percent Complete
  11. Total Float
  12. Calendar ID
  13. Work performed by DBE Subcontractors and Trainees shall be shown in the Gantt Report.
- d. Reports shall be printed in color on 11 in. x 17 in. (minimum) size sheets. The Classic Gantt shall show all columns, bars, column headings at the top, time scale at the top and shall show relationships.

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

Updating.

- a. The Contractor shall not make any changes to the original duration, activity relationships, constraints, costs, add or delete activities, or alter the schedule's logic when updating the schedule.
- b. The originally approved baseline CPM schedule will be designated as the "Target Schedule" and shall only be changed based on a Change Order that extends the Contract duration. All updates will be plotted against the "Target Schedule." If the Contractor believes any such changes result in an overall increase in the contract time, the Contractor will immediately submit a request for extension of time along with the changed progress schedule and a detailed justification for the time extension request in accordance with Article 108.08.
- c. The updated information will include the original schedule detail and the following additional information:
  1. Actual start dates
  2. Actual finish dates
  3. Activity percent completion
  4. Remaining duration of activities in progress
  5. Identified or highlighted critical activities
- d. The Contractor shall submit scheduling documents in the same formats and number as indicated in this section.
- e. The Engineer shall withhold progress payments if the Contractor does not submit scheduled updates as required.
- f. Upon receipt of the CPM schedule update, the Engineer will review the schedule for conformance with the Contract Documents and degree of detail. The Engineer, within fourteen (14) Days after receipt of the Updated CPM Schedule and supporting documents, will approve or reject it with written comments. If the Updated CPM schedule is rejected, the Contractor must submit a Revised Updated CPM Schedule within seven (7) Days after the date of rejection.
- g. The updated progress schedule must accurately represent the Project's current status.

Contractor Changes to the Schedule.

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

- a. If the Contractor proposes to make any changes in the approved baseline CPM schedule, the Contractor shall notify the Engineer in writing, stating the reasons for the change, identifying each changed activity (including duration and interrelationships between activities) and providing a diskette of the proposed changed schedule. Every effort must be made by the Contractor to retain the original Activity ID numbers.
- b. The Engineer has the authority to approve or disapprove the proposed change in the baseline CPM schedule and shall do so in writing within ten (10) Days after receipt to the Contractor's submission. If the Engineer approves the change in the baseline. All monthly updates will be plotted against the new "Target Schedule".
- c. If the Engineer approves a portion of the change to the baseline CPM schedule, the Contractor shall submit a revised CPM schedule incorporating such change(s) within ten (10) Days after approval along with a written description of the change(s) to the schedule.

#### Recovery Schedule.

- a. The Contractor shall maintain an adequate work force and the necessary materials, supplies and equipment to meet the current approved baseline CPM schedule. In the event that the Contractor, in the judgment of the Engineer, is failing to meet the approved CPM schedule including any Contract milestones, the Contractor shall submit a recovery schedule.
- b. The recovery schedule shall set forth a plan to eliminate the schedule slippage (negative float). The plan must be specific to show the methods to achieve the recovery of time, i.e. increasing manpower, working overtime, weekend work, employing multiple shifts. All costs associated with implementing the recovery schedule shall be borne by the Contractor.
- c. Upon receipt of the CPM recovery schedule, the Engineer will review the schedule for conformance with the Contract Documents and degree of detail. The Engineer will approve the schedule or reject it with written comments within fourteen (14) Days of receipt of the recovery schedule and supporting documents. If the detailed CPM recovery schedule is rejected, the Contractor must submit a revised CPM recovery schedule within seven (7) Days of the date of rejection.

#### Revised Schedule.

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

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

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

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

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

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

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

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



INCENTIVE PAYMENT PLAN

The Contractor shall be entitled to an incentive payment for completing all required contract items to safely open all roadways in accordance with the requirements of the special provision "Completion Date Plus Guaranteed Working Days".

The incentive payment shall be paid at the rate of \$20,000 per calendar day for completion of work, as specified above, each day prior to the completion date, as indicated in TABLE A. The maximum payment under this incentive plan will be limited to 30 calendar days.

TABLE A

<u>Date Completed</u>	<u>Incentive Payment</u>	<u>Cooperative Payment</u>	<u>Date Completed</u>	<u>Disincentive Deduction</u>
October 29, 2006	*	*	October 29, 2006	*
October 28, 2006	\$20,000	\$20,000	October 30, 2006	\$20,000
October 27, 2006	\$40,000	\$40,000	October 31, 2006	\$40,000
October 26, 2006	\$60,000	\$60,000	November 1, 2006	\$60,000
October 25, 2006	\$80,000	\$80,000	November 2, 2006	\$80,000
October 24, 2006	\$100,000	\$100,000	November 3, 2006	\$100,000
October 23, 2006	\$120,000	\$120,000	November 4, 2006	\$120,000
October 22, 2006	\$140,000	\$140,000	November 5, 2006	\$140,000
October 21, 2006	\$160,000	\$160,000	November 6, 2006	\$160,000
October 20, 2006	\$180,000	\$180,000	November 7, 2006	\$180,000
October 19, 2006	\$200,000	\$200,000	November 8, 2006	\$200,000
October 18, 2006	\$220,000	\$220,000	November 9, 2006	\$220,000
October 17, 2006	\$240,000	\$240,000	November 10, 2006	\$240,000
October 16, 2006	\$260,000	\$260,000	November 11, 2006	\$260,000
October 15, 2006	\$280,000	\$280,000	November 12, 2006	\$280,000
October 14, 2006	\$300,000	\$300,000	November 13, 2006	\$300,000
October 13, 2006	\$320,000	\$320,000		**
October 12, 2006	\$340,000	\$340,000		
October 11, 2006	\$360,000	\$360,000		
October 10, 2006	\$380,000	\$380,000		
October 9, 2006	\$400,000	\$400,000		
October 8, 2006	\$420,000	\$420,000		
October 7, 2006	\$440,000	\$440,000		
October 6, 2006	\$460,000	\$460,000		
October 5, 2006	\$480,000	\$480,000		
October 4, 2006	\$500,000	\$500,000		
October 3, 2006	\$520,000	\$520,000		
October 2, 2006	\$540,000	\$540,000		
October 1, 2006	\$560,000	\$560,000		
September 30, 2006	\$580,000	\$580,000		
September 29, 2006	\$600,000	\$600,000		

\* The completion date specified in the contract.

\*\*The disincentive deduction shall be charged until work is completed.

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

Should the Contractor be delayed in the commencement, prosecution or completion of the work for any reason, there shall be no extension of the incentive payment completion date even though there may be granted an extension of time for completion of the work. No incentive will be paid if the Contractor fails to complete the work before the specified completion date. Failure by the Contractor to complete all work as specified above before October 29, 2006 shall release and discharge the State, the Department and all of its officers, agents and employees from any and all claims and demands for payment of any incentive amount or damages arising from the refusal to pay an incentive amount.

The Contractor and the Department recognize that the prosecution of work by other contractors may not be effectively under the control of the Contractor; however, it is also recognized and agreed that the nature of the project is such that use of the highway cannot safely and efficiently begin until all sections are completed.

Should work under this contract, as described above, and all work on the Department Contracts,  
Section: (2425 & 2626) R-2  
Section: (0203.1 & 0304) R-6  
Section: 2626.2-R-2

be completed, the Contractor shall be entitled to an additional \$20,000 as a cooperative incentive payment for each calendar day of completion prior to October 29, 2006. No cooperative incentive payment will be made solely because the Contractor has finished early and no cooperative incentive payment will begin to accrue until the date of completion of work under this contract, as described above, and until the date of completion of all work on the Department Contract/s,

Section: (2425 & 2626) R-2  
Section: (0203.1 & 0304) R-6  
Section: 2626.2-R-2

No cooperative incentive payment will be made should any work not be completed before October 29, 2006, regardless of any extension of time. Cooperative incentive payments shall in no event be paid for more than 30 calendar days.

#### FAILURE TO COMPLETE THE WORK ON TIME

Should the Contractor fail to complete the work on or before the completion date or dates as specified in the Special Provision for "Completion Date Plus Guaranteed Working Days", or within such extended time as may have been allowed by the Department, the Contractor shall

be liable to the Department in the amount of \$20,000, not as a penalty but as liquidated damages, for each calendar day or a portion thereof of overrun in the contract time or such extended time as may have been allowed.

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

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

#### COMPLETION DATE PLUS GUARANTEED WORKING DAYS

The Contractor shall complete all contract items and safely open all roadways to traffic by 11:59 pm, October 29, 2006, except as specified herein.

The Contractor will be allowed to complete all clean-up work, punch list items, and landscaping within 20 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 during the allowable hours as provided in the Special Provision "Keeping the Expressway Open to Traffic" at the discretion of the Engineer.

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

#### COORDINATION WITH ADJACENT AND/OR OVERLAPPING CONTRACTS

This contract abuts and/or overlaps with other concurrent and future contracts as listed below. Each contract includes work items requiring close coordination between the various Contractors regarding the sequence and timing for execution of work items. This contract also includes critical work items that affect the future staging of traffic and the completion dates of other contracts. These critical items along with their completion dates are listed after each contract.

1. Contract #62105 - I-80 / I-94 from IL 394 to west of Torrence Ave. Mainline paving and bridge reconstruction during 2006.  
Critical Items affecting the above contract:
  - A. The existing outside piers, abutments, and embankment for the IL 394 SB Bridge shall be removed by mid-April 2006.
  - B. The existing center pier of the IL 394 SB Bridge shall be removed and the proposed center pier constructed by mid-August 2006.
2. Illinois State Toll Highway Authority (ISTHA) Project – I-80/294 from 159<sup>th</sup> St. to IL 394. Mainline paving and bridge reconstruction project.  
Critical Item affecting the above contract
  - A. None
3. Contract #62353 - IL 394 NB bridge over I-94 EB and Thorn Creek, and I-80/294 EB ramp to IL 394/ I-94 NB (Ramp J).  
Critical Items affecting the above contract:  
None
4. Contract #62854 - I-80/94 WB to IL 394 SB ramp (Ramp G) over I-94 EB, IL 394 NB and SB, and I-80/294 EB and WB. Bridge and bridge approach reconstruction project.  
Critical Items affecting the above contract:
  - A. The existing outside piers, abutments, and embankment for the IL 394 SB Bridge shall be removed by mid-April 2006.
5. Contract #62898 – Beam fabrication contract for the following bridges: IL 394 SB over I-80, IL 394 SB over Thorn Creek, I-94 EB over Thorn Creek.  
Critical Items affecting the above contract
  - A. See the Special Provision Furnishing Structural Steel
6. Contract #62664 Highway lighting and surveillance  
Critical Items affecting the above contract:
  - A. None

The following contracts also include critical work items that affect the staging of traffic and the completion dates of this Contract #62108. These critical items are listed after each contract.

1. Contract #62105 - I-80 / I-94 from IL 394 to west of Torrence Ave. Mainline paving and bridge reconstruction during 2006.
  - a. The I-80 EB and WB Stage 1 work needs to be completed and traffic shifted onto the new pavement under the IL 394 SB Bridge prior to starting work on the center pier this bridge. The estimated completion date for this work is June 30, 2006.
2. Contract #62353 - IL 394 NB bridge over I-94 EB and Thorn Creek, and I-80/294 EB ramp to IL 394/ I-94 NB (Ramp J)
  - a. The erection of the Ramp J girders, which may also require shoring towers, may affect the progress of the work under this bridge.

3. Contract #62854 – I-80/94 WB to IL 394 SB ramp (Ramp G) over I-94 EB, IL 394 NB and SB, and I-80/294 EB and WB. Bridge and bridge approach reconstruction project.
  - a. Pier #7 of this Ramp G needs to be completed prior to starting work on the north abutment of the IL 394 SB Bridge over I-80.
  - b. The erection of the Ramp G girders, which may also require shoring towers, will affect the progress of the work under this bridge.

Add the following paragraph to the beginning of Article 105.08. “The Contractor shall identify all such work items (including the critical items listed above) at the beginning of the contract and coordinate the sequence and timing for their execution and completion with the other Contractors through the Engineer. All of these work items shall be identified as separate line items in the Contractor’s proposed Construction Progress Schedule. Additional compensation or the extension of contract time will not be allowed for the progress of the work items affected by the lack of such coordination by the Contractor”.

#### TRAFFIC CONTROL PLAN

Traffic control shall 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, the Traffic Specifications and the Special Provisions contained herein.

Special attention is called to Articles 107.09 and 107.14 and Section 701 of the Standard Specifications and the following Highway Standards, Details, Quality Standard for Work Zone Traffic Control Devices, Recurring Special Provisions and Special Provisions contained herein, relating to traffic control.

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

#### STANDARDS:

701101	701400	701401	701402	701411	701416
	701426	701446	702001	704001	

#### DETAILS:

- TC-8, Freeway Entrance and Exit Ramp Closure Details
- TC-9, Center Lane Closure, Two Lane Weave and Shoulder Lane
- TC-12, Multi- Lane Freeway Pavement Marking
- TC-16, Pavement Marking letters and Symbols for Traffic Staging
- TC-17, Traffic Control Details for Freeway Shoulder Closures and Partial Ramp Closures
- TC-18, Signing for Flagging Operations at Work Zone Openings

Maintenance of Traffic Plans

SPECIAL PROVISIONS:

- Work Restrictions
- Traffic Control Plan
- Keeping the Expressway Open to Traffic
- Failure to Open the Traffic Lanes to Traffic
- Traffic Control and Protection (Special)
- Traffic Control and Protection (Expressways)
- Traffic Staging
- Staging and Interchange Restrictions
- Traffic Control Surveillance (Expressways)
- Traffic Control for Work Zone Areas
- Traffic Control and Protection for Temporary Detour
- Roadway Cleaning (Special)
- Maintenance of Roads
- Temporary Information Signing
- Accident Investigation Sites
- Traffic Control Deficiency Deduction
- Work Zone Public Information Signs
- Work Zone Speed Limit Signs
- Work Zone Traffic Control Devices
- Portable Changeable Message Signs
- Night Time Inspection of Roadway Lighting

KEEPING THE EXPRESSWAY OPEN TO TRAFFIC

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

The Contractor shall request and gain approval from the Illinois Department of Transportation's Expressway Traffic Operations Engineer (847-705-4155) twenty-four (24) hours in advance of all daily lane, ramp and shoulder closures and seventy-two (72) hours in advance of all permanent and weekend closures on all Freeways and/or Expressways in District One.

**Temporary Lane Closures will only be permitted during the hours listed in the tables below:**

**LOCATION: I-80/94 Kingery (3-lane sections) I-294 to Calumet Ave. (US 41)**

WEEKNIGHT	TYPE OF CLOSURE	ALLOWABLE LANE CLOSURE HOURS		
SUNDAY THRU THURSDAY	ONE LANE	9:00 PM	TO	5:00 AM
	TWO LANES	11:00 PM	TO	5:00 AM
FRIDAY	ONE LANE	10:00 PM (FRI)	TO	10:00 AM (SAT)
	TWO LANES	12:01 AM (SAT)	TO	7:00 AM (SAT)
SATURDAY	ONE LANE	9:00 PM (SAT)	TO	11:00 AM (SUN)
	TWO LANES	11:00 PM (SAT)	TO	9:00 AM (SUN)

**LOCATION: I-94 Bishop Ford (3-lane sections) 159<sup>th</sup> St. to Thorn Creek**

WEEKNIGHT	TYPE OF CLOSURE	ALLOWABLE LANE CLOSURE HOURS		
SUNDAY THRU THURSDAY	ONE LANE	8:00 PM	TO	5:00 AM
	TWO LANES	11:00 PM	TO	5:00 AM
FRIDAY	ONE LANE	9:00 PM (FRI)	TO	10:00 AM (SAT)
	TWO LANES	12:01 AM (SAT)	TO	7:00 AM (SAT)
SATURDAY	ONE LANE	8:00 PM (SAT)	TO	11:00 AM (SUN)
	TWO LANES	11:00 PM (SAT)	TO	9:00 AM (SUN)

**LOCATION: IL 394 South of I-80**

WEEKNIGHT	TYPE OF CLOSURE	ALLOWABLE LANE CLOSURE HOURS		
SUNDAY THRU THURSDAY	ONE LANE	8:00 PM	TO	5:00 AM
	ONE LANE	9:00 PM (FRI)	TO	10:00 AM (SAT)
SATURDAY	ONE LANE	8:00 PM (SAT)	TO	11:00 AM (SUN)

**LOCATION: I-80/94 & I-94 (2-lane sections)**

One lane closures in these sections will only be permitted during the allowable hours that are listed for two lane closures in the above tables.

**LOCATION: IL 394 SB and NB during Phase III (2006)**

All work, which will require the stopping of traffic in the only open lane, shall be scheduled and performed in accordance with the paragraph on full expressway closures.

**LOCATION: I-94 EB (SB) and WB (NB) during Phase III (2006)**

One lane closures on this expressway during construction will only be permitted during the allowable hours that are listed for two lane closures in the above tables.

Shoulder closures and partial non-interstate ramp closures, which are not shown on the maintenance of traffic plan sheets, will not be permitted during the hours of 5:00 AM to 9:00 AM and 3:00 PM to 7:00 PM. Monday thru Friday.

Full expressway closures will only be permitted for a maximum of 15 minutes at a time, during the low traffic periods of 1:00 AM to 5:00 AM., Monday through Friday and 1:00 AM to 7:00 AM on Sunday. During full expressway closures the Contractor is required to close off all lanes except one, using a District One Freeway Standard Closure. Police forces shall be notified and requested to close the remaining lane at which time the work item may be removed or set in place. The District One Traffic Operations Department shall be notified (847-705-4155) seventy-two hours in advance of the proposed road closure and will coordinate the closure operations with police forces.

All stage changes, which require the stopping and/or the pacing of traffic, shall take place during the allowable hours for Full Expressway Closures and shall be approved by the Department.

All daily lane closures shall be removed during adverse weather conditions such as rain, snow, and/or fog and as determined by the Engineer.

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

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

The Contractor will be required to cooperate with all other contractors when erecting lane closures on the expressway. All lane closures within one (1) mile of each other in one direction of the expressway shall be on the same side of the pavement and any lane closure within a half (1/2) mile of each other should be connected. The maximum length of any lane closure on the project and combined with any adjacent projects shall be three (3) miles. Gaps between successive permanent lane closures shall be no less than two (2) miles in length.

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

#### FAILURE TO OPEN THE TRAFFIC LANES TO TRAFFIC

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



One Lane Blocked = \$ 2,000  
Two Lanes Blocked = \$ 5,000

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

#### TRAFFIC CONTROL AND PROTECTION (SPECIAL)

Specific traffic control plan details and Special Provisions have been prepared for this contract.

**Method of Measurement:** All traffic control (excluding traffic control on expressways where the special provision for "Traffic Control and Protection (Expressways)" has been included in the contract and except traffic control 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. Traffic control pavement markings will be measured per meter (foot).

**Basis of Payment:** 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.

All traffic control on expressways shall be paid for in accordance with the special provision for "Traffic Control and Protection (Expressways)" when included in the contract.

SHORT TERM PAVEMENT MARKING, TEMPORARY PAVEMENT MARKING and PAVEMENT MARKING TAPE TYPE III will be paid for separately.

#### TRAFFIC CONTROL AND PROTECTION (EXPRESSWAYS)

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

**General:** The governing factor in the execution and staging of work for this project is to provide the motoring public with the safest possible travel conditions on the expressway through the construction zone. The Contractor shall arrange his operations to keep the closing of lanes and/or ramps to a minimum.

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

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

**Signs:** Prior to the beginning of construction operations, the Contractor will be provided a sign log of all existing signs within the limits of the construction zone. The Contractor is responsible for verifying the accuracy of the sign log. Throughout the duration of this project, all existing traffic signs shall be maintained by the Contractor. All provisions of Article 107.25 of the Standard Specifications shall apply except the third paragraph shall be revised to read: "The Contractor shall maintain, furnish, and replace at his own expense, any traffic sign or post which has been damaged or lost by the Contractor or a third party. The Contractor will not be held liable for third party damage to large freeway guide signs".

**Exit Gore Signs:** The exit gore signs as shown in Standard 701411 shall be a minimum size of 1.2m (48 inch) by 1.2m (48 inch) with 300mm (12 inch) capital letters and a 500mm (20inch) arrow.

**Rough Grooved Surface Signs:** The Contractor shall furnish and erect "Rough Grooved Surface" signs (W8-1107) on both sides of the expressway, 300m (1000') in advance of any milled area. These signs shall be erect on all ramps that enter the milled area. All signs shall be mounted at a minimum clearance height of 2.1m (7').

**Drums/Barricades:** Check barricades shall be placed in work areas perpendicular to traffic every 300m (1000'), one per lane and per shoulder, to prevent motorists from using work areas as a traveled way. Check barricades shall also be placed in advance of each open patch, or excavation, or any other hazard in the work area, the first at the edge of the open traffic lane and the second centered in the closed lane. Check barricades, either Type I or II, or drums shall be equipped with the flashing light.

To provide sufficient lane widths (3m (10') minimum) for traffic and also working room, the Contractor shall furnish and install vertical barricades with steady burn lights, in lieu of Type II or drums, along the cold milling and asphalt paving operations. The vertical barricades shall be placed at the same spacing as the drums.

**Vertical Barricades:** Vertical barricades shall not be used in lane closure tapers, lane shifts, and exit ramp gores. Also, vertical barricades shall not be used as patch barricades or check barricades. Special attention shall be given, and ballast provided per manufacture's specification, to maintain the vertical barricades in an upright position and in proper alignment.

**Temporary Concrete Barrier Wall:** Prismatic barrier wall reflectors shall be installed on both the face of the wall next to traffic and the top of all temporary concrete barrier wall. These reflectors shall be placed at 15m (50 foot) centers along tangents and at 7.5m (25 foot) centers on curves. The color of these reflectors shall match the color of the edgelines (yellow on the left and crystal or white on the right). If the base of the temporary concrete barrier wall is 300mm(12 inches) or less from the travel lane, then the wall shall also have a 150mm (6 inch) wide temporary pavement marking edgeline (yellow on the left and white on the right).

**Method of Measurement:** This item of work will be measured on a lump sum basis for furnishing, installing, maintaining, replacing, relocating, and removing traffic control devices required in the plans and these Special Provisions. Traffic control and protection required under Standards 701101, 701400, 701401, 701402, 701411, 701416, 701426, 701446, and 701501 will be included with this item.

**Basis of Payment:**

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

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

$$\text{Adjusted contract price} = .25P + .75P [1+(X-0.1)]$$

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

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

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

- b.) The Engineer may require additional traffic control be installed in accordance with standards and/or designs other than those included in the plans. In such cases, the standards and/or designs will be made available to the Contractor at least one week in advance of the change in traffic control. Payment for any additional traffic control required will be in accordance with Article 109.04 of the Standard Specifications.
- c.) Revisions in the phasing of construction or maintenance operations, requested by the Contractor, may require traffic control to be installed in accordance with standards and/or designs other than those included in the plans. Revisions or modifications to the traffic control shown in the contract shall be submitted by the Contractor for approval by the Engineer. No additional payment will be made for a Contractor requested modification.
- d.) Temporary concrete barrier wall and end sections will be measured and paid for according to Section 704.

Sand module impact attenuators, temporary bridge rail, and temporary rumble strips will be paid for separately.

All temporary pavement markings will be measured and paid for according to Section 703 and Section 780.

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

Temporary pavement marking at the base of the temporary concrete barrier wall will be measured and paid for as TEMPORARY PAVEMENT MARKING, 150mm (6").

All prismatic barrier wall reflectors will be measured and paid for according to Section 782.

#### TRAFFIC STAGING

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

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

Pre-Stage A – IL 394 NB

Traffic: Close right lane on IL 394 NB from south end of project to 170<sup>th</sup> St.. Signing and barricading shall be according to State Standards 701400, 701401 and 701411. Merge IL 394 NB traffic with the two lanes from I-94 WB (NB). Provide a 1000-foot merging distance and sign according to Std. 701411.

Work: Revise pavement markings.

Pre-Stage A - I-94 WB (NB)

Traffic: Shift I-94 WB (NB) traffic to the right lane and right shoulder from south of 170<sup>th</sup> St. to 159<sup>th</sup> St. Signing and barricading shall be according to TC-9 and as shown in the plans (MOT, Stage 1). Left lane will remain closed from north of 170<sup>th</sup> St. to 159<sup>th</sup> St.. Lane closures will be needed on the night of the stage change to revise the pavement markings along I-94 WB (NB). Signing and barricading shall be according to State Standards 701400, 701401, 701411, and 701446.

Work: Revise pavement markings and install temporary signing. Begin installing the temporary concrete barrier, which divides traffic, and begin installing reflectors and glare screen.

Pre-Stage B – IL 394 NB

Traffic: Shift IL 394 NB traffic to right lane from the south project limit to 170<sup>th</sup> St., as shown in the plans (MOT, Stage 1).

Work: Revise the pavement markings and prepare crossovers. Install temporary signing. Install the temporary concrete barrier, which divides traffic, and install reflectors and glare screen.

Pre-Stage A - I-94 EB (SB)

Traffic: Close I-94 EB (SB) left lane from north of 159<sup>th</sup> St. to 170<sup>th</sup> St..

Work: Revise the pavement markings and prepare crossovers. Install temporary signing.

Pre-Stage A – IL 394 SB

Traffic: Close IL 394 SB left lane from I-80 to south end of project.

Work: Revise the pavement markings and prepare crossovers. Install temporary signing.

Stage 1 – I-94 EB (SB) & IL 394 SB

Traffic: Shift I-94 EB (SB) traffic to the left two southbound lanes from 159<sup>th</sup> St. to 170<sup>th</sup> St., route IL 394 SB traffic to the left IL 394 NB lane from 170<sup>th</sup> St. to the south end of the project, and shift I-94 EB (SB) traffic back to the SB lanes onto the temporary

runaround as shown in the plans (MOT, Stage1). Additional lane closures will be needed, from north of 170<sup>th</sup> St. to Thorn Creek, on the night of the stage change to revise the pavement markings on I-94 at 170<sup>th</sup> St. and at the I-94/IL 394 interchange. Signing and barricading shall be according to State Standards 701400, 701401, and 701411.

Work: Begin reconstructing the southbound lanes and the southbound bridges over I-80 and the railroad.

Stage 2 – At Ramps I-80 EB to IL 394 SB & 159<sup>th</sup> EB to I-94 EB (SB)

Traffic: Switch ramp traffic across proposed pavement. Signing and barricading shall be according to the plans.

Work: Complete the paving of the IL 394 SB lanes and the I-94 EB (SB) lanes.

Stage 2 – On I-94 EB (SB)

Traffic: Shift the two I-94 EB (SB) lanes back onto the newly constructed eastbound lanes and across the proposed Thorn Creek Bridge, south of 170<sup>th</sup> St.. Close the ramp I-94/394 SB to I-80/294 WB (Ramp F). MOT should be as shown in the plans for Stage 2. Lane closures will be needed on the night of the stage change to revise the pavement markings along I-94 EB (SB). Signing and barricading shall be according to State Standards 701400, 701401, 701411, and 701446.

Work: Finish installing embankment for IL 394 SB and proposed Ramp F. Complete the paving of the IL 394 SB lanes and Ramp F. Complete the paving of the right I-94 EB lane, north of the bridge over I-80.

Upon completion of all southbound work, the Contractor shall move traffic back to the final conditions as shown on the plans in the reverse order of setting up. The proposed southbound left lane remains closed, as shown in the plans (MOT, Stage 3), until the crossovers are removed and the concrete barrier is installed.

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

## STAGING AND INTERCHANGE RESTRICTIONS

### Ramp Closures

Prior to and after stage construction, temporary closures of ramps at the interchange between I-80/94 and Illinois Route 394 and the interchange between I-94 and 159<sup>th</sup> St. will only be permitted at night during the allowable hours listed for two-lane closures, as stated in the Special Provision Keeping the Expressway Open to Traffic. These hours also apply to temporary closures of the ramps, which are shown as open on the Maintenance of Traffic plan sheets.

For all ramp closures the Contractor shall furnish and install "DETOUR with arrow" signs (900mm x 900mm) and the appropriate shield (900mm) as directed by the Engineer. The cost of these signs shall be included in the contract price for TRAFFIC CONTROL AND PROTECTION, EXPRESSWAYS (6 signs maximum per closure).

The Contractors shall coordinate the work such that no two (2) adjacent entrance or exit ramps in one direction of the expressway are closed at the same time. The closing of ramps, which are used as the detour route for other roadways or ramps, is prohibited.

Should the Contractor fail to completely open, and keep open, the ramps to traffic in accordance with the above limitations, the Contractor shall be liable to the Department for liquidated damages as noted under the Special Provision, "Failure to Open Traffic Lanes to Traffic".

#### Special Ramp Closure Restrictions

Under the Maintenance of Traffic (MOT) Plan for this project, the Contractor will be permitted to close the following ramps for extended time periods as noted below:

1. 159<sup>th</sup> St. EB ramp to I-94 EB (SB) - The Contractor will be permitted to close this ramp once for a period of 14 consecutive calendar days, to complete the I-94 EB (SB) mainline pavement across the ramp. Traffic should be detoured around the three loop ramps at the 159<sup>th</sup> St. interchange. Detour signing shall be as noted above for all ramp closures.
2. I-94 / IL 394 SB to I-80/294 WB (Ramp F) - The Contractor will be permitted to close Ramp F once for a period of 90 consecutive calendar days, starting after the I-94 EB Bridge over Thorn Creek is completed and open to traffic, to finish constructing the proposed Ramps F and the proposed IL 394 SB pavement.

The Contractor shall submit to the Department in writing the starting date for each of the extended ramp closures. Approval from the Department is required prior to closing the ramp. Should the Contractor fail to complete the work and reopen the ramp to traffic within the allowable time limit, the Contractor shall be liable to the Department for liquidated damages as noted under the Special Provision, "Failure to Open Traffic Lanes to Traffic" under one lane blocked.

#### TRAFFIC CONTROL SURVEILLANCE (EXPRESSWAYS)

The Contractor shall provide a person with a vehicle to survey, inspect and maintain all temporary traffic control devices when a lane is closed to traffic and when hazards are present adjacent to or within 3m (10 foot) of the edge of pavement for more than 24 hours.

The surveillance person is required to drive through the project, to inspect all temporary traffic control devices, to correct all traffic control deficiencies, if possible, or immediately contact someone else to make corrections and to assist with directing traffic until such corrections are

made, at intervals not to exceed 4 hours. This person shall list every inspection on an inspection form, furnished by the Engineer, and shall return a completed form on the first working day after the inspections are made.

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

**Method of Measurement:** Traffic Control Surveillance will be measured on calendar day basis. One calendar day is equal to a minimum of six (6) inspections. The inspections shall start within 4 hours after the lane is closed to traffic or a hazard exists within 3m (10 foot) from the edge of pavement and shall end when the lane closure or hazard is removed.

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

#### TRAFFIC CONTROL FOR WORK ZONE AREAS

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

The Contractor shall plan his trucking operations into and out of the work zone as well as on to and off the expressway to maintain adequate merging distance. Merging distances to cross all lanes of traffic shall be no less than 800m (1/2 mile). This distance is the length from where the trucks enter the expressway to where the trucks enter the work zone. It is also the length from where the trucks exit the work zone to where the trucks exit the expressway. The stopping of expressway traffic to allow trucks to change lanes and/or cross the expressway is prohibited.

Failure to comply with the above requirements will result in a Traffic Control Deficiency charge. The deficiency charge will be calculated as outlined in the special provision for "**TRAFFIC CONTROL DEFICIENCY DEDUCTION**". The Contractor will be assessed this daily charge for each day a deficiency is documented by the Engineer.



TRAFFIC CONTROL AND PROTECTION FOR TEMPORARY DETOUR  
Effective: September 1, 1995, Revised: January 1, 1997

When traffic is to be directed over a detour route, the Contractor shall furnish, erect, maintain and remove all applicable traffic control devices along the detour route.

Furnishing, erecting, maintaining and removing traffic control devices along detour routes, in accordance with the details shown in the plans, will be paid for at the contract unit price each for TRAFFIC CONTROL AND PROTECTION FOR TEMPORARY DETOUR.

PRINCE DRIVE CLOSURE RESTRICTIONS

Under the Maintenance of Traffic (MOT) plan for this project the Contractor will be permitted to close Prince Drive in the area noted in the plans for the extended time period noted below.

The contractor will be permitted to close Prince Drive for a maximum period of 60 consecutive calendar days to finish all work associated with constructing structure 016-C012. The road must be reopened to traffic once the work is complete even if the 60 days have not expired.

The contractor shall submit to the department in writing the starting date for the Prince Drive closure. Approval from the Department is required prior to closing Prince Drive. Signs advertising the closure of Prince Drive should be posted a minimum of two weeks prior to the closure. Should the Contractor fail to complete the work and reopen Prince Drive to traffic within the allowable time limit, the Contractor shall be liable to the Department for liquidated damages as noted under the Special Provision, "Failure to Open Prince Drive on Time".

FAILURE TO OPEN PRINCE DRIVE ON TIME

Should the Contractor fail to complete the work within the time allowable as specified in the Special Provision "Prince Drive Closure Restrictions", or within such extended time as may have been allowed by the Department, the Contractor shall be liable to the Department in the amount of \$1650, not as a penalty but as liquidated damages, for this calendar day or portion thereof of overrun in the allowable time period for this closure.

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

TUBULAR TRAFFIC SIGN POST

**Description:** This work shall consist furnishing and installing Tubular Traffic Sign Posts into the top of the concrete barrier at the locations shown in the plans.

**Materials:** The traffic posts shall be galvanized inside and out, and electrostatically powder coated with a high visibility yellow coating. The post shall be welded steel tubing conforming to A.S.T.M. A-513 specifications made from hot dipped galvanized steel sheets conforming to A.S.T.M. specifications A-525 or the tube may be hot dipped galvanized to obtain a zinc weight of 1.25 oz/ sq. ft. of sheet which is a G-90 commercial weight. The high visibility coating shall be applied over the galvanized post to a minimum dry mil thickness of 3.0 mils. The tubing shall be properly cleaned and pretreated to achieve the required coating properties for Pozitube traffic posts.

**Installation:** The contractor shall core a hole or embed a sleeve in the top of the concrete barrier that is of sufficient diameter to accommodate the traffic post and wedge. The post should be installed in the hole and the wedge should be driven next to the post to keep the post vertical. The diameter and depth of the hole and the size of the wedge with a pulling hole shall be according to the manufacturer's recommendations for the POZ-LOC Sign Post Socket System and according to plan details.

Holes, which are cored in the top of structural steel walls, shall be done in a manner to avoid damaging the reinforcing steel in the wall.

**Basis of Payment:** This work will be paid for at the contract unit price per each for **TUBULAR TRAFFIC SIGN POST**, which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

#### ORNAMENTAL FENCE

**Description.** This work shall consist of constructing concrete foundation, steel posts, rails, accessories and appurtenant work as shown in the contract details for ornamental fence.

**Installation.** Concrete foundations shall be poured prior to reconstruction of the surrounding areas. All concrete foundation work shall be performed in accordance with Article 503.14 of the Standard Specifications. Foundations shall be 18" diameter, and cast in place using a sonnet tube or similar forming device. The finished concrete elevations shall be nominally 1" below the finished bituminous surface elevation of the adjacent bike path, such that the 1-1/2" mortar bed beneath the steel base plates will protrude only 1/2" above the finished asphalt, and one full inch (1") of bituminous surface course will cover the top of the concrete foundations.

Steel base plates shall be centered atop the foundation, inspected, stored, and erected in accordance with Section 505 of the Standard Specifications. Upon material approval, the railings and posts shall be constructed as shown in the detail drawings, and in accordance with all applicable articles of Section 509 of the Standard Specifications.

All rails and posts shall be straight and true to line, without kinks, bends or warps, and shall be neatly cut to fit in accordance with the dimensions shown on the plan drawings. All welds shall be ground smooth. The finished steel railings, including all bolts steel plates, caps and accessories shall be cleaned and painted with two coats of black paint as approved by the Village in accordance with Section 506.

**Basis of Payment.** The cost for this work will be measured per Foot for ORNAMENTAL FENCE, and shall include all materials, labor and equipment required to construct all rails, posts, steel plates, caps, anchor bolts, and accessories required for a complete installation, as well as all welding, cleaning and painting. The cost for excavation, forming and pouring the concrete foundations shall be paid incidental to this work.

**ROADWAY CLEANING (SPECIAL)**

This work shall consist of the pickup, removal and satisfactory disposal of all sand, stones, debris, refuse and other similar rubbish which has accumulated on the highway areas hereinafter described as the areas to be cleaned. After each cleaning cycle all areas must present an appearance which is completely satisfactory to the Engineer. Adequate equipment and hand labor is to be provided to accomplish the cleaning cycles.

Limits of Cleaning for One Cycle. The Contractor shall clean all hard surfaces and will include ramps, curbs, gutters, median gores, shoulders, wheel guards, walks, bridges and traveled lanes on the following:

1. IL 394 in both directions from Glenwood/Dyer Rd. to I-94 (Bishop Ford).
2. I-94 (Bishop Ford) in both directions from where I-80 and I-94 meet to 159<sup>th</sup> St.
3. The following ramps:
  - a. IL 394 NB to I-80 EB
  - b. I-80/294 EB to IL 394 SB
  - c. IL 394 SB to I-80/294 WB
  - d. I-80 WB to IL 394 SB
  - e. I-80/294 EB to IL 394 NB & I-94 WB (NB)
  - f. I-94 WB (NB) to 159<sup>th</sup> ST WB
  - g. I-94 EB (SB) to 159<sup>th</sup> ST. EB
  - h. 159<sup>th</sup> ST. WB to I-94 EB (SB)
  - i. 159<sup>th</sup> St. EB to I-94 EB (SB)
4. All Accident Investigation Sites located on the above roadways.

**Cleaning Cycle:** The initial cleaning cycle of the expressways shall commence on or before March 4<sup>th</sup>, 2006 and be completed prior to switching southbound traffic onto the northbound lanes. Subsequent cleaning cycles shall be performed every two (2) weeks or as directed by the Engineer. Each subsequent cleaning cycle shall be completed within three (3) days.

**General Requirement:** The Contractor is hereby informed and shall understand that sufficient equipment shall be provided and maintained so that the cleaning cycles are satisfactorily completed within the allotted time.

Personnel shall be made available, with hand tools, to clean areas not accessible to sweeping units, such as on top of medians; also to loosen tightly compacted dirt in curb lines. All bridges located within the specific limits of the expressways shall be cleaned by utilizing vacuum type

sweepers or other approved equipment and methods that will prevent dirt and debris from being deposited into the drainage structures. This work shall only be conducted during the contract specified times that allow lane closures and all traffic control will be in accordance with Standard 701426.

**Extra Work:** The Contractor shall have equipment and personnel available to assist IDOT emergency forces to clear debris from the roadway after the accident or incident within the cleaning limits. This work will be paid for according to Article 109.04 of the Standard Specifications. Upon notification from the Department the Contractor will have a maximum of one half hour to respond to the request for assistance from the Engineer otherwise the deduction specified under TRAFFIC CONTROL DEFICIENCY DEDUCTION will be imposed.

**Method of Measurement:** The satisfactory completion of all cleaning within the entire limits will be the standard measurement of payment for each cycle.

**Basis of Payment:** This work will be paid for at the contract unit price each for ROADWAY CLEANING (SPECIAL) which price includes all labor, equipment and supplies necessary to perform the above work.

#### MAINTENANCE OF ROADS

Effective: September 30, 1985 Revised: November 1, 1996

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

Traffic control and protection for maintenance of roadways will be provided by the Contractor as required by the Engineer.

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

#### TEMPORARY INFORMATION SIGNING

**Description:** This work shall consist of furnishing, installing, maintaining, relocating for various states of construction and eventually removing temporary informational signs. Included in this item may be ground mounted signs, signs on temporary stands, truss mounted signs, bridge mount signs, and overlay sign panels which cover portions of existing signs.

**Materials:** Materials shall be according to the following Articles of Section 1000-Materials:

	<u>Item</u>	<u>Article/ Section</u>
a.)	Sign Base (Notes1 & 2)	1090
b.)	Sign Face (Note 3)	1091
c.)	Sign Legends	1092
d.)	Sign Supports	1093
e.)	Overlay Panels Note 4)	1090.01

Notes 1. The Contractor may use 16mm (5/8 inch) instead of 19mm (3/4 inch) thick plywood.

Note 2. Type A sheeting can be used on the plywood base.

Note 3. All sign faces shall be Type A except all orange signs shall meet the requirements of Article 1084.02(b)

Note 4. The overlay panels shall be 2mm (0.08 inch) thick.

### **GENERAL CONSTRUCTION REQUIREMENTS**

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

Signs which are placed along the roadway and/or within the construction zone shall be installed according to the requirements of Article 702.05 and Article 720.04. The signs shall be 2.1m (7') above the near edge of the pavement and shall be a minimum of 600mm (2') beyond the edge of the paved shoulder. A minimum of 2 posts shall be used.

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

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

**Method of Measurement:** This work shall be measured for payment in square meters (square feet) edge to edge (horizontally and vertically).

All hardware, posts, supports, bases for ground mounted signs, connections, which are required for mounting these signs will be included as part of this pay item.

**Basis of Payment:** This work shall be paid for at the contract unit price per square meter (square feet) for TEMPORARY INFORMATION SIGNING, which price shall be full compensation for all labor, equipment and materials required for performing the work as herein specified.

**SUPER-HIGH EFFICIENCY FULL CUBE RETROREFLECTIVE SHEETING**

**Description:** This work shall consist of providing and applying flexible colored Super-High Efficiency Full Cube Retroreflective Sheeting (DG cubed Series 4000, ASTM XI sheeting) or equivalent sheeting to all type 3 sign panels. The sheeting shall consist of full cube prismatic lens elements with a distinctive interlocking diamond seal pattern visible from the face of a smooth surface. The work shall be done in accordance with this special provision, the applicable portions of Section 720 and Section 1091 of the Standard Specifications and/or as directed by the Engineer.

**Materials:** The sheeting color shall conform to the latest appropriate standard color tolerance chart issued by the U.S. Department of Transportation, Federal Highway Administration and to the daytime color requirements of ASTM D 4956.

The retroreflective sheeting shall have the minimum brightness values shown in Table 1 (below) for the type and color of material specified. The reflective intensity shall be determined by the procedures described in ASTM E 810. In determining the Coefficient of Retroreflection the observation angles shall be 0.2°, 0.5°, 1.0° and the entrance angles shall be -4° and 30°.

Table I – Extracted from ASTM D 4956 Proposed Type XI  
 Minimum Coefficient of Retroreflection  
 (cd/lux/m<sup>2</sup>)

White	-4	30
0.2	570	215
0.5	400	150
1.0	120	45

Blue	-4	30
0.2	45	28
0.5	32	16
1.0	9	6

Yellow	-4	30
0.2	425	160
0.5	300	112
1.0	90	34

FYG	-4	30
0.2	455	170
0.5	320	120
1.0	96	36

Red	-4	30
0.2	114	43
0.5	80	30
1.0	24	9

FY	-4	30
0.2	340	130
0.5	240	90
1.0	72	27

Green	-4	30
0.2	57	21
0.5	40	15
1.0	12	4.5

FO	-4	30
0.2	200	75
0.5	140	52
1.0	42	16

The reflective sheeting shall be processed and applied directly to properly prepared sign bases according to the sheeting manufacturer's recommended procedures. The reflective material shall be weather resistant and, following cleaning, shall show no appreciable discoloration, cracking, crazing, blistering, or dimensional change and shall meet the requirements shown in the above table when exposed to the corresponding hours of accelerated weathering as described under Testing.

The sheeting shall comply with the requirements contained in ASTM D 4956-04 sections 6.6, 6.8 and 6.9 for shrinkage, liner removal and adhesion and with the supplementary requirements contained in section S1 of ASTM D 4956-04 for fungus resistance.

Testing: The sheeting shall be applied to test panels in accordance with ASTM D 4956-04, section 7.2 and the test conditions shall conform to ASTM D 4956-04 section 7.1. Three samples of retroreflective sheeting applied to test panels and conditioned in accordance with ASTM testing procedures shall each first have their photometric properties characterized by measuring the coefficients of retroreflection in accordance with ASTM E 810 at all test geometries shown in Table I. These panels shall then be exposed in an air circulating oven at  $160 \pm 5^\circ\text{F}$  ( $71 \pm 3^\circ\text{C}$ ) for a period of 24 hours. After exposure the panels shall be allowed to condition according to the provisions. These panels will again be characterized for photometric properties by measuring the coefficients of retroreflection at all test geometries measured before exposure. The coefficients of retroreflection measured after exposure shall be between 85% and 115% of the values measured before exposure for each of the three samples.

The retroreflective sheeting shall be designed to work in concert with recommended imaging systems. Color processing with compatible transparent and opaque process colors shall be possible in accordance with the sheeting manufacturer's recommendation at temperatures of  $60^\circ$  to  $100^\circ\text{F}$  ( $16^\circ$  to  $38^\circ\text{C}$ ) and relative humidity of 20% to 80%. The sheeting shall be heat resistant and permit force curing without staining of applied or unapplied sheeting at temperatures recommended by the sheeting manufacturer.

**Certification:** The Contractor shall provide certification from an independent testing laboratory approved by the Department stating that the material to be furnished meets the requirements here specified and per the requirements of Section 1091.02 of the Standard Specifications. The sheeting manufacturer shall also submit with each lot or shipment, a certification that states the material supplied will meet all the requirements listed herein. In addition, the sheeting manufacturer shall guarantee their product in accordance with the following field performance requirements and replacement obligations:

**General:** The Department also reserves the right to inspect any completed sign face and reject any or all signs if the inspection indicates failure to meet these specifications.

All signs shall be fabricated such that the copy or text is applied in the preferred orientation for maximum angularity per the sheeting manufacturer's recommendations. The background sheeting and the legend shall be of compatible material provided by the same manufacturer. The legend should be direct applied to extrusions and bid accordingly.

The Contractor shall place the date on each sign that the sheeting is applied in accordance with Article 720.03 of the Standard Specifications, or as directed by the Engineer. This date shall constitute the start of the field performance obligation period.

**Basis of Payment:** The Super-High Efficiency Full Cube Retroreflective Sheeting will not be measured or paid for separately but is considered included as part of the pay item for SIGN PANEL, TYPE 3. All necessary requirements for the sheeting, as outlined above, shall be included in the contract unit price per square meter (square foot) for SIGN PANEL, TYPE 3.

#### ACCIDENT INVESTIGATION SITES

**Description:** This item shall consist of furnishing and installing the necessary equipment and maintenance of accident investigation sites which are shown in the plans and listed below. These sites are for the exclusive use of the Department, the State Police, and the motoring public. The Contractor is prohibited from parking any personnel vehicles or equipment at these locations. The Engineer will designate the location of the equipment and it shall remain at the site until released by the Engineer.

The Contractor shall furnish and install a full water storage tank on a stand at each site. The tank should have a minimum of 380 liter (100 gallon) capacity and shall have a tap with a hose for dispensing the water. The tap should be of a type that closes when not in use. A sign stating that the water is not for drinking should be predominantly placed at each tank. The tanks should be checked weekly and even daily during hot weather and refilled with clean water when low.

Accident Investigation Sites are as follows:

<u>Expressway</u>	<u>Direction</u>	<u>Location</u>
IL 394	SB	South of Thornton-Lansing Road located on the right side behind the barricades at the south end project limits.
I-94	EB	North of the I-80 bridge located on the left side at the end of the temporary concrete barrier, behind the barrier barricades. Site can be used for all stages in 2006, by shifting it to the right side in stage 2.

These Accident Investigation sites shall be ready to open for use by April 1, 2006. All work required to open the sites will be paid for under the appropriate pay items.

**Signing at each site:** The Contractor shall furnish the signs, which are shown on the table included herein and shall install them on posts or skids at the locations specified by the Engineer. All signs shall be in place prior to opening the accident investigation site.



LEGEND LAYOUT	SIZE (MM)	SIGN SIZE & COLOR LEGEND/BACKGROUND BORDER	TOTAL NUMBER OF SIGNS	LOCATION
<div style="border: 2px solid black; padding: 5px;">           STAY WITH            YOUR            DISABLED            VEHICLE         </div>	100 100C 100 100C 100 100C 100 100C 100	900 MM X 900 MM  BLACK/WHITE  15 MM BORDER	—	ONE SIGN AT EACH SITE
<div style="border: 2px solid black; padding: 5px;">           ACCIDENT            INVESTIGATION            SITE            ½ MILE         </div>	125 150D 100 100C 125 150D 150 150D 150	1.2 M X 1.2 M  WHITE/BLUE  15 MM BORDER	with "1/2 MILE"  with "AHEAD"  with ARROW RIGHT	ONE SIGN IN ADVANCE OF EACH SITE  ONE SIGN IN ADVANCE OF EACH SITE  ONE SIGN AT EACH SITE

½ MILE, AHEAD,  
 ARROW RIGHT

**Basis Of Payment:** Each fully equipped site, as specified herein, will be paid for at the contract unit price per calendar month or fraction there of, for ACCIDENT INVESTIGATION SITE. This price shall include all labor, material, and equipment necessary to perform the work.

All Traffic Control Devices shall be included in the cost for TRAFFIC CONTROL & PROTECTION (EXPRESSWAYS).  
 All signing work shall be paid for in accordance with TEMPORARY INFORMATION SIGNING.

**TEMPORARY CONCRETE BARRIER**

**Description:** This work shall consist of furnishing, placing, maintaining, relocating, and removing concrete barriers at temporary locations as shown on the plans or as directed by the Engineer. This work shall be done according to the applicable portions of Section 704 of the Standard Specifications and as indicated herein.

Due to the various traffic staging required for this contract, several pay items are required for temporary concrete barrier. Temporary concrete barrier for this contract may involve relocating temporary concrete barrier which is already on site from an advance work contract or may involve providing additional temporary concrete barrier by the Contractor.

TEMPORARY CONCRETE BARRIER shall consist of furnishing, placing, maintaining, and removing temporary concrete barrier by the contractor at locations shown on the plans or as directed by the Engineer in accordance with the applicable portions of Section 704 of the Standard Specifications.

TEMPORARY CONCRETE BARRIER (INSTALL ONLY) shall consist of furnishing, placing, and maintaining temporary concrete barrier at locations shown on the plans or as directed by the Engineer in accordance with the applicable portions of Section 704 of the Standard Specifications. It shall remain on the jobsite at the conclusion of the project at the location shown on the plans. Temporary concrete barrier that is to remain on the job site at the conclusion of the contract shall become the property of the State at the conclusion of this contract.

RELOCATE TEMPORARY CONCRETE BARRIER, (SPECIAL) shall consist of relocating temporary concrete barrier installed under an advance work contract or installed by the Contractor under this contract, to locations shown on the plans or as directed by the Engineer in accordance with the applicable portions of Section 704 of the Standard Specifications.

REMOVE TEMPORARY CONCRETE BARRIER shall consist of removing excess temporary concrete barrier already on site as shown on the plans or as directed by the Engineer in accordance with the applicable portions of Section 704 of the Standard Specifications. Removal of temporary concrete barrier placed by the contractor will not be paid for separately but included in the cost of TEMPORARY CONCRETE BARRIER. Temporary concrete barrier that is to be removed from the job sit at the end of construction shall become the property of the Contractor.

**Method of Measurement:** The temporary concrete barrier items will be measured per Article 704.07 of the Standard Specifications and as modified herein.

Add the following to the first paragraph of Article 704.07:

“When excess temporary concrete barrier is shown to be removed it will be measured for payment in meters in place along the centerline of the barrier.”

**Basis of Payment:** Temporary concrete barrier which is to be relocated, either from an advance work contract or during the course of the current contract shall be paid for at the contract unit price per meter for RELOCATE TEMPORARY CONCRETE BARRIER (SPECIAL). Temporary concrete barrier which is to remain on the job site at the conclusion of the contract will be paid for at the contract unit price per meter for TEMPORARY CONCRETE BARRIER (INSTALL ONLY). Temporary concrete barrier which is to be removed shall be paid for at the contract unit price per meter for REMOVE TEMPORARY CONCRETE BARRIER.

The relocation of glare screens attached to the top of any temporary concrete barrier shall be disassembled and reattached to the barrier wall at its new location as shown on the plans. This work shall not be paid for separately but included in the cost of RELOCATE TEMPORARY CONCRETE BARRIER (SPECIAL).

#### TEMPORARY PAVEMENT

**Description:** This work shall consist of constructing a temporary pavement at the locations shown on the plans or as directed by the engineer.

The contractor shall use either portland cement concrete as outlined in Section 353 and 354 of the Standard Specifications or bituminous concrete according to Section 355, 356, 406 of the Standard Specifications, and the special provisions for Bituminous Base Course/Widening Superpave and Superpave Bituminous Concrete Mixtures. The bituminous mixtures to be used shall be specified in the plans. The thickness of the Temporary Pavement shall be as described in the plans. The contractor shall have the option of constructing either material type if both portland cement concrete and bituminous concrete are shown in the plans.

Articles 355.10 and 406.21 shall not apply.

The removal of the Temporary Pavement shall conform to Section 440 of the Standard Specification.

**Method of Measurement:** Temporary pavement will be measured in place and the area computed in square meters (square yards).

**Basis of Payment:** This work will be paid for at the contract unit price per square meter (square yard) for TEMPORARY PAVEMENT and TEMPORARY PAVEMENT (INTERSTATE).

Removal of temporary pavement will be paid for at the contract unit price per square meter (square yard) for PAVEMENT REMOVAL.

#### CONSTRUCTION AIR QUALITY - DUST CONTROL

**Description:** This work shall consist of developing and implementing a detailed Dust Control Plan (DCP). Development of a DCP is required in "Non-attainment" and "Maintenance" areas, per Article 107.36 of the Standard Specifications. All construction activities shall be governed by the DCP. The nature and extent of dust generating activities, and specific control techniques appropriate to specific situations shall be discussed at the pre-construction meeting, with subsequent development of the DCP to include but not be limited to the requirements below.

The Contractor is responsible for the control of dust at all times during the duration of the contract, 24 hours per day, 7 days per week, including non-working hours, weekends, and holidays. This work shall be considered complete after the completion of all permanent erosion control measures required for the contract, and after all temporary and permanent seeding has taken place. Work on this contract shall be conducted in a manner that will not result in generating excessive air borne particulate matter (PM) or nuisance dust conditions.

The DCP shall include legible copies of the product literature and Material Safety Data Sheets for dust suppression agents and stabilizers the contractor proposes to use. The Dust Control Plan shall involve the implementation of control measures before, during and after conducting any dust generating operation. These controls must be in place on non-working days and after working hours, not just while work is being done on the site. The Dust Control Plan must contain information specific to the project site, proposed work, and dust control measures to be implemented. A copy of the Dust Control Plan must be available on the project site at all times.

The Dust Control Plan must contain, at a minimum, all of the following information:

- a. Name, address and phone number of the person(s) responsible for the dust generating operation and for the submittal and implementation of the Dust Control Plan.
- b. A drawing specifying the site boundaries of the project with the areas to be disturbed, the locations of the nearest public roads, and all planned exit and entrance locations to the site from any paved public roadways.
- c. Control measures to be applied to all actual and potential fugitive dust sources before, during and after conducting any dust generating operation, including non-work hours and non-work days.
- d. A list of dust suppressants to be applied, including product specifications, Material Safety Data Sheets, and product label instructions that include the method, frequency and intensity of applications; and information on the environmental impacts and approval or certifications related to the appropriate and safe use for ground applications.
- e. Provide a plan for inspection and maintenance of the necessary dust controls installed.
- f. A contingency plan consisting of at least one contingency measure for each activity occurring on the site in case the primary control measure proves inadequate.

The Contractor shall submit two copies of the DCP that outlines in detail the measures to be implemented by the Contractor complying with this section, including prevention, cleanup, and other measures at least 14 days before beginning any dust generating activity. The Contractor shall not begin any dust generating activities until the Engineer approves the DCP in writing. Failure to comply with the DCP or provisions herein will subject the contractor to an "Environmental Deficiency Deduction," as outlined below.

**MATERIALS:**

1. Dust Suppression Agents

Dust suppression agents shall be water soluble, non-toxic, non-reactive, non-volatile, and non-foaming. The use of petroleum for dust control is prohibited.

Calcium Chloride shall conform to the requirements of Article 1013.01 of the Standard Specifications. Other commercially available dust suppression agents may be substituted for calcium chloride subject to the approval of the Engineer. Material Safety Data Sheets must be reviewed and approved by the Engineer prior to the use of any substances other than Calcium Chloride.

Water shall meet the requirements of Article 1002 of the Standard Specifications.

2. Soil stabilizers shall consist of seed and mulch meeting the requirements of Article 1081.06 (a) (2) and (3).

3. Covers for stockpiles shall be commercially available plastic tarps, or other materials approved by the Engineer.

**Construction Methods:** Dust suppression agents shall be used to provide temporary control of dust on haul roads and other active work areas. Several applications per day may be necessary to control dust depending upon meteorological conditions and work activity. The Contractor shall apply dust suppression on a routine basis as necessary or as directed by the Engineer to control dust. Wet suppression consists of the application of water or a wetting agent in solution with water. Wetting agents shall not be applied directly to live plant material. Wet suppression equipment shall consist of sprinkler pipelines, tanks, tank trucks or other devices approved by the Engineer, capable of providing a regulated flow, uniform spray and positive shut off.

The Contractor shall store a sufficient amount of Dust Suppression Agents for necessary maintenance throughout the duration of the project.

Calcium chloride dust suppression agents may be used in lieu of wet suppression only when freezing conditions exist. Calcium chloride shall be uniformly applied by a mechanical spreader at a rate of 0.8 kilograms per square meter (1 and 1/2 pounds per square yard) or its equivalent liquid, unless otherwise directed by the Engineer. Calcium chloride shall not be directly applied to live plant material.

Calcium chloride must not be stored outdoors without an impermeable cover. Storage must be on an impermeable surface such as paved asphalt or appropriately treated concrete of sufficient thickness to avoid exfiltration. Storage should be as airtight as possible to limit the calcium chloride's absorbing moisture from the air. No storage facilities will be allowed within 30 meters (100 feet) of a storm sewer, or any other drain. Positive drainage must be maintained on all treated surfaces. Ditches, culverts and other structures must be kept clean to

ensure proper drainage and to limit the amount of water infiltrating earth surfaces and thereby leeching out chlorides. If calcium chloride is applied dry, or during dry periods, and crystals are seen on the road surface, the road should be wetted sufficiently to dissolve the calcium chloride. Wetting should be limited to an amount that will sufficiently cause the calcium chloride to penetrate the surface but not to the point of causing any runoff from the road surface. Other approved dust suppression agents shall be applied and used as per the manufacturer's instructions.

Haul truck cargo areas shall be securely covered during the transport of materials on public roadways that are prone to cause dust.

Public Roadway Dust Control. Track out, including carryout and spillage of material that adheres to the exterior surfaces of or are spilled from motor vehicles and/or equipment and subsequently fall onto a paved public roadway must be controlled at all times. Clean up of carryout and spillage is required immediately if it extends a cumulative distance of 15 meters (50 feet) or more on a paved public roadway. If the extent of carryout is less than 15 meters (50 feet), clean up at the end of the day is permissible. Clean up of paved surfaces shall be by wet spray power vacuum street sweeper. Dry power sweeping is prohibited.

Control of earthwork dust. During batch drop operations (i.e. earthwork with a front-end loader, clamshell bucket, or backhoe), the free drop height of excavated or aggregate material shall be reduced to minimum heights as necessary to perform the specified task, and to minimize the generation of dust. To prevent spills during transport, a minimum of 50 millimeters (2 inches) of freeboard space shall be maintained between the material load and the top of the truck cargo bed rail. A maximum drop height of 600 millimeters (two feet) (or minimum height allowed by equipment) will be allowed, or to heights as directed by the Engineer.

Control of dust on stockpiles and inactive work areas. The Contractor shall use the following methods to control dust and wind erosion of stockpiles and inactive areas of disturbed soil:

Dust suppression agents shall be used during active stockpile load-in, load-out, and maintenance activities. Soil stabilizers (hydraulic or chemical mulch) shall be applied to the surface of inactive stockpiles and other inactive areas of disturbed soil. Final grading and seeding of inactive areas shall occur immediately after construction activity is completed in an area and as directed by the Engineer. Plastic tarps may be used on small stockpiles, secured with sandbags or an equivalent method approved by the Engineer, to prevent the cover from being dislodged by the wind. The Contractor shall repair or replace the covers whenever damaged or dislodged at no additional cost.

**Method of Measurement:** All measuring devices shall be furnished by the Contractor and approved by the Engineer.

Calcium chloride and other approved dust suppression agents shall be mixed with water at the rate specified by the manufacturer and measured for payment in units of 1000 Liters (1000 Gallons) of solution applied.

The application of soil stabilizers shall be measured by weight kilograms (pounds) of soil stabilizer. The soil stabilizer will then be added to water to form a solution in accordance with the manufacturer's recommendation.

All other dust control measures will not be measured for payment.

**Basis of Payment:** The application of dust suppression agents shall be paid for at the contract unit price per unit for APPLYING DUST SUPPRESSION AGENT.

Soil stabilizers will be paid for at the contract price per kilogram (pound) for SOIL STABILIZERS.

All other dust control measures will not be paid for directly but shall be considered as included in the various items involved and no additional compensation will be allowed.

#### CONSTRUCTION AIR QUALITY–DIESEL VEHICLE EMISSIONS CONTROLS

**Description:** The reduction of emissions of Carbon Monoxide (CO), Hydrocarbons (HC), Nitrogen oxides (NOx), and Particulate Matter (PM) will be accomplished by installing Retrofit Emission Control Devices and/or by using cleaner burning diesel fuels. The term “equipment” refers to any and all diesel fuel powered devices rated at 50 Horse power (HP) and above, to be used on the project site for any length of time, (including any “rented” or “rental” equipment).

All Contractor and Sub-contractor diesel powered equipment with engine horsepower (HP) ratings of 50 HP and above, that are on the project or are assigned to the contract shall be prohibited from using “off-road” diesel fuel (above 500 parts per million (ppm) sulfur content) at any time. In addition, diesel powered equipment shall be either (1) retrofitted with Emissions Control Devices and use Cleaner burning “on-road” diesel fuel (500 ppm sulfur content or less), or (2) use Ultra Low Sulfur Diesel fuel (ULSD) exclusively (15 ppm sulfur content or less), in order to reduce diesel particulate matter emissions. Large cranes (Sky cranes or Link Belt cranes), which are responsible for critical lift operations are exempt from installing Retrofit Emission Control Devices if they adversely affect equipment operation.

In addition, all construction motor vehicles (both on-road and off-road, gasoline or diesel fuel powered) shall comply with all pertinent State and Federal regulations relative to exhaust emission controls and safety, including opacity. Frequently Asked Questions (FAQ's) regarding Illinois Environmental Protection Agency (IEPA) emissions testing for gasoline powered vehicles can be accessed at ([www.epa.state.il.us/air/vim/faq/testing.htm](http://www.epa.state.il.us/air/vim/faq/testing.htm)). Regulations regarding diesel powered vehicles over 16,000 pounds, and the Diesel Emission Inspection Program (Title 92: Transportation Part 460, Diesel Emission Inspection Program, Subpart A: General) can be accessed at ([www.dot.state.il.us/regulations.html](http://www.dot.state.il.us/regulations.html)). Diesel powered vehicles less than 16,000 pounds are exempt from testing by IDOT. All diesel powered equipment used on the project site shall be subject to reasonable, random spot checks for compliance with the required emissions controls and proper diesel fuel usage. The Secretary of State, Illinois State

Police and other law enforcement officers shall enforce Part 460. For additional information concerning Illinois diesel emission inspection requirements, please call the Illinois Department of Transportation, Diesel Emission Inspections Unit, at 217-557-6081.

The Retrofit Emission Control Devices shall consist of oxidation catalysts, or similar retrofit equipment control technology that (1) is included on the Environmental Protection Agency (EPA) Verified Retrofit Technology List ([www.epa.gov/otaq/retrofit/retroverifiedlist.html](http://www.epa.gov/otaq/retrofit/retroverifiedlist.html)) and (2) is verified by EPA or certified by the manufacturer via letter, to provide a minimum emissions reduction of 20% PM10, 40% CO, and 50% HC when used with "on-road" diesel fuel. As noted above, the Retrofit Emission Control Device must be used with on-road diesel fuel (500 ppm sulfur content or less).

If used, ULSD fuel shall conform to American Society for Testing and Materials (ASTM) D-975 diesel with the following additional specifications:

ASTM D-5453 15 ppm Sulfur max.  
ASTM D-6078 Lubricity (SBOCLE) 3100 g min.  
ASTM D-613 Cetane 45 min.  
Dyed (for Off-road use)

Construction shall not proceed until the contractor submits a certified list of the diesel powered equipment that will be retrofitted with emission control devices and use "on-road" diesel fuel, and a list of equipment that will use ULSD fuel only. The list(s) shall include (1) the equipment number, type, make, and contractor/sub-contractor name; (2) the emission control devices make, model and EPA verification number; and (3) the type and source of clean fuels to be used. Vehicles reported as fitted with emissions control devices shall be made available to the Engineer for visual inspection of the device installation by qualified staff, prior to being used on the project site. Diesel powered equipment in non-compliance will not be allowed to be used on the project site, and is also subject to a "Notice of Non-Compliance" as outlined below under "Environmental Deficiency Deduction."

The contractor shall submit monthly summary reports, updating the list of construction equipment, and include certified copies of the diesel fuel delivery slips (for both "on-road" and ULSD) for the reporting time period, noting the type of diesel fuel used with each piece of diesel powered equipment. The addition or deletion of any diesel powered equipment shall be included in the summary and noted on the monthly report.

If any diesel powered equipment is found to be in non-compliance with any portion of this specification, the Engineer will issue the contractor a Notice of Non-Compliance and given an appropriate period of time, as outlined below under "Environmental Deficiency Deduction," in which to bring the equipment into compliance or remove it from the project site. Failure to comply with the "Diesel Vehicle Emission Controls", shall also subject the Contractor or sub-contractor to an "Environmental Deficiency Deduction," as outlined below.

Any costs associated with bringing any diesel powered equipment into compliance with these "Diesel Vehicle Emissions Controls" shall be included in the overall cost of the contract. In



addition, there shall be no time granted to the contractor for compliance with this notice. The contractor's compliance with this notice and any associated regulations shall also not be grounds for a claim.

#### A. IDLING.

The contractor shall establish truck-staging areas for all diesel powered vehicles that are waiting to load or unload material at the contract area. Such zones shall be located where the diesel emissions from the equipment will have a minimum impact on adjacent abutters and sensitive receptors of the general public. The Department will coordinate such locations with the Contractor and local authorities in the selection of staging areas, whether within or outside the existing highway right-of-way (ROW), to avoid locations near sensitive areas or populations to the extent possible. Sensitive receptors include, but are not limited to hospitals, schools, residences, motels, hotels, daycare facilities, elderly housing and convalescent facilities. Diesel powered engines shall also be located as far away as possible from fresh air intakes, air conditioners, and windows. Diesel powered engines shall not be allowed to idle, except only as follows:

A maximum of 5 minutes idling is allowed for loading and unloading vehicles.

When the equipment is forced to remain motionless because of traffic conditions or mechanical difficulties over which the operator has no control;

When it is necessary to operate auxiliary systems installed on the equipment, only when such system operation is necessary to accomplish the intended use of the equipment;

To bring the equipment to the manufacturer's recommended operating temperature;

When the outdoor temperature is below forty-five (45) degrees Fahrenheit or above eighty (80) degrees Fahrenheit;

When the equipment is being repaired.

All work shall be conducted to ensure that no harmful effects are caused to adjacent sensitive receptors. Equipment and equipment operators found in non-compliance with these idling provisions shall receive a warning, and on the next offense be subject to an Environmental Deficiency Deduction as outlined below. The contractor or sub-contractor may reserve the right to enforce this deduction on their own equipment operator, as necessary.

#### B. MITIGATION

Appropriate mitigation measures can include a variety of actions ranging from, but not limited to additional watering, removal of construction equipment from nearby sensitive receptors, shut down of diesel powered equipment, or other mitigation measures which may be required as data becomes available and as approved by the Engineer.

**Method of Measurement and Basis of Payment:**

The CONSTRUCTION AIR QUALITY – DIESEL EMISSIONS CONTROLS will not be measured for payment and the cost of this work shall be included in the unit prices bid and no additional compensation will be allowed.

**CONSTRUCTION NOISE MITIGATION**

**Description:** This work shall consist of implementing construction noise restrictions as outlined in a project Construction Noise Mitigation plan. Work on the project shall be in accordance with the Construction Noise Mitigation plan submitted by the contractor, applicable sections of Article 107.35 of the Standard Specifications, and modifications as contained herein for construction noise.

The contractor must provide advance notification, and secure approval from the Engineer prior to the use of heavy construction equipment outside normal construction work hours ("normal construction work hours" as specified in Article 107.35 of the Standard Specifications). Inspection and maintenance of all vehicle exhaust systems shall be conducted on a monthly basis, (or as determined by the Engineer), for all such vehicles and other equipment assigned to or utilized on the project site. Inspections shall be conducted by personnel having a working knowledge of exhaust systems so that proper recommendations regarding the adequacy of the mufflers can be established.

**Construction Equipment:**

Pavement Breakers create high concentrations of low frequency sound energy, and noise attenuation can be achieved through the introduction of high-mass material between the noise source and the receiver. The attachment of shrouds (sound curtains) to the steel frame around the breaker shall be installed, as equipment allows. The operation of pavement breakers shall be prohibited outside of normal work hours, as specified herein, unless otherwise approved by the Engineer. This includes any type of pavement breaking equipment (pneumatic air hammers, jack hammers, hydraulic point breakers (bobcat or backhoe mounted), and pile driving equipment).

Special care shall be taken with respect to the set up and operation of concrete batch and concrete crushing plants to minimize the potential noise impacts to the adjacent community. The Department will work with the Contractor and local authorities in selecting construction concrete batch and/or crushing locations, whether within or outside the highway ROW, to avoid locations near sensitive areas or populations to the extent possible. All local County, City, Village, Town and/or Township rules, regulations, and/or requirements regarding batch and crushing plants shall be followed, as instructed by the Engineer.

Compressors or generators shall be located as far away as possible from sensitive receptors. Compressors and generators shall be positioned such that the cooling fan intake does not point towards the community. The Contractor shall review stationary equipment placement with the Engineer prior to commencement of work.

**Method of Measurement and Basis of Payment:**

The CONSTRUCTION NOISE MITIGATION will not be measured for payment and the cost of this work shall be included in the unit prices bid and no additional compensation will be allowed.

**ENVIRONMENTAL DEFICIENCY DEDUCTION**

To ensure a prompt response to incidents involving the integrity of work zone Environmental (Air Quality and Noise) Control, the Contractor shall provide a telephone number where a responsible individual can be contacted on a 24 hour a day basis.

When the Engineer is notified, or determines an environmental control deficiency exists, he/she will notify the Contractor in writing, and direct the Contractor to correct the deficiency within a specified time frame. The specified time frame, which begins upon contractor notification, will be from 1/2 hour to 24 hours long, based on the urgency of the situation and the nature of the deficiency. The Engineer shall be the sole judge.

The deficiency may include lack of repair, maintenance or non-compliance with the Special Provisions for Construction Air Quality Dust Control and/or Construction Noise Mitigation.

If the Contractor fails to correct the deficiency within the specified time frame, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency exists. The calendar day(s) will begin with Contractor's notification and end with the Engineer's acceptance of the correction. The daily monetary deduction will be either \$1,000.00 or 0.05 percent of the awarded contract value, whichever is greater.

In addition, if the Contractor or sub-contractor fails to respond within the allotted time frame, the Engineer may take action to correct the deficiency, or may cause the correction of the deficiency to be made by others, the cost thereof being deducted from monies due or which may become due the Contractor or sub-contractor. This corrective action will in no way relieve the Contractor or sub-contractor of his/her contractual requirements or responsibilities, and shall not be grounds for any claim.

If a Contractor or sub-contractor accumulates three (3) Deficiency Deductions for the same deficiency, in a contract period, the contractor will be shut down until the deficiency is corrected. Such a shut down will not be grounds for any extension of the completion date, waiver of penalties, or be grounds for any claim.

**EROSION AND SEDIMENT CONTROL MANAGER**

This Special Provision revises Section 105 (Control of Work) of the Standard Specifications for Road and Bridge Construction, creating a requirement for a designated erosion and sediment control manager to be present full time at this project.

Add the following to Article 105.06:

Erosion and Sediment Control Manager (ESCM). The Contractor shall assign to the project an on-site full-time employee to serve in the capacity of ESCM. This employee shall be thoroughly experienced in all aspects of erosion and sediment control and construction. The ESCM shall have sufficient authority for the implementation of the approved erosion and sediment control schedules and methods of operation, including both on-site and off-site activities.

At least 10 days prior to beginning any work on this project, the name and credentials of the ESCM shall be submitted to the Engineer. Any changes in the ESCM shall require a resubmission of the above. The resubmission shall be timed to ensure that an ESCM is assigned to the project at all times. This ESCM is considered to be included in the base bid and no separate pay item shall be provided.

**EROSION AND SEDIMENT CONTROL CALL OUT**

This work shall consist of the short notice mobilization of a work crew for the purpose of maintaining and repairing critical erosion and sediment control items when required to respond to unpredictable events beyond the Contractor's control. Upon receipt of a written notification of the a Request for Erosion and Sediment Control Call Out (RESCCO) from the Engineer, the Contractor shall have until the end of the next Working Day to perform the required work.

If the required work is not performed by the end of the next Working Day, the Request for Erosion and Sediment Control Call Out will also be considered the warning for an Erosion and Sediment Control Deficiency Deduction (ESCDD). The Erosion and Sediment Control Deficiency Deduction will be dated 2 Working Days after the date on the Request for Erosion and Sediment Control Call Out. The Erosion and Sediment Control Deficiency Deduction will be enforced as described herein.

<b>Contractor Action</b>	<b>Department Action</b>
Receipt of RESCCO end of Day One.	Deliver RESCCO on Day One
Finish required Work end of Day Two.	Department measures work performed according to Erosion and Sediment Control Call Out Method of Measurement.
Finish required Work end of Day Three.	Department pays only standard pay items and does not apply to Erosion and Sediment Control Call Out Method of Measurement.
Finish required Work end of Day Four or later.	Department invokes ESCDD prior to Work Day Three, pays only standard work pay items, and does not apply to Erosion and Sediment Control Call Out Method of Measurement.

Any individual RESCCO will not be applied towards work whose contract prices total more than \$10,000 (ten thousand dollars) before the application of Article 280.06.

**Method of Measurement:** This work will not be measured for payment separately, but included in the items of work performed, when indicated in a Request for Erosion and Sediment Control Call Out. Each RESCCO will be paid at a rate of 1.1 units for every 1.0 units of work measured and performed.

**Basis of Payment:** This work will be paid for at the contract unit price for the work items performed, measured as specified and will not be paid for separately.

#### EROSION AND SEDIMENT CONTROL SCHEDULE

This Special Provision revises Section 108 (Prosecution and Progress) of the Standard Specifications for Road and Bridge Construction, creating a requirement that erosion and sediment control work items be included in the overall Progress Schedule.

Add the following to the end of the first paragraph of Article 108.02:

The Progress Schedule shall also include the following listed items. The erosion and sediment control components of the Progress Schedule shall be referred to as the Erosion and Sediment Control Schedule.

The Erosion and Sediment Control Schedule shall include the following:

- (a) Clearing of areas necessary for installation of perimeter controls specified in the Contract Documents.
- (b) Construction of perimeter controls specified in the Contract Documents.
- (c) Remaining clearing.
- (d) Roadway grading (including off-site work).
- (e) Structural Stabilization devices listed in the Storm Water Pollution Prevention Plan (SWPPP).
- (f) Winter shutdown date and probable days lost to inclement weather.
- (g) Seeding dates.
- (h) If applicable, utility installation and whether storm drains shall be used or blocked after construction.
- (i) Final grading, landscaping, and stabilization.
- (j) Removal of perimeter controls as required by plans.

#### SURFACE ROUGHENING

This Special Provision revises Section 250 (Seeding) of the Standard Specifications for Road and Bridge Construction, creating a requirement that steep slopes be surface roughened as part of the seed bed preparation.

After the first paragraph of Article 250.05 add the following paragraph:

All slopes 1:3 (vertical to horizontal) and steeper shall be surface roughened by tracking with tracked machinery. The machinery shall be operated up and down the slope to leave horizontal depressions in the prepared seed bed. Back-blading shall not be permitted during the final grading operation. The number of machinery passes shall be limited to minimize soil compaction.

After the third paragraph of Article 250.10 add the following paragraph:

Surface roughening will not be paid separately, but is included in the cost of Seeding, of the type specified.

### EROSION AND SEDIMENT CONTROLS

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

Include the following as the third paragraph of Article 280.01:

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

Revise Article 280.02 (f) to read:

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

Add the following as Article 280.02:

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

Delete Article 280.04 (b) and replace with:

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

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

Add the following as Article 280.04:

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

Topsoil shall be removed, geotextile fabric placed, and the cellular confinement grid installed and staked according to the manufacturer's recommendations. Stabilized construction entrances shall be built to the lines and dimensions shown in the details at the locations shown in the Plans, or as directed by the Engineer. The cells shall be filled with aggregate base course using gradation CA-3. The aggregate base course shall be placed within the cellular confinement grid using the methods and equipment recommended by the manufacturer. The aggregate base course shall be placed by applicable portions for Section 351 of the Standard Specification. All surface water flowing or diverted toward the construction entrance shall be accounted for either by installation of a pipe culvert under the entrance, or if piping is impractical, a mountable berm will be permitted.

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

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

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

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

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

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

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

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

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



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

Side edges of temporary diversion channel geotextile fabric shall terminate on horizontal shelves running parallel to the flow of water for the full length of the ditch. Edges of the geotextile fabric shall be pinned at 1 meter (3 feet) on center and buried in the Sediment Control, Silt Fence trench.

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

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

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

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

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

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

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

- (l) Erosion Control, Diversion Dike and Temporary Ditch. This work shall consist of the construction and maintenance of a temporary ridge of compacted soil, located to intercept and divert runoff to a stabilized outlet or to intercept sediment-laden water and divert it to a sediment-trapping device. Diversion Dikes or Temporary Ditches shall be constructed to the lines and dimensions shown on the plans or as directed by the Engineer.

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

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

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

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

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

- (n) Sediment Control, Stone Outlet Structure Sediment Trap. This work shall consist of the furnishing all of the equipment, labor and materials required to install and maintain a stone outlet structure sediment trap, as shown on the Details in the Plans, or as directed by the Engineer. Riprap, placed over a geotextile fabric, shall be used to construct the stone outlet structure.

Add the following to Article 280.05:

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

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

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

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

280.06 Method of Measurement. Revise Article 280.06 (a) to read:

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

Revise Article 280.06 (c) to read:

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

Sediment Control, Silt Fence Maintenance. This work will be measured for payment, each incident, in meters (feet) of silt fence cleaned, re-erected, or otherwise maintained.

Add the following as Article 280.06:

- (h) Sediment Control, Stabilized Construction Entrance. This work will be measured for payment by the outside dimensions of cellular confinement grid and the area calculated in square meters (square yards). All grading, excavation, and embankment necessary to construct the entrance

shall not be paid for separately, but included in the cost of Sediment Control, Stabilized Construction Entrance. Temporary pavement placement shall be paid for separately. Placement of the Pipe Culvert, of the diameter specified, shall be paid for separately. If additional Trench Backfill should be required for placement of the Pipe Culvert, it shall be paid for separately.

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

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

- (i) Erosion Control, Temporary Pipe Slope Drain. This work will be measured for payment by each complete system installed and maintained, regardless of pipe diameter and length. This work will be measured only once per location installed. All connections, anchors, extensions, geotextile materials, and temporary berms used to install, reinstall, or operate the temporary pipe slope drain will not be measured for payment.
- (j) Erosion Control, Temporary Channel Diversion. This work will be measured for payment in along the centerline of the channel in meters (feet) of temporary channel diversion installed, maintained, and removed. Earth Excavation, Earth Plug, Riprap, geotextile materials for channel lining, and backfill will not be measured separately for payment, but be included in cost of temporary channel diversion. Sediment Control, Silt Fence shall be paid for separately.
- (k) Same-Day Stabilization. This work will not be measured for payment, but included in the cost of the items utilized shown on the Plans or as directed by the Engineer.
- (l) Sediment Control, Stone Outlet Structure Sediment Trap. This work will not be measured for payment separately, but included in the price for each item of work performed as shown in the Details in the Plans.
- (m) Sediment Control, Drainage Structure Inlet Filter Cleaning. This work will be measure for payment each time that the cleaning work is performed at each of the drainage structure inlet filter locations.

Revise Article 280.07 (a) to read:

- (a) Excavation for Sediment and Dewatering Basins, Temporary Ditches, and Diversion Dikes. This work will be paid for at the contract unit price per cubic meter (cubic yard) for EARTH EXCAVATION FOR EROSION CONTROL. The various required linings shall be paid for at the contract unit price for the various items of work as detailed on the plans.

Revise Article 280.07 (c) to read:

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

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

Revise Article 280.07 (h) to read:

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

Add the following as Article 280.07:

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

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

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

- (j) Erosion Control, Temporary Pipe Slope Drain. This work will be paid for at the contract unit price each, for EROSION CONTROL, TEMPORARY PIPE SLOPE DRAIN.
- (k) Erosion Control, Temporary Channel Diversion. This work will be paid for at the contract unit price, per meter (feet), for EROSION CONTROL, TEMPORARY CHANNEL DIVERSION.
- (l) Same-Day Stabilization. This work will be paid for at the contract unit price for the various items of work performed and will not be paid for separately.
- (m) Sediment Control, Stone Outlet Structure Sediment Trap. This work will be paid for at the contract unit price for the work measured and will not be paid for separately. Riprap will be paid for according to Article 281.07. Earth Excavation for Erosion Control will be paid for according to Article 280.07 (a)

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

#### ARTICULATED BLOCK MATS

This Special Provision revises Section 285 (Concrete Revetment Mats) of the Standard Specifications for Road and Bridge Construction to change the requirement in which articulated block mats are installed.

Add the following to Article 285.06:

When Advance Articulated Block Mats are shown in the Plans, the Engineer may order the Articulated Block Mats be placed at any time, but never until the majority of grading is completed in the area and before any other required erosion-causing work begins. The Articulated Block Mats may be placed in a temporary manner; individual mats do not have to be sectioned to fit irregular spaces, but the area shall be covered as best possible with full size mats as approved by the Engineer. The Contractor may perform the trim and finish of the articulated block mats at his discretion.

The Contractor is required to protect the articulated block mats from damage by his operations for the duration of the Contract. Damage that requires repair includes, but is not limited to the following: severing of a flexible cable by more than 40% of its cross section or full breakage of two or more adjacent blocks.

#### GEOTEXTILE FABRIC MATERIALS

This Special Provision revises Section 1080 (Fabric Materials) of the Standard Specifications for Road and Bridge Construction to create a new material specifications for silt fence and stabilized construction entrances.

Add the following to Article 1080.02:

Sediment Control, Silt Fence fabric shall conform to the specifications of AASHTO M288-00 for Temporary Silt Fence, < 50% elongation, unsupported. This fabric shall be 90 cm (36 in) in width.

Certification: The manufacturer shall furnish a certification with each shipment of silt fence material, stating the amount of product furnished, and that the material complies with these requirements.

Sediment Control, Silt Fence support posts shall be of 5x5 cm (2x2 inch) nominal hardwood, a minimum of 1.2 m (4.0 ft) long.

Add the following Article to Section 1080:

1080.06 Cellular Confinement Grid.

Geotextile Fabric.....AASHTO M288-00, Class 3 Separation,  $\geq 50\%$  elongation

Cellular Confinement Grid:

Maximum Cell Length .....	315 mm
Maximum Cell Width .....	299 mm
Cell Depth .....	200 mm
Nominal Cell Area .....	460 cm <sup>2</sup>
Cells per m <sup>2</sup> .....	21.7 cells

Certification: The manufacturer shall furnish a certification with each shipment of cellular confinement grid, stating the amount of product furnished, and that the material complies with these requirements.

TEMPORARY DITCH CHECKS

Effective: January 24, 2002

This Special Provision revises Section 280 of the Standard Specifications for Road and Bridge Construction to eliminate the use of Aggregate Ditch Checks and Hay or Straw Bales for Temporary Ditch Checks.

Delete Paragraphs 2 and 3 of Article 280.04 (a) Temporary Ditch Checks.

Add to Article 280.04 (a) Temporary Ditch Checks: Temporary Ditch Checks shall be at least 3.66 meters (12 feet) or longer in length.

COMPOST FURNISH AND PLACE

Effective: September 13, 2002

Revised:

**Description:** This work shall consist of furnishing, transporting, and spreading compost to the depth specified in areas as shown in the plans or as directed by the Engineer.

Material: Add the following to Article 1081.05 (b):

Compost shall have no metal shards or glass present. Any plastic or other man-made material shall be no larger than 4 mm and screened out top be less than 1.0% of the total dry weight. A copy of the compost test results complying with IEPA standards for General Use Compost and certification of IEPA registration must be provided to the Engineer with each shipment load of compost.

**Method:** All areas to receive compost shall be graded, smoothed and finished uniformly to the satisfaction of the Engineer with equipment approved by the Engineer prior to placement.

The contractor shall remove all litter (including plastic bags, bottles, rocks, etc.) and plant debris before placing compost. Disposal and materials shall be done in accordance with Article 202.03.

All irregularities or depressions in the surface due to weathering or other causes shall be filled or smoothed out before the compost is placed.

The Engineer will verify that the proper compost depth has been applied. After verification of proper depth, the Contractor shall completely incorporate the placed compost into the existing surface to a minimum depth of 6 in. (150mm) below finished grade by disking or tilling.

**Finishing:** The surface of the compost shall be free from clods, stones, sticks and debris and shall be left smooth and level to maintain a uniform surface and appearance.

After the compost placement, all areas shall be immediately cleared of equipment, debris, and excess material. Surplus or waste material shall be disposed of by the Contractor according to Article 202.03.

**Method of Measurement:** Compost will be measured in place to the depth specified in square yards (square meters). Areas not meeting the depth specified shall not be measured for payment.

**Basis of Payment:** This work will be paid for at the contract unit price per square yard (square meter) for COMPOST FURNISH AND PLACE, of the thickness specified. Payment shall include all costs for materials, equipment and labor required to complete the work specified herein, including the cost of removing and disposing of any debris.

**SEEDING, CLASS 4B (MODIFIED)**

**Description.** All work, materials, and equipment shall conform to Section 250 and 1081 of the Standard Specifications except as modified herein.

The Class 4B (Modified) seed mix shall be supplied in pounds of Pure Live Seed. All native species will be local genotype and will be from a radius of 150 miles from the site. The Class 4B (Modified) seed mix shall be supplied with the appropriate inoculants. Fertilizer is not required.

Article 250.07 Seeding Mixtures – Add the following to Table 1:

**Class 4B (Modified) – Wetland Grass and Forb Mixture**

<u>Seeds</u>	<u>Kg/Hectare</u>	<u>Lb/Acre</u>
Panicum virgatum (Switch Grass)	0.5	(0.5)
Scirpus fluviatilis (River Bulrush)	1.0	(1.0)



Scirpus acutus (Hardstemmed Bulrush)		1.0	(1.0)
Asclepias incarnata (Swamp Milkweed)		0.5	(0.5)
Helenium autumnale (Autumn Sneezeweed)	0.5		(0.5)
Vernonia fasciculata (Ironweed)		0.5	(0.5)
Vernonia altissima (Tall Ironweed)		0.5	(0.5)
Verbena hastata (Blue Vervain)		0.5	(0.5)
Silphium perfoliatum (Cup Plant)		0.5	(0.5)
Oats, Spring (Temporary Cover)		30.0	(25.0)
Redtop (Temporary Cover)		30.0	(25.0)

Notes:

1. Temporary cover seed shall be kept separate from the woodland type mixture. It shall be mixed on site under the direction of the Engineer.
2. Purity and germination tests no older than twelve months old must be submitted for all seed supplied to verify quantities of bulk seed required to achieve KG PLS (LB PLS) specified.

If specified seed material is unavailable, the Engineer shall approve the substitutes. Adjustments will be made at no cost to the contract. Approval of substitutes shall in no way waive any requirements of the contract.

Article 250.09 – Add Seeding, Class 4B (Modified)

Article 250.10 – Add Seeding, Class 4B (Modified)

**SUPPLEMENTAL WATERING**

**Scope:** This work will include watering turf, trees shrubs and perennial plants at the rates specified and as directed by the Engineer

Watering must be completed in a timely manner. When the Engineer directs the Contractor to do supplemental watering, the Contractor must begin the watering operation within 24 hours and must apply a minimum of 10 units of water per day until the watering directed is complete. Damage to plant material that is a result of the Contractor’s failure to water in a timely way must be repaired or replaced at the Contractor’s expense.

**Source of Water:** The Contractor shall notify the Engineer of the source of water used and provide written certification that the water does not contain chemicals harmful to plant growth.

**Rate of Application:** The normal rates of application for watering are as follows. The Engineer will adjust these rates as needed depending upon weather conditions.

Turf and Perennial Plants:	3 gallons per square foot (122 liters per square meter)
Trees:	10 gallons per tree (38 liters per tree)
Shrubs:	3 gallons per shrub (12 liters per shrub)
Seedlings:	3 gallons per seedling (12 liters per seedling)

Ornamental Grasses: 3 gallons per square foot (122 liters per square meter)  
Groundcovers and Vines: 2 gallons per square foot (82 liters per square meter)

**Method of Application:** A spray nozzle that does not damage small plants must be used when watering perennial plants or turf. Water shall be applied at the base of the plant to keep as much water as possible off plant leaves. An open hose may be used to water trees, shrubs and seedlings if mulch and soil are not displaced by watering. Water shall trickle slowly into soil and completely soak the root zone. The Contractor must supply metering equipment as needed to assure the specified application rate of water.

**Method of Measurement:** Supplemental watering will be measured in units of 1000 gallons (3785 liters) of water applied as directed.

**Basis of Payment:** This work will be paid for at the contract unit price per unit of SUPPLEMENTAL WATERING, measured as specified. Payment will include the cost of all water, equipment and labor needed to complete the work as specified and to the satisfaction of the Engineer.

#### CONCRETE BARRIER REMOVAL

**Description:** This work shall consist of the removal and satisfactory disposal of both single face and double face concrete barrier wall at locations as shown on the plans or as directed by the Engineer, in accordance with the applicable portions of Section 440 of the Standard Specifications.

The concrete barrier shall be removed to the top of the existing sub grade. The removal of any conduit or junction boxes and the base under the concrete barrier shall be included in the cost of CONCRETE BARRIER REMOVAL. Any saw cuts at the base of the concrete barrier required to remove the concrete barrier and base shall be included in the cost of CONCRETE BARRIER REMOVAL.

**Method of Measurement:** This work will be measured for payment in meters (feet) in place, calculated along the centerline of the barrier.

**Basis of Payment:** This work will be paid for at the contract unit price per meter (foot) for CONCRETE BARRIER REMOVAL, which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

#### SELECTIVE CLEARING

**Description:** This work shall consist of extensive removal and disposal of shrubs, brush, debris (including rocks, bottles, etc.) and selected trees up to six (6) inches (150 mm) in diameter. All trees and shrubs to be saved shall be carefully protected as provided by Article 201.05 of the Standard Specifications. Locations for Selective Clearing and vegetation to be cleared or saved shall be designated by the Engineer.

The undesirable trees and brush (Siberian Elm, European Buckhorn, Mulberry, etc.) shall be cut flush with the ground and all stubs or stumps shall be treated with a resprout herbicide approved by the Engineer to prevent regrowth from the stumps. Trees of Tree of Heaven shall not be cut off as specified above, but shall be pulled or grubbed in such a manner as to insure complete removal. Branches on remaining trees shall be pruned off up to 6 feet (2 meters) from the ground.

All cleared areas shall be graded, trimmed, smoothed, and finished uniformly to the satisfaction of the Engineer with equipment approved by the Engineer. Disposal of material shall be done in accordance with Article 202.03.

**Method of Measurement:** Selective Clearing will be measured in units of 1,000 square feet (90 square meters). Areas not meeting the satisfaction of the Engineer shall not be measured for payment. Plan quantities are estimates only. Actual quantities will be measured in place. Agreement to plan quantities will not be allowed.

**Basis of Payment:** This work will be paid for at the contract unit price per unit for SELECTIVE CLEARING. Payment for Selective Clearing shall include the cost of all minor grading, debris removal and disposal, trimming, pruning, smoothing, finishing, labor, materials, tools and equipment required to complete the work as specified herein and to the satisfaction of the Engineer.

#### MULCH PLACEMENT Effective: December 2002

This work shall be done in accordance with the applicable portion of Section 253.02 (c) and Section 1081.06 of the Standard Specifications for Road and Bridge Construction.

**Description:** This work shall consist of furnishing, transporting, and spreading approved shredded hardwood bark mulch to the depth specified in areas as shown in the plans or as directed by the Engineer.

**Material:** The mulch material shall consist of shredded tree bark, wood chips and other approved organic mulch meeting the following requirements:

- Material shall be free of sticks, leaves, stones, dirt clods, and other debris.
- Individual wood chips shall not exceed 2 inches (50 mm) in the largest dimension.

A mulch sample and request for material inspection must be supplied to the Engineer for approval prior to performing any work 72 hours prior to application.

**Method:** The grade, depth, and condition of the area must be approved by the Engineer prior to placement.

The Contractor shall remove any weeds, all litter and plant debris before mulching. The Contractor shall prepare a neatly spaded edge between the mulched bed and/or mulch ring and the turf. The Contractor shall repair the grade by raking as needed, before mulching. Care shall be taken not to bury leaves, stems, or vines under mulch material. Mulch shall not be in contact with the base of the trunk.

The shredded mulch shall be placed according to the specifications for planting trees, shrubs, vines and perennial plants. The mulch depth shall be as specified in the plans. Pre-emergent herbicide, if required, shall be applied prior to the placement of the shredded mulch.

All finished mulch areas shall be left smooth and level to maintain uniform surface and appearance.

After the mulch placement, any debris or piles of material shall be immediately removed from the right of way, including raking excess mulch out of turf areas.

**Method of Measurement:** Mulch placement will be measured in place to the depth specified in square yards (square meters). Areas not meeting the depth specified shall not be measured for payment.

**Basis of Payment:** This work will be paid for at the contract unit price per square yard (square meter) for **MULCH PLACEMENT**, of the thickness specified. Payment shall include all costs for materials, equipment and labor required to complete the work specified herein, including the cost of removing and disposing of any debris. Any mulch placement included as part of the work in other work items will not be measured separately for payment. Pre-emergent herbicide, if required, shall be paid for separately.

#### PAVEMENT BREAKING

**Description:** This work shall consist of the breaking of all pavement, shoulders, and other appurtenances at locations shown on the plans, in accordance with the applicable portions of Article 205.03 of the Standard Specifications, and as directed by the Engineer.

Revise Article 205.03(b)(1) of the Standard Specification, to read:

- (1) When the distance between the existing pavement and the proposed subgrade is 75mm (3 in.) and greater, the existing pavement shall be broken into pieces not to exceed 0.3 sq m (3 sq ft) in surface area.

**Method of Measurement:** PAVEMENT BREAKING will be measured for payment in place and the area computed in square meters (square yards). Shoulders, curbs and gutters and other appurtenances identified to be broken and left in place are not to be measured for payment.

**Basis of Payment:** This work will be paid for at the contract unit price per square meter (square yards) for PAVEMENT BREAKING, which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein. Shoulders, curbs and gutters and other appurtenances identified to be broken and left in place will not be paid for separately, but shall be included in the contract unit price for PAVEMENT BREAKING.

## EMBANKMENT

**Description.** This work shall be in accordance with Section 205 of the Standard Specifications and in accordance with the Special Provision for Extended Life Concrete Pavement (30 year) with the following additional requirements:

**Material:** Reclaimed asphalt pavement shall not be used within the ground water table or as a fill if ground water is present.

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

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

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

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

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

The top two feet of embankment below the Granular Subbase shall be compacted to not less than 100 percent of the standard laboratory density.

**Stability:** The top two feet of embankment below the Granular Subbase shall have a minimum shear strength of 2600 psf, minimum IBV of 8.0, or maximum IDOT Dynamic Cone Penetration Rate of 0.9 inches per blow, depending on the test method being used.

AGGREGATE SUBGRADE, 225MM (9")

Effective: May 1, 1990

Revised: July 1, 1999

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:

Crushed Stone, Crushed Blast Furnace Slag, and Crushed Concrete will be permitted. Steel slag and other expansive materials as determined through testing by the Department will not be permitted.

<u>Sieve Size</u>	<u>Percent Passing</u>
150 mm (6 inches)	97 $\pm$ 3
100 mm (4 inches)	90 $\pm$ 10
50 mm (2 inches)	45 $\pm$ 25
75 $\mu$ m (#200)	5 $\pm$ 5

The Aggregate subgrade shall be placed in one lift consisting of a 225 mm (9 inches). Reclaimed Asphalt Pavement (RAP) meeting Article 1004.07 of the Standard Specifications and having 100% passing the 37.5 mm (1 1/2 inches) sieve and well-graded down through fines may shall 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.

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 meters (square yards).

Basis of Payment. This work will be paid for at the contract unit price per square meter (square yard) for AGGREGATE SUBGRADE, 225 mm (9"), which price shall include the capping aggregate.

AGGREGATE SUBGRADE, 300MM (12")

Effective: May 1, 1990

Revised: July 1, 1999

This work shall be done in accordance with the applicable portions of Section 207 of the Standard Specifications. The material shall conform to Article 1004.06 of the Standard Specifications except as follows:

1. Crushed Stone, Crushed Blast Furnace Slag, and Crushed Concrete will be permitted. Steel slag and other expansive materials as determined through testing by the Department will not be permitted.

<u>Sieve Size</u>	<u>Percent Passing</u>
150 mm (6 inches)	97 $\pm$ 3
100 mm (4 inches)	90 $\pm$ 10
50 mm (2 inches)	45 $\pm$ 25
75 $\mu$ m (#200)	5 $\pm$ 5

2. Gravel, Crushed Gravel, and Pit Run Gravel

<u>Sieve Size</u>	<u>Percent Passing</u>
150 mm (6 inches)	97 $\pm$ 3
100 mm (4 inches)	90 $\pm$ 10
50 mm (2 inches)	55 $\pm$ 25
4.75 mm (#4)	30 $\pm$ 20
75 $\mu$ m (#200)	5 $\pm$ 5

3. Crushed Concrete with Bituminous Materials\*\*

<u>Sieve Size</u>	<u>Percent Passing</u>
150 mm (6 inches)	97 $\pm$ 3
100 mm (4 inches)	90 $\pm$ 10
50 mm (2 inches)	45 $\pm$ 25
4.75 mm(#4)	20 $\pm$ 20
75 $\mu$ m (#200)	5 $\pm$ 5

\*\*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 inches) 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 inches) and variable nominal thickness lower lift and a 75 mm (3 inches) 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 inches) 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 (2 feet) 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 meters (square yards).

**Basis of Payment:** This work will be paid for at the contract unit price per square meter (square yard) for AGGREGATE SUBGRADE, 300 mm (12”), which price shall include the capping aggregate.

RECLAIMED ASPHALT PAVEMENT (RAP) FOR TEMPORARY ACCESS ENTRANCES AND/OR AGGREGATE SHOULDERS, TYPE B  
Effective: April 1, 2001

Replace the Note in Articles 402.02(a) and 481.02(a) of the Standard Specifications for Road and Bridge Construction with the following:

"Note: Reclaimed asphalt pavement (RAP) may be used as aggregate in surface course for temporary access entrances and/or aggregate shoulders Type B. The RAP material shall be reclaimed asphalt pavement material resulting from the cold milling or crushing of an existing hot-mix bituminous concrete pavement structure, including shoulders. RAP containing contaminants such as earth, brick, concrete, sheet asphalt, sand, or other materials identified by the Department will be unacceptable until the contaminants are thoroughly removed. The RAP shall also meet the following requirements:

One hundred percent of the RAP material shall pass the 37.5 mm (1 1/2 inch) sieve. The RAP material shall be reasonably well graded from coarse to fine. RAP material that is gap-graded or single-sized will not be accepted."

EMBANKMENT FOR 30 YEAR EXTENDED LIFE CONCRETE PAVEMENT

Description: This work shall consist of constructing concrete pavement, shoulders and appurtenances of an extended life (30 year) design at locations specified on the plans. Work shall be performed according to the Standard Specifications except as modified herein:

Definitions:



- a) Granular Subbase. The aggregate above the subgrade and below the granular subbase cap.
- b) Granular Subbase Cap. The aggregate above the granular subbase and below the bituminous concrete base.
- c) Bituminous Concrete Base. The bituminous concrete layer above the granular subbase cap and below the pavement.

Embankment: Add the following to Section 205:

“Embankment material shall be approved by the Engineer and shall have a standard laboratory density of not less than 1450 Kg/cu m (90 lb/cu ft). It shall not have an organic content greater than ten percent when tested according to AASHTO T 194. Soils that demonstrate the following properties shall be restricted to the interior of the embankment:

- a) A grain size distribution with less than 35 percent passing the 75 um (#200) sieve.
- b) A plasticity index (PI) of less than 12.
- c) A liquid limit (LL) in excess of 50.
- d) Potential for erosion.
- e) Potential for excess volume change.

Such soils shall be covered on the side and top with a minimum of 900 mm (3 ft) of soil not characterized by any of the five items above.”

Revised the second paragraph of Article 205.05 to read:

“All lifts shall be compacted to not less than 95 percent of the standard laboratory density.”

Revise the first sentence of the third paragraph of Article 205.05 to read:

“The embankment shall not contain more than 110 percent of the optimum moisture content determined according to AASHTO T 99 (Method C).”

Subgrade Preparation: Add the following to the second paragraph of Article 301.06:

During compaction, the upper 200 mm (8 in.) of the subgrade shall not contain more than 110 percent of the optimum moisture content determined according to AASHTO T 99 (Method C).”

Granular Subbase and Granular Subbase Cap: Revise Article 311.02 to read:

“311.02 Materials. Materials shall meet the requirements of the following Articles of Section 1000 – Materials:

- a) Granular Subbase (Note 1).....1004.04
- b) Granular Subbase Cap (Note 2) .....1004.04

Note 1. The quality requirements in Article 1004.04 (b) shall not apply. The granular subbase shall be subbase granular material Type B, shall be classified as Category III in the Aggregate Gradation Control System (AGCS), and shall meet the following gradation requirements:

<b>Granular Subbase Gradations</b>						
Coarse Aggregate Type	Sieve Size Percent Passing					
	200 mm (8 in.)	150 mm (6 in.)	100 mm (4 in.)	50 mm (2 in.)	4.75 mm (#4)	75 um (#200)
Crushed Stone, Crushed Slag, and Crushed Concrete	100	97 ± 3	90 ± 10	45 ± 25		5 ± 5
Crushed Gravel		100	90 ± 10	55 ± 25	30 ± 20	5 ± 5

The granular subbase shall be well-graded from coarse to fine. Material that is gap-graded or single-sized will not be accepted.

Note 2. The granular subbase cap shall be subbase granular material, Type B and shall be CA 6 gradation.” Reclaimed Asphalt Pavement (RAP) meeting Article 1004.07 of the Standard Specifications and having 100% passing the 75 mm (3 inches) 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.

Add the following to Article 311.03:

“(h) Vibratory Roller .....1101.01 (g)”

Revise Article 311.05(c) to read:

“(c) Subbase Granular Material, Type B. The manner of placing and compacting the material shall be approved by the Engineer prior to starting the work.

The Granular subbase shall be constructed in layers not more than 600 mm (2 ft) thick when compacted. Each layer shall be compacted with a vibratory roller to the satisfaction of the Engineer.

After completion of the granular subbase, the granular subbase cap shall be placed. Each layer shall be compacted with a vibratory roller to the satisfaction of the Engineer.

If the moisture content of the material is insufficient to obtain satisfactory compaction, sufficient water shall be added, at the Contractors expense, so that satisfactory compaction can be obtained.”

Revise that first sentence of the first paragraph of Article 311.08 (b) to read:

“Aggregate used in the granular subbase and granular subbase cap will be measured for payment in square meters (square yards).”

Bituminous Concrete Base: This work shall be performed according to the special provision, “Superpave Bituminous Concrete Mixtures”. The mixture used shall be the Superpave IL-19.0, N50, 3.0% voids.

Pavement and Shoulders: Add the following to Articles 420.03, 421.03, and 483.03:

“The Contractor shall submit to the Engineer, for approval before paving, the proposed internal type vibrator spacing for the paver. The Contractor shall also provide the proposed vibrator operating frequencies for a paving speed greater than or equal to 0.9 m/min (3 ft./min) and a paving speed less than 0.9 m/min (3 ft/min).”

Add the following to Article 421.05:

“When the surface temperature, as measured on the surface with a device as approved by the Engineer, of the Stabilized Sub-base is 115°F (46°C) or greater the Contractor shall spray the Stabilized Sub-base with a water mist with equipment that meets the approval of the Engineer. The Stabilized Sub-base shall be cooled below 115°F (46°C) prior to paving on top. The water spray shall not produce excessive water runoff or leave puddles on the Stabilized Sub-base at the time of paving. All cooling shall be completed a minimum of 10 minutes prior to paving. The surface temperature shall be monitored during the paving operation to determine if the Stabilized Sub-base requires re-spraying.

The water used shall meet the requirements of Section 1002.”

Portland Cement Concrete:” Revise Article 1020.02 (d) to read:

“(d) Coarse Aggregate (Note 1) .....1004.01 – 1004.02”

Add the following to Article 1020.02:

“Note 1. For pavement, median, curb, gutter, combination curb and gutter and concrete barrier, the freeze-thaw rating expansion limit for the coarse aggregate shall be a maximum of 0.040 percent according to Illinois Modified AASHTO T 161, Procedure B.”

Revise the curing table of Article 1020.13 as follows:

“The curing period for pavement, median, curb, gutter and combination curb and gutter shall be a minimum of 7 days.”

Revise the first sentence of the second paragraph of Article 1020.13 (a)(4) to read:

“Membrane curing shall be completed within ten minutes after tining.”

Add the following to Article 1020.14(a):

“Prior to placing concrete, the Contractor shall indicate to the Engineer how the temperature of the concrete mixture will be controlled. If the temperature requirements are not being met, production of concrete shall stop until corrective action is taken. The Contractor will be allowed to deliver concrete already in route to the paving site.”

Method of Measurement: This work shall be measured for payment per sections 200, 300, and 400 of the Standard Specifications.

Basis of Payment: The plans indicate which roadways will be constructed to the 30 year extended life pavement requirements. The cost to construct the roadways to the 30 year extended life pavement requirements will not be paid for separately, but included in the cost of the various items of work.

The additional costs to meet the various Material, Samples, Compaction, Stability, Placing and Trimming requirements for embankment beneath the 30 year extended life pavement will not be measured for payment, but included in the cost of the various items of excavation.

The additional cost to meet the various Material, Equipment, Placing, Stability, Compaction, Trimming, and Finishing requirements for Granular Subbase beneath 30 year extended life pavement will not be paid for separately, but included in the cost per square meter for SUBBASE GRANULAR MATERIAL TYPE B, of the thickness specified.

The additional costs to meet the various Material, Placing, Stability, Compaction, Trimming, and Finishing requirements for the bituminous stabilized subbase beneath 30 year extended life pavement will not be paid for separately, but included in the cost per square meter for STABILIZED SUBBASE, of the thickness specified.

The additional costs to meet the various Material, Equipment, Placement, Finishing, Curing, and Sealing requirements for 30 year extended life pavement will not be paid for separately but included in the cost per square meter for CONTINUOUSLY REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT, of the thickness specified; per square meter for PORTLAND CEMENT CONCRETE SHOULDER, of the thickness specified; per each for LUG SYSTEM COMPLETE, of the width specified; per square meter of BRIDGE APPROACH PAVEMENT (SPECIAL).

## EMBANKMENT FOR NON 30 YEAR PAVEMENT

Embankment shall conform to the applicable requirements of Section 205 (Embankment) of the Standard Specifications except that excavated materials that are suitable shall be used in the construction of the embankment in areas where 30 year extended life pavement is not being constructed and the remainder disposed of at the Contractor's discretion. Embankment material shall either be from suitable excavated material from within the right-of-way or furnished by the Contractor from locations off the right-of-way. Suitable excavation material from structures and drainage items may also be placed in embankments.

For locations off the right-of-way, embankment material shall conform to the applicable requirements of Article 106.03 of the Standard Specifications except the contractor shall identify embankment sources to the Engineer a minimum of three weeks prior to use in order that laboratory tests for approval and compaction can be performed. Embankment material placement cannot begin until the tests are completed and approval given.

Earth excavation quantities shown in the plans may contain topsoil and unsuitable material that will not meet the criteria for approved embankment material, based on actual soil conditions. The Contractor should review the Soil Report available in the District One Bureau of Materials.

All material, which is proposed for use in embankment construction, must be approved by the District Geotechnical Engineer. The proposed material must meet the following requirements.

1. The laboratory Standard Dry Density shall be a minimum of 1450 kg/m<sup>3</sup> (90 lb/ft<sup>3</sup>) when determined in accordance with AASHTO designation T-99.
2. Soils with an organic content less than 10 percent determined in accordance with AASHTO designation T-194 (Wet Combustion).
3. Soils which demonstrate the following properties should be restricted to the interior of the embankment and shall be covered on both the sides and top of the embankment by a minimum of 900mm (3 feet) of soil not considered detrimental in terms of erosion potential or excess volume change.
  - a. A grain size distribution with less than 35 percent passing the number 75  $\mu$ m (#200) sieve.
  - b. A plasticity index (PI) of less than 11.
  - c. A liquid limit (LL) in excess of 45.

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

Reclaimed asphalt shall not be used within the ground water table or as a fill if ground water is present.

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

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

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

It is the responsibility of the contractor to ensure all lifts meet all the criteria of this provision. No additional placement will be allowed until these requirements are satisfied. All lifts which do not meet the criteria must be removed and replaced until approval is given.

Basis of Payment and Method of Measurement: This work shall be measured and paid for per Articles 205.07 and 205.08 of the Standard Specifications.

**POROUS GRANULAR EMBANKMENT, SUBGRADE**  
 Effective: September 30, 1985      Revised: November 1, 1996

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 inches)	97 $\pm$ 3
*100 mm (4 inches)	90 $\pm$ 10in
50 mm (2 inches)	45 $\pm$ 25
75 um (#200)	5 $\pm$ 5

2. Gravel, Crushed Gravel and Pit Run Gravel

<u>Sieve Size</u>	<u>Percent Passing</u>
*150 mm (6 inches)	97 $\pm$ 3
*100 mm (4 inches)	90 $\pm$ 10
50 mm (2 inches)	55 $\pm$ 25
4.75 mm (#4)	30 $\pm$ 20
75 um (#200)	5 $\pm$ 5

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

The porous granular material shall be placed in one lift when the total thickness to be placed is 600 mm (2 feet) 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.

A 75 mm (3 inches) nominal thickness top lift of capping aggregate having a gradation of CA 6 will be required when Aggregate Subgrade is not specified in the contract and Porous Granular Embankment, Subgrade will be used under the pavement and shoulders. Capping aggregate will not be required when embankment meeting the requirements of Section 207 of the Standard Specifications or granular subbase is placed on top of the porous granular material.

Construction equipment not necessary for the completion of the replacement material will not be allowed on the undercut areas until completion of the recommended thickness of the porous granular embankment subgrade.

Full depth subgrade undercut should occur at limits determined by the Engineer. A transition slope to the full depth of undercut shall be made outside of the undercut limits at a taper of 300 mm (1 foot) longitudinal per 25 mm (1 inch) depth below the proposed subgrade or bottom of the proposed aggregate subgrade when included in the contract.

This work will be measured for payment in accordance with Article 207.04 of the Standard Specifications. When specified on the contract, the theoretical elevation of the bottom of the aggregate subgrade shall be used to determine the upper limit of Porous Granular Embankment, Subgrade. The volume will be computed by the method of average end areas.

This work shall be paid for at the contract unit price per cubic meter (cubic yard) for POROUS GRANULAR EMBANKMENT, SUBGRADE which price shall include the capping aggregate, when required.

The Porous Granular Embankment, Subgrade shall be used as field conditions warrant at the time of construction. No adjustment in unit price will be allowed for an increase or decrease in quantities from the estimated quantities shown on the plans.

## EMBANKMENT STABILITY

**Description:** This work shall be according to Section 205 of the Standard Specifications except for the following. Wherever the final embankment height is 9.1m (30ft) or greater, the entire height of compacted embankment must demonstrate an unconfined compressive strength of 100kPa (1 tsf) or greater.

**Inspection:** Embankment stability will be measured with a Dynamic Cone Penetrometer (DCP) in accordance with the test method in the IDOT Geotechnical Manual. The penetration rate must be equal or less than 40mm (1.6 in) per blow.

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

#### EXTENDED LIFE CONCRETE PAVEMENT (30 YEAR)

**Description:** This work shall consist of constructing concrete pavement, shoulders and appurtenances of an extended life (30 year) design at locations specified on the plans. Work shall be performed according to the Standard Specifications except as modified herein:

#### Definitions:

- a) Granular Subbase. The aggregate above the subgrade and below the granular subbase cap.
- b) Granular Subbase Cap. The aggregate above the granular subbase and below the bituminous concrete base.
- c) Bituminous Concrete Base. The bituminous concrete layer above the granular subbase cap and below the pavement.

**Embankment:** Add the following to Section 205:

“Embankment material shall be approved by the Engineer and shall have a standard laboratory density of not less than 90 lb/cu ft.. It shall not have an organic content greater than ten percent when tested according to AASHTO T 194. Soils that demonstrate the following properties shall be restricted to the interior of the embankment:

- a) A grain size distribution with less than 35 percent passing the #200 sieve.
- b) A plasticity index (PI) of less than 12.
- c) A liquid limit (LL) in excess of 50.
- d) Potential for erosion.
- e) Potential for excess volume change.

Such soils shall be covered on the side and top with a minimum of 3 ft. of soil not characterized by any of the five items above.”



Revised the second paragraph of Article 205.05 to read:

“All lifts shall be compacted to not less than 95 percent of the standard laboratory density.”

Revise the first sentence of the third paragraph of Article 205.05 to read:

“The embankment shall not contain more than 110 percent of the optimum moisture content determined according to AASHTO T 99 (Method C).”

Subgrade Preparation: Add the following to the second paragraph of Article 301.06:

During compaction, the upper 8 in. of the subgrade shall not contain more than 110 percent of the optimum moisture content determined according to AASHTO T 99 (Method C).”

Granular Subbase and Granular Subbase Cap: Revise Article 311.02 to read:

“311.02 Materials. Materials shall meet the requirements of the following Articles of Section 1000 – Materials:

- a) Granular Subbase (Note 1).....1004.04
- b) Granular Subbase Cap (Note 2) .....1004.04

Note 1. The quality requirements in Article 1004.04 (b) shall not apply. The granular subbase shall be subbase granular material Type B, shall be classified as Category III in the Aggregate Gradation Control System (AGCS), and shall meet the following gradation requirements:

<b>Granular Subbase Gradations</b>						
Coarse Aggregate Type	Sieve Size Percent Passing					
	8 in.	6 in.	4 in.	2 in.	#4	#200
Crushed Stone, Crushed Slag, and Crushed Concrete	100	97 ± 3	90 ± 10	45 ± 25		5 ± 5
Crushed Gravel		100	90 ± 10	55 ± 25	30 ± 20	5 ± 5

The granular subbase shall be well-graded from coarse to fine. Material that is gap-graded or single-sized will not be accepted.

Note 2. The granular subbase cap shall be subbase granular material, Type B and shall be CA 6 gradation.” Reclaimed Asphalt Pavement (RAP) meeting Article 1004.07 of the Standard Specifications and having 100% passing the 3 inch 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.

Add the following to Article 311.03:

"(h) Vibratory Roller .....1101.01 (g)"

Revise Article 311.05(c) to read:

"(c) Subbase Granular Material, Type B. The manner of placing and compacting the material shall be approved by the Engineer prior to starting the work.

The Granular subbase shall be constructed in layers not more than 2 ft. thick when compacted. Each layer shall be compacted with a vibratory roller to the satisfaction of the Engineer.

After completion of the granular subbase, the granular subbase cap shall be placed. Each layer shall be compacted with a vibratory roller to the satisfaction of the Engineer.

If the moisture content of the material is insufficient to obtain satisfactory compaction, sufficient water shall be added, at the Contractors expense, so that satisfactory compaction can be obtained."

Revise that first sentence of the first paragraph of Article 311.08 (b) to read:

"Aggregate used in the granular subbase and granular subbase cap will be measured for payment in square meters (square yards)."

Stabilized Sub Base: This work shall be performed according to the special provision, "Superpave Bituminous Concrete Mixtures". The mixture used shall be the Superpave IL-19.0, N50, 3.0% voids.

Pavement and Shoulders: Add the following to Articles 420.03, 421.03, and 483.03:

"The Contractor shall submit to the Engineer, for approval before paving, the proposed internal type vibrator spacing for the paver. The Contractor shall also provide the proposed vibrator operating frequencies for a paving speed greater than or equal to 3 ft./min. and a paving speed less than 3 ft/min."

Add the following to Article 421.05:

"When the surface temperature, as measured on the surface with a device as approved by the Engineer, of the Stabilized Sub-base is 115°F or greater the Contractor shall spray the Stabilized Sub-base with a water mist with equipment that meets the approval of the Engineer.

The Stabilized Sub-base shall be cooled below 115°F prior to paving on top. The water spray shall not produce excessive water runoff or leave puddles on the Stabilized Sub-base at the time of paving. All cooling shall be completed a minimum of 10 minutes prior to paving. The surface temperature shall be monitored during the paving operation to determine if the Stabilized Sub-base requires re-spraying.

The water used shall meet the requirements of Section 1002.”

Portland Cement Concrete:” Revise Article 1020.02 (d) to read:

Revise Article 1020.05 to Read: Fly Ash – Will not be an option to partially replace Portland Cement in Concrete Mixtures, for Class BD, PV, MS, SI, SC and SH.

“(d) Coarse Aggregate (Note 1) .....1004.01 – 1004.02”

Add the following to Article 1020.02:

“Note 1. For pavement, median, curb, gutter, combination curb and gutter and concrete barrier, the freeze-thaw rating expansion limit for the coarse aggregate shall be a maximum of 0.040 percent according to Illinois Modified AASHTO T 161, Procedure B.”

Revise the curing table of Article 1020.13 as follows:

“The curing period for pavement, median, curb, gutter and combination curb and gutter shall be a minimum of 7 days.”

Revise the first sentence of the second paragraph of Article 1020.13 (a)(4) to read:

“Membrane curing shall be completed within ten minutes after tining.”

Add the following to Article 1020.14(a):

“Prior to placing concrete, the Contractor shall indicate to the Engineer how the temperature of the concrete mixture will be controlled. If the temperature requirements are not being met, production of concrete shall stop until corrective action is taken. The Contractor will be allowed to deliver concrete already in route to the paving site.”

**Method of Measurement:** This work shall be measured for payment per sections 200, 300, and 400 of the Standard Specifications.

**Basis of Payment:** The plans indicate which roadways will be constructed to the 30 year extended life pavement requirements. The cost to construct the roadways to the 30 year extended life pavement requirements will not be paid for separately, but included in the cost of the various items of work.

The additional costs to meet the various Material, Samples, Compaction, Stability, Placing and Trimming requirements for embankment beneath the 30 year extended life pavement will not be measured for payment, but included in the cost of the various items of excavation.

The additional cost to meet the various Material, Equipment, Placing, Stability, Compaction, Trimming, and Finishing requirements for Granular Subbase beneath 30 year extended life pavement will not be paid for separately, but included in the cost per square yard for SUBBASE GRANULAR MATERIAL TYPE B, of the thickness specified. At the option of the contractor the trimming of the stabilized subbase will not be required as per Article 311.06 except the subbase shall be brought to true shape by either placing the material in two equal or grade controlled mechanical paver as approved by the Engineer.

The additional costs to meet the various Material, Placing, Stability, Compaction, Trimming, and Finishing requirements for the bituminous stabilized subbase beneath 30 year extended life pavement will not be paid for separately, but included in the cost per square yard for STABILIZED SUBBASE, of the thickness specified.

The additional costs to meet the various Material, Equipment, Placement, Finishing, Curing, and Sealing requirements for 30 year extended life pavement will not be paid for separately but included in the cost per square yard for CONTINUOUSLY REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT, of the thickness specified; per square yard for PORTLAND CEMENT CONCRETE SHOULDER, of the thickness specified; per each for LUG SYSTEM COMPLETE, of the width specified; per square yard of BRIDGE APPROACH PAVEMENT (SPECIAL).

#### STABILIZED SUB-BASE

The Contractor shall use positive grade control on both sides of the placement equipment as approved by the Engineer. If positive grade control is not used on both sides of the placement equipment the following revisions to Section 312 shall apply.

Add the following to Article 312.04 of the Standard Specifications:

- (k) Electronically controlled trimmer capable of trimming a minimum width of 7.2m (24 feet) where pavement is 7.2m (24 feet) or wider and 3.6m (12 feet) where one lane is being constructed in a single pass.

Add the following to Article 312.10 of the Standard Specifications:

The compacted thickness of stabilized sub-base shall be approximately 13mm (1/2") more than the specified thickness as shown on the plans. The stabilized sub-base will then be trimmed to the proper plan elevations and thickness with an electronically controlled trimmer. Placement of extra thickness of stabilized sub-base, trimming to the plan specified thickness, and disposal of trimmed waste material will not be paid for separately but the cost shall be included in the unit price per square meter of STABILIZED SUB-BASE, 150MM and no extra payment shall be allowed.

**EXISTING SUBGRADE DENSITY REQUIREMENTS**

Description. This work will be in accordance with Section 301 of the Standard Specifications and in accordance with the Special Provision for Extended Life Concrete Pavement (30 year) with the following additional requirements:

The top 200mm of the exposed existing subgrade within the sections of improvement shown below in the following table shall be compacted to not less than 100 percent of the standard laboratory density (AASHTO T-99, Method C).

Alignment	Location
Eastbound Interstate 94	Station 18+509 to Station 19+930
Southbound Illinois Route 394	Station 38+520 to Station 39+600
Illinois Route 394	Station 440+250 to Station 440+440

Basis of Payment. This work shall not be measured for payment separately but shall be considered included in the cost of the various items of excavation, subbase, pavement, and shoulder.

**END SECTIONS TO BE REMOVED**

**Description:** This item shall consist of the removal and disposal of end sections at locations shown on the plans, in accordance with the applicable portions of Section 201 of the Standard Specification, and as directed by the Engineer.

**Method of Measurement:** Removal of existing end sections will be measured for payment in units of each at the location designated on the plans.

**Basis of Payment:** This work will be paid for at the contract unit price per each for END SECTIONS TO BE REMOVED, which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

**STORM SEWERS AND CULVERTS TO BE GROUTED**

**Description:** This work shall consist of filling existing sewers and culverts to be abandoned with a flowable grout mixture that completely fills the inside of the pipe at locations shown on the plans.

The material shall conform to the Recurring Special Provision for Controlled Low-Strength Material (CLSM) except as modified herein. The grout mix shall be modified with a high range water reducer in conformance with Article 1021.03 as required to obtain suitable flowable characteristics to completely fill the inside of the pipe, and as approved by the Engineer.

Unless existing drainage structures are available for access, the flowable grout mixture shall be placed into the pipe by means of access holes cut into the top of the pipe. The excavated areas for the access holes shall be backfilled and compacted to the satisfaction of the Engineer. Backfill material at locations under new pavement shall be Trench Backfill in conformance with Article 1003.04. Other areas may be backfilled with suitable excavated material.

**Basis of Payment:** This work will be measured and paid for at the contract unit price per cubic meter for STORM SEWERS TO BE GROUTED, or for CULVERTS TO BE GROUTED, which price shall be payment in full for all labor, material and equipment necessary to complete all the work as specified, including bulkheads where required, excavation, backfill and trench backfill.

#### PIPE UNDERDRAINS FOR STRUCTURES

**Description:** This work shall consist of furnishing and installing the perforated drain pipe, geotechnical fabric and/or impervious geomembrane, and coarse aggregate as shown on the plans, as specified herein, and as directed by the Engineer

**Materials:** Materials shall meet the requirements as set forth below:

Pipe underdrains shall consist of perforated drain pipe in accordance with Article 601.02 of the Standard Specifications. Outlet pipes shall not be perforated.

The coarse aggregate shall have a gradation of CA5 or CA7 in accordance with Section 1004 of the Standard Specifications.

The fabric surrounding the coarse aggregate shall consist of Geotechnical Fabric for French Drains in Accordance with Article 1080.05 of the Standards Specifications.

The impervious geomembrane surrounding the coarse aggregate shall be a minimum 20 mil in thickness and shall be manufactured from polypropylene, polyethylene, or polyvinyl chloride material.

**Construction Requirements:** All work shall be in accordance with the applicable requirements of Section 601 of the Standard Specifications except as modified below.

The pipe underdrains shall be installed to the lines and gradients as shown on the plans. The drain pipe shall be situated within an area of coarse aggregate as shown on the plans. The coarse aggregate shall be wrapped completely in geotechnical fabric and/or impervious geomembrane as shown on the plans.

**Method of Measurement:** Pipe underdrains for structures shall be measured for payment in meters (feet), in place. Measurement shall be along the centerline of the pipe underdrains. All connectors, outlet pipes, elbows, and all other miscellaneous items shall be included in the measurement.

**Basis of Payment:** This work will be paid for at the contract unit price per meter (foot) for PIPE UNDERDRAINS FOR STRUCTURES of the diameter specified, installed and measured as specified herein. Furnishing and installation of the coarse aggregate, geotechnical fabric, impervious geomembrane, forming holes in structural elements and any excavation required, will not be paid for separately, but shall be included in the cost of the pipe underdrains for structures.

#### PROTECTION OF EXISTING DRAINAGE FACILITIES DURING CONSTRUCTION

Unless otherwise noted in the contract plans, the existing drainage facilities shall remain in use during the period of construction. Locations of existing drainage structures and sewers as shown on the contract plans are approximate. Prior to commencement of work, the Contractor, at his own expense, shall determine the exact location of existing structures which are within the proposed construction site. All drainage structures are to be kept free from any debris resulting from construction operations. All work and materials necessary to prevent accumulation of debris in the drainage structures will be considered as included in the cost of the associated drainage pay items of the Contract. Any accumulation of debris in the drainage structure resulting from construction operations shall be removed at the Contractor's own expense, and no extra compensation will be allowed.

Unless reconstruction or adjustment of an existing manhole, catch basin, or inlet is called for in the contract plans or ordered by the Engineer, the proposed work should meet the existing elevations of these structures. 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.

Existing frames and grates are to remain unless otherwise noted in the contract plans or as directed by the Engineer. Frames and grates that are missing or damaged prior to construction shall be replaced. The type of replacement frame or grate shall be determined by the Engineer, and replacement and payment for same shall be in accordance with Section 604 and Article 104.02 respectively, of the Standard Specifications unless otherwise noted in the plans or Special Provisions.

The Contractor is responsible for removing 300mm riser section from precast tee and sealing opening at locations where a 300mm RCP was temporarily connected to the mainline sewer in Contract 62107. This work is to be included in the cost of STORM SEWER REMOVAL, of the diameter specified.

The Contractor shall take the necessary precautions when working near or above existing sewers and culverts in order to protect these pipes during construction from any damage resulting from his operations. All work and materials necessary to protect existing pipes damaged because of noncompliance with this provision shall be replaced as directed by the Engineer in accordance with Section 542 or 550 of the Standard Specifications and at the Contractor's own expense, and no extra compensation will be allowed.

During construction, if the Contractor encounters or otherwise becomes aware of any sewers, culverts, or underdrains within the right-of-way other than those shown on the plans, he shall so inform the Engineer who shall direct the work necessary to maintain the facilities in service and to protect them from damage during construction. Complying with this requirement shall be considered as included in the costs of the various pay items involved.

## SLOTTED DRAIN

**Description:** This work consists of furnishing and installing slotted drains, concrete encased, laid to the line, grade and at the locations shown in the plans, in accordance with the applicable portions of Sections 542 and 601 of the Standard Specifications, and as directed by the Engineer.

**Materials:** The corrugated steel pipe used in the slotted drain shall be bituminous coated and meet the requirements of AASHTO M36 and ASTM A760. The corrugated steel pipe shall be made of aluminized steel Type 2 (AASHTO M274), with a minimum wall thickness of 2mm.

The pipe shall be cut along the longitudinal axis and reinforced with a grate of solid spacer bars. The grate assembly shall be made from structural steel suitably welded to form the open slot and shall be hot-dip galvanized to meet the provisions of AASHTO M 111.

The slot shall vary in height as shown on the plans and as required in the field. Grates shall be designed for HS 20 truck loading tire pressure and be manufactured from ASTM A570 steel, grade 36 or ASTM A36 steel. Spacers, reducer plates and side plates shall be 5mm material with plate extenders of 7-gage minimum and made from ASTM A 761 or above materials. Spacer plates shall be 150mm spaced welded on each side. Opening at the top shall be 44mm to 50mm maximum. A maximum gap of 75mm at couplings shall be provided when banding slotted drains together.

Joints and couplers for slotted drain shall provide ring compression capability across the full width of the joint. The band coupler shall butt up against the grating. A single band bolt shall be provided for band tensioning. Couplers shall be hugger bands at a minimum width of 175mm and not less than 1.5mm thick AASHTO M36 steel. Couplings and bolts are to be galvanized in accordance with ASTM A123 except with a 2-ounce galvanized coating.

Cast-in-Place Concrete shall meet the requirements of Section 1020 for Class SI concrete.

**Construction Requirements:** The slotted drain shall be installed in a trench excavated to the required grade, wide enough to accommodate the drain pipe. If the trench is excavated too deep, the additional depth shall be filled with approved fine aggregate and compacted to the satisfaction of the Engineer. The slotted drain must be properly positioned in the trench prior to backfilling. The upper end of the drain shall be capped as directed by the Engineer.

Slotted drains shall be laid to the line and grades as shown on the plans. The Contractor shall field verify lines and grades needed for slotted drains prior to ordering materials. Any discrepancy between the plans and field verified lines and grades shall be submitted to the Engineer for review prior to ordering materials.



Support and brace the pipe rigidly in place and verify all connections and bolts are tightened prior to placement of trench backfill or concrete.

**Method of Measurement:** This work will be measured in meters (feet) measured along the centerline of the slotted drain from the end or inside face of the structure to the end of the inside face of structure, whichever is applicable.

**Basis of Payment:** This work will be paid for at the contract unit price per meter (foot) for SLOTTED DRAIN, of the size and slot height specified, which price shall be payment in full for all labor, equipment, and materials necessary to complete the work as specified herein including but not limited to pipe, side plates and reducer plates, concrete, reinforcement as specified, grating, trench excavation and disposal, bedding, and trench backfill where specified, fittings and connections including all accessories and connections required for connecting the slotted drain pipes to drainage structures where necessary, shop drawings necessary to complete the work as specified.

#### PAINT PAVEMENT MARKING – LINE 125MM (SPECIAL)

**Description:** This work shall consist of furnishing and applying a painted vertical stripe up the face of concrete barrier walls and extending across the top of the wall in accordance with Section 780 of the Standard specifications.

**Materials:** The stripe shall consist of Painted Pavement Markings and Glass Beads for Pavement Markings in accordance with Articles 780.02 (b) and (f).

**Construction Requirements:** The painted stripe shall be yellow in color and installed at the center of all drainage structures located adjacent to the concrete barrier wall. The stripe shall start at the drainage structure grate run up the face of the wall (perpendicular to the adjacent shoulder or pavement) and across the top of the wall.

**Method Of Measurement:** The lines will be measured for payment in meters of paint pavement marking lines applied and accepted, measured in place.

**Basis Of Payment:** This work will be paid for at the contract unit price per meter of line applied, as specified, for PAINT PAVEMENT MARKING – LINE 125MM (SPECIAL).

#### CATCH BASIN, SPECIAL

**Description:** This work shall consist of constructing catch basins (of the size specified) special with a Type 20 frame and grate, or Type 22 frame and grate as shown on the plans and District One Details CS-7 and CS-8, in accordance with the applicable portions of Section 602 of the Standard Specification.

**Method of Measurement and Basis of Payment:** This work will be paid for at the Contract unit price each for CATCH BASINS, (of the size specified) SPECIAL, TYPE 20 FRAME AND GRATE, and CATCH BASINS, (of the size specified) SPECIAL, TYPE 22 FRAME AND GRATE, which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

#### SLIP-ON FLAT BOTTOM CHECK VALVE

**Description.** This item shall consist of the furnishing of all labor, materials and equipment, transporting, and complete installation of slip-on flat bottom check valve of the size specified at the locations shown on the plans and details, or as directed by the Engineer.

**General Requirements.** The check valve shall operate in such a manner that when line pressure inside the valve exceeds the backpressure outside the valve by a certain amount, the line pressure forces the bills of the valve open, allowing flow to pass. When backpressure exceeds the line pressure by the same amount, the bills of the valve are forced close. The flat bottom allows the valve to be installed where minimal bottom clearance exists.

The valve shall be an all rubber, “duckbill” type elastomeric diffuser check valve of the flow operated check type with a slip-on connection. Included shall be stainless steel clamps and any other stainless fittings, clamps and rubber gaskets necessary for the complete installation.

The check valve shall be designed to slip over the specified pipe outside diameter and attached by means of vendor supplied stainless steel clamps. The port area shall contour down to a duckbill that shall allow passage of flow in one direction while preventing reverse flow. The check valve shall be of one-piece rubber construction with nylon reinforcement. The duckbill shall be offset so that the bottom line of the valve is flat, keeping the invert of the pipe parallel with the invert of the check valve. The top of the valve shall rise to form the duckbill shape.

The supplier shall have at least ten (10) years experience in the manufacture and successful installation of “duckbill” style elastomeric check valves, and shall provide references and a list of installations.

For submittals, the Contractor shall submit shop drawings that clearly identify the check valve dimensions. In addition, product literature shall be submitted that includes information on the performance and operation of the check valve, materials of construction, dimensions and weights, elastomer characteristics, flow data, headloss data, and pressure ratings.

The manufacturer shall have available and submit flow test data from an accredited hydraulics laboratory to confirm pressure drop data. Company name, plant location, valve size and serial number shall be bonded to the check valve. Valves shall be manufactured in the USA.

All valves shall be installed in accordance with the manufacturer’s written Installation and Operation Manual and approved submittals.

The manufacturer's authorized representative shall be on hand, and customer service shall be available directly from the factory, during installation and start-up, and to train owner's personnel in the proper operation, maintenance and troubleshooting of the check valve.

**Method of Measurement.** This item shall be measured in place for each complete check valve assembly of the size specified including the valve itself, all fittings, clamps and gaskets, and any related appurtenances, as shown in the manufacturer's submittals, on the Plans and as designated by the Commissioner.

**Basis of Payment.** This item shall be paid for at the contract unit price per each for SLIP-ON FLAT BOTTOM CHECK VALVE, of the size specified, measured as specified herein, which price shall be payment in full for all materials, labor and equipment necessary to furnish, transport and install the complete check valve assembly, all where shown on the manufacturer's submittals, required on the Plans and as directed.

#### DRAINAGE STRUCTURES, TYPE 1 (SPECIAL) WITH TWO TYPE 20 FRAME AND GRATES

**Description:** This item shall consist of constructing drainage structures, Type 1 Special with two Type 20 frame and grates as shown on the plans, in accordance with the applicable portions of Section 602 of the Standard Specification.

**Basis of Payment.** This work will be paid for at the contract unit price each for DRAINAGE STRUCTURES, TYPE 1 (SPECIAL) WITH TWO TYPE 20 FRAME AND GRATES which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

#### STORM SEWER ADJACENT TO OR CROSSING WATER MAIN

Effective: February 1, 1996

Revised: March 31, 1998

**Description:** This work consists of constructing storm sewer of the specified diameter adjacent to or crossing water main, at the locations shown on the plans, meeting the material and installation requirements of the latest edition of the "Standard Specifications for Water and Sewer Main Construction in Illinois", and the applicable portions of Section 550 of the Standard Specifications.

Pipe materials shall meet the requirements of Sections 40 and 41-2.01 of the "Standard Specifications for Water and Sewer Main Construction in Illinois", except PVC pipe will not be allowed. Ductile-Iron pipe shall meet the minimum requirements for Thickness Class 50.

Encasing of standard type storm sewer, in accordance with the details for "Water and Sewer Separation Requirements (Vertical Separation)", (DIV. V/STANDARD DRAWINGS) in the "Standard Specifications for Water and Sewer Main Construction in Illinois", may be used for storm sewers crossing water mains.

**Basis of Payment:** This work will be paid for in accordance with Article 550.09 of the Standard Specifications, except the pay item shall be STORM SEWER (WATER MAIN REQUIREMENTS), of the diameter specified, and shall include all materials, labor, equipment, concrete collars and encasing pipe with seals.

**PROPOSED STORM SEWER CONNECTION TO EXISTING MANHOLE**

**Description:** This work shall consist of connecting proposed storm sewers to existing manholes at locations as shown on the plans or as directed by the Engineer, in accordance with the applicable portions of Section 550 of the Standard Specifications.

**Basis of Payment:** This work will be paid for at the contract unit price per each for PROPOSED STORM SEWER CONNECTION TO EXISTING MANHOLE which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

**BACKFILLING STORM SEWER UNDER ROADWAY**

Effective: September 30, 1985                      Revised: July 2, 1994

For storm sewer constructed under the roadway, backfilling methods two and three authorized under the provisions of Article 550.07 will not be allowed.

**CONCRETE BARRIER**

Revise Section 637 of the Standard Specifications to read:

**“SECTION 637. CONCRETE BARRIER**

**637.01 Description.** This work shall consist of constructing a concrete barrier and its base.

**637.02 Materials.** Materials for concrete barrier and concrete base shall conform to the requirements of the following Articles of Section 1000 - Materials:

Item	Article/Section
(a).....Portland Cement Concrete	1020
(b).....Tie Bars (Note 1)	1006.10(a)(b)
(c).....Dowel Bars	1006.11(b)
(d).....Protective Coat	1023
(e).....Non-Shrink Grout	1024
(f).....Chemical Adhesive	1027
(g).....Preformed Expansion Joint Filler	1051.01 – 1051.08

Note 1. Tie bars shall be Grade 400 (Grade 60).

The coarse aggregate to be used in the concrete barrier walls shall conform to the requirements for the coarse aggregate that is used for superstructure concrete.

**637.03 Equipment.** Equipment for concrete barrier shall conform to the requirements of the following Articles of Section 1100 - Equipment:

Item	Article/Section
(a)..... Hand Vibrator	1103.17(a)
(b)..... 3 m (10 ft) Straightedge	1103.17(h)

Equipment for portland cement concrete base shall conform to the requirements of Article 483.03.

### CONSTRUCTION REQUIREMENTS

**637.04 Barrier Base.** The base may be constructed separately or poured monolithically with the barrier. When constructed separately, portland cement concrete base shall be constructed according to Articles 483.04 – 483.06, except the surface shall be finished according to Article 503.09(a).

**637.05 Anchoring.** Barrier shall be anchored to the base by the methods shown on the plans. When tie bars are used, they shall be installed in preformed or drilled holes with a non-shrink grout or chemical adhesive.

**637.06 Barrier Construction.** Concrete barrier shall be constructed according to the applicable portions of Articles 503.06 and 503.07. Where the horizontal alignment of the concrete barrier is curved, the barrier shall be constructed either on the curved alignment or on cords not more than 3 m (10 ft) in length.

When slipformed, the vertical centerline of the barrier shall not vary from the proposed centerline by more than 75 mm (3 in.) nor by more than 13 mm in 3 m (1/2 in. in 10 ft). All surfaces shall be checked with a 3 m (10 ft) straightedge as the concrete exits the slipform mold. Surface irregularities greater than 10 mm in 3 m (3/8 in. in 10 ft) shall be corrected immediately. Continued variations in the barrier surface exceeding 6 mm in 3 m (1/4 in. in 10 ft) will not be permitted and remedial action shall immediately be taken to correct the problem. Any deformations or bulges remaining after the initial set shall be removed by grinding after the concrete has hardened. All holes and honeycombs shall be patched immediately.

When a reinforced single face barrier is specified, the required reinforcing shall be as detailed in the plans.

**637.07 Barrier Transitions.** Transitions between barriers of different design shall be constructed according to the details shown on the plans.

**637.08 Joints.** Joints shall be constructed as shown on the plans and as follows:

- (a) Construction Joints. Construction joints shall be constructed in the barrier whenever there is an interruption in the pour of more than 30 minutes.
- (b) Expansion Joints. Expansion joints shall be constructed in the barrier and the base in line with expansion joints in the adjacent pavement or shoulder. Expansion joints shall also be constructed at locations where the barrier abuts a rigid structure.

Prior to placing concrete, a light coating of oil shall be uniformly applied to the dowel bars.

- (c) Contraction Joints. Contraction joints shall be constructed in the barrier at uniform intervals with a maximum spacing of 6 m (20 ft) or in line with contraction joints in the adjacent pavement or shoulder. Contraction joints shall be formed by a groove 3 mm (1/8 in.) wide by 50 mm (2 in.) deep either formed in the plastic concrete or sawed after the concrete has set.

**637.09 Finishing.** The surface of concrete barrier shall be finished according to Article 503.16(a).

**637.10 Protective Coat.** When required, the top and vertical surfaces of the barrier exposed to traffic shall receive a protective coat. The application of the protective coat shall be according to Article 420.21.

**637.11 Method of Measurement.** This work will be measured as follows:

- (a) Contract Quantities. The requirements for the use of contract quantities shall be according to Article 202.07(a).
- (b) Measured Quantities. New barrier base, both separate and monolithic, will be measured for payment in meters (feet) in place, along the centerline of the base or barrier. The width of the base will be defined as the width of the barrier.

Concrete barrier will be measured for payment in meters (feet) in place, along the centerline of the barrier.

The cost of reinforcing bars shall be included in the cost of the reinforced concrete barrier.

Barrier transitions will be measured for payment in meters (feet) in place, along the centerline of the transition.

Protective coat will be measured for payment according to Article 420.22(b).

**637.12 Basis of Payment.** This work will be paid for at the contract unit price per meter (foot) for CONCRETE BARRIER BASE; CONCRETE BARRIER, DOUBLE FACE, of the height specified; CONCRETE BARRIER, SINGLE FACE, of the height specified; CONCRETE BARRIER, SINGLE FACE, of the height specified, REINFORCED; and CONCRETE BARRIER TRANSITION.

Protective coat will be paid for according to Article 420.23.”

#### SAND BACKFILL

**Description:** This work shall consist of furnishing, transporting and placing a sand backfill between concrete barriers or between concrete barrier and retaining wall in accordance with Section 586 of the IDOT Standard Specifications and as indicated on the Plans.

**Method of Measurement:** Sand backfill will be measured for payment as specified in Article 586.04 of the IDOT Standard Specifications.

**Basis of Payment:** This work will be paid for at the contract unit price per cubic meter for SAND BACKFILL which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

#### CONCRETE FILLED STEEL POSTS

**Description:** This item shall consist furnishing and installing concrete filled steel posts to the locations and dimensions shown on the plans or as directed by the Engineer. The steel post shall be fabricated from Schedule 40 steel pipe, ASTM A53, and shall be shop painted with one coat of primer and two coats of yellow enamel according to Section 851.

**Method of Measurement:** Concrete Filled Steel Posts will be measured for payment for each, in place.

**Basis of Payment:** This work will be paid for at the contract unit price each for CONCRETE FILLED STEEL POSTS, which price shall include all labor, material, and equipment to complete the work herein.

#### CONCRETE HEADWALLS

**Description:** This item shall consist of the construction of Concrete Headwalls at locations shown on the plans, in accordance with the applicable portions of Section 503 of the Standard Specification, and as directed by the Engineer.

**Method of Measurement:** This work will be measured for payment in cubic meters, calculated to the exact dimensions of placement, as shown on the plans in accordance with Article 503.21 of the Standard Specifications

**Basis of Payment:** This work will be paid for at the contract unit price per cubic meter for CONCRETE HEADWALLS, which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

Reinforcement will not be measured or paid for separately but will be included in the cost of CONCRETE HEADWALLS.

#### FENCE REMOVAL

Effective: March 1 , 2002

This work shall consist of the removal and disposal of existing fence at the locations shown on the plans and as directed by the Engineer. The work shall include the removal and disposal of the fence, posts, post foundations, and any other appurtenances.

All holes left by the removal of the fence posts and post foundations shall be filled with crushed stone screenings. The furnishing and placement of the crushed stone screenings will not be paid for separately but shall be considered as included in the cost of fence removal.

**Method of Measurement:** This work will be measured for payment in meters (feet) along the top of the fence of the area to be removed.

**Basis of Payment:** This work will be paid for at the contract unit price per meters (feet) for FENCE REMOVAL, which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

#### GENERAL ELECTRICAL REQUIREMENTS

Effective: November 4, 2004

Add the following to Article 801 of the Standard Specifications:

“Maintenance transfer and Preconstruction Inspection:

General. Before performing any excavation, removal, or installation work (electrical or otherwise) at the site, the Contractor shall request a maintenance transfer and preconstruction site inspection, to be held in the presence of the Engineer and a representative of the party or parties responsible for maintenance of any lighting and/or traffic control systems which may be affected by the work. The request for the maintenance



transfer and preconstruction inspection shall be made no less than seven (7) calendar days prior to the desired inspection date. The maintenance transfer and preconstruction inspection shall:

Establish the procedures for formal transfer of maintenance responsibility required for the construction period.

Establish the approximate location and operating condition of lighting and/or traffic control systems which may be affected by the work

Marking of Existing Cable Systems. The party responsible for maintenance of any existing lighting and/or traffic control systems at the project site will, at the Contractor's request, mark and/or stake, once per location, all underground cable routes owned or maintained by the State. A project may involve multiple "locations" where separated electrical systems are involved (i.e. different controllers). The markings shall be taken to have a horizontal tolerance of at least 304.8 mm (one (1) foot) to either side.. The request for the cable locations and marking shall be made at the same time the request for the maintenance transfer and preconstruction inspection is made. The Contractor shall exercise extreme caution where existing buried cable runs are involved. The markings of existing systems are made strictly for assistance to the Contractor and this does not relieve the Contractor of responsibility for the repair or replacement of any cable run damaged in the course of his work, as specified elsewhere herein. NOTE THAT THE CONTRACTOR SHALL BE ENTITLED TO ONLY ONE REQUEST FOR LOCATION MARKING OF EXISTING SYSTEMS AND THAT MULTIPLE REQUESTS MAY ONLY BE HONORED AT THE CONTRACTOR'S EXPENSE. NO LOCATES WILL BE MADE AFTER MAINTENANCE IS TRANSFERRED, UNLESS IT IS AT THE CONTRACTOR'S EXPENSE.

Condition of Existing Systems. The Contractor shall conduct an inventory of all existing electrical system equipment within the project limits, which may be affected by the work, making note of any parts which are found broken or missing, defective or malfunctioning. Megger and load readings shall be taken for all existing circuits which will remain in place or be modified. If a circuit is to be taken out in its entirety, then readings do not have to be taken. The inventory and test data shall be reviewed with and approved by the Engineer and a record of the inventory shall be submitted to the Engineer for the record. Without such a record, all systems transferred to the Contractor for maintenance during construction shall be returned at the end of construction in complete, fully operating condition."

Delete the last paragraph of Article 801.06 of the Standard Specifications.

Revise the 7<sup>th</sup> and 8<sup>th</sup> paragraphs of Article 801.08 of the Standard Specifications to read:

“Engineer’s Stamp. After the Engineer reviews the submittals for conformance with the design concept of the project, the Engineer will stamp the drawings indicating their status as ‘Approved’, ‘Approved-As-Noted’, ‘Disapproved’, or ‘Information Only’. Since the Engineer’s review is for conformance with the design concept only, it is the Contractor’s responsibility to coordinate the various items into a working system as specified. The Contractor shall not be relieved from responsibility for errors or omissions in the shop, working, layout drawings, or other documents by the Department’s approval thereof. The Contractor must still be in full compliance with contract and specification requirements.

Resubmittals. All submitted items reviewed and marked ‘APPROVED AS NOTED’, or ‘DISAPPROVED’ are to be resubmitted in their entirety with a disposition of previous comments to verify contract compliance at no additional cost to the state unless otherwise indicated within the submittal comments.”

Revise Article 801.12 of the Standard Specifications to read:

“Lighting Operation and Maintenance Responsibility. The scope of work shall include the assumption of responsibility for the continuing operation and maintenance the of existing, proposed, temporary, sign and navigation lighting, or other lighting systems and all appurtenances affected by the work as specified elsewhere herein.”

Add the following to Article 801.12 of the Standard Specifications:

“Energy and Demand Charges. The payment of basic energy and demand charges by the electric utility for existing lighting which remains in service will continue as a responsibility of the Owner, unless otherwise indicated. Unless otherwise indicated or required by the Engineer duplicate lighting systems (such as temporary lighting and proposed new lighting) shall not be operated simultaneously at the Owner’s expense and lighting systems shall not be kept in operation during long daytime periods at the Owner’s expense. Upon written authorization from the Engineer to place a proposed new lighting system in service, whether the system has passed final acceptance or not, (such as to allow temporary lighting to be removed), the

Owner will accept responsibility for energy and demand charges for such lighting, effective the date of authorization. All other energy and demand payments to the utility shall be the responsibility of the Contractor until final acceptance.”

Add the following to Section 801 of the Standard Specifications:

“Splicing of Lighting cables. Splices above grade, such as in poles and junction boxes, shall have a waterproof sealant and a heat-shrinkable plastic cap. The cap shall be of a size suitable for the splice and shall have a factory-applied sealant within. Additional seal of the splice shall be assured by the application of sealant tape or the use of a sealant insert prior to the installation of the cap. Either method shall be assured compatible with the cap sealant. Tape sealant shall be applied in not less than one half-lapped layer for a length at least 6.35 mm (1/4-inch) longer than the cap length and the tape shall also be wrapped into the crotch of the splice. Insert sealant shall be placed between the wires of the splice and shall be positioned to line up flush or extend slightly past the open base of the cap.

Lighting Cable Identification. Each wire installed shall be identified with its complete circuit number at each termination, splice, junction box or other location where the wire is accessible.

Lighting Cable Fuse Installation. Standard fuse holders shall be used on non-frangible (non-breakaway) light pole installations and quick-disconnect fuse holders shall be used on frangible (breakaway) light pole installations. Wires shall be carefully stripped only as far as needed for connection to the device. Over-stripping shall be avoided. An oxide inhibiting lubricant shall be applied to the wire for minimum connection resistance before the terminals are crimped-on. Crimping shall be performed in accordance with the fuse holder manufacturer's recommendations. The exposed metal connecting portion of the assembly shall be taped with two half-lapped wraps of electrical tape and then covered by the specified insulating boot. The fuse holder shall be installed such that the fuse side is connected to the pole wire (load side) and the receptacle side of the holder is connected to the line side.

Grounding of Lighting Systems. All electrical systems, equipment and appurtenances shall be properly grounded in strict conformance with the NEC, even though every detail of the requirements is not specified or shown. Good ground continuity throughout the electrical system shall be assured. All electrical circuit runs shall have a continuous equipment grounding conductor. IN NO CASE SHALL THE EARTH BE CONSIDERED AS AN ADEQUATE EQUIPMENT GROUNDING PATH. Where connections are made to painted surfaces, the paint shall be scraped to fully expose metal at the connection point and serrated connectors or washers shall be used. Where metallic conduit is utilized as the equipment grounding conductor, extreme care shall be exercised to assure continuity at joints and termination points. No wiring run shall be installed without a suitable equipment ground conductor. Where no equipment ground conductor is provided for in the plans and associated specified pay item, the Contractor is obligated to bring the case to the attention of the Engineer who will direct the Contractor accordingly. Work which is extra to the contract will be paid extra. All

connections to ground rods, structural steel, reinforcing steel or fencing shall be made with exothermic welds. Where such connections are made to insulated conductors, the connection shall be wrapped with at least 4 layers of electrical tape extended 152.4 mm (six inches) onto the conductor insulation. Where a ground field of "made" electrodes is provided, the exact locations of the rods shall be documented by dimensioned drawings as part of the Record Drawings. Equipment ground wires shall be bonded, using a splice and pigtail connection, to all boxes and other metallic enclosures throughout the wiring system.

Lighting Unit Identification. Each pole, light tower and underpass light shall be labeled as indicated in the plans to correspond to actual circuiting, and as designated by the Engineer. They shall be installed by the Contractor on each lighting unit pole shaft and on the underpass walls, or piers, as shown in the details. Median-mounted poles shall have two sets of identification labeling oriented to allow visibility from travel in either direction. Lighting Controllers shall also be identified by means identification decals as described herein. Identification shall be in place prior to placing the equipment in service. Identification of weathering steel poles shall be made by application of letters and numerals as specified herein to an appropriately sized 3.175 mm (1/8-inch) thick stainless steel plate which shall be banded to the pole with two stainless steel bands. Identification of painted poles shall be made by application of letters and numerals as specified herein via an adhesive approved by the paint manufacturer for the application. Identification of luminaires which are not pole mounted, such as underpass luminaires, shall be done using identification brackets. In general, the brackets shall be mounted adjacent to and within one foot of their respective luminaires. The brackets shall be fabricated from 3.175 mm (one-eighth (1/8)) inch aluminum alloy sheet according to the dimensions shown on the plans. The bracket shall be bent so as to present the luminaire identification numbers at a sixty (60) degree angle to the wall.

The bracket shall be attached to concrete walls with three (3) 6.35 mm (1/4 inch), self drilling, snap-off type galvanized steel concrete anchors set flush with the wall, or power driven fasteners approved by the Engineer. The brackets shall be offset from the wall with 12.7 mm (1/2") aluminum bushings. The structural steel shall not be drilled to attach the brackets. The luminaire identification numbers shall be applied to the bracket using the method described for identification applied to poles.

Procurement. Materials and equipment shall be the products of established manufacturers, and shall be suitable for the service required. The Contractor is obligated to conduct his own search into the timely availability of the specified equipment and to ensure that all materials and equipment are in strict conformance with the contract documents and that delivery schedules are compatible with project time constraints. **Materials or equipment items which are similar or identical shall be the product of the same manufacturer.** The cost of submittals, certifications, any required samples and similar costs shall not be paid for extra but shall be included in the pay item bid price for the respective material or work.

UL Label. Unless otherwise indicated, materials and equipment shall bear the UL label whenever such labeling is available for the type of material or equipment being furnished.

#### RACEWAYS EMBEDDED IN STRUCTURE

Effective: March 10, 2004

Section 810 of the Standard Specifications for Road and Bridge Construction shall be modified as follows:

Add the following to Article 810.03(c):

“Coilable non-metallic conduit shall be machine straightened to remove the longitudinal curvature caused by coiling the conduit onto reels prior to installing in trench, encasing in concrete or embedding in structure. The straightening shall not deform the cross-section of the conduit such that any two measured outside diameters, each from any location and at any orientation around the longitudinal axis along the conduit differ by more than 6 mm (0.25”).” The longitudinal axis of the straightened conduit shall not deviate by more than 20 mm per meter (0.25” per foot) from a straight line.

Section 812 of the Standard Specifications for Road and Bridge Construction shall be modified as follows:

Add the following to Article 812.02:

“(d) Coilable Nonmetallic Conduit....1088.01(c)”

Change Article 812.03(d) to 812.03 (e). Add the following as the new Article 812.03(d):

“(d) Coilable Nonmetallic Conduit. Conduit installation shall be according to Article 810.03(c).”

Add the following paragraph to Article 812.03:

All conduits which extend outside of the structure but are not terminated in a cabinet, junction box, pull box, handhole, post, pole, or pedestal shall extend a minimum of 300 mm (12”) or the length shown on the plans beyond the structure. The end of this extension shall be capped and sealed with a cap designed for the conduit to be capped. The ends of rigid metal conduit to be capped shall be threaded, the threads protected with full galvanizing, and capped with a threaded galvanized steel cap. The ends of rigid nonmetallic conduit and coilable nonmetallic conduit shall be capped with a rigid PVC cap of not less than 3 mm (0.125”) thick. The cap shall be sealed to the conduit using a room-temperature-vulcanizing (RTV) sealant compatible with the material of both the cap and the conduit. A washer or similar metal ring shall be glued to the inside center of the cap with epoxy, and the pull cord shall be tied to this ring.

COILABLE NON-METALLIC CONDUIT  
 Effective: September 1, 2005

Description.

This work shall consist of furnishing, installing, splicing, connecting and demonstrating continuity of coilable non-metallic conduit (CNC) of sizes specified herein and as shown on the contract drawings. The coilable non-metallic conduit shall be High Density Polyethylene (HDPE) pipe, schedule 40, UL Listed.

Materials.

- (a) General. The duct shall be a plastic duct which is intended for underground use and which can be manufactured and coiled or reeled in continuous transportable lengths and uncoiled for further processing and/or installation without adversely affecting its properties of performance. The duct shall be a plastic duct which is intended for underground use and can be manufactured and coiled or reeled in continuous transportable lengths and uncoiled for further processing and/or installation without adversely affecting its properties of performance.

The duct shall be made of high density polyethylene which shall meet the requirements of ASTM D 2447, for schedule 40. The duct shall be composed of black high density polyethylene meeting the requirements of ASTM D 3350, Class C, Grade P33. The wall thickness shall be in accordance with Table 2 for ASTM D 2447.

The duct shall be UL Listed per 651-B for continuous length HDPE coiled conduit. The duct shall also comply with NEC Article 354.100 and 354.120.

Submittal information shall demonstrate compliance with the details of these requirements.

- (b) Dimensions. Duct dimensions shall conform to the standards listed in ASTM D2447. Submittal information shall demonstrate compliance with these requirements.

Nominal Size		Nominal I.D.		Nominal O.D.		Minimum Wall		Pulled Tensile	
mm	in	mm	in	mm	in	mm	in	N	lbs
25.0	1.0	26.64	1.049	33.4	1.315	3.4	0.133	2451	551
30.0	1.25	35.05	1.380	42.16	1.660	3.556	0.140	3322	747
40.0	1.50	40.89	1.610	48.26	1.900	3.683	0.145	3972	893
50.0	2.0	52.55	2.067	60.33	2.375	3.912	0.154	5338	1200
65.0	2.5	62.71	2.469	73.03	2.875	5.156	0.203	8465	1903
75.0	3.0	77.92	3.068	88.9	3.500	5.486	0.216	11067	2488
100.0	4.0	102.26	4.026	114.3	4.500	6.019	0.237	15764	3544

- (c) Marking. As specified in NEMA Standard Publication No. TC-7, the duct shall be clearly and durably marked at least every 3.05 meters (10 feet) with the material designation (HDPE for high density polyethylene), nominal size of the duct and the name and/or trademark of the manufacturer.

- (d) Performance Tests. Polyethylene Duct testing procedures and test results shall meet the requirements of ASTM D 3485. Certified copies of the test report shall be submitted to the Engineer prior to the installation of the duct. Duct crush test results shall meet or exceed the following requirements:

Nominal Duct Diameter		Min. force required to deform sample 50%	
mm	in	N	lbs
25	1.0	5337	1200
30	1.25	4937	1110
40	1.5	4559	1025
50	2.0	3780	850

Installation.

- (a) General.

- (1) Straightening. The CNC shall be mechanically straightened (by a commercially produced straightening machine) prior to installation in raceway, encasement in concrete, or embedded in structure. CNC installed in earth does not need to be processed through a straightening mechanism. The CNC and straightening mechanism manufacturer operating temperatures shall be followed.
- (2) Pulling Tension. Pulling tension of the duct shall be monitored throughout the pull and pulling tension shall not exceed the specific manufacturer maximum pulling tensions as indicated in the catalog cut submittals. Failure to monitor the pulling tension will result in non-payment of that particular CNC span and the span may be replaced with new duct at no additional cost to the State. Lubricants used shall be compatible with the CNC.
- (3) Junction boxes. Where CNC passes through junction and/or pull boxes, the CNC may be carefully cut and removed for the length within the box, but conductors shall remain continuous and without splicing unless directed by the Engineer. Where CNC enters a box, fitting, or other enclosure such as a light pole, a bushing or box adapter shall be provided to protect the conductors from abrasion unless the design of the box, fitting, or enclosure provides equivalent protection.
- (4) Handholes. Where CNC passes through handholes, the CNC shall be looped uncut within the handhole unless otherwise indicated on the Plans or directed by the Engineer. Where CNC is allowed to be cut at handholes in order to facilitate the installation, conductors shall remain continuous and unspliced unless specifically directed by the Engineer and conductors shall be supported to keep them near the top of the handhole.

- (5) Bends. Minimum bending radius for the installed CNC assembly shall be 609.6 mm (24 inches) for the CNC or the manufacturer's recommended radius, whichever is larger. Bends shall be made so that the CNC will not be damaged and the internal diameter of the duct will not be effectively reduced. The degrees of bend in one CNC run shall not exceed 360° between termination points.
- (b) In Trench. Where CNC is installed in trench, it shall be placed in the bottom of the trench after all loose stones have been removed and all protruding stones have been removed or covered with backfill material as directed by the Engineer.

Where CNC is shown to be installed in trench, it shall be installed at a depth not less than 762.0 mm (30 inches) unless otherwise indicated or specifically directed by the Engineer.

Where the specification for trench and backfill permits plowing in lieu of trench and backfill, the CNC may be plowed into place. Unless otherwise indicated or specifically approved by the Engineer, plowing of CNC shall lay the CNC in place and shall not pull the CNC through the length of the cut behind a bullet-nose mandrel or similar apparatus. In all cases, plowing operations shall be non-injurious to the CNC.

- (c) In Raceway. Where CNC is installed in raceways, lubricating compounds shall be used where necessary to assure smooth installation.
- (d) Encased in Concrete. Concrete shall be class SI complying with Section 720 of the Standard Specifications.

Steel reinforcement bars shall comply with Section 706.10 of the Standard Specifications.

Underground concrete-encased CNC shall be supported on interlocking plastic spacers specifically designed for the purpose spaced along the length of the run as recommended by the manufacturer. Spacing between raceways within a common duct bank shall be not less than 50.8 mm (2 inches). The interlocking spacers shall be used at a minimum interval of 2.438 m (8 ft).

Concrete cover overall shall not be less than 76.2 mm (3 inches) all around the encased run. Space below the encased run, and concrete fill shall be assured. Care shall be exercised during concrete placement to assure that there are no voids, so that spacers are undisturbed, and so that CNC joints stay secure and unbroken. Concrete shall be deflected during placement to minimize the possible damage to or movement of the CNC.

CNC encased in concrete shall have steel reinforcing where installed below roadway or other paved vehicle areas (including shoulder) and the reinforcement shall extend not less than 1.524 m (5 feet) additional from the edge of pavement unless otherwise indicated. Steel reinforcement shall not be less than No. 15 (No. 4) bars at corners and otherwise spaced on 304.8 mm (12-inch) centers, tied with No. 15 (No. 4) bars on 304.8 mm (12-inch) centers.



The Engineer shall examine all CNC joints for compliance with this specification before concrete is poured.

- (e) Embedded. CNC embedded in structure shall be supported on interlocking plastic spacers specifically designed for the purpose spaced along the length of the run as recommended by the manufacturer. Spacing between raceways within a common structure shall be not less than 50.8 mm (2 inches). The interlocking spacers shall be used at a minimum interval of 2.438m (8 ft).

Concrete cover overall shall not be less than 76.2mm (3 inches) all around the embedded run. Space below the embedded run, and concrete fill shall be assured. Care shall be exercised during concrete placement to assure that there are no voids, so that spacers are undisturbed, and so that CNC joints stay secure and unbroken. Concrete shall be deflected during placement to minimize the possible damage to or movement of the CNC.

The Engineer shall examine all CNC joints for compliance with this specification before concrete is poured.

### Joints

Any methods implemented to join the CNC shall not decrease the inner diameter of the CNC nor reduce the ovality of the CNC. Due to the HDPE ridge created during fusion splicing and subsequent decrease in inner diameter of the CNC, fusion splicing of the CNC is not allowed. Joining of the CNC shall be with one or more of the following methods:

- (a) Mechanical Couplers. Mechanical couplers may be used to join CNC to CNC, CNC to PVC, and CNC to galvanized rigid steel conduit. The couplers shall meet the following requirements.
- (1) Couplers shall be an air-tight and water-tight.
  - (2) The coupler shall be air pressure tested to over 125 psi. The couplings water sealing capability shall withstand head pressures of greater than 20 feet.
  - (3) The coupling shall have a minimum pullout force of 750 lbs for a 1 ¼" diameter coupler.
  - (4) Couplings shall be manufactured to provide a smooth inner wall

The contractor shall furnish a sample of the CNC coupling to the IDOT District 1 Bureau of Electrical Operations upon request.

- (b) Adhesives. Coilable non-metallic conduit to non-coilable non-metallic conduit joints may be made with an approved chemical adhesive. The adhesive must be specifically designed for joining CNC. Minimum pullout force for the chemical adhesive shall be as follows:

<b>Nominal Duct Size</b>	<b>Pullout Force (1 hour at 70° F)</b>	<b>Pullout Force (24 hours at 70° F)</b>
<b>in</b>	<b>Lbs</b>	<b>Lbs</b>
1.25	360	720
1.50	430	860
2.0	860	1,720
2.5	1,080	2,170
3.0	1,730	3,475
4.0	3,460	6,940

The contractor shall furnish a sample joint to the IDOT District 1 Bureau of Electrical Operations with the catalog cut submittal.

Expansion/Deflection.

Expansion fittings shall be provided for all runs crossing structural expansion joints.

Expansion fittings, as specified herein, shall be installed in all raceway runs crossing structural expansion joints. Unless otherwise indicated or approved by the Engineer, expansion fittings shall include an 203.2 mm (8-inch) expansion fitting plus a deflection fitting allowing not less than a 10.05 mm (3/4-inch) deflection in any direction. The drawings shall be examined to determine complete extent of expansion joints.

Concrete shall be formed around the expansion fittings in a manner to permit their movement as specified.

Pulling Tape.

A pull tape shall be installed in all empty CNC raceways or shall be shipped pre-fabricated in the CNC prior to installation. The pull tape shall be a flat unidirectional tape woven from aramid fibers.

The pull tape shall clearly indicate sequential foot markings. The pull tape shall have a minimum tensile strength of 567 kg (1250 lbs). All pull tape splices shall be kept to a minimum and shall incorporate maximum splice free lengths of pulling tape supplied by the manufacturer. Pull tapes shall run continuously from junction box to junction box or pull point to pull point.

Method of Measurement.

The CNC shall be measured for payment in linear meters (feet) in place as described herein. Measurements shall be made in straight lines between horizontal changes in direction between the centers of the terminating points (poles, cabinets, junction boxes). Vertical measurement of the unit duct shall be as described below.

For runs terminating at light poles, the vertical measure shall be taken from the bottom of the trench, or horizontal raceway, to a point 457.2 mm (18-inches) beyond the center of the light pole handhole regardless of light pole mounting method.

For runs terminating at junction boxes and/or control cabinets, the vertical measurement shall be taken from the bottom of the trench, or horizontal raceway, to a point 914.4 mm (36-inches) beyond the center of the junction box or control cabinet.

CNC installed in excess of the limits describes herein shall not be paid for.

Basis of Payment.

This work shall be paid for at the contract unit price per meter for **CONDUIT ENCASED, REINFORCED CONCRETE, 30 MM DIA., CNC, 4 WIDE X 2 HIGH; or CONDUIT EMBEDDED IN STRUCTURE, 30 MM DIA., CNC, 4 WIDE X 2 HIGH; or CONDUIT EMBEDDED IN STRUCTURE, 30 MM DIA., CNC, 2 WIDE X 1 HIGH; or CONDUIT EMBEDDED IN STRUCTURE, 1-100 MM DIA., 30 MM DIA., CNC, 4 WIDE X 2 HIGH; or CONDUIT EMBEDDED IN CONCRETE, 100 MM DIA., CNC, 1 WIDE X 1 HIGH.**

CONCRETE GLARE SCREEN, SPECIAL

**Description:** The Concrete Glare Screen, Special shall be constructed in accordance with the details shown in the plans and the applicable portions of Section 638 of the Standard Specifications and as directed by the Engineer.

Tangent section of the Concrete Glare Screen, Special may be required between various junction boxes or other appurtenances. The glare screen top and side shall transition smoothly for Section A-A to Section B-B as shown in the plans.

**Method Of Measurement:** The Concrete Glare Screen, Special will be measured for payment in meters, (feet) in place, measured along the centerline of the concrete glare screen.

**Basis Of Payment:** The work of constructing CONCRETE GLARE SCREEN, SPECIAL as detailed in the plans will be paid for at the contract unit price per meter (foot) for **CONCRETE GLARE SCREEN, SPECIAL** including all labor and materials necessary to complete this work.

STAINLESS STEEL JUNCTION BOX

Effective: January 1, 2002

Revise the second sentence of the seventh paragraph of Article 1088.04 of the Standard Specifications to read:

"The gasket shall be extruded directly onto the junction box cover."

TRENCH AND BACKFILL FOR ELECTRICAL WORK

Effective: January 1, 2002

Revise the first sentence of Article 815.03(a) of the Standard Specifications to read:

"Trench. Trenches shall have a minimum depth of 760 mm (30 in.) or as otherwise indicated on the plans, and shall not exceed 300 mm (12 in.) in width without prior approval of the Engineer."

Revise Article 1066.05 of the Standard Specifications to read:

**"Underground Cable Marking Tape.** The tape shall be 150 mm (6 in.) wide; consisting of 0.2 mm (8 mil) polyethylene according to ASTM D882, and ASTM D2103.

The tape shall be red with black lettering or red with silver lettering reading "CAUTION - ELECTRICAL LINE BURIED BELOW".

The tape shall have reinforced metallic detection capabilities consisting of a woven reinforced polyethylene tape with a metallic core or backing."

#### EXPOSED RACEWAYS

Effective: November 1, 2004

Revise Article 811.03(a)(1) of the Standard Specifications to read:

"General. Rigid metal conduit installation shall be according to Article 810.03(a)(1). Conduits terminating in junction and pull boxes shall be terminated with insulated and gasketed watertight threaded NEMA 4X conduit hubs. The hubs shall be Listed under UL 514B. The insulated throat shall be rated up to 105° C. When PVC coated conduit is utilized, the aforementioned hubs shall also be PVC coated."

Add the following to Article 811.03(b) of the Standard Specifications:

"Where PVC coated conduit is utilized, all conduit fittings, couplings and clamps shall be PVC coated. All other mounting hardware and appurtenances shall be stainless steel."

Add the following to Article 811.03(b) of the Standard Specifications:

"The personnel installing the PVC coated conduit must be trained and certified by the PVC coated conduit Manufacturer or Manufacturer's representative to install PVC coated conduit. Documentation demonstrating this requirement must be submitted for review and approval."

"All conduit fittings, couplings and clamps shall be PVC coated. All other mounting hardware and appurtenances shall be stainless steel."

Revise Article 1088.01(a) of the Standard Specifications to read:

“Couplings and fittings shall meet ANSI Standard C80.5 and U.L. Standard 6. Elbows and nipples shall conform to the specifications for conduit. All fittings and couplings for rigid conduit shall be of the threaded type. All conduit hubs shall be gasketed and watertight with an integral O-ring seal.”

Revise Article 1088.01(a)(1) of the Standard Specifications to read:

“Rigid Steel Conduit. Rigid steel conduit shall be galvanized and manufactured according to UL Standard 6 and ANSI Standard C 80.1.”

Revise Article 1088.01(a)(3) of the Standard Specifications to read:

a. PVC Coated Steel Conduit. The PVC coated rigid metal conduit shall be UL Listed (UL 6). The PVC coating must have been investigated by UL as providing the primary corrosion protection for the rigid metal conduit. Ferrous fittings for general service locations shall be UL Listed with PVC as the primary corrosion protection. Hazardous location fittings, prior to plastic coating shall be UL listed.

b. The PVC coating shall have the following characteristics:

Hardness:	85+ Shore A Durometer
Dielectric Strength:	400V/mil @ 60 Hz
Aging: Temperature	1,000 Hours Atlas Weatherometer The PVC compound shall conform at 0 °F. to Federal Specifications PL-406b, Method 2051, Amendment 1 of 25 September 1952 (ASTM D 746)
Elongation:	200%

c. The exterior and interior galvanized conduit surface shall be chemically treated to enhance PVC coating adhesion and shall also be coated with a primer before the PVC coating to ensure a bond between the zinc substrate and the PVC coating. The bond strength created shall be greater than the tensile strength of the plastic coating.

d. The nominal thickness of the PVC coating shall be 1 mm (40 mils). The PVC exterior and urethane interior coatings applied to the conduit shall afford sufficient flexibility to permit field bending without cracking or flaking at temperatures above -1°C (30°F).

- e. An interior urethane coating shall be uniformly and consistently applied to the interior of all conduit and fittings. This internal coating shall be a nominal 2 mil thickness. The interior coating shall be applied in a manner so there are no runs, drips, or pinholes at any point. The coating shall not peel, flake, or chip off after a cut is made in the conduit or a scratch is made in the coating.
- f. The PVC conduit shall pass the following tests:

Exterior PVC Bond test RN1:

Two parallel cuts 13 mm (1/2 inch) apart and 40 mm (1 1/2 inches) in length shall be made with a sharp knife along the longitudinal axis. A third cut shall be made perpendicular to and crossing the longitudinal cuts at one end. The knife shall then be worked under the PVC coating for 13 mm (1/2 inch) to free the coating from the metal.

Using pliers, the freed PVC tab shall be pulled with a force applied vertically and away from the conduit. The PVC tab shall tear rather than cause any additional PVC coating to separate from the substrate.

Boil Test:

Acceptable conduit coating bonds (exterior and interior) shall be confirmed if there is no disbondment after a minimum average of 200 hours in boiling water or exposure to steam vapor at one atmosphere. The RN1 Bond Test and the Standard Method for Measuring Adhesion by Tape Test shall be utilized.

Exterior Adhesion. In accordance with ASTM D870, a 6" length of conduit test specimen shall be placed in boiling water. The specimen shall be periodically removed, cooled to ambient temperature and immediately tested according to the bond test (RN1). When the PVC coating separates from the substrate, the boil time to failure in hours shall be recorded.

Interior Adhesion. In accordance with ASTM D3359, a 6" conduit test specimen shall be cut in half longitudinally and placed in boiling water or directly above boiling water with the urethane surface facing down. The specimen shall be periodically removed, cooled to ambient temperature and tested in accordance with the Standard Method of Adhesion by Tape Test (ASTM D3359). When the coating disbonds, the time to failure in hours shall be recorded.

Heat/Humidity Test:

Acceptable conduit coating bonds shall be confirmed by a minimum average of 30 days in the Heat and Humidity Test. The RN1 Bond Test and the Standard Method for Measuring Adhesion by Tape Test shall be utilized.

Exterior Adhesion. In accordance with ASTM D1151, D1735, D2247 and D4585, conduit specimens shall be placed in a heat and humidity environment where the temperature is maintained at 150°F (66°C) and 95% relative humidity. The specimens shall be periodically removed and a bond test (RN1) performed. When the PVC coating separates from the substrate, the exposure time to failure in days shall be recorded.

Interior Adhesion. In accordance with ASTM D3359, conduit specimens shall be placed in a heat and humidity environment where the temperature is maintained at 150°F (66°C) and 95% relative humidity. When the coating disbonds, the time to failure in hours shall be recorded.

Add the following to Article 1088.01(a)(4) of the Standard Specifications:

“All liquid tight flexible metal conduit fittings shall have an insulated throat to prevent abrasion of the conductors and shall have a captive sealing O-ring gasket. The fittings shall be Listed under UL 514B. The insulated throat shall be rated up to 105° C.”

Revise Article 811.05 of the Standard Specifications to read:

“**811.05 Basis of Payment.** This work will be paid for at the contract unit price per meter (foot) for **CONDUIT ATTACHED TO STRUCTURE**, of the diameter specified, **RIGID GALVANIZED STEEL** or **CONDUIT ATTACHED TO STRUCTURE**, of the diameter specified, **RIGID GALVANIZED STEEL, PVC COATED.**”

APPROACH SLAB REMOVAL

Effective: March 1, 2002

Revised:

**Description:** This item shall consist of full depth approach slab removal and disposal at locations designated on the plans and in accordance with the applicable portions of Sections 440 and 501 of the Standard Specification.

**Method of Measurement:** This work will be measured for payment on the basis of the actual square meters (square yards) of approach slab removed, regardless of replacement area.

**Basis of payment:** This work will be paid for at the contract unit price per square meter (square yard) for APPROACH SLAB REMOVAL, which price shall be payment in full for all labor, equipment and materials necessary to complete the work.

## REMOVAL OF EXISTING STRUCTURES

**Description:** This work item shall consist of the removal and satisfactory disposal of existing structures as detailed in the plans, described herein and applicable provisions of Section 501 of the Standard Specifications, and as directed by the Engineer. The scope of this item shall also include removal and disposal of miscellaneous items appurtenant to the structures, including but not limited to bridge expansion joint materials and anchorages, reinforcing steel, railings, drainage scuppers & down spouts, bearings, etc.

Existing light poles, luminaries and traffic control & surveillance equipment and cabinets will be removed by others under a separate contract, and shall not be included in this work. Existing metal conduits, conduit supports, electrical wires, junction boxes, handholes, etc. which may be left-in-place to be abandoned shall all be removed as part of this work item.

Existing Plans: Available plans for the existing roadways and structures involved in this work will be made available to the Contactor by the Department upon his/her written request to the Chief of Bureau of Maintenance, Illinois Department of Transportation - District One, 201 West Center Court, Schaumburg, Illinois 60196. The Contractor shall make an appointment with at least 48 hours notice to view or retrieve available microfilm drawings of the existing roadways and structures. The completeness of these plans is not guaranteed and no responsibility is assumed by the Department for their accuracy. Information is furnished for whatever value may be derived by the Contractor, and is to be used solely at the Contractor's risk.

**Construction Requirements:** The removal of existing structures shall be performed in accordance with applicable provisions of Section 501 of the Standard Specifications. Materials that are required to be salvaged (if any) under the contract are listed in the plans. Materials to be salvaged shall be carefully removed and stored near the project site at a location designated by the Engineer.

**Method of Measurement:** No separate measurement will be made for removal of existing structures. The removal limits for each structure number or designation shall be as defined in the plans.

**Basis of Payment:** This item will be paid for at a contract unit price each for REMOVAL OF EXISTING STRUCTURES - "Number", which payment shall constitute full compensation for all labor, materials, tools and equipment required for removal and disposal of existing structure and incidental items, as detailed in the plans, described herein and as directed by the Engineer within the limits shown in the plans for a particular structure number.



#### BRIDGE APPROACH PAVEMENT (SPECIAL)

This item shall consist of the construction of portland cement concrete bridge approach pavement to the length and width as indicated on the plans and/or sidewalks and/or concrete medians and/or parapets supported by approach pavement at locations shown on the plans, in accordance with the applicable portions of Section 420 of the Standard Specification, and as directed by the Engineer.

**Method of Measurement:** This work will be measured for payment in square meters (square yards), calculated to the exact dimensions of placement, as shown on the plans. In accordance with Article 420.22(b) of the Standard Specifications, a deduction will be made for the area displaced by the inlet.

**Basis of Payment:** This work will be paid for at the contract unit price per square meter (square yard) for BRIDGE APPROACH PAVEMENT (SPECIAL).

The unit price bid for BRIDGE APPROACH PAVEMENT (SPECIAL) shall include tie bars, preformed joint seal, polyethylene bond breaker, granular sub-base, reinforcement bars, the concrete pad (including reinforcement and excavation), and all other items necessary to complete this item of work.

#### LUG SYSTEM COMPLETE (SPECIAL)

**Description:** This item shall consist of the construction of a lug anchor system as shown on the plans, in accordance with the applicable portions of Section 421 of the Standard Specifications, and as directed by the Engineer.

**Basis of Payment.** This work will be paid for at the contract unit price each for LUG SYSTEM COMPLETE (SPECIAL), which price shall be payment in full for all excavation, portland cement concrete, reinforcement and all other appurtenances necessary to construct the lug system complete as shown on the plans. The continuously reinforced portland cement concrete pavement over the lugs will be paid for separately.

#### REMOVE STEEL SHEET PILING

**Description.** This work shall consist of the removal of existing sheet piling at the locations as shown on the plans. This work shall also include removal of any miscellaneous steel shapes, plates and connecting hardware attached to the sheeting and any connections if connected to an existing substructure unit.

**Construction.** The sheet piling shall be removed and disposed of by the Contractor. Any excavation and backfilling required to remove any walers, plates, connecting hardware and other miscellaneous steel shapes shall be included. The removed sheet piling shall become the property of the Contractor.

Method of Measurement. The temporary sheet piling removed will be measured for payment in place from the top of the highest grade to the bottom tip of the sheeting in square meters (square feet). However, no additional payment will be made for the removal of any walers, bracing, or other supplements to the temporary sheet piling.

Basis of Payment. This work will be paid for at the contract unit price per square meter (square foot) for REMOVE STEEL SHEET PILING.

Payment for any excavation and replacing the embankment performed in conjunction with this work will not be paid for separately but will be included in the cost of this work.

## TEMPORARY SOIL RETENTION SYSTEM

Description. This work shall consist of designing, furnishing, installing, removing, adjusting for stage construction when required, of the temporary soil retention system according to the dimensions and details shown on the plans and in the approved design submittal.

General. The temporary soil retention system shall be designed by the Contractor as a minimum, to retain the exposed surface area specified in the plans or as directed by the Engineer.

The design calculations and details for the temporary soil retention system proposed by the Contractor shall be submitted to the Engineer for approval. The calculations shall be prepared and sealed by an Illinois Licensed Structural Engineer. This approval will not relieve the Contractor of responsibility for the safety of the excavation. Approval shall be contingent upon acceptance by all involved utilities and/or railroads.

Construction. The Contractor shall verify locations of all underground utilities before installing any of the soil retention system components or commencing any excavation. Any disturbance or damage to existing structures, utilities or other property, caused by the Contractor's operation, shall be repaired by the Contractor in a manner satisfactory to the Engineer at no additional cost to the Department. The soil retention system shall be installed according to the Contractor's approved design, or as directed by the Engineer, prior to commencing any related excavation. If unable to install the temporary soil retention system as specified in the approved design, the Contractor shall have the adequacy of the design and constructability re-evaluated. Any reevaluation shall be submitted to the Engineer for approval prior to commencing the excavation adjacent to the area in question. The Contractor shall not excavate below the maximum excavation line shown in the approved design without the prior permission of the Engineer.

The temporary soil retention system shall remain in place until the Engineer determines it is no longer required. The removal of the temporary soil retention system is included in this contract.

When an obstruction is encountered, the Contractor shall notify the Engineer and upon concurrence of the Engineer, the Contractor shall begin working to break up, push aside, or remove the obstruction. An obstruction shall be defined as any object (such as but not limited to, boulders, logs, old foundations etc.) where its presence was not obvious or specifically noted on

the plans prior to bidding, that cannot be driven or installed through or around, with normal driving or installation procedures, but requires additional excavation or other procedures to remove or miss the obstruction.

**Method of Measurement.** The temporary soil retention system furnished, installed and removed according to the Contractor's approved design or as directed by the Engineer will be measured for payment in place, in square meters (square feet). The area measured shall be the horizontal and vertical exposed surface area envelope of the excavation supported by temporary soil retention system.

Any temporary soil retention system cut off or installed beyond those dimensions shown on the contract plans or the approved contractor's design without the written permission of the Engineer, shall not be measured for payment but shall be done at the contractor's own expense.

**Basis of Payment.** This work will be paid for at the contract unit price per square meter (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.

## REMOVE MSE RETAINING WALL

**Description.** This work shall consist of removal of portions of the existing MSE retaining wall system, constructed in contract 62107 and 62854, necessary for construction of the proposed roadway at the locations shown on the plans. The details of the existing wall system are shown on the plans and includes the removal of welded wire baskets, geotextile, structural geogrid, geotextile wrap, geogrid reinforcement, stone, and any connecting hardware.

**Construction.** The MSE retaining wall system shall be removed and disposed of by the Contractor. Any excavation and backfilling required to remove any welded wire baskets, geotextile, structural geogrid, geotextile wrap, geogrid reinforcement, stone, and any connecting hardware shall be included. The MSE retaining wall system shall become the property of the Contractor.

**Method of Measurement.** The REMOVE MSE RETAINING WALL will be measured for payment in square meters (square feet). The area measured shall be the horizontal and vertical exposed surface area envelope of the excavation necessary to place the proposed roadway substructure. However, no additional payment will be made for the removal of any

welded wire baskets, geotextile, structural geogrid, geotextile wrap, geogrid reinforcement, stone, and any connecting hardware to the MSE retaining wall.

**Basis of Payment.** This work will be paid for at the contract unit price per square meter (square foot) for REMOVE MSE RETAINING WALL. Payment for any excavation and replacing the embankment performed in conjunction with this work will not be paid for separately but will be included in the cost of this work.

## ERECTING STRUCTURAL STEEL

**Description:** This work shall consist of all labor, materials, tools and equipment necessary for the erection of structural steel, which will be furnished by others under a separate contract, as per the details included in the plans, according to the applicable portions of Section 505 and 506 of the Standard Specifications and these special provisions. The steel retainers, shim plates and neoprene pads for the bearings will be furnished by others under a separate fabrication contract; the installation of these items shall be included in the cost for erecting structural steel. All shop and field fasteners will be furnished by others with structural steel. The anchor bolts required for installation of bearings, and all other miscellaneous steel not furnished by others shall be furnished and installed under a separate pay item for Furnishing and Erecting Structural Steel.

The Contractor for furnishing of structural steel is herein referred to as Fabrication Contractor, and the Contractor for erection of these items is referred to as Erection Contractor.

**Erection:** The structural steel shall be erected according to the requirements of Article 505.08 of the Standard Specifications, as shown on the plans, and in this special provision.

The Erecting Contractor shall retain the services of an Illinois Licensed Structural Engineer to prepare, sign and seal an erection plan and calculations for the erection of the structural steel. As a minimum, the erection plan shall include erection drawings and an erection procedure in accordance with the applicable sections of the IDOT Standard Specifications for Road and Bridge Construction, Section 11 Steel Structures of Division II Construction of the latest version of the AASHTO Standard Specifications for Highway Bridges, and Section 4 Steel Erection of Division II Construction of the AASHTO Guide Specifications for Horizontally Curved Steel

Girder Highway Bridges 2003. As a minimum, the Contractor shall take into account such items as sequencing, shoring, stability, pick points, girder shape, deformations and roll, cross frame/diaphragm connections, use of oversized holes, blocking of bearings, and plumbness.

The erection documents must indicate as a minimum in a detailed sequence:

- Subassembly of the girders
- Erection of the girders on a girder by girder and span by span basis
- When each and every cross frame/diaphragm is placed including that over the supports

- When each and every cross frame/diaphragm connection bolt is installed and when and to what degree they are tightened
- Use and placement of each and every temporary supports and when they are installed and removed

Supporting calculations must demonstrate that each and every member and connection of the bridge is not overstressed during any phase of erection.

**Field Painting:** The structural steel will be shop painted with a full 3-coat paint system by the Fabrication Contractor. The Erection Contractor shall be responsible for field touch-up painting, and spot cleaning and painting of the damaged coating on newly erected work. The cleaning and painting work shall be according to the Special Provision for "Cleaning and Painting New Metal Structures". The paint coating shall be compatible with the paint system used by the Fabrication Contractor.

Article 505.09 of the Standard Specifications shall be amended to add the following:

1. No extra compensation will be allowed for touch-up field painting of steel members which have been burred and marred at the time of shipping or erecting and all other areas of the new structural steel surfaces where the paint coatings have been removed or are incomplete.
2. The structural steel and the fixed steel bearings including shim plates and neoprene pads for the bearings will be furnished and delivered under a separate fabrication contract. (Bearing anchor bolts will be furnished and installed under this contract.)

Delivery of structural steel and bearings to the site shall be coordinated with the Fabrication Contractor to permit the erection of the steel in stages without delaying the progress of the steel erection. The Erection Contractor shall provide the fabrication Contractor with a working schedule for shipping the structural steel and bearings to the jobsite, within 30 calendar days after the execution of the erection contract. The Erection Contractor shall notify the Fabrication Contractor a minimum of three calendar weeks in advance for any changes in the scheduled delivery dates. Copies of all notifications and correspondence between the Erection Contractor and Fabrication Contractor shall be submitted promptly to the Engineer.

The expense of night time and weekend erection of structural steel shall not be paid for separately, but shall be included in the lump sum cost for ERECTING STRUCTURAL STEEL.

For bidding purposed only, it is anticipated that the delivery of the structural steel will be required on or before the dates given in the following table:

Delivery Stage	Construction Stage	Erection Contract	Construction Area	Delivery Dates
1	1	IL 394 SB over I-80	Entire Structure	May 30, 2006
2	1	IL 394 SB over Thorn Creek	Entire Structure	April 15, 2006
3	1	Ramp F over Thorn Creek	Entire Structure	April 15, 2006
4	1	EB I-94 over Thorn Creek	Entire Structure	April 15, 2006

These dates are the scheduled delivery dates. The Engineer will confirm these dates.

3. The Fabrication Contractor will provide one (1) reproducible copy of all approved fabrication shop drawings to the Erection Contractor for use during erection of the fabricated structural steel. Shop drawings will include a list and location of the field bolts required.
4. All field fasteners will be furnished by the Fabrication Contractor, unless noted otherwise.

**Basis of Payment:** The erecting of structural steel will be measured and paid for according to Section 505 of the Standard Specification respectively. Where noted on the plans, this work also includes the retention of the services of an Illinois Licensed Structural Engineer to analyze, approve, sign, and seal the Contractor's intended girder erection procedure. Anchor bolts for bearings will be measured and paid for at the contract unit price per kilogram for FURNISHING AND ERECTING STRUCTURAL STEEL.

FURNISHING STRUCTURAL STEEL (FOR INFORMATION ONLY)  
 FURNISHING ELASTOMERIC BEARING ASSEMBLY, TYPE I (FOR INFORMATION ONLY)  
 FURNISHING FLOATING BEARINGS, GUIDED EXPANSION, (FOR INFORMATION ONLY)  
 FURNISHING FLOATING BEARINGS, FIXED, (FOR INFORMATION ONLY)

**Description:** This work consists of furnishing, fabricating, shop painting (where required), storing and delivering all structural steel, elastomeric bearing assemblies, fixed steel bearings and shim plates and elastomeric neoprene leveling pads to the jobsite, as shown on the plans, according to the requirements of Sections 503, 505, 506 and 1083 of the Standard Specifications and as specified in these Special Provisions. The Contractor for this work shall hereinafter be referred to as the Fabrication Contractor. The items furnished under this item will be erected by Erection Contractors under a separate erection contract.

This work shall include the furnishing of all materials including but not limited to steel beams, plate girders, splice plates, cross frames, elastomeric bearing assemblies, fixed steel bearings, and all shop and field fasteners for structural steel. The steel retainers, shim plates and neoprene pads for all bearings shall be furnished under the pay item for Furnishing Structural Steel.

Steel Fabrication and Shop Assembly: All structural steel shall be fabricated and stored according to the requirements of Article 505.04 of the Standard Specifications. The work under the pay item of "Furnishing Structural Steel" shall include shop assembly of individual framing members as specified in Article 505.04 (g).

Delivery of Structural Steel and Bearings: For bidding purposes only, it is anticipated that the delivery of the structural steel and bearings will be required on or before the dates given in the following table:

Delivery Stage	Construction Stage	Erection Contract	Construction Area	Delivery Date
1	1	IL 394 SB over I-80	Entire Structure	May 30, 2006
2	1	IL 394 SB over Thorn Creek	Entire Structure	April 15, 2006
3	1	Ramp F over Thorn Creek	Entire Structure	April 15, 2006
4	1	EB I-94 over Thorn Creek	Entire Structure	April 15, 2006

These dates are the scheduled delivery dates. The Engineer will confirm these dates.

Delivery of structural steel and bearings to the jobsite shall be coordinated with the Fabrication Contractors to permit the erection of the steel in stages without delaying the progress of the Erection Contractors. It shall be the Fabrication Contractor's responsibility to deliver the structural steel and bearings on time according to Article 505.09 of the Standard Specifications.

The Fabrication Contractors will provide the Erection Contractor with a working schedule for shipping the structural steel to the jobsite, within 30 calendar days after the execution of the erection contracts. The Erection Contractors will notify the Fabrication Contractor of any changes in the scheduled delivery date(s) a minimum of three calendar weeks in advance of his/her steel erection date for each bridge. If necessary, the Erection Contractors will be allowed up to and including the Fabrication Contractor's contract completion date to make such changes. Any changes to the working or shipping schedule requested by either Contractor after the Fabrication Contractor's completion date shall require the Engineer's written approval and shall be agreed upon in writing by both Contractors. No additional compensation shall be allowed nor will an extension of time be considered because of the above requirements.

Storage of Structural Steel and Bearing Assemblies: The Fabrication Contractor will be responsible for storage of fabricated materials until delivery to the jobsite according to Article 505.09 of the Standard Specifications, except the furnishing pay items shall include storage of fabricated materials up to 60 days for structural steel and bearings per the Special Provisions, after the completion dates. The storage shall include proper protection and care of the fabricated materials. The storage of fabricated materials required beyond the specified 60-day period shall be measured and paid per storage unit as defined below and in these Special Provisions.

The Fabrication Contractor shall be responsible for delivering the fabricated materials to the jobsite according to the above table for "Delivery of Structural Steel and Bearings". The Erection Contractors will be responsible for receiving, unloading, storing, and protecting all fabricated materials from the time of delivery, as required by Article 505.09 of the Standard Specifications.

Shop Painting: Except as otherwise specified, all structural steel shall receive full 3-coat paint system as specified in the plans, and according to the Special Provision for "Cleaning and Painting New Metal Structures".

Drawings: Shop drawings shall be prepared according to Article 505.03 of the Standard Specification and as modified herein. Each bearing assembly or shipping piece shall be detailed with an erection mark. The erection marks shall be shown on the shop drawings and also on the individual shipping pieces so they can be located in the field. The shop drawings shall list the manufacturer (and paint number, if applicable) for the paint system. Shop drawings shall include a field bolt list and location of the field bolts required.

In addition to the drawings required by Article 505.03 of the Standard Specifications, the Fabrication Contractor shall provide two copies of the approved fabrication and shop assembly plan and procedures and two (2) paper copies and one (1) reproducible copy of all approved fabrication shop drawings to each Erection Contractor for use during erection of the structural steel. No extra compensation will be allowed for furnishing shop drawings for the Erection Contractor's use.

**Method of Measurement:** The storage of the fabricated structural steel beyond the specified storage period of 60 days will be measured by a UNIT for structural steel, and a CALENDAR DAY for elastomeric bearings and expansion joints, which consists of storage of five (5) metric ton mass of fabricated structural steel for one (1) calendar day. The specified storage period included with furnishing the pay item and the payment for storage beyond the specified storage period shall apply to both, interim and final, completion dated as specified in the Special Provision for "Completion Date".

**Basis of Payment:** The furnishing of elastomeric bearing assemblies, storage of elastomeric assemblies and storage of structural steel will be measured and paid for according to Sections 503 and 505 of the Standard Specifications. The cost incurred by the Fabrication Contractor for storage of structural steel beyond the specified storage period of 60 days will be paid for at the contract unit price per UNIT for STORAGE OF STRUCTURAL STEEL.



STRIP SEAL EXPANSION JOINT ASSEMBLY  
Effective: July 7, 2004

**Description.** This work shall consist of furnishing and installing an expansion joint assembly as shown on the plans and as specified herein. The joint assembly shall be comprised of steel locking edge rails with studs and a preformed elastomeric strip seal.

**Materials:**

- (a) Steel Locking Edge Rails for the Preformed Elastomeric Strip Seal System. The steel locking edge rails shall be either a one-piece extrusion (rolled section) or a combination of extruded and stock plate, shop welded according to Section 505. All steel shall be AASHTO M270, Grade 250 (Grade 36) minimum. The locking portion of the steel edge rail shall be extruded, with a cavity, properly shaped to allow the insertion of the strip seal gland and the development of a watertight mechanical interlock. This cavity shall also be formed or machined with allowance made for the required galvanizing process. The top edge of the steel edge rails shall not contain any horizontal projections.
- (b) Anchor Studs. The steel locking edge rails shall contain anchor studs and/or anchor plates of the size shown on the plans for the purpose of firmly anchoring the expansion joint system in either portland cement concrete or polymer concrete, depending on the application. The anchor studs shall be according to Article 1006.32 and shall be installed in the shop prior to galvanizing.
- (c) Preformed Elastomeric Strip Seal. The elastomeric gland shall meet the physical requirements of ASTM D5973. The gland material shall have a shallow "v" profile and shall contain "locking ears" that, when inserted in the steel locking edge rails, forms a mechanical interlock. The elastomeric gland shall be of an appropriate size to accommodate the rated movement specified on the plans.
- (d) Adhesive/Lubricant. The adhesive/lubricant shall comply with the requirements of ASTM D4070.

**Shop Drawings:**

The Contractor must submit shop drawings in accordance with the provisions of 105.04 of the Standard Specifications for all expansion joint devices. No materials detailed in the Plans and/or as described in this Special Provision, or covered by shop drawings, may be delivered to the site of the work until the shop drawings have been approved.

**Construction:**

- (a) Steel locking edge rails. After fabrication the steel locking edge rails shall be hot dip galvanized according to AASHTO M111 and ASTM A385. The steel components of the joint system shall be properly aligned and set prior to pouring the anchorage material. For expansion joints, the joint opening shall be adjusted according to the temperature at the time of placing so that the specified opening will be secured at a temperature of 10 °C (50 °F).

The joint opening for each 10 m (100 ft.) of bridge between the nearest fixed bearings each way from the joint shall be reduced 1 mm (1/8 in.) from the amount specified, for each 8 °C (15 °F) the temperature at the time of placing exceeds 10 °C (50 °F) and increased 1 mm (1/8 in.) from the amount specified, for each 8 °C (15 °F) the temperature at the time of placing is below 10 °C (50 °F).

- (b) Preformed Elastomeric Strip Seal. Once the anchoring material has fully cured according to specifications, preparation for the placement of the gland can begin.

(1) Surface Preparation. The cavity portion of the locking edge rails must be cleaned of all foreign material prior to placement of the strip seal. The cavity shall be cleaned of debris using compressed air with a minimum pressure of 620 kPa (90 psi). The air compressor shall be equipped with traps to prevent the inclusion of water and/or oil in the air line. Any oil left on the surface of the steel extrusion at this stage shall be removed using a solvent recommended by the strip seal manufacturer. Once the surface preparation has been completed, the steel extrusion cavities must be kept clean and dry until the strip seal is placed.

(2) Placement of Elastomeric Strip Seal. The placement of the strip seal will only be permitted when the steel locking edge rail cavities are in a clean and dry state and the ambient air and steel substrate temperature are above the minimum temperature recommended by the strip seal manufacturer. Prior to inserting the strip seal in the steel retainer cavities, the "locking ears" portion of the seal shall be coated with the approved adhesive/lubricant. Only about 1.5 m (5 ft) of gland should be coated at a time to prevent the lubricant/adhesive from drying prior to insertion into the cavities of the steel locking edge rails. After each section is coated, the coated portion of the seal should be inserted in the steel locking edge rail cavities using tools and procedures recommended by the strip seal manufacturer. Under no circumstances shall any uncoated "locking ears" be permitted in the joint.

- (c) End Treatment. The end treatment for curbs, parapets and sidewalks must be as detailed on the plans and as recommended by the manufacturer of the joint system. The Contractor must field measure the exact length from toe to toe of curbs, parapets or sidewalks along the joint to ensure proper dimensioning of any required shop fabricated miters. The elastomeric strip seal shall be one continuous piece along the entire length of the joint. The seal should physically be able to navigate the 30° upturn at the parapets as well as some degree of horizontal bridge skew in one continuous piece. If bridge skew angles exceed the

physical ability of the strip seal to navigate the change in angle as set forth by the manufacturer's specifications and recommendations, then the seal may be spliced at the mitered ends by factory molding or shop vulcanization by the manufacturer. In addition, this factory spliced seal shall then be verified to fit properly with its corresponding steel locking edge rail assembly prior to delivery. Under no circumstances shall the strip seal be field "vulcanized", glued, or joined in any manner other than by the manufacturer's approved factory process.

- (d) Technical Support. The manufacturer shall supply technical support during surface preparation and the installation of the entire joint assembly.

**Method of Measurement.** The completed joint assembly will be measured in meters (feet) along the centerline of the joint.

**Basis of Payment.** The expansion joint assembly, measured as specified, will be paid for at the contract unit price per meter (foot) for STRIP SEAL EXPANSION JOINT ASSEMBLY, regardless of the design movement specified. This price shall be payment in full for all labor, materials, equipment, and manufacturer's technical support required for surface preparation and joint installation.

#### NOISE ABATEMENT WALL (REFLECTIVE WITH SOIL PROFILES)

This work shall consist of designing, preparation of shop drawings, and the furnishing of materials and equipment necessary to construct noise abatement walls in accordance with these special provisions and at the locations shown on the plans or as directed by the Engineer.

General. The noise abatement wall shall consist of panels spanning between vertical posts supported by concrete foundations (ground mounted), or supported by bridge parapets, retaining walls or traffic barriers (structure mounted) as shown on the contract plans. The design, fabrication, construction and materials shall comply with these special provisions and the requirements specified by the noise wall supplier selected by the Contractor for use on this project.

The Contractor shall verify the wall locations of the proposed ground mounted wall for conflicts and realign or redesign the wall to avoid any conflicts. The Contractor shall field verify all structure mount locations constructed in prior contracts and adjust the noise abatement wall designs according to the current field conditions. The Contractor shall inform the Engineer in writing of any conflicts before realigning or redesigning the wall.

The wall components shall be fabricated and erected to produce a precast concrete reflective noise wall system satisfying the acoustical requirements stated in these special provisions. Other abatement systems will not be allowed as equal alternates.

All appurtenances behind, in front of, under, over, mounted upon, or passing through, such as drainage structures, fire hydrant access, highway signage, emergency access and utilities shall be accounted for in design of the wall.

Submittals. The Contractor shall prepare a wall and foundation design submittal for the Engineer for review and approval. The noise wall shall be designed and constructed to extend to the minimum lines, grades and dimensions of the wall envelope, with no omissions or gaps, as shown on the contract plans and as directed by the Engineer.

Complete design calculations for wall panels, posts, foundations, and all connections and shop drawings shall be submitted to the Department for review and approval no later than 60 days prior to beginning construction of the wall. The time required for the preparation and review of these submittals shall be charged to the allowable contract time. Delays caused by untimely submittals or insufficient data will not be considered justifications for any time extensions. No additional compensation will be made for any additional material, equipment or other items found necessary to comply with the project specifications as a result of the Engineer's review. The Contractor will be required to submit the necessary shop drawings as per Article 105.04 of the Standard Specifications. All submittals shall be sealed by a Structural Engineer licensed in Illinois and include, but not be limited to, the following items:

Submittals shall include all details, dimensions, quantities and cross sections necessary for the construction of the noise abatement wall and will include but not limited to:

- (1) A plan view of the wall that indicates the stations and offsets from the centerline to the face of the wall and required to locate the drilled shaft foundations. The proposed foundation diameter(s) and spacing(s) shall be indicated with all changes in the walls horizontal alignment shown. Each panel and post shall be numbered and any changes in type or size shall be noted. The centerline of any utilities passing under the wall and locations of expansion joints, access doors, lighting, signing and drainage structures shall also be shown.
- (2) An elevation view of the wall, indicating the elevations of the top of the posts and panels as well as the elevations of the bottom of the panels, tops of the shaft foundations, all steps in wall system and the finished grade line. Each post size and length, panel type and size, and foundation depth shall be designated.
- (3) A typical cross section(s) that shows the panel, post, foundation or bridge parapet, and the elevation relationship between existing ground conditions and the finished grade as well as slopes adjacent to the wall.
- (4) All general notes required for constructing the wall.
- (5) All details for the steps in the bottom of panels shall be shown. The bottom of the panels shall be located at or below the theoretical bottom of panel line shown on the contract plans. The theoretical bottom of panel line is assumed to be 150 mm (6 in.) below the finished grade line at front face of the wall for ground mounted walls and at the top of the structure for structure mounted walls, unless otherwise shown on the contract plans.

- (6) Tops of the panels and posts shall extend to or above the theoretical top of wall line shown on the contract plans. All panel tops shall be cast and placed horizontally with any changes in elevation accomplished by stepping adjacent panel sections at posts. Steps shall not exceed 300 mm (1 ft.) in height, except within the last 15 m (50 ft.) where 600 mm (2 ft.) steps will be permitted.
- (7) All panel types shall be detailed. The details shall show all dimensions necessary to cast and fabricate each type of panel, the reinforcing steel, and location of post or foundation connection hardware as well as lifting devices embedded in the panels and posts.
- (8) All post types shall be detailed and designed for 3.6 m (12 ft.) spacing unless noted otherwise by the plans, field conditions or manufacturer. Post spacing for barriers on walls shall be limited to a distance that does not over stress the structure or barrier.
- (9) Details of wall panels with appurtenances attached to or passing through the wall, as shown on the contract plans, such as utilities, fire or access doors, drainage structures, signs etc. shall be shown. Any modifications to the design or location of these appurtenances to accommodate a particular system shall also be submitted.
- (10) All architectural panel treatment, including color, texture and form liner patterns shall be shown. All joints shall be placed horizontal or vertical.
- (11) The details for the connection between panels and posts as well as their connection to the foundation and bridge parapet shall be shown. Foundation details including details showing the dimensions, reinforcement and post anchorage system for the drilled shaft foundations shall be shown.
- (12) Testing, certifications and reports from independent laboratories showing that the panel and post deflection satisfy the criteria shown in the design criteria section of this specification. The testing for the flame spread, smoke density and freeze-thaw/salt scaling requirements described in the materials section of this specification shall also be submitted.
- (13) Manufacturer recommended installation requirements, a sequence of construction and a detailed bill of materials shall be included.
- (14) The color of the wall panels and support posts shall be Federal Color Standard color number 595-B.

The Contractor shall deliver to the Department (attention Mr. Rick Wanner 847-705-4172) a 600 mm x 600 mm (2 ft. x 2 ft.) sample of the colors, textures and patterns proposed for use on the project for approval. The samples must be made at the same plant that will be making the product for the noise wall under this contract and be representative of those which will be tested per this specification. Once the color sample is approved, a batch shall be designated by batch number and date and will remain the standard for the entire project.

The Contractor shall submit site access plans showing access and limits of the work areas for the installation of the wall and any required traffic controls are to conform to the requirements in the special provision for TRAFFIC CONTROL PLAN.

The initial submittal shall include three (3) sets of shop drawings and calculations. One set of drawings will be returned to the Contractor with any corrections indicated. The Contractor shall do no work or ordering of materials for the structure until the Engineer has approved the submittal.

Design Criteria. The wall system shall be designed to withstand wind pressure, applied perpendicular to the panels in either direction, according to the AASHTO Guide Specifications for Structural Design of Sound Barriers (latest edition) including interims. The concrete and steel components shall be designed according, to the 2002 AASHTO Standard Specifications for Highway Bridges (17<sup>th</sup> Edition), and as specified herein. The contractor shall be responsible for the structural adequacy of the panels, posts, foundations and connections as well as overall wall overturning stability. The design shall account for the presence of all appurtenances mounted on or passing through the wall such as drainage structures, existing or proposed utilities, fire or access doors and other items.

The design wind loading shall be 1.7 kN/m<sup>2</sup> (35 psf.) when located on bridge structures, retaining walls or traffic barriers. This loading can be reduced to 1.2 kN/m<sup>2</sup> (25 psf.) when ground mounted on drilled shafts. For structure mounted walls, the panel dead weight must not exceed 2.6 kPa (55 psf.) of wall face area.

For ground mounted noise abatement walls the posts shall be connected to drilled shafts with anchor bolts as required by design. The minimum number of anchor bolts per post shall be four M 30 A449 threaded anchor rods embedded into each foundation, which shall be reinforced in accordance with AASHTO specifications. The anchor rod assembly shall be installed and payment shall be included in the cost for NOISE ABATEMENT WALL, GROUND MOUNTED.

The material and construction of the foundations (drilled shafts) shall be in accordance with the Special Provision for DRILLED SHAFTS except that the payment for the drilled shaft and reinforcement will be included with the payment for the NOISE ABATEMENT WALL, GROUND MOUNTED.

The shaft foundation dimensions shall be determined using Broms method of analysis. Soils profiles from prior soil investigations are shown in the plans. The design shall utilize a factor of safety of 2.0, applied to the soil shear strength if cohesive or the unit weight if granular, and account for the effects of a sloping ground surface and water table indicated on the plans. The following should be assumed for the foundation design:

Effective unit weight	70pct.
Internal friction angle	30 deg.
Cohesion intercept	0 ksf

The maximum allowable panel deflection shall be no more than the panel length (L) divided by 240 (L/240) for ground-mounted panels and panel length (L) divided by 180 (L/180) for structure-mounted panels. The vertical posts shall have a maximum deflection of (H/180) where H is the height of the post above the foundation. A lateral load report shall be submitted to the Engineer indicating that the above noted design lateral loads can be applied to the panels and/or posts without exceeding noted deflection tolerance.

Corrugations, ribs or battens on the panel must be oriented vertically when erected. The panels shall be designed to prevent entrapment and ponding of water. The noise barrier walls shall not have openings allowing the perching or nesting of birds or the collection of dirt, debris or water. The walls shall not have handholds or grips promoting climbing of the walls.

Fire hydrant access points (300mm diameter) shall be designed with additional reinforcement or bracing and protective coating around the opening as necessary to maintain structural integrity in accordance with the details shown in the plans. The Contractor is required to coordinate with the local fire departments to confirm the final placement of the fire hydrant access points. This coordination shall be done prior to the finalization of the shop drawings and the results included in the drawings submitted for approval.

Materials. The wall materials shall conform to the supplier's standards, AASHTO Specifications for noise walls and the following:

- (a) Reinforcement bars satisfy AASHTO M 31M, M 42M, or M 53M Grade 60. Welded wire fabric shall be according to AASHTO M 55M.
- (b) The concrete for the precast elements shall be Class PC according to Section 1020 of the current IDOT Standard Specifications. Cement shall be Type I, II, or III and shall conform to the requirement of AASHTO M-85. Additives containing chloride shall not be used without the approval of the Department. The compressive strength at 28 days shall not be less than 30 MPa (4500 psi), according to Article 504.05 of the current IDOT Standard Specifications. Wooden or steel materials will not be allowed as substitutes for the panels. The concrete elements shall be tested according to ASTM C 672 (as modified in the HITEC report on sound barriers 96-04) and shall not exhibit excessive deterioration (cracks, spalls, aggregate disintegration, or other objectionable features) to demonstrate resistance to deicing chemicals. The concrete elements shall be tested according ASTM C 666 and shall not exhibit excessive deterioration to demonstrate resistance to freeze-thaw conditions.
- (c) Steel plates and posts shall conform to AASHTO M 270M Grade 250 (36) or 345 (50). All portions of the post shall be galvanized according to AASHTO M111 and ASTM A385. The portion of steel posts exposed to view shall then be painted with an acrylic/acrylic paint system in the shop according to the special provision CLEANING AND PAINTING NEW METAL STRUCTURES except that the inorganic zinc rich primer may be omitted. CLEANING AND PAINTING NEW METAL STRUCTURES shall be included in the unit price of the NOISE ABATEMENT WALL of the type required. The color of the acrylic/acrylic paint system shall closely match the panels. Steel bolts, nuts, washers and anchor bolts shall be galvanized according to AASHTO M232.
- (d) Coloring of concrete elements shall be accomplished using a single component, water based sound adsorptive penetrating architectural stain satisfying ASTM G155 –Xenon light source.

The Noise Barrier Wall surfaces shall be prepared in accordance with the stain manufacturer's written instructions. Surfaces must be clean and free of oil, grease, laitance, efflorescence and any other contaminants that could prevent good adhesion.

Prior to use, the stain shall be thoroughly mixed using a drill with a "Jiffy" type mixer attachment or other mechanical means suitable for use. Mix approximately 3-5 minutes or until color is uniform throughout and the material is homogeneous. Remix as required to maintain uniformity.

Penetrating Architectural Concrete Stain must be applied at the manufacturing plant. Staining in the field on site will not be allowed. In order to apply stain, both the Noise Barrier panels and air temperature must be between 45°F and 90°F. Stain shall not be applied unless weather conditions will permit complete drying of material prior to rain, fog, dew or temperatures beyond the prescribed limits. Stain shall not be applied to damp surfaces. Stain shall be applied in one coat and shall provide a uniform appearance. The final color shall be consistent with the quality and appearance of the approved sample area.

The finish will consist of a rolled Ashlar Stone finish. Rolled finishes shall have a minimum 0.75 in. (19 mm) impression.

- (e) With the exception of the steel and Portland cement concrete elements of the wall, all materials shall be tested for flame spread and smoke density developed in accordance with ASTM E84. The material must exhibit a flame-spread index less than 10 and a smoke density developed value of 10 or less.

Fabrication. All precast units shall be manufactured according to Section 504 of the Standard Specifications and the following requirements and tolerances with respect to the dimensions shown on the approved shop drawings.

- (a) The minimum reinforcement bar cover shall be 40 mm (1½ in.).
- (b) All reinforcement shall be epoxy coated.
- (c) Panel dimensions shall be within 6 mm (¼ in.).
- (d) All hardware embedded in panels or posts shall be within 6 mm (¼ in.).
- (e) Angular distortion with regard to panel squareness, defined as the difference between the two diagonals, shall not exceed 13 mm (½ in.).
- (f) Surface defects on formed surfaces measured on a length of 1.5 m (5 ft.) shall not be more than 2.5 mm (0.10 in.).
- (g) Posts shall be installed plumb to within 13 mm (½ in.) of vertical for every 5 m (15 ft.) of height and to within 13 mm (½ in.) of the station and offset indicated on the approved shop drawings.
- (h) Drilled shaft foundations shall be placed within 50 mm (2 in.) of the station and offset indicated on the approved shop drawings.
- (i) All lifting inserts cast into the panels shall be hot dipped galvanized.



The date of manufacture, the production lot number, and the piece-mark shall be clearly noted on each panel.

Any bolts or fasteners used shall be recessed or embedded below the surface.

Both sides of the panels shall be light brown in color with a textured Ashlar Stone finish unless stated otherwise on the contract plans.

The panels, posts and other visible elements shall be fabricated with a light brown earth tone color following the procedures noted in the materials section of this specification unless otherwise shown on the contract plans.

Construction. The Contractor shall obtain technical assistance from the supplier during wall erection to demonstrate proper construction procedures and shall include any costs related to this technical assistance in the unit price bid for this item. The instructions provided here are guidelines and do not relieve the contractor of the responsibility to adhere to contract specifications.

It is recommended that all bottom panels be installed for a length of wall prior to placing middle or top panels. After bottom panels are in-place, finish grading can be accomplished with heavy equipment by reaching over the in-place panels. Problems associated with lack of access to the backside of the wall or limited right-of-way can be avoided.

Site excavations and/or fill construction shall be completed to plan elevations and profiles prior to the start of wall foundation construction. All underground utility or drainage structure installation shall be completed prior to foundation installation. The ground elevations as shown on the plans and the approved noise barrier wall shop drawings shall be verified by the contractor and discrepancies corrected prior to material fabrication. The locations of underground utilities and overhead obstructions shown on the plans shall be verified and considered by the Contractor prior to wall erection.

If the soils encountered during drilling of the foundations do not satisfy the design strengths shown on the contract plans, the Engineer shall be notified to evaluate the required foundation modifications. The shaft foundation will normally require additional length, which may be paid separately under Article 104.03 of the Standard Specifications. All drilled shaft excavations shall be filled with concrete within 6 hours of their initiation. The concrete for the drilled shaft foundations shall be Class SI and shall be placed against undisturbed, in-place soils. The concrete at the top of the shaft shall be shaped to provide the panels on each side of the post adequate bearing area and correct elevation per the approved shop drawings.

Units shall be shipped, unloaded, handled and stored in such a manner as to minimize the danger of staining, chipping, spalling, development of cracks, fractures, and excessive bending stresses. Any touch up and repair is at the Contractor's expense and shall be carried out according to the manufacturer's recommendations or as directed by the Engineer.

Method of Measurement. The noise abatement wall will be measured by the square meter (square foot) from the wall envelope, defined by the theoretical top of wall line to the theoretical bottom of panel line for the length of the wall (ground mounted or structure mounted) as shown on the contract plans.

Basis of Payment. This work will be paid for at the contract unit price per square meter (square foot) for NOISE ABATEMENT WALL, GROUND MOUNTED and/or NOISE ABATEMENT WALL, STRUCTURE MOUNTED measured as provided above. This shall be payment in full for developing the wall and foundation design, preparation of shop drawings, all labor, equipment and material required for the manufacture, testing, delivery and erection of the panels, concrete or metal posts, all fire hydrant access openings and coordination, post connection system to the foundation (or structure), and foundations (for the ground mounted walls only).

#### BARRIER SUPPORT STRUCTURE FOR NOISE ABATEMENT WALL

Description. This work shall consist of designing, preparation of shop drawings, and the furnishing of materials and equipment necessary to construct the concrete barrier support structure for the noise abatement wall. The concrete foundations shall be constructed in accordance with these special provisions and details in the plans, the requirements contained in the special provisions for “Noise Abatement Wall” and “Drilled Shafts” and at the locations shown on the plans or as directed by the Engineer.

Design Criteria. The barrier support structure shall be designed in accordance with the applicable portions of the requirements contained in the special provisions for “Noise Abatement Wall”, AASHTO impact loading for concrete railing of 44.5 kN (10 kips) of transverse force on the concrete parapet spread over a longitudinal length of 1.52 meter (5 feet) for the post spacing provided and “Concrete Barrier (District 1)” and signed by a licensed structural engineer. The barrier wall and face configuration shall be as shown on the details in the plans and shall have a consistent smooth line where the wall face meets adjacent walls. The face of the noise wall shall provide a smooth transition to the adjacent wall where it meets adjacent walls and shall maintain a consistent distance from the face of the barrier face.

Submittals. The Contractor shall prepare a foundation design for the drilled shafts in accordance with the applicable requirements in the special provisions for “Noise Abatement Wall” and “Drilled Shafts”.

Materials. Materials for concrete barrier and concrete base shall conform to the requirements of the following Articles of Section 1000 – Materials, except as modified herein:

Item	Article/Section
(a) High – Strength Steel Bolts, Nuts and Washers.....	1006.08
(b) Reinforcement bars.....	1006.10
(c) Portland Cement Concrete .....	1020
(d) Protective Coat.....	1023
(g) Preformed Expansion Joint Filler .....	1051.01 – 1051.08
(f) Anchor Rods.....	1094.03

Equipment. Equipment for concrete barrier shall conform to the requirements of the following Articles of Section 1100 - Equipment:

Item	Article/Section
(a) Hand Vibrator .....	1103.17(a)
(b) 3 m (10 ft) Straightedge.....	1103.17(h)

Equipment for the drilled shafts shall conform to the requirements of the special provision for "Drilled Shafts".

Barrier Construction. Concrete barrier shall be constructed according to the applicable portions of Articles 503.06, 503.07 and the special provision for Drilled Shafts. Where the horizontal alignment of the concrete barrier is curved, the barrier shall be constructed either on the curved alignment or on cords not more than 7.2 m (24 ft) in length.

The design, material, fabrication and construction shall comply with this special provision, the requirements in the detail for Barrier Support Structure for Noise Abatement Wall and the requirements in the special provision for Noise Abatement Wall

All reinforcement shall be epoxy coated and conform to the requirements of AASHTO M284M (M284).

Finishing. The surface of concrete barrier shall be finished according to Article 503.16(a).

Protective Coat. When required, the top and vertical surfaces of the barrier exposed to traffic shall receive a protective coat. The application of the protective coat shall be according to Article 420.21.

Method of Measurement. The barrier support structure for the noise abatement wall will be measured for payment in meters (feet) in place, along the centerline of the barrier face.

Protective coat will be measured for payment according to Article 420.22(b).

Basis of Payment. This work will be paid for at the contract unit price per meter for BARRIER SUPPORT STRUCTURE FOR NOISE ABATEMENT WALL measured as provided above. This shall be payment in full for developing the foundation design, preparation of shop drawings, all labor, equipment and material including reinforcement bars and anchor rods required for the design of the concrete barrier drilled shafts and construction of the barrier support structure.

Protective coat will be paid for according to Article 420.23.

**POROUS GRANULAR EMBANKMENT (SPECIAL)**

Effective: June 22, 2005

Description. This work shall consist of furnishing, and placing porous granular embankment (special) material as detailed on the plans, according to Section 207 except as modified herein.

Materials. The gradation of the porous granular material may be any of the following CA 5 thru CA 18, FA 1 thru FA 4, FA 7 thru FA 9, and FA 20 according to Articles 1003 and 1004.

Basis of Payment. This work will be paid for at the contract unit price per Cubic Yard (Cubic Meter) for POROUS GRANULAR EMBANKMENT (SPECIAL).

**ISTHA – CLEARING**

Description: This work item shall conform to ISTHA Standard Specification 201 for CLEARING, except that measurement will be made in hectares and payment will be made at the Contract unit price per hectare.

**ISTHA – ROADWAY EXCAVATION**

Description: This work item shall conform to ISTHA Standard Specification Section 203 for ROADWAY EXCAVATION, COMMON and ROADWAY EXCAVATION, UNCOMMON, except that measurement will be made in cubic meters, and payment will be made at the Contract unit price per cubic meter.

**ISTHA – STRUCTURE EXCAVATION**

Description: This work item shall conform to ISTHA Standard Specification Section 206 for STRUCTURE EXCAVATION, COMMON except that measurement will be made in cubic meters, and payment will be made at the Contract unit price per cubic meter.

**ISTHA – EMBANKMENT**

Description: This work item shall conform to ISTHA Standard Specification Section 207 for EMBANKMENT, ZONE A, and EMBANKMENT, ZONE B, except that measurement will be made in cubic meters, and payment will be made at the Contract unit price per cubic meter.

ISTHA – POROUS GRANULAR BACKFILL

Description: This work item shall conform to ISTHA Standard Specification Section 210 for POROUS GRANULAR BACKFILL, except that measurement will be made in cubic meters, and payment will be made at the Contract unit price per cubic meter.

ISTHA – STRUCTURAL SUBDRAIN (FILTER FABRIC) (150MM)

Description: This work item shall conform to ISTHA Standard Specification Section 607 for STRUCTURAL SUBDRAIN (FILTER FABRIC) (6”), except that measurement will be made in meters, and payment will be made at the Contract unit price per meter.

ISTHA – SELECTED SUBGRADE

Description: This work item shall conform to ISTHA Item No. 211 SELECTED SUBGRADE as described in the ISTHA Standard Specifications, except that measurement will be made in cubic meters, and payment will be made at the Contract unit price per cubic meter.

ISTHA – GRANULAR SUBBASE

Description: This work item shall conform to ISTHA Standard Specification Section 301 for GRANULAR SUBBASE, except that measurement will be made in cubic meters, and payment will be made at the Contract unit price per cubic meter.

ISTHA – AGGREGATE BASE COURSE (100MM)

Description: This work item shall conform to ISTHA Standard Specification Section 302 for AGGREGATE BASE COURSE, except that measurement will be made in cubic meters, and payment will be made at the Contract unit price per cubic meter.

ISTHA – BITUMINOUS BASE COURSE

Description: This work item shall conform to ISTHA Standard Specification Section 304 for Bituminous Base Course (4 IN.), except that the pay item name will be BITUMINOUS BASE COURSE (100 mm), measurement will be made in square meters, and payment will be made at the contract unit price per square meter.

#### ISTHA – PORTLAND CEMENT CONCRETE PAVEMENT

Description: This work item shall conform to ISTHA Standard Specification Section 401 for PORTLAND CEMENT CONCRETE PAVEMENT (12”), except that the pay item name will be PORTLAND CEMENT CONCRETE PAVEMENT (300MM), measurement will be made in square meters, and payment will be made at the Contract unit price per square meter.

#### ISTHA - BITUMINOUS MATERIAL (PRIME OR TACK)

Description: This work item shall conform to ISTHA Standard Specification Section 402 for BITUMINOUS MATERIAL (TACK), except that measurement will be made in liters, and payment will be made at the Contract unit price per liter.

#### ISTHA – BITUMINOUS CONCRETE SHOULDERS

Description: This work item shall conform to ISTHA Standard Specification Section 418 for BITUMINOUS CONCRETE SHOULDERS (6”), except that the pay item name will be BITUMINOUS CONCRETE SHOULDERS (150mm), measurement will be made in square meters, and payment will be made at the Contract unit price per square meter.

#### ISTHA – AGGREGATE SHOULDERS

Description: This work item shall conform to ISTHA Standard Specification Section 420 for AGGREGATE SHOULDERS WITH FILTER FABRIC, except that measurement will be made in metric tons, and payment will be made at the Contract unit price per metric ton.

#### ISTHA – S. P. 117 PORTLAND CEMENT CONCRETE CLASSIFICATION REVISIONS

*Issued April 12, 2005*

Special Provision 1101 in the Contract Requirements amends the material requirements for Portland Cement Concrete used in Contracts advertised for bids after January 1, 2004.

Classes P or P(FA) concrete shall continue to be used for Portland Cement Concrete Base Course (Section 303) and Portland Cement Concrete Pavement (Section 401). Classes P or JP concrete shall be used for Concrete Pavement Removal and Replacement (S.P. 412) and Concrete Shoulder Removal and Replacement (S.P. 417). Classes P, HE or JP concrete shall be used for Concrete Pavement Repair (Full Depth) (S.P. 413). Class P concrete shall continue to be exclusively used for Concrete Pressure Relief Joint – Type 1 (Section 436), Toll Plaza Lane Paving (Section 441), Bridge Approach Slabs (Section 526) and Approach Slab Removal and Replacement (Section 527). Class J concrete shall continue to be exclusively used for Bridge Deck Drainage (Section 515) and Formed Concrete Repair (Section 530).

All other uses where 'Class P' concrete is specified in Standard Specifications and the ISTHA Standard Drawings shall utilize the "Class SP" concrete as specified in S.P. 1101.

Specific references where 'Class P' concrete in the Standard Specifications shall now be considered 'Class SP' are as follows:

- Subsection 206.2.4 - STRUCTURE EXCAVATION – Disposal of Structure Excavation
- Subsection 438.2 - CONCRETE SIDEWALK, MEDIAN AND DRIVEWAY PAVEMENT – Materials
- Subsection 500.1 – DESCRIPTION OF STRUCTURES – Pay Items for Part V
- Subsection 501.2 – CONCRETE BRIDGES AND DRAINAGE STRUCTURES – Materials
- Subsection 501.8.3 – CONCRETE BRIDGES AND DRAINAGE STRUCTURES – Depositing Concrete Under Water
- Subsection 501.17 – CONCRETE BRIDGES AND DRAINAGE STRUCTURES - Payment
- Subsection 505.5(e) – PILING – Filling Shells with Concrete
- Subsection 538.6 – PRECAST CONCRETE BOX CULVERTS – Joints
- Subsection 542.2 – DRILLED CAISSON SHAFTS – Materials
- Subsection 600.1 – DESCRIPTION OF DRAINAGE AND EROSION CONTROL – Pay Items for Part VI
- Subsection 601.4 – DRAINAGE PIPES – Plugging Existing Sewers and Drains
- Subsection 601.9 – DRAINAGE PIPES – Headwalls, Sloped Headwalls and End Sections
- Subsection 601.10 – DRAINAGE PIPES – Concrete Collars
- Subsection 601.13 – DRAINAGE PIPES – Payment
- Subsection 602.9 – CORRUGATED STRUCTURAL PLATE PIPES AND ARCHES – Headwalls and Slopewalls
- Subsection 602.13 – CORRUGATED STRUCTURAL PLATE PIPES AND ARCHES – Payment
- Subsection 604.3 – SLOTTED PAVEMENT DRAINS – General Requirements
- Subsection 604.4 – SLOTTED PAVEMENT DRAINS – Construction Requirements
- Subsection 604.7 – SLOTTED PAVEMENT DRAINS – Payment
- Subsection 607.1 – SUBSURFACE DRAINS – Description
- Subsection 610.5.1 - STRUCTURES FOR PIPE DRAINAGE SYSTEMS – General Requirements
- Subsection 612.3 – CONCRETE CURB AND COMBINATION CONCRETE CURB AND GUTTER – General
- Subsection 612.13 - CONCRETE CURB AND COMBINATION CONCRETE CURB AND GUTTER – Payment
- Subsection 616.2 – PAVED DITCHES AND CHANNELS – Materials (*Refer to Errata in 1/03 Supplemental Specifications*)
- Subsection 617.2 – CONCRETE SLOPE WALLS – Materials (*Refer to Errata in 1/03 Supplemental Specifications*)

- Subsection 628.19A.1 – EROSION AND SEDIMENT CONTROL – (Sediment Basin) Materials (*Refer to 1/03 Supplemental Specifications*)
- Subsection 701.5 – STEEL PLATE BEAM GUARDRAIL – Fabrication and Erection (*Refer to 1/03 Supplemental Specifications*)
- Subsection 704.2 – ENERGY ATTENUATOR – General Requirements (*Refer to 1/03 Supplemental Specifications*)
- Subsection 705.2 – CONCRETE MEDIAN BARRIER BASE – Materials
- Subsection 811.2 – FOUNDATION FOR OVERHEAD SIGN STRUCTURES – Materials
- Subsection 811.6 – FOUNDATION FOR OVERHEAD SIGN STRUCTURES – Measurement
- Subsection 811.7 – FOUNDATION FOR OVERHEAD SIGN STRUCTURES – Payment
- Subsection 812.2 – FOUNDATION FOR GROUND MOUNTED SIGN SUPPORT – Materials
- Subsection 812.3.3– FOUNDATION FOR GROUND MOUNTED SIGN SUPPORT – Casting Concrete
- Subsection 817.7 – RIGHT-OF-WAY FENCE – Concrete Footings
- Subsection 821.2 – RIGHT-OF-WAY MARKER AND SURVEY MONUMENT – Materials
- Subsection 902.2 – LIGHT POLE FOUNDATIONS – Materials
- Subsection 902.3.2 – LIGHT POLE FOUNDATIONS – Concrete Foundation - Roadway
- Subsection 905.2 – FOUNDATION FOR OUTDOOR ROADWAY LIGHTING CONTROL CONSOLE – Materials
- Subsection 910.2 – JUNCTION BOXES, PULL BOXES AND WIREWAYS – Materials
- Subsection 1110.3 – PRECAST CONCRETE DRAINAGE STRUCTURES – Precast Reinforced Concrete Inlets and Catch Basins
- Subsection 1144.1 – CONCRETE JUNCTION BOX – General Requirements

All uses where 'Class D' concrete is specified in Standard Specifications and the ISTHA Standard Drawings shall utilize the 'Class SD' concrete as specified in S.P. 1101, except bridge decks which shall use 'Class DK' concrete.

Specific references where 'Class D' concrete in the Standard Specifications shall now be considered 'Class SD' are as follows:

- Subsection 500.1 – DESCRIPTION OF STRUCTURES – Pay Items for Part
- Subsection 501.2 – CONCRETE BRIDGES AND DRAINAGE STRUCTURES – Materials
- Subsection 528.2 – BRIDGE PARAPET MODIFICATION – Materials
- Subsection 529.2 – CRASHWALL MODIFICATION – Materials
- Subsection 614.3 – BRIDGE ABUTMENT DRAIN PIPE – Construction Requirements
- Subsection 706.2 – CONCRETE MEDIAN BARRIER – Materials

V



- Subsection 709.2- MOVEABLE CONCRETE BARRIER, CONTRACTOR-FURNISHED – Materials (*Refer to 1/03 Supplemental Specifications*)
- Subsection 714.2 – CONCRETE GLARE SCREEN – Materials (*Refer to 1/03 Supplemental Specifications*)

The following references in the Standard Specifications and the ISTHA Standard Drawings stating 'Class J' concrete shall utilize the Class JP concrete as specified in S.P. 1101.

- Subsection 414.2 – PAVEMENT REPAIR (PARTIAL DEPTH) - Materials
- Subsection 427.2 – CLASS B TOLL PLAZA LANE REPAIR – Materials
- Subsection 427.3 – CLASS B TOLL PLAZA LANE REPAIR – Equipment
- Subsection 427.2 – CLASS B TOLL PLAZA LANE REPAIR – Construction Requirements

ISTHA – S.P. 152 MATERIAL SUBSTITUTIONS – PORTLAND CEMENT CONCRETE  
 Issued 3/23/05

The Contractor shall be required to submit for Tollway acceptance, Portland Cement Concrete (PCC) mix designs as prepared by the Contractor under the provisions of the January 1, 2002 edition of the IDOT Standard Specifications for Road and Bridge Construction; Section 1020, Portland Cement Concrete in-place of equivalent classes of ISTHA specified PCC mix designs as defined by Contract Special Provision 1101. The Authority's acceptance of any mix design for an IDOT Class of Portland Cement Concrete shall permit the Contractor to use the approved IDOT Class of concrete as a substitute material in-place of a specified ISTHA Class of concrete as identified in the following list of Contract pay items which specify the use of a cast-in-place or pre-cast concrete. Such a submittal and acceptance shall not make IDOT a party to the Contract and responsibility for the performance of the concrete mixture shall remain with the Contractor.

ISTHA Pay Item No.	Unit of Measure	Description	ISTHA PCC Class	IDOT PCC Class
526	Sq. M.	Bridge Approach Slab & Grade Beam	P	PV
501B	Cu. M.	Bridge Substructure	SP	SI
501F	Cu. M.	Bridge Approach Slab Parapet	SD	BD
501F	Cu. M.	Bridge Deck Parapet	SD	BD

- \* Denotes Special Provision
- \*\* With CA-16 Aggregate
- \*\*\*With Superstructure Quality Coarse Aggregate

ISTHA – S.P. 211A    AGGREGATE SUBGRADE 300MM (12 IN.)  
 Issued 4/19/05

**S.P. 211A.1    DESCRIPTION**

This work shall consist of the furnishing, placement and compaction of an aggregate subgrade of porous granular embankment material capped with 76mm (3 inches) of a CA-6 grade aggregate constructed on the finished subgrade in accordance with this special provision and to the lines, dimensions, and cross sections shown on the Plans, and as required by the Engineer.

**S.P. 211A.2    MATERIALS**

The materials used for AGGREGATE SUBGRADE 300MM (12 In.) shall consist of coarse aggregate for porous granular embankment in accordance with Article 1004.06 of the IDOT Standard Specifications except as follows:

1. Crushed Stone, Crushed Blast Furnace Slag, and Crushed Concrete will be permitted. Steel slag and other expansive materials as determined through testing by the Tollway will not be permitted.

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

2. Gravel, Crushed Gravel, and Pit Run Gravel

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

3. Crushed Concrete with Bituminous Materials\*\*

<u>Sieve Size</u>	<u>Percent Passing</u>
150 mm (6 inches)	97±3
100 mm (4 inches)	90±10
50 mm (2 inches)	45±25
#4 (4.75 mm)	20±20
#200 (75 µm)	5±5

\*\*The bituminous material shall be separated and mechanically blended with the crushed concrete so that the bituminous material does not exceed 40% of the final product. The top size of the bituminous material in the final product shall be less than 100 mm (4 inches) and shall not contain steel slag or any material that is considered expansive by the Tollway.

The capping aggregate shall have a gradation of CA-6 with the Contractor having the option to use Reclaimed Asphalt pavement (RAP), except RAP containing steel slag or other expansive material as identified by the Tollway, as capping aggregate. Any RAP shall have 100% passing the 75 mm (3 inch) sieve and be well graded down through the fines.

### **S.P. 211A.3 CONSTRUCTION REQUIREMENTS**

The aggregate subgrade shall be placed in two lifts consisting of a 225 mm (9 inch) variable nominal thickness lower lift and a 75 mm (3 inch) nominal thickness top lift of capping aggregate having a gradation of CA-6. The thickness of the porous granular embankment aggregate under bituminous shoulders will vary as a result of shoulder pavement thicknesses and shoulder surface or shoulder subgrade slope requirements as shown on the Plans. If used as the capping aggregate, the RAP shall be separated and stockpiled before use. A vibratory roller meeting the requirements of Article 1101.01(g) of the IDOT 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 (2 feet) or less.

### **S.P. 211A.4 MEASUREMENT**

- (a) Contract Quantities. Contract quantities shall be in accordance with Subsection 203.7 of the ISTHA Standard Specifications.
- (b) Measured Quantities. AGGREGATE SUBGRADE, 300MM (12 In.) will not be measured for payment, but will be computed in cubic meters for the various thicknesses from the Plan cross-sections and dimensions when completed essentially to the lines and dimensions shown in the Plans.

Should the Engineer direct a change in the Plan limits, that volume of material involved in the change shall be measured for adjustment to the calculated quantity. The volumes involved in the change shall be computed in cubic meters from cross-sections taken before and after placement and compaction of the material to the revised limits.

**S.P. 211A.5 PAYMENT**

Payment for AGGREGATE SUBGRADE, 300MM (12 In.) measured as specified, will be made at the Contract unit price per cubic meter, which payment shall constitute full compensation for furnishing, transporting, placing, compacting and finishing the aggregate subgrade materials, including the capping aggregate, as specified or as directed by the Engineer.

PAY ITEM NUMBER	DESCRIPTION	UNIT OF MEASURE
211A	AGGREGATE SUBGRADE, 300MM (12 In.)	CU. M.

ISTHA - S.P. 501 CONCRETE BRIDGES AND DRAINAGE STRUCTURES  
*Issued 2/01/04 – 9/13/05*

**S.P. 501 CONCRETE BRIDGES AND DRAINAGE STRUCTURES**

**S.P. 501.1 DESCRIPTION**

This work shall be performed in accordance with Section 501 on the Standard Specifications and as shown on the Plans, except as modified herein.

**S.P. 501.2 MATERIALS**

Subsection 501.2 of the Standard Specifications shall govern, except as modified herein. Revise the first material reference to read as follows:

“Concrete..... S.P.1101

Concrete shall be Class DK (Standard), Class SD, or Class SP as shown in the Plans.

Concrete (High Performance) .....S.P.1101A

Concrete shall be Class DK – HPC (High Performance Concrete) as shown in the Plans.

Concrete (with Self Consolidating Admixture System)..... S.P.1101C

**S.P. 501.3 EQUIPMENT**

Subsection 501.3 of the Standard Specifications shall govern, except as modified herein.

The Contractor shall furnish, and maintain in good working condition, modern and dependable equipment appropriate for the work. All equipment shall conform to the requirements of Section 1203 of the Standard Specifications and S.P. 1203.

#### **S.P. 501.4 FORMS**

##### **General**

Subsection 501.4.1 of the Standard Specifications shall govern, except as modified herein.

In order to provide the various concrete treatments as specified or as shown on the Plans, the forms for cast-in-place noise walls, retaining walls, and wing walls shall include form liners as specified in accordance with special provision S.P.547.

#### **S.P. 501.5 PLACING AND CONSOLIDATION**

##### **Placing**

With the placement of standard ready-mixed concrete, Subsection 501.8.1 of the Standard Specifications shall govern, except as modified herein.

The Contractor shall advise the Engineer at least 24 hours in advance of placing Class DK High Performance Concrete. Placing equipment that results in a loss of over 3.0 percent of air in the plastic concrete shall not be allowed or shall be reconfigured. The concrete shall be adjusted to ensure that it meets the air requirements of Section 1101 as placed.

Revise the third paragraph of Subsection 501.8.1 of the Standard Specifications to read as follows:

“The placing of concrete shall be conducted so as to produce a dense, impervious structure of uniform texture and with smooth, exposed surfaces. Concrete shall be deposited in the forms within the time limits specified for the various methods of mixing and transporting, and in such a manner as to avoid segregation and the displacement of reinforcement steel and embedded items. When placing Class DK concrete, the discharge end of the pump shall have attached an “S” shaped flexible or rigid conduit, a 90 degree elbow with a minimum of 10 feet of flexible conduit placed parallel to the deck, or a similar configuration approved by the Engineer. Concrete shall be deposited as nearly as possible in its final position; depositing a large quantity at any one point and running or working it along the forms will not be permitted.”

##### **Consolidation**

With the placement of standard ready-mixed concrete, revise Subsection 501.8.2 of the Standard Specifications to read as follows:

“Standard Concrete shall be consolidated to the maximum practicable density, so that it is free from pockets of coarse aggregate and entrapped air, and closes snugly against all surfaces of forms and embedded materials. Consolidation of concrete in structures shall be by hand-type vibrators. The Contractor shall provide and use a sufficient number of vibrators to ensure that consolidation can be started immediately after the concrete has been deposited in the forms. In consolidating each layer of concrete, the vibrator shall be operated in a near vertical position and the vibrating head shall be allowed to penetrate and revibrate the concrete in the upper portion of the underlying layer. Vibrators shall not be used to transport concrete in the forms. Care shall be exercised to avoid contact of the vibrating head with surfaces of the forms or reinforcing steel.

The vibration shall be of sufficient duration and intensity to thoroughly compact the concrete into place, but shall not be continued so as to cause segregation. When consolidating concrete in bridge decks, the vibrator shall be vertically inserted into the concrete for 3 to 5 seconds, or for a period of time determined by the Engineer. Vibration shall be supplemented by spading along form surfaces and in corners and locations impossible to reach with the vibrators. In addition to the internal vibration required herein, formed surfaces which will be exposed to view after completion of the work shall be worked with a spading tool approved by the Engineer to prevent the formation of entrapped air voids in the surface.”

## **S.P. 501.6 FINISHING**

### **General**

Revise Subsection 501.10.1 of the Standard Specifications to read as follows:

“Unless otherwise provided for on the Plans, in these Specifications or as directed by the Engineer, all formed concrete surfaces exposed to view shall be given an Ordinary Formed Surface Finish as described in Subsection 501.10.2. Concrete bridge decks using Standard Class DK concrete shall be finished as described in Subsection 501.10.4. Concrete bridge decks using Class DK High Performance concrete shall be finished as described in Subsection 501.10.4 with exception to the following modifications to the second paragraph of Subsection 501.10.4(a) and to the first paragraph of Subsection 501.10.4(c):

Revise the second paragraph of Subsection 501.10.4(a) of the Standard Specifications to read as follows:

The rails upon which the finishing machine will travel shall be accurately set so that the finished roadway surface will conform to the profiles shown on the Plans. The rail supports shall be adjustable, of substantial construction and shall be placed and properly adjusted to compensate for the deflection of forms and supporting beams or falsework which will occur during placement of the concrete. Wherever possible, the loads and stresses of rail supports shall be

carried on slab forms, with the formwork structure properly designed to carry the weight of the finishing machine without deflection. The leg brace of the cantilever bracket shall bear on the web within 6 inches of the bottom of the beam or girder.

Exterior beams or girders, supporting cantilever forming brackets, shall be tied together at 4 ft to 8 ft intervals. During stage construction ties shall extend to the furthest opposite interior beam or girder. Ties shall be a minimum No. 4 epoxy coated reinforcement bars with threaded ends. Each tie bar shall be furnished with an approved tie bar stabilizing system consisting of adjustable end clips, lag studs, and turnbuckles. The tie clips shall mechanically attach to the outside fascia girder and the individual tie bars. The tie bars, turnbuckles, lag studs and tie clips shall be furnished by the Contractor. The tie bars shall be placed parallel to and have the same clearance from the deck form work as required for the bottom transverse reinforcement. No welding will be permitted to structural steel or stud shear connectors. After installation, the tie bar shall be tensioned with turnbuckles until the bar does not vary from a straight line from center of end clip to center of opposite end clip. The tie spacing shall be not greater than 4 ft. centers for steel beams or girders and not greater than 8 ft. centers for precast, prestressed concrete girders. Cross frames on steel girders which do not have a top strut shall not be considered a tie. Hardwood, 4 in. x 4 in., blocks or material of an equivalent strength shall be wedged between webs of exterior and first interior beams or girders within 6 in. of the bottom flanges at each location where the top of the beams are tied together. Rail supports shall not be more than 5 feet apart.

Revise the first paragraph of Subsection 501.10.4(c) of the Standard Specifications to read as follows:

1. Finishing: After the concrete is placed and consolidated, it shall be struck off and finished with a power driven finishing machine. The finishing machine shall be equipped with a mechanical strike off device and rotating cylinders, which transversely finishes the surface of the concrete. The finishing machine shall produce a floor surface of uniform texture, free from porous areas and the required surface smoothness. Vibrating screeds shall not be allowed unless approved by the Engineer.

For the bridge deck pour, fogging equipment shall be in operation unless the evaporation rate is less than 0.1 lb/sq ft/hour and the Engineer gives permission to turn off the equipment. The evaporation rate shall be determined according to the figure in the Portland Cement Association's publication, "Design and Control of Concrete Mixtures" (refer to the section of plastic shrinkage cracking). The Contractor shall provide temperature, relative humidity, and wind speed measuring equipment.

The fogging equipment shall be adjusted to adequately cover the entire width of the pour.

If there is a delay of more than ten minutes during bridge deck placement, consolidation and finishing operations, wet burlap shall be used to protect the concrete until operations resume.

Concrete placement operations shall be coordinated to limit the distance between the point of concrete placement and concrete covered with cotton mats for curing. With the use of Standard Class DK concrete, the distance shall not exceed 35 feet, and for bridge decks with widths greater than 50 feet, the distance shall not exceed 25 feet. With the use of High Performance Class DK concrete, the distance shall not exceed 25 ft. and the concrete shall be covered with the cotton mat for curing within 20 minutes of placement.

Concrete placement shall be in lifts not to exceed 18 inches (450 mm). Internal vibrator operation shall be at appropriate intervals and depths and withdrawn slowly enough to assure the minimum amount of surface air voids and the best possible finish without causing segregation. Any use of external form vibrators must be approved by the form liner manufacturer. Any use of SCC shall be in accordance with special provision S.P.1101C for Self-Consolidating Concrete for Cast-In-Place Concrete.

#### **S.P. 501.7 MEASUREMENT**

Unless otherwise provided, measurement of concrete for bridges and drainage structures, which includes high performance, and structural concrete excluding pre-cast / pre-stressed concrete components, will be calculated in cubic yards of the various classes of concrete specified from the lines and dimensions shown in the Plans, or as directed by the Engineer. No measurement for payment will be made for concrete, which for the convenience of the Contractor, is placed beyond the specified limits.

Measurement of high performance concrete placed in bridge decks will be limited to the thickness and/or neat lines shown on the Plans, or as directed by the Engineer.

Unless otherwise provided, no deductions will be made for the volume of joint material or embedded reinforcement, conduits, pipes, scuppers or for the tops of embedded piles. A deduction will be made for pipe with a volume greater than 1 cubic foot. The volume occupied by pipe in headwalls and end-walls and pre-cast deck plank shall be deducted to determine the pay volume of concrete for bridges and drainage structures.

BRIDGE DECK GROOVING will be measured for payment in place and the area computed in square yards. In computing the area for payment, no deductions will be made for grooving omissions at deck drains, expansion joints or longitudinal joints or lane lines.

Measurement for payment of pre-cast concrete components will be as specified in Section 502 of the Standard Specifications.

Measurement for payment of reinforcing steel will be as specified in Section 504 of the Standard Specifications.

#### **S.P. 501.8 PAYMENT**

Payment at the Contract unit prices for the various classes of concrete shall constitute full compensation for furnishing, mixing, hauling and placing of all materials (except



reinforcing steel), required for the work; furnishing, erecting, maintaining and removing all forms, falsework and falsework piling, including all necessary working drawings; furnishing, placing and splicing water seals; finishing, fog spraying, and curing of the high performance or standard deck concrete; finishing and curing of the structural concrete; installing, furnishing, and placing all joints with the exception of structural expansion joints; furnishing and placing all drainage holes, including necessary pipe and porous granular backfill; furnishing and setting anchor bolts; and for all labor, equipment, tools and incidentals necessary to complete the work as specified.

Bridge deck grooving will be paid for at the Contract unit price per square yard for BRIDGE DECK GROOVING, which price shall include all labor, materials, equipment and incidental items necessary to complete the work.

Payment for pre-cast / pre-stressed concrete components will be as provided in Section 502 of the Standard Specifications.

Payment for furnishing and placing reinforcing steel will be as provided in Section 504 of the Standard Specifications.

<u>PAY ITEM NUMBER</u>	<u>DESIGNATION</u>	<u>UNIT OF MEASURE</u>
501A	CONCRETE FOR BRIDGES AND DRAINAGE STRUCTURES (CLASS DK)	CU. YD.
501B	CONCRETE FOR BRIDGES AND DRAINAGE STRUCTURES (CLASS SP)	CU. YD.
501E	BRIDGE DECK GROOVING	SQ. YD.
501F	CONCRETE FOR BRIDGES AND DRAINAGE STRUCTURES (CLASS SD)	CU. YD.
501G	HIGH PERFORMANCE CONCRETE FOR BRIDGES AND DRAINAGE STRUCTURES (CLASS DK-HPC)	CU. YD.

ISTHA - S.P. 1101 PORTLAND CEMENT AND OTHER CONCRETE  
*Issued 2/01/04 – Revised 3/17/05*

Replace the requirements in Section 1101 of the Standard Specifications with the following.

**“1101.1 - Description**

This specification applies to the materials, required compositions, batching, mixing and transporting, placement temperatures, curing and protecting of Portland cement concrete.

**1101.2 - MATERIALS**

All materials shall conform to Materials, Part XI. Specific references are as follows.

Portland cement <sup>1</sup> .....	1102
Water .....	1104
Mineral Admixtures FlyAsh .....	S.P.1105.6
Silica fume .....	S.P.1105.7
Ground granulated blast furnace slag .....	S.P.1105.5
Chemical Admixtures	
Air-Entraining Admixtures .....	S.P.1105.1
Water-Reducing and Retarding Admixtures .....	S.P.1105.2
Set Accelerating Admixtures.....	S.P.1105.3
Latex Admixture.....	S.P.1105.4
High Range Water-Reducing or Retarding Admixtures .	S.P.1105.2
Fine Aggregate .....	1106
Coarse Aggregate <sup>2</sup> .....	1107
Concrete Curing and Insulating materials .....	S.P.1118

1. If the use of High-early strength cement Type III is not specified and the Contractor desires to use it, he shall first obtain the written approval of the Engineer. The Contractor shall assume all additional cost incurred by the use of such cement.
2. Bulk specific gravity shall be a minimum of 2.68 for Class HP concrete.

The coarse aggregate permitted in Section 1107, for Class DK concrete shall be uniformly graded according to Subsection 1107.1.2, first paragraph; except that when concrete placement shall be by the pump method, the percent passing the ½ inch (12.5 mm) sieve shall be a minimum of 50 percent. If the coarse aggregate gradation does not meet this requirement, combining aggregate sizes will be permitted according to Subsection 1107.2. Two or more aggregate sizes consisting of CA-7 or CA-11, and CA-13, CA-14, and/or CA-16 may be combined. However, a CA-7 or CA-11 shall be included in the blend for the Class DK concrete.

**1101.3 - EQUIPMENT**

The Contractor shall furnish and maintain in good working condition, modern and dependable equipment for transporting, storing, batching and mixing of the concrete ingredients and for transporting the concrete. All equipment shall be appropriate for the work, shall be subject to the approval of the Engineer, and shall conform to the requirements of Section 1203. Specific references are as follows:

Batching and Weighing Equipment .....	1203.1
Concrete Mixers.....	1203.2
Water Supply Equipment .....	1203.9
Membrane Curing Equipment.....	S.P.1203.15
Bridge Deck Fogging Equipment.....	S.P.1203.18.11

**1101.4 - COMPOSITION OF CONCRETE**

**1101.4.1 - Proportioning**

The actual proportions of cement, fine aggregate, coarse aggregate, and water in the concrete mixes to be used for the various classes of concrete shall be as specified herein. The Contractor may, subject to the approval of the Engineer, make appropriate adjustments the mixture in order to effect an acceptable yield. The Class of concrete to be used for various pay items shall be that shown in the Plans, in the Special Provisions, or as directed by the Engineer, and each Class will nominally conform to the requirements herein. The mixes shall be such as will produce concrete of satisfactory plasticity and workability and shall conform to the following:

**Cast-in-Place Concrete. (See Table 11-1)**

In Table 11-1, both the coarse and fine aggregates for all classes of concrete shall be “A” quality or better.

Aggregates used in all bridge superstructure concrete, and concrete for medians and other safety-faced barriers including parapets on retaining walls, and at other locations shown on the plans, shall be “superstructure aggregate” as specified in Subsection 1107.1.1

**Pre-cast /Pre-stressed or Pre-Cast Concrete (See Table 11-2)**

For Class R1, Class R2, Class R3, and Class R4 concrete, aggregates shall be “A” quality or better. The composition of the pre-cast/pre-stressed or pre-cast classes of concrete shall be determined by the Contractor and shall provide efficient quality control with respect to the mixture so that each batch of concrete produced for any member will meet the criteria specified herein under table 11-2. Before the work begins, the Contractor shall obtain the Engineer’s approval of the proportions of materials he/she proposes to use in the concrete and shall identify each of the materials as to name, source, brand, type, etc.

**TABLE 11-1 CONCRETE PROPORTIONS FOR ONE CUBIC YARD**

USE		PCC. PAVEMENT & BASE COURSE				BRIDGE DECK OVERLAY		
Material	Unit	Class P	Class P	Class P(FA)	Class P(FA)	Class L <sup>k</sup>	Class L-S <sup>a</sup>	Class M <sup>h</sup>
Portland cement, Type I or II	lbs.	517	517	451 Min. <sup>b</sup>	451 Min. <sup>b</sup>	658	822 1/2	611 Min.
Portland cement, Type III	lbs.	-----	-----	-----	-----	-----	-----	-----
Fly ash, Class C	lbs.	-----	-----	141 Max.	141 Max.	-----	-----	-----
Ground Granulated blast furnace slag (max.)	lbs.	-----	-----	-----	-----	-----	-----	-----
Silica fume (microsilica)	lbs.	-----	-----	-----	-----	-----	-----	10% of cement
Coarse aggregate, CA-7 or CA-11 Limestone	lbs.	1800	-----	1860	-----	-----	-----	-----
Coarse aggregate, CA-7 or CA-11 Gravel	lbs.	-----	1900	-----	1920	-----	-----	-----
Coarse aggregate, CA-11 or CA-14	lbs.	-----	-----	-----	-----	1246	1394	-----
Coarse aggregate, CA-14 or CA-16	lbs.	-----	-----	-----	-----	-----	-----	1600
Coarse aggregate, CA-16	lbs.	-----	-----	-----	-----	-----	-----	-----
Fine aggregate, grade FA-1 or FA-2	lbs.	1375	1275	1200	1150	1715	1394	1432
Fine aggregate, grade FA-2 or FM-20	lbs.	-----	-----	-----	-----	-----	-----	-----
Total water, maximum	lbs.	233	233	250	250	250 <sup>j</sup>	263	262
Water Reducer (ASTM C494)	oz/cwt	3 1/2 - 4	3 1/2 - 4	3 1/2 - 4	3 1/2 - 4	-----	-----	-----
High-range water reducer (Type F)	oz/cwt	-----	-----	-----	-----	-----	-----	-----
Accelerator - Non Chloride (ASTM C494 Type C)	oz/cwt	-----	-----	-----	-----	-----	-----	-----
Slump - Machine Finish	in.	1 1/2 Max.	1 1/2 Max.	1 1/2 Max.	1 1/2 Max.	6 Max. <sup>l</sup>	4 - 6 <sup>g</sup>	3 - 6
Slump - Hand Finished	in.	3 Max.	3 Max.	3 Max.	3 Max.	-----	-----	-----
Slump - maximum after HRWR addition at site	in.	-----	-----	-----	-----	-----	-----	-----
Entrained Air	%	5 - 8	5 - 8	5 - 8	5 - 8	6 1/2 Max.	5 1/2 - 7 1/2	5 - 8
Maximum water to cementitious materials ratio <sup>m</sup>	lb/lb	0.45	0.45	0.42	0.42	0.40**	0.34	0.39 *
Minimum Required Interim Compressive Strength	psi	Str.*** Pav't. 2000	Str.*** Pav't. 2000	Pav't. 2000	Pav't. 2000	Pav't. 2000	-----	Str.*** Pav't. 2000
Minimum Required Ultimate Compressive Strength	psi/age	3,500/14 day	3,500/14 day	3,500/14 day	3,500/14 day	4,000/14 day	3,000/7 day	4,000/14 day

**TABLE 11-1 Continued CONCRETE PROPORTIONS FOR ONE CUBIC YARD**

USE		BRIDGE SUBSTRUCTURES & DRAINAGE STRUCTURES					
Material	Unit	Class SP Option 1	Class SP Option 1	Class SP Option 2	Class SP Option 2	Class SP Option 3	Class SP Option 3
Portland cement, Type I or II	lbs.	540	540	432 Min.	432 Min.	405 Min.	405 Min.
Portland cement, Type III	lbs.	-----	-----	-----	-----	-----	-----
Fly ash, Class C	lbs.	-----	-----	135 Max.	135 Max.	-----	-----
Ground Granulated blast furnace slag (max.)	lbs.	-----	-----	-----	-----	141 Max.	141 Max.
Silica fume (microsilica)	lbs.	-----	-----	-----	-----	-----	-----
Coarse aggregate, CA-7 or CA-11 Limestone	lbs.	1800	-----	1780	-----	1800	-----
Coarse aggregate, CA-7 or CA-11 Gravel	lbs.	-----	1920	-----	1875	-----	1900
Coarse aggregate, CA-11 or CA-14	lbs.	-----	-----	-----	-----	-----	-----
Coarse aggregate, CA-14 or CA-16	lbs.	-----	-----	-----	-----	-----	-----
Coarse aggregate, CA-16	lbs.	-----	-----	-----	-----	-----	-----
Fine aggregate, grade FA-1 or FA-2	lbs.	1330	1220	1310	1225	1325	1235
Fine aggregate, grade FA-2 or FM-20	lbs.	-----	-----	-----	-----	-----	-----
Total water, maximum	lbs.	232	232	244	244	232	232
Water Reducer (ASTM C494)	oz/cwt	See Note <sup>s</sup>	See Note <sup>s</sup>	See Note <sup>s</sup>	See Note <sup>s</sup>	See Note <sup>s</sup>	See Note <sup>s</sup>
High-range water reducer (Type F)	oz/cwt	See Note <sup>q</sup>	See Note <sup>q</sup>	See Note <sup>q</sup>	See Note <sup>q</sup>	See Note <sup>q</sup>	See Note <sup>q</sup>
Accelerator - Non Chloride (ASTM C494 Type C)	oz/cwt	-----	-----	-----	-----	-----	-----
Slump - Machine Finish	in.	5 Max.	5 Max.	5 Max.	5 Max.	5 Max.	5 Max.
Slump - Hand Finished	in.	5 Max.	5 Max.	5 Max.	5 Max.	5 Max.	5 Max.
Slump - maximum after HRWR addition at site	in.	7.5 <sup>q</sup>	7.5 <sup>q</sup>	7.5 <sup>q</sup>	7.5 <sup>q</sup>	7.5 <sup>q</sup>	7.5 <sup>q</sup>
Entrained Air	%	5 - 8	5 - 8	5 - 8	5 - 8	5 - 8	5 - 8
Maximum water to cementitious materials ratio <sup>m</sup>	lb./lb.	0.43	0.43	0.43	0.43	0.43	0.43
Minimum Required Interim Compressive Strength	psi	-----	-----	-----	-----	-----	-----
Minimum Required Ultimate Compressive Strength	psi/age	3,500/14 day	3,500/14 day	3,500/14 day	3,500/14 day	3,500/14 day	3,500/14 day

**TABLE 11-1 Continued CONCRETE PROPORTIONS FOR ONE CUBIC YARD**

USE		PCC PATCHING					
Material	Unit	Class HE <sup>c</sup>	Class HP <sup>c</sup>	Class J	Class J	Class JP	Class JP
Portland cement, Type I or II	lbs.	----	728 Min.	658	658	658	658
Portland cement, Type III	lbs.	799 Min.	----	----	----	----	----
Fly ash, Class C	lbs.	----	----	----	----	----	----
Ground Granulated blast furnace slag (max.)	lbs.	----	----	----	----	----	----
Silica fume (microsilica)	lbs.	----	9% of cement	----	----	----	----
Coarse aggregate, CA-7 or CA-11 Limestone	lbs.	----	----	1780	----	1710	----
Coarse aggregate, CA-7 or CA-11 Gravel	lbs.	----	----	----	1880	----	1795
Coarse aggregate, CA-11 or CA-14	lbs.	----	----	----	----	----	----
Coarse aggregate, CA-14 or CA-16	lbs.	----	----	----	----	----	----
Coarse aggregate, CA-16	lbs.	1600	1700 <sup>d</sup>	----	----	----	----
Fine aggregate, grade FA-1 or FA-2	lbs.	1160	1024	1230	1110	1300	1195
Fine aggregate, grade FA-2 or FM-20	lbs.	----	----	----	----	----	----
Total water, maximum	lbs.	304	320	252	252	252	252
Water Reducer (ASTM C494)	oz/cwt.	----	----	3 <sup>1</sup> / <sub>2</sub> - 4	3 <sup>1</sup> / <sub>2</sub> - 4	3 <sup>1</sup> / <sub>2</sub> - 4	3 <sup>1</sup> / <sub>2</sub> - 4
High-range water reducer (Type F)	oz/cwt.	See Note <sup>c</sup>	See Note <sup>c</sup>	----	----	12 - 14 <sup>p</sup>	12 - 14 <sup>p</sup>
Accelerator - Non Chloride (ASTM C494 Type C)	oz/cwt.	See Note <sup>c</sup>	See Note <sup>c</sup>	----	----	20.0	20.0
Slump - Machine Finish	in.	----	----	3 Max.	3 Max.	----	----
Slump - Hand Finished	in.	8 Max. <sup>e</sup>	8 Max. <sup>f</sup>	4 Max.	4 Max.	8 Max. <sup>u</sup>	8 Max. <sup>u</sup>
Slump - maximum after HRWR addition at site	in.	----	----	----	----	----	----
Entrained Air	%	5 - 8	5 - 8	5 - 8	5 - 8	5 - 8	5 - 8
Maximum water to cementitious materials ratio <sup>m</sup>	lb./lb.	0.38	0.38*	0.40	0.40	0.40	0.40
Minimum Required Interim Compressive Strength	psi	Pav't. 2,000/10 hr	Br. deck 3,000/36 hr	Pav't 2000	Pav't. 2000	3500 @ 48 Hrs	3500 @ 48 Hrs
Minimum Required Ultimate Compressive Strength	psi/age	4,000/ 7 day	4,000/ 7 day	4,000/ 14 day	4,000/ 14 day	4,000/ 14 day	4,000/ 14 day

**TABLE 11-1 Continued CONCRETE PROPORTIONS FOR ONE CUBIC YARD**

USE		BRIDGE SUPER STRUCTURE(Except Bridge Deck) & CAST-IN-PLACE CONCRETE BARRIER						BRIDGE DECK	
Material	Unit	Class SD Option 1	Class SD Option 1	Class SD Option 2	Class SD Option 2	Class SD Option 3	Class SD Option 3	Class DK Option 1	Class DK Option 2
Portland cement, Type I or II	lbs.	564	564	451 Min.	451 Min.	423 Min.	423 Min.	500 Min.	500 Min.
Portland cement, Type III	lbs.	-----	-----	-----	-----	-----	-----	-----	-----
Fly ash, Class C	lbs.	-----	-----	141 Max.	141 Max.	-----	-----	132 Max.	132 Max.
Ground Granulated blast furnace slag (max.)	lbs.	-----	-----	-----	-----	141 Max.	141 Max.	-----	-----
Silica fume (microsilica)	lbs.	-----	-----	-----	-----	-----	-----	-----	-----
Coarse aggregate, CA-7 or CA-11 Limestone	lbs.	1830	-----	1840	-----	1830	-----	1780	-----
Coarse aggregate, CA-7 or CA-11 Gravel	lbs.	-----	1875	-----	1905	-----	1900	-----	1835
Coarse aggregate, CA-11 or CA-14	lbs.	-----	-----	-----	-----	-----	-----	-----	-----
Coarse aggregate, CA-13, CA-14 or CA-16	lbs.	-----	-----	-----	-----	-----	-----	See Note <sup>w</sup>	See Note <sup>w</sup>
Coarse aggregate, CA-16	lbs.	-----	-----	-----	-----	-----	-----	-----	-----
Fine aggregate, grade FA-1 or FA-2	lbs.	1280	1240	1220	1170	1230	1220	1220	1175
Fine aggregate, grade FA-2 or FM-20	lbs.	-----	-----	-----	-----	-----	-----	-----	-----
Total water, maximum	lbs.	231	231	243	243	231	231	265	265
Water Reducer (ASTM C494)	oz/cwt	See Note <sup>s</sup>	See Note <sup>s</sup>	See Note <sup>s</sup>	See Note <sup>s</sup>	See Note <sup>s</sup>	See Note <sup>s</sup>	See Note <sup>s</sup>	See Note <sup>s</sup>
High-range water reducer (Type F)	oz/cwt	See Note <sup>q</sup>	See Note <sup>q</sup>	See Note <sup>q</sup>	See Note <sup>q</sup>	See Note <sup>q</sup>	See Note <sup>q</sup>	-----	-----
Accelerator - Non Chloride (ASTM C494 Type C)	oz/cwt	-----	-----	-----	-----	-----	-----	-----	-----
Slump - Machine Finish	in.	2 1/2 Max <sup>r</sup>	2 1/2 Max <sup>r</sup>	2 1/2 Max <sup>r</sup>	2 1/2 Max <sup>r</sup>	2 1/2 Max <sup>r</sup>	2 1/2 Max <sup>r</sup>	2 - 5	2 - 5
Slump - Hand Finished	in.	5 Max	5 Max	5 Max	5 Max	5 Max	5 Max	-----	-----
Slump - maximum after HRWR addition at site	in.	6 <sup>q</sup>	6 <sup>q</sup>	6 <sup>q</sup>	6 <sup>q</sup>	6 <sup>q</sup>	6 <sup>q</sup>	-----	-----
Entrained Air	%	5 - 8	5 - 8	5 - 8	5 - 8	5 - 8	5 - 8	5 - 8	5 - 8
Maximum water to cementitious materials ratio <sup>m</sup>	lb/lb	0.41	0.41	0.41	0.41	0.41	0.41	0.42	0.42
Minimum Required Interim Compressive Strength	psi	-----	-----	-----	-----	-----	-----	-----	-----
Minimum Required Ultimate Compressive Strength	psi/age	4,000/14 day	4,000/14 day	4,000/14 day	4,000/14 day	4,000/14 day	4,000/14 day	4000 @ 14 days	4000 @ 14 days

**Table 11-1 Footnotes**

a	Class L-S shall be modified by adding a plasticizing admixture to the mix design if shown on the plans or directed by the Engineer.	*	This ratio includes the water of a Microsilica Admixture suspended in water and added water divided by the total weight of cement and Microsilica solids.
b	For P.C.Concrete Pavement Only. Minimum cement content shall be the same as for Class P, except that up to 20% cement by weight may be replaced by the Class C Fly Ash Admixture at a ratio of 1:1.25 cement-to-pozzolan.	**	This ratio considers the combined weights of emulsion water and added water.
c	Class HE and HP concrete shall be produced by adding an ASTM C-494 Type F	***	Minimum design compressive strength f <sub>c</sub> as shown on plans, or as determined by Sub-Section 1101.4.9.
d	Coarse Aggregate for Class HP concrete shall have a minimum bulk specific	m	This ratio includes the water of the silica fume admixture (if present in mix and suspended in water), added water from chemical admixtures, added free water, and free water in the aggregate, divided by the total weight of cement, silica fume solids (if present in mix), GGBFS (if present in mix), and fly ash (if present in mix).
e	3" Max. before addition of superplasticizer at the central mixer.	p	This is an approximate amount. The actual amount should be adjusted to provide the specified slump or air content and could be outside this range.
f	2" Max. before addition of superplasticizer at the central mixer.	q	As needed to provide specified slump for pumping applications. Type F HRWR is allowed only by the approval of the Engineer.
g	1" Max. before addition of superplasticizer at the central mixer.	r	Slip form applications
h	Water reducing or any other admixture shall be used if shown in the plans or as directed by the Engineer.	s	Normal-range Type A or Type D or mid-range water reducer, "optional"
j	Total water shall include free water in the aggregate, water in the latex emulsion	u	4" Max before addition of superplasticizer at central mixer.
k	Latex solids in the emulsion shall be 15% of the cement weight.	w	If the coarse aggregate gradation does not indicate a percent passing the 1/2 inch sieve to be at the required minimum of 50 percent when concrete is placed by pump, additional coarse aggregates may be combined including CA-13, CA-14, and/or CA-16 in accordance with S.P. 1101.2.
l	Slump shall be measured within 5 minutes of discharge from the continuous mixer.		

**TABLE 11-2 CLASSES OF CONCRETE FOR PRECAST / PRESTRESSED CONCRETE MEMBERS OR PRECAST STRUCTURES AND MIX DESIGN CRITERIA.**

Material	Unit	Class R1	Class R2	Class R3	Class R4
Portland cement, Type I	lbs.	635	682	564	705
Minimums					
Maximum Size Aggregate	inches	1"	¾"	¾"	¾"
Maximum Water / Cement Ratio	w/c	0.45	0.45	0.44	0.43
Maximum Slump	inches	3"	3"	3"	3"
Entrained Air	%	3.0 – 5.0	3.0 – 5.0	5.0 – 8.0	3.0 – 5.0
Minimum Required Ultimate Compressive Strength	psi/ days	5000/ 28 day	6000/ 28 day	4000/ 28 day	7000/ 28 day

**1101.4.2 - Strength Requirements and Uses**

For all classes of concrete it shall be the Contractor's responsibility to determine the proportions of the materials for the concrete, and to exercise



quality control with respect to the mixture, so that each batch of concrete will meet the requirements specified. Batches of concrete not meeting the requirements as to slump and entrained air content will be rejected. When the ambient temperature is 70 °F (21 °C) or higher, an AASHTO M-194, Type D combination water reducing and set retarding admixture may be added to the concrete mixture except for Class JP, Class HE, or Class HP concretes. The Class JP, Class HE or Class HP concretes shall not receive an AASHTO M-194, Type D water reducing/retarding admixture without written approval of the Engineer. The Engineer may order or permit the use of an AASHTO M-194, Type A water-reducer or Type D combination water reducing and set retarding admixture for all other classes of concrete whenever he believes it advisable to do so.

Before the work begins, the Contractor shall secure the Engineer's approval of the sources and the proportions of cement, fine aggregate, coarse aggregate, and water he proposes to use.

- Interim compressive strength is that strength required before subsequent construction, vehicular traffic, or action (strand release of prestressed beams) of any kind is permitted on the new concrete.
- Ultimate compressive strength is that strength required for acceptance of the concrete.
- The Contractor shall use as much cement as needed to meet the requirements of these Specifications without additional compensation.

- Uses for the various classes of concrete shown in Table 11-1 will be as follows, unless otherwise specified in these Specifications or the **Special Provisions**:

Class	Use	Specification Section Reference
P	PCC Pavement Base Course Bridge Approach Slabs Pavement Removal & Replacement	401 & 441 303 526 412 & 527
DK	Bridge Deck	501
SD	Bridge Superstructures (except deck) & Drainage Structures Barrier Wall	501 706, 707, 708, & 709
J	Bridge Deck & Bridge Joint Repair Structural Partial Depth Patching	511 530
JP	Pavement Removal & Replacement Pavement Patching Toll Plaza Lane Repair	412 & 417 413 & 414 427
HE	Accelerated Pavement Repair	413, 414, & 427
HP	Accelerated Bridge Deck Repair	512
L	Toll Plaza Lane Overlay Bridge Deck Overlay	428, 429, 430, & 431 513
L-S	Bridge Deck Overlay	513
M	Bridge Deck Overlay	513
SP	Bridge Substructures Drainage Structures Headwalls, End Sections, & Collars Slotted Pavement Drains Subsurface Drains Structures For Pipe Drainage Systems Curb & Gutter Paved Ditch & Channel Slope Wall Foundations Piling Drilled Caisson Shafts Barrier Wall Base Sign Foundations Light Foundations Miscellaneous	501  601 604 607 610 612 616 617  505 542 705, 707, & 708 811 & 812 902 & 905 701, 817, & 821

Uses of the classes of concrete shown in Table 11-2 will be for prestressed structural members or for precast structures.

### **1101.4.3 - BASIS OF CONFORMANCE**

#### Plain or Reinforced Concrete

Excepting Class HE, HP, JP, P(FA), L and M concretes, trial batches and trial batch testing will not be required for concrete mixtures of the other classes given in Table 11-1 provided the Contractor elects to furnish concrete of the proportions given in Table 11-1, with allowance for minor changes of batch weights of aggregate and water to allow for moisture in the aggregates and to adjust yield. If the Contractor elects to furnish concrete of proportions other than those given in the Table 11-1, laboratory trial mix testing will be required prior to the use of such concrete in the work, except if:

- The mixture proportions have been approved for use in Authority work during the 12 months preceding the date of receiving bids for the Contract, and for the same Class of concrete; and
- The aggregate sources are the same.

No deviation from the minimum cement content and maximum water/cement ratio as given in Table 11-1 will be allowed in any case.

For Class P (FA), Class SD, and Class SP concrete mix designs containing Class C fly ash of proportions other than those given in Table 11-1, trial batches and trial batch testing will be required in all cases, except when:

- The proposed mix ingredients and proportions have been approved for use in Authority work during the 12 months preceding the date of receiving bids for the Contract;
- The proposed mix ingredients and proportions have demonstrated satisfactory field performance; and
- The aggregate and fly ash sources are the same.

No deviation from the minimum cement content and maximum water/cement ratio as given in Table 11-1 will be allowed in any case.

Trial batches and laboratory trial mix testing will be required for Class DK, Class HE, Class HP, Class JP, Class L and Class M concretes in all cases, except where:

- The mixture proportions for production at specific plants have been approved for use in Authority work within the same calendar year preceding the mix design submittal date;

- The proposed mix ingredients and proportions have demonstrated satisfactory strength gain and field performance;
- The aggregate, admixture and pozzolan sources are identical to the previously approved mix designs; and
- For the Class DK concrete the proportions shall comply with Table 11-1 and the ambient air temperature shall be no greater than 70 °F(21 °C) at the time of placement.

No deviation from the minimum cement content and maximum water/cement ratio as given in Table 11-1 will be allowed in any case.

Mix designs and trial batch data shall be furnished to the Engineer by the Contractor at least 60 days prior to the production of any Class DK, P(FA), L, M, JP, HE and HP concretes.

### **Prestressed Concrete**

For concrete mixtures of the Classes given in Table 11-2, trial batches and trial batch testing will be required in all cases, except if:

- The proposed mix ingredients and proportions have been approved for use in Authority work during the 12 months preceding the date of receiving bids for the contract, and for the same Class of concrete; and
- the aggregate sources are the same.

No deviation from the minimum cement content and maximum water/cement ratio as given in Table 11-2 will be allowed in any case.

### **Trial Batches**

A sufficient number of trial batches of the specified mixtures that are to be used in the work shall be made at the plant site as required by the Engineer to properly verify that all requirements are met prior to incorporation of any of the concrete into the work.

The number of trial batches to be prepared for any specified Class of concrete cannot be determined beforehand. No concrete mix design will be approved by the Engineer until the concrete specimens taken from a trial batch conform to the following strength requirements:

- The average compressive strength of 5 consecutive cylinders from one trial batch of concrete shall be at least 600 pounds per square inch greater than the Ultimate Compressive Strength at the age specified in Tables 11-1 and 11-2.
- No individual cylinder of the 5 consecutive cylinders shall have a compressive strength, at the end of the specified curing period, of less than the specified Ultimate Compressive Strength.

- For Class HP and Class HE concretes the average compressive strength of 5 consecutive field cured cylinders from one trial batch of concrete shall be at least 150 pounds per square inch greater than the compressive strength at any age specified of 36 hours or less.
- For Class JP concrete the average compressive strength of 5 consecutive field cured cylinders from one trial batch of concrete shall be at least 150 pounds per square inch greater than the compressive strength at any age specified of 48 hours or less.

For Class DK concrete for bridge decks to be placed when the air temperature is 70 °F (21 °C) or higher, trial batches shall be prepared with and without an AASHTO M-194, Type B or Type D retarding admixture, and the addition rate of the set retarder shall be established as specified in Subsection 1101.4.8.

When approved by the Engineer, concrete in the trial batches may be used in the work at locations where concrete of a lower strength is required, and such concrete will be measured and paid for as the type or Class of concrete required for that location.

The trial batches for Class HP concretes shall be designed for the average compressive strength of 5 consecutive field cured cylinders from one trial batch to develop these strengths at the specified ages of 1000 psi at 10 hours, 1600 psi at 14 hours, 2300 psi at 24 hours and 3000 psi at 36 hours. The Ultimate Compressive Strength of the Class HP concrete is 4000 psi at 7 days age.

The trial batches for Class HE concrete shall be designed for the average compressive strength of 5 consecutive field cured cylinders from one trial batch to develop these strengths at the specified ages of 1200 psi at 6 hours, 2000 psi at 10 hours, 2250 psi at 14 hours, and 2800 psi at 1 day. The Ultimate Compressive Strength for the Class HE concrete is 4000 psi at 7 days age.

The trial batches for Class JP concrete shall be designed for the average compressive strength of 5 consecutive field cured cylinders from one trial batch to develop these strength at the specified ages of 1000 psi at 12 hours, 2400 psi at 24 hours, and 3500 psi at 48 hours. The Ultimate Compressive Strength for the Class JP concrete is 4000 psi at 14 days age.

#### **1101.4.4 - Testing Procedures**

- Gradation of aggregate shall be determined in accordance with ASTM C 136.
- Cement content shall be determined in accordance with ASTM C 138.
- Water-cement ratio shall be computed by dividing the total number of pounds of water in the batch (exclusive of water absorbed by the aggregates) by the number of pounds of cementitious material in the batch.

A gallon of water shall be 8.3356 pounds. A sack of cement shall be 94 pounds.

- Slump shall be determined in accordance with ASTM C-143 (AASHTO T119).
- Entrained air shall be determined in accordance with ASTM C-231 (AASHTO T152).
- Compressive strength will be determined on the basis of specimens made, cured, and tested in accordance with ASTM C-172 (AASHTO T141), C-31 (T23) or C-192 (T126), and C-39 (AASHTO T22) respectively.
- Specimens for all applications except rigid overlays shall be 6 inch" X 12 inch cylinders.
- Tests for strength of Class JP, Class HP and Class HE concretes shall be performed at the time intervals specified to verify the test batch design will yield the minimum required strengths.
- The mass of latex solids in the latex suspension shall be determined by drying at 230 °F (110 °C).

#### **1101.4.5 - Conformance to Strength Requirements**

Concrete compressive strength requirements consist of an interim minimum strength, which must be attained before various loads or stresses are applied to the concrete, and an ultimate minimum strength, which must be attained for acceptance and payment. The various strengths required are specified in Tables in 11-1 and 11-2 of S.P.1101.4.1. The interim minimum compressive strength of Class HE concrete shall be 2000 psi at 10 hours age, 3000 psi at 36 hours for Class HP concrete, and 3500 psi at 48 hours for Class JP concrete. These interim strengths shall be verified before loading the patched pavement or bridge deck with construction equipment or before opening the patched area to roadway traffic. Any patches found to be loaded prior to verification of the interim minimum strength shall be removed and replaced by the Contractor at no additional cost.

No payment will be made for in-place concrete until the specimens for ultimate compressive strength have been tested and found to meet ultimate strength requirements when evaluated as follows.

The concrete strength to be used as a basis for acceptance will be determined from specimens molded, cured and tested as provided in Subsection 1101.10. Ninety percent or more of the specimens tested for Ultimate Compressive Strength for any items of work shall meet or exceed the required strength. Should more than 10 percent of the specimens tested for ultimate strength fail to meet the required strength, or should any single ultimate strength specimen have a strength of less than 90 percent of the strength required, supplemental tests will be made to verify conformance or non-conformance to the ultimate strength requirements of the concrete in the work which is represented by said specimens.

Supplemental tests shall be as follows:

The location(s) of the in-place concrete represented by the low-strength specimens will be determined by the Engineer.

Three core samples from each such location will be obtained and tested by the Engineer in accordance with ASTM C-42 (AASHTO T24), except:

- The location of coring shall be such that no fragments of reinforcement are contained within any of the cores.
- Cores from all locations except bridge decks, approach slabs and pavements shall be tested dry.
- Cores from bridge decks, approach slabs, and pavements shall be moisture conditioned in accordance with ASTM C-42-6.3 (AASHTO T24, Section 6.3), and tested wet.
- The average compressive strength of the three cores at each location will be taken as the compressive strength of the in-place concrete.
- Core holes shall be filled with Class J concrete meeting the requirements of Table 11-1.

The cost of such supplemental tests shall be borne by:

- The Contractor if the in-place concrete is found to have less than the specified ultimate compressive strength.
- The Authority if the in-place concrete is found to have the specified ultimate compressive strength or more.

If supplemental testing shows that the in-place concrete has at least the reduced compressive strength at the age shown in Table 11-3, and if the Authority in its sole discretion allows the in-place concrete to remain, it is mutually agreed that the Contractor will be paid 85 percent of the Contract unit price for that quantity of the in-place concrete represented by the original low-strength specimens.

**TABLE 11-3**

<u>AGE OF CONCRETE At Time of Sampling</u>	<u>Required Percentage of Ultimate Compressive Strength</u>
15 to 30 days	85
30 to 45 days	90
45 days or more	95

If supplemental testing shows that the in-place concrete fails to meet the reduced compressive strength requirements of Table 11-3, or if the Authority in its sole discretion elects not to allow the in-place concrete to remain, that quantity represented by the original low-strength specimens shall be rejected and shall be removed and replaced in its entirety including any necessary removal and replacement of related work in order to accomplish replacement of the rejected concrete, all at no additional cost to the Authority.

It is mutually agreed that the Authority and the Engineer together with their respective agents and representatives have no responsibility for determining the cause(s) for any concrete to have less than the specified ultimate compressive strength.

**1101.4.6 - Adjustments for Compliance**

The variability of the Contractor's operations will be evaluated and adjustments will be made as indicated by the compressive strength tests. If the results indicate a consistently downward trend in strengths, the Contractor shall increase the cement content or make changes in his operations, as directed by the Engineer. The Contractor shall receive no additional compensation for extra cement which may be required because of such adjustments.

Regardless of any adjustments in the mix, the limits on water/cement ratio, slump, air content, and maximum size of aggregate as specified shall not be exceeded, and the limit on minimum cement content shall not be reduced at any time during the entire operation.

**1101.4.7 - Aggregate Content**

The Engineer shall have the right to direct that the proportions of fine aggregate to coarse aggregate be adjusted, should such adjustment be necessary due to changes or variations in the materials, to improve the workability of the concrete. The Contractor shall notify the Engineer in writing whenever such adjustments are made. No adjustments shall be made to the total aggregate content.



#### **1101.4.8 - Admixtures**

Admixtures shall be used in concrete as provided:

##### **Air-entraining Admixture**

Portland cement concrete shall contain entrained air as specified in Tables 11-1 and 11-2. Air-entrainment shall be achieved by the use of non-air-entraining Portland cement in connection with an approved air-entraining admixture added during the mixing process. The air entraining admixtures shall comply with the requirements of AASHTO M 154.

Air-entraining admixture shall be dispensed by means of a mechanically activated dispenser having a sight gauge permitting visual determination of the quantity dispensed, and shall be approved by the Engineer. The air-entraining admixture shall be introduced into the stream of mixing water, and, except for volumetric proportioning continuous mixers, the required amount shall be fully discharged before all the mixing water has entered the drum. The tank feeding the dispenser shall at all times contain an amount of admixture sufficient for the next batch, and shall be provided with a device, approved by the Engineer, for indicating visually when the supply runs low. The amount to be used shall be determined, and shall be varied during the progress of the work, on the basis of air content determinations made by the Engineer, so as to achieve entrained air contents within the specified limits.

##### **Water-Reducing Admixture**

At the option of the Contractor an AASHTO M-194, Type A water-reducing admixture may be used except that when an AASHTO M-194, Type D combination water reducing and set retarding admixture is required no Type A water-reducing admixture will be permitted, unless otherwise specifically approved in writing by the Engineer.

If an AASHTO M-194, Type D combination water-reducing and set-retarding admixture is used, the initial set of the concrete shall not be delayed more than one hour.

The water-reducing admixture and the sequence of adding this material shall meet the approval of the Engineer. Except for volumetric proportioning continuous mixers, the air-entraining admixture and water-reducing admixture shall be added to the concrete separately, and shall be permitted to intermingle only after they have separately entered the mixing chamber. The maximum amount of water-reducing admixture permitted will be determined by the Engineer. The amount of water-reducing admixture (within the maximum limits established by the Engineer) air-entraining admixture and water shall be determined by the Contractor and shall be such that the concrete will have the required slump, entrained air, and strength. When a water-reducing admixture is used, the cement content may be reduced with the approval of the Engineer as provided in Subsection 1101.4.2.

### **High Range Water Reducing Admixture**

Plasticizing or high range water reducing AASHTO M-194, Type F admixtures shall be used only as specified for the production of Class L-S, HE and HP concretes, unless otherwise specifically approved in writing by the Engineer.

Water-cement ratios shall not exceed 0.43 for Class SP concrete. The liquid admixture shall be counted as water in the calculation of the water-cement ratio.

An initial slump of 1½ inches (40 mm) to 2 inches (50 mm) is recommended prior to addition of the high range water-reducing admixture. Final slump shall be no greater than is necessary for proper placement and compaction and in no case shall exceed 8 inches (200 mm) after addition of the high range water-reducing admixture.

Air tests will be performed after the addition of the admixture.

The high range water-reducing admixture shall be added at the jobsite unless otherwise directed by the Engineer. A high range water-reducing admixture, at a dosage rate not to exceed 40 percent of the original amount used, may be used to retemper concrete, provided set times are not unduly affected.

With permission of the Engineer, admixtures compatible with the high range water-reducing admixture may be used concurrently to facilitate placement and/or strength gain and/or to control set times.

### **Water-Reducing/Retarding Admixture**

When the atmospheric temperature is 70 °F (21 °C) or higher, an AASHTO M-194, Type D combination water reducing and set retarding admixture shall be used in Class DK Concrete for bridge decks on continuous steel or precast concrete superstructures. The amount of retarding admixture to be used at the prevailing ambient temperatures will be determined by the Engineer as the work progresses so as to produce the delay of initial set needed to prevent cracking of the in-place concrete as load-induced deflections change. The proportions of the ingredients of the concrete shall be as would be used without the retarding admixture except that the amount of mixing water shall be reduced as necessary to maintain the consistency of the concrete as required by the Specifications. In addition, a high range water reducer admixture shall be used in the Class DK Concrete. The amount of high range water reducer will be determined by the Engineer.

Except for volumetric proportioning continuous mixers, the air-entraining admixture and retarding admixture shall be permitted to intermingle only after they have separately entered the mixing chamber. The method and equipment for adding the retarding admixture shall be approved by the Engineer.

### **Accelerating Admixture**

The use of an AASHTO M 194, Type C or Type E admixture to accelerate the hardening of the concrete will be permitted only when directed by the Engineer and only when all embedded steel reinforcement and supports are epoxy coated or otherwise positively protected against chloride-induced corrosion. Chloride for the accelerating of hardening will not be permitted for Class JP, Class HP, Class HE or Class M Concrete.

### **Fly Ash**

At the Contractor's option, fly ash from IDOT approved sources may partially replace portland cement in concrete mixtures, for Class DK, SP, SD, and P(FA).

If Class F fly ash is used, the amount of cement replaced shall not exceed 15 percent by mass (weight) and the replacement ratio (fly ash: cement replaced) shall be a minimum of 1.5:1.

With the use of Class C fly ash, the amount of cement replacement shall not exceed 20 percent by mass (weight), at a minimum replacement ratio of 1.25:1. For Class C fly ash, the minimum replacement ratio may be reduced to 1:1, if the fly ash calcium oxide is 18 percent or greater, the fly ash loss on ignition is less than 2.0 percent, and a water-reducing or high range water-reducing admixture is used.

For bridge decks, the amount of cement replaced shall not exceed 15 percent by mass (weight) at a minimum replacement ratio of 1.5:1, regardless of the type of fly ash used.

Mix design strength requirements for fly ash compensated mixes shall be according to Subsection 1101.4.1.

For Class P(FA) concrete containing Class C fly ash of the proportions given in Table 11-1, trial batches and trial batch testing will be required only for mixtures to be produced after October 15 or before April 1 to provide 14-day compressive strengths equal to or greater than the strengths obtained from the equivalent mixture with only Type I Portland Cement.

For Class DK, Class SP, and Class SD concrete fly ash shall not be used in concrete mixtures when the air temperature is below 40 °F (4 °C) without permission of the Engineer. If permission is provided by the Engineer, the Contractor may be required to adjust the mix design by reducing or eliminating the fly ash content and increasing the cement content to compensate.

Fly ash shall be weighed in a separate weigh hopper when a manual operation is utilized. When an automatic batching plant is utilized, the fly ash may be weighed in the cement hopper. Cement and fly ash storage bins shall be separated to the satisfaction of the Engineer.

### **Latex Admixture**

When Latex admixture is specified to be used in concrete, the concrete shall be produced at the work site only in volumetrically proportioning continuous mixers approved by the Engineer.

The amount of latex admixture used shall be as specified in Table 11-1.

The latex admixture used for Class L concrete shall contain 15 percent of latex solids (by weight of cement), and shall be a styrene-butadiene type latex modifier manufactured in compliance with the prequalification requirements specified in Report FHWA RD-78-35 for each batch of latex to the Engineer.

Store the latex admixture at temperatures between 40° to 85 °F (4.4° to 29 °C). Do not allow to freeze.

### **Microsilica Admixture**

The ASTM C1240 silica fume or microsilica admixture as a dry densified powder may be stored in a separate cement silo, free of contamination, or as a bagged product for manual dispensing at the plant. The liquid form of a microsilica admixture as a water based slurry may be contained within non-contaminated plant storage tanks or in 55 gallon drums. The microsilica admixture in either form shall be stored and dispensed at the plant to the satisfaction of the Engineer in accordance with the supplier's instructions.

The microsilica admixture can be used in either central or transit mixers, with the dispensing of microsilica to be separate from the addition of any other admixture.

### **Ground Granulated Blast-Furnace (GGBF) Slag**

At the option of the Contractor, GGBF slag may partially replace portland cement in concrete mixtures for Class SD and Class SP concrete.

The amount of cement replaced by GGBF slag shall not exceed 25 percent by mass (weight). The replacement ratio (GGBF slag: cement replaced) shall be a minimum of 1 to 1 for Grade 100 and 120.

Mix design strength requirements for GGBF slag compensated mixes shall be according to Subsection 1101.4.1.

For Class SD and Class SP concrete GGBF slag shall not be used in concrete mixtures when the air temperature is below 40 °F (4 °C) without permission of the Engineer. If permission is provided by the Engineer, the Contractor may be required to adjust the mix design by reducing or eliminating the GGBF slag content and increasing the cement content to compensate.

#### **1101.4.9 - Interim Strength**

At the Contractor's option, he may submit to the Engineer a request for variance of the Minimum Required Interim Strength shown in Table 11-1 herein these requirements. This request shall include 5 (five) copies of the calculations using either the AASHTO Service Load Design Method or Strength Design Method (Load Factor Design) showing proposed minimum required Interim Strength. These calculations shall be prepared and sealed by a Registered Structural Engineer currently licensed in the State of Illinois. This request shall be submitted at the preconstruction conference and the time advantages shall be clearly shown on the Contractor's progress schedule. The Engineer will then review this request with the approval solely at the discretion of the Chief Engineer.

All costs associated with this request shall be the responsibility of the Contractor and no additional compensation will be allowed to the Contractor (see Subsection 501.6b of the Standard Specifications for additional requirements).

#### **1101.5 - CONSISTENCY OF CONCRETE**

No concrete mixture shall contain more water than is necessary to produce a product which is workable and plastic. The amount of water used, including the free moisture in the aggregates, shall be confirmed by the Engineer and shall not exceed the maximum allowable water/cement ratio as specified. Corrections shall be made for the amount of moisture contained in the aggregates and allowance shall be made for the absorption of water by the aggregates during the period of mixing and handling. A uniform consistency shall be maintained except when changes are authorized or directed by the Engineer.

#### **1101.6 - CHANGING COMPOSITION OF CONCRETE**

##### **1101.6.1 - Deviation from Tables 11-1 and 11-2**

Should the Contractor choose to use a concrete mixture other than those specified in Tables 11-1 and 11-2, and which does not have prior approval in accordance with Subsection 1101.4.3, he shall submit trial mix data to the Engineer for approval.

The Contractor shall designate the sources of all materials to be incorporated in the concrete as soon as possible prior to the start of concreting operations. Samples of the materials will be taken from the designated sources by the Engineer.

After the materials proposed by the Contractor for use in the concrete have been tested and approved by the Engineer, the concrete mixes shall be designed and tested.

Unless otherwise provided herein or in the Standard Specifications, the Contractor shall engage a concrete testing laboratory acceptable to the Authority to design and test mixes for the several Classes of concrete required for the work. All ingredients to be used in the laboratory's trial mix work shall be from approved sources and shall be from current production of the proposed aggregate, cement and admixture suppliers.

The trial mixes shall be designed in accordance with the procedures outlined in ACI-211, and shall meet the requirements of Subsection 1101.4.1 except the batch proportions and aggregate gradings of Tables 11-1 and 11-2. The maximum aggregate size shall not be increased. If the Contractor proposes to use admixtures in the concrete, the mixes shall be designed and tested using the proposed admixtures.

Mixes for Class DK concrete for bridge decks shall be designed with and without an AASHTO M-194, Type D retarding admixture to establish the addition rate of the retarding admixture.

The Contractor shall furnish the Engineer 3 copies of the laboratory trial mix reports for each Class of concrete, which reports shall show gradations, specific gravities, absorption factors and dry, rodded weights of all the aggregates used in the trial mixes; mix proportions with absolute volumes of all components in the trial mixes; slump, net entrained air content, unit weight, water/cement ratio, yield and cement factor of the plastic concrete; and except for Class JP, HE and HP concretes, compressive strength at ages of 3, 7 and 14 days based on the average of 3 standard 6 inch X 12 inch cylinders cast for each age. Laboratory trial mix data for Class HE concrete mix designs shall include the average compressive strengths of 3 laboratory air cured 6 inch x 12 inch cylinders at 6 hour, 10 hour, 14 hour and 24 hour age; and the ultimate strength for the age specified based on the average of 3 laboratory moist cured 6 inch x 12 inch cylinders cast. Laboratory trial mix data for Class HP concrete mix designs shall consist of the average compressive strengths of 3 laboratory air cured 6 inch x 12 inch cylinders at 10 hour, 14 hour, 24 hour and 36 hour age; and the ultimate strength for the age specified based on the average of 3 laboratory moist cured 6 inch x 12 inch cylinders cast. Laboratory trial mix data for Class JP concrete mix designs shall consist of the average compressive strengths of 3 laboratory air cured 6 inch x 12 inch cylinders at 12 hour, 24 hour, and 48 hour age; and the

ultimate strength for the age specified based on the average of 3 laboratory moist cured 6 inch x 12 inch cylinders cast. All testing procedures shall be carried out in accordance with current ASTM Standards. Based on the furnished reports, the Engineer will accept or reject the concrete mixes to be used in the work.

No concrete shall be placed in the work prior to acceptance of the concrete mixes by the Engineer. The mix proportions will be adjusted in the field if, in the opinion of the Engineer, such adjustments are needed to produce concrete having satisfactory plasticity and workability. Such adjustments shall not result in any reduction of the water/cement ratio as designed and approved.

#### **1101.6.2 - Changing Sources of Materials**

If the Contractor desires to change the sources of the materials after mix selections have been approved or after trial batch testing has been acceptably completed, he shall submit samples of new materials, and the concrete testing laboratory shall, for the new materials, design and test trial mixes as specified. Such new materials shall not be used in the work until the Engineer has accepted both the new materials and the trial mix test results.

#### **1101.6.3 - Changing Production Methods**

If the Contractor desires to make changes in batching and mixing plants, or in procedures for production of concrete after concrete mixes have been approved or trial batch test results accepted, and, if in the opinion of the Engineer, such changes could result in lowering the compressive strength, the Contractor shall prepare trial batches of concrete based on the desired changes and the Engineer will test concrete specimens from such trial batches. Concrete produced under these changed conditions shall not be used in the work until approval has been received from the Engineer.

### **1101.7 - BATCHING**

Aggregate shall be handled from stockpiles or other sources at the batching plant in such a manner as to maintain a uniform grading of the material. Aggregates that have become segregated, or mixed with earth or foreign material, shall not be used.

Each separated gradation of coarse aggregate shall not be moved directly from rail cars or transporting trucks to the batch plant storage bins unless the aggregate particles have been mixed uniformly before or during loading of the cars or trucks. Coarse aggregate not so loaded shall be placed in a stockpile and mixed uniformly before being placed in the batch plant storage bins.

The fine aggregate and the single gradation coarse aggregate or each separated gradation of coarse aggregate shall be separately weighed into the hoppers in the respective amounts determined by the Engineer for the job mix. Cement shall be measured by the bag, as packed by the manufacturer, or shall be weighed. If the cement is weighed, separate scales and hoppers shall be used. 94 pounds of bulk cement shall be considered as equivalent to one bag. Batches involving fractional bags will not be allowed, except when the cement is weighed. Water may be measured either by volume or by weight.

## **1101.8 - MIXING**

### **1101.8.1 - General**

The concrete ingredients shall be mixed thoroughly in stationary mixing plants, or in truck mixers of approved type, size and design so as to positively ensure uniform distribution of all of the component materials throughout the mass at the end of the mixing period. The concrete, as discharged from the mixer, shall be uniform in composition and consistency within each individual batch and from batch to batch, except where changes in composition or consistency are required.

Retempering concrete by adding water, or by other means will not be permitted. Neither shall delay of placement nor excessive mixing or agitation of wet batches be permitted in order to obtain the required slump. Concrete that is not within the specified slump limits at the time of placement shall not be used. Admixtures, other than those required for use in the concrete or permitted by these Specifications, shall not be used.

#### **1101.8.1A - Batching and Mixing Microsilica Concrete**

The mixing sequence for microsilica concrete shall be as follows:

- (a) Water-based slurries:
  - (1) Transit Mix:
    - Combine air entrainment, water reducer and/or retarders, slurry and 80% of the water.
    - Add cement and aggregates.
    - Add remaining water.
    - Mix 20-30 revolutions at the rated mixing speed.
    - Add superplasticizers (if used).
    - Mix 90 to 100 revolutions at the rated mixing speed.
  - (2) Central Mix:
    - Slurry shall be diluted into the water stream or weigh box prior to adding into central mixer.



(b) Densified microsilica (bulk):

- (1) Transit Mix:
  - Same as (a)(1) above except the densified microsilica shall be added with the cement.
- (2) Central Mix:
  - Same as (a)(2) above except the densified microsilica shall be added with the cement.

(c) Densified microsilica (bag):

Bagged microsilica shall be kept dry. No bag or material containing moisture shall be introduced into the concrete mixes.

- (1) Transit Mix:
  - Combine air entrainment, water reducers and/or retarders and 80% of the water.
  - Add cement and aggregates.
  - Add remaining water.
  - Mix 20-30 revolutions at the rated mixing speed.
  - Add microsilica.
  - Mix 50-60 revolutions at the rated mixing speed.
  - Add superplasticizers. (if used)
  - Mix 70-80 revolutions at the rated mixing speed.
- (2) Central Mix:
  - Combine air entrainment, water reducers and/or retarders and 80% of the water.
  - Add cement and aggregates.
  - Add remaining water.
  - After mixing cycle is completed deposit into ready mix truck.
  - Add microsilica to truck.
  - Mix 50-60 revolutions at 12-15 RPM.
  - Add superplasticizers. (if used)
  - Mix 60-80 revolutions at 12-15 RPM.

The admixtures shall not be allowed to come in contact with each other in the concentrated form.

Minimum central mixing time for Class HP concrete may be increased by no more than 50 percent over the specified mixing time for standard mixes. The batch volume for central mixing of Classes HP and M concretes shall not exceed 80 percent of the rated capacity of the mixer drum.

### **1101.8.2 - Central Mixing**

Central-mix concrete shall be proportioned and mixed in a stationary mixing plant approved by the Engineer, and transported to the point of use in truck mixers, truck agitators, or in specially designed and approved concrete dump trucks. Dump trucks which do not have specially designed bodies which can discharge concrete without segregation will not be permitted, except for the formless method of concrete paving.

Mixers in stationary plants shall be capable of combining the cement, aggregates, water, and admixtures into a thoroughly mixed and uniform mass within the specified mixing time and capable of discharging the mixture in a homogeneous flow without segregation. For mixers having a capacity of 2 cubic yards or less, the mixing time, beginning when the cement and aggregates enter the drum, shall be not less than one minute. For mixers having a capacity of more than 2 cubic yards, such minimum mixing time shall be 90 seconds except that the minimum mixing time may be reduced for stationary mixing plants of the tilting drum type having a capacity of more than 2 cubic yards if the Engineer determines, on the basis of Subsection 1203.2.6(b), that adequate mixing can be obtained in less time. Mixer performance tests shall be made by the Contractor or by a concrete testing laboratory employed by the Contractor and witnessed by the Engineer. All costs for this testing shall be borne by the Contractor. If mixer performance tests have been successfully completed on the tilting drum mixer proposed for use in the work by another recognized agency or concrete testing laboratory and a reduced mixing time has been established, the Contractor may request, in writing, permission to operate this same plant and mixer at the reduced established mixing time. Proof of execution of the mixer performance test by which the reduced mixing time was established shall be submitted by the Contractor with his request for permission to operate the mixer at the reduced mixing time.

When successful mixer performance tests have been made on given concrete mixtures in accordance with Subsection 1203.2.6(b), the acceptable reduced mixing time shall apply only when the mixer is being operated under the conditions which prevailed during the testing. In no event shall mixing time be less than 60 seconds.

The volume of material mixed per batch in the central mixing plant shall not exceed the manufacturer's guaranteed capacity of the mixer drum. The mixer shall be rotated at the rate recommended by the manufacturer. The mixing time shall be measured from the time that all cement and aggregate are in the drum. The batch shall be charged into the drum so that some water shall enter in advance of the aggregates. The flow of the water shall be uniform and all water shall be in the drum by the end of the first 15 seconds of the mixing period. The sequence of charging admixtures into the drum shall be approved by the Engineer.

The time elapsing from when water is added to the mix until it is deposited in place at the worksite shall not exceed 30 minutes when the concrete is hauled in non-agitating trucks, nor 60 minutes when hauled in truck mixers or truck agitators. The vehicles used for transporting the mixed concrete shall be of such capacity, or the batches shall be so proportioned, that the entire contents of the mixer drum can be discharged into each vehicle load.

The truck bed on non-agitating trucks shall be capable of being raised to a near-vertical position for discharge of low-slump concrete. Truck mixers used for transporting concrete from a central mix plant for pavement construction shall have specially constructed mixers designed for quick discharge of low-slump concrete or shall have tilting drum type mixers.

The volume of concrete transported in the truck mixer or truck agitator shall in no case be greater than the rated capacity determined in accordance with the Truck Mixer Manufacturers Bureau, as shown on the rating plate. If the truck mixer or truck agitator does not have a rating plate complying with these standards, the allowable capacity shall be determined by the Engineer. The agitating speed for a truck mixer or truck agitator shall be as given on the manufacturer's rating plate.

All wash water shall be completely discharged from each vehicle prior to its being loaded with the next batch.

Each delivery of concrete from a commercial producer of central-mix concrete shall be accompanied by a mechanically stamped ticket showing the time of loading. Tickets shall be turned over to the Engineer or his representative upon arrival at the job site, and prior to discharging any concrete.

### **1101.8.3 -Transit-Mixing**

Transit-mixed concrete shall be batched at an approved stationary batch plant, the batch transferred to a revolving-drum type truck-mixer and the concrete completely mixed while in transit to the job site. Transit-mixing will be acceptable only when the mixers and their operation are such that the concrete throughout each mixed batch, and from batch to batch is uniform with respect to consistency and grading.

Any transit mixer to be used in the work shall be subject to examination by the Engineer prior to its use. Concrete delivered in a transit mixer not previously examined by the Engineer at his request may be rejected. Transit mixers to be used for Portland cement concrete pavement shall be of the tilting drum or rapid discharge type. Transit mixers shall be examined periodically for changes in condition due to accumulation of hardened concrete or mortar or wear of the blades. Mixing blades which become worn down  $\frac{3}{4}$  inch (19 mm) or more in width shall be repaired or replaced. The Contractor shall furnish to the Engineer

a copy of the manufacturer's design showing dimensions and arrangements of blades in reference to original height and depth if the blades do not have permanent marks which indicate  $\frac{3}{4}$  inch (19 mm) wear from the new condition. Each transit mixer shall be equipped with a hatch in the periphery of the drum shell to permit access to the inside of the drum for inspection, cleaning and repair of the drum and blades.

The batch plant shall be approved by the Engineer. If the weight-batch equipment in the batch plant is of insufficient capacity to permit batching of materials for a transit mixer batch in a single weighing, then part-batching shall be done in increments of identical size. The volume of the batch in the transit mixer shall in no case be greater than the manufacturer's rated capacity in terms of volume of mixed concrete, as shown by the rating plate.

Mixing water may be measured by volume or by weight. Normally all mixing water shall be added at the batch plant. At the direction, or with the specific approval of the Engineer, up to 4 percent of the mixing water may be withheld at the batch plant to be added at the discharge site for slump control. Such water shall be added under the observation of the Engineer and the batch mixed at least 30 additional revolutions at mixing speed prior to discharge. Transit-mixed concrete mixes shall be designed to allow for the loss of slump that takes place in transit. No water shall be added in transit. The water tank on each transit mixer shall be full upon arrival at the discharge site. The sequence of charging admixtures into the drum shall be approved by the Engineer. After all the ingredients are in the drum, each batch shall be mixed not less than 70 or no more than 100 revolutions at the rate of rotation designated by the manufacturer of the equipment as the mixing speed. Additional mixing, if any, shall be done at agitating speed. All concrete shall be completely discharged from the mixer drum before the succeeding batch is placed therein. All wash water shall be completely discharged from the mixer drum prior to re-charging the mixer.

Delivery and discharge of transit-mixed concrete shall be made within 60 minutes after the addition of the mixing water to the cement and aggregates. Each delivery of transit-mixed concrete shall be accompanied by a mechanically stamped ticket showing the time of loading. Tickets shall be turned over to the Engineer or his representative upon arrival at the job site.

The production of transit-mixed concrete shall be such that the operations of placing and finishing shall be continuous insofar as the job operations require. The Contractor shall be responsible for producing concrete that will have the required consistency when delivered to the work. Concrete which is unsuitable for placement as delivered shall be rejected. The Engineer may require such modification of procedure as will produce satisfactory results. If the Contractor's operations are such that the concrete becomes too stiff to consolidate and finish as specified, the Engineer may order the use of transit-mixed concrete to be discontinued and require the concrete to be mixed at the site of the work.

#### **1101.8.4 - Hand Mixing**

Hand-mixing will not be permitted except in case of emergency and then only with permission and under the direction of the Engineer.

#### **1101.8.5 - Volumetric Batching and Continuous Mixing**

Cement, fine and coarse aggregates, water, and admixtures shall be measured by weight. Devices such as counters, calibrated gate openings, and flow meters shall be used for controlling and determining the quantities of the ingredients discharged. In operation, the entire measuring and dispensing mechanism must produce the specified proportions of each ingredient.

The recommendations of the equipment manufacturer in the operation of the equipment and in calibrating and using the various gauges, revolution counters, speed indicators, or other control devices shall be followed.

All indicating devices that bear on the accuracy of proportioning shall be in full view and near enough to be read by the operator while concrete is being produced. The operator shall have convenient access to all controls.

The proportioning and indicating devices shall be individually checked by following the equipment manufacturer's recommendations as related to each individual concrete batching and mixing unit. Adequate standard volume measures, scales, and weights shall be provided by the Contractor for checking the accuracy of the proportioning mechanism. The device for measurement of the mixing water shall be capable of delivering to the batch the required quantity with an accuracy of  $\pm 1$  percent; the device shall be so constructed that the measurements will not be affected by variable pressures in the water supply line.

Whenever the sources or characteristics of the ingredients are changed, or the characteristics of the mixture are observed to have changed, the Engineer may require a check of the fine and coarse aggregate proportioning by use of the washout test. Essentially, in the washout test,  $\frac{1}{2}$  cubic foot of concrete is washed through a No. 4 (4.75 mm) sieve and through a No. 100 (150  $\mu$ m) sieve; that portion retained on the No. 4 (4.75 mm) sieve is considered coarse aggregate; that portion passing the No. 4 (4.75 mm) sieve and retained on the No. 100 (150  $\mu$ m) sieve is considered fine aggregate. Corrections to the quantity of aggregates (per cubic foot of concrete) can be made if the original sieve analysis of each aggregate is available.

Washout tests, when required, shall be performed by the Contractor under the observation of the Engineer. Equipment for washout tests shall be provided by the Contractor and approved by the Engineer. All calculations for analysis of washout tests and all proposed changes of mix proportions resulting from a washout test shall be approved by the Engineer prior to resuming production for payment.

Tolerances in proportioning the various ingredients are as follows:

- Cement,(by weight) percent ..... 0 to+4
- Fine Aggregate,(by weight) percent ..... ±2
- Coarse Aggregate,(by weight) percent ..... ±2
- Water, (by weight or volume) percent ..... ±1
- Admixtures other than microsilica and latex emulsion, (by weight or volume) percent ..... ±3
- Latex Emulsions and Microsilica, (by weight or volume) percent..... ±1

The Contractor shall furnish to the Engineer with each increment of discharged concrete for which payment is to be made, a delivery ticket or a statement of particulars on which is shown the following:

- Name of concrete supplier;
- Serial number of the delivery ticket or statement;
- Date; starting time and finishing time;
- Identification number of batching and mixing unit;
- Name of the Contractor;
- Contract Number;
- Class of concrete in conformance with Subsection 1101.4;
- Amount of concrete in cubic yards and reading of the revolution counter or other device which indicates quantity of concrete;
- Type, name, and amount of admixtures; Additional information designated by the Engineer shall be furnished upon request. Such information may include the following:
  - Signature or initials of the person operating the batching and mixing unit;
  - Type and brand of cement;
  - Amount of cement;
  - Total water content or water/cement ratio;
  - Maximum size of aggregate;
  - Weights or volumes of fine and coarse aggregate;
  - Notation of calibrated settings for flow control of fine and coarse aggregate, mixing water, and admixture(s);
  - Indications that all ingredients are previously certified or approved.

## **1101.9 - PLACING TEMPERATURE, CURING AND PROTECTION**

### **1101.9.1 - Placing Temperature**

Concrete placement will not be permitted when, in the opinion of the Engineer, the atmospheric conditions or limitations of facilities furnished by the Contractor prevent proper finishing and curing of the concrete in accordance with the requirements of these Specifications. The temperature of the concrete mixture as it is being placed shall be not less than 40 °F (4.4 °C) in moderate weather, nor less than 50 °F (10 °C), in weather during which the temperature drops below 40 °F (4.4 °C), and shall not exceed 90 °F (32 °C). When insulated

forms are used, the temperature of the concrete mixture shall not exceed 80 °F (27 °C). If it is determined by the Engineer that heat of hydration might cause excessive temperatures in the concrete, the concrete shall be placed at such lower temperature as the Engineer may direct.

At the first indication that the temperature of the concrete mixture is exceeding the 90 °F (32 °C) limit, the Contractor shall cool the mixing water by employing the practices recommended in ACI 305R as necessary to maintain the temperature of the concrete mixture below this limit.

The placement of Class M concrete as an overlay shall not be performed if the base pavement temperature is below 45 °F (7 °C) and the ambient air temperature is not forecast to remain above 45 °F (7 °C), for at least 8 hours following completion of the concrete placement. Class M or HP Concrete mixtures with Microsilica admixture shall not be placed when the ambient air temperature exceeds 85 °F (29 °C) or when rain is predicted to occur during the placement of the concrete.

During cold weather, protect the freshly placed Class L concrete from temperatures below 45 °F (7 °C) during the first 72 hours of curing. Follow the procedures in ACI 306.1.

Do not place Class L concrete when the evaporation rate, as determined by figure 2.1.5 of ACI 305R-91, exceeds 0.10/lb./ft.<sup>2</sup>/hr., unless provisions accepted by the Engineer are made to reduce the rate of evaporation. Wind breaks and fogging procedures may be used.

#### **1101.9.2 - FABRICATION, CONSTRUCTION AND ERECTION REQUIREMENTS**

Heating of the aggregates will not be permitted when heating of the mixing water will ensure delivery of concrete at the required temperature. Water may be heated by special heaters, by the introduction of live steam, steam coils, or other methods satisfactory to the Engineer. The water shall not be more than 150 °F (65 °C) at the time of mixing with the other ingredients. In charging the mixer, care shall be taken to prevent mixing hot water with cement, without having aggregate present to absorb some of the heat.

Aggregates which are frozen or which contain ice shall not be used. When heating the water will not ensure delivery of concrete at the required temperature, the aggregate may be heated by steam or hot oil coils or by other approved methods. The injection of live steam into stockpiles or the use of open flame heaters will not be permitted. Heating methods shall result in uniform temperature and moisture content of the aggregates. The temperature of the aggregates shall be not more than 125 °F (52 °C) at the time of mixing with the other ingredients.

Heating of both water and aggregates will be permitted only in accordance with the specific written directions of the Engineer, in which case the Engineer will establish the allowable maximum temperatures for the various ingredients.

Cement shall not be heated artificially other than by the heat transmitted to it from the other ingredients of the concrete at the time of mixing. The cement shall be stored in well-maintained, moisture-proof buildings, railroad cars, truck tanks or special bins until it is used.

### **1101.9.3 - Methods of Curing**

(See Table 11-4, S.P.1101.9.6, for applications).

As provided in Table 11-4, curing shall be accomplished by one of the following described methods. When water is required to wet the surface of the newly placed concrete, it shall be applied as a fine spray so that it will not mar or pond on the surface. Except where otherwise specified, the curing period shall be at least 72 hours. If high early strength Type III Portland cement is permitted in place of Type I Portland Cement, the curing period may be reduced as directed by the Engineer.

**(a) Waterproof Paper Method.** The surface of the concrete shall be covered with waterproof paper as soon as the concrete has hardened sufficiently to prevent marring the surface. The surface of the concrete shall be wetted immediately before the paper is placed. The waterproof paper shall be lapped at least 12 inches (305 mm) end to end, and the laps securely held in place to form a closed joint. The same requirements shall apply to longitudinal laps where separate strips are used for curing edges, except the lap shall be at least 9 inches (229 mm). The edges of the waterproof paper shall be weighted securely by any means satisfactory to the Engineer to provide an air-tight cover.

Any torn places or holes in the paper shall be repaired immediately by patches cemented over the openings, using a bituminous cement having a melting point of not less than 180 °F (83 °C). The waterproof paper may be reused, provided it is airtight and kept serviceable by proper repairs.

A longitudinal pleat shall be provided in the paper to permit shrinkage where the width of the paper is sufficient to cover the entire surface.

The pleat will not be required where separate strips are used for the edges. Joints in the paper shall be sewed or cemented together in such a manner that they will not separate during use.

The Engineer may approve the use of other impermeable covering, in lieu of waterproof paper, provided it has been shown through laboratory and field investigation that the results obtained are at least as satisfactory as those obtained with waterproof paper.



**(b) Polyethylene Sheeting Method.** The surface of the concrete shall be covered with white polyethylene sheeting as soon as the concrete has hardened sufficiently to prevent marring the surface. The use of clear sheeting or sheeting of any other color will not be permitted. The surface of the concrete shall be wetted immediately before the sheeting is placed. The edges of the sheeting shall be fastened securely by any means satisfactory to the Engineer to provide an air-tight cover. Adjoining sheets shall overlap not less than 12 inches (305 mm) and the laps shall be securely held in place to provide an airtight cover. For Portland cement concrete pavement and base course, the polyethylene sheets shall be not less than 100 feet (30 m) in length nor longer than can be conveniently handled, and be of such width that, when in place, they will cover the full width of the surface, including the edges, except that separate strips may be used to cover the edges. Any tears or holes in the sheeting shall be repaired by cemented patches.

**(c) Wetted Burlap Method.** The surface of the concrete shall be covered with wetted burlap meeting the requirements of S.P. 1118 as soon as the concrete has hardened sufficiently to prevent marring of the surface. Adjoining sheets or strips of burlap shall overlap 6 inches (152 mm). At least two layers of wetted burlap shall be placed on the finished surface. The burlap shall be kept saturated by means of a mechanically operated sprinkling system. In place of the sprinkling system, two layers of wetted burlap covered with impermeable covering may be used. The burlap shall be kept saturated with water. Plastic coated burlap may be substituted for one layer of burlap and impermeable covering.

The burlap sheets shall be placed so that they are in contact with the vertical faces of concrete slabs, and that portion of the material in contact with those faces shall be kept saturated with water.

**(d) Membrane Curing Method.** Membrane curing will not be permitted where a protective coat or waterproofing is to be applied, where a rubbed or normal finish is required, or at construction joints other than those necessary in pavement or base course. Concrete at these locations shall be cured by another specified method at no additional cost to the Authority.

After the concrete has been finished and immediately after the water sheen has disappeared from the surface, the surface shall be sealed with membrane curing compound of the type specified. The seal shall be maintained for the specified curing period. The vertical faces of concrete slabs shall likewise be sealed immediately after the forms are removed. Two separate applications, applied at least one minute apart, each at the rate of not less than one gallon per 250 square feet, will be required upon all

surfaces of the concrete. These applications shall be made with mechanical equipment as specified in Subsection 1203.15. The compound shall be agitated immediately before and during the application when Type III curing compound is used.

At locations where the coating is discontinuous or where pin holes show or where the coating is damaged due to any cause and on areas adjacent to sawed joints, immediately after sawing is completed, an additional coating of membrane curing compound shall be applied at the rate of one gallon per 250 square feet. The equipment used may be of the same type as that used for coating variable widths of pavement. Before the additional coating is applied adjacent to sawed joints, the cut faces of the joint shall be protected by inserting a suitable flexible material in the joint, or placing an adhesive width of impermeable material over the joint, or by placing the permanent sealing compound in the joint. Material, other than the permanent sealing compound, used to protect cut faces of the joint, shall remain in place for the duration of the curing period. In lieu of applying the additional coating, the area of the sawed joint may be cured according to any other method permitted.

If, before an application of membrane curing compound has dried, rain occurs and the coating is damaged, another application shall be made in the same manner and at the same rate as the original coat. No additional compensation will be allowed the Contractor for materials or labor required to perform this work.

The Engineer may order curing by another method specified herein if unsatisfactory results are obtained with membrane curing compound. Prior to starting the work, the Contractor shall have available a supply of one of the other approved curing materials sufficient for curing one day's production.

The Contractor's construction operations, including the management of traffic, shall be such as to avoid damage to the coatings of curing compound for a period not less than the curing period specified in Table 11-4, after application. Any curing membrane that is damaged or that peels from the concrete surface within the curing period specified, shall be repaired by the Contractor without delay and in an approved manner. No additional compensation will be allowed the Contractor for performance of this work.

The method of curing Class HP high-early strength concrete to obtain the Interim Strength required shall be by application of wetted burlap in accordance with Subsection 1101.9.3 (c) and followed by applications of the approved membrane forming curing compound. The curing compound shall comply with the provisions of ASTM C-309 (AASHTO M148) and Subsection

1118.1 of Standard Specifications as a Type II curing compound. The burlap shall be kept saturated until the Interim Strength required is obtained as indicated by the compressive strength of field curing cylinders. The approved curing compound shall be applied shortly after burlap removal and allowed to dry before the area shall be open to traffic.

- (e) **Wetted Cotton Mat Method.** After the surface of the concrete has been textured, it shall be covered immediately with dry cotton mats meeting the requirements of S.P. 1118. The cotton mats shall then be wetted immediately with a gentle spray of water. A foot bridge shall be used for this operation.

The cotton mats shall be maintained in a wetted condition until the concrete has hardened sufficiently to prevent marring of the surface. Once the concrete has sufficiently hardened, soaker hoses shall be placed on top of the cotton mats and the cotton mats kept continuously wet 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 polyethylene sheeting materials meeting the requirements of Subsection 1118.2 of the Standard Specifications.

For areas inaccessible to the cotton mats, curing shall be according to Subsection 1101.9.3(c) of the Standard Specifications.

**TABLE 11-4**  
**Index Table of Curing and Protection of Concrete Construction**

Type of Construction		Curing Methods	Curing Period Days	Protection Methods SubSection
Pavement.....	1101.9.3	(a) (b) (c) (d) <sup>3+6</sup>	3	1101.9.5
Portland Cement Concrete Base Course .....	1101.9.3	(a) (b) (c) (d) <sup>1+2</sup>	3	1101.9.5
Pavement and Base Widening ....	1101.9.3	(a) (b) (c) (d) <sup>1+2</sup>	3	1101.9.5
Driveways .....	1101.9.3	(a) (b) (c) (d) <sup>4+6</sup>	3	1101.9.5
Paved Median.....	1101.9.3	(a) (b) (c) (d) <sup>4+6</sup>	3	1101.9.5
Concrete Gutter, Curb, Combination Curb & Gutter .....	1101.9.3	(a) (b) (c) (d) <sup>4+6</sup>	3	1101.9.5
Sidewalk .....	1101.9.3	(a) (b) (c) (d) <sup>4+6</sup>	3	1101.9.5
Slope Wall.....	1101.9.3	(a) (b) (c) (d) <sup>4+6</sup>	3	1101.9.5
Paved Ditches.....	1101.9.3	(a) (b) (c) (d) <sup>4</sup>	3	1101.9.5
Catch Basin, Manhole, Inlet and Valve Vault.....	1101.9.3	(a) (b) (c) (d) <sup>4</sup>	3	1101.9.5
Pavement Patching.....	1101.9.3	(a) (b) (c) (d) <sup>2+9</sup>	3	1101.9.5
Pavement Replacement .....	1101.9.3	(a) (b) (c) (d) <sup>1+2+6</sup>	3	1101.9.5
Railroad Crossing .....	1101.9.3	(c)	1	1101.9.5
Piling <sup>5</sup> .....	1101.9.3	(c) 505.4(d)	7	1101.9.6(a),(b),(c)
Footings, Foundations .....	1101.9.4	(a) (b) (c) (d) <sup>4</sup>	7	1101.9.6(a),(b),(c)
Substructure .....	1101.9.4		7	1101.9.6(a),(b)
Superstructure (except deck).....	1101.9.3	(a) (b) (c)	7	1101.9.6(a),(b)
Deck.....	1101.9.3	(c) <sup>8</sup> (e)	7	1101.9.6(a),(b)
Retaining Walls.....	1101.9.4	(b) <sup>1</sup>	7	1101.9.6(a),(b)
Bridge Parapets .....	528.5	(d) <sup>1</sup>	7	1101.9.6(a),(b)
Culverts and Headwalls .....	1101.9.4	(b) <sup>4</sup>	7	1101.9.6(a),(b)
Other Incidental Concrete .....	1101.9.3	(a) (b) (c)	3	1101.9.6

Precast Concrete Members (except piling) .....	502.4.11	(a) (b) (c) (d) <sup>1+2</sup>	3	1101.9.6
Median Barrier Base .....	705.3.3	(d) <sup>7</sup>	3	1101.9.6
Median Barrier .....	706.3.4			

Notes: General

<sup>1</sup>Type I membrane curing compound

<sup>2</sup>Type II membrane curing compound

<sup>3</sup>Type III membrane curing compound

<sup>4</sup>Type I, II, or III membrane curing compound

<sup>5</sup>See Sub-Section 505.4 (d) for additional requirements

<sup>6</sup>Membrane Curing will not be permitted between November 1 and April 15

<sup>7</sup>Type 1, Class A, linseed oil emulsion or Horsey Set, WDE per Subsection 1118.1

<sup>8</sup>See Subsection 1101.9.4(c)

<sup>9</sup>Curing maintained only until opening strength is attained, with a maximum curing period of three days.

**1101.9.4 - Curing of Structures**

Reference is made to Table 11-4 for curing periods for various structures. Except for precast members, all concrete for structures shall be cured for not less than 7 days nor more than 10 days after the concrete has been placed. The Contractor must be able to apply the curing material within 2 hours from the time of starting the removal of forms.

- (a) **Curing Structure Footings and Foundations.** Concrete may be cured by any of the methods listed in S.P.1101.9.3. The use of water to inundate footings and foundations is permissible when approved by the Engineer, provided the water temperature can be maintained at 45 °F (7 °C) or higher. Material and insulation used for curing or protection of the concrete may, when approved by the Engineer, be removed the following day in areas where the Contractor must place forms for the successive placement of concrete.
- (b) **Substructure Concrete.** The Contractor may remove forms on substructure units at the times specified in Sub-Section 501.4.6, providing the curing requirements are met for the remainder of the curing period by the use of one of the curing methods listed in Subsection 1101.9.3.
- (c) **Bridge Decks.** The top surface of bridge floors shall be cured according to Subsection 1101.9.3(e) after the surface of the concrete has been textured according to Subsection 501.10.4(c) (4) or (5).

### **1101.9.5 - Protection of Portland Cement Concrete Pavement from Low Temperatures**

When the Official National Weather Service Forecast for the construction area predicts a low of 32 °F (0 °C) or lower, or the actual temperature drops to 32 °F (0 °C) or lower, concrete less than 72 hours old shall be provided at least the following protection:

<u>Temperature</u>	<u>Protection</u>
25 °F (-4 °C) through 32 °F (0 °C)	2 layers of polyethylene sheeting or 1 layer of polyethylene and 1 layer of burlap, or 2 layers of waterproof paper.
Below 25 °F (-4 °C)	6 inches (152 mm) of straw covered with 1 layer of polyethylene sheeting or waterproof paper.

These protective covers shall remain in place until the concrete is at least 96 hours of age. When straw is required on pavement cured with membrane curing compound, the surface shall first be covered with a layer of burlap, polyethylene sheeting or waterproof paper before the straw is applied.

Regardless of 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 no additional cost to the Authority.

### **1101.9.6 - Cold Weather Protection of Structures**

If temperatures below 45 °F (7 °C) are forecast as defined in Subsection 1101.9.5, protection methods will be required as specified. Concrete shall not be placed when the air temperature is below 45 °F (7 °C) and falling, or below 40 °F (4.4 °C), unless the Contractor has provided acceptable protection facilities and methods for maintaining concrete at temperatures as specified. Unless otherwise specified, cold weather protection of structures shall be in accordance with ACI 306. The temperature of plastic concrete shall be in accordance with Subsection 1101.9.1 at the time of placement.

Concrete shall not be placed on ice, snow, or frozen foundation material. The Contractor shall be responsible for all concrete damaged by low temperatures and any concrete so damaged shall be removed and replaced at no additional cost to the Authority.

The Contractor shall provide means, satisfactory to the Engineer, for checking the temperature of the concrete during the protection period.

In constructing bridges, median barrier, retaining walls, and culverts having a waterway opening of more than 10 square feet (3.05 square meters), if the concrete is placed during the period between December 1 and March 15, the concrete shall be protected by Protection Method I or Protection Method II as specified or directed by the Engineer. In the construction of other structures and incidental construction including footings and slope walls, concrete may be protected by Protection Method III. Concrete shall not be placed until the protection and facilities are approved by the Engineer.

If the concrete is placed in the foregoing described structures during the period between March 15 and December 1 and the temperature falls below 45 °F (7 °C) at any time on 3 consecutive days during the specified curing period, the concrete shall be protected in accordance with Protection Method I or Protection Method II. In the construction of all structures not specified and all incidental construction, including footings and slope walls, concrete may be protected by Protection Method III. When Protection Method II is used to protect the concrete in bridge decks, the housing may enclose only the bottom and sides, in which case, the top surface shall be protected by Protection Method I.

**(a) Protection Method I.** The concrete shall be completely covered with insulating material such as fiberglass, rock wool, or other approved insulating material of a thickness sufficient to adequately insulate the concrete. The insulating material shall be completely enclosed on sides and edges with a waterproof covering maintained in good and serviceable condition. Any tears in the covering shall be patched or covered with a waterproof tape or other suitable vapor barrier cemented in place.

All insulating material shall be in place before any concrete is placed.

If rigid insulating material is used, it shall be attached to the outside of the forms with wood cleats or other suitable means so as to prevent any circulation of air under the insulation. If insulation blankets are used, they shall be applied tightly against the forms and over studs. The edges and ends shall be attached so as to exclude air and moisture. If the blankets are provided with nailing flanges, the flanges may be attached to the studs with cleats. Where tie rods or reinforcement bars protrude, the areas adjacent to the rods or bars shall be adequately protected in a manner satisfactory to the Engineer. Where practicable, the insulation shall overlap any previously placed concrete by at least one foot. Insulation on the underside of bridge decks on steel members shall cover the top flanges of supporting members. On horizontal surfaces, the insulating material shall be placed as soon as the concrete has hardened sufficiently that the surface will not be marred and shall be covered with canvas or other waterproof covering. The insulating material shall remain in place for a period of 7 days after the concrete is placed.

The Contractor may remove the forms after 24 hours where necessary to continue with construction, providing the temperature is 35 °F (1.6 °C) and rising and the Contractor is able to provide the same degree of insulating protection for any particular section within 2 hours from the time of starting the removal of forms. The insulation shall remain in place for the remainder of the 7 days curing period.

- (b) **Protection Method II.** The concrete shall be enclosed in an adequate housing and the air surrounding the concrete kept at a temperature of not less than 50°F (10 °C) or more than 80°F (27 °C) for a period of 7 days after the concrete is placed. Concrete shall not be placed until the protection and facilities for heating have been approved by the Engineer. All exposed surfaces within the housing shall be cured in accordance with the methods specified in Subsection 1101.9.3.

The Contractor shall provide adequate fire protection while heating is in progress and such protection shall be accessible at all times. He shall maintain watchmen or other workmen to keep the heating equipment in continuous operation.

At the end of the heating period, the temperature shall be decreased to the approximate temperature of the outside air at a rate not to exceed 15°F (-9 °C) per 12 hour period, after which the housing may be removed. The surface of the concrete shall be permitted to dry during the cooling period.

- (c) **Protection Method III.** The concrete shall be covered as soon as the surface has hardened sufficiently to prevent marring with 12 inches of loose, dry straw and shall be covered with a layer of impermeable covering. The edges of the covering shall be sealed to prevent circulation of air. The protection shall remain in place for a period of 7 days after the concrete is placed.

#### **1101.10 - FIELD SAMPLING AND TESTING**

Test specimens of concrete will be taken in the field to determine the accuracy of control of the materials, proportioning and mixing of the concrete, and compliance with strength requirements. Specimens for determination of compressive strength shall be cylinders molded, cured, and tested in accordance with ASTM C-31 (AASHTO T23), and C-39 (AASHTO T22), respectively. Samples for casting cylinders will be taken from the concrete before it is subjected to vibration or any finishing operations in accordance with ASTM C-172 (AASHTO T141).

The Contractor shall furnish the concrete required for test specimens and for slump and air-entrainment tests as necessary. The Contractor shall also provide the Engineer with a water tank for the moist curing of compressive



strength specimens as specified. Such water tank shall be of sufficient size to contain all the cylinders generated by the Contractor's production at any given time and shall be located in an air-conditioned building or field office on or near the job site where the temperature of the water can be maintained constantly between 60 °F (16 °C) and 80 °F (27 °C).

Unless otherwise specified, the cost for furnishing the concrete for the test specimens and facilities for curing such specimens shall be considered as included in the various pay items of the Contract and no separate payment will be made therefore.

For Class HP Concrete, one set of 6 cylinders shall be taken from every 50 cubic yards of concrete or fraction thereof on each production day during construction, or more frequently as directed by the Engineer. Test cylinders shall be collected and delivered to the laboratory within 1 hour of the compressive strength test performed for Interim Strength at a specific age. These test cylinders for field quality control shall be prepared and tested by the Engineer at the frequency listed below:

2 cylinders, field cured for 36 hr. interim compressive strength  
2 cylinders, moist cured for 7 day ultimate compressive strength  
2 cylinders, field cured, "reserved".

For Class HE Concrete, one set of 6 cylinders shall be taken from every 50 cubic yards of concrete or fraction thereof on each production day during construction, or more frequently as directed by the Engineer. Test cylinders shall be collected and delivered to the laboratory within 1 hour of the compressive strength test performed for interim strength at a specified age. These test cylinders for field quality control shall be prepared and tested by the Engineer at the frequency listed below:

2 cylinders, field cured for 10 hour interim compressive strength  
2 cylinders, moist cured, 7 day ultimate compressive strength  
2 cylinders, field cured, "reserved"

## **1101.11 - CONCRETE PATCHING MATERIALS**

### **1101.11.1 - Description**

Concrete patching materials shall consist of packaged, dry, cementitious concrete materials for rapid repairs to Portland cement structures. Materials that contain organic compounds such as bitumens, epoxy resins, and polyesters as the principal binder are not included. Where such materials are to be used, they will be specified in the Special Provisions for each particular application. Class J concrete may be used for patches greater than 2 inches in depth.

This Section shall be applied to the use of packaged, dry, cementitious concrete materials only if required by Contract design and specifications.

#### **1101.11.1 - Materials**

Concrete patching material shall meet the physical requirements of ASTM C-928, with the following exceptions:

- (a) Subparagraphs 4.1 and 4.2 under paragraph 4 of ASTM C-928 shall be deleted, and the following substituted in their place.

"Any proposed product shall be certified by the manufacturer's notarized affidavit to contain no soluble chloride."

- (b) The use of magnesium phosphate in these materials is acceptable.

Concrete patching material shall meet the physical requirements shown in Table 1 in ASTM C-928 for Very Rapid Hardening Material.

For any proposed concrete patching material, the Contractor shall submit manufacturer's descriptive literature and notarized certification to the Engineer for approval prior to using the product in the work."

#### **ISTHA - S.P.1101A CLASS DK HIGH PERFORMANCE CONCRETE AND MODIFIED CLASS SP CONCRETE FOR STRUCTURAL PLACEMENT**

*Issued 3/17/05 – Revised 8/12/05*

The provisions of Section 1101 of the Standard Specifications shall apply with the following modifications.

#### **S.P. 1101A.1 DESCRIPTION**

The Class DK High Performance Concrete (HPC) applicable to bridge deck placement shall consist of ASTM C 150 Portland cement (Type I or II), Class C fly ash, silica fume, fine aggregate, coarse aggregate, water, entrained air, high range water reducer, and other chemical admixtures as described in this Special Provision.

The Portland cement Modified Class SP concrete for application to FORMED CONCRETE REPAIR work shall consist of ASTM C 150 portland cement (Type I), and possibly, partially replaced by Class C fly ash, CA-16 grade coarse aggregate, FA-2 grade fine aggregate, potable water, entrained air, high range water reducer, and other chemical admixtures as described in this Special Provision.

#### **S.P. 1101A.2 MATERIALS**

Sub-section 1101.2 of the Standard Specifications shall govern except as modified herein. Specific references are as follows:

Portland cement.....	S.P. 1102A
Water.....	1104
Mineral Admixtures	
Fly ash.....	S.P. 1105.6
Silica fume.....	S.P. 1105.7
Ground granulated blast furnace slag.....	S.P. 1105.5
Chemical Admixtures	
Air-entraining admixtures.....	S.P. 1105.1
Water-Reducing and Retarding Admixtures.....	S.P. 1105.2
Set Accelerating Admixtures.....	S.P. 1105.3
High Range Water-Reducing or Retarding Admixture.....	S.P. 1105.2
Fine Aggregate.....	S.P. 1106A
Coarse Aggregate.....	S.P. 1107A
Concrete Curing Material.....	S.P. 1118

The coarse aggregate permitted in Section S.P. 1107A, for Class DK High Performance Concrete (HPC) shall be uniformly graded according to Sub-Section 1107.1.2, first paragraph, of the Standard Specifications; except the percent passing the ½ inch (12.5 mm) shall be a minimum 50 percent. If the coarse aggregate gradation does not meet this requirement, combining aggregate sizes will be permitted according to Sub-Section 1107.2 of the Standard Specifications. Two or more aggregate sizes consisting of CA-7, CA-11, CA-13, CA-14, and CA-16 may be combined. However, a CA-7 or CA-11 shall be included in the blend for the Class DK-HPC concrete.

The coarse aggregate for the Modified Class SP concrete shall be a CA-16 grade of crushed stone aggregate of “A” quality or better.

**S.P. 1101A.3 EQUIPMENT**

Sub-Section 1101.3 of the Standard Specifications shall apply except as modified herein.

With bridge deck placement of the Class DK-HPC concrete, additional fogging equipment shall be provided. The fogging equipment shall consist of a mechanically operated pressurized system using a triple headed nozzle or equivalent nozzle. The fogging nozzle shall be capable of producing a fine, fog mist that will increase the relative humidity of the air just above the fresh concrete surface without ponding water on the concrete. The fogging equipment shall be mounted on either the finishing equipment or a separate work bridge behind the finishing equipment. Controls shall be easily accessible. No hand-held fogging equipment will be allowed to supplement mounted equipment.

Any special equipment needed for the Modified Class SP concrete production, placement and protection which is not currently specified in Special Provisions Subsection S.P. 530.2 or in the Standard Specifications shall be proposed by the Contractor and be subject to the approval of the Engineer.

S.P. 1101A.4 COMPOSITION OF CONCRETE

**S.P. 1101A.4.1      PROPORTIONING**

Within Sub-Section 1101.4.1 of the Standard Specifications add to the requirements of Table 11-1 the following for the Class DK-HPC cast-in-place concrete mix design; and for the Modified Class SP Portland cement concrete mix design:

**HIGH PERFORMANCE BRIDGE DECK CONCRETE,  
 PROPORTIONS FOR ONE CUBIC YARD**

Material	<i>Unit</i>	<b>Class DK-HPC</b>
<i>Portland cement, Type I or II</i>	Lbs.	451
Fly ash, Class C	Lbs.	141
Silica fume (microsilica)	Lbs.	23
Coarse aggregate, grade CA-7 or CA-11	Lbs.	Note 4
Coarse aggregate, grade CA-13, CA-14, or CA-16	Lbs.	Note 4
Fine aggregate, grade FA-2	Lbs.	Note 4
Total water, maximum	Lbs.	234
Water to cementitious materials ratio <sup>1</sup>		0.37 ± 0.01
High-range water reducer (Type F)	Oz/cwt <sup>2</sup>	12-16 <sup>3</sup>
Mid-range water reducer, optional (maximum)	Oz/cwt <sup>2</sup>	5
Air entraining agent	Oz/cwt <sup>2</sup>	As needed to achieve 7 ± 1.5 % entrained air <sup>3</sup>

<sup>1</sup>This ratio includes the water of the silica fume admixture (if suspended in water), added water from chemical admixtures, added free water, and free water in the aggregate, divided by the total weight of cement, silica fume solids, and fly ash.

<sup>2</sup>cwt is defined as per hundred pounds of portland cement

<sup>3</sup>This is an approximate amount. The actual amount should be adjusted to provide the specified slump or air content and could be outside this range.

**Note 4: Coarse and fine aggregate proportions shall be based on successful completion of trial batches.**

**CONCRETE PERFORMANCE CRITERIA**

Properties	Unit	Class DK-HPC
Entrained air, plastic concrete	%	*
Slump, maximum after HRWR addition	Inches	8
Slump, minimum after 45 minutes after HRWR addition	Inches	4
Initial set time, minimum <sup>1</sup>	Hours	3
Entrained air (hardened concrete)	%	7 ± 1.5
Air void specific surface, minimum	in <sup>2</sup> /in <sup>3</sup>	500
Air void spacing factor, maximum	In.	0.010
Minimum required ultimate compressive strengths	psi	4000 @ 14 days

\*As needed to meet the entrained air content in the hardened concrete

<sup>1</sup>Retarders shall not be allowed unless required to meet this minimum requirement under job conditions or as approved by the Authority

**HIGH PERFORMANCE CONCRETE DURABILITY CRITERIA**

Property (Test Method)	Required Value
	Class DK-HPC
Chloride permeability resistance (AASHTO T277)	<3000 coulombs at 28 days <2000 coulombs at 56 days

**SUBSTRUCTURE AND SUPERSTRUCTURE CONCRETE,  
PROPORTIONS FOR ONE CUBIC YARD**

Material	Unit	Class SP Option 1	Class SP Option 2
Portland cement, Type I	Lbs.	540	432
Fly Ash, Class C (max.)	Lbs.	--	135
Ground granulated blast furnace slag (max.)	Lbs.	--	--
Coarse aggregate, grade CA-16	Lbs.	1800	1780
Fine aggregate, grade FA-2	Lbs.	1330	1310
Total water, maximum	Lbs.	232	244
Water to cementitious materials ratio, maximum <sup>1</sup>		.43	.43
High-range water reducer (Type F)	oz/cwt 2	*	*
Normal-range Type A or Type D or Mid-range water reducer, optional (maximum)	oz/cwt 2	5**	5**
Air entraining agent	oz/cwt 2	1 to 2, or as needed to achieve 6.5 ± 1.5 % entrained air <sup>3</sup>	

<sup>1</sup>This ratio includes the added water from chemical admixtures, added free water, and free water in the aggregate, divided by the total weight of cement, ground granulated blast furnace slag (if present in mix), and fly ash (if present in mix).

<sup>2</sup>cwt is defined as per hundred pounds of portland cement plus pozzolan.

<sup>3</sup>This is an approximate amount. The actual amount should be adjusted to provide the specified air content and could be outside this range.

\* As needed to provide specified slump. Type F HRWR is allowed only by the approval of the Engineer

\*\* This is an approximate amount. The actual amount should be adjusted in accordance with the admixture manufacturer's recommendations to provide the specified slump.

**Note: Coarse and fine aggregate proportions are approximate and final proportions shall be based on successful completion of trial batches.**

**MODIFIED CLASS SP CONCRETE,  
 PERFORMANCE CRITERIA**

Properties	Unit	Class SP
Slump, maximum after HRWR addition	Inches	7.0*
Slump, maximum before HRWR addition	Inches	4.5
Slump, minimum at placement	Inches	4.0
Entrained Air	%	6.5 ± 1.5 %
Minimum required Ultimate Compressive Strengths	psi	3500 @ 14 days

\*With the requirement for placement by pump procedure as approved by the Engineer

**S.P. 1101A.4.2      STRENGTH REQUIREMENTS AND USE**

For the new classes of high performance and structural concrete it shall be the Contractor's responsibility to determine the proportions of the aggregates and chemical admixtures for the concrete, and to exercise quality control with respect to the mixtures, so that each batch of concrete will meet the requirements specified. Batches not meeting the requirements as to slump and entrained air content will be rejected. An AASHTO M-194 Type B retarding admixture or the Type D water reducing/retarding admixture shall not be permitted for Class DK-HPC or Class SP Modified concrete except by approval from the Engineer.

Before the work begins, the Contractor shall secure the Engineer's approval of the sources and the proportions of cement, mineral admixture(s), fine aggregate, coarse aggregate, water and chemical admixtures for each class of high performance and structural concrete detailed herein.

- Interim compressive strength is that strength required before subsequent construction or action (strand release of pre-stressed beams) of any kind is permitted on the new concrete.
- Ultimate compressive strength is that strength required at a specified age for acceptance of the concrete.

### **S.P. 1101A.4.3 BASIS OF CONFORMANCE**

Sub-Section 1101.4.3 of the Standard Specifications shall govern except as modified herein.

#### **Plain or Reinforced Concrete**

Trial mix testing by the Contractor will be required prior to the use of Class DK-HPC concrete. Trial batch data showing conformance to the Concrete Performance and Durability Criteria will be required to be submitted to the Authority at least 60 days prior to the production of these mix designs. No deviation from the minimum cement contents, maximum mineral admixture contents, silica fume dosages, or maximum water/cementitious materials ratios as given above will be allowed unless approved by the Engineer, and trial batches are completed satisfactorily.

At the option of the Contractor with approval of the Engineer, Class DK-HPC concrete shall be placed in a substructure element or other non-structural element, at no additional cost to the Authority, for the purpose of evaluating the field placement of the deck concrete. The concrete shall be delivered in a similar manner as proposed for the deck placement so the plastic concrete properties, at site arrival, after admixture addition, and after pumping or placement can be evaluated. This field trial will allow for an assessment of the target air and plastic concrete properties for the actual deck placements.

For Class DK-HPC concrete, Class C fly ash is required to partially replace the minimum cement content, and silica fume (microsilica) is added to the cement content. For Class DK-HPC concrete, the Class C fly ash replacement is 20 percent by mass (weight) and the replacement ratio (fly ash to cement replaced) is 1.25:1. The silica fume (microsilica) is added at 5 percent by mass (weight) of the cement.

For Class SP Modified concrete, if Class C fly ash is used, the amount of cement replaced shall not exceed 20 percent by mass (weight), at a minimum replacement ratio of 1.25:1.

#### **Trial Batches**

Add to the section titled "Trial Batches" within Sub-Section 1101.4.3 of the Standard Specifications the following:

Trial batches of High Performance Class DK-HPC concrete shall be performed at least 70 days prior to use. Trial batches of Class SP Modified concrete shall be performed at least 28 days prior to use. Batches shall be made using the actual materials and plant to be used for the work. Changes in materials or plant may require new trial batches. The Engineer shall be notified of the scheduling



for trial batches a minimum of 14 days prior to batching. A sufficient number of trial batches shall be performed to ensure that the mixtures meet the requirements of this specification. Full size batches shall be made. The Contractor shall hire an IDOT-approved concrete testing laboratory to perform the following tests on the trial batches as shown in Tables 1 through 3:

**Table 1. Tests for Hardened Concrete**

Test	Test Method	Age at Testing
Compressive Strength	AASHTO T22	1, 3, 7, 14, 28, and 56* days
Flexural Strength	AASHTO T97	1, 7, 14 days
Modulus of Elasticity	ASTM C 469	1, 7, 28, and 56* days
Chloride Penetration [Charge Passed (Coulombs)]	AASHTO T277	28* and 56* days
Air Void Parameters	ASTM C 457	At least 3 days*

\*For Class DK-HPC concrete only.

**Table 2. Tests for Fine and Coarse Aggregates**

Test	Test Method
Absorption and Specific Gravity	AASHTO T85 and T 84
Sieve Analysis	ASTM C 136
Material Finer than 75 µm	AASHTO T11
Moisture Content	AASHTO T255

**Table 3. Tests for Plastic Concrete**

Test	Test Method
Slump	AASHTO T119
Air Content	AASHTO T152
Unit Weight	AASHTO T121
Temperature	
Slump after 45 Minutes	AASHTO T119
Set Time	AASHTO T197

All test results shall be reported to the Authority within 24 hours of the test. A final report that includes all test results, actual batch weights, raw materials certificates, actual water to cement ratio calculation, batching sequence, mixing times, and target air contents in the plastic concrete shall be provided to the Authority 56 days after the trial batches (see Special Provision Subsection 1101A4.4).

**S.P. 1101A.4.4 TESTING PROCEDURES**

Sub-Section 1101.4.4 of the Standard Specifications shall govern except as modified herein.

### **Quality Control Plan**

The Contractor shall submit, in writing, a proposed Quality Control (QC) Plan to the Engineer for approval. The QC Plan shall be submitted a minimum of 45 calendar days prior to the production of a mixture for the job. The QC Plan shall address the quality control of all High Performance Concrete incorporated in the project. The Contractor shall refer to IDOT's "Model Quality Control Plan for Concrete Production" to prepare a QC Plan. The Engineer will respond in writing to the Contractor's proposed QC Plan within 15 calendar days of receipt. The response will indicate the approval or denial of the Contractor's proposed QC Plan amendment.

Proportioning and mixing procedures shall be approved prior to use, and production of a mixture shall not begin until the Engineer provides written approval of the QC Plan. The approved QC Plan shall become a part of the contract between the Authority and the Contractor, but shall not be construed as acceptance of any mixture produced.

### **Submittal and Review Procedures**

At least forty-five (45) days prior to the start of production, the Contractor shall submit to the Engineer two copies of the trial batch results that as a minimum contains all 28-day test results, and includes the mix designs in accordance with those shown in the Special Provisions. The mix design cover sheet shall include signature blocks for both the Contractor's mix designer and the Engineer. Prior to the Engineer's review, the mix designer shall sign and date each copy attesting that all information in the report is accurate and true. The Engineer's signature will verify that the Engineer had the opportunity to review the mix design, to check that it meets the concrete mix requirements, and to comment. The Authority will keep one original signed copy, and the other copy will be returned to the Contractor.

The following items are required for each High Performance Class DK-HPC mix and new Class SP Modified to be used. This information and material shall be submitted to the Authority a minimum of 45 days prior to use.

- Source and mill certificates and IDOT approval for portland cements
- Source, IDOT approval, certificates, and test data to demonstrate that the Class C fly ash meets AASHTO M295
- Source, IDOT approval, certificates, and test data to demonstrate that the silica fume meets AASHTO M307 / ASTM C1240
- Source, IDOT approval, certificates, and test data to demonstrate that the ground granulated blast furnace slag (GGBFS) meets AASHTO M302
- Alkali-silica reactivity test results for aggregates (performance history, independent test data)

- Certificates of compliance for all chemical admixtures
- IDOT approvals for aggregates (coarse and fine)
- Proposed mix designs
- Batching sequence and delivery plan
- Soundness test data of fly ash/cement combination
- Raw materials in quantities as described below:

Material	<i>Quantity</i>
Portland Cement	20 lbs.
Fly Ash	20 lbs.
Silica Fume	5 lbs.
Ground Granulated Blast Furnace Slag	20 lbs.
Coarse Aggregate	150 lbs.
Fine Aggregate	150 lbs.
Air-Entraining Agent	1 pint
Chemical Admixtures	1 pint

All raw material submittals and mix design information as outlined above shall be submitted and shipped at the Contractor's own cost to the Authority's Test Coordinator.

### Raw Materials Testing Procedures

THE FOLLOWING TABLE LISTS SOME OF THE TESTS THAT MAY BE PERFORMED BY THE AUTHORITY ON THE SUBMITTED RAW MATERIALS. THE RAW MATERIALS MUST MEET THE SPECIFICATIONS AS OUTLINED IN THE SPECIAL PROVISIONS SECTIONS S.P.1102A, S.P.1105, S.P.1106A, AND S.P.1107A.

Description	Test Method
<b>Aggregate Testing:</b>	
Fine (F) aggregate petrography	ASTM C295
Coarse (C) aggregate petrography	ASTM C295
Soundness of aggregates by use of sodium sulfate or magnesium sulfate (F and C)	AASHTO T104
Potential reactivity of aggregates (chemical method) [F and C]	ASTM C289
Potential reactivity of aggregates (mortar-bar method) [F and C]	ASTM C1260
Test method for concrete aggregates by determination of length change of concrete due to alkali-silica reaction (F and C)	ASTM C1293 (Coarse only)
Acid soluble chlorides in aggregates (F and C)	Modified ASTM C1152
Air void system (C)	ASTM C457
<b>Aggregate/cement combinations testing:</b>	
Potential alkali reactivity of cement-aggregate combinations (mortar bar method) [F and C]	ASTM C227

<b>Cement testing :</b>	
Sulfate content	AASHTO T105
Total acid-soluble alkalies	AASHTO T105
Early stiffening	AASHTO T185
Water-soluble sulfates	ASTM C265
<b>Fly ash testing</b>	X-ray, Leco SO <sub>3</sub> , Available Alkalies
<b>Fly ash/cement combinations testing</b> (Autoclave soundness test)	ASTM C311 and AASHTO T107
	X-ray

**S.P. 1101A.4.5 CONFORMANCE TO STRENGTH REQUIREMENTS**

Sub-Section 1101.4.5 of the Standard Specifications shall govern except as modified herein.

Add to the first paragraph of Sub-Section 1101.4.5 the following:

High Performance Class DK-HPC concrete and Class SP Modified concrete compressive strength requirements consist of an ultimate minimum strength, which must be attained for acceptance and payment. The various strengths required are specified in the Tables within Section S.P. 1101A.4.1 of this special provision.

**S.P. 1101A.4.6 ADJUSTMENTS FOR COMPLIANCE**

Sub-Section 1101.4.6 of the Standard Specifications shall govern except as modified herein.

Adjustments to the target air content in the plastic concrete may be necessary to achieve the specified air void system in the hardened concrete. These parameters shall be measured on rodded cylinders of concrete sampled at the point of delivery (after pumping or transporting) or on core samples of the in-place concrete. The Contractor shall have the ability to adjust the air content and high range water reducing admixture dosage in the field. A representative of the concrete supplier shall be available at the site upon request of the Engineer and at no cost to the Authority.

**S.P. 1101A.4.7 AGGREGATE CONTENT**

Sub-Section 1101.4.7 of the Standard Specifications shall govern.

**S.P. 1101A.4.8      ADMIXTURES**

Sub-Section 1101.4.8 of the Standard Specifications as well as S.P.1105 shall govern except as modified herein.

**Water-Reducing Admixture**

The use of an AASHTO M 194 mid-range Type A or Type D water-reducing admixture in all classes of concrete that are detailed in this special provision shall be approved by the Engineer.

**Plasticizing (High Range Water Reducing) Admixture**

Partial addition of an AASHTO M 194 Type F HRWR at the plant with completed addition at the site shall be allowed for cast-in-place concrete. The addition of Type G HRWR shall be limited to the batch plant. The maximum haul time for concrete transported in truck mixers or truck agitators shall be in accordance with the Standard Specifications. The concrete temperature at placement shall be in accordance with the Standard Specifications under all field and plant conditions.

**Retarding Admixture**

An AASHTO M-194 Type B retarding admixture shall not be permitted for Class DK-HPC and Class SP Modified concrete except by approval of the Engineer.

**Accelerating Admixtures**

Accelerating admixtures (Types C and E) shall not be allowed in Class DK-HPC concrete without the approval of the Engineer.

**S.P. 1101A.5 CONSISTENCY OF CONCRETE**

Sub-Section 1101.5 of the Standard Specifications shall govern.

**S.P. 1101A.6 CHANGING COMPOSITION OF CONCRETE**

**S.P. 1101A.6.1      DEVIATION FROM TABLES 11-1 AND 11-2**

Sub-Section 1101.6.1 of the Standard Specifications shall govern, except as modified herein.

Should the Contractor choose to use a High Performance or new structural concrete mixture other than those specified in the Tables of Sub-Section S.P.1101A.4.1 of this special provision, and which does not have prior approval

in accordance with Sub-Section S.P.1101A.4.3 of this special provision, he shall submit the trial mix design (including sources of materials and quantities used) and testing data to the Engineer for approval. This trial mix testing data shall consist of plastic concrete data (slump, air, unit weight), air void measurements in hardened concrete (entrained air, specific surface, spacing factor), compressive strength development over time, and durability testing results (freeze/thaw, chloride permeability, chloride penetration, salt scaling resistance [if required], and shrinkage). Trial batching in accordance with S.P.1101A.4.1 and other sections of this Special Provision shall be required unless waived by the Engineer.

#### **S.P. 1101A.6.2      CHANGING SOURCES OF MATERIALS**

Sub-Section 1101.6.2 of the Standard Specifications shall govern except as modified herein.

The Contractor shall also supply relevant test certifications to the Engineer for all proposed materials source changes. If there are no data for the required Quality Assurance tests available, additional testing of the new materials may be required (and may impact the schedule of construction).

#### **S.P. 1101A.6.3      CHANGING PRODUCTION METHODS**

Sub-Section 1101.6.3 of the Standard Specifications shall govern.

#### **S.P 1101A.7    BATCHING**

Sub-section 1101.7 of the Standard Specifications shall govern, except as modified herein.

Fly ash admixture and microsilica (silica fume) admixture handling and mixing are described in Sub-Section 1101.4.8 of the Standard Specifications.

#### **S.P. 1101A.8    MIXING**

Sub-section 1101.8.1 of the Standard Specifications shall govern, except as modified herein.

Alternate batching and mixing sequences may be acceptable if submitted in writing prior to trial batching, used for trial batching, and demonstrated that all ingredients are uniformly dispersed and well-mixed. Clustering of air voids, non-uniform aggregate distribution, poor hydration, or clumping of silica fume shall be cause for rejection. Volumetric batching and continuous mixing shall not be allowed for Class DK or Class SP Modified concrete.

All chemical admixtures batched at the plant shall be directly metered into the mixer or truck.

### **S.P. 1101A.9 PLACING TEMPERATURE, CURING AND PROTECTION**

Sub-section 1101.9 shall govern except as modified herein.

#### **S.P. 1101A.9.1 PLACING TEMPERATURE**

Class DK-HPC High Performance concrete mixtures shall not be placed when the ambient air temperature exceeds 85°F without approval of the Engineer. The maximum concrete temperature shall be 85°F for the cast-in-place high performance concrete mixtures, as placed in the forms. The difference in temperature of the forms and concrete shall be <10°F at time of placement. The evaporation rate shall be monitored as described in S.P. 1101A.9.3 and fogging procedures shall be used as described therein.

#### **S.P. 1101A.9.3 METHODS OF CURING**

For Class DK-HPC concrete, fogging equipment shall be present and in working conditions with adequate backup equipment. For Class DK-HPC concrete, the Contractor shall provide air and concrete temperature, relative humidity, and wind speed-measuring equipment at the site whenever concrete is being placed. The evaporation rate shall be calculated by the Contractor or Engineer (to be decided prior to the placement) every half-hour until all concrete is covered with wet curing. Figure 13-8 of the Portland Cement Association's publication "Design and Control of Concrete Mixtures, 14th Edition" shall be used to calculate the evaporation rate. Fogging equipment shall be in operation unless the evaporation rate is less than 0.10 lb/ft<sup>2</sup>/hr (0.50 kg/m<sup>2</sup>/hr). The fogging equipment controls shall be adjusted to ensure adequate coverage of the fog mist without ponding water on the fresh concrete surface.

For Class DK-HPC concrete, curing shall be kept continuously wet for a minimum of 7 days. The Cotton Mat Method of wet curing is followed by the application of a membrane-curing compound is required as described below:

**Cotton mat method.** The surface of the concrete shall be covered immediately after plastic texturing with dampened (not dry) cotton mats. The mats shall be soaked immediately with a gentle spray of water. The cotton mats shall be maintained in a wet condition until the soaker hoses are placed.

The cotton mats shall be maintained in a wet condition by continuous wetting with soaker hoses. Intermittent wetting will not be allowed. Soaker hoses shall not be placed until the concrete has hardened sufficiently to prevent marring of the surfaces. Other continuous wetting systems that are not intermittent may be used if approved by the Authority.

After placement of the soaker hoses, the cotton mats shall be covered with white polyethylene sheeting or white plastic-coated burlap. The curing period shall be 7 days. If the formwork is removed prior to completion of the 7-day curing period, a Type I membrane curing compound shall be applied to the bottom of the superstructure within 2 hours from the start of form removal. Membrane curing shall be in accordance with Sub-Section 1101.9.3(d) of the Standard Specifications.

Cotton mats shall consist of cotton fill material [minimum 1.3 oz/ft<sup>2</sup> (400 grams/m<sup>2</sup>)] covered with unsized cloth or burlap [minimum 0.65 oz/ft<sup>2</sup> (200 grams/m<sup>2</sup>)], and be tufted or stitched to maintain stability. Cotton mats shall be free from tears and shall be in good condition. At the completion of a minimum of 7 days of moist curing, a membrane curing compound shall be applied to the top deck surface in accordance with Subsection 1101.9.3(d) of the Standard Specifications to reduce the rate of drying from the deck surface. The curing compound shall comply with the provisions of ASTM C-309 (AASHTO M418) and Subsections 1118.1 of the Standard Specifications as a Type II curing compound. The compound shall not be placed prior to the completion of the moist curing. The compound shall be applied to a dry concrete surface and placed within 6 hours of the removal of the moist curing.

For Class DK-HPC High Performance concrete, the concrete temperature shall be maintained at a minimum of 50°F and less than 140°F (60°C) throughout the curing period. The concrete temperature shall be monitored using embedded thermocouples or other internal temperature measuring devices and recorded a minimum of every half hour for a minimum of 48 hours after casting. Cold weather concrete procedures shall be in accordance with Sub-Sections 1101.9.5 and 1101.9.6 of the Standard Specifications.

For Class SP Modified concrete, Section 1101.9.3 of the Standard Specifications shall apply.

#### **S.P 1101A.9.4 CURING OF STRUCTURES**

**Bridge Decks.** The top surface of the bridge floors placed with the Class DK-HPC concrete placed at any time of the year shall be cured in accordance with S.P. 1101A.9.3. Membrane curing shall not be permitted. Membrane curing compound shall be applied at the end of the 7 day moist curing to reduce the rate of drying of the concrete.

#### **S.P. 1101A.10 FIELD SAMPLING AND TESTING (QUALITY CONTROL/QUALITY ASSURANCE)**

Sub-Section 1101.10 of the Standard Specifications shall govern except as modified herein.



Add the following field sampling and compressive strength test requirements for the High Performance Class DK-HPC concrete:

“For High Performance Class DK-HPC concrete, one set of test cylinders shall be taken every 250 cu. yds. or fraction thereof on each production day during construction, or more frequently as directed by the Engineer. These test set cylinders for field quality control/quality assurance shall be prepared by the Contractor and Engineer, and tested at the frequency listed below:

**For High Performance Class DK-HPC Concrete**

- 2 cylinders, moist cured, “reserved”
- 2 cylinders, moist cured for 7 day compressive strength
- 2 cylinders, moist cured for 14 day ultimate compressive strength

The Contractor shall measure the air content of the plastic High Performance concrete for bridge deck placement before and after transporting concrete using a conveyor or concrete pump to determine a correlation factor. Tests shall be performed on the first five trucks before and after pumping or conveying and every 150 cu. yds. thereafter for each date of placement to develop and maintain the correlation factor. The Contractor shall measure the air content of the plastic high performance concrete before the pumping or conveying of every truck load of concrete.”

**Plant Sampling**

The Contractor shall test aggregates for gradation, moisture, and absorption at the plant. The frequency is given in the table.

**CONTRACTOR PLANT SAMPLING AND TESTING**

<b>Material</b>	<b>Test</b>	<b>Minimum Frequency</b>	<b>Test Test Method</b>
Aggregates (arriving at the plant)	Gradation	Minimum of once per week during production and as needed to check source	T 2, T 11, T 27 and T 248
Fine aggregates	Moisture	Daily and prior to production	Flask IDOT 301, Dunagan IDOT 302, Pycnometer Jar IDOT 303, or T 255
Coarse aggregates	Moisture	As needed to control production, minimum once per week	Dunagan, Pycnometer Jar, or T 255
Aggregates (Stored at Plant Stockpiles or in Bins)	Absorption	Once a month during production	Illinois Modified T84-94 and Illinois Modified T85-91, or ASTM C127 and C128

**CONTRACTOR JOBSITE SAMPLING AND TESTING**

Item	Measured Property	Random Sample Testing Frequency Per Mix Design & Per Plant	Illinois Modified or AASHTO Test Method
Plastic Concrete Tests for HPC	Slump	Initial truck and 1 per 50 yd <sup>3</sup>	T 141 and T 119
	Air Content	Every truck before pumping or conveying. First 5 trucks, then 1 truck per 150 yd <sup>3</sup> after pumping and/or conveying.	T 141 and T 152 or T 196
	Concrete Temperature	Initial truck and 1 per 50 yd <sup>3</sup>	T 141 and T309
	Unit Weight	Initial truck and 1 per 50 yd <sup>3</sup>	T 121
Hardened Concrete Tests for HPC	Compressive Strength	Initial truck and 1 set* per 250 yd <sup>3</sup> (min. 2 sets per day)	T 141, T 22, and T 23

\*A set is 6 cylinders for Class DK-HPC concrete

**QUALITY ASSURANCE TESTING (BY AUTHORITY)**

Location	Item	Measured Property	Testing Frequency (a)
Plant	Aggregate	Gradation and Moisture of Aggregates Stored in Stockpiles or Bins	Start-up and as determined by the Authority.
Jobsite	Concrete	Slump, Air Content And Strength	Start-up and 10 percent of QC test frequency required (based on volume of production)
Plant	Fine Aggregates	Petrography	At startup and every 3,000 cu yds of concrete per ASTM C 295
Plant	Coarse Aggregate	Water-Soluble Chloride	At startup and source or pit change, per AASHTO T260, ASTM C1218, or Soxhlet Method
Plant	Fine Aggregate	Water-Soluble Chloride	Every 3,000 cu yds of concrete per AASHTO T260, ASTM C1218, or Soxhlet Method
Plant	Fly Ash/Cement Combination	Soundness	Each source initially and per change in cement or fly ash source per ASTM C151/ASTM C311, AASHTO T 107
Plant	Hardened Concrete	Hardened Air Voids	Startup and minimum of one per deck placement, per ASTM C457
		Chloride Permeability Resistance	Startup and minimum of one per deck placement, per AASHTO T 277

**S.P.1101A.10.1 QUALITY ASSURANCE BY AUTHORITY**

The Authority will perform quality assurance tests on independent samples and split samples. An independent sample is a field sample obtained and tested by only one party. A split sample is one of two equal portions of a field sample. The Authority may request the Contractor to obtain a split sample through their Quality Control program on High Performance concrete aggregates and mixtures. The results of all quality assurance tests by the Authority will be made available to the Contractor as soon as they are completed. The Authority's quality assurance independent sample and split sample testing is indicated in the table in Sub-Section S.P.1101A.10.

- a) Strength Testing. For strength testing, Sub-Section 1101.4.4 of the Standard Specifications shall apply.
- b) Comparing Test Results. Differences between the Authority's and the Contractor's split sample test results will not be considered extreme if within the following limits:

<u>Test Parameter</u>	<u>Acceptable Limits of Precision</u>
Slump	0.75 inch
Air Content	0.9 percent
Compressive Strength	900 psi
Aggregate Gradation	Procedure for Sample Comparison" in Appendix "A" of the IDOT Manual of Test Procedures for Materials.

- c) Test Results. If either the Authority's or the Contractor's split sample test result is not within specification limits, and the other party is within specification limits; immediate retests on a split sample shall be performed for slump, air content, or aggregate gradation. A passing retest result by each party will require no further action. If either the Authority's or Contractor's slump, air content, or aggregate gradation split sample retest result is a failure; or if either the Authority's or Contractor's strength test result is a failure, and the other party is within specification limits; the following actions shall be initiated:
  - 1) The Authority and the Contractor shall investigate the sampling method, test procedure, equipment condition, equipment condition, equipment calibration, and other factors.
  - 2) The Authority or the Contractor shall replace test equipment, as determined by the Authority.
  - 3) The Authority and the Contractor shall perform additional testing on split samples, as determined by the Authority.

- 4) For aggregate gradation, jobsite slump, and jobsite air content (measured at the truck with the correlation factor applied); if the failing test result is not resolved according to (1), (2), or (3), and the High Performance concrete mixture has not been placed, the Contractor shall reject the material.

For aggregate gradation, jobsite slump, and jobsite air content; if the result of a quality assurance test on a sample independently obtained by the Authority is not within specification limits, and the mixture has not been placed, the Contractor shall reject the material.

If a continued trend of difference exists between the Authority and the Contractor's split sample test results, or if split sample test results exceed the acceptable limits of precision, the Authority and the Contractor shall investigate. The investigation shall be according to (1), (2), and (3).

The provisions of Section 1101 of the Standard Specifications shall apply with the following modifications.

ISTHA-S.P. 1101C SELF-CONSOLIDATING CONCRETE FOR CAST-IN-PLACE CONCRETE  
*Issued 2/24/05*

#### **S.P. 1101C.1 DESCRIPTION**

Self-consolidating concrete is a flowable mixture that does not require mechanical vibration for consolidation. Self-consolidating admixture system may be used for cast-in-place concrete items, except for items related to flatwork, when approved by the Engineer.

#### **S.P. 1101C.2 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 and 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 rang 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 referenced in AASHTO M 194, and shall comply with the following physical requirements.

- (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 14 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:

$$\text{Aggregate Blend Expansion} = (a/100 \times A) + (b/100 \times B) + (c/100 \times C) + \text{etc.}$$

Where: a, b, c, ..... = percent of aggregate blend

A, B, C,.. = aggregate expansion according to ASTM C 1260

### **S.P. 1101C.3 MIX DESIGN CRITERIA**

For IDOT Classes of Concrete, Article 1020.04 of the IDOT Standard Specifications shall apply except as follows:

- (a) The minimum cement factor shall be according to Article 1020.04 of the IDOT Standards or as specified. The maximum cement factor shall be 7.05 cwt/cu yd). The cement factor shall not be reduced if a water-reducing, retarding, or high range water-reducing admixture is used.
- (b) The maximum allowable water/cement ratio shall be according to Article 1020.04 of the IDOT Standards for IDOT Classes of Concrete or 0.44, whichever is lower.
- (c) The slump requirements shall not apply.
- (d) The 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.
- (e) The slump flow range shall be  $\pm 75$  mm ( $\pm 3$  in.) of the Contractor target value, and within the overall Department range of 510 mm (20 in.) minimum to 710 mm (28 in.) maximum.
- (f) The visual stability index shall be a maximum 1.

- (g) The J-ring value shall be a maximum of 100 mm (4 in.). The Contractor may specify a lower maximum in their mix design.
- (h) The L-box blocking ratio shall be a minimum of 60 percent. The Contractor may specify a higher minimum in their mix design.
- (i) The column segregation index shall be a maximum 15 percent.
- (j) The hardened visual stability index shall be a maximum of 1.

#### **S.P.1101C.4 TEST METHODS**

The State of Illinois Test Procedures SCC-1, SCC-2, SCC-3, SCC-4, SCC-5, SCC-6, and Illinois Modified AASHTO T 22, 23, 121, 126, 141, 152, 177, 196, and 309 shall be used for testing of self-consolidating concrete admixtures.

#### **S.P.1101C.5 MIX DESIGN SUBMITTAL**

The Contractor's Level III PCC Technician shall submit a mix design according to the "Portland Cement Concrete Level III Technician" course manual, except target slump information is not applicable and will not be required. However, a slump flow target range shall be submitted. In addition, the design mortar factor may exceed 1.10 and durability test data will be waived.

A J-ring value shall be submitted if a lower mix design maximum will apply. An L-box blocking ratio shall be submitted if a higher mix design minimum will apply. The Contractor shall also indicate applicable construction items for the mix design.

Trial mixture information will also be required by the Engineer. A trial mixture is a batch of concrete tested by the Contractor to verify the Contractor's mix design will meet specification requirements. Trial mixture information shall include test results as specified in the "Portland Cement Concrete Level III Technician" course manual. Test results shall also include slump flow, visual stability index, J-ring value, L-box blocking ratio, column segregation index, and hardened visual stability index.

#### **S.P.1101C.6 TRIAL BATCH**

The Engineer will require a trial batch. A trial batch for the self-consolidating concrete mix design shall be scheduled a minimum of 21 calendar days prior to anticipated use, and shall be performed in the presence of the Engineer.

A minimum 1.5 cubic meter (2 cubic yard) trial batch shall be produced, and the self-consolidating concrete admixture dosage proposed by the Contractor shall be used. The slump flow shall be within 25 mm (1.0 in.) of the maximum slump flow range specified by the Contractor, and the air content shall be within the top half of the allowable specification range.

The Contractor shall provide the labor, equipment, and materials to test the concrete. The mixture will be evaluated by the Engineer for strength, air content, slump flow, visual stability index, J-ring value, L-box blocking ratio, column segregation index, and hardened visual stability index. If necessary, the Contractor shall be responsible for the disposal of the concrete.

Upon review of the test data from the trial batch, the Engineer will verify or deny the use of the mix design, and notify the Contractor. Verification by the Engineer will include the Contractor's target slump flow range. If applicable, the Engineer will verify the Contractor's J-ring value maximum and L-box blocking ratio minimum.

A new trial batch will be required whenever there is a change in the source of any component material, proportions, batch sequence, mixing speed, mixing time, or as determined by the Engineer. The testing criteria for the new trial batch will be determined by the Engineer.

#### **S.P. 1101C.7 MIXING PROCEDURES FOR READY-MIX SUPPLIERS**

In addition to Article 1020.11 of the IDOT Standard Specifications or to Subsection 1101.8.3 of contract Special Provision 1101, the mixing time for central-mixed concrete shall not be reduced as a result of a mixer performance test. Truck-mixed or shrink-mixed concrete shall be mixed in a truck mixer for a minimum of 100 revolutions.

#### **S.P. 1101C.8 FALSEWORK AND FORMS**

In addition to Subsections 501.4 and 501.5 of the ISTHA Standard Specifications, the Contractor shall take into consideration the hydrostatic head pressure of the concrete. Forms shall be tight to prevent leakage of fluid concrete.

#### **S.P. 1101C.9 CONCRETE PLACEMENT AND CONSOLIDATION**

Revise Subsection 501.8.1 of the ISTHA Standard Specifications as follows:

- (a) Delete the fourth paragraph and replace with "Open troughs and chutes shall extend as nearly as practicable to the point of deposit. The drop distance of concrete shall not exceed 1.5 m (5 ft). If necessary, a tremie shall be used to meet this requirement. The maximum distance of horizontal flow from the point of deposit shall be 9 m (30 ft), unless approved otherwise by the Engineer. For drilled shafts, free fall placement will not be permitted."
- (b) Replace the ninth paragraph with "Concrete shall be placed in continuous layers. When it is necessary by reason of an emergency to place less than a complete horizontal layer in one operation, such layer shall terminate in a vertical bulkhead. In order that the concrete will not be injured and that there

shall be no line of separation between the batches, the separate batches shall follow each other closely, and in no case shall the interval of time between the placing of successive batches be greater than 5 minutes. Concrete shall be rodded with a piece of lumber or conduit if the material has lost its fluidity prior to placement of additional concrete. If ready-mixed concrete is used, the requirements of Subsection 1101.8 of the ISTHA Standard Specifications shall apply. Delivery of mixed concrete shall be regulated so that there will not be an interruption of more than 5 minutes duration in the placing of concrete in the forms.”

Delete Subsection 501.8.2 of the ISTHA Standard Specifications.

**S.P. 1101C.10            QUALITY CONTROL BY THE CONTRACTOR**

a) At The Plant

The specified test frequencies for aggregate gradation, aggregate moisture, air content, unit weight/yield, and temperature shall be performed by the Contractor as indicated in the contract Plans.

Slump flow, visual stability index, and J-ring value or L-box blocking ratio tests shall be performed by the Contractor as needed to control production. The column segregation index test and hardened visual stability index test will not be required to be performed at the plant.

b) At The Jobsite

The specified test frequencies for air content, strength, and temperature shall be performed by the contractor as indicated in the contract plans.

Slump flow, visual stability index, J-ring or L-box blocking ratio tests shall be performed by the Contractor on the first two truck deliveries of the day, and every 50 cu. yd. (40 cu m) thereafter. The Contractor shall select either the J-ring value test or L-box blocking ratio test for jobsite testing.

The column segregation index test will not be required to be performed at the jobsite. The hardened visual stability index test shall be performed by the Contractor on the first truck delivery of the day, and every 300 cu. yd. (230 cu m) thereafter. Slump flow, visual stability index, J-ring value or L-box blocking ratio, air content, and concrete temperature shall be recorded for each hardened visual stability index test.

The Contractor shall retain all hardened visual stability index cut cylinder specimens until the Engineer notifies the Contractor that the specimens may be discarded.



**S.P. 1101C.11                    QUALITY ASSURANCE BY THE ENGINEER**

**a) At The Plant**

For air content and aggregate gradation, quality assurance independent sample testing and split sample testing will be performed by the Engineer as indicated in the contract plans.

For slump flow, visual stability index, and J-ring value or L-box blocking ratio tests, quality assurance independent sample testing and split sample testing will be performed as determined by the Engineer.

**b) At The Jobsite**

For air content and strength, quality assurance independent sample testing and split sample testing will be performed by the Engineer as indicated in the contract plans.

For slump flow, visual stability index, J-ring value or L-box blocking ratio, and hardened visual stability index tests, quality assurance independent sample testing will be performed as determined by the Engineer.

For slump flow and visual stability index quality assurance split sample testing, the Engineer will perform tests at the beginning of the project on the first three tests performed by the Contractor. Thereafter, a minimum of 10% of total tests required of the Contractor will be performed per plant, which will include a minimum of one test per mix design. The acceptable limit of precision will be 1 in. (25 mm) for slump flow, and a limit of precision will not apply to the visual stability index.

For the J-ring value or the L-box blocking ratio quality assurance split sample testing, a minimum of 80% of the total tests required of the Contractor will be witnessed by the Engineer per plant, which will include a minimum of one witnessed test per mix design. The Engineer reserves the right to conduct quality assurance split sample testing. The acceptable limit of precision will be 1 in. (25 mm) for the J-ring value and 10% for the L-box blocking ratio.

For each hardened visual stability index test performed by the Contractor, the cut cylinders shall be presented to the Engineer for determination of the rating. The Engineer reserves the right to conduct quality assurance split sample testing. A limit of precision will not apply to hardened visual stability index.

**S.P.1101C.12 UNACCEPTABLE WORK**

If the Engineer observes a line of separation or a weak surface in the completed work, it will be considered unacceptable. If a failing test result occurs for the hardened visual stability index test, the work will be considered unacceptable. The Engineer may permit the Contractor to core the completed work to show it is acceptable.

ISTHA - S.P. 1105 CONCRETE ADMIXTURES AND MODIFIERS  
Issued 2/01/04

This Special Provision replaces the requirements in Section 1105 of the Standard Specifications with the following:

**“1105.1 - AIR-ENTRAINING ADMIXTURES**

Air-entraining admixtures shall conform to the requirements of AASHTO M154 (ASTM C 260).

Air-entraining admixtures shall be furnished in liquid form ready for use.

Any air-entraining admixture appearing in the Illinois Department of Transportation current listing of approved air-entraining admixtures will be acceptable without certification.

If the air-entraining admixture has not previously been approved, the admixture may be accepted for use provided the manufacturer presents laboratory test data of tests, performed by a laboratory regularly inspected by the Cement and Concrete Reference Laboratory of the National Bureau of Standards, indicating that the material conforms to Specification requirements and furnishes a notarized certification stating that no changes have been made in the formulation of the material since the conduct of the tests.

Air-entraining admixtures to be used in conjunction with latex admixtures or plasticizers (high range water reducers) shall be of the vinsol resin type only.

**1105.2 - WATER-REDUCING AND RETARDING ADMIXTURES.**

The admixture shall conform to the following requirements:

- (a) The water-reducing admixtures shall conform to the requirements of AASHTO M 194, (ASTM C 494) Type A.
- (b) The retarding admixtures shall conform to the requirements of AASHTO M 194, (ASTM C 494) Type B.
- (c) The combination water-reducing and retarding admixtures shall conform to the requirements of AASHTO M 194, (ASTM C-494) Type D. The materials shall contain no chlorides and shall be furnished in liquid form ready for use.
- (d) The high range water-reducing (plasticizers) or retarding admixtures shall conform to the requirements of AASHTO M 194, Type F or Type G. The material shall contain no chlorides and shall be furnished in liquid form ready for use.

The high range water-reducing admixture shall be added at the jobsite unless otherwise directed by the Engineer. Tests for air entrainment shall be performed after the addition of the admixture.

**1105.3 - SET ACCELERATING ADMIXTURES**

The accelerator admixture shall conform to the requirements of AASHTO-161, procedure B and AASHTO M-194, Type C or Type E, without chloride unless allowed in writing by the Engineer.

**1105.4 - LATEX ADMIXTURES**

Latex admixtures shall be film-forming, polymeric emulsions in water to which all emulsifiers, surfactants, and stabilizers have been added at the point of manufacture. The emulsions shall be homogeneous and uniform in composition and manufactured in compliance with the prequalification requirements specified in Report FHWA RD-78-35.

The latex admixture shall conform to the following requirements for the chemical and physical properties.

Chemical Properties	
Polymer Type .....	Styrene Butadiene
Physical Properties	
Percent solids .....	46.4% to 49%
Weight per gallon @ 77 °F (25 °C) .....	8.4.-8.7 lbs.
Shelf life .....	2 years minimum

The latex admixture shall not contain any chlorides. The latex admixture shall be accompanied by a notarized certificate from the manufacturer attesting to the material's conformance to the above chemical and physical properties and compliance with FHWA RD-78-35. The certificate shall also state the date of manufacture of the latex admixture, batch or lot number, quantity represented, manufacturer's names, and the location of the manufacturing plant.

The admixture shall be packaged and stored in containers and storage facilities, which will protect the material from freezing and from temperatures above 85° F. Additionally, the material shall not be stored in direct sunlight and shall be shaded when stored outside of buildings during moderate temperatures.

The latex admixture shall have been approved by the FHWA for use in latex modified concrete for bridge deck overlays.

**1105.5 - GROUND GRANULATED BLAST-FURNACE (GGBF) SLAG**

Ground Granulated Blast-Furnace (GGBF) Slag consists of a nonmetallic product that contains silicates and aluminosilicates of calcium and other bases produced in a molten state from iron ore in a blast furnace. The GGBFS is then ground to particle sizes less than 1.8 mils (45µm).

The GGBF Slag mineral admixture shall conform to the physical and chemical requirements of AASHTO M 302 for Grade 100 or Grade 120 material and be obtained only from sources approved by the Illinois Department of Transportation.

### 1105.6 - FLY ASH

Fly ash to be used in Portland Cement Concrete shall be in compliance with the requirements of ASTM C 618, for Class C fly ash and be obtained only from sources approved by IDOT as of the date for receiving bids for the contract.

The combined or alternate use of different fly ash sources and classes shall not be permitted during the production of a specific previously approved Class DK, Class P(FA), Class SD, and Class SP concrete mix design without permission from the Engineer.

Class P(FA) concrete Mix designs with a Class C fly ash shall be considered for use after October 15 or before April 1 only if the Contractor provides acceptable trial batch test results indicating 14-day strengths to be equal to or greater than, the strengths obtained from the equivalent mixture with Type I cement only. Fly ash shall not be used in any additional concrete mixtures for any other classes of concrete when the air temperature is below 40 °F (4 °C) without permission of the Engineer. If permission is provided by the Engineer, the Contractor may be required to adjust the mix design by reducing or eliminating the fly ash content and increasing the cement content to compensate.

Fly ash with an R factor greater than 3.0 shall not be used in concrete which will be subjected to high sulfate concentrations in soil or water. For the purposes of this requirement, high sulfate soils shall be considered as those having concentrations of water soluble sulfate (expressed as SO<sub>4</sub>) greater than 0.10 percent, and high sulfate waters shall be considered as those with sulfate concentrations greater than 150 mg per L.

$$\text{R Factor} = \frac{\% \text{ Calcium Oxide} - 5\%}{\% \text{ Iron Oxide}}$$

### 1105.7 - MICROSILICA ADMIXTURES

The microsilica admixture shall be supplied as either a dry densified powder or a liquid slurry with the microsilica powder suspended in water. The Contractor shall submit a notarized manufacturer's certification that the Microsilica admixture consists of the raw silica fume material that conforms to the requirements of ASTM C 1240-93. The certification shall include the solids content if the microsilica is furnished as a liquid admixture.

The supplier of the Microsilica admixture shall submit test data from an independent testing laboratory to verify that the admixture will reduce the chloride permeability to a Q value, in coulombs, in the very low range of 1000 coulombs or less for the proposed admixture dosage with Class M concrete. The permeability test for Class M concrete shall be performed at 28 days age in compliance with AASHTO T277 test methods.

The Microsilica admixture shall be protected from freezing at a temperature of approximately 32 °F (0 °C). If Microsilica freezing occurs, the admixture shall not be used.”

ISTHA - S.P. 1118 CONCRETE CURING, INSULATING AND SEALING MATERIALS  
*Issued 2/01/04*

This Special Provision amends Section 1118 of the provisions of the Standard Specifications by adding the following to the end of this section:

**“1118.5 - BURLAP CURING BLANKETS**

Burlap blankets shall be made from whole stock widths of new burlap and shall be 2 feet (600 mm) longer than the width of the pavement. The burlap shall be free from substances which may be deleterious to freshly laid concrete. Sacks or burlap reclaimed from uses other than curing shall not be used. Reused burlap shall be in a condition satisfactory to the Engineer. The burlap shall conform to the following requirements:

1. Mass per sq. yd. (sq. m.), not less than 9 oz. (305 g.).
2. Ash (based on dry mass), not more than 3.0 percent.
3. The burlap shall be composed of not less than 95.0 percent jute and manila fibers.

**1118.6 - COTTON MATS**

Cotton mats shall consist of a cotton fill material, minimum 11.8 oz./sq. yd. (400 g/sq. m.), covered with unsized cloth or burlap, minimum 5.9 oz./sq. yd. (200 g./sq. m.), 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 mat shall be repaired.”

ISTHA - S.P. 1203 PORTLAND CEMENT CONCRETE EQUIPMENT  
*Issued 2/01/04 – Revised 6/22/05*

The provisions of Section 1203 of the Standard Specifications shall govern except as modified herein.

**S.P. 1203.1 BATCHING AND WEIGHING EQUIPMENT**

Subsection 1203.1.4 of the Standard Specifications shall govern except as modified herein.

Add the following paragraph to Subsection 1203.1.4(a)(4) – Admixture Control:

“The dispenser’s visual indicator shall be easily viewed by the plant operator when batching. Televised images may be used.”

Revise the fourth paragraph of Subsection 1203.1.4(b) – Automatic Batching Equipment, to read as follows:

“The interlock of the system, with respect to the sequence of discharge of the materials into the mixer, shall be such that the mixing water and admixtures are discharged in accordance with the requirements of S.P. 1101.4.8.”

**S.P. 1203.2 CONCRETE SPREADER/PLACER FOR SIDE FORM PAVING**

Subsection 1203.10 of the Standard Specifications shall govern except as modified herein.

Revise the fifth paragraph of Subsection 1203.10 to read as follows:

“Vibrators of the internal type shall be especially designed for this purpose and so constructed as to operate satisfactorily. The vibrating frequency of the internal type shall be  $7000 \pm 2000$  vibrations per minute (VPM). The vibrating elements shall be so spaced that the concrete mass will be consolidated throughout its entire depth and width but the spacing of the vibrating elements shall not exceed 24 inches.”

Add the following paragraphs to the end of this Subsection:

“A vibrating reed tachometer, hand type, shall be provided with each paver. The vibrating reed tachometer shall have a range from at least 4000 to 10000 VPM.

For contracts with a minimum Plan Quantity of 10000 square yards of PCC Pavement that is twelve (12) feet wide or more, an electronic internal vibrator monitoring device shall be provided. The device shall be capable of displaying the operating frequency of each internal vibrator, and shall be visible to the paving operator. The vibrator monitoring device shall have a range from at least 4000 to 10000 VPM.”

**S.P. 1203.3 CURING COMPOUND SPRAYING MACHINE**

Subsection 1203.15 of the Standard Specifications shall govern except as modified herein.

Add the following subparagraph:

(d) “Equipment for use on Bridge Decks.

The equipment used to apply membrane curing compound to bridge decks shall consist of a container having a minimum capacity of 25 gal. (95 L) in which a constant pressure is maintained by mechanical means to insure the membrane curing compound is applied uniformly at the specified rate. The spray nozzle or nozzles shall be designed to deliver a uniform fine spray and be easily cleaned, should they become clogged. A separate construction bridge spanning the width of the deck being placed shall be provided for the spraying operation. Exposed reinforcing steel and construction joint areas shall be covered or shielded to prevent curing compound from coating any portions of these surfaces.”

**S.P. 1203.4 MISCELLANEOUS EQUIPMENT**

Add the following paragraph to Subsection 1203.18.2 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.”

Add the following to the end of Subsection 1203.18 of the Standard Specifications:

**“1203.18.11 - Fogging Equipment**

Fogging equipment shall consist of a mechanically operated, pressurized system using a triple headed nozzle or an equivalent nozzle. The fogging nozzle shall be capable of producing a fine fog mist that will increase the relative humidity of the air just above the fresh concrete surface without accumulating any water on the concrete. The fogging equipment shall be mounted behind the roller and pan of finishing machine or on a separate foot bridge. Controls shall be designed to vary the volume of water flow, be easily accessible and immediately shut off the water when in the off position. Hand held fogging equipment will not be allowed.”

**S.P. 1203.5 SURFACE TESTING DEVICE**

Replace Subsection 1203.18.10 of the Standard Specifications as follows:

Required surface testing and analysis equipment and their jobsite transportation shall be provided by the Contractor.

- (a) 16 ft Straightedge. The 16 ft straightedge shall consist of a metal I-beam mounted between two wheels spaced 16 ft between the axles. Scratcher bolts which can be easily and accurately adjusted, shall be set at the 1/4, 1/2, and 3/4 points between the axles. A handle suitable for pushing and guiding shall be attached to the straightedge. The straightedge shall meet the approval of the Engineer.
  - (b) California Profilograph. The California Profilograph or approved equivalent shall consist of a frame 25 ft in length supported upon multiple wheels at either end. The profile shall be recorded from the vertical movement of a wheel attached to the frame at mid point. All traces from pavement sections tested with a California Profilograph or approved equivalent shall be recorded on paper with scales of 300:1 longitudinally and 1:1 vertically. Data filters for an automated California Profilograph shall be set according to the parameters outlined in California Test 526, except the blanking band shall be set to 0.00 in.
- (1) Calibration. The Contractor shall demonstrate to the Engineer that the testing equipment has proper tire pressure inflation, trueness of tire travel, and is calibrated for vertical displacement and horizontal distance. This calibration shall consist of the following:

- a. A 500 to 1000 ft long calibration test section shall be located on the project. This test section should be relatively straight and flat. The profilograph shall be calibrated for longitudinal distance on this test section to the satisfaction of the Engineer.
  - b. Longitudinal calibration consists of pushing, at walking speed (approximately 3 mph), the profilograph over the pre-measured test section and determining the chart scale factor. To calculate the chart scale factor, divide the pre-measured test distance, in inches, by the length of the profile trace from this test section, in inches. This factor should be  $300 \pm 0.5$ . If the profilograph produces charts with a different scale factor, adjustment of the profilograph shall be made to bring the scale factor to the tolerance specified above.
  - c. Vertical calibration consists of placing the center recording wheel of the profilograph on a base plate and recording the base elevation. Two plates, 0.5 in. thick each, are added under the center wheel, one at a time, and the change in elevation noted. The two plates are removed, one at a time, and the change in elevation noted. Each step in the process shall show a change in height of  $0.5 \text{ in.} \pm 0.01 \text{ in.}$  If the profilograph produces results not conforming to the above limits, it shall be adjusted to the tolerance specified.
  - d. The automatic trace reduction capability of a machine so equipped shall be checked by comparing the machine's results to the results obtained through manual trace reduction using California Test 526 with a 0.00 in. blanking band. The comparison shall be made with the trace obtained on the pre-measured test section. The results of the comparison shall not differ by more than 2.0 in./mile.
  - e. All calibration traces and calculations shall be submitted to the Engineer for the project file. The Engineer may retest the pavement at any time to verify the accuracy of the equipment.
- (2) Trace Analysis. The Contractor shall reduce/evaluate these traces using a 0.00 in. blanking band and determine a profile index in in./mile for each section of finished pavement surface. If the Contractor's profilograph is equipped with a computerized recorder, the trace produced will be evaluated without further reduction. If the profilograph has a mechanical recorder, the Contractor shall provide an electronic scanner, a computer, and software to reduce the trace. All analysis equipment (electronic scanner, computerized recorder, etc.) shall be able to accept 0.00 in. for the blanking band.



#### ISTHA – STEEL STRUCTURES

Description: This work item shall conform to the ERECTING STRUCTURAL STEEL special provision for ERECTING STRUCTURAL STEEL (GIRDER SPANS) and FURNISHING AND ERECTING STRUCTURAL STEEL (MISCELLANEOUS) and to the ISTHA Standard Specification Section 503 for STUD-TYPE SHEAR CONNECTORS.

#### ISTHA – REINFORCING STEEL

Description: This work item shall conform to ISTHA Standard Specification Section 504 for REINFORCING STEEL, except that measurement will be made in kilograms, and payment will be made at the Contract unit price per kilogram.

#### ISTHA – REINFORCING STEEL, EPOXY COATED

Description: This work item shall conform to ISTHA Standard Specification Section 504 for REINFORCING STEEL, EPOXY COATED, except that measurement will be made in kilograms, and payment will be made at the Contract unit price per kilogram.

#### ISTHA – PILING

Description: This work item shall conform to ISTHA Standard Specification Section 505 for FURNISHING STEEL PILES; DRIVING STEEL PILES; SPLICES OF STEEL PILES OR STEEL SHELLS; TEST PILES; AND PILE POINTS, except that measurement for FURNISHING STEEL PILES and TEST PILES will be made in meters, and payment will be made at the Contract unit price per meter.

#### ISTHA – BRIDGE EXPANSION JOINT CLOSURES

Description: This work item shall conform to ISTHA Standard Specification Section 525 for BRIDGE EXPANSION JOINT CLOSURE for the type and size shown, except that measurement will be made in meters, and payment will be made at the Contract unit price per meter.

#### ISTHA – SCUPPER

Description: This work item shall conform to the Drainage Scupper, DS-11 requirements of the Illinois Department of Transportation Standard Specifications.

#### ISTHA – BEARINGS

Description: This work item shall include placement of the elastomeric bearings, side retainers, shims, attachment bolts, structural steel bearings plates, TFE sheets, stainless steel sheets, and other component parts as specified and shall conform to the ISTHA Standard Specification Section 518 except that payment will be made at the Contract unit price per each for ERECTING ELASTOMERIC BEARING for the size, shape and type specified in the Plans. Furnishing and placement of the anchor bolts will be paid at the Contract unit price per kilogram for FURNISHING AND ERECTING STRUCTURAL STEEL (MISCELLANEOUS).

#### ISTHA – APPLY CONCRETE SEALANT

Description: This work item shall conform to ISTHA Standard Specification Section 524 for APPLY CONCRETE SEALANT, except that measurement will be made in square meters, and payment will be made at the Contract unit price per square meter.

#### ISTHA – RIPRAP, HAND LAID

Description: This work shall conform to Stone Riprap, Class A4 requirements of the Illinois Department of Transportation Standard Specifications.

#### **ISTHA – BRIDGE APPROACH SLAB**

Description: This work item shall conform to ISTHA Standard Specification Section 526 for BRIDGE APPROACH SLAB, except that measurement will be made in square meters, and payment will be made at the Contract unit price per square meter.

#### ISTHA – GEOCOMPOSITE WALL DRAIN

Description: This work item shall conform to ISTHA Standard Specification Section 539 for GEOCOMPOSITE WALL DRAIN, except that measurement will be made in square meters, and payment will be made at the Contract unit price per square meter.

#### ISTHA – REINFORCED CONCRETE PIPE

Description: This work item shall conform to ISTHA Standard Specification Section 601 for REINFORCED CONCRETE PIPE of the diameter specified, except that measurement will be made in meters, and payment will be made at the Contract unit price per meter. Joints shall be sealed with preformed flexible gaskets. Mastic joint sealer will not be allowed.

#### ISTHA –CONCRETE PIPE END SECTIONS

**Description:** This work item shall conform to ISTHA Standard Specification Section 601 for CONCRETE PIPE END SECTIONS of the diameter specified.

#### ISTHA – COARSE AGGREGATE BACKFILL

**Description:** This work shall conform to ISTHA Standard Specification Section 601 for COARSE AGGREGATE BACKFILL, except that measurement will be made in cubic meters, and payment will be made at the Contract unit price per cubic meter.

#### ISTHA – SUBSURFACE DRAINS

**Description:** This work shall conform to ISTHA Standard Specification Section 607 for SUBSURFACE PAVEMENT DRAIN (FILTER FABRIC) (6”), except that the pay item name will be SUBSURFACE PAVEMENT DRAIN (FILTER FABRIC) (150mm), measurement will be made in meters, and payment will be made at the Contract unit price per meter.

#### ISTHA – STRUCTURES FOR PIPE DRAINAGE SYSTEMS

**Description:** This work shall conform to ISTHA Standard Specification Section 610 for MANHOLE, TYPE 1, 4FT; CATCH BASIN, TYPE B; and CATCH BASIN, TYPE G-2.

#### ISTHA – RAISED PAVEMENT LANE MARKERS

**Description:** This work item shall conform to ISTHA Standard Specification Section 805 for RAISED PAVEMENT LANE MARKER, and Section 805A for RAISED PAVEMENT LANE MARKER, BRIDGE.

#### ISTHA – GUARDRAIL ANCHOR INSTALLATION TYPE 3

**Description:** This work item shall conform to ISTHA Standard Specification Section 701 for STEEL PLATE BEAM GUARDRAIL. GUARDRAIL ANCHOR INSTALLATION of the type specified and shown in the plans, will be measured per each unit.

#### ISTHA – GUARDRAIL ANCHOR INSTALLATION TYPE 4

Description: This work item shall conform to ISTHA Standard Specification Section 701 for STEEL PLATE BEAM GUARDRAIL. GUARDRAIL ANCHOR INSTALLATION of the type specified and shown in the plans, will be measured per each unit.

#### ISTHA – ROADWAY DELINEATOR

Description: This work item shall conform to ISTHA Standard Specification Section 820 for ROADWAY DELINEATOR.

#### ISTHA - VEHICULAR GATE

Description: This work shall conform to ISTHA Standard Specification Section 817 for SINGLE VEHICULAR GATE, RIGHT-OF-WAY FENCE, TYPE 1. In addition, the contract unit price for SINGLE VEHICULAR GATE, RIGHT-OF-WAY FENCE, TYPE 1 shall also include the provision of locking equipment.

#### ISTHA – RIGHT OF WAY FENCE

Description: This work shall conform to ISTHA Standard Specification Section 817 for RIGHT-OF-WAY FENCE, TYPE 1 except that measurement will be made in linear meters, and payment will be made at the Contract unit price per linear meter.

#### ISTHA – RIGHT-OF-WAY FENCE POSTS

Description: This work item shall conform to ISTHA Standard Specification Section 817 for CORNER POST, RIGHT-OF-WAY FENCE, TYPE 1; PULL POST, RIGHT-OF-WAY FENCE, TYPE 1; END POST, RIGHT-OF-WAY FENCE, TYPE 1; and END POST AT STRUCTURE, RIGHT-OF-WAY FENCE, TYPE 1.

#### ISTHA – RIGHT-OF-WAY FENCE REMOVAL

Description: This work item shall conform to ISTHA Standard Specification Section 818 for RIGHT-OF-WAY FENCE REMOVAL, except that measurement will be made in linear meters, and payment will be made at the Contract unit price per linear meter.

## ISTHA – EPOXY PAVEMENT MARKING LINES

Description: This work item shall conform to ISTHA Standard Specification Section 822 for EPOXY PAVEMENT MARKING, LINE (4 in.), except that the pay item name will be EPOXY PAVEMENT MARKING, LINE (100mm), measurement will be made in meters, and payment will be made at the Contract unit price per meter.

STORM WATER POLLUTION PREVENTION PLAN  
See following page



### Storm Water Pollution Prevention Plan

Route FAI 80/94 and IL 394 Marked I-80/94, Bishop Ford Expressway and Kingery Expressway  
Section See individual contract Project No. \_\_\_\_\_  
County Cook, IL and Lake, IN

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.

John P. Kuhl  
Signature  
District Eng  
Title

12-20-02  
Date

#### 1 Site Description

- a. The following is a description of the construction activity which is the subject of this plan (use additional pages, as necessary):

The project is located at I-80/94 from I-294 (Tri- State Tollway) to US 41.

#### Construction Descriptions

Interstate 80 will be reconstructed from approximately 1000 m west of IL 394 to US 41. In addition, Interstate 94 will be reconstructed from 159<sup>th</sup> Street to Interstate 80 and IL 394 will be reconstructed from its terminus at Interstate 94 to 1600 m south of Thornton-Lansing Road. The project also includes the reconstruction of Thornton-Lansing Road for approximately 350 m east and west of IL 394; Dorchester Avenue from Thornton-Lansing Road to approximately 700 m south of Thornton-Lansing Road; IL 83 (Torrence Avenue) from 335 m north of I-80 to 558 m south of I-80; 176<sup>th</sup> Place from 217 m west of IL 83 to IL 83; 170<sup>th</sup> Street from 290 m west of I-94 to 295 m east of I-94; Van Dam Road from 170<sup>th</sup> Street to 110 m north of 170<sup>th</sup> Street and from 384 m south of 159<sup>th</sup> Street to 183 m south of 159<sup>th</sup> Street; Bernice Avenue from IL 83 to Wentworth Avenue, net length 1918 m; 175<sup>th</sup> Street from IL 83 to Wentworth Avenue, net length 1988 m; Wentworth Avenue from 400 m south of I-80 to 630 m north of I-80, and portions of 175<sup>th</sup> Street between Paxton Avenue and IL 83, net length 333 m.

The proposed improvements will consist of four through lanes in each direction along Interstate 80/94 within the reconstruction limits. Auxiliary lanes are also utilized between all of the interchanges within the project limits. In addition, C-D roads have been incorporated for both the I-80 and I-94 traffic movements. The IL 83 interchange will be reconfigured from a cloverleaf to a Single Point Urban Interchange (SPUI). The I-80 and I-

94 interchange will be reconfigured as well, with the east to north and west to south movements at the I-80/94 IL 394 loop ramps being removed and replaced with semi directional ramps (flyovers).

All mainline structures and overhead structures (IL 83, Wentworth Avenue, 170<sup>th</sup> Street and Thornton-Lansing Road) will be reconstructed. Some mainline structures will be realigned to accommodate the interchange reconfigurations. In addition, several retaining walls will be constructed along the mainline roadways and cross streets.

All interstate, including IL 394, and ramp pavements will be replaced with either continuously reinforced concrete pavement or jointed concrete pavement. IL 83, 170<sup>th</sup> Street, Burnham Avenue, and Wentworth Avenue pavements will be replaced with jointed concrete pavement. Existing pavements on 175<sup>th</sup> Street, Bernice Avenue, Thornton-Lansing, Dorchester Avenue, Van Dam Road and 176<sup>th</sup> Place will be replaced with bituminous pavements.

Drainage inlets will be placed along the median of the Interstates and IL 83 and storm water runoff will be conveyed through proposed sewers to outlets at existing locations per the Location Drainage Plan. New detention areas will be provided in the location of the existing loop ramps at IL 83. Existing drainage culverts that cross I-80 will be replaced. Pump Stations 1 and 6 will be removed at the completion of the improvements. Roadside ditches along I-94, IL 394 and ramps will be improved.

Other work includes construction of a noise abatement walls along both sides of I-80 from IL 83 to US 41 (with omissions) and along I-94 from Thorn Creek to 159<sup>th</sup> Street, installation of high mast tower lighting, sign structure installations, pavement striping restoration and all necessary and related road work.

#### Environmental Descriptions

West of the I-94/IL 394 interchange are sensitive ecological areas and commitments have been made to protect them. These areas include the Thorn Creek Forest Preserve, Volbrecht Woods, Wampum Lake Seepage INAI sites, and sand flatwood communities. All required protection devices, activities, and training must be completed before any work may begin.

Entry is not permitted under any circumstances in these forest preserve areas. This includes all construction traffic, foot and motorized, to enter this forest preserve. Perimeter fencing and no-intrusion signage will be erected. These protection devices are listed in the Erosion Control Plan.

The required plant species sensitivity training session is further explained in the Special Provisions.

Existing ground water levels must be maintained to protect existing pharmacological communities. New drainage swales are to be dug so they do not intersect with ground water levels. Rubber gasket sealed storm sewers and anti-seep collars are among the devices utilized.

Compaction must also be minimized in this western location outside of the embankment area. The Contractor will use low ground weight vehicles or matting to reduce rutting. The Contractor will also be responsible to rework the topsoil to remove any unnatural compaction that occurred.

IDOT will work with the FPDCC to develop a maintenance and restoration plan. Reseeding west of this interchange will be done with native prairie mixes that supplement the adjacent areas and any tree replacement within the preserve will be coordinated with the FPDCC. More specific information is included in the plans.



- 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 (use additional pages, as necessary):

The project has been scheduled to be built in three phases (first phase advanced work, second phase mainline first year, and second phase mainline second year). During each phase multiple contracts will be awarded. Each of these contracts have multiple stages.

Phase I Contracts: 62103, 62109, 62112, 62348, 62350, 62351, 62352, 62353, 62422, 62518

Phase I-Stages 1 and 2

- Resurface of IL 394 and replacement of shoulders.
- Placement of new embankment for I-94 EB from IL 394 to merge with I-80.
- Construction of new pavement on new alignment for I-94 EB from IL 394 to merge with I-80.
- Construction of new ramp bridge from I-80/294 EB to IL 394 NB and widening of I-294 to accommodate the ramp exit.
- Construction of new IL 394 NB bridge over Thorn Creek.
- Construction of new Thornton-Lansing Road bridge over IL 394 and associated roadway work on Dorchester Avenue.
- Construction of new 170<sup>th</sup> Street bridge over I-94 and associated roadway work on Prince Drive and Van Dam Road.
- Reconstruction of the northbound lanes of IL 83 (Torrence Avenue), new ramps on east side of I-80/IL 83 interchange and temporary ramp pavement at I-80.
- Begin construction of both Bernice Avenue and 175<sup>th</sup> Street from IL 83 to Wentworth Avenue and portions of 175<sup>th</sup> Street between Paxton Avenue IL 83. Construction includes retaining walls and street relocation.
- Begin construction of Wentworth Avenue.

Phase I-Stage 3

- Finish construction at locations discussed in Phase I-Stages 1 and 2.
- Switch traffic on IL 83 to northbound lanes and construct southbound lanes and new drainage system.
- Construct ramps on west side of I-80/IL 83 interchange.
- Complete all work necessary for start of Phase II.

Phase II Contracts: 62104, 62107, 62109, 62110, 62113, 62350

Phase II-Stage 1

- Placement of embankment and pavement for widening of I-80/294 from Thorn Creek to the bridge over the Grand Trunk Railroad.
- Placement of embankment and pavement for IL 394 NB.
- Construction of IL 394 Northbound bridge over I-80.
- Placement of embankment and pavement for I-94 Westbound.
- Construction of bridge for I-94 westbound over Thorn Creek.
- Placement of embankment and pavement for a small segment of IL 394 southbound over Grand Trunk Railroad.
- Construction of the outer lanes of the bridge IL 394 southbound over Canadian National Railroad.
- Placement of embankment and pavement for Ramp H, IL 394 northbound to I-80 westbound.
- Placement of embankment and pavement for connector ramp from IL 394 northbound to I-80 east bound.
- Construction of collector-distributor roadway west of IL 83.

Phase II-Stages 2 thru 6

- Continue construction at locations discussed in Phase II-Stage 1 with sub-stages used

to complete the work necessary for the start of Phase III.

Phase III Contracts: 62105, 62108, 62111, 62114

Phase III-Stage 1

- Placement of embankment and pavement for I-94 EB.
- Placement of embankment and pavement for IL 394 SB.
- Construction of IL 394 Southbound bridge over I-80.
- Placement of embankment and pavement for I-94 Eastbound.
- Construction of bridge for I-94 Eastbound over Thorn Creek.
- Construction of the remaining portion of the bridge IL 394 southbound over Canadian National Railroad.
- Placement of embankment and pavement for Ramp F, IL 394 southbound to I-80 westbound.
- Construction of I-80 eastbound lanes from Burnham Avenue to Illinois State Line.
- Construction of I-80 westbound lanes from I-294 to approximately the exit to I-94 WB.

Phase III-Stage 2

- Begin reconstruction of Burnham Road from Bernice Road to south of I-80/94.
- Construction of I-80 westbound lanes from approximately the exit to I-94 WB to US 41.
- Construction of I-80 Eastbound lanes near Railroad Avenue.
- Continue construction at locations discussed in Phase III-Stage 1 with sub-stages used to complete the work.

Post Mainline Construction

- Final landscaping.
- Bridge painting.

- c. The total area of the construction site is estimated to be 371 acres (150 HA).  
The total area of the site that it is estimated will be disturbed by excavation, grading or other activities is acres 371 (150 HA): Phase I, 134 ac (54 ha); Phase II, 142 ac (57 ha); Phase III, 95 ac (39 ha).

- 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 areal extent of wetland acreage at the site are in the design/project report or plan documents, which are incorporated by reference as a part of this plan.

Thorn creek will accept storm water runoff on the western half of the project, and the Little Calumet will accept run off on the eastern half of the project.

- g. During major storm events, some locations within the work zone may become saturated. These saturated areas may be expected near Thorn Creek, I-80 over the Canadian National Railroad eastern abatement, Ramp F, Ramp E, I-94 WB near Thorn Creek, and the areas near culverts. In addition, the project impacts several wetlands and these areas would also be expected to be saturated as a result of a major storm event. Care has been taken to prepare the Erosion Control Plan to limit erosion and the ponding of water in the work zone.

## 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

- (i) 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.(i).(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 (use additional pages, as necessary):

1. Temporary Erosion Control Seeding shall be applied in accordance with the Special Provision. Seed mixture will depend on the time of year it is applied. Oats will be applied from January 1 to July 31 and Hard Red Winter Wheat from August 1 to December 31.
2. Short Term Seeding — Seeding Class 2A shall be used to protect bare earth from more than just one or two summer-winter cycles. Due to the length and complexity of this project, it is necessary that short term, final graded slopes be short term seeded as directed by the Engineer.

3. Stone Riprap — Class A4 stone riprap with filter fabric will be used as protection at the discharge end of most storm sewer and culvert end sections to prevent scouring at the end of pipes and to prevent downstream erosion.
4. Temporary Tree Protection — Shall consist of items “temporary fencing” and “tree trunk protection” as directed by the engineer and in accordance with Article 201.05 of the Illinois Department of Transportation’s Standard Specifications for Road and Bridge Construction.
5. Permanent Stabilization — All areas disturbed by construction will be stabilized as soon as permitted with permanent seeding following the finished grading, but always within seven days with Temporary Erosion Control Seeding. Erosion Blankets will be installed over fill slopes, which have been brought to final grade and have been seeded to protect the slopes from rill and gully erosion and allow seeds to germinate properly.
6. Erosion Control Blankets and Mulching — Erosion control blankets will be installed over fill slopes and in high velocity areas that have been brought to final grade and seeded to protect slopes from erosion and allow seeds to germinate. Mulch will be applied in relatively flat areas to prevent further erosion.

- (ii) **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 (use additional pages, as necessary):

1. Sediment Control, Stabilized Construction Access – Coarse aggregate overlaying a geotextile fabric will be placed in locations necessary for contractor access. The aggregate surface of the access points will capture soil debris, reducing the amount of soil deposits placed on to the roadway by vehicles leaving the work zones.
2. Inlet Filters – Inlet and Pipe Protection will be provided for storm sewers. These filters will be placed in every inlet, catch basin or manhole with an open lid, which will drain water during at least a 10-year storm event. The Erosion Control Plan will identify the structures requiring Inlet filters.
3. Sediment Control, Silt Fence— A silt fence will be placed adjacent to the areas of construction to intercept waterborne silt and prevent it from leaving the site. These areas are marked on the erosion control plans in each contract.
4. Sediment Control, Temporary Ditch Checks — Rolled excelsior ditch checks will be placed in swales at the rate of one for every 0.3 meters in vertical drop, or as directed by the Engineer, in order to prevent downstream erosion.
5. Sediment Control, Temporary Stream Crossing -- Coarse aggregate overlaying a geotextile fabric will be placed in locations necessary for contractor access over water channels. The aggregate surface of the crossing will reduce the amount of soil disturbance in the streams.
6. Sediment Control, Temporary Pipe Slope Drain – This item consists of a pipe with flared end sections, placed daily, along with anchor devices in conjunction with temporary berms that direct runoff down an unstabilized slope.
7. Sediment Control, Dewatering Basins will be provided at wherever the contractor is removing and discharging water from excavated areas and the water is not being routed through a sediment trap or basin.
8. Stone riprap will be provided at several storm and culvert outlets as a measure for erosion and sediment control where needed during and after the project.
9. Bridges will be designed to reduce the potential for scouring.
10. Underdrains will be used to minimize potential erosion caused by surface water flows by reducing the subsurface water which can cause failed pavements, unstable shoulders and other disturbed areas.
11. Covers will be placed on open ends of pipes in trenches.

The structural practices indicated above may not be used in every contract. The Erosion Control Plans included in every contract will indicate which structural practices are required for that contract.

**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.

- (i) 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.**
- (ii) 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).
- (iii) The Department proposes to remove vegetation within the project limits as necessary for construction. The Department proposes to revegetate these areas with salt tolerant turf grass near the roadway and the majority of ground cover consisting of native prairie grasses and wildflowers. Areas that require tree removal will be reforested.

Approximately 1,772 trees exist on Forest Preserve property that are proposed for removal. The Forest Preserve accounted for tree trunk cross sectional area, species, location, and condition to evaluate these trees. The Department has agreed to replace all 1,772 trees on a 1 to 1 basis. The replacement trees will only be worth 57% of the original trees, requiring the Department to reimburse the FPDCC for the remaining 43% to fulfill the Department's mitigation responsibility. During this process, 4.0 acres of Forest Preserve property will be exposed, with the Department reforesting the 4.0 acres according to our planting policies, leaving the FPDCC the potential to restore 3.0 more acres.

- (iv) Articulated Block Mats are being utilized for this project to control erosion underneath bridge decks adjacent to streams and wet areas. These articulated block mats will be installed early in the project, providing construction crews with stabilized work pads, and will be left in place, giving bridge inspectors and highway maintainers suitable, and non-damaging means to perform necessary maintenance.

**Note:**

1. Ponded water areas with wetland type vegetation will be created for this project for water quality only, and not detention or habitat. Only the first flush of runoff will be detained.
2. It is not anticipated that any channels will be relocated as part of this project, however, if a need arises, a riffle pool will be used to accommodate the relocation.
3. When possible, the flow in detention basins will be offset, not linear.
4. Care will be taken to only use fertilizer nutrients on final seeding items when nutrients are incorporated into the soil during seedbed preparation.

Description of Storm Water Management Controls (use additional pages, as necessary):

1. Detention ponds on the southwest and northwest quadrants of the IL 83 and I-94/CD road interchange will provide additional storm water detention.
2. Proposed oversized pipe at Outlet 22 will provide additional storm water detention.
3. Lengths of ditches will be maximized in order to aid in pollutant filtering along with the over sizing of storm sewers and ditches.
4. Pump Stations #1 and #6 will be removed as a result of this project. The removal of these pump stations will reduce the velocity of release water at the discharge points. The reduction in velocity of the water will reduce the potential for erosion.
5. Permanent measures for storm water management controls will be placed as soon as possible during construction.
  - a. All ditches will be vegetated, where feasible, which will provide a buffering effect for run off contaminates.
  - b. Ditches should receive permanent seeding after the final grading and topsoil have been placed.
  - c. In turf areas where low maintenance seeding is required, native prairie grasses should be used in the final landscaping design.
  - d. Wet bottom ditches will be employed before outfalls. The ditches will be oversized to contribute to detention, where feasible. If wet bottom ditches are not feasible, the ditches will be lined with riprap.
6. Sediment traps located outside the final clear zone and below the elevation of the roadway subgrade will be left in place at the completion of the project.

**c. Other Controls**

- (i) Waste Disposal. No solid materials, including building materials, shall be discharged into Waters of the State, except as authorized by a Section 404 permit.
- (ii) 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: See Erosion Control and Landscaping Plan.

### **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 (use additional pages, as necessary):

Construction equipment shall be stored and fueled only at designated locations. All necessary measures shall be taken to contain any fuel or pollution runoff in compliance with environmental law and EPA Water Quality Regulations. Leaking equipment or supplies shall be immediately repaired or removed from the site. The construction field engineer on a weekly basis shall inspect the project to determine that erosion controls efforts are in place and effective and if other control is necessary. Sediment collected during construction by the various temporary erosion systems shall be disposed on the site on a regular basis as directed by the Engineer.

All erosion and sediment control measures will be checked weekly and after each significant rainfall (13 mm (0.5 inch) or greater in a 24 hour period). The following items will be checked:

1. Seeding – all erodable bare earth areas will be temporarily seeded and inspected on a weekly basis to minimize the amount of erodable surface within the contract limits.
2. Silt Filter Fence, all types
3. Erosion Control Blanket
4. Tree Protection
5. Ditch Checks
6. Temporary slope drains
7. Sediment/dewatering basins
8. Stabilized construction entrances

All maintenance of the erosion control systems will be the responsibility of the contractor. All locations where vehicles enter and exit the construction site and all other areas subject to erosion should also be inspected periodically. Inspection of these areas shall be made at least once every seven days and within 24 hours of the end of each 13 mm (0.5 inch) or greater rainfall, or an equivalent snowfall.

#### 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 is 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. (Use additional pages as necessary to describe non-storm water discharges and applicable pollution control measures).

Dewatering activities for footing and pier construction of retaining walls and bridges will be a source of non-storm water discharge during construction. Contractors should discharge dewatering activities to a temporary settling basing surrounded by silt fence.

The cutting of joints in PCC pavements or bridge deck grooving will result in slurry. This slurry must be contained on the deck/pavement and cleaned up.



RAILROAD PROTECTIVE LIABILITY INSURANCE  
See following page

**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.

GTW/CN RR under I-80/294

<u>NAMED INSURED &amp; ADDRESS</u>	<u>NUMBER &amp; SPEED OF PASSENGER TRAINS</u>	<u>NUMBER &amp; SPEED OF FREIGHT TRAINS</u>
Grand Trunk Western/ Canadian National Railroad 17642 S. Ashland Avenue. Homewood, IL 60430	0	19 trains/day @60 MPH

FOR FREIGHT/PASSENGER INFORMATION CONTACT: Tom Zeinz PHONE: 708-206-3557

FOR INSURANCE INFORMATION CONTACT: Tom Zeinz PHONE: 708-206-3557

FOR FREIGHT/PASSENGER INFORMATION CONTACT: \_\_\_\_\_ PHONE: \_\_\_\_\_

FOR INSURANCE INFORMATION CONTACT: \_\_\_\_\_ PHONE: \_\_\_\_\_

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). The Contractor shall also provide the Resident Engineer with expiration date of each required policy.

404 PERMIT  
See following page



**DEPARTMENT OF THE ARMY**  
CHICAGO DISTRICT, CORPS OF ENGINEERS  
111 NORTH CANAL STREET  
CHICAGO, ILLINOIS 60606-7206

REPLY TO  
ATTENTION OF

OCT 27 2004

Technical Services Division  
Regulatory Branch  
200400584

SUBJECT: Reconstruction of Northbound IL 394 over Thorn Creek  
for the I-80/94 / IL 394 Interchange in South Holland, Cook  
County, IL

Diane M. O'Keefe  
Illinois Department of Transportation  
District Engineer  
201 West Center Court  
Schaumburg, Illinois 60196-1096

RECEIVED  
NOV 05 2004  
DIST. ONE - DESIGN

Dear Ms. O'Keefe:

The U.S. Army Corps of Engineers has authorized the above-referenced project under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899, as described in your notification and as shown plans titled F.A.I Route 80/94. Enclosed is your copy of the executed permit which becomes effective on the date of this letter.

This determination covers only your project as described above. If the design, location, or purpose of the project is changed, you should contact this office to determine the need for further authorization. If it is anticipated that the activity as described cannot be completed within the time limits of the authorization, you must submit a request for a time extension to this office at least thirty (30) calendar days prior to the expiration date of your permit. Failure to do so will result in the District's re-evaluation of your project, which may include the issuance of a public notice.

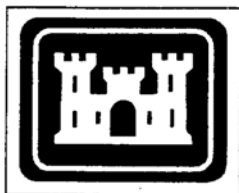
Once you have completed your project, please sign and return the enclosed compliance certification. If you have any questions, contact Ron Abrant of the Regulatory Branch at (312) 846-5536 or email ron.j.abrant@usace.army.mil.

Sincerely,

A handwritten signature in black ink, appearing to read "Mitchell A. Isoe".

Mitchell A. Isoe  
Chief, Regulatory Branch

Enclosure



PERMIT COMPLIANCE  
CERTIFICATION

Permit Number: 200400584

Permittee: Illinois Department of Transportation

Date of Issuance: 27 Oct 2004

I hereby certify that the work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of said permit and that compensatory wetland mitigation was completed in accordance with the approved mitigation plan.<sup>1</sup>

\_\_\_\_\_  
PERMITTEE

\_\_\_\_\_  
DATE

Upon completion of the activity authorized by this permit and any mitigation required by the permit, this certification must be signed and returned to the following address:

U.S. Army Corps of Engineers  
Chicago District, Regulatory Branch  
111 North Canal Street, Suite 600  
Chicago, Illinois 60606-7206

Please note that your permitted activity is subject to compliance inspections by Corps of Engineers representatives. If you fail to comply with this permit, you may be subject to permit suspension, modification, or revocation.

<sup>1</sup> If compensatory mitigation was required as part of your authorization, you are certifying that the mitigation area has been graded and planted in accordance with the approved plan. You are acknowledging that the maintenance and monitoring period will begin after a site inspection by a Corps of Engineers representative or after thirty days of the Corps' receipt of this certification. You agree to comply with all permit terms and conditions, including additional reporting requirements, for the duration of the maintenance and monitoring period.



DEPARTMENT OF THE ARMY

PERMIT

**Permittee:** Illinois Department of Transportation  
**Application No.:** 200400584  
**Issuing Office:** CHICAGO DISTRICT, U.S. ARMY CORPS OF ENGINEERS

**DEFINITIONS:** The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform the work in accordance with the terms and conditions specified below.

**Project Description:** Reconstruction of Northbound IL 394 over Thorn Creek for the I-80/94 / IL 394 Interchange in South Holland, Cook County, IL, as described in your notification and plans titled F.A.I Route 80/94.

**Project Location:** In wetlands along Thorn Creek in South Holland, Cook County, Illinois (NE Quarter of Section 26, Township 36 North, Range 14 East, 3rd P.M.)

**Permit Conditions:**

**General Conditions**

1. The time limit for completing the authorized work ends on December 31, 2007. If you find that you need more time to complete the authorized activity(s), submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you

abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archaeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being accomplished in accordance with the terms and conditions of your permit.

#### **Special Conditions**

1. This permit is based on all material submitted as part of application number 200400584. You must comply with all applicable regulations in carrying out this project. Failure to comply with the terms and conditions of this permit may result in suspension and revocation of your permit.

2. You shall undertake and complete the project as described in your notification and plans titled F.A.I Route 80/94 including all relevant documentation to the project plans as proposed.

3. You shall comply with the water quality certification issued under Section 401 of the Clean Water Act by the Illinois Environmental Protection Agency for the project. Conditions of the certification are conditions of this authorization.

4. Throughout the project's duration, you shall adhere to all soil erosion and sediment control plans as recommended by the Will-South Cook Soil and Water Conservation District (SWCD).
5. You are responsible for all work authorized herein and for ensuring that all contractors are aware of the terms and conditions of this authorization. A copy of this authorization must be present at the project site during all phases of construction.
6. You shall notify this office of any proposed modifications to the project, including revisions to any of the plans or documents cited in this authorization. You must receive approval from this office before work affected by the proposed modification is performed.
7. You shall notify this office prior to the transfer of this authorization and liabilities associated with compliance with its terms and conditions. The transferee must sign the authorization in the space provided and forward a copy of the authorization to this office.
8. The permittee understands and agrees that, if future operations by the United States require removal, relocation, or other alteration of the structure or work authorized herein, or if, in the opinion of the Secretary of the Army or his authorized representative said structure or work shall cause unreasonable obstruction to the free navigation of the navigable water, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

**Further Information:**

1. Congressional Authorities. You have been authorized to undertake the activity described above pursuant to:
  - (X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
  - (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
  - ( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).



2. Limits of this Authorization.

a. This permit does not obviate the need to obtain other federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. The Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on the behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modifications, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in the reliance on the information you provided.

5. Reevaluation of Permit Decision. The office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General Condition 1 established a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as a permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Diane O'Keefe  
PERMITTEE  
Diane M. O'Keefe  
Illinois Department of Transportation  
District Engineer  
201 West Center Court  
Schaumburg, Illinois 60196-1096

10-26-07  
DATE

This authorization becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Michael J. Johnston  
FOR AND ON BEHALF OF  
Gary E. Johnston  
Colonel, U.S. Army  
District Engineer

270-009  
DATE

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

\_\_\_\_\_  
TRANSFEEEE

\_\_\_\_\_  
DATE

\_\_\_\_\_  
ADDRESS

\_\_\_\_\_  
TELEPHONE



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276, 217-782-3397  
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601, 312-814-6026

217/782-3362

ROD R. BLAGOJEVICH, GOVERNOR

RENEE CIPRIANO, DIRECTOR

JUL 27 2004

Chicago District  
Corps of Engineers  
111 North Canal Street, 6th Floor  
Chicago, IL 60606

Re: Illinois Department of Transportation, District 1 (Cook County)  
Interstate 80/94/394 interchange reconstruction – Thorn Creek and Unnamed Wetlands  
Log # C-0378-03 [CoE appl. # 200400584]

Gentlemen:

This Agency received a request on April 3, 2003 from IDOT District 1 requesting necessary comments concerning the proposed reconstruction of the Interstate 80/94/394 interchange including the construction of three bridges over Thorn Creek and roadway improvements that will impact 2.17-acre of wetland. We offer the following comments.

Based on the information included in this submittal, it is our engineering judgment that the proposed project may be completed without causing water pollution as defined in the Illinois Environmental Protection Act, provided the project is carefully planned and supervised.

These comments are directed at the effect on water quality of the construction procedures involved in the above described project and are not an approval of any discharge resulting from the completed facility, nor an approval of the design of the facility. These comments do not supplant any permit responsibilities of the applicant toward the Agency.

This Agency hereby issues certification under Section 401 of the Clean Water Act (PL 95-217), subject to the applicant's compliance with the following conditions:

1. The applicant shall not cause:
  - a. violation of applicable water quality standards of the Illinois Pollution Control Board, Title 35, Subtitle C: Water Pollution Rules and Regulations;
  - b. water pollution defined and prohibited by the Illinois Environmental Protection Act; or
  - c. interference with water use practices near public recreation areas or water supply intakes.
2. The applicant shall provide adequate planning and supervision during the project construction period for implementing construction methods, processes and cleanup procedures necessary to prevent water pollution and control erosion.

Page No. 2  
Log No. C-0378-03

3. Any spoil material excavated, dredged or otherwise produced must not be returned to the waterway but must be deposited in a self-contained area in compliance with all state statues, regulations and permit requirements with no discharge to waters of the State unless a permit has been issued by this Agency. Any backfilling must be done with clean material and placed in a manner to prevent violation of applicable water quality standards.
4. All areas affected by construction shall be mulched and seeded as soon after construction as possible. The applicant shall undertake necessary measures and procedures to reduce erosion during construction. Interim measures to prevent erosion during construction shall be taken and may include the installation of staked straw bales, sedimentation basins and temporary mulching. All construction within the waterway shall be constructed during zero or low flow conditions. The applicant shall be responsible for obtaining an NPDES Storm Water Permit prior to initiating construction if the construction activity associated with the project will result in the disturbance of 1 (one) or more acres, total land area on or after March 10, 2003. An NPDES Storm Water Permit may be obtained by submitting a properly completed Notice of Intent (NOI) form by certified mail to the Agency's Division of Water Pollution Control, Permit Section.
5. The applicant shall implement erosion control measures consistent with the "Illinois Urban Manual" (IEPA/USDA, NRCS; 2002).
6. The channel relocation shall be constructed under dry conditions and stabilized to prevent erosion prior to the diversion of flow.
7. The proposed work shall be constructed with adequate erosion control measures (i.e., silt fences, straw bales, etc.) to prevent transport of sediment and materials to the adjoining wetlands and downstream.
8. The fill material used for temporary crossings in waters of the State shall be predominantly sand or larger size material, with <20% passing a #230 U. S. sieve.
9. The wetland mitigation plan received by the Agency on May 3, 2004 shall be implemented. Modification to the wetland mitigation plan must be submitted to the Agency for approval. The permittee shall submit written proof from the wetland mitigation bank that the wetland credits have been purchased within thirty (30) days of said purchase. The subject documents shall be submitted to:

Illinois Environmental Protection Agency  
Bureau of Water  
Watershed Management Section  
1021 North Grand Avenue East  
Post Office Box 19276  
Springfield, Illinois 62794-9276

This certification becomes effective when the Department of the Army, Corps of Engineers, includes the above conditions # 1 through # 9 as conditions of the requested permit issued pursuant to Section 404 of PL 95-217.

This certification replaces the certification issued July 15, 2004 (Log # C-0378-03 [CoE appl. # 200300468]). The CoE appl. # has been revised to # 200400584 for the current phase of the project.



**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  
200400584

OCT 25 2004

SUBJECT: Reconstruction of Northbound IL 394 over Thorn Creek  
for the I-80/94 / IL 394 Interchange in South Holland, Cook  
County, IL

Diane M. O'Keefe  
Illinois Department of Transportation  
District Engineer  
201 West Center Court  
Schaumburg, Illinois 60196-1096

Dear Ms. O'Keefe:

The U.S. Army Corps of Engineers has made a favorable determination on your application for a Department of the Army individual permit.

Two copies of your permit for the above-referenced project are enclosed. If the terms and conditions of the permit are acceptable, please sign both copies on the line above the word "PERMITTEE" and return them to this office. Upon receipt, I will sign both copies and return one to you for your records. You are not authorized to do any work until you receive your signed copy of the permit.

Please review the conditions before signing the permit. Your signature constitutes your specific agreement to the enclosed permit. Failure to meet any of the conditions may result in revocation of your permit. If the copies of the permit with your signature are not returned to this office within thirty (30) days of the date of this letter, your authorization will no longer be valid and the application will be considered withdrawn. If you wish to reinstate your permit request after the thirty (30) day time period, this office reserves the right to reevaluate your project, which may include the reissuance of a public notice.

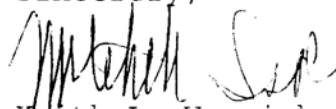
Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and a Request for Appeal (RFA) form. If you wish to appeal this decision, please fill out the RFA form and submit it to the division office listed on the form.

-2-

Under Federal regulations, no fee is required for permits issued to agencies or instrumentalities of Federal, state or local governments.

This permit does not obviate your responsibility to obtain any required state or local approvals for this project. If you have any questions, please contact Ron Abrant of my staff by telephone at (312) 846-5536, or email ron.j.abrant@usace.army.mil

Sincerely,



Keith L. Wozniak  
Chief, West Section  
Regulatory Branch

**MITCHELLA. ISOE**  
Chief, Regulatory Branch

Enclosures



NOTIFICATION OF APPLICANT OPTIONS (NAO)  
FOR PARTIES ISSUED  
A DEPARTMENT OF THE ARMY INDIVIDUAL PERMIT

U.S. ARMY CORPS OF ENGINEERS  
Chicago District

Date: OCT 25 2004

File Number: 200400584

You are hereby advised that the following options are available to you in your evaluation of the enclosed permit:

- 1) You may sign the permit, and return it to the District Engineer for final authorization. Your signature on the permit means that you accept the permit in its entirety, and waive all rights to appeal the permit, or its terms and conditions.
- 2) You may decline to sign the permit because you object to certain terms and conditions therein, and you may request that the permit be modified accordingly. You must outline your objections to the terms and conditions of the permit in a letter to the District Engineer. Your objections must be received by the District Engineer within 60 days of the date of this NAO, or you will forfeit your right to request changes to the terms and conditions of the permit. Upon receipt of your letter, the District Engineer will evaluate your objections, and may: (a) modify the permit to address all of your concerns, or (b) modify the permit to address some of your objections, or (c) not modify the permit, having determined that the permit should be issued as previously written. In any of these three cases, the District Engineer will send you a final permit for your reconsideration, as well a notification of appeal (NAP) form and a request for appeal (RFA) form. Should you decline the final proffered permit, you can appeal the declined permit under the Corps of Engineers Administrative Appeal Process by submitting the completed RFA form to the Division Engineer. The RFA must be received by the Division Engineer within 60 days of the date of the NAP that was transmitted with the second proffered permit.



## **CHAIN LINK FENCE, CHAIN LINK FENCE GATE**

**Description.** This work shall consist of the construction of a chain link fence and gate at the locations and per details shown on the plans, in accordance with the applicable portions of Section 664 Standard Specifications and as directed by the Engineer.

Each gate installed shall be provided with one (1) weather resistant stainless steel padlock and two (2) keys to be provided by the Contractor. The Contractor shall provide the keys to the Engineer once the locks have been placed.

For chain link fences and gates to be installed on top of walls, the Contractor shall provide and install all anchor bolts and hardware necessary to affix the fence and gate to the wall. The Contractor shall also layout the fence and gates to ensure that the posts do not conflict with the expansion joints in the wall.

**Method of Measurement.** The CHAIN LINK FENCE will be measured for payment in meters, along the top of the fence from center to center of end posts, excluding the length of the gate. CHAIN LINK FENCE GATE will be measured for payment per each installed.

**Basis of Payment.** This work will be paid for at the contract unit price per meter for CHAIN LINK FENCE and at the contract unit price each for CHAIN LINK FENCE GATE. The price for the padlocks and keys will be included in the price of the chain link fence gate.

## **DRILLED SHAFTS**

Effective: May 1, 2001

Revised: February 7, 2005

Description. This work shall consist of all labor, materials, equipment and services necessary to complete the drilled shaft installation according to the details and dimensions shown on the plans, this specification and as directed by the Engineer.

Submittals. The Contractor shall submit the following:

- (a) Qualifications. At the time of the preconstruction conference, the Contractor shall provide the following documentation:
- (1) A list containing at least 3 projects completed within the 3 years prior to this project's bid date which the Contractor performing this work has installed drilled shafts of similar diameter, length and site conditions to those shown in the plans. The list of projects shall contain names and phone numbers of owner's representatives who can verify the Contractor's participation on those projects.
  - (2) Name and experience record of the drilled shaft supervisor, responsible for all facets of the shaft installation, and the drill operator(s) who will be assigned to this project. The supervisor and driller shall each have a minimum of 3 years experience in the construction of drilled shafts.

- (3) A signed statement that the drilled shaft supervisor has inspected both the project site and all the subsurface information available. In addition to the subsurface information in the contract documents, rock core specimens and/or geotechnical reports, when available, should be requested for evaluation.
  
- (b) Installation Procedure. A submittal detailing the installation procedure will be required for all drilled shafts, unless directed otherwise by the Engineer. The Contractor, meeting the above qualifications, shall prepare the installation procedure, addressing all items shown below and will be responsible for directing all aspects of the shaft construction. The installation procedure shall be submitted to the Engineer at least 45 days prior to drilled shaft construction and shall address each of the following items:
  - (1) List of proposed equipment to be used including cranes, drill rigs, augers, belling tools, casing, core barrels, bailing buckets, final cleaning equipment, slurry equipment, tremies or concrete pumps, etc.
  - (2) Details of the overall construction operation sequence, equipment access, and the sequence of individual shaft construction within each substructure bent or footing group. The submittal shall address the Contractor's proposed time delay and/or the minimum concrete strength necessary before initiating a shaft excavation adjacent to a recently installed drilled shaft.
  - (3) A step by step description of how the Contractor anticipates the shaft excavation to be advanced based on their evaluation of the subsurface data and conditions expected to be encountered. This sequence shall note the method of casing advancement, anticipated casing lengths, tip elevations and diameters, the excavation tools used and drilled diameters created. The Contractor shall indicate whether wet or dry drilling conditions are expected or if the water table will be sealed from the excavation.
  - (4) When slurry is proposed, details covering the measurement and control of the hardness of the mixing water, agitation, circulation, de-sanding, sampling, testing and chemical properties of the slurry shall be submitted.
  - (5) Method(s) and sequence proposed for the shaft cleaning operation as well as recommendations on how the shaft excavation will be inspected under the installation conditions anticipated.
  - (6) Details of reinforcement placement including cage centralization devices to be used and method to maintain proper elevation and plan location of cage within the shaft excavation during concrete placement. The method(s) of adjusting the cage length if rock is encountered at an elevation other than as estimated in the plans.
  - (7) Details of concrete placement including proposed operational procedures for free fall, tremie or pumping methods. The sequence and method of casing removal shall also be stated along with the top of pour elevation, and method of forming through water above streambed.

- (8) The proposed concrete mix design(s).

The Engineer will evaluate the drilled shaft installation plan and notify the Contractor of acceptance, or if additional information is required, or if there are concerns with the installation's effect on the existing or proposed structure(s).

Materials. The materials used for the construction of the drilled shaft shall satisfy the following requirements:

- (a) The drilled shaft portland cement concrete shall be according to Section 1020, except the mix design shall be as follows:
- (1) A Type I or II cement shall be used at 395 kg/cu m (665 lb/cu yd). When specified in the plans that soil and ground water sulfate contaminates exceed 500 parts per million, a Type V cement shall be required.
  - (2) Class C or F fly ash may replace Type I or II cement. The cement replacement shall not exceed 15 percent by mass (weight) at a minimum replacement ratio of 1.5:1. The fly ash shall not be used in combination with ground granulated blast-furnace slag.
  - (3) Grade 100 or 120 ground granulated blast-furnace slag may replace Type I or II cement. The cement replacement shall not exceed 25 percent by mass (weight) at a minimum replacement ratio of 1:1. The ground granulated blast-furnace slag shall not be used in combination with fly ash.
  - (4) The maximum water/cement ratio shall be 0.44.
  - (5) The mortar factor shall be a value which produces a coarse aggregate content comprising between 55 and 65 percent of total aggregate by mass (weight).
  - (6) The slump at point of placement shall be 175 mm  $\pm$  25 mm (7  $\pm$  1 in.). If concrete is placed to displace drilling fluid, or against temporary casing, the slump shall be 200 mm  $\pm$  25 mm (8  $\pm$  1 in.) at point of placement. The concrete mix shall be designed to remain fluid throughout the anticipated duration of the pour plus 1 hour.
  - (7) An air entraining admixture shall be required and the air content range shall be 4.0 to 7.0 percent.
  - (8) The minimum compressive strength shall be 27,500 kPa (4000 psi) at 14 days. The minimum flexural strength shall be 4,650 kPa (675 psi) at 14 days.
  - (9) A retarding admixture shall be required.
  - (10) A water-reducing or high range water-reducing admixture shall be required.

(11) An accelerating admixture may be used with the permission of the Engineer in extraordinary situations.

(12) The coarse aggregate shall be a CA 13, CA 14, CA 16 or a blend of these gradations. The fine aggregate shall consist of sand only according to Article 1003.01(a).

At the Engineers discretion, and at no additional cost to the Department, the Contractor may be required to conduct a minimum 0.76 cu m (1 cu yd) trial batch to verify the mix design.

(b) The sand-cement grout mix used to fill any visible gaps, which may exist between the permanent casing and either the drilled excavation or temporary casing, shall be as follows:

(1) A Type I or II cement shall be used at 110 kg/cu m (185 lb/cu yd). When specified in the plans that soil and ground water sulfate contaminates exceed 500 parts per million, a Type V cement shall be required. The cement shall be according to Section 1001.

(2) The fine aggregate shall be according to Articles 1003.01 and 1003.02.

(3) The water shall be according to Section 1002.

(4) The maximum water shall be sufficient to provide a flowable mixture with a typical slump of 254 mm (10 in.).

(c) Reinforcement shall be according to Section 508 of the Standard Specifications.

(d) Drilling slurry, when required, shall consist of a polymer or mineral base material. Mineral slurry shall have both a mineral grain size that will remain in suspension with sufficient viscosity and gel characteristics to transport excavated material to a suitable screening system. The percentage and specific gravity of the material used to make the suspension shall be sufficient to maintain the stability of the excavation and to allow proper concrete placement. For polymer slurry, the calcium hardness of the mixing water shall not exceed 100 mg/L.

(e) Permanent casing, when required, shall be fabricated from steel satisfying ASTM A252 Grade 2, produced by electric seam, butt, or spiral welding to satisfy the outside diameter(s) and lengths shown in the contract plans or as shown in the Contractor's installation procedure. The minimum wall thickness shall be as required to resist the anticipated installation and dewatering stresses, as determined by the Contractor, but in no case less than 6 mm (1/4 in.).

Equipment. The drilling equipment shall have adequate capacity, including power, torque and down thrust, to create a shaft excavation of the maximum diameter specified to a depth of 20 percent beyond the depths shown on the plans. Standby equipment of sufficient capacity shall be available so that there will be no delay in placing of the concrete once the operation has started. Concrete equipment shall be according to Article 1020.03 of the Standard Specifications.

Construction Requirements. Excavation for drilled shaft(s) shall not proceed until written authorization is received from the Engineer. The Contractor shall furnish an installation log for each shaft installed. Excavation by blasting shall not be permitted unless authorized in writing by the Engineer.

No shaft excavation shall be made within 4 shaft diameters center to center of a shaft with concrete that has a compressive strength less than 10,342 kPa (1500 psi) unless otherwise approved in the Contractor's installation procedure. The site-specific soil strengths and installation methods selected will determine the actual required minimum spacing, if any, to address vibration and blow out concerns.

Materials removed or generated from the shaft excavations shall be disposed of by the Contractor according to Article 202.03 of the Standard Specifications.

The Contractor's methods and equipment shall be suitable for the anticipated conditions and the following requirements noted below:

- (a) Construction Tolerances. The following construction tolerances shall apply to all drilled shafts unless otherwise stated in the contract documents:
- (1) The center of the drilled shaft shall be within 75 mm (3 in.) of the plan station and offset at the top of the shaft.
  - (2) The center of the reinforcement cage shall be within 38 mm (1 1/2 in.) of plan station and offset at the top of the shaft.
  - (3) The out of vertical plumbness of the shaft shall not exceed 1.5 percent.
  - (4) The out of vertical plumbness of the shaft reinforcement cage shall not exceed 0.83 percent.
  - (5) The top of the reinforcing steel cage shall be no more than 25 mm (1 in.) above and no more than 75 mm (3 in.) below the plan elevation.
  - (6) The top of the shaft shall be no more than 25 mm (1 in.) above and no more than 75 mm (3 in.) below the plan elevation.
  - (7) Excavation equipment and methods used to complete the shaft excavation shall have a nearly planar bottom. The cutting edges of excavation equipment used to create the bottom of shafts in rock shall be normal to the vertical axis of the shaft within a tolerance of 6.25 percent.
- (b) Construction Methods. The construction of drilled shafts may involve the use of one or more of the following methods to support the excavation during the various phases of shaft drilling, cleaning and concrete placement dependent on the site conditions encountered. The following are general descriptions indicating the conditions when these methods may be used:

- (1) Dry Method. The dry method consists of drilling the shaft excavation, removing accumulated water and loose material from the excavation, placing the reinforcing cage, and concrete in a predominately dry excavation. This method shall be used only at sites where the groundwater and soil conditions are suitable to permit the drilling and dewatering of the excavation without causing excessive water infiltration, boiling, squeezing, or caving of the shaft side walls. This method allows the concrete placement by tremie or concrete pumps, or if the excavation can be dewatered, the concrete can be placed by free fall within the limits specified for concrete placement.
- (2) Wet Method. The wet construction method may be used at sites where dewatering the excavation would cause collapse of the shaft sidewalls or when the volume and head of water flowing into the shaft is likely to contaminate the concrete during placement resulting in a shaft defect. This method uses water or slurry to maintain stability of the shaft perimeter while advancing the excavation. After the excavation is completed, the water level in the shaft is allowed to seek equilibrium, the base is cleaned, the reinforcing cage is set and the concrete is discharged at the base using a tremie pipe or concrete pump, displacing the drilling fluid upwards.
- (3) Temporary Casing Method. Temporary casing shall be used when either the wet or dry methods provide inadequate support to prevent sidewall caving or ensure excessive deformation of the hole. Temporary casing may also be used to reduce the flow of water into the excavation to allow dewatering, adequate cleaning and inspection, or to insure proper concrete placement. Temporary casing left in place may constitute a shaft defect; no temporary casing will be allowed to remain permanently in place without the specific approval of the Engineer.

Before the temporary casing is broken loose, the level of concrete in the casing shall be a minimum of 1.5 m (5 ft) above the bottom of the casing. After being broken loose and as the casing is withdrawn, additional concrete shall be added to maintain sufficient head so that water and soil trapped behind the casing can be displaced upward and discharged at the ground surface without contaminating the concrete in the shaft or at the finished construction joint.

- (4) Permanent Casing Method. When called for on the plans or proposed as part of the Contractor's accepted installation procedure, the Contractor shall install a permanent casing of the diameter, length, thickness and strength specified. When permanent casings are used, the lateral loading design requires intimate contact between the casing and the surrounding soils. If the installation procedure used to set the permanent casing results in annular voids between the permanent casing and the drilled excavation, the voids shall be filled with a sand-cement grout to maintain the lateral load capacity of the surrounding soil, as assumed in the design. No permanent casing will be allowed to remain in place beyond the limits shown on the plans without the specific approval of the Engineer.

- (5) Removable Forms. When the shaft extends above streambed through a body of water and permanent casing is not shown, the portion above the streambed shall be formed with removable casings, column forms, or other forming systems as approved by the Engineer. The forming system shall not scar or spall the finished concrete or leave in place any forms or casing within the removable form limits as shown on the plans unless approved as part of the installation procedure. The forming system shall not be removed until the concrete has attained a minimum compressive strength of 17,237 kPa (2500 psi) and cured for a minimum of 72 hours. For shafts extending through water, the concrete shall be protected from water action after placement for a minimum of 7 days.
- (c) Slurry. If the Contractor proposes to use a method of slurry construction, it shall be submitted with the installation plan. During construction, the level of the slurry shall be maintained at a height sufficient to prevent caving of the hole. In the event of a sudden or significant loss of slurry to the hole, the construction of that foundation shall be stopped and the shaft excavation backfilled or supported by temporary casing, until a method to stop slurry loss, or an alternate construction procedure has been approved by the Engineer.
- (d) Obstructions. Obstructions shall be defined as any object (such as but not limited to, boulders, logs, old foundations etc.) that cannot be removed with normal earth drilling procedures but requires special augers, tooling, core barrels or rock augers to remove the obstruction. When obstructions are encountered, the Contractor shall notify the Engineer and upon concurrence of the Engineer, the Contractor shall begin working to core, break up, push aside, or remove the obstruction. Lost tools or equipment in the excavation as a result of the Contractor's operation shall not be defined as obstructions and shall be removed at the Contractor's expense.
- (e) Top of Rock. The actual top of rock will be defined as the point when material is encountered which can not be drilled with a conventional earth auger and/or underreaming tool, and requires the use of special rock augers, core barrels, air tools, blasting or other methods of hand excavation.
- (f) Sidewall overreaming. Sidewall overreaming shall be required when the sidewall of the hole is determined by the Engineer to have either softened due to the excavation methods, swelled due to delay in concreting, or degraded because of slurry cake buildup. It may also be required to correct a shaft excavation which has been drilled out of tolerance. Overreaming thickness shall be a minimum of 13 mm (1/2 in.). Overreaming may be accomplished with a grooving tool, overreaming bucket or other approved equipment. Any extra concrete needed as a result of the overreaming shall be furnished and installed at the Contractor's expense.
- (g) Excavation Inspection. The Contractor shall be responsible for verification of the dimensions and alignment of each shaft excavation as directed by the Engineer. Unless otherwise specified in the contract documents, the Contractor's cleaning operation shall be adjusted so that a minimum of 50 percent of the base of each shaft shall have less than 13 mm (1/2 in.) of sediment or debris at the time of placement of the concrete. The maximum depth of sediment or any debris at any place on the base of the shaft shall not exceed 38 mm (1 1/2 in.).

Shaft cleanliness will be determined by the Contractor using the methods as submitted in their installation procedure. Visual inspection coupled with the use of a weighted tape may also be used to confirm adequate cleanliness.

- (h) Design Modifications. If the top of rock elevation differs from that shown on the plans by more than 10 percent of the length of the shaft above the rock, the Engineer shall be contacted to determine if any drilled shaft design changes may be required. In addition, if the type of soil or rock encountered is not similar to that shown in the subsurface exploration data, the Contractor may be required to extend the drilled shaft length(s) beyond those specified in the plans. In either case, the Engineer will determine if revisions are necessary and the extent of the modifications required.
- (i) Reinforcement Cage Construction and Placement. The shaft excavation shall be cleaned, inspected and accepted prior to placing the reinforcement cage. The reinforcement cage shall be completely assembled prior to drilling and be ready for adjustment in length as required by the conditions encountered. The cage shall be lifted using multiple point sling straps or other approved methods to avoid cage distortion or stress. Additional cross frame stiffeners may also be required for lifting or to keep the cage in proper position during lifting and concrete placement.

The Contractor shall attach suitable centralizers to keep the cage away from the sides of the shaft excavation and ensure that at no point will the finished shaft have less than the minimum concrete cover(s) shown on the plans. The cage centralizers or other approved non-corrosive spacing devices shall be used at sufficient intervals (near the bottom and at intervals not exceeding 3 m (10 ft) throughout the length of the shaft) to ensure proper cage alignment and clearance for the entire shaft.

If the top of rock encountered is deeper than estimated in the plans, and/or if the conditions differ such that the length of the shaft is increased, additional longitudinal bars shall be either mechanically spliced or lap spliced to the lower end of the cage and confined with either hoop ties or spirals to provide the additional length. If the additional shaft length is less than the lap splice shown, subject to the approval of the Engineer, a mechanical splice may be used in lieu of the lap splice in order to take advantage of or utilize that lap length in the extension of the shaft reinforcement. The Contractor shall have additional reinforcement available or fabricate the cages with additional length as necessary to make the required adjustments in a timely manner as dictated by the encountered conditions. The additional reinforcement may be non-epoxy coated at the option of the Contractor. Any reinforcement fabricated in advance but not incorporated into the installed shaft(s) shall not be paid for but shall remain the property of the Contractor.

- (j) Concrete placement. Concrete work shall be performed according to the applicable portions of Section 503 of the Standard Specifications and as specified herein.

Concrete shall be placed as soon as possible after reinforcing steel is set and secured in proper position. The pour shall be made in a continuous manner from the bottom to the top elevation of the shaft as shown on the contract plan or as approved in the Contractor's



installation procedure. Concrete placement shall continue after the shaft excavation is full and until good quality, uncontaminated concrete is evident at the top of shaft. The elapsed time from the beginning of concrete placement in the shaft to the completion of the placement shall not exceed 2 hours. The Contractor may request a longer placement time provided the concrete mix maintains the minimum slump requirements over the longer placement time as demonstrated by trial mix and slump loss tests. Concrete shall be placed either by free fall, or through a tremie or concrete pump subject to the following conditions:

- (1) The free fall placement shall only be permitted in shafts that can be dewatered to ensure less than 75 mm (3 in.) of standing water exist at the time of placement without causing side wall instability. The maximum height of free fall placement shall not exceed 18.3 m (60 ft). Concrete placed by free fall shall fall directly to the base without contacting either the rebar cage or hole sidewall. Drop chutes may be used to direct concrete to the base during free fall placement.

Drop chutes used to direct placement of free fall concrete shall consist of a smooth tube of either one continuous section or multiple pieces that can be added and removed. Concrete may be placed through either a hopper at the top of the tube or side openings as the drop chute is retrieved during concrete placement. The drop chute shall be supported so that the free fall does not exceed 18.3 m (60 ft) at all times and to ensure the concrete does not strike the rebar cage. If placement cannot be satisfactorily accomplished by free fall in the opinion of the Engineer, the Contractor shall use either tremie or pumping to accomplish the pour.

- (2) Tremies shall consist of a tube of sufficient length, weight, and diameter to discharge the initial concrete at the base of the shaft. The tremie shall be according to Article 503.08 of the Standard Specifications and contain no aluminum parts that may have contact with the concrete. The inside and outside surfaces of the tremie shall be clean and smooth to permit both flow of concrete and unimpeded withdrawal during concrete placement.
- (3) Concrete pumps: Pumps and lines may be used for concrete placement and shall have a minimum 100 mm (4 in.) diameter.

The tremie or pump lines used for wet method concrete placement shall be watertight and not begin discharge until placed within 250 mm (10 in.) of the shaft base. Valves, bottom plates or plugs may be used only when they can be removed from the excavation or be of a material approved by the Engineer that will not cause a defect in the shaft if not removed. The discharge end shall be immersed at least 1.5 m (5 ft) in concrete at all times after starting the pour. Sufficient concrete head shall be maintained in the tremie at all times to prevent water or slurry intrusion in the shaft concrete.

If at any time during the concrete pour in the "wet" hole, the tremie or pump line orifice is removed from the fluid concrete and discharges through drilling fluid or water above the rising concrete level, the shaft may be considered defective.

Vibration of concrete is not recommended when placed while displacing drilling fluid or water. In dry excavations, vibration is allowed only in the top 3 m (10 ft) of the shaft.

Conformity with Contract. In addition to Article 105.03, the Contractor shall be responsible for correcting all out of tolerance excavations and completed shafts as well as repairing any defects in the shaft to the satisfaction of the Engineer at no additional cost to the Department. No time extensions will be allowed to repair or replace unacceptable work. When a shaft excavation is completed with unacceptable tolerances, the Contractor will be required to submit for approval his/her proposed corrective measures. Any proposed design modification with computations submitted by the Contractor shall be signed and sealed by an Illinois licensed Structural Engineer.

Method of Measurement. The items Drilled Shaft in Soil and Drilled Shaft in Rock, will be measured for payment and the length computed in meters (feet) for all drilled shafts installed according to the plans, specifications, and accepted by the Engineer. The length shall be measured at each shaft. The length in soil will be defined as the difference in elevation between the top of the drilled shaft shown on the plans, or as installed as part of the Contractor's installation procedure, and the bottom of the shaft or the top of rock (when present) whichever is higher. The length in rock will be defined as the difference in elevation between the measured top of rock and the bottom of the shaft. When permanent casing is installed as specified on the plans, it will be measured in meters (feet) and shall be the length of casing installed.

Basis of Payment. This work will be paid for at the contract unit price per meter (foot) for DRILLED SHAFT IN SOIL, and/or DRILLED SHAFT IN ROCK, of the diameter(s) specified. The price shall be payment in full for all labor, materials, equipment, and services necessary to complete the work as specified. When the shaft is detailed with a belled base, furnishing and installing it shall not be paid for separately but shall be included in the cost of the appropriate drilled shaft item(s).

When permanent casing is furnished and installed as specified, it will be paid for at the contract unit price per meter (foot) for PERMANENT CASING. Permanent casing installed at the Contractor's option shall not be included in this item, but shall be considered as included in the appropriate drilled shaft item(s) above.

Obstruction mitigation shall be paid for according to Article 109.04 of the Standard Specifications.

No additional compensation, other than noted above, will be allowed for removing and disposing of excavated materials, for furnishing and placing concrete, bracing, lining, temporary casings placed and removed or left in place, for grouting of any voids, or for any excavation made or concrete placed outside of the plan diameter(s) of the shaft(s) specified.

Reinforcement bars, spirals and ties shall be as specified and paid for under the items, REINFORCEMENT BARS or REINFORCEMENT BARS EPOXY COATED, according to Section 508 of the Standard Specifications.

## **FLOATING BEARINGS**

Effective: October 13, 1988

Revised: June 21, 2004

Description. This work shall consist of furnishing and installing floating (pot type) bearing assemblies as shown on the plans.

Floating bearings shall be the following types:

Fixed:	Allows rotation in any direction and fixed against translation.
Guided Expansion:	Allows rotation in any direction and translation in limited directions.
Non-Guided Expansion:	Allows rotation in any direction and translation in any direction.

The floating bearings shall be of the type specified and designed for the loads shown on the plans. The design of the top and bottom bearing plates are based on detail assumptions which are not applicable to all suppliers and may require modifications depending on the supplier chosen by the Contractor. The overall depth dimension for the floating bearings shall be as specified on the plans. The horizontal dimensions shall be limited to the available bearing seat area. Any modifications required to accommodate the bearings chosen shall be submitted to the Engineer for approval prior to ordering materials. Modifications required shall be made at no additional cost to the State. Inverted pot bearing configurations will not be permitted.

The Contractor shall comply with all manufacturer's material, fabrication and installation requirements specified.

Submittals. Shop drawings shall be submitted to the Engineer for approval according to Article 105.04 of the Standard Specifications. In addition the Contractor shall furnish certified copies of the bearing manufacturer's test reports on the physical properties of the component materials for the bearings to be furnished and a certification by the bearing manufacturer stating the bearing assemblies furnished conform to all the requirements shown on the plans and as herein specified. Submittals with insufficient test data and supporting certifications will be rejected.

Materials. The materials for the floating bearing assemblies shall be according to the following:

- (a) Elastomeric Materials. The rubber disc shall be according to Article 1083.02 of the Standard Specifications for "55 Duro" rubber.
- (b) Polytetrafluoroethylene (TFE) Material. The TFE material shall be according to Article 1083.03 of the Standard Specifications.

- (c) Stainless Steel Sheets: The stainless steel sheets shall be of the thickness specified and shall be according to ASTM A 240, Type 302 or 304. The sliding surface shall be polished to a bright mirror finish less than 510 nm (20 micro-in.) root mean square.
- (d) Structural Steel. All structural steel used in the bearing assemblies shall be according to AASHTO M 270M Grade 345 (M 270, Grade 50), unless otherwise specified.
- (e) Threaded studs. The threaded stud, when required, shall conform to the requirements of AASHTO M 164M (M 164).

Fabrication and Installation of Floating Bearings. The bearings shall be complete factory-produced assemblies. They shall provide for rotation in all directions and for sliding, when specified, in directions as indicated on the plans. All bearings shall be furnished as a complete unit from one manufacturing source. All material used in the manufacture shall be new and unused with no reclaimed material incorporated into the finished assembly.

When directed by the Engineer, the manufacturer shall furnish random samples of component materials used in the bearings for testing by the Department.

The bearings furnished shall be manufactured so that the rotational capability is provided by an assembly having a rubber disc of proper thickness, confined in a manner so it behaves like a fluid. The disc shall be installed, with a snug fit, into a steel cylinder and confined by a tight fitting piston. The outside diameter of the piston shall be no more than 750 microns (0.03 in.) less than the inside diameter of the cylinder at the interface level of the piston and rubber disc. The sides of the piston shall be beveled. TFE sheets shall be attached to the top and bottom of the rubber disc to facilitate rotation of the rubber disc. Suitable brass sealing rings shall be provided to prevent any extrusion between piston and cylinder.

The translation capability for both guided and non-guided expansion bearings shall be provided by means of a polished stainless steel sliding plate that bears on a TFE sheet bonded and recessed to the top surface of the piston. The sliding element of expansion bearings shall be restrained against movement in the fixed direction by exterior guide bars capable of resisting the horizontal forces or 20 percent of the vertical design load on the bearing applied in any direction, whichever is greater. The sliding surfaces of the guide bar shall be of TFE sheet and stainless steel. Guiding off of the fixed base, or any extension of it, will not be permitted.

Structural steel bearing plates shall be fabricated according to Article 505.04(l) of the Standard Specifications. Prior to shipment the exposed edges and other exposed portions of the structural steel bearing plates shall be cleaned and painted according to Articles 506.03 and 506.04 of the Standard Specifications. Painting shall be with the paint specified for shop painting of structural steel. During cleaning and painting the stainless steel, TFE sheet and neoprene shall be protected from abrasion and paint.

TFE sheets shall be bonded to steel under factory controlled conditions using heat and pressure for the time required to set the epoxy adhesive used. The TFE sheet shall be free from bubbles and the sliding surface shall be burnished to an absolutely smooth surface.

The steel piston and the steel cylinder shall each be machined from a solid piece of steel. The steel base cylinder shall be either integrally machined, recessed into with a snug fit, or continuously welded to its bottom steel bearing plate.

Packaging. Each floating bearing assembly shall be fully assembled at the manufacturing plant and delivered to the construction site as complete units. The assemblies shall be packaged, crated or wrapped so the assemblies will not be damaged during handling, transporting and shipping. The bearings shall be held together with removable restraints so sliding surfaces are not damaged.

Centerlines shall be marked on both top and base plates for alignment in the field. The bearings shall be shipped in moisture-proof and dust-proof covers.

Testing. Each floating bearing assembly shall be load tested to 150 percent of the rated capacity at a 2 percent slope by the manufacturer prior to shipment. The load of 150 percent of the rated capacity shall be maintained for at least 30 minutes. Any bearings showing failure of the sealing rings or other component parts after this load test shall be replaced. The Contractor shall furnish to the Department a notarized certification from the bearing manufacturer stating the floating bearings have been load tested as specified. The Department reserves the right to perform the specified load test on one or more of the furnished bearings. If the tested bearing shows failure it shall be replaced and the remaining bearings shall be load tested for acceptance at the Contractor's expense.

Shear Inhibited Disc Type Bearing. Shear Inhibited Disc type bearing assemblies may be used in lieu of the Floating (Pot type) Bearing assemblies at the option of the Contractor. All requirements specified for floating bearings shall be applicable for the shear inhibited disc type bearings except as follows:

- (a) The Structural Element shall be restricted from shear by the pin and ring design and need not be completely confined as with the Floating Bearing design.
- (b) The Structural Element shall be molded of Polyether Urethane compound and shall be monolithic. The physical properties of the Polyether Urethane shall be according to one of the following requirements:

PHYSICAL PROPERTY	ASTM TEST METHOD	REQUIREMENTS			
		COMPOUND A		COMPOUND B	
		MIN.	MAX.	MIN.	MAX.
Hardness, Type D durometer	D 2240	46	50	60	64
Tensile Stress, kPa (psi) At 100% elongation	D 412	10,350 kPa (1500 psi)	--	13,800 kPa (2000 psi)	--
Tensile Stress, kPa (psi) At 300% elongation	D 412	19,300 kPa (2800 psi)	--	25,500 kPa (3700 psi)	--
Tensile Strength, kPa (psi)	D 412	27,600 kPa (4000 psi)	--	34,500 kPa (5000 psi)	--
Ultimate Elongation, %	D 412	300	--	220	--
Compression Set 22 hr. at 70 °C (158 °F), %	D 395	--	40	--	40

Bearings shall be erected according to Article 505.08(f) of the Standard Specifications.

Exposed edges and other exposed portions of the structural steel plates shall be field painted as specified for Structural Steel.

Basis of Payment. This work will be paid for at the contract unit price each for FLOATING BEARINGS, FIXED; FLOATING BEARINGS, GUIDED EXPANSION; or FLOATING BEARINGS, NON-GUIDED EXPANSION of the load rating specified.

When the fabrication and erection of floating bearings is accomplished under separate contracts, the applicable requirements of Article 505.09 shall apply.

Fabricated floating bearings and other materials complying with the requirements of this item, furnished and accepted, will be paid for at the contract unit price each for FURNISHING FLOATING BEARINGS, FIXED, FURNISHING FLOATING BEARINGS, GUIDED EXPANSION or FURNISHING FLOATING BEARINGS, NON-GUIDED EXPANSION of the load rating specified.

Storage and care of fabricated floating bearings and other materials complying with the requirements of this item by the Fabrication Contractor beyond the specified storage period, will be paid for at the contract unit price per calendar day for STORAGE OF FLOATING BEARINGS if a pay item is provided for in the contract, or will be paid for according to Article 109.04 if a pay item is not provided in the contract.

Floating bearings and other materials fabricated under this item erected according to the requirements of the specifications, and accepted, will be paid for at the contract unit price each for ERECTING FLOATING BEARINGS, FIXED, ERECTING FLOATING BEARINGS, GUIDED EXPANSION or ERECTING FLOATING BEARINGS, NON-GUIDED EXPANSION of the load rating specified.

### **MODULAR EXPANSION JOINT**

Effective: May 19, 1994

Revised: June 27, 2005

Description. This work shall consist of furnishing and installing a modular expansion joint(s) as shown on the plans, and according to applicable portions of the Standard Specifications.

General. The expansion joint device shall be capable of handling the specified longitudinal movement. In addition, when specified, the joint shall also be capable of handling the differential non-parallel longitudinal movement. The expansion joint device shall effectively seal the joint opening in the deck surface and barrier curbs against the entrance of water and foreign materials. There shall be no appreciable change in the deck surface plane with the expansion and contraction movements of the bridge.

The device shall consist of a shop-fabricated modular assembly of transverse neoprene seals, edge and separation beams, bearing on support bars spanning the joint opening. The assembly shall maintain equal distances between intermediate support rails, at any cross section, for the entire length of the joint. The assembly shall be stable under all conditions of expansion and contraction, using a system of longitudinal control springs and upper and lower support beam bearings and springs.

At sidewalks, concrete median barriers and concrete parapet joints, a sliding steel plate shall be fabricated and installed according to the plans. Painting or galvanizing of sliding steel plates shall be as specified on the plans.

The expansion joint system options shall be limited to the following pre-approved systems:

#### For Modular Expansion Joints:

- Steelflex system, by the D.S. Brown Company
- WABO system, by the Watson Bowman Acme Corporation
- LG System, by TechStar Incorporated.

#### For Swivel Modular Expansion Joints:

- MAURER Swivel system, by the D.S. Brown Company
- WABO X-CEL system, by the Watson Bowman Acme Corporation.

Pre-approval of the expansion joint system does not include material acceptance at the jobsite.

Submittals: Shop drawings and a copy of the calculations and support documents shall be submitted to the Engineer for approval according to Article 105.04 of the Standard Specifications. Submittals will be required for each modular expansion joint device specified. In addition the Contractor shall provide the Department with a certification of compliance by the manufacturer listing all materials in the system. The certification shall attest that the system conforms to the design and material requirements and be supported by a copy of the successful results of the fatigue tests performed on the system as herein specified. Submittals with insufficient test data and supporting certifications will be rejected.

The shop drawings shall include tables showing the total anticipated movements for each joint and the required setting width of the joint assemblies at various temperatures.

Design Requirements: The maximum vertical, transverse and horizontal rotations and displacements shall be defined and included in the design.

The modular expansion joint shall be designed, detailed and successfully tested according to the requirements specified in NCHRP Report 402 "Fatigue Design of Modular Bridge Expansion Joints" and NCHRP Report 467 "Performance Testing for Modular Bridge Joint Systems".

Top, bottom and sides of support bars shall be restrained to prevent uplift, transmit bearing loads, and maintain the lateral position of the bars.

Movement limit. The total movement of each individual sealing element shall not exceed 75 mm (3 in.).

Materials:

(a) Metals. The hot-rolled or extruded steel sections and the support bars shall meet the material requirements specified by the manufacturer.

Stainless steel sheets for the sliding surfaces of the support bars shall conform to the requirements of ASTM A240 type 302 or 304.

The use of aluminum components in the modular joint will not be allowed.

(b) Preformed Elastomeric Seals. The elastomeric sealing element shall be either an elastomeric compression seal meeting the requirements of AASHTO M 220 or strip seal meeting the requirements of Article 1052.02(a) of the Standard Specifications.

Lubricant/Adhesive for installing the preformed elastomeric elements in place shall be a one-part, moisture-curing, polyurethane and hydrocarbon solvent mixture as recommended by the manufacturer and containing not less than 65 percent solids.

(c) Support Bar Bearings. Support bar bearings shall be fabricated from elastomeric pads with polytetrafluorethylene (PTFE) surfacing or from polyurethane compound with PTFE sliding surfaces. The elastomeric and PTFE materials shall meet the requirements of Section 1083 of the Standard Specifications.



- (d) Control Springs. Suitable elastomeric type springs which work longitudinally shall be used to maintain the equidistant spacing between transverse edge and separation beams when measured at any given cross section through the joint.
- (e) Support Bars. Support bars shall incorporate stainless steel sliding surfaces to permit joint movement.

### **Construction Requirements**

General. Installation of expansion devices shall be according to the plans and shop drawings.

The fabricator of the modular joint assembly shall be AISC certified according to Article 106.08(a) of the Standard Specifications. In lieu of AISC certification, the Contractor may have all welding on main members (support bars and separation beams) observed and inspected by independent (third party) personnel at the Contractor's expense. Welding shall then be observed by a Certified Welding Inspector (CWI) in addition to the manufacturer's own welding inspection. Third party Non Destructive Examination (NDE) shall be performed by inspector(s), certified as level II in applicable methods, and all complete penetration beam-to-bar welds and butt joints in beams shall be UT inspected and 10 percent of fillets and partial pen welds shall be MT inspected.

The manufacturer of the expansion device shall provide a qualified technical service representative to supervise installation. Modular expansion joint devices shall be factory prefabricated assemblies, preset by the manufacturer prior to shipment with provisions for field adjustment for the ambient temperature at the time of installation.

Unless otherwise shown on the plans, the neoprene seals shall be continuous without any field splices.

All steel surfaces of the prefabricated assembly shall be shop painted with the primer specified for structural steel, except areas in direct contact with the seals, galvanized items and stainless steel surfaces.

The metal surfaces in direct contact with the neoprene seals shall be blast cleaned to permit a high strength bond of the lubricant/adhesive between the neoprene seal and mating metal surfaces.

The prefabricated joint assembly shall be properly positioned and attached to the structure according to the manufacturer's approved shop drawings. The attachment shall be sufficiently rigid to prevent non-thermal rotation, distortion, or misalignment of the joint system relative to the deck prior to casting the concrete. The joints shall be adjusted to the proper opening based on the ambient temperature at the time of installation and then all restraints preventing thermal movement shall be immediately released and/or removed. The joint assembly units shall be straight, parallel and in proper vertical alignment or reworked until proper adjustment is obtained prior to casting of the concrete around the joint.

After the joint system is installed, the joint area shall be flooded with water and inspected, from below for leakage. If leakage is observed, the joint system shall be repaired, at the expense of the Contractor, as recommended by the manufacturer and approved by the Engineer.

Method of Measurement. This work will be measured for payment in place, in meters (feet), along the centerline of the joint from face to face of the parapets or curbs. All sliding plate assemblies at the sidewalks, parapets and median barriers will not be measured for payment. The size will be defined as the specified longitudinal movement rounded up to the nearest 75 mm (3 inch) increment.

Basis of Payment: When only a longitudinal movement is specified, this work will be paid for at the contract unit price per meter (foot) for the MODULAR EXPANSION JOINT, of the size specified. When a differential non parallel movement is also specified, this work will be paid for at the contract unit price per meter (foot) for the MODULAR EXPANSION JOINT-SWIVEL, of the size specified.

All materials, equipment and labor required to fabricate, paint and install the sliding plate assemblies at the sidewalks, parapets and median barriers will not be paid for separately but shall be included in the price for the expansion joint specified.

When the fabrication and erection of modular expansion joint is accomplished under separate contracts, the applicable requirements of Article 505.09 shall apply, except the furnishing pay items shall include storage and protection of fabricated materials up to 75 days after the completion dates.

Fabricated modular expansion joints and other materials complying with the requirements of this item, furnished and accepted, will be paid for at the contract unit price per meter (foot) for FURNISHING MODULAR EXPANSION JOINT or FURNISHING MODULAR EXPANSION JOINT – SWIVEL of the size specified.

Storage and care of fabricated joints and other materials complying with the requirements of this item by the Fabrication Contractor beyond the specified storage period, will be paid for at the contract unit price per calendar day for STORAGE OF MODULAR EXPANSION JOINTS if a pay item is provided for in the contract, or will be paid for according to Article 109.04 if a pay item is not provided in the contract.

Modular expansion joints and other materials erected according to the requirements of the specifications, and accepted, will be paid for at the contract unit price per meter (foot) for ERECTING MODULAR EXPANSION JOINT or ERECTING MODULAR EXPANSION JOINT - SWIVEL of the size specified.

### **CLEANING AND PAINTING NEW METAL STRUCTURES**

Effective Date: September 13, 1994

Revised Date: June 27, 2005

Description. The material and construction requirements that apply to cleaning and painting new structural steel shall be according to the applicable portion of Sections 506 of the Standard Specifications except as modified herein. The three coat paint system shall be the system as specified on the plans and as defined herein.

Materials. All materials to be used on an individual structure shall be produced by the same manufacturer. The Bureau of Materials and Physical Research has established a list of all products that have met preliminary requirements. Each batch of material must be tested and approved by that bureau before use.

The paint materials shall meet the requirements of the following articles of the Standard Specification:

<u>Item</u>	<u>Article</u>
(a) Inorganic Zinc-Rich Primer	1008.22
(b) Waterborne Acrylic	1008.24
(c) Aluminum Epoxy Mastic	1008.25
(d) Organic Zinc-Rich Primer (Note 1)	
(e) Epoxy Intermediate (Note 1)	
(f) Aliphatic Urethane (Note 1)	

Note 1: These material requirements shall be according to the Special Provision for the Organic Zinc-Rich Paint System.

Submittals. At least 30 days prior to beginning field painting, the Contractor shall submit for the Engineer's review and acceptance, the following applicable plans, certifications and information for completing the field work. Field painting can not proceed until the submittals are accepted by the Engineer. Qualifications, certifications and QC plans for shop cleaning and painting shall be available for review by the QA Inspector.

- a) Contractor/Personnel Qualifications. Except for miscellaneous steel items such as bearings, side retainers, expansion joint devices, and other items allowed by the Engineer, or unless stated otherwise in the contract, the shop painting Contractors shall be certified to perform the work as follows: the shop painting Contractor shall possess AISC Sophisticated Paint Endorsement or SSPC-QP3 certification. Evidence of current qualifications shall be provided.

Personnel managing the shop and field Quality Control program(s) for this work shall possess a minimum classification as a National Association of Corrosion Engineers (NACE) Coating Inspector Technician, or shall provide evidence of successful inspection of 3 projects of similar or greater complexity and scope that have been completed in the last 2 years. Copies of the certification and/or experience shall be provided.

The personnel performing the QC tests for this work shall be trained in coatings inspection and the use of the testing instruments. Documentation of training shall be provided.

- b) Quality Control (QC) Program. The shop and field QC Programs shall identify the following; the instrumentation that will be used, a schedule of required measurements and observations, procedures for correcting unacceptable work, and procedures for improving surface preparation and painting quality as a result of quality control findings. The field program shall incorporate the IDOT Quality Control Daily Report form, as supplied by the Engineer.

- c) Field Cleaning and Painting Inspection Access Plan. The inspection access plan for use by Contractor QC personnel for ongoing inspections and by the Engineer during Quality Assurance (QA) observations.
- d) Surface Preparation/Painting Plan. The surface preparation/painting plan shall include the methods of surface preparation and type of equipment to be utilized for solvent cleaning, abrasive blast cleaning, washing, and power tool cleaning. The plan shall include the manufacturer's names of the materials that will be used, including Product Data Sheets and Material Safety Data Sheets (MSDS).

A letter or written instructions from the coating manufacturer shall be included, indicating the required drying time for each coat at the minimum, normal, and maximum application temperatures before the coating can be exposed to temperatures or moisture conditions that are outside of the published application parameters.

Field Quality Control (QC) Inspections. The Contractor shall perform first line, in process QC inspections of each phase of the work. The Contractor shall implement the submitted and accepted QC Program to insure that the work accomplished complies with these specifications. The Contractor shall use the IDOT Quality Control Daily Report form supplied by the Engineer to record the results of quality control tests. The completed reports shall be turned into the Engineer before work resumes the following day.

The Contractor shall have available at the shop or on the field site, all of the necessary inspection and testing equipment. The equipment shall be available for the Engineer's use when requested.

Field Quality Assurance (QA) Observations. The Engineer will conduct QA observations of any or all phases of the work. The Engineer's observations in no way relieve the Contractor of the responsibility to provide all necessary daily QC inspections of his/her own and to comply with all requirements of this Specification.

The Engineer has the right to reject any work that was performed without adequate provision for QA observations.

The Engineer will issue a Non-Conformance Report when cleaning and painting work is found to be in violation of the specification requirements, and is not corrected to bring it into compliance before proceeding with the next phase of work.

Inspection Access and Lighting. The Contractor shall facilitate the Engineer's observations as required, including allowing ample time to view the work. The Contractor shall furnish, erect and move scaffolding or other mechanical equipment to permit close observation of all surfaces to be cleaned and painted. This equipment shall be provided during all phases of the work. Examples of acceptable access structures include:

- Mechanical lifting equipment, such as, scissor trucks, hydraulic booms, etc.
- Platforms suspended from the structure comprised of trusses or other stiff supporting members and including rails and kick boards.

- Simple catenary supports are permitted only if independent life lines for attaching a fall arrest system according to Occupational Safety and Health Administration (OSHA) regulations are provided.

When the surface to be inspected is more than 1.8 m (6 ft) above the ground or water surface, the Contractor shall provide the Engineer with a safety harness and a lifeline according to OSHA regulations. The lifeline and attachment shall not direct the fall into oncoming traffic. The Contractor shall provide a method of attaching the lifeline to the structure independent of the inspection facility or any support of the platform. When the inspection facility is more than 800 mm (2 1/2 ft) above the ground, the Contractor shall provide an approved means of access onto the platform.

The Contractor shall provide artificial lighting in areas where natural light is inadequate, as determined by the Engineer, to allow proper cleaning, inspection, and painting. Illumination for inspection shall be at least 325 LUX (30 foot candles). Illumination for cleaning and painting, including the working platforms, access, and entryways shall be at least 215 LUX (20 foot candles).

**Construction Requirements.** The Contractor shall be responsible for any damage caused to persons, vehicles, or property, except as indemnified by the Response Action Contractor Indemnification Act. Whenever the intended purposes of the protective devices are not being accomplished, as determined by the Engineer, work shall be immediately suspended until corrections are made. Painted surfaces damaged by any Contractor's operation shall be removed and repainted, as directed by the Engineer, at the Contractor's expense.

The Contractor shall comply with the provisions of the Illinois Environmental Protection Act. Paint drips, spills, and overspray are not permitted to escape into the air or onto any other surfaces or surrounding property not intended to be painted. Containment shall be used to control paint drips, spills, and overspray, and shall be dropped and all equipment secured when sustained wind speeds of 64 kph (40 mph) or greater occur, unless the containment design necessitates action at lower wind speeds. The contractor shall evaluate project-specific conditions to determine the specific type and extent of containment needed to control the paint emissions and shall submit a plan for containing or controlling paint debris (droplets, spills, overspray, etc.) to the Engineer for approval prior to starting the work. Approval shall not relieve the Contractor of their ultimate responsibility for controlling paint debris from escaping the work zone.

**Surface and Weather Conditions.** Surfaces to be painted after cleaning shall remain free of moisture and other contaminants. The Contractor shall control his/her operations to insure that dust, dirt, or moisture does not come in contact with surfaces cleaned or painted that day.

The surface temperature shall be at least 3°C (5°F) above the dew point during final surface preparation operations. The paint manufacturers' published literature shall be followed for specific temperature, dew point, and humidity restrictions during the application of each coat.

The Contractor shall monitor temperature, dew point, and humidity every 4 hours during surface preparation and coating application in the specific areas where the work is being performed. The frequency of monitoring shall increase if weather conditions are changing. The Engineer has the right to reject any work that was performed under unfavorable weather conditions. Rejected work shall be removed, recleaned, and repainted at the Contractor's expense.

Seasonal Restrictions on Field Cleaning and Painting. Field cleaning and painting work shall be accomplished between April 15 and October 31 unless authorized otherwise by the Engineer in writing.

**Inorganic Zinc-rich/ Waterborne Acrylic Paint system.** This system shall be for shop and field application of the coating system, shop application of the intermediate and top coats will not be allowed.

In the shop, all structural steel designated to be painted shall be given one coat of inorganic zinc rich primer. In the field, before the application of the intermediate coat, the prime coat and any newly installed fasteners shall be spot solvent cleaned per SSPC-SP 1 and all surfaces pressure washed to remove dirt, oil, lubricants, oxidation products, and foreign substances. Washing shall involve the use of potable water at a pressure between 7 MPa (1000 psi) and 34 MPa (5000 psi) and according to "Low Pressure Water Cleaning" of SSPC-SP12. Paint spray equipment shall not be used to perform the water cleaning. All damaged shop primed areas shall then be spot cleaned per SSPC-SP3 and spot primed with aluminum epoxy mastic. The structural steel shall then receive one full intermediate coat and one full topcoat of waterborne acrylic paint.

- a) Paint drips, spills, and overspray must be controlled. If containment is used to control paint drips, spills, and overspray, the containment shall be dropped and all equipment secured when sustained wind speeds of 64 kph (40 mph) or greater occur. When the protective coverings need to be attached to the structure, they shall be attached by bolting, clamping, or similar means. Welding or drilling into the structure is prohibited unless approved by the Engineer in writing.
- b) Coating Dry Film Thickness (dft), measured according to SSPC-PA2:
  - Zinc Primer: 75 microns (3 mils) min., 150 microns (6 mils) max.
  - Epoxy Mastic: 125 microns (5 mils) min., 180 microns (7 mils) max.
  - Intermediate Coat: 50 microns (2 mils) min., 100 microns (4 mils) max.
  - Topcoat: 50 microns (2 mils) min., 100 microns (4 mils) max.

The total dry film thickness, excluding the spot areas touched up with epoxy mastic, shall be between 180 and 355 microns (7 and 14 mils).

- c) The pressure washing requirement above may be waived if the QC and QA Inspectors verify the primed surfaces have not been contaminated.
- d) Damage to the paint system shall be spot cleaned using SSPC-SP3. The cleaned areas shall be spot painted with a penetrating sealer as recommended by the manufacturer, which shall overlap onto the existing topcoat. Then the aluminum epoxy

mastic shall be spot applied not to go beyond the area painted with the sealer. The acrylic intermediate and topcoat shall be spot applied to the mastic with at least a 150 mm (6 inch) overlap onto the existing topcoat.

**Organic Zinc-Rich/ Epoxy/ Urethane Paint System.** This system shall be for full shop application of the coating system, all contact surfaces shall be masked off prior to application of the intermediate and top coats.

Additional Surface Preparation. In addition to the requirements of Section 3.2.9 of the AASHTO/AWS D1.5M/D1.5:2002 Bridge Welding Code (breaking thermal cut corners of stress carrying members), rolled and thermal cut corners to be painted with organic zinc primer shall be broken if they are sharper than a 1.5 mm (1/16 in.) radius. Corners shall be broken by a single pass of a grinder or other suitable device at a 45° angle to each adjoining surface prior to final blast cleaning, so the resulting corner approximates a 1.5 mm (1/16 in.) or larger radius after blasting. Surface anomalies (burrs, fins, deformations) shall also be treated to meet this criteria before priming.

In the shop, all structural steel designated to be painted shall be given one coat of organic zinc rich primer. Before the application of the intermediate coat, the prime coat and any newly installed fasteners shall be spot solvent cleaned per SSPC-SP 1 and all surfaces pressure washed to remove dirt, oil, lubricants, oxidation products, and foreign substances. Washing shall involve the use of potable water at a pressure between 7 MPa (1000 psi) and 34 MPa (5000 psi) and according to “Low Pressure Water Cleaning” of SSPC-SP12. Paint spray equipment shall not be used to perform the water cleaning. All damaged shop primed areas shall then be spot cleaned per SSPC-SP3, and the structural steel shall then receive one full intermediate coat of epoxy and one full topcoat of aliphatic urethane.

- (a) Paint drips, spills, and overspray must be controlled. If containment is used to control paint drips, spills, and overspray, the containment shall be dropped and all equipment secured when sustained wind speeds of 64 kph (40 mph) or greater occur. When the protective coverings need to be attached to the structure, they shall be attached by bolting, clamping, or similar means. Welding or drilling into the structure is prohibited unless approved by the Engineer in writing.
- (b) Coating Dry Film Thickness (dft), measured according to SSPC-PA2:
  - organic Zinc Primer: 75 microns (3 mils) min., 125 microns (5 mils) max.
  - Aluminum Epoxy Mastic: 125 microns (5 mils) min., 180 microns (7 mils) max.
  - Epoxy Intermediate Coat: 75 microns (3 mils) min., 150 microns (6 mils) max.
  - Aliphatic Urethane Top Coat: 65 microns (2.5 mils) min., 100 microns (4 mils) max.
- (c) The total dry film thickness, excluding the spot areas touched up with epoxy mastic, shall be between 215 and 375 microns (8.5 and 15 mils).
- (d) When specified on the plans or as requested by the Contractor, and approved by the Engineer, the epoxy intermediate and aliphatic urethane top coats shall be applied in the shop. All faying surfaces of field connections shall be masked off after priming and shall

not receive the intermediate or top coats in the shop. The intermediate and top coats for field connections shall be applied, in the field, after erection of the structural steel is completed. The pressure washing requirement above may be waived if the QC and QA Inspectors verify the primed surfaces have not been contaminated.

- (e) Erection and handling damage to the shop applied system shall be spot cleaned using SSPC-SP3. The surrounding coating at each repair location shall be feathered for a minimum distance of 40 mm (1 1/2 in.) to achieve a smooth transition between the prepared areas and the existing coating. The existing coating in the feathered area shall be roughened to insure proper adhesion of the repair coats. The areas cleaned to bare metal shall be spot painted with aluminum epoxy mastic. The intermediate and finish coat shall be spot applied to with at least a 150 mm (6 inch) overlap onto the existing finish coat.

**Aluminum Epoxy Mastic/ Waterborne Acrylic Paint system.** This system shall be for shop or field application of the entire coating system.

Before priming with aluminum epoxy mastic the steel the surfaces to be primed shall be prepared according to SSPC SP6 for Commercial Blast Cleaning. In the field, before the application of the intermediate coat, the prime coat and any newly installed fasteners shall be spot solvent cleaned per SSPC-SP 1 and all surfaces pressure washed to remove dirt, oil, lubricants, oxidation products, and foreign substances. Washing shall involve the use of potable water at a pressure between 7 MPa (1000 psi) and 34 MPa (5000 psi) and according to "Low Pressure Water Cleaning" of SSPC-SP12. Paint spray equipment shall not be used to perform the water cleaning. All damaged shop primed areas shall then be spot cleaned per SSPC-SP3 and spot primed with aluminum epoxy mastic. The structural steel shall then receive one full intermediate coat of aluminum epoxy mastic and one full topcoat of waterborne acrylic paint.

- d) Paint drips, spills, and overspray must be controlled. If containment is used to control paint drips, spills, and overspray, the containment shall be dropped and all equipment secured when sustained wind speeds of 64 kph (40 mph) or greater occur. When the protective coverings need to be attached to the structure, they shall be attached by bolting, clamping, or similar means. Welding or drilling into the structure is prohibited unless approved by the Engineer in writing.
- e) Coating Dry Film Thickness (dft), measured according to SSPC-PA2:  
Epoxy Mastic Primer: 125 microns (5 mils) min., 180 microns (7 mils) max.  
Epoxy Mastic Intermediate Coat: 125 microns (5 mils) min., 180 microns (7 mils) max.  
Acrylic Topcoat: 50 microns (2 mils) min., 100 microns (4 mils) max.

The total dry film thickness, excluding the spot areas touched up with epoxy mastic, shall be between 300 and 460 microns (12 and 18 mils).

- f) The pressure washing requirement above may be waived if the QC and QA Inspectors verify the primed surfaces have not been contaminated.



- d) Damage to the paint system shall be spot cleaned using SSPC-SP3. The cleaned areas shall be spot painted with a penetrating sealer as recommended by the manufacturer, which shall overlap onto the existing topcoat. Then the aluminum epoxy mastic shall be spot applied not to go beyond the area painted with the sealer. The acrylic topcoat shall be spot applied to the mastic with at least a 150 mm (6 inch) overlap onto the existing topcoat.

The paint manufacturer's product data sheets shall be available for QA review in the shop and submitted to the Engineer prior to start of field work and the requirements as outlined in the data sheets shall be followed.

#### Special Instructions.

Painting Date/System Code. At the completion of the work, the Contractor shall stencil in contrasting color paint the date of painting the bridge, the painting Contractors name, and the paint type code from the Structure Information and Procedure Manual for the system used. The letters shall be capitals, not less than 50 mm (2 in.) and not more than 75 mm (3 in.) in height.

The stencil shall contain the following wording "PAINTED BY (insert the name of the painting Contractor)" and shall show the month and year in which the painting was completed, followed by "CODE S" for the Inorganic Zinc/ Acrylic System, "CODE X" for the Organic Zinc/ Epoxy/ Urethane System, "CODE AB" for the Organic Zinc/ Epoxy/ Urethane System (shop applied), and "CODE U" for the Aluminum Epoxy Mastic/ Acrylic System all stenciled on successive lines. This information shall be stenciled on the cover plate of a truss end post near the top of the railing, or on the outside face of an outside stringer near both ends of the bridge facing traffic, or at some equally visible surface designated by the Engineer.

Method of Measurement. Shop cleaning and painting new structures will not be measured for payment. Field cleaning and painting will not be measured for payment except when performed under a contract that contains a separate pay item for this work.

Basis of Payment. This work will be paid for according to Article 506.07.

### **TEMPORARY SHEET PILING**

Effective: September 2, 1994

Revised: December 13, 2002

Description. This work shall consist of furnishing, driving, adjusting for stage construction when required and subsequent removal of the sheet piling according to the dimensions and details shown on the plans and according to the applicable portions of Section 512 of the Standard Specifications.

This work shall also include furnishing, installing and subsequent removal of all miscellaneous steel shapes, plates and connecting hardware when required to attach the sheeting to an existing substructure unit and/or to facilitate stage construction.

General. The Contractor may propose other means of supporting the sides of the excavation provided they are done so at no extra cost to the department. If the Contractor elects to vary from the design requirements shown on the plans, the revised design calculations and details 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.

Material. The sheet piling shall be made of steel and may be new or used material, at the option of the Contractor. The sheet piling shall have a minimum section modulus as shown on the plans or in the approved Contractor's alternate design. The sheeting shall have a minimum yield strength of 265 MPa (38.5 ksi) unless otherwise specified. The sheeting, used by the Contractor, shall be identifiable and in good condition free of bends and other structural defects. The Contractor shall furnish a copy of the published sheet pile section properties to the Engineer for verification purposes. The Engineer's approval will be required prior to driving any sheeting. All driven sheeting not approved by the Engineer shall be removed at the Contractor's expense.

Construction. The Contractor shall verify locations of all underground utilities before driving any sheet piling. Any disturbance or damage to existing structures, utilities or other property, caused by the Contractor's operation, shall be repaired by the Contractor in a manner satisfactory to the Engineer at no additional cost to the Department. The Contractor shall be responsible for determining the appropriate equipment necessary to drive the sheeting to the tip elevation(s) specified on the plans or according to the Contractor's approved design. The sheet piling shall be driven, as a minimum, to the tip elevation(s) specified, prior to commencing any related excavation. If unable to reach the minimum tip elevation, the adequacy of the sheet piling design will require re-evaluation by the Department prior to allowing excavation adjacent to the sheet piling in question. The Contractor shall not excavate below the maximum excavation line shown on the plans without the prior permission of the Engineer. The sheet piling shall remain in place until the Engineer determines it is no longer required.

The sheet piling 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 sheet piling leaving the remainder in place. The remaining sheet piling shall be a minimum of 300 mm (12 in.) below the finished grade or as directed by the Engineer. Removed sheet piling 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 through or around with normal driving procedures, but requires additional excavation or other procedures to remove or miss the obstruction.

Method of Measurement. The temporary sheet piling will be measured for payment in place in square meters (square feet). Any temporary sheet piling cut off, left in place, or driven to dimensions other than those shown on the contract plans without the written permission of the Engineer, shall not be measured for payment but shall be done at the contractor's expense.

If the Contractor is unable to drive the sheeting to the specified tip elevation(s) and can demonstrate that any further effort to drive it would only result in damaging the sheeting, then the Contractor shall be paid based on the plan quantity of temporary sheeting involved. However, no additional payment will be made for any walers, bracing, or other supplement to the temporary sheet piling, which may be required as a result of the re-evaluation in order to insure the original design intent was met.

Basis of Payment. This work will be paid for at the contract unit price per square meter (square foot) for TEMPORARY SHEET PILING.

Payment for any 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.

### **FABRIC REINFORCED ELASTOMERIC MAT**

Effective: July 14,2000

Revised: September 12, 2003

Description. This work shall consist of furnishing and installing the fabric reinforced elastomeric mat as shown on the plans and as directed by the Engineer.

Materials. The elastomeric material requirements for the reinforced mat shall be according to the following:

The Elastomer Compound for the mat shall be according to AASHTO M 251 for Polychloroprene "50 duro", except the tensile strength shall be 10.3 MPa (1500 psi) minimum or it shall be (EPDM) ethylene propylene diene monomer according to Article 1052.02 of the Standard Specifications.

The composite of the fabric and elastomer shall have a minimum tensile strength of 122.6 x 122.6 N/mm (700 x 700 lb/in) according to ASTM D 378.

The minimum elongation at ultimate tensile strength shall be 30 percent according to ASTM D 412.

The minimum thickness of the reinforced mat shall be 3 mm (1/8 in.).

Threaded studs, washers and nuts shall be according to ASHTO M 164. Flattening plates shall be according to AASHTO M 270M, Grade 250 (M 270,Grade 36).

Method of Measurement. The fabric reinforced elastomeric mat and all hardware necessary to install the mat will not be measured for payment but shall be included in the concrete pay item involved.

## **BRIDGE JOINT SEALING SYSTEM**

Effective: May 1, 2001

Revised: January 1, 2002

**Description.** This work shall consist of furnishing and installing an expansion or fixed joint system as shown on the plans and as specified herein. The joint system shall be comprised of either steel locking edge rails or plates, with studs and a preformed elastomeric seal. Unless noted otherwise, the Contractor shall have the option of choosing from the preformed elastomeric compression or strip seal joint systems shown on the plans.

### **Materials:**

- (b) Steel Locking Edge Rails for the Preformed Elastomeric Strip Seal System. The steel locking edge rails shall be either a one-piece extrusion (rolled section) or a combination of extruded and stock plate, shop welded according to Section 505. All steel shall be AASHTO M270, Grade 250 (Grade 36) minimum. The locking portion of the steel edge rail shall be extruded, with a cavity, properly shaped to allow the insertion of the strip seal gland and the development of a mechanical interlock. The top edge of the steel edge rails shall not contain any horizontal projections.
- (b) Steel Plates for the Preformed Elastomeric Compression Seal System. The plates and bars or other structural shapes provided as edge reinforcement at joints, between adjacent spans, shall be accurately fabricated in the shop to conform to the section of the concrete floor or sidewalk. The fabrication shall conform to Section 505. The plates shall be held securely in the correct position during the placing of the concrete.
- (c) Anchor Studs. The steel locking edge rails or plates shall contain anchor studs and/or anchor plates of the size shown on the plans for the purpose of firmly anchoring the expansion joint system in either portland cement concrete or polymer concrete, depending on the application. The anchor studs shall be according to Article 1006.32 and shall be installed in the shop prior to painting or galvanizing.
- (d) Preformed Elastomeric Compression Seals. The Preformed Elastomeric compression seal shall be according to AASHTO M220. The compression seal shall be of the size and shape shown on the plans.
- (e) 

Preformed Elastomeric Strip Seal.

The elastomeric gland shall meet the physical requirements of ASTM D5973. The gland material shall have a shallow "v" profile and shall contain "locking ears" that, when inserted in the steel locking edge rails, forms a mechanical interlock. The elastomeric gland shall be of an appropriate size to accommodate the rated movement specified on the plans.
- (f) Adhesive/Lubricant. The adhesive/lubricant shall comply with the requirements of ASTM D4070.

**Construction:**

- (a) Steel Plates or locking edge rails. After fabrication the steel plates or locking edge rails shall be given one shop coat of the paint specified for structural steel. The steel components may be hot dip galvanized according to AASHTO M111 and ASTM A385 in lieu of shop painting at the manufacturer's option. The steel components of the joint system shall be properly aligned and set prior to pouring the anchorage material. For expansion joints, the joint opening shall be adjusted according to the temperature at the time of placing so that the specified opening will be secured at a temperature of 10 °C (50 °F).

The joint opening for each 10 m (100 ft.) of bridge between the nearest fixed bearings each way from the joint shall be reduced 1 mm (1/8 in.) from the amount specified, for each 8 °C (15 °F) the temperature at the time of placing exceeds 10 °C (50 °F) and increased 1 mm (1/8 in.) from the amount specified, for each 8 °C (15 °F) the temperature at the time of placing is below 10 °C (50 °F).

- (b) Preformed Elastomeric Strip Seal. Once the anchoring material has fully cured according to specifications, preparation for the placement of the gland can begin.

(1) Surface Preparation. The cavity portion of the locking edge rails must be cleaned of all foreign material prior to placement of the strip seal. Surface rusting shall be removed and any bare steel touched up according to Article 506.05. The cavity shall be cleaned of debris using compressed air with a minimum pressure of 620 kPa (90 psi). The air compressor shall be equipped with traps to prevent the inclusion of water and/or oil in the air line. Any oil left on the surface of the steel extrusion at this stage shall be removed using a solvent recommended by the strip seal manufacturer. Once the surface preparation has been completed, the steel extrusion cavities must be kept clean and dry until the strip seal is placed.

(2) Placement of Elastomeric Strip Seal. The placement of the strip seal will only be permitted when the steel locking edge rail cavities are in a clean and dry state and the ambient air and steel substrate temperature are above the minimum temperature recommended by the strip seal manufacturer. Prior to inserting the strip seal in the steel retainer cavities, the "locking ears" portion of the seal shall be coated with the approved adhesive/lubricant. Only about 1.5 m (5 ft) of gland should be coated at a time to prevent the lubricant/adhesive from drying prior to insertion into the cavities of the steel locking edge rails. After each section is coated, the coated portion of the seal should be inserted in the steel locking edge rail cavities using tools and procedures recommended by the strip seal manufacturer. Under no circumstances shall any uncoated "locking ears" be permitted in the joint.

- (c) Preformed Elastomeric Compression Seal. Once the anchoring material has fully cured according to specifications, preparation for the placement of the gland can begin.

(1) Surface Preparation. The steel plates must be cleaned of all foreign material prior to placement of the compression seal. Surface rusting shall be removed and any bare

steel touched up according to Article 506.05. Once the surface preparation has been completed, the steel plates must be kept clean and dry until the compression seal is placed.

(2) Placement of Elastomeric Compression Seal. The seals shall be installed by suitable hand or machine tools and thoroughly secured in place with the approved adhesive which shall cover both sides of the seals over the full area in contact with the sides of the joint. The adhesive may be applied to the sides of the joint or the seals or both. The seals shall be installed in a compressed condition and shall at all times be below the level of the deck surface as shown on the plans. The seals shall be in one continuous piece for the full length of the joint. The continuous piece for installation shall not have more than one manufacturer's butt splice within its length. If the splice is torn or damaged it shall be repaired, prior to installation, using the manufacturer's recommended adhesive. Temperature limitations of the adhesive, as specified by the manufacturer, shall be observed.

(d) End Treatment. The end treatment for curbs, parapets and sidewalks shall be as detailed on the plans and as recommended by the manufacturer of the joint system.

(e) Technical Support. The manufacturer shall supply technical support during surface preparation and the installation of the entire joint system.

**Method of Measurement.** The completed joint system will be measured in meters (feet) along the centerline of the joint.

**Basis of Payment.** The expansion joint system(s), measured as specified, will be paid for at the contract unit price per meter (foot) for BRIDGE JOINT SYSTEM (EXPANSION), of the design movement specified. The fixed joint system, measured as specified, will be paid for at the contract unit price per meter (foot) for BRIDGE JOINT SYSTEM (FIXED). These prices shall be payment in full for all labor, materials, equipment, and manufacturer's technical support required for surface preparation and joint installation.

## **TEMPORARY SOIL RETENTION SYSTEM**

Effective: December 30, 2002

**Description.** This work shall consist of designing, furnishing, installing, adjusting for stage construction when required and subsequent removal of the temporary soil retention system according to the dimensions and details shown on the plans and in the approved design submittal.

**General.** The temporary soil retention system shall be designed by the Contractor as a minimum, to retain the exposed surface area specified in the plans or as directed by the Engineer.

The design calculations and details for the temporary soil retention system proposed by the Contractor shall be submitted to the Engineer for approval. The calculations shall be prepared

and sealed by an Illinois Licensed Structural Engineer. This approval will not relieve the Contractor of responsibility for the safety of the excavation. Approval shall be contingent upon acceptance by all involved utilities and/or railroads.

Construction. The Contractor shall verify locations of all underground utilities before installing any of the soil retention system components or commencing any excavation. Any disturbance or damage to existing structures, utilities or other property, caused by the Contractor's operation, shall be repaired by the Contractor in a manner satisfactory to the Engineer at no additional cost to the Department. The soil retention system shall be installed according to the Contractor's approved design, or as directed by the Engineer, prior to commencing any related excavation. If unable to install the temporary soil retention system as specified in the approved design, the Contractor shall have the adequacy of the design re-evaluated. Any reevaluation shall be submitted to the Engineer for approval prior to commencing the excavation adjacent to the area in question. The Contractor shall not excavate below the maximum excavation line shown in the approved design without the prior permission of the Engineer. The temporary soil retention system shall remain in place until the Engineer determines it is no longer required.

The temporary soil retention system shall be removed and disposed of by the Contractor when directed by the Engineer. When allowed, the Contractor may elect to cut off a portion of the temporary soil retention system leaving the remainder in place. The remaining temporary soil retention system shall be removed to a depth which will not interfere with the new construction, and as a minimum, to a depth of 300 mm (12 in.) below the finished grade, or as directed by the Engineer. Removed system components shall become the property of the Contractor.

When an obstruction is encountered, the Contractor shall notify the Engineer and upon concurrence of the Engineer, the Contractor shall begin working to break up, push aside, or remove the obstruction. An obstruction shall be defined as any object (such as but not limited to, boulders, logs, old foundations etc.) where its presence was not obvious or specifically noted on the plans prior to bidding, that cannot be driven or installed through or around, with normal driving or installation procedures, but requires additional excavation or other procedures to remove or miss the obstruction.

Method of Measurement. The temporary soil retention system furnished and installed according to the Contractor's approved design or as directed by the Engineer will be measured for payment in place, in square meters (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.

Basis of Payment. This work will be paid for at the contract unit price per square meter (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.

### **POROUS GRANULAR EMBANKMENT (SPECIAL)**

Effective: June 22, 2005

Description. This work shall consist of furnishing, and placing porous granular embankment (special) material as detailed on the plans, according to Section 207 except as modified herein.

Materials. The gradation of the porous granular material may be any of the following CA 5 thru CA 18, FA 1 thru FA 4, FA 7 thru FA 9, and FA 20 according to Articles 1003 and 1004.

Basis of Payment. This work will be paid for at the contract unit price per Cubic Yard (Cubic Meter) for POROUS GRANULAR EMBANKMENT (SPECIAL).

### **NOISE ABATEMENT WALL ANCHOR ROD ASSEMBLY**

Description. This item shall consist of fabricating, furnishing and installing noise abatement wall anchor rod assemblies for retaining wall or other roadway structure in accordance with applicable portions of Section 505 of the Standard Specifications as shown on the plans or as directed by the Engineer.

Materials. Anchor rods shall be in accordance with AASHTO specifications as shown in the plans.

Construction Requirements. The Contractor shall furnish and install anchor rod assemblies for noise abatement walls according to Article 1006.09 of the standard specifications and as modified elsewhere in these Special Provisions.

Method of Measurement. NOISE ABATEMENT WALL ANCHOR ROD ASSEMBLY shall be counted, per each assembly complete.

Basis of Payment. This item shall be paid at the contract unit price each for NOISE ABATEMENT WALL ANCHOR ROD ASSEMBLY, which shall be payment in full for the furnishing, installing, materials, identification and delivery to the jobsite.



## **RUSTICATION FINISH**

Effective: May 1, 1990

Revised: January 12, 2000

This work consists of providing a rustication finish on concrete surfaces as detailed in the plans and as described in this Special Provision.

Forms shall be constructed so that the completed concrete structures conform to the shape, lines and dimensions of the members as shown on the plans. Forms shall be properly braced or tied together to maintain position and shape. Forms shall be made sufficiently tight to prevent leakage of mortar.

Formwork shall have the strength and stability to ensure finished concrete dimensions within the tolerances specified herein. The quality of the formwork shall be maintained throughout the entire project.

Variations in dimensions for the wall sections with a rustication finish shall be within the following tolerances: the width and depth of rustication joints shall be within 3 mm (1/8 inch)  $\pm$ , the location of the rustication joints shall be within 13 mm (1/2 inch)  $\pm$ , the maximum variation of a joint from a straight line shall be 6 mm (1/4 inch)  $\pm$  in 3 meters (10 feet).

The Contractor shall submit to the Engineer proposed construction procedures to achieve the rustication finish as detailed in the plans. The Contractor's method of obtaining the surface texture specified on the plans shall be subject to approval by the Engineer.

In order to establish procedures to achieve a rustication finish satisfactory to the Engineer, the Contractor shall submit to the Engineer for approval a 610 X 610 (2 foot X 2 foot) sample panel prior to casting the structure to receive the rustication finish. The sample panel shall be cast using the concrete mix and aggregate proposed for use in the work. Concreting and formwork operations, in preparation of the sample panel, shall follow actual work procedures in so far as practical. In any event, the approved panel shall be used as the control for the appearance of the finished work. Any work found to be unsatisfactory to the Engineer shall be corrected as required by the Engineer, at no additional cost to the State.

The Contractor shall notify the Engineer at least 40 hours prior to placing concrete. Concrete shall not be placed until the Engineer has inspected the formwork and the placement of reinforcing bars for compliance with the plans.

Method of Measurement. The limits used to measure the area of Rustication Finish will be those dimensions indicated on the plans or as directed by the Engineer and the area computed in square meters (square feet).

Basis of Payment. This work will be paid for at the contract unit price per square meter (square foot) for RUSTICATION FINISH, which price includes all work as specified herein.

**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."

**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 ( $D_i$ ) 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 Gyratory 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  $\mu\text{m}$  (#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 <sup>1/</sup>	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."

#### **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.”

### **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 the placement of a surface course or at other times throughout the work.”

### **BRIDGE DECK CONSTRUCTION (BDE)**

Effective: April 1, 2002

Revised: April 1, 2004

Add the following to Article 503.03 of the Standard Specifications:

“ .....(h)Fogging  
..... 1103.17(k)”

Equipment

Add the following after the first sentence of the second paragraph to Article 503.07 of the Standard Specifications:



“When placing Class BD concrete, the discharge end of the pump shall have attached an “S” shaped flexible or rigid conduit, a 90 degree elbow with a minimum of 3 m (10 ft) of flexible conduit placed parallel to the deck, or a similar configuration approved by the Engineer.”

Add the following after the second sentence of the ninth paragraph of Article 503.07 of the Standard Specifications:

“When consolidating concrete in bridge decks, the vibrator shall be vertically inserted into the concrete for 3 - 5 seconds, or for a period of time determined by the Engineer.”

Add the following after the first paragraph of Article 503.17 of the Standard Specifications:

“For the bridge deck pour, fogging equipment shall be in operation unless the evaporation rate is less than 0.5 kg/sq m/hour (0.1 lb/sq ft/hour) and the Engineer gives permission to turn off the equipment. The evaporation rate shall be determined according to the figure in the Portland Cement Association’s publication, “Design and Control of Concrete Mixtures” (refer to the section on plastic shrinkage cracking). The Contractor shall provide temperature, relative humidity, and wind speed measuring equipment.

The fogging equipment shall be adjusted to adequately cover the entire width of the pour.

If there is a delay of more than ten minutes during bridge deck placement, wet burlap shall be used to protect the concrete until operations resume.

Concrete placement operations shall be coordinated to limit the distance between the point of concrete placement and concrete covered with cotton mats for curing. The distance shall not exceed 10.5 m (35 ft). For bridge deck widths greater than 15 m (50 ft), the distance shall not exceed 7.5 m (25 ft).”

Add the following to the end of the first paragraph of Article 503.17(b) of the Standard Specifications to read:

“The concrete in these areas shall be struck off during the deck pour and excess material from the finishing machine shall not be incorporated.”

In the Coarse Aggregate Gradation table of Article 1004.01(c) of the Standard Specifications revise the percent passing the 12.5 mm (1/2 in.) sieve for gradation CA 7 to “45±15<sup>4/ 9/”</sup>.

In the Coarse Aggregate Gradation table of Article 1004.01(c) of the Standard Specifications revise the percent passing the 12.5 mm (1/2 in.) sieve for gradation CA 11 to “45±15<sup>6/ 9/”</sup>.

Add the following to the Coarse Aggregate Gradation table of the Standard Specifications:

“9/ When Class BD concrete is to be pumped, the coarse aggregate gradation shall have a minimum of 45 percent passing the 12.5 mm (1/2 in.) sieve. The Contractor may combine two or more coarse aggregate sizes, consisting of CA-7, CA-11, CA-13, CA-14, and CA-16, provided a CA-7 or CA-11 is included in the blend.”

Revise Article 1020.05(d) of the Standard Specifications to read:

“(d) Class BD Concrete. The maximum mortar factor shall be 0.86.”

Add the following to Article 1103.17 of the Standard Specifications:

“(k) Fogging Equipment. Fogging equipment shall consist of a mechanically operated, pressurized system using a triple headed nozzle or an equivalent nozzle. The fogging nozzle shall be capable of producing a fine fog mist that will increase the relative humidity of the air just above the fresh concrete surface without accumulating any water on the concrete. The fogging equipment shall be mounted behind the roller and pan of finishing machine or on a separate foot bridge. Controls shall be designed to vary the volume of water flow, be easily accessible and immediately shut off the water when in the off position. Hand held fogging equipment will not be allowed.”

**CHAIR SUPPORTS (BDE)**

Effective: November 1, 2002

Revised: November 2, 2002

Revise the fourth and fifth paragraphs of Article 421.06(a) to read:

“Pavement reinforcement shall be supported on steel chair supports at the depth below the pavement surface as indicated on the plans. The Contractor shall submit prints of shop drawings showing details of chair supports and their spacing to the Engineer and obtain the Engineer’s approval before any fabrication is begun.

The chair supports shall possess the necessary rigidity and be spaced at intervals close enough to hold the reinforcement at the proper depth and position. However, the spacing of the chair supports shall not exceed 900 mm (3 ft) transversely or 1.2 m (4 ft) longitudinally. The chair supports shall be fabricated with sand plates.”

**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  $\mu$ m (No. 200) sieve shall  
| be  $2 \pm 2$ ."

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"



**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)”

**CURING AND PROTECTION OF CONCRETE CONSTRUCTION (BDE)**

Effective: January 1, 2004

Revised: November 1, 2005

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
<b>Cast-in-Place Concrete:</b> <sup>11/</sup>			
Pavement			
Shoulder	1020.13(a)(1)(2)(3)(4)(5) <sup>3/ 5/</sup>	3	1020.13(c)
Base Course			
Base Course Widening	1020.13(a)(1)(2)(3)(4)(5) <sup>1/ 2/</sup>	3	1020.13(c)
Driveway			
Median			
Curb			
Gutter	1020.13(a)(1)(2)(3)(4)(5) <sup>4/ 5/</sup>	3	1020.13(c) <sup>16/</sup>
Curb and Gutter			
Sidewalk			
Slope Wall			
Paved Ditch			
Catch Basin			
Manhole	1020.13(a)(1)(2)(3)(4)(5) <sup>4/</sup>	3	1020.13(c)
Inlet			
Valve Vault			
Pavement Patching	1020.13(a)(1)(2)(3)(4)(5) <sup>2/</sup>	3 <sup>12/</sup>	1020.13(c)
Pavement Replacement	1020.13(a)(1)(2)(3)(4)(5) <sup>1/ 2/</sup>	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) <sup>4/ 6/</sup>	7	1020.13(e)(1)(2)(3)
Substructure	1020.13(a)(1)(2)(3)(4)(5) <sup>1/ 7/</sup>	7	1020.13(e)(1)(2)(3)
Superstructure (except deck)	1020.13(a)(1)(2)(3)(5) <sup>8/</sup>	7	1020.13(e)(1)(2)
Deck	1020.13(a)(5)	7	1020.13(e)(1)(2) <sup>17/</sup>
Retaining Walls	1020.13(a)(1)(2)(3)(4)(5) <sup>1/ 7/</sup>	7	1020.13(e)(1)(2)
Pump Houses	1020.13(a)(1)(2)(3)(4)(5) <sup>1/</sup>	7	1020.13(e)(1)(2)
Culverts	1020.13(a)(1)(2)(3)(4)(5) <sup>4/ 6/</sup>	7	1020.13(e)(1)(2) <sup>18/</sup>
Other Incidental Concrete	1020.13(a)(1)(2)(3)(5)	3	1020.13(c)
<b>Precast Concrete:</b> <sup>11/</sup>			
Bridge Beams			
Piles			
Bridge Slabs	1020.13(a)(3)(5) <sup>9/ 10/</sup>	As required. <sup>13/</sup>	504.06(c)(6), 1020.13(e)(2) <sup>19/</sup>
Nelson Type Structural Member			
All Other Precast Items	1020.13(a)(3)(4)(5) <sup>2/ 9/ 10/</sup>	As required. <sup>14/</sup>	504.06(c)(6), 1020.13(e)(2) <sup>19/</sup>
<b>Precast, Prestressed Concrete:</b> <sup>11/</sup>			
All Items	1020.13(a)(3)(5) <sup>9/ 10/</sup>	Until strand tensioning is released. <sup>15/</sup>	504.06(c)(6), 1020.13(e)(2) <sup>19/</sup>

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 at no additional cost to the Department.”

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 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 be according to the following.

- (a) Temperature Control other than Structures. The temperature of the concrete immediately before placement shall be a minimum of 10 °C (50 °F) and a maximum of 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 between 20 °C (70 °F) and 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 the concrete, as placed in the forms, shall be a minimum of 10 °C (50 °F) and a maximum of 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). 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 between 20 °C (70 °F) and 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."

#### **DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION**

Effective: September 1, 2000

Revised: June 22, 2005

FEDERAL OBLIGATION. The Department of Transportation, as a recipient of federal financial assistance, is required to take all necessary and reasonable steps to ensure nondiscrimination in the award and administration of contracts. Consequently, the federal regulatory provisions of 49 CFR part 26 apply to this contract concerning the utilization of disadvantaged business enterprises. For the purposes of this Special Provision, a disadvantaged business enterprise (DBE) means a business certified by the Department in accordance with the requirements of 49 CFR part 26 and listed in the DBE Directory or most recent addendum.

STATE OBLIGATION. This Special Provision will also be used by the Department to satisfy the requirements of the Business Enterprise for Minorities, Females, and Persons with Disabilities Act, 30 ILCS 575. When this Special Provision is used to satisfy state law requirements on 100% state-funded contracts, the federal government has no involvement in such contracts (not a federal-aid contract) and no responsibility to oversee the implementation of this Special Provision by the Department on those contracts. DBE participation on 100% state-funded contracts will not be credited toward fulfilling the Department's annual overall DBE goal required by the US Department of Transportation to comply with the federal DBE program requirements.

CONTRACTOR ASSURANCE. The Contractor makes the following assurance and agrees to include the assurance in each subcontract that the Contractor signs with a subcontractor:

The Contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of contracts

funded in whole or in part with federal or state funds. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

OVERALL GOAL SET FOR THE DEPARTMENT. As a requirement of compliance with 49 CFR part 26, the Department has set an overall goal for DBE participation in its federally assisted contracts. That goal applies to all federal-aid funds the Department will expend in its federally assisted contracts for the subject reporting fiscal year. The Department is required to make a good faith effort to achieve the overall goal. The dollar amount paid to all approved DBE 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 10.00% of the work. This percentage is set as the DBE participation goal for this contract. Consequently, in addition to the other award criteria established for this contract, the Department will 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.il.gov](http://www.dot.il.gov).

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 not responsive.

- (a) In order to assure the timely award of the contract, the as-read low bidder shall 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 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 not responsive. In the event the bid is declared not responsive 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 bidder to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidders are not, however, required to accept higher quotes from DBE companies if the price difference is excessive or unreasonable.
- (5) Not rejecting DBE companies as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.
  - (6) Making efforts to assist interested DBE companies in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.
  - (7) Making efforts to assist interested DBE companies in obtaining necessary equipment, supplies, materials, or related assistance or services.
  - (8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBE companies.
- (b) If the Department determines that the bidder has made a good faith effort to secure the work commitment of DBE companies to meet the contract goal, the Department will award the contract provided that it is otherwise eligible for award. If the Department determines that 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 not responsive.

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 Regional 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.

- (e) Notwithstanding any other provision of the contract, including but not limited to Article 109.09 of the Standard Specifications, the Contractor may request administrative reconsideration of a decision to deduct the amount of the goal not achieved as liquidated damages. A request to reconsider shall be delivered to the Contract Compliance Section and shall be handled and considered in the same manner as set forth in paragraph (c) of "Good Faith Effort Procedures" of this Special Provision, except a final decision that a good faith effort was not made during contract performance to achieve the goal agreed to in the Utilization Plan shall be the final administrative decision of the Department.

## **ELASTOMERIC BEARINGS (BDE)**

Effective: April 1, 2005

Revise Section 1083 of the Standard Specifications to read:

### **"SECTION 1083. ELASTOMERIC BEARINGS**

**1083.01 Description.** Elastomeric bearings shall consist of steel laminated elastomeric pads or assemblies of steel laminated elastomeric pads with externally bonded structural steel bearing plates, structural steel top bearing plate, and required stainless steel and TFE sheets, as shown on the plans and as specified herein.

Shop drawings of the bearing assemblies shall be submitted to the Engineer. The bearing assemblies shall be furnished as a complete unit from one manufacturing source.

**1083.02 Materials.** Materials shall be according to the following.

- (a) Properties of the Elastomer. The elastomer compound used in the construction of the bearings shall contain only virgin crystallization resistant polychloroprene (neoprene) or virgin natural polyisoprene (natural rubber) as the raw polymer. All materials shall be new with no reclaimed material incorporated in the finished bearing. The elastomer compounds shall be classified as being of low-temperature, Grade 3, as specified by the minimum grade requirements of Table 14.7.5.2-2, "Low Temperature Zones and Minimum Grade of Elastomer", of the AASHTO LRFD Bridge Design Specification. Low temperature zones used in this table are as defined in Figure 14.7.5.2-1, "Temperature Zones", of the same publication.

The cured elastomer shall be according to the following requirements. The properties of the cured elastomeric compound material shall be determined using samples taken from actual bearings.

Material Property <sup>1/ 2/</sup>	ASTM Standard	Test Requirements	Polyisoprene (Natural Rubber)	Polychloroprene (Neoprene)
Physical Properties	D 2240	Hardness	55 ± 5 Shore "A" points	55 ± 5 Shore "A" points
	D 412	Min. Tensile Strength	15,500 kPa (2250 psi)	15,500 kPa (2250 psi)
		Min. Ultimate Elongation	400%	400%
Heat Resistance	D 573 at Specified Temp.	Specified Temperature of Test	70 °C (158 °F)	100 °C (212 °F)
		Aging Time	168 hours	70 hours
		Max. Change in Durometer hardness	+10 Shore "A" points	+15 Shore "A" points
		Max. Change in Tensile Strength	-25%	-15%
		Max. Change in Ultimate Elongation	-25%	-40%
Adhesion <sup>3/</sup> to Steel	Illinois Test Procedure 603	Bond Strength (Peel Test)	7 N/mm (40 lb/in.)	7 N/mm (40 lb/in.)
	D 429, B	Adhesion Failure	R-80%	R-80%

1/ All material tests shall be conducted at 23 ± 2°C (73 ± 4°F) unless otherwise noted.

2/ For the purpose of determining conformance with this specification, an observed or calculated value shall be rounded off to the nearest 100 kPa (10 psi) for tensile strength, to the nearest ten percent of elongation, and to the nearest one percent for change in aged tensile and aged elongation. Hardness and aged hardness shall be rounded off to nearest point according to AASHTO R 11.

3/ The adhesion failure requirement is waived if bond strength equals or exceeds 14 N/mm (80 lb/in.).

- (b) TFE Material. The TFE resin shall be 100 percent virgin material, premium grade, meeting the requirements of ASTM D 4894. The TFE sheet (polytetrafluoroethylene sheet, premium grade) shall consist of pure TFE resin, compression molded and skived into sheets of the required thickness. The finished sheet shall conform to the following.

ASTM Standard	Physical Properties
D 638M (D 638)	Tensile strength min, kPa (psi) <span style="float: right;">19,300 (2800)</span>
D 638M (D 638)	Elongation, min % <span style="float: right;">200</span>
D 792	Specific Gravity <span style="float: right;">2.15-2.20</span>
D 2240	Hardness, Durometer D <span style="float: right;">50-65</span>
D 621	Deformation Under Load 23 °C/690 kPa/24 hrs (73 °F/100 psi/24 hrs), % <span style="float: right;">2-3</span> 50 °C/8,300 kPa/24 hrs (122 °F/1200 psi/24 hrs), % <span style="float: right;">4-8</span> 23 °C/13,800 kPa/24 hrs (73 °F/2000 psi/24 hrs), % <span style="float: right;">15 max.</span>
D 570	Water Absorption, % <span style="float: right;">0.01 max.</span> Static Coef. of Friction at 3450 kPa (500 psi) bearing pressure on stainless steel, max <span style="float: right;">0.07</span>
D 429, B	Adhesion to Steel Peel Strength, N/mm (lb/in.) <span style="float: right;">4.4 (25)</span>

(c) **Stainless Steel Sheets.** The stainless steel sheets shall be of the thickness specified and shall conform to ASTM A 240, Type 304. The sliding surface shall have a Type 2B finish or smoother as per the American Society of Metals.

(d) **Structural Steel.** Structural steel components shall be according to the following.

- (1) **Structural Steel Bearing Plates.** The structural steel bearing plates shall conform to the requirements of AASHTO M 270M Grade 250 (M 270, Grade 36).
- (2) **Internal Steel Laminates.** The internal steel laminates for the laminated elastomeric bearings shall be rolled mild steel sheets conforming to AISI 1015 - 1025, inclusive, ASTM A 1008 (A 1008M) or ASTM A 1011 (A 1011M) for less than 5 mm (3/16 in.) thick sheets, or AASHTO M 270M, Grade 250 (M 270, Grade 36) or ASTM A 283M (A 283) Grade D for 5 mm (3/16 in.) and thicker sheets.
- (3) **Shear Restrictor Pin.** The shear restrictor pin, when required, shall be press fit into the bearing plate and shall be alloy steel, quenched, and tempered to a minimum yield strength 1,450,000 kPa (210,000 psi) or RC hardness of 50 to 55.
- (4) **Threaded Stud.** The threaded stud, nuts and washers, when required, shall conform to the requirements of ASTM A 449 or A 193-B7 and shall be galvanized according to Article 1006.08 of the Standard Specifications.

**1083.03 Fabrication Requirements.** Bearings with steel laminates shall be cast as a unit in a mold and bonded and vulcanized under heat and pressure. The molds shall have standard shop practice mold finish. The internal steel laminates shall be blast cleaned to a condition matching that of SSPC-Vis 1-01, Pictorial Standard SP6, and additionally cleaned of any oil or grease before bonding. External load plates shall be protected from rusting by the manufacturer, and shall be hot bonded to the bearing during vulcanization. The bond of steel

components to and within the elastomeric pads shall be continuous throughout the plan area with no voids or air spaces greater than 2.5 mm (0.10 in.) within the bonding material. Bearings with steel laminates which are designed to act as a single unit with a given shape factor must be manufactured as a single unit. Corners and edges may be rounded with a radius at the corners not exceeding 10 mm (3/8 in.) and a radius at the edges not exceeding 6 mm (1/4 in.).

Bonding of TFE sheets shall be done as noted on the plans. No rubber flash will be permitted on the edges of TFE bearing surfaces. All burrs or raised edges along the perimeter of the TFE surface shall be removed before shipment.

All dimension tolerances shall be according to the following.

Dimensions	Tolerances	
	mm	(in.)
Overall vertical dimensions:		
Design thickness; 32 mm (1 1/4 in.) or less	-0, + 3	(-0, + 1/8)
Design thickness; over 32 mm (1 1/4 in.)	-0, + 6	(-0, + 1/4)
Overall horizontal dimensions:		
For measurements 914 mm (36 in.) and less	-0, + 6	(-0, + 1/4)
For measurements over 914 mm (36 in.)	-0, + 12	(-0, + 1/2)
Thickness of individual layers of elastomer at any point within the bearing:	± 20 % of design value but no more than ± 3 mm (1/8 in.)	
Variation from a plane parallel to the theoretical surface: (as determined by measurements at the edge of the bearings)		
Top	Slope relative to the bottom of no more than 0.005 radians.	
Sides	6	(1/4)
Position of exposed connection members:	± 3	(± 1/8)
Edge cover of embedded steel laminates, restraining devices, holes and slots:	+ 3 min. + 6 max.	(+ 1/8 min.) (+ 1/4 max.)
Size of holes, slots, or inserts:	± 3	(± 1/8)
Position of holes, slots, or inserts:	± 3	(± 1/8)

Structural steel bearing plates shall be fabricated according to Article 505.04 of the Standard Specifications. Prior to shipment of the bearing assemblies, the exposed edges and other exposed portions of the structural steel bearing plates shall be cleaned and painted in accordance with Articles 506.03 and 506.04 of the Standard Specifications. Painting shall be with the zinc-silicate primer according to Article 1008.22 of the Standard Specifications. During the cleaning and painting, the stainless steel and TFE sheet sliding surfaces and the elastomer shall be protected from abrasion and paint.

**1083.04 Testing and Acceptance.** The rubber laminates shall be of uniform integral units, capable of being separated by mechanical means into separate, well-defined elastomeric layers. The ultimate breakdown limit of the elastomeric bearing under compressive loading shall be not less than 13,800 kPa (2000 psi).

The bearing manufacturer shall load test each completed steel laminated elastomeric bearing pad assembly prior to shipment. The bearings shall be loaded to 10,300 kPa (1500 psi) and under this loading shall exhibit relatively uniform bulging of the rubber layers on all sides and shall show no bond loss or edge splitting. Bearing assemblies under this loading showing nonuniform bulging from one side of the pad to the other, nonuniform bulging along any vertical face of a pad, bulging extending across the specified location of one or more of the internal steel laminates or edge splitting shall be replaced. Nonuniform bulging from one side of the pad to the other may be an indication of lateral misalignment of the internal steel laminates and would not be cause for replacement if probing shows that the edge cover of the steel laminates are within the specified tolerances. Nonuniform bulging along any vertical face of the pad may be an indication of vertical misalignment of the steel laminates and would not be cause for replacement if measurement of the bases of the nonuniform bulges show that the thickness of the elastomeric layers are within the specified  $\pm 20$  percent tolerance. Bulging across the specified location of one or more steel laminates indicates missing steel laminates or lack of bond and pads exhibiting these characteristics shall always be replaced.

The Contractor shall furnish certified copies of the bearing manufacturer's test reports on the physical properties of the component materials for the bearings to be furnished and a certification by the bearing manufacturer that the bearings furnished have been load tested and conform to all requirements.

When directed by the Engineer, the Contractor shall furnish random samples of component materials used in the bearings for testing. In addition, when requested in writing by the Engineer, the Contractor shall furnish an additional project bearing assembly to the Department for testing. When the additional bearing assembly is requested, the Engineer retains the right to select the bearing assembly for testing at random from the project lot. The Contractor will be paid for the additional bearing assembly as specified in Article 503.22 of the Standard Specifications. If the bearing assembly tested is found to be unacceptable, two additional bearing assemblies will be tested. If both are acceptable, the lot will be accepted. If either of the two additional bearing assemblies are unacceptable, the lot will be rejected. The Contractor shall have a new lot produced, including one additional test bearing. No payment will be made for the original failed bearing assembly or any subsequent test assemblies.”

#### **EPOXY PAVEMENT MARKING (BDE)**

Effective: January 1, 2001

Revised: August 1, 2003

Revise Article 1095.04(b) of the Standard Specifications to read:

“(b) The Epoxide Value (WPE) of Component A shall be tested according to ASTM D 1652 on a pigment free basis. The WPE shall not vary more than plus or minus 50 units of the qualification samples.”

Revise Article 1095.04(c) of the Standard Specifications to read:



“(c) The Total Amine Value of Component B shall be tested according to ASTM D 2074. The Total Amine Value shall not vary more than plus or minus 50 units of the qualification samples.”

Revise Article 1095.04(g) of the Standard Specifications to read:

“(g) The epoxy pavement marking material, when mixed in the proper mix ratio and applied at 0.35 mm to 0.41 mm (14 to 16 mils) wet film thickness and with the proper saturation of glass spheres, shall exhibit a dry no pick-up time of twenty minutes or less when tested according to ASTM D 711.”

Revise Article 1095.04(m) of the Standard Specifications to read:

“(m) The glass beads meet the requirements of Article 1095.07 and the following:

- (1) The first drop glass beads shall be tested by the standard visual method of large glass spheres adopted by the Department. The beads shall have a silane coating and meet the following sieve requirements.

Sieve Size	U.S. Standard Sieve Number	% Passing (by weight)
1.70 mm	12	95-100
1.40 mm	14	75-95
1.18 mm	16	10-47
1.00 mm	18	0-7
850 μm	20	0-5

- (2) The second drop glass beads shall be Type B.”

Revise the second sentence of the first paragraph of Article 1095.04(n) of the Standard Specifications to read:

“Subject the coated panel for 75 hours to accelerated weathering using the light and water exposure apparatus (fluorescent UV – condensation type) as specified in ASTM G 53 (equipped with UVB-313 lamps).”

**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.

### **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."

### **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."

#### **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."

#### **FURNISHED EXCAVATION (BDE)**

Effective: August 1, 2002

Revised: November 1, 2004

Revise Article 204.01 of the Standard Specifications to read:

**Description.** Borrow excavation and furnished excavation shall consist of excavating suitable materials obtained from locations approved by the Engineer and transporting the materials to various locations throughout the limits of the contract."

Revise Article 204.07(b) of the Standard Specifications to read:

"(b) Measured Quantities. Furnished excavation will be computed for payment in cubic meters (cubic yards) as follows:

Furnished Excavation = Embankment - [Suitable Excavation x (1 - Shrinkage Factor)]

Where:

Embankment = the volume of fill in its final position computed by the method of average end areas and based upon the existing ground line as shown on the plans except as noted in (1) and (2) below;

Suitable Excavation = earth excavation, rock excavation, and other on-site excavation suitable for use in embankments as shown in the Earthwork Schedule on the plans;

Shrinkage Factor = 0.25 unless otherwise shown on the plans.

- (1) If the Contractor so requests, the Engineer will reestablish the existing ground line after the clearing and tree removal have been performed according to Section 201 and the top 150 mm (6 in.) of the existing ground surface has been disked and compacted to the satisfaction of the Engineer.
- (2) If settlement platforms are erected, the Engineer will reestablish the existing ground line after the embankment is complete as specified in Article 204.07(a)(2).

Furnished excavation placed in excess of that required for the execution of the contract will not be measured for payment.”

Add the following paragraph to the end of Article 204.07 of the Standard Specifications:

“The quantity for furnished excavation will not be recalculated when surplus, suitable materials are utilized in embankments according to Article 202.03.”

**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.”

**IMPACT ATTENUATORS (BDE)**

Effective: November 1, 2003

Description. This work shall consist of furnishing and installing 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

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.

### 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. Fully redirective and partially redirective attenuators shall also be designed for bi-directional impacts.

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. For sand modules, the perimeter of each module and the specified mass (weight) of sand in each module shall be painted on the surface of the base.

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.

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 (FULLY REDIRECTIVE, NARROW); IMPACT ATTENUATORS (FULLY REDIRECTIVE, WIDE); IMPACT ATTENUATORS (SEVERE USE, NARROW); IMPACT ATTENUATORS (SEVERE USE, WIDE); IMPACT ATTENUATORS (PARTIALLY REDIRECTIVE); or IMPACT ATTENUATORS (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.

#### **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.

**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 $\mu$ 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.”

**MINIMUM LANE WIDTH WITH LANE CLOSURE (BDE)**

Effective: January 1, 2005

Add the following paragraph after the eighth paragraph of Article 701.04(a) of the Standard Specifications.

“ The minimum lane width adjacent to a closed lane during paving, patching, and other moving operations on freeways and expressways shall be a minimum of 3 m (10 ft). The 3 m (10 ft) shall be clear, unobstructed, and free of channelizing devices or other obstacles.”

**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.

## **ORGANIC ZINC RICH PAINT SYSTEM**

Effective: November 1, 2001

Revised: August 1, 2003

Add the following to Section 1008 of the Standard Specifications:

“ **1008.26 Organic Zinc-Rich Paint System.** The organic zinc-rich paint system shall consist of an organic zinc-rich primer, an epoxy or urethane intermediate coat, and aliphatic urethane finish coats. It is intended for use over blast-cleaned steel when three-coat shop applications are specified. The system is also suitable for field painting blast-cleaned existing structures.

(a) General Requirements.

(1) Compatibility. Each coating in the system shall be supplied by the same paint manufacturer.

(2) Toxicity. Each coating shall contain less than 0.01 percent lead in the dry film and no more than trace amounts of hexavalent chromium, cadmium, mercury or other toxic heavy metals.

(3) Volatile Organics. The volatile organic compounds of each coating shall not exceed 420 g/L (3.5 lb/gal) as applied.

(b) Test Panel Preparation.

(1) Substrate and Surface Preparation. Test panels shall be AASHTO M 270M, Grade 250 (M 270 Grade 36), hot-rolled steel measuring 100 mm x 150 mm (4 in. x 6 in.). Panels shall be blast-cleaned per SSPC-SP5 white metal condition using metallic abrasive. The abrasive shall be a 60/40 mix of shot and grit. The shot shall be an SAE shot number S230 and the grit an SAE number G40. Hardness of the shot and grit shall be Rockwell C45. The anchor profile shall be 40-65 microns (1.5-2.5 mils) measured according to ASTM D 4417, Method C.

(2) Application and Curing. All coatings shall be spray applied at the manufacturer's recommended film thickness. The coated panels shall be cured at least 14 days at 24 °C ± 1 °C (75 °F ± 2 °F) and 50 ± 5 percent relative humidity.

(3) Scribing. The test panels shall be scribed according to ASTM D 1654 with a single "X" mark centered on the panel. The rectangular dimensions of the scribe shall have a top width of 50 mm (2 in.) and a height of 100 mm (4 in.). The scribe cut shall expose the steel substrate as verified with a microscope.

(4) Number of Panels. All testing shall be performed on triplicate panels.

(c) Zinc-Rich Primer Requirements.

(1) Generic Type. This material shall be an organic zinc-rich epoxy or urethane primer. It shall be suitable for topcoating with epoxies, urethanes, and acrylics.

(2) Zinc Dust. The zinc dust pigment shall comply with ASTM D 520, Type II.

(3) Slip Coefficient. The organic zinc coating shall meet a Class B AASHTO slip coefficient (0.50 or greater) for structural steel joints using ASTM A 325M (A 325) or A 490M (A 490) bolts.

(4) Salt Fog. There shall be no delamination, blistering, rust creepage at the scribe, or rusting at the scribe edges after 5,000 hours of salt fog exposure when tested according to ASTM B 117 and evaluated according to AASHTO R 31.

(5) Cyclic Exposure. There shall be no delamination, blistering, rust creepage at the scribe, or rusting at the scribe edges after 5,000 hours of cyclic exposure when tested according to ASTM D 5894 and evaluated according to AASHTO R 31.

(6) Humidity Exposure. There shall be no delamination, blistering, rust creepage at the scribe, or rusting at the scribe edges after 4,000 hours of humidity exposure when tested according to ASTM D 2247 and evaluated according to AASHTO R 31.

(7) Adhesion. The adhesion to an abrasively blasted steel substrate shall not be less than 6200 kPa (900 psi) when tested according to ASTM D 4541 Annex A4.

(8) Freeze Thaw Stability. There shall be no reduction of adhesion, which exceeds the test precision, after 30 days of freeze/thaw/immersion testing. One 24-hour cycle shall consist of 16 hours of approximately -30 °C (-22 °F) followed by 4 hours of thawing at 50 °C (122 °F) and 4 hours tap water immersion at 25 °C (77 °F). The test panels shall remain in the freezer on weekends and holidays.

(d) Intermediate Coat Requirements.

(1) Generic Type. This material shall be an epoxy or urethane. It shall be suitable as an intermediate coat over inorganic and organic zinc primers and compatible with acrylic, epoxy, and polyurethane topcoats.

(2) Color. The color of the intermediate coat shall be white or off-white.

(e) Urethane Finish Coat Requirements.

(1) Generic Type. This material shall be an aliphatic urethane. It shall be suitable as a topcoat over epoxies and urethanes.

(2) Color and Hiding Power. The finish coat shall match Munsell Glossy Color 7.5G 4/8 Interstate Green, 2.5YR 3/4 Reddish Brown, 10B 3/6 Blue, or 5B 7/1 Gray. The color difference shall not exceed 3.0 Hunter Delta E Units. Color difference shall be measured by instrumental comparison of the designated Munsell standard to a minimum dry film thickness of 75 microns (3 mils) of sample coating produced on a test panel according to ASTM D 823, Practice E, Hand-Held, Blade Film Application. Color measurements shall be determined on a spectrophotometer with 45 degrees circumferential/zero degrees geometry, illuminant C, and two degrees observer angle. The spectrophotometer shall measure the visible spectrum from 380-720 nanometers with a wavelength interval and spectral bandpass of 10 nanometers.

The contrast ratio of the finish coat at 75 microns (3 mils) dry film thickness shall not be less than 0.99 when tested according to ASTM D 2805.

(3) Weathering Resistance. Test panels shall be aluminum alloy measuring 300 mm x 100 mm (12 in. x 4 in.) prepared according to ASTM D 1730 Type A, Method 1 Solvent Cleaning. A minimum dry film thickness of 75 microns (3 mils) of finish coat shall be applied to three test panels according to ASTM D 823, Practice E, Hand Held Blade Film Application. The coated panels shall be cured at least 14 days at 24 °C ± 1 °C (75 °F ± 2 °F) and 50 ± 5 percent relative humidity. The panels shall be subjected to 300 hours of accelerated weathering using the light and water exposure apparatus (fluorescent UV - condensation type) as specified in ASTM G 53-96 and ASTM G 154 (equipped with UVB-313 lamps). The cycle shall consist of 8 hours UV exposure at 60 °C (140 °F) followed by 4 hours of condensation at 40 °C (104 °F). After exposure, rinse the panel with clean water; allow to dry at room temperature for one hour. The exposed panels shall not show a color change of more than 3 Hunter Delta E Units.

(f) Three Coat System Requirements.

(1) Finish Coat Color. For testing purposes, the color of the finish coat shall match Federal Standard No 595, color chip 14062 (green).

(2) Salt Fog. When tested according to ASTM B 117 and evaluated according to AASHTO R 31, the paint system shall exhibit no spontaneous delamination and not exceed the following acceptance levels after 5,000 hours of salt fog exposure:

Salt Fog Acceptance Criteria (max)			
Blister Criteria	Rust Criteria		
Size/Frequency	Maximum Creep	Average Creep	% Rusting at Scribed Edges
#8 Few	4mm	1mm	1

(3) Cyclic Exposure. When tested according to ASTM D 5894 and evaluated according to AASHTO R 31, the paint system shall exhibit no spontaneous delamination and not exceed the following acceptance levels after 5,000 hours of cyclic exposure:

Cyclic Exposure Acceptance Criteria (max)			
Blister Criteria	Rust Criteria		
Size/Frequency	Maximum Creep	Average Creep	% Rusting at Scribed Edges
#8 Few	2mm	1mm	1

(4) Humidity Exposure. There shall be no delamination, blistering, rust creepage at the scribe, or rusting at the scribe edges after 4,000 hours of humidity exposure when tested according to ASTM D 2247 and evaluated according to AASHTO R 31.

(5) Adhesion. The adhesion to an abrasively blasted steel substrate shall not be less than 6200 kPa (900 psi) when tested according to ASTM D 4541 Annex A4.

(6) Freeze Thaw Stability. There shall be no reduction of adhesion, which exceeds the test precision, after 30 days of freeze/thaw/immersion testing. One 24 hour cycle shall consist of 16 hours of approximately -30 °C (-22 °F) followed by 4 hours of thawing at 50 °C (122 °F) and 4 hours tap water immersion at 25 °C (77 °F). The test panels shall remain in the freezer mode on weekends and holidays.

(g) Qualification Samples and Tests. The manufacturer shall supply, to an independent test laboratory and to the Department, samples of the organic zinc-rich primer, epoxy or urethane intermediate coat, and aliphatic urethane finish coats for evaluation. Prior to approval and use, the manufacturer shall submit a notarized certification of the independent laboratory, together with results of all tests, stating that these materials meet the requirements as set forth herein. The certified test report shall state lots tested, manufacturer's name, product names, and dates of manufacture. New certified test results and samples for testing by the Department shall be submitted any time the manufacturing process or paint formulation is changed. All costs of testing, other than tests conducted by the Department, shall be borne by the manufacturer.

(h) Acceptance Samples and Certification. A 1 L (1 qt) sample of each lot of paint produced for use on state or local agency projects shall be submitted to the Department for testing, together with a manufacturer's certification. The certification shall state that the formulation for the lot represented is essentially identical to that used for qualification testing. All acceptance samples shall be witnessed by a representative of the Illinois Department of Transportation. The organic zinc-rich primer, epoxy or urethane intermediate coat, and aliphatic urethane finish coats shall not be used until tests are completed and they have met the requirements as set forth herein."

**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 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 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:

$$S = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}} \quad \text{where} \quad \Sigma(x_i - \bar{x})^2 = (x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + \dots + (x_{10} - \bar{x})^2$$

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.

$$\text{Pay Factor (PF) in percent} = 55 + 0.5 (\text{PWL})$$

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:

$$\text{Total Payment} = \text{TPF}[\text{CUP} (\text{TOTPAVT} - \text{DEFPAVT})]$$

TPF = Total Pay Factor

CUP = Contract Unit Price

TOTPAVT = Area of Pavement Subject to Coring

DEFPAVT = 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.

Percent Within Limits							
Quality Index (Q <sub>L</sub> )*	Percent Within Limits (PWL)	Quality Index (Q <sub>L</sub> )*	Percent Within Limits (PWL)	Quality Index (Q <sub>L</sub> )*	Percent Within Limits (PWL)	Quality Index (Q <sub>L</sub> )*	Percent Within Limits (PWL)
0.00	50.00	0.40	65.07	0.80	78.43	1.20	88.76
0.01	50.38	0.41	65.43	0.81	78.72	1.21	88.97
0.02	50.77	0.42	65.79	0.82	79.02	1.22	89.17
0.03	51.15	0.43	66.15	0.83	79.31	1.23	89.38
0.04	51.54	0.44	66.51	0.84	79.61	1.24	89.58
0.05	51.92	0.45	66.87	0.85	79.90	1.25	89.79
0.06	52.30	0.46	67.22	0.86	80.19	1.26	89.99
0.07	52.69	0.47	67.57	0.87	80.47	1.27	90.19
0.08	53.07	0.48	67.93	0.88	80.76	1.28	90.38
0.09	53.46	0.49	68.28	0.89	81.04	1.29	90.58
0.10	53.84	0.50	68.63	0.90	81.33	1.30	90.78
0.11	54.22	0.51	68.98	0.91	81.61	1.31	90.96
0.12	54.60	0.52	69.32	0.92	81.88	1.32	91.15
0.13	54.99	0.53	69.67	0.93	82.16	1.33	91.33
0.14	55.37	0.54	70.01	0.94	82.43	1.34	91.52
0.15	55.75	0.55	70.36	0.95	82.71	1.35	91.70
0.16	56.13	0.56	70.70	0.96	82.97	1.36	91.87
0.17	56.51	0.57	71.04	0.97	83.24	1.37	92.04
0.18	56.89	0.58	71.38	0.98	83.50	1.38	92.22
0.19	57.27	0.59	71.72	0.99	83.77	1.39	92.39
0.20	57.65	0.60	72.06	1.00	84.03	1.40	92.56
0.21	58.03	0.61	72.39	1.01	84.28	1.41	92.72
0.22	58.40	0.62	72.72	1.02	84.53	1.42	92.88
0.23	58.78	0.63	73.06	1.03	84.79	1.43	93.05
0.24	59.15	0.64	73.39	1.04	85.04	1.44	93.21
0.25	59.53	0.65	73.72	1.05	85.29	1.45	93.37
0.26	59.90	0.66	74.04	1.06	85.53	1.46	93.52
0.27	60.28	0.67	74.36	1.07	85.77	1.47	93.67
0.28	60.65	0.68	74.69	1.08	86.02	1.48	93.83
0.29	61.03	0.69	75.01	1.09	86.26	1.49	93.98
0.30	61.40	0.70	75.33	1.10	86.50	1.50	94.13
0.31	61.77	0.71	75.64	1.11	86.73	1.51	94.27
0.32	62.14	0.72	75.96	1.12	86.96	1.52	94.41
0.33	62.51	0.73	76.27	1.13	87.20	1.53	94.54
0.34	62.88	0.74	76.59	1.14	87.43	1.54	94.68
0.35	63.25	0.75	76.90	1.15	87.66	1.55	94.82
0.36	63.61	0.76	77.21	1.16	87.88	1.56	94.95
0.37	63.98	0.77	77.51	1.17	88.10	1.57	95.08
0.38	64.34	0.78	77.82	1.18	88.32	1.58	95.20
0.39	64.71	0.79	78.12	1.19	88.54	1.59	95.33

\*For Q<sub>L</sub> values less than zero, subtract the table value from 100 to obtain PWL

Percent Within Limits (continued)					
Quality Index (Q <sub>L</sub> )*	Percent Within Limits (PWL)	Quality Index (Q <sub>L</sub> )*	Percent Within Limits (PWL)	Quality Index (Q <sub>L</sub> )*	Percent Within Limits (PWL)
1.60	95.46	2.00	98.83	2.40	99.89
1.61	95.58	2.01	98.88	2.41	99.90
1.62	95.70	2.02	98.92	2.42	99.91
1.63	95.81	2.03	98.97	2.43	99.91
1.64	95.93	2.04	99.01	2.44	99.92
1.65	96.05	2.05	99.06	2.45	99.93
1.66	96.16	2.06	99.10	2.46	99.94
1.67	96.27	2.07	99.14	2.47	99.94
1.68	96.37	2.08	99.18	2.48	99.95
1.69	96.48	2.09	99.22	2.49	99.95
1.70	96.59	2.10	99.26	2.50	99.96
1.71	96.69	2.11	99.29	2.51	99.96
1.72	96.78	2.12	99.32	2.52	99.97
1.73	96.88	2.13	99.36	2.53	99.97
1.74	96.97	2.14	99.39	2.54	99.98
1.75	97.07	2.15	99.42	2.55	99.98
1.76	97.16	2.16	99.45	2.56	99.98
1.77	97.25	2.17	99.48	2.57	99.98
1.78	97.33	2.18	99.50	2.58	99.99
1.79	97.42	2.19	99.53	2.59	99.99
1.80	97.51	2.20	99.56	2.60	99.99
1.81	97.59	2.21	99.58	2.61	99.99
1.82	97.67	2.22	99.61	2.62	99.99
1.83	97.75	2.23	99.63	2.63	100.00
1.84	97.83	2.22	99.66	2.64	100.00
1.85	97.91	2.25	99.68	≥ 2.65	100.00
1.86	97.98	2.26	99.70		
1.87	98.05	2.27	99.72		
1.88	98.11	2.28	99.73		
1.89	98.18	2.29	99.75		
1.90	98.25	2.30	99.77		
1.91	98.31	2.31	99.78		
1.92	98.37	2.32	99.80		
1.93	98.44	2.33	99.81		
1.94	98.50	2.34	99.83		
1.95	98.56	2.35	99.84		
1.96	98.61	2.36	99.85		
1.97	98.67	2.37	99.86		
1.98	98.72	2.38	99.87		
1.99	98.78	2.39	99.88		

\*For Q<sub>L</sub> 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.

### **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.

### **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.”

### **POLYUREA PAVEMENT MARKING (BDE)**

Effective: April 1, 2004

Description. This work shall consist of furnishing and applying pavement marking lines.

The type of polyurea pavement marking applied will be determined by the type of reflective media used. Polyurea Pavement Marking Type I shall use glass beads as a reflective media. Polyurea Pavement Marking Type II shall use a combination of composite reflective elements and glass beads as a reflective media.

Polyurea-based liquid pavement markings shall only be applied by Contractors on the list of Approved Polyurea Contractors maintained by the Engineer of Operations and in effect on the date of advertisement for bids.

Materials. Materials shall meet the following requirements:

(a) Polyurea Pavement Marking. The polyurea pavement marking material shall consist of 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.

(b) Pigmentation. The pigment content by weight of component A shall be determined by low temperature ashing according to ASTM D 3723. The pigment content shall not vary more than  $\pm$  two percent from the pigment content of the original qualified paint.

White Pigment shall be Titanium Dioxide meeting ASTM D 476 Type II, Rutile.

Yellow Pigment shall be an Organic Yellow and contain no heavy metals.

(c) Environmental. Upon heating to application temperature, the material shall not exude fumes which are toxic or injurious to persons or property.

(d) Daylight Reflectance. The daylight directional reflectance of the cured polyurea material (without reflective media) shall be a minimum of 80 percent (white) and 50 percent (yellow) relative to magnesium oxide when tested using a color spectrophotometer with a 45 degrees circumferential /zero degrees geometry, illuminant C, and two degrees 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 with chromaticity limits as follows:

X	0.490	0.475	0.485	0.539
Y	0.470	0.438	0.425	0.456

(e) Weathering Resistance. The polyurea marking material, when mixed in the proper ratio and applied at 0.35 to 0.41 mm (14 to 16 mils) wet film thickness to an aluminum alloy panel (Federal Test Std. No. 141, Method 2013) 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) and tested according to ASTM G 53.

The cycle shall consist of four hours UV exposure at 50 °C (122 °F) and four hours of condensation at 40 °C (104 °F). UVB 313 bulbs shall be used. At the end of the exposure period, the material shall show no substantial change in color or gloss.

(f) Dry Time. The polyurea pavement marking material, when mixed in the proper ratio and applied at 0.35 to 0.41 mm (14 to 16 mils) wet film thickness and with the proper saturation of reflective media, shall exhibit a no-tracking time of ten minutes or less when tested according to ASTM D 711.

(g) Adhesion. The catalyzed polyurea pavement marking materials when applied to a 100 x 100 x 50 mm (4 x 4 x 2 in.) 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 of 24,100 kPa (3500 psi). A 50 mm (2 in.) square film of the mixed polyurea shall be applied to the brushed surface and allowed to cure for 72 hours at room temperature. A 50 mm (2 in.) square cube shall be affixed to the surface of the polyurea by means of an epoxy glue. After the glue has cured for 24 hours, the polyurea specimen shall be placed on a dynamic testing machine in such a fashion so that the specimen block is in a fixed position and the 50 mm (2 in.) cube (glued to the polyurea surface) is attached to the dynamometer head. Direct upward pressure shall be slowly applied until the polyurea system fails. The location of the break and the amount of concrete failure shall be recorded.



(h) 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 0.35 to 0.41 mm (14 to 16 mils) in thickness and allowed to cure at room temperature for 72 hours before testing.

(i) 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 120 mgs. The tests shall be run on cured samples of polyurea material which have been applied at a film thickness of 0.35 to 0.41 mm (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 and not more than 96 hours before testing.

(j) Reflective Media. The reflective media shall meet the following requirements:

(1) Type I - The glass beads shall meet the requirements of Article 1095.07 of the Standard Specifications and the following requirements:

a. First Drop Glass Beads The first drop glass beads shall be tested by the standard visual method of large glass spheres adopted by the Department. The beads shall have a silane coating and meet the following sieve requirements:

Sieve Size	U.S. Standard Sieve Number	% Passing (By Weight)
1.70 mm	12	95-100
1.40 mm	14	75-95
1.18 mm	16	10-47
1.00 mm	18	0-7
850 µm	20	0-5

b. Second Drop Glass Beads. The second drop glass beads shall meet the requirements of Article 1095.07 of the Standard Specifications for Type B.

(2) Type II - The combination of microcrystalline ceramic elements and glass beads shall meet the following requirements:

a. First Drop Glass Beads. The first drop glass beads shall meet the following requirements:

1. 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.

2. Index of Refraction. All microcrystalline reflective elements embedded to the outer surface shall have an index of refraction of 1.8 when tested by the immersion method.

3. Acid Resistance. A sample of microcrystalline ceramic beads supplied by the manufacturer, shall show resistance to corrosion of their surface after exposure to a one percent solution (by weight) of sulfuric acid. Adding 5.7 ml (0.2 oz) of concentrated acid into the water shall make the one percent acid solution. This test shall be performed by taking a 25 x 50 mm (1 x 2 in.) sample and adhering it to the bottom of a glass tray and placing just enough acid solution to completely immerse the sample. The tray shall be covered with a piece of glass to prevent evaporation and allow the sample to be exposed for 24 hours under these conditions. The acid solution shall be decanted (do not rinse, touch, or otherwise disturb the bead surfaces) and the sample dried while adhered to the glass tray in a 66 °C (150 °F) oven for approximately 15 minutes. Microscope examination (20X) shall show no white (corroded) layer on the entire surface.

b. Second Drop Glass Beads. The second drop glass beads shall meet the requirements of Article 1095.07 of the Standard Specifications for Type B or the following manufacturer's specification:

1. Sieve Analysis. The glass beads shall meet the following sieve requirements:

Sieve Size	U.S. Standard Sieve Number	% Passing (By Weight)
850 μm	20	100
600 μm	30	75-95
300 μm	50	15-35
150 μm	100	0-5

The manufacturer of the glass beads shall certify that the treatment of the glass beads meets the requirements of the polyurea manufacturer.

2. Imperfections. The surface of the glass beads shall be free of pits and scratches. The glass beads shall be spherical in shape and shall contain a maximum of 20 percent by weight of irregular shapes when tested by the standard method using a vibratile inclined glass plate as adopted by the Department.

3. Index of Refraction. The index of refraction of the glass beads shall be a minimum of 1.50 when tested by the immersion method at 25 °C (77 °F).

(k) Packaging. Microcrystalline ceramic reflective elements and glass beads shall be delivered in approved moisture proof bags or weather resistant bulk boxes. 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 12.7 mm (1/2 in.) in height.

(1) Moisture Proof Bags. Moisture proof bags shall consist of at least five ply paper construction unless otherwise specified. Each bag shall contain 22.7 kg (50 lb) net.

(2) Bulk Weather Resistance Boxes. Bulk weather resistance boxes shall conform to Federal Specification PPP-8-640D Class II or latest revision. Boxes are to be weather resistant, triple wall, fluted, corrugated-fiber board. Cartons shall be strapped with two metal straps. Straps shall surround the outside perimeter of the carton. The first strap shall be located approximately 50 mm (2 in.) 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 shall be lined with a minimum 4 mil polyester bag and meet Interstate Commerce Commission requirements. Cartons shall be approximately 1 x 1 m (38 x 38 in.), contain 910 kg (2000 lb) of microcrystalline ceramic reflective elements and/or glass beads and be supported on a wooden pallet with fiber straps.

(l) Packaging. 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.

(m) Verification. Prior to approval and use of the polyurea pavement 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 1/2 L (1 pt) 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 Department, certification by the polyurea manufacturer shall be submitted for each batch used. New independent laboratory certified test results and samples for testing by the Department shall be submitted any time the manufacturing process or paint formulation is changed. All costs of testing (other than tests conducted by the Department) shall be borne by the manufacturer.

(n) Acceptance samples. Acceptance samples shall consist of one 1/2 L (1 pt) 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 will be taken by a representative of the Department. The polyurea pavement marking materials shall not be used until tests are completed and they have met the requirements as set forth herein.

(o) Material Retainage. The manufacturer shall retain the test sample for a minimum of 18 months.

Equipment. The polyurea pavement marking compounds shall be applied through equipment specifically designed to apply two component liquid materials, glass beads and/or reflective elements in a continuous and skip-line pattern. The two-component liquid materials shall be applied after being accurately metered and then mixed with a static mix tube or airless impingement mixing guns. The static mixing tube or impingement mixing guns shall accommodate plural component material systems that have a volumetric ratio of 2 to 1 or 3 to

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 shall have the capacity to deliver materials from approximately 5.7 to 11.4 L/min (1.5 to 3 gal/min) to compensate for a typical range of application speeds of 10 to 13 km/h (6 to 8 mph). The accessories such as spray tip, mix chamber, and rod diameter shall 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 source to produce lines of uniform dimensions and prevent application failure. The truck shall have at least two polyurea tanks each of 415 L (110 gal) 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 in a solid or intermittent pattern, in yellow or white, and applying the appropriate reflective media according to 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) Material Reservoirs. The applicator shall provide individual material reservoirs, or space for the storage of Part A and Part B of the resin composition.
- (b) Heating Equipment. The applicator shall be equipped with heating equipment of sufficient capacity to maintain the individual resin components at the manufacturer's recommended temperature of  $\pm 2.8$  °C ( $\pm 5$  °F) for spray application.
- (c) Dispensing Equipment. 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) Volumetric Usage. The applicator 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.
- (e) Pavement Marking Placement. 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.

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.

## CONSTRUCTION REQUIREMENTS

General. The pavement 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 surface. New PCC pavements shall be air-blast-cleaned to remove all latents.

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.

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 approves the cleaning.

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 0.4 mm (15 mils) according to the manufacturer's installation instructions. On new bituminous course surfaces the pavement markings shall be applied at a minimum uniform wet thickness of 0.5 mm (20 mils). 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 4 °C (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 will 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:

- (a) The surface shall be air-blasted to remove any dirt and residue.
- (b) The resin shall be mixed and heated according to manufacturer's recommendations and sprayed onto the pavement surface.

The edge of the center line or lane line shall be offset a minimum distance of 50 mm (2 in.) from a longitudinal crack or joint. Edge lines shall be approximately 50 mm (2 in.) from the edge of pavement. The finished center and lane lines shall be straight, with the lateral deviation of any 3 m (10 ft) line not to exceed 25 mm (1 in.).

Notification. The Contractor shall notify the Engineer 72 hours prior to the placement of the markings in order that he/she can be present during the operation. At the time of notification, the Contractor shall provide the Engineer the manufacturer and lot numbers of polyurea and reflective media that will be used.

Inspection. The polyurea pavement markings will be inspected following installation according to Article 780.10 of the Standard Specifications, except, no later than December 15, and inspected following a winter performance period that extends 180 days from December 15.

Method of Measurement. This work will be measured for payment in place, in meters (feet). Double yellow lines will be measured as two separate lines.

Basis of Payment. This work will be paid for at the contract unit price per meter (foot) for POLYUREA PAVEMENT MARKING TYPE I – LINE of the line width specified or for POLYUREA PAVEMENT MARKING TYPE II – LINE of the line width specified.

### **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.

#### **PORTLAND CEMENT (BDE)**

Effective: January 1, 2005

Revised: November 1, 2005

Add the following paragraph after the last paragraph of Article 1001.01 of the Standard Specifications.

“For portland cement according to ASTM C 150, the bill of lading shall state if limestone has been added. The bill of lading shall also state that the limestone addition is not in excess of five percent by mass (weight) of the cement.”

#### **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”.”

## **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.



**PRECAST, PRESTRESSED CONCRETE MEMBERS (BDE)**

Effective: April 1, 2004

Revise the tables, "Maximum Allowable Dimensional Tolerances for Precast, Prestressed I-beams and Bulb T-beams" in Article 504.06(d) of the Standard Specifications to read:

"Maximum Allowable Dimensional Tolerances for Precast, Prestressed Concrete I-Beams and Bulb T-Beams	
mm	
Depth (flanges, web and fillets) .....	± 5
Depth (overall) .....	+ 5 to - 3
Width (flanges and fillets) .....	± 5
Width (web) .....	+ 5 to - 3
Length .....	± 3 per 3 m, max. + 15 to - 20
Square Ends (deviation from square) .....	± 5
Skew Ends (deviation from tangent offset) .....	± 5
Side Insert (spacing between centers of inserts and from the centers of inserts to the ends of the beams) .....	± 15
Bearing Plates (spacing between the centers of bearing plates) .....	± 15
Bearing Plate (spacing between the centers of bearing plates to the ends of the beams) .....	± 5
Bearing Plate or Bearing Area (variation from a true horizontal plane or from a plane surface when tested with a straightedge) .....	± 2
Stirrup Bars (extension above top of the beam) .....	0 to - 10
Stirrup Bars longitudinal spacing	
Within a distance equal to the depth of the member and measured from the end of the member .....	+ 25
In all other locations .....	+ 50
<p>The number of stirrups shall not be less than the required number in each length. Additional stirrups may be added when the maximum allowable tolerance is exceeded provided the minimum clearance between stirrups is not less than 50 mm.</p>	
<p>End Stirrup Bars - not more than 50 mm from the end of the beam</p>	
Horizontal Alignment (deviation from a straight line parallel to the centerline of the beam) .....	± 3 per 3 m, max. ± 30

Maximum Allowable Dimensional Tolerances For Precast, Prestressed Concrete I-Beams and Bulb T-Beams (English)	
	in.
Depth (flanges, web and fillets) .....	± 1/4
Depth (overall) .....	+ 1/4 to - 1/8
Width (flanges and fillets) .....	± 1/4
Width (web) .....	+ 1/4 to - 1/8
Length .....	± 1/8 per 10', max. + 1/2 to - 3/4
Square Ends (deviation from square) .....	± 1/4
Skew Ends (deviation from tangent offset) .....	± 1/4
Side Insert (spacing between centers of inserts and from the centers of inserts to the ends of the beams) .....	± 1/2
Bearing Plates (spacing between the centers of bearing plates) .....	± 1/2
Bearing Plate (spacing between the centers of bearing plates to the ends of the beams) .....	± 1/4
Bearing Plate or Bearing Area (variation from a true horizontal plane or from a plane surface when tested with a straightedge) .....	± 1/16
Stirrup Bars (extension above top of the beam) .....	0 to - 3/8
Stirrup Bars longitudinal spacing	
Within a distance equal to the depth of the member and measured from the end of the member .....	+ 1
In all other locations .....	+ 2
<p>The number of stirrups shall not be less than the required number in each length. Additional stirrups may be added when the maximum allowable tolerance is exceeded provided the minimum clearance between stirrups is not less than 2 in.</p>	
<p>End Stirrup Bars - not more than 2" from the end of the beam</p>	
Horizontal Alignment (deviation from a straight line parallel to the centerline of the beam) .....	± 1/8 per 10 ft, max. ± 1 1/4"

**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.”

**RAISED REFLECTIVE PAVEMENT MARKERS (BRIDGE) (BDE)**

Effective: August 1, 2003

Add the following sentence to the end of the second paragraph of Article 781.03(a) of the Standard Specifications:

“The installed height for the reflective pavement markers shall be approximately 7.5 mm (0.3 in.) above the road surface.”

Revise Article 781.05 of the Standard Specifications to read:

“**781.05 Basis of Payment.** This work will be paid for at the contract unit price per each for RAISED REFLECTIVE PAVEMENT MARKER, RAISED REFLECTIVE PAVEMENT MARKER (BRIDGE), TEMPORARY RAISED REFLECTIVE PAVEMENT MARKER, and REPLACEMENT REFLECTOR.”

Revise the first paragraph of Article 1096.01(b) of the Standard Specifications to read:

“(b) The overall dimensions for raised reflective pavement markers shall be approximately 254 mm (10 in.) long by 140 mm (5.5 in.) wide and a maximum of 45 mm (1.76 in.) high. The overall dimensions for bridge raised reflective pavement markers shall be approximately 235 mm (9.25 in.) long by 149 mm (5.86 in.) wide and a maximum of 32 mm (1.25 in.) high. The surface of the keel and web shall be free of scale, dirt, rust, oil, grease, or any other contaminant which may reduce the bond.”

**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.

**REINFORCEMENT BARS (BDE)**

Effective: November 1, 2005

Revised: November 2, 2005

Revise Article 1006.10(a) of the Supplemental Specifications to read:

“(a) Reinforcement Bars. Reinforcement bars will be accepted according to the current Bureau of Materials and Physical Research Policy Memorandum, “Reinforcement Bar and Dowel Bar Plant Certification Procedure”. The Department will maintain an approved list of producers.

(1) Reinforcement Bars (Non-Coated). Reinforcement bars shall be according to ASTM A 706M (A 706), Grade 420 (60) for deformed bars and the following.

a. Chemical Composition. The chemical composition of the bars shall be according to the following table.

CHEMICAL COMPOSITION		
Element <sup>1/</sup>	Heat Analysis (% maximum)	Product Analysis (% maximum)
Carbon	0.30	0.33
Manganese	1.50	1.56
Phosphorus	0.035	0.045
Sulfur	0.045	0.055
Silicon	0.50	0.55
Nickel	2/	2/
Chromium	2/	2/
Molybdenum	2/	2/
Copper	2/	2/
Titanium	2/	2/
Vanadium	2/	2/
Columbium	2/	2/
Aluminum	2/, 3/	2/, 3/
Tin <sup>4/</sup>	0.040	0.044

Note 1/. The bars shall not contain any traces of radioactive elements.

Note 2/. There is no composition limit but the element must be reported.

Note 3/. If aluminum is not an intentional addition to the steel for deoxidation or killing purposes, residual aluminum content need not be reported.

Note 4/. If producer bar testing indicates an elongation of 15 percent or more and passing of the bend test, the tin composition requirement may be waived.

- b. Heat Numbers. Bundles or bars at the construction site shall be marked or tagged with heat identification numbers of the bar producer.
  - c. Guided Bend Test. Bars may be subject to a guided bend test across two pins which are free to rotate, where the bending force shall be centrally applied with a fixed or rotating pin of a certain diameter as specified in Table 3 of ASTM A 706M (A 706). The dimensions and clearances of this guided bend test shall be according to ASTM E 190.
  - d. Spiral Reinforcement. Spiral reinforcement shall be deformed or plain bars conforming to the above requirements or cold-drawn steel wire conforming to AASHTO M 32.
- (2) Epoxy Coated Reinforcement Bars. Epoxy coated reinforcement bars shall be according to Article 1006.10(a)(1) and shall be epoxy coated according to AASHTO M 284M (M 284) and the following.
- a. Certification. The epoxy coating applicator shall be certified under the Concrete Reinforcing Steel Institute's (CRSI) Epoxy Plant Certification Program.
  - b. Coating Thickness. The thickness of the epoxy coating shall be 0.18 to 0.30 mm (7 to 12 mils). When spiral reinforcement is coated after fabrication, the thickness of the epoxy coating shall be 0.18 to 0.50 mm (7 to 20 mils).
  - c. Cutting Reinforcement. Reinforcement bars may be sheared or sawn to length after coating, providing the end damage to the coating does not extend more than 13 mm (0.5 in.) back and the cut is patched before any visible rusting appears. Flame cutting will not be permitted."

**REMOVE AND RE-ERECT STEEL PLATE BEAM GUARDRAIL AND TRAFFIC BARRIER TERMINALS (BDE)**

Effective: January 1, 2001

Revised: January 1, 2005

Description. This work shall consist of replacing existing steel block-outs with wood or plastic block-outs during the removal and re-erection of steel plate beam guardrail and traffic barrier terminals.

Wood block-outs shall be according to the current standard applicable to the type of guardrail or terminal section being re-erected. Plastic blockouts shall be on the Department's approved list.

The existing steel posts may be drilled to match the bolt pattern shown on standard 630001 for the block-out or a new steel post shall be provided.

All existing "C" posts shall be removed and new posts shall be provided.



Basis of Payment. This work will not be paid for separately but shall be included in the contract unit price per meter (foot) for REMOVE AND RE-ERECT STEEL PLATE BEAM GUARDRAIL, of the type specified, and at the contract unit price each for REMOVE AND RE-ERECT TRAFFIC BARRIER TERMINALS, of the type specified.

**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/

**SELF-CONSOLIDATING CONCRETE FOR CAST-IN-PLACE CONSTRUCTION (BDE)**

Effective: November 1, 2005

Definition. Self-consolidating concrete is a flowable mixture that does not require mechanical vibration for consolidation.

Usage. Self-consolidating concrete may be used for cast-in-place concrete construction items involving Class MS and SI concrete. Self-consolidating concrete may also be used for drilled shafts.

Materials. Materials shall be according to the following.

- (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 concrete that can flow around reinforcement and consolidate under its own weight without additional effort and without segregation.

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. Article 1020.04 of the Standard Specifications shall apply except as follows:

- (a) The minimum cement factor shall be according to Article 1020.04 of the Standard Specifications or as specified. The maximum cement factor shall be 418 kg/cu m (7.05 cwt/cu yd). The cement factor shall not be reduced if a water-reducing, retarding, or high range water-reducing admixture is used.
- (b) The maximum allowable water/cement ratio shall be according to Article 1020.04 of the Standard Specifications or 0.44, whichever is lower.
- (c) The slump requirements shall not apply.
- (d) The coarse aggregate gradations shall be CA 11, CA 13, CA 14, CA 16, or a blend of these gradations. CA 11 shall not be used for drilled shafts or when the Engineer approves a horizontal flow distance greater than 9 m (30 ft). The fine aggregate proportion shall be a maximum 50 percent by mass (weight) of the total aggregate used.

- (e) The slump flow range shall be  $\pm 50$  mm ( $\pm 2$  in.) of the Contractor target value, and within the overall Department range of 510 mm (20 in.) minimum to 710 mm (28 in.) maximum.
- (f) The visual stability index shall be a maximum of 1.
- (g) The J-ring value shall be a maximum of 100 mm (4 in.). The Contractor may specify a lower maximum in the mix design.
- (h) The L-box blocking ratio shall be a minimum of 60 percent. The Contractor may specify a higher minimum in the mix design.
- (i) The column segregation index shall be a maximum 15 percent.
- (j) The hardened visual stability index shall be a maximum of 1.

Test Methods. Illinois Test Procedures SCC-1, SCC-2, SCC-3, SCC-4, SCC-5, SCC-6, and Illinois Modified AASHTO T 22, 23, 121, 126, 141, 152, 177, 196, and 309 shall be used for testing of self-consolidating concrete mixtures.

Mix Design Submittal. The Contractor's Level III PCC Technician shall submit a mix design according to the "Portland Cement Concrete Level III Technician" course manual, except target slump information is not applicable and will not be required. However, a slump flow target range shall be submitted. In addition, the design mortar factor may exceed 1.10 and durability test data will be waived.

A J-ring value shall be submitted if a lower mix design maximum will apply. An L-box blocking ratio shall be submitted if a higher mix design minimum will apply. The Contractor shall also indicate applicable construction items for the mix design.

Trial mixture information will also be required by the Engineer. A trial mixture is a batch of concrete tested by the Contractor to verify the Contractor's mix design will meet specification requirements. Trial mixture information shall include test results as specified in the "Portland Cement Concrete Level III Technician" course manual. Test results shall also include slump flow, visual stability index, J-ring value, L-box blocking ratio, column segregation index, and hardened visual stability index. For the trial mixture, the slump flow shall be near the midpoint of the proposed slump flow target range.

Trial Batch. A minimum 1.5 cu m (2 cu yd) trial batch shall be produced, and the self-consolidating concrete admixture dosage proposed by the Contractor shall be used. The slump flow shall be within 25 mm (1.0 in.) of the maximum slump flow range specified by the Contractor, and the air content shall be within the top half of the allowable specification range.

The trial batch shall be scheduled a minimum of 21 calendar days prior to anticipated use, and shall be performed in the presence of the Engineer.

The Contractor shall provide the labor, equipment, and materials to test the concrete. The mixture will be evaluated by the Engineer for strength, air content, slump flow, visual stability index, J-ring value, L-box blocking ratio, column segregation index, and hardened visual stability index.

Upon review of the test data from the trial batch, the Engineer will verify or deny the use of the mix design and notify the Contractor. Verification by the Engineer will include the Contractor's target slump flow range. If applicable, the Engineer will verify the Contractor's maximum J-ring value and minimum L-box blocking ratio.

A new trial batch will be required whenever there is a change in the source of any component material, proportions, dosage of the self-consolidating concrete admixture, batch sequence, mixing speed, mixing time, or as determined by the Engineer. The testing criteria for the new trial batch will be determined by the Engineer.

When necessary, the trial batches shall be disposed of according to Article 202.03 of the Standard Specifications.

Mixing Portland Cement Concrete. In addition to Article 1020.11 of the Standard Specifications, the mixing time for central-mixed concrete shall not be reduced as a result of a mixer performance test. Truck-mixed or shrink-mixed concrete shall be mixed in a truck mixer for a minimum of 100 revolutions.

Wash water, if used, shall be completely discharged from the drum or container before the succeeding batch is introduced.

The batch sequence, mixing speed, and mixing time shall be appropriate to prevent cement balls and mix foaming for central-mixed, truck-mixed, and shrink-mixed concrete.

Falsework and Forms. In addition to Articles 503.05 and 503.06 of the Standard Specifications, the Contractor shall design falsework and forms for full hydrostatic head pressure of the concrete. Forms shall be tight to prevent leakage of fluid concrete.

Placing and Consolidating. Concrete placement and consolidations shall be according to Article 503.07 of the Standard Specifications except as follows:

Revise the third paragraph of Article 503.07 of the Standard Specifications to read:

“Open troughs and chutes shall extend as nearly as practicable to the point of deposit. The drop distance of concrete shall not exceed 1.5 m (5 ft). If necessary, a tremie shall be used to meet this requirement. The maximum distance of horizontal flow from the point of deposit shall be 9 m (30 ft), unless approved otherwise by the Engineer. For drilled shafts, free fall placement will not be permitted.”

Delete the sixth, seventh, eighth and ninth paragraphs of Article 503.07 of the Standard Specifications.

Revise the eleventh paragraph of Article 503.07 of the Standard Specifications to read:

“Concrete shall be placed in continuous layers. When it is necessary by reason of an emergency to place less than a complete horizontal layer in one operation, such layer shall terminate in a vertical bulkhead. In order that the concrete will not be injured and that there shall be no line of separation between the batches, the separate batches shall follow each other closely as recommended by the manufacturer of the self-consolidating concrete admixture(s). In no case shall the interval of time between the placing of successive batches be greater than 20 minutes. Concrete shall be rodded with a piece of lumber or conduit if the material has lost its fluidity prior to placement of additional concrete. Any other method for restoring the fluidity of the concrete shall be approved by the Engineer. If ready-mixed concrete is used, the requirements of Article 1020.11 shall apply. Delivery of mixed concrete shall be regulated so that there will not be an interruption in the placing of concrete in the forms, as recommended by the manufacturer of the self-consolidating concrete admixture(s). In no case shall the interval of time be greater than 20 minutes.”

Quality Control by Contractor at Plant. The specified test frequencies for aggregate gradation, aggregate moisture, air content, unit weight/yield, and temperature shall be performed as indicated in the contract plans.

Slump flow, visual stability index, and J-ring or L-box tests shall be performed as needed to control production. The column segregation index test and hardened visual stability index test will not be required to be performed at the plant.

Quality Control by Contractor at Jobsite. The specified test frequencies for air content, strength, and temperature shall be performed as indicated in the contract plans.

Slump flow, visual stability index, and J-ring or L-box tests shall be performed on the first two truck deliveries of the day, and every 40 cu m (50 cu yd) thereafter. The Contractor shall select either the J-ring or L-box test for jobsite testing.

The column segregation index test will not be required to be performed at the jobsite. The hardened visual stability index test shall be performed on the first truck delivery of the day, and every 230 cu m (300 cu yd) thereafter. Slump flow, visual stability index, J-ring value or L-box blocking ratio, air content, and concrete temperature shall be recorded for each hardened visual stability index test.

The Contractor shall retain all hardened visual stability index cut cylinder specimens until the Engineer notifies the Contractor that the specimens may be discarded.

If mix foaming or other potential detrimental material is observed during placement or at the completion of the pour, the material shall be removed while the concrete is still plastic.

Quality Assurance by Engineer at Plant. For air content and aggregate gradation, quality assurance independent sample testing and split sample testing will be performed as indicated in the contract plans.

For slump flow, visual stability index, and J-ring or L-box tests, quality assurance independent sample testing and split sample testing will be performed as determined by the Engineer.

Quality Assurance by Engineer at Jobsite. For air content and strength, quality assurance independent sample testing and split sample testing will be performed as indicated in the contract plans.

For slump flow, visual stability index, J-ring or L-box, and hardened visual stability index tests, quality assurance independent sample testing will be performed as determined by the Engineer.

For slump flow and visual stability index quality assurance split sample testing, the Engineer will perform tests at the beginning of the project on the first three tests performed by the Contractor.

Thereafter, a minimum of ten percent of total tests required of the Contractor will be performed per plant, which will include a minimum of one test per mix design. The acceptable limit of precision will be 25 mm (1 in.) for slump flow, and a limit of precision will not apply to the visual stability index.

For the J-ring or the L-box quality assurance split sample testing, a minimum of 80 percent of the total tests required of the Contractor will be witnessed by the Engineer per plant, which will include a minimum of one witnessed test per mix design. The Engineer reserves the right to conduct quality assurance split sample testing. The acceptable limit of precision will be 25 mm (1 in.) for the J-ring value and ten percent for the L-box blocking ratio.

For each hardened visual stability index test performed by the Contractor, the cut cylinders shall be presented to the Engineer for determination of the rating. The Engineer reserves the right to conduct quality assurance split sample testing. A limit of precision will not apply to the hardened visual stability index.

### **SELF-CONSOLIDATING CONCRETE FOR PRECAST PRODUCTS (BDE)**

Effective: July 1, 2004

Revised: November 1, 2005

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.

Materials. Materials shall be according to the following.

- (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 concrete that can flow around reinforcement and consolidate under its own weight without additional effort and without segregation.



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 mix design criteria shall be as follows:

- (a) The minimum cement factor shall be according to Article 1020.04 of the Standard Specifications or as specified. The maximum cement factor shall be 418 kg/cu m (7.05 cwt/cu yd).
- (b) The maximum allowable water/cement ratio shall be according to Article 1020.04 of the Standard Specifications or 0.44, whichever is lower.
- (c) The slump requirements of Article 1020.04 of the Standard Specifications shall not apply.
- (d) The coarse aggregate gradations shall be CA 11, CA 13, CA 14, CA 16, or a blend of these gradations. CA 11 shall not be used when the Engineer approves a horizontal flow distance greater than 9 m (30 ft). The fine aggregate proportion shall be a maximum 50 percent by mass (weight) of the total aggregate used.

- (e) The slump flow range shall be  $\pm 50$  mm ( $\pm 2$  in.) of the Contractor target value, and within the overall Department range of 510 mm (20 in.) minimum to 710 mm (28 in.) maximum.
- (f) The visual stability index shall be a maximum of 1.
- (g) The J-ring value shall be a maximum of 100 mm (4 in.). The Contractor may specify a lower maximum in the mix design.
- (h) The L-box blocking ratio shall be a minimum of 60 percent. The Contractor may specify a higher minimum in the mix design.
- (i) The column segregation index shall be a maximum 15 percent.
- (j) The hardened visual stability index shall be a maximum of 1.

Mix Design Approval. The Contractor shall obtain mix design approval according to the Department's Policy Memorandum "Quality Control/Quality Assurance Program for Precast Concrete Products".

#### **SHOULDER RUMBLE STRIPS (BDE)**

Effective: January 1, 2003

Delete the third paragraph of Article 482.06 of the Standard Specifications.

Delete the last two sentences of the fourth paragraph of Article 483.06 of the Standard Specifications.

Add the following to the Standard Specifications:

#### **"SECTION 642. SHOULDER RUMBLE STRIPS**

**642.01 Description.** This work shall consist of constructing rumble strips in shoulders.

**642.02 Equipment.** The equipment shall be a self-propelled milling machine with a rotary-type cutting head(s). The cutting head(s) shall be suspended from the machine such that it can align itself with the slope of the shoulder and any irregularities in the shoulder surface. The teeth of the cutting head(s) shall be arranged to provide a smooth cut, with no more than a 3 mm (1/8 in.) difference between peaks and valleys.

Prior to commencement of the work, the Contractor shall demonstrate, to the satisfaction of the Engineer, the ability of the equipment to achieve the desired results without damaging the shoulder.

## CONSTRUCTION REQUIREMENTS

**642.03 General.** The rumble strips shall be cut to the dimensions shown on the plans. Guides shall be used to ensure consistent alignment, spacing and depth. In portland cement concrete shoulders, rumble strips may be formed according to the details shown on the plans immediately after the application of the final finish.

Rumble strips shall be omitted within the limits of structures, entrances, side roads, entrance ramps and exit ramps. In portland cement concrete shoulders, rumble strips shall not be placed within 150 mm (6 in.) of transverse joints.

Cuttings resulting from this operation shall be disposed of according to Article 202.03 of the Standard Specifications and the shoulders shall be swept clean.

**642.04 Method of Measurement.** This work will be measured for payment in meters (feet) along the edge of pavement. Measurement will include both the cut and uncut (formed and unformed) sections of the shoulder rumble strips with exceptions for bridge decks, approach pavements, turn lanes, entrances and other sections where shoulder rumble strips have been omitted.

**642.05 Basis of Payment.** This work will be paid for at the contract unit price per meter (foot) for SHOULDER RUMBLE STRIPS.”

### 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.”

**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 Gyrotory 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 <sup>1/</sup>	93.0 – 97.4% of G <sub>mm</sub>

- 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 Production .....312.08”

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”.

## **STEEL PLATE BEAM GUARDRAIL (BDE)**

Effective: November 1, 2005

Add the following to the end of the first paragraph of Article 1006.25 of the Standard Specifications:

"The thickness of the galvanized coating for each side of the guardrail shall be at least 610 g/sq m (2.00 oz/sq ft). The thickness of the zinc or zinc alloy will be determined for each side using the average of at least three non-destructive test readings taken on that side of the guardrail."

### **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.

### **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.”

### **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  $163 \pm 3$  °C ( $325 \pm 5$  °F) and a gyratory compaction temperature of  $152 \pm 3$  °C ( $305 \pm 5$  °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 Gyratory Compactor. The superpave gyratory 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.

<b>TABLE 1. MIXTURE COMPOSITION (% PASSING)<sup>1/</sup></b>								
<b>Sieve Size</b>	<b>IL-25.0 mm</b>		<b>IL-19.0 mm</b>		<b>IL-12.5 mm<sup>4/</sup></b>		<b>IL-9.5 mm<sup>4/</sup></b>	
	<b>min</b>	<b>max</b>	<b>min</b>	<b>max</b>	<b>Min</b>	<b>max</b>	<b>min</b>	<b>max</b>
<b>37.5 mm (1 1/2 in.)</b>		100						
<b>25 mm (1 in.)</b>	90	100		100				
<b>19 mm (3/4 in.)</b>		90	82	100		100		
<b>12.5 mm (1/2 in.)</b>	45	75	50	85	90	100		100
<b>9.5 mm (3/8 in.)</b>						89	90	100
<b>4.75 mm (#4)</b>	24	42 <sup>2/</sup>	24	50 <sup>2/</sup>	28	65	28	65
<b>2.36 mm (#8)</b>	16	31	20	36	28	48 <sup>3/</sup>	28	48 <sup>3/</sup>
<b>1.18 mm (#16)</b>	10	22	10	25	10	32	10	32
<b>600 μm (#30)</b>								
<b>300 μm (#50)</b>	4	12	4	12	4	15	4	15
<b>150 μm (#100)</b>	3	9	3	9	3	10	3	10
<b>75 μm (#200)</b>	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  $N_{design} \geq 90$ .
- 3/ The mixture composition shall not exceed 40 percent passing the 2.36 mm (#8) sieve for surface courses with  $N_{design} \geq 90$ .
- 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  $\mu\text{m}$  (#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.

<b>TABLE 2. VOLUMETRIC REQUIREMENTS</b>					
	<b>Voids in the Mineral Aggregate (VMA), % minimum</b>				<b>Voids Filled with Asphalt (VFA), %</b>
<b>N<sub>design</sub></b>	<b>IL-25.0</b>	<b>IL-19.0</b>	<b>IL-12.5</b>	<b>IL-9.5</b>	
<b>50</b>	12.0	13.0	14.0	15	65 - 78
<b>70</b>					65 - 75
<b>90</b>					
<b>105</b>					

- (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.

<b>TABLE 3. REQUIRED PLANT TESTS for SUPERPAVE</b>		
<b>Parameter</b>	<b>Frequency of Tests</b>	<b>Test Method</b>
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	Illinois Modified AASHTO T 312
	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:

<b>TABLE 4 – MINIMUM COMPACTED LIFT THICKNESS</b>	
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:

<b>TABLE 5 – LEVELING BINDER</b>	
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:

<b>TABLE 6. DENSITY CONTROL LIMITS</b>		
Mixture	Parameter	Individual Test
12.5 mm / 9.5 mm	Ndesign ≥ 90	92.0 – 96.0%
12.5 mm / 9.5 mm	Ndesign < 90	92.5 – 97.4%
19.0 mm / 25.0 mm	Ndesign ≥ 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.



**SURFACE TESTING OF PAVEMENTS (BDE)**

Effective: April 1, 2002

Revised: November 1, 2005

**Bituminous Concrete Overlays**

Revise Article 406.03(k) of the Standard Specifications to read:

“ (k)Pavement Surface Test Equipment ..... 1101.10”

Revise Article 406.21 of the Standard Specifications to read:

**“406.21 Surface Tests.** The finished surface of the pavement shall be tested for smoothness within three days of paving. Testing shall be performed in the presence of the Engineer.

Prior to testing, a copy of the approval letter and recorded settings from the Profile Equipment Verification (PEV) Program shall be submitted to the Engineer; and all objects and debris shall be removed from the pavement.

(a) Test Sections/Equipment.

- (1) High-Speed Mainline Pavement. High-speed mainline pavement shall consist of pavements, ramps and loops with a posted speed greater than 75 km/hr (45 mph). These sections shall be tested using a California Profilograph or an approved equivalent.
- (2) Low-Speed Mainline Pavement. Low-speed mainline pavement shall consist of pavements, ramps and loops with a posted speed of 75 km/hr (45 mph) or less. These sections shall be tested using a California Profilograph or an approved equivalent.
- (3) Miscellaneous Pavement. Miscellaneous pavement shall consist of:
  - a. pavement on horizontal curves with a centerline radius of curvature of less than or equal to 300 m (1000 ft) and pavement within the superelevation transition of such curves;
  - b. the first or last 4.5 m (15 ft) of a pavement section where the Contractor is not responsible for the adjoining surface;
  - c. intersections;
  - d. variable width pavements;
  - e. side street returns;

- f. crossovers;
- g. connector pavement from mainline pavement expansion joint to the bridge approach pavement;
- h. bridge approach pavement; and
- i. other miscellaneous pavement surfaces (i.e. a turn lane) as determined by the Engineer.

Miscellaneous pavement shall be tested using a 5 m (16 ft) straightedge set to a 10 mm (3/8 in.) tolerance.

(b) Lots/Sublots. Mainline pavement test sections will be divided into lots and sublots.

(1) Lots. A lot will be defined as a continuous strip of pavement 1600 m (1 mile) long and one lane wide. When the length of a continuous strip of pavement is less than 1600 m (1 mile), that pavement will be included in an adjacent lot. Structures will be omitted when measuring pavement length.

(2) Sublots. Lots will be divided into 160 m (0.1 mile) sublots. A partial sublot resulting from an interruption in the pavement will be subject to the same evaluation as a whole sublot.

(c) Testing Procedure. One wheel track shall be tested per lane. Testing shall be performed 1 m (3 ft) from and parallel to the edge of the lane away from traffic. A guide shall be used to maintain the proper distance.

The profile trace generated shall have stationing indicated every 150 m (500 ft) at a minimum. Both ends of the profile trace shall be labeled with the following information: contract number, beginning and ending stationing, which direction is up on the trace, which direction the data was collected, and the device operator name(s). The top portion of the Department supplied form, "Profile Report of Pavement Smoothness" shall be completed and secured around the trace roll.

Although surface testing of intermediate lifts will not be required, they may be performed at the Contractor's option. When this option is chosen, the testing shall be performed and the profile traces shall be generated as described above.

The Engineer may perform his/her own testing at any time for monitoring and comparison purposes.

(d) Trace Reduction and Bump Locating Procedure. All traces shall be reduced. Traces produced by a mechanical recorder shall be reduced using an electronic scanner and computer software. This software shall calculate the profile index of each sublot in mm/km (in./mile) and indicate any high points (bumps) in excess of 8 mm (0.30 in.) with a line intersecting the profile on the printout. Computerized recorders shall provide the same information.

The profile index of each track, average profile index of each subplot, average profile index of the lot and locations of bumps shall be recorded on the form.

All traces and reports shall be provided within two working days of completing the testing to the Engineer for the project file. Traces from either a computerized profile testing device or analysis software used with a manual profile testing device shall display the settings used for the data reduction. The Engineer will compare these settings with the approved settings from the PEV Program. If the settings do not match, the results will be rejected and the section shall be retested/reanalyzed with the appropriate settings.

The Engineer will use the results of the testing to evaluate paving methods and equipment. If the average profile index of a lot exceeds 635 mm/km (40.0 in./mile) for high-speed mainline pavement or 1025 mm/km (65.0 in./mile) for low-speed mainline pavement, the paving operation will be suspended until corrective action is taken by the Contractor.

(e) Corrective Work. All bumps in excess of 8 mm (0.30 in.) in a length of 8 m (25 ft) or less shall be corrected. If the bump is greater than 13 mm (0.50 in.), the pavement shall be removed and replaced to the satisfaction of the Engineer at the Contractor's expense. The minimum length of pavement to be removed shall be 900 mm (3 ft).

(1) High-Speed Mainline Pavement. Any subplot having a profile index within the range of, greater than 475 to 635 mm/km (30.0 to 40.0 in./mile) including bumps, shall be corrected to reduce the profile index to 475 mm/km (30.0 in./mile) or less on each trace. Any subplot having a profile index greater than 635 mm/km (40.0 in./mile) including bumps, shall be corrected to reduce the profile index to 475 mm/km (30.0 in./mile) or less on each trace, or replaced at the Contractor's option.

(2) Low-Speed Mainline Pavement. Any subplot having a profile index within the range of, greater than 710 to 1025 mm/km (45.0 to 65.0 in./mile) including bumps, shall be corrected to reduce the profile index to 710 mm/km (45.0 in./mile) or less on each trace. Any subplot having a profile index greater than 1025 mm/km (65.0 in./mile) including bumps, shall be corrected to reduce the profile index to 710 mm/km (45.0 in./mile) or less on each trace, or replaced at the Contractor's option.

(3) Miscellaneous Pavement. Surface variations which exceed the 10 mm (3/8 in.) tolerance will be marked by the Engineer and shall be corrected by the Contractor.

Corrective work shall be completed using either an approved grinding device consisting of multiple saws or by removing and replacing the pavement. Corrective work shall be applied to the full lane width. When completed, the corrected area shall have uniform texture and appearance, with the beginning and ending of the corrected area squared normal to the centerline of the paved surface.

Upon completion of the corrective work, the surface of the subplot(s) shall be retested. The Contractor shall furnish the profile tracing(s) and the completed form(s) to the Engineer within two working days after corrections are made. If the profile index and/or bumps still do not meet the requirements, additional corrective work shall be performed.

Corrective work shall be at the Contractor's expense.

- (f) Smoothness Assessments. Assessments will be paid to or deducted from the Contractor for each subplot of mainline pavement, per the Smoothness Assessment Schedule. Assessments will be based on the average profile index of each subplot prior to performing any corrective work unless the Contractor has chosen to remove and replace the subplot. For sublots that are replaced, assessments will be based on the profile index determined after replacement.

Assessments will not be paid or deducted until all other contract requirements for the pavement are satisfied. Pavement that is corrected or replaced for reasons other than smoothness, shall be retested as stated herein.

SMOOTHNESS ASSESSMENT SCHEDULE (Bituminous Concrete Overlays)		
High-Speed Mainline Pavement Average Profile Index mm/km (in./mile)	Low-Speed Mainline Pavement Average Profile Index mm/km (in./mile)	Assessment per subplot
95 (6.0) or less	240 (15.0) or less	+\$150.00
>95 (6.0) to 160 (10.0)	>240 (15.0) to 400 (25.0)	+\$80.00
>160 (10.0) to 475 (30.0)	>400 (25.0) to 710 (45.0)	+\$0.00
>475 (30.0) to 635 (40.0)	>710 (45.0) to 1025 (65.0)	+\$0.00
Greater than 635 (40.0)	Greater than 1025 (65.0)	-\$300.00

Smoothness assessments will not be applied to miscellaneous pavement sections.”

**Bituminous Concrete Pavement (Full-Depth)**

Revise Article 407.09 of the Standard Specifications to read:

“**407.09 Surface Tests.** The finished surface of the pavement shall be tested for smoothness according to Article 406.21 except as follows:

Two wheel tracks shall be tested per lane. Testing shall be performed 1 m (3 ft) from and parallel to each lane edge.”

SMOOTHNESS ASSESSMENT SCHEDULE (Full-Depth Bituminous)		
High-Speed Mainline Pavement Average Profile Index mm/km (in./mile)	Low-Speed Mainline Pavement Average Profile Index mm/km (in./mile)	Assessment per subplot
95 (6.0) or less		+\$800.00
>95 (6.0) to 175 (11.0)	240 (15.0) or less	+\$550.00
>175 (11.0) to 270 (17.0)	>240 (15.0) to 400 (25.0)	+\$350.00
>270 (17.0) to 475 (30.0)	>400 (25.0) to 710 (45.0)	+\$0.00
>475 (30.0) to 635 (40.0)	>710 (45.0) to 1025 (65.0)	+\$0.00
Greater than 635 (40.0)	Greater than 1025 (65.0)	-\$500.00

Delete the fourth paragraph of Article 407.13 of the Standard Specifications.

**Portland Cement Concrete Pavement**

Revise Article 420.12 of the Standard Specifications to read:

**“420.12 Surface Tests.** The finished surface of the pavement shall be tested for smoothness according to Article 406.21 except as follows:

The finished surface of the pavement shall be tested for smoothness once the pavement has attained a flexural strength of 3,800 kPa (550 psi) or a compressive strength of 20,700 kPa (3,000 psi).

Two wheel tracks shall be tested per lane. Testing shall be performed 1 m (3 ft) from and parallel to each lane edge.

Membrane curing damaged during testing shall be repaired as directed by the Engineer at the Contractor’s expense.

No further texturing for skid resistance will be required for areas corrected by grinding. Protective coat shall be reapplied to ground areas according to Article 420.21 at the Contractor’s expense.

For pavement that is corrected by removal and replacement, the minimum length to be removed shall meet the requirements of either Class A or Class B patching.

SMOOTHNESS ASSESSMENT SCHEDULE (PCC)		
High-Speed Mainline Pavement Average Profile Index mm/km (in./mile)	Low-Speed Mainline Pavement Average Profile Index mm/km (in./mile)	Assessment per subplot
95 (6.0) or less		+\$1200.00
>95 (6.0) to 175 (11.0)	240 (15.0) or less	+\$950.00
>175 (11.0) to 270 (17.0)	>240 (15.0) to 400 (25.0)	+\$600.00
>270 (17.0) to 475 (30.0)	>400 (25.0) to 710 (45.0)	+\$0.00
>475 (30.0) to 635 (40.0)	>710 (45.0) to 1025 (65.0)	+\$0.00
Greater than 635 (40.0)	Greater than 1025 (65.0)	-\$750.00"

Delete the sixth paragraph of Article 420.23 of the Standard Specifications.

### Testing Equipment

Revise Article 1101.10 of the Standard Specifications to read:

**“1101.10 Pavement Surface Test Equipment.** Required surface testing and analysis equipment and their jobsite transportation shall be provided by the Contractor.

(a) 5 m (16 ft) Straightedge. The 5 m (16 ft) straightedge shall consist of a metal I-beam mounted between two wheels spaced 5 m (16 ft) between the axles. Scratcher bolts which can be easily and accurately adjusted, shall be set at the 1/4, 1/2, and 3/4 points between the axles. A handle suitable for pushing and guiding shall be attached to the straightedge. The straightedge shall meet the approval of the Engineer.

(b) Profile Testing Device. The Profile Testing Device shall have a decal displayed to indicate it has been tested through the PEV Program administered by the Department.

(1) California Profilograph. The California Profilograph shall be either computerized or manual and have a frame 8 m (25 ft) in length supported upon multiple wheels at either end. The profile shall be recorded from the vertical movement of a wheel attached to the frame at mid point.

The California Profilograph shall be calibrated according to the manufacturer’s recommendations and California Test 526. All calibration traces and calculations shall be submitted to the Engineer for the project file.

(2) Inertial Profiler. The inertial profiler shall be either an independent device or a system that can be attached to another vehicle using one or two non-contact sensors to measure the pavement profile. The inertial profiler shall be capable of performing a simulation of the California Profilograph to provide results in the Profile Index format.

The inertial profiler shall be calibrated according to the manufacturer's recommendations. All calibration traces and calculations shall be submitted to the Engineer for the project file.

- (3) Trace Analysis. The Contractor shall reduce/evaluate these traces using a 0.0 mm (0.00 in.) blanking band and determine a Profile Index in mm/km (in./mile) for each section of finished pavement surface. Traces produced using a computerized profile testing device will be evaluated without further reduction. When using a manual profile testing device, the Contractor shall provide an electronic scanner, a computer, and software to reduce the trace. All analysis equipment (electronic scanner, computerized recorder, etc.) shall be able to accept 0.0 mm (0.00 in.) for the blanking band.

All traces from pavement sections tested with the profile testing device shall be recorded on paper with scales of 300:1 longitudinally and 1:1 vertically. Equipment and software settings of the profile testing device and analysis equipment shall be set to those values approved through the PEV Program.

The Engineer may retest the pavement at any time to verify the accuracy of the equipment.”

#### **TEMPORARY MODULE GLARE SCREEN SYSTEM (BDE)**

Effective: January 1, 2000

Description. This work consists of furnishing, installing, and maintaining a temporary modular glare screen system on top of temporary barrier according to the modular glare screen system manufacturer's specifications. The temporary modular glare screen system shall consist of modular base units attached to the top of concrete barrier rail with blades evenly spaced and securely mounted to base units.

#### Materials.

- (a) Specifications. The modular base units and glare screen blades shall be compatible so the base unit and blades can be securely attached to each other. The base unit and blades shall be supplied from the same manufacturer.

The length of individual modular base units shall be a maximum of 3.05 m (10') or no longer than the nominal 3.05 m (10') length of the individual temporary concrete barrier sections. The width of the modular base units shall be a maximum width of 150 mm (6") or no wider than the top of the temporary concrete barrier rail.

The glare screen blades shall be FHWA highway green in color and made of impact resistant non-metallic high-density plastic material. The blades shall have a height from 600 mm (24") to 750 mm (30") and a width from 150 mm (6") to 225 mm (9"). The same uniform sized blades shall be used throughout the project.

(b) Producers. The following modular glare screen systems may be used:

- (1) Carsonite Modular Guidance System  
Carsonite International  
1301 Hot Springs Road  
Carson City, NV 89706  
Phone: (800) 327-9647
- (2) Safe-Hit Glare System  
Safe-Hit Corporation  
1390 W. Winton Avenue  
Building 11  
Hayward, CA 94545  
Phone: (800) 537-8958
- (3) FlexStake Glare Screen  
FlexStake, Inc.  
2348 Bruner Lane SE  
Ft. Myers, FL 33912  
Phone: (800) 348-9839

Installation. The contractor shall install the temporary modular glare screen system according to the manufacturer's instructions. The temporary modular glare screen system shall be installed so that it is centered along the longitudinal axis length to the top of the concrete barrier rail and is flush with the rail so that the modular base unit does not extend over the joints between the concrete barrier sections. The glare screen blades shall be installed so the combination of blade width and spacing provide for a minimum 22-degree sight cut-off angle.

The contractor shall, at their own expense, maintain and repair the temporary modular glare screen system throughout the duration of the project.

Method of Measurement. The temporary modular glare screen system will be measured for payment in meters (feet) in place, measured along the centerline of the modular glare screen system.

Basis of Payment. The installation, maintenance, and removal of the temporary modular glare screen system will be paid at the contract unit price per meter (foot) for MODULAR GLARE SCREEN SYSTEM.

#### **TRAFFIC BARRIER TERMINALS (BDE)**

Effective: January 1, 2003

Revise Article 631.05 of the Standard Specifications to read:



**“631.05 Traffic Barrier Terminal, Type 5 and Type 5A.** The face of the guardrail shall be installed flush with the face of the bridge rail or parapet.”

Revise Article 631.06 of the Standard Specifications to read:

**“631.06 Traffic Barrier Terminal, Type 6.** When attaching the end shoe to concrete constructed with forms and with a thickness of 300 mm (12 in.) or less, the holes may be formed, core drilled or an approved 20 mm (3/4 in.) cast-in-place insert may be used.

When attaching the end shoe to concrete constructed with forms and with a thickness greater than 300 mm (12 in.), an approved M20 (3/4 in.) bolt with an approved expansion device may be used in lieu of formed or core drilled holes.

When attaching the end shoe to concrete constructed by slipforming, the holes shall be core drilled.

The tapered, parapet, wood block out shall be used on all appurtenances with a sloped face.

When no bridge approach curb is present, Type B concrete curb shall be constructed as shown on the plans according to Section 606.”

Revise Article 631.07 of the Standard Specifications to read:

**“631.07 Traffic Barrier Terminal, Type 6B.** Attachment of the end shoe to concrete shall be according to Article 631.06 except the tapered, parapet, wood block out will not be required.”

Delete the third and fourth paragraphs of Article 631.11 of the Standard Specifications.

Add the following paragraph to the end of Article 631.11 of the Standard Specifications:

“Construction of the Type B concrete curb for TRAFFIC BARRIER TERMINAL, TYPE 6 will be paid for according to Article 606.14.”

### **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.

### **TRAINING SPECIAL PROVISIONS**

This Training Special Provision supersedes Section 7b of the Special Provision entitled "Specific Equal Employment Opportunity Responsibilities," and is in implementation of 23 U.S.C. 140(a).

As part of the contractor's equal employment opportunity affirmative action program, training shall be provided as follows:

The contractor shall provide on-the-job training aimed at developing full journeyman in the type of trade or job classification involved. The number of trainees to be trained under this contract will be 1. In the event the contractor subcontracts a portion of the contract work, he shall determine how many, if any, of the trainees are to be trained by the subcontractor, provided however, that the contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The contractor shall also insure that this Training Special Provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within the reasonable area of recruitment. Prior to commencing construction, the contractor shall submit to the Illinois Department of Transportation for approval the number of trainees to be trained in each selected classification and training program to be used. Furthermore, the contractor shall specify the starting time for training in each of the classifications. The contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeyman status is a primary objective of this Training Special Provision. Accordingly, the contractor shall make every effort to enroll minority trainees and women (e.g. by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent such persons are available within a reasonable area of recruitment. The contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the contractor and approved by the Illinois Department of Transportation and the Federal Highway Administration. The Illinois Department of Transportation and the Federal Highway Administration shall approve a program, if it is reasonably calculated to meet the equal employment opportunity obligations of the contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved by not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather 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.

**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.”

**VARIABLY SPACED TINING (BDE)**

Effective: August 1, 2005

Revise the first sentence of the third paragraph of Article 420.11(e)(1) of the Standard Specifications to read:

“ The metal comb shall consist of a single line of tempered spring steel tines variably spaced as shown in the table below and securely mounted in a suitable head.”

Replace the sixth sentence of the third paragraph of Article 420.11(e)(1) of the Standard Specifications to read:

“ The tining device shall be operated so as to produce a pattern of grooves, 3 to 5 mm (1/8 in. to 3/16 in.) deep and 2.5 to 3.2 mm (1/10 in. to 1/8 in.) wide across the pavement. The tining device shall be operated at a 1:6 skew across the pavement for facilities with a posted speed limit of 55 mph or greater. The tining pattern shall not overlap or leave gaps between successive passes.”

Add the following table after the third paragraph of Article 420.11(e)(1) of the Standard Specifications:

Center to Center Spacings of Metal Comb Tines mm (in.) (read spacings left to right)				
34 (1 5/16)	36 (1 7/16)	47 (1 7/8)	54 (2 1/8)	48 (1 7/8)
43 (1 11/16)	32 (1 1/4)	31 (1 1/4)	27 (1 1/16)	36 (1 7/16)
29 (1 1/8)	46 (1 13/16)	21 (13/16)	43 (1 11/16)	23 (7/8)
42 (1 5/8)	52 (2 1/16)	24 (15/16)	18 (11/16)	28 (1 1/8)
40 (1 9/16)	34 (1 5/16)	27 (1 1/16)	26 (1)	25 (1)
27 (1 1/16)	20 (13/16)	37 (1 7/16)	38 (1 1/2)	52 (2 1/16)
51 (2)	45 (1 3/4)	37 (1 7/16)	43 (1 11/16)	53 (2 1/16)
27 (1 1/16)	37 (1 7/16)	42 (1 5/8)	41 (1 5/8)	29 (1 1/8)
43 (1 11/16)	45 (1 3/4)	44 (1 3/4)	30 (1 3/16)	37 (1 7/16)
33 (1 5/16)	40 (1 9/16)	28 (1 1/8)	31 (1 1/4)	50 (1 15/16)
34 (1 5/16)	45 (1 3/4)	20 (13/16)	45 (1 3/4)	50 (1 15/16)
53 (2 1/16)	51 (2)	29 (1 1/8)	25 (1)	18 (11/16)
53 (2 1/16)	18 (11/16)	38 (1 1/2)	51 (2)	40 (1 9/16)
17 (11/16)	49 (1 15/16)	50 (1 15/16)	39 (1 9/16)	51 (2)
36 (1 7/16)	36 (1 7/16)	38 (1 1/2)	46 (1 13/16)	29 (1 1/8)
38 (1 1/2)	50 (1 15/16)	24 (15/16)	33 (1 5/16)	

**WEIGHT CONTROL DEFICIENCY DEDUCTION**

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.

#### **WORK ZONE PUBLIC INFORMATION SIGNS (BDE)**

Effective: September 1, 2002

Revised: January 1, 2005

Description. This work shall consist of furnishing, erecting, maintaining, and removing work zone public information signs.

Camera-ready artwork for the signs will be provided to sign manufacturing companies upon request by contacting the Central Bureau of Operations at 217-782-2076. The sign number is W21-I116-6048.

Freeways/Expressways. These signs are required on freeways and expressways. The signs shall be erected as shown on Highway Standard 701400 and according to Article 702.05(a) of the Standard Specifications.

All Other Routes. These signs shall be used on other routes when specified on the plans. They shall be erected in pairs midway between the first and second warning signs.

Basis of Payment. This work will not be paid for separately but shall be considered as included in the cost of the Standard.

#### **WORK ZONE SPEED LIMIT SIGNS (BDE)**

Effective: April 2, 2004

Revised: April 15, 2004

Delete Article 702.05(c).

Revise Article 702.05(d) to read:

“(d) Work Zone Speed Limit Signs. Work zone speed limit sign assemblies shall be provided and located as shown on the plans. Two additional assemblies shall be placed 150 m (500 ft) beyond the last entrance ramp for each interchange. The individual signs that make up an assembly may be combined on a single panel. The sheeting for the signs shall be reflective and conform to the requirements of Article 1084.02.

All permanent “SPEED LIMIT” signs located within the work zone shall be removed or covered. This work shall be coordinated with the lane closure(s) by promptly establishing a reduced posted speed zone when the lane closure(s) are put into effect and promptly reinstating the posted speed zone when the lane closure(s) are removed.

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

The work zone speed limit signs shown within the lane closure(s) shall only be used when workers are present in the closed lane adjacent to traffic; at all other times, the signs shall be promptly removed or covered. The sign assemblies shown within the lane closure(s) will not be required when the worker(s) are located behind a concrete barrier wall.

#### **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.

## **PAYROLLS AND PAYROLL RECORDS (BDE)**

Effective: August 10, 2005

FEDERAL AID CONTRACTS. Add the following State of Illinois requirements to the Federal requirements contained in Section V of Form FHWA-1273:

“The payroll records shall include each worker’s name, address, telephone number, social security number, classification, rate of pay, number of hours worked each day, starting and ending times of work each day, total hours worked each week, itemized deductions made, and actual wages paid.

The Contractor and each subcontractor shall submit payroll records to the Engineer each week from the start to the completion of their respective work. The submittals shall be on the Department’s form SBE 48, or an approved facsimile. When there has been no activity during a work week, a payroll record shall still be submitted with the appropriate box (“No Work”, “Suspended”, or “Complete”) checked on the form.”

STATE CONTRACTS. Revise Section IV of Check Sheet #5 of the Recurring Special Provisions to read:

### **“IV. COMPLIANCE WITH THE PREVAILING WAGE ACT**

1. **Prevailing Wages.** All wages paid by the Contractor and each subcontractor shall be in compliance with The Prevailing Wage Act (820 ILCS 130), as amended, except where a prevailing wage violates a federal law, order, or ruling, the rate conforming to the federal law, order, or ruling shall govern. The Contractor shall be responsible to notify each subcontractor of the wage rates set forth in this contract and any revisions thereto. If the Department of Labor revises the wage rates, the Contractor will not be allowed additional compensation on account of said revisions.
2. **Payroll Records.** The Contractor and each subcontractor shall make and keep, for a period of three years from the date of completion of this contract, records of the wages paid to his/her workers. The payroll records shall include each worker’s name, address, telephone number, social security number, classification, rate of pay, number of hours worked each day, starting and ending times of work each day, total hours worked each week, itemized deductions made, and actual wages paid. Upon two business days’ notice, these records shall be available, at all reasonable hours at a location within the State, for inspection by the Department or the Department of Labor.
3. **Submission of Payroll Records.** The Contractor and each subcontractor shall submit payroll records to the Engineer each week from the start to the completion of their respective work. The submittals shall be on the Department’s form SBE 48, or an approved facsimile. When there has been no activity during a work week, a payroll record shall still be submitted with the appropriate box (“No Work”, “Suspended”, or “Complete”) checked on the form.

Each submittal shall be accompanied by a statement signed by the Contractor or subcontractor which avers that: (i) such records are true and accurate; (ii) the hourly rate paid to each worker is not less than the general prevailing rate of hourly wages required by the Act; and (iii) the Contractor or subcontractor is aware that filing a payroll record that he/she knows to be false is a Class B misdemeanor.

4. Employee Interviews. The Contractor and each subcontractor shall permit his/her employees to be interviewed on the job, during working hours, by compliance investigators of the Department or the Department of Labor.”

### **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)

**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:** \_\_\_\_\_

**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

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"Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded from Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

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#### **Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Primary Covered Transactions**

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

- a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and
- d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

#### **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.

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**Certification Regarding Debarment, Suspension, Ineligibility And Voluntary Exclusion-Lower Tier Covered Transactions:**

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

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**XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.



## **MINIMUM WAGES FOR FEDERAL AND FEDERALLY ASSISTED CONSTRUCTION CONTRACTS**

This project is funded, in part, with Federal-aid funds and, as such, is subject to the provisions of the Davis-Bacon Act of March 3, 1931, as amended (46 Sta. 1494, as amended, 40 U.S.C. 276a) and of other Federal statutes referred to in a 29 CFR Part 1, Appendix A, as well as such additional statutes as may from time to time be enacted containing provisions for the payment of wages determined to be prevailing by the Secretary of Labor in accordance with the Davis-Bacon Act and pursuant to the provisions of 29 CFR Part 1. The prevailing rates and fringe benefits shown in the General Wage Determination Decisions issued by the U.S. Department of Labor shall, in accordance with the provisions of the foregoing statutes, constitute the minimum wages payable on Federal and federally assisted construction projects to laborers and mechanics of the specified classes engaged on contract work of the character and in the localities described therein.

General Wage Determination Decisions, modifications and supersedes decisions thereto are to be used in accordance with the provisions of 29 CFR Parts 1 and 5. Accordingly, the applicable decision, together with any modifications issued, must be made a part of every contract for performance of the described work within the geographic area indicated as required by an applicable DBRA Federal prevailing wage law and 29 CFR Part 5. The wage rates and fringe benefits contained in the General Wage Determination Decision

### **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.