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 that 4:30 p.m. prevailing time twenty-one days prior to the letting of interest. This pre-qualification requirement applies to first time contractors, contractors renewing expired ratings, contractors maintaining continuous pre-qualification or contractors requesting revised ratings. To be eligible to bid, existing pre-qualification ratings must be effective through the date of letting.

REQUESTS FOR AUTHORIZATION TO BID

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

WHO CAN BID ?

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

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

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

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

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

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

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

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

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

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

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

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

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

WHO SHOULD BE CALLED IF ASSISTANCE IS NEEDED?

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

ADDENDUMS AND REVISIONS TO THE PROPOSAL FORMS

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

RETURN WITH BID

4P

Proposal Submitted By
Name
Address
City

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

Letting December 16, 2005

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. 62114
COOK, IL-LAKE, IN Counties
Section 2626.2R-2
District 1 Construction Funds
Route FAI 80/94

PLEASE MARK THE APPROPRIATE BOX BELOW:

☐ A Bid Bond is included.

☐ A Cashier's Check or a Certified Check is included.

Prepared by

S

Checked by

(Printed by authority of the State of Illinois)

INSTRUCTIONS

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

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

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

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

1. All documents from the Proposal Cover Sheet through the Proposal Bid Bond

2. Other special documentation and/or information that may be required by the contract special provisions

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

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

WHO SHOULD BE CALLED IF ASSISTANCE IS NEEDED?

Questions Regarding	Call
Prequalification and/or Authorization to Bid	217/782-3413
Preparation and submittal of bids	217/782-7806
Mailing of 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. 62114
   COOK, IL-LAKE, IN Counties
   Section 2626.2R-2
   Route FAI 80/94
   District 1 Construction Funds

Construction of retaining walls, noise abatement walls, reconstruction of the bridges carrying I-80/94 over Hohman Avenue, Little Calumet River, Harrison Avenue and adding lanes to the mainline pavement with jointed and continuously reinforced concrete pavement, all along 2.5 km of I-80/94/U.S. 6 (Kingery-Borman Expressway) from Burnham Road to U.S. 41 (Calumet Avenue) in Lansing, Illinos and Hammond and Munster, Indiana.

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:

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

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

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

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

Attach Cashier's Check or Certified Check Here

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

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

Item _____

Section No. _____

County _____

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

BD 354 (Rev. 11/2001)

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 - 62114

State Job # - C-91-020-01
PPS NBR - 1-76843-0400
County Name - COOK- -
Code - 31 - -
District - 1 - -
Section Number - 2626.2 R-2

Project Number

Route
FAI 80/94

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX030063	STORM SEW WM REQ 300	METER	27.000				
MX030110	REM & PLUG ABAN W MN	METER	235.200				
MX030128	REM EX NOISE ABATE WL	SQ M	8,798.000				
MX030144	CB 1.2X0.9 SPL T20F&G	EACH	45.000				
MX030170	CB 1.2X1.5 SPL T22F&G	EACH	6.000				
MX030236	REMOV STL SHT PILING	SQ M	2,161.000				
MX030257	ERECT F B G-EX 1250KN	EACH	21.000				
MX030355	NOISE AB WALL GRD MT	SQ M	1,213.000				
MX030356	NOISE AB WALL STR MT	SQ M	11,169.000				
MX030504	TEMP PAVT INTERSTATE	SQ M	6,264.000				
MX030505	STORM SEWERS GROUTED	CU M	1,296.100				
MX030510	CON ATS 100 PVC S80	METER	160.000				
MX030511	EXC FDN UNCLASS (IN.)	CU M	21,085.000				
MX030512	EXCAVATION WET (IN.)	CU M	498.000				
MX030513	EXCAVATION DRY (IN.)	CU M	1,362.000				

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Section Number - 2626.2 R-2

Project Number

Route
FAI 80/94

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX030514	STRUCT BACKFILL (IN.)	CU M	22,373.700				
MX030515	RIPRAP REVETMNT (IN.)	SQ M	4,314.000				
MX030516	TEST PILE 356MM (IN.)	EACH	22.000				
MX030517	PIL CSSE 6.35 356 IN.	METER	33,311.500				
MX030518	CONC A SUB-STR (IN.)	CU M	11,141.800				
MX030519	CONC C SUP-STR (IN.)	CU M	3,255.900				
MX030520	REINF BARS E-CT (IN.)	KG	1,177,220.000				
MX030521	P UDR PRF 1.63 150 IN	METER	1,248.000				
MX030522	STR EXP JOINT SS IN.	METER	131.100				
MX032159	CON EN RC 100 PVC 1X1	METER	329.000				
MX032160	CON EN RC 100 PVC 2X1	METER	118.000				
MX032178	TEMP INFO SIGNING	SQ M	91.000				
MX033183	SOIL STABILIZERS	KG	580,885.000				
MX033290	SED CONT SILT FENCE	METER	2,669.700				
MX033291	SED CON SILT FEN MAIN	METER	1,334.900				

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Project Number

Route
FAI 80/94

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX033292	SED CON STAB CONST EN	SQ M	322.000				
MX033303	SED CON STAB CON EN M	SQ M	812.000				
MX033401	CON T 50 RGS	METER	10.000				
MX033487	BLIND FLANGE CAP 150	EACH	1.000				
MX033545	CON EM STR 30 CNC 4X2	METER	904.000				
MX033575	REM MCHSTAB EARTHWALL	SQ M	603.000				
MX033581	BAR SUP ST NOIS AB WL	METER	279.600				
MX033582	LUG SYS COMP SPL 14.4	EACH	1.000				
MX033583	RCP TEE 1950P 300R	EACH	3.000				
MX033584	RCP TEE 1950P 450R	EACH	1.000				
MX033585	SS REM 1200X600 ELLIP	METER	62.000				
MX033586	SEW OUTFL SEPR SYSTEM	L SUM	1.000				
MX033587	P STR 80-1-8460 RM IN	L SUM	1.000				
MX033588	P STR 80-1-8461 RM IN	L SUM	1.000				
MX033589	P STR 80-1-8459 RM IN	L SUM	1.000				

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FAI 80/94

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX033590	BORROW (INDIANA)	CU M	30,895.600				
MX033591	EXCAVATION COMMON IN	CU M	7,518.700				
MX033592	SBBS PCCP 225 IN	SQ M	14,062.700				
MX033593	DNS GRD SUBBASE IN	CU M	515.400				
MX033594	D-1 CONTRN JOINT IN	METER	11,334.000				
MX033595	TERM JOINT INDIANA	METER	308.000				
MX033596	BAR CONC 1145 MM IN	METER	263.800				
MX033597	BAR CONC 1145 MOD IN	METER	1,033.000				
MX033598	CONC BAR TRANSITN IN	EACH	14.000				
MX033599	BAR DELINEATOR IN	EACH	519.000				
MX033600	SLOPEWALL CONC 100 IN	SQ M	3,101.000				
MX033601	RIPRAP, UNIFORM, IN	SQ M	44.000				
MX033602	SOUND BAR SYS T2 IN	SQ M	8,505.000				
MX033603	GEOTEXTILE F UNDRN IN	SQ M	7,753.000				
MX033604	PIPE INSTLN TRLSS 600	METER	59.000				

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Project Number

Route
FAI 80/94

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX033605	AGG F UNDRDRNS IN	CU M	1,023.000				
MX033606	VID INSP F UNDRNS IN	METER	3,230.000				
MX033607	INLET TYPE HA INDIANA	EACH	1.000				
MX033608	MANHOLE C4 INDIANA	EACH	3.000				
MX033609	MANHOLE D4 INDIANA	EACH	2.000				
MX033610	DROP MAN C2 INDIANA	EACH	2.000				
MX033611	DROP MAN C4 INDIANA	EACH	1.000				
MX033612	INL TH SPL SLOT DR IN	EACH	2.000				
MX033613	INLET TYPE H SPL IN	EACH	14.000				
MX033614	INLET TYPE HA MOD IN	EACH	34.000				
MX033615	INLET TYPE HA SPL IN	EACH	7.000				
MX033616	INL THA SPL SLT DR IN	EACH	7.000				
MX033617	MANHOLE C2 INDIANA	EACH	1.000				
MX033618	MANHOLE D2 INDIANA	EACH	3.000				
MX033619	MANHOLE E4 INDIANA	EACH	2.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
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Code - 31 - -
District - 1 - -
Section Number - 2626.2 R-2

Project Number

Route
FAI 80/94

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX033620	IMP ATTN CR W2 TL3 IN	EACH	4.000				
MX033621	BRG ASSY ELAST T1 IN	EACH	48.000				
MX033622	REINF STL SN FDN IN	KG	15,130.000				
MX033623	SN PANEL W LEGEND IN	SQ M	211.000				
MX033624	TBLR TRAFF SN POST IN	EACH	12.000				
MX033625	CONC SIGN FOUNDATN IN	CU M	102.500				
MX033626	SN SHT ENCLNS 2.54 IN	SQ M	24.000				
MX033627	SN SHT ENCLNS 3.18 IN	SQ M	30.000				
MX033628	LINE EPXY SLD W100 IN	METER	2,915.000				
MX033629	LINE EPXY SLD Y100 IN	METER	4,133.000				
MX033630	LINE EPXY SLD W200 IN	METER	2,741.000				
MX033631	LINE EPXY BRK W125 IN	METER	3,230.000				
MX033632	PVT MSG MKG EPX WD IN	SQ M	10.500				
MX033633	PVT MSG MKG EPX TA IN	SQ M	7.400				
MX033634	SNOWPLOWABLE R PVT MK	EACH	1,162.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
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Code - 31 - -
District - 1 - -
Section Number - 2626.2 R-2

Project Number

Route
FAI 80/94

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX033635	SEW OUTFL SEPR SYS IN	L SUM	1.000				
MX033636	SURFACE SEAL INDIANA	L SUM	1.000				
MX033637	BLIND FLANGE CAP 600	EACH	5.000				
MX033638	CON ENC RC 100PVC 6X2	METER	22.000				
MX033639	SLPON FB CHK VLV 1950	EACH	1.000				
MX033640	SLPON FB CHK VLV 600	EACH	1.000				
MX033641	PT PVT MK LN 125 SP	METER	114.300				
MX033642	SUBGRADE TRTMNT 1A IN	SQ M	62,501.000				
MX033643	COMPACTED AGG 73 IN	SQ M	1,030.000				
MX033644	QC/QA - PCCP 400 IN	SQ M	57,226.000				
MX033645	QC/QA - PCCP 330 IN	SQ M	3,867.000				
MX033646	RETROFTD TIE BARS IN	EACH	370.000				
MX033647	PROFILOGRAPH PCCP IN	L SUM	1.000				
MX033648	BAR CONC 840 MOD IN	METER	547.000				
MX033649	RFC BR APP PVT 400 IN	SQ M	3,436.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
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Code - 31 - -
District - 1 - -
Section Number - 2626.2 R-2

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FAI 80/94

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX033650	MONUMENT D INDIANA	EACH	3.000				
MX033651	GEOTEXTILES INDIANA	SQ M	44.000				
MX033652	HANDRAIL STEEL IN	METER	11.000				
MX033653	PIPE T2 CIRCLR 300 IN	METER	917.800				
MX033654	PIPE T2 CIRCLR 375 IN	METER	244.100				
MX033655	PIPE T2 CIRCLR 450 IN	METER	334.500				
MX033656	PIPE T2 CIRCLR 600 IN	METER	693.600				
MX033657	PIPE T2 CIRCLR 750 IN	METER	166.300				
MX033658	PIPE T2 CIRCLR 900 IN	METER	146.000				
MX033659	PIPE T4 CIRCLR 150 IN	METER	3,225.400				
MX033660	PIPE END SEC 600 IN	EACH	2.000				
MX033661	AUTO DRNG GATE 600 IN	EACH	1.000				
MX033662	MANHOLE C2 SLOT DR IN	EACH	4.000				
MX033663	CON FN GRD 750X1500IN	EACH	9.000				
MX033664	LINE EPXY SLD W600 IN	METER	336.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
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Project Number

Route
FAI 80/94

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX033665	WIM STA 10 LN SLC IN	L SUM	1.000				
MX033666	BORROW B (INDIANA)	CU M	2,725.100				
MX033667	GRATES BASINS FTGS IN	KG	584.000				
MX033668	DI WM RSTRND JT T 600	METER	35.000				
MX033669	DI WM RSTRND JT T 150	METER	8.000				
MX033670	DI WM RJ 600 SC 1050A	METER	93.000				
MX033672	VV TA 2.1MD T1F CL	EACH	2.000				
MX033673	ABAN WM IN PLACE 600	L SUM	1.000				
MX033674	CON EN RC 100 PVC 3X1	METER	29.000				
MX033675	CON EM STR 75 GALVS	METER	5.000				
MX033676	CH LK FENCE 1220MM IN	METER	2,049.000				
MX033677	CH LK GATE 1220X3.7IN	EACH	2.000				
MX033678	LINE EPXY BRK W200 IN	METER	169.000				
MX033679	SIDEWALK CONC 100 IN	SQ M	277.000				
MX033680	SIDEWALK CONC 150 IN	SQ M	24.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
SCHEDULE OF PRICES
CONTRACT NUMBER - 62114

State Job # - C-91-020-01
PPS NBR - 1-76843-0400
County Name - COOK- -
Code - 31 - -
District - 1 - -
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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX033681	C&G C CONCRETE SPL IN	METER	340.000				
MX033682	INL HA MOD SLOT DR IN	EACH	6.000				
MX033683	SIGN POST WOOD IN	METER	27.000				
MX033684	SP OVHD SN ST B TR IN	METER	101.000				
MX033685	S OVHD SSTR BT SPL IN	METER	28.000				
MX033686	EXCAV UNCLASSIFIED IN	CU M	3,810.300				
MX033687	PIPE T2 DFRMD 1.68 IN	METER	12.000				
MX033688	PIPE SLOT DRN 300 IN	METER	575.700				
MX033689	CASTINGS 5 FRN/ADJ IN	EACH	4.000				
MX033690	OSS SPAN ANCHOR RA IN	EACH	6.000				
MX033691	PLANTG MIX F&P 900MM	SQ YD	159.000				
MX355200	BIT BC SUPER 200	SQ M	90.000				
MX406012	BC SC SUPER "C" N50	M TON	32.100				
MX406078	P BCSC SUPER "F" N105	M TON	52.200				
MX406220	BCBC SUP IL-19.0 N105	M TON	36.100				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
MX406271	BCBC SUP IL19 N50 150	SQ M	225.000				
MX550175	D I STORM SEWER 150	METER	28.000				
MX637150	CONC BAR 1F 1065HT SP	METER	113.000				
MX704200	REM TEMP CONC BARRIER	METER	3,881.000				
MX810115	CON EN RC 30 CNC 4X2	METER	200.000				
MZ013825	CONTR LOW-STRENG MATL	CU M	165.400				
MZ022800	FENCE REMOVAL	METER	2,346.000				
MZ068400	STEEL CASINGS 1050	METER	5.000				
M2010500	TREE REMOV HECTARES	HA	1.700				
M2020010	EARTH EXCAVATION	CU M	1,034.300				
M2021200	REM & DISP UNS MATL	CU M	1,904.600				
M2040800	FURNISHED EXCAV	CU M	63,340.200				
M2070220	POROUS GRAN EMBANK	CU M	185.000				
M2080150	TRENCH BACKFILL	CU M	9,550.600				
M2101000	GEOTECH FAB F/GR STAB	SQ M	58,401.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
M2113100	TOPSOIL F & P 100	SQ M	250.000				
M2113150	TOPSOIL F & P 150	SQ M	10,926.000				
M2113300	TOPSOIL F & P 300	SQ M	4,640.000				
M2114100	COMPOST F & P 100	SQ M	4,632.000				
M2130201	EXPLOR TRENCH 2.1	METER	140.000				
M2500210	SEEDING CL 2A	HA	3.130				
M2500400	NITROGEN FERT NUTR	KG	341.000				
M2500500	PHOSPHORUS FERT NUTR	KG	341.000				
M2500600	POTASSIUM FERT NUTR	KG	341.000				
M2500750	MOWING	HA	1.300				
M2510125	MULCH METHOD 3	HA	0.030				
M2510630	EROSION CONTR BLANKET	SQ M	52,071.000				
M2520110	SODDING SALT TOLERANT	SQ M	4,473.000				
M2520200	SUPPLE WATERING	UNIT	581.000				
M2800250	TEMP EROS CONTR SEED	KG	625.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
M2810101	STONE RIPRAP CL A1	SQ M	72.000				
M2810107	STONE RIPRAP CL A4	SQ M	72.000				
M2820200	FILTER FABRIC	SQ M	231.000				
M3111010	SUB GRAN MAT B	M TON	408.500				
M3111300	SUB GRAN MAT B 300	SQ M	58,401.000				
M3120150	STAB SUB-BASE 150	SQ M	58,401.000				
M3511010	AGG BASE CSE B	M TON	1,780.900				
M4210360	CON REINF PCC PVT 360	SQ M	41,475.000				
M4214360	PVT REINFORCEMENT 360	SQ M	41,475.000				
M4217180	LUG SYSTEM COMP 18	EACH	3.000				
M4218000	PROTECTIVE COAT	SQ M	32,514.000				
M4230200	PCC DRIVEWAY PAVT 200	SQ M	1,019.000				
M4243000	PC CONC SIDEWALK SPL	SQ M	3.820				
M4401000	BIT SURF REM VAR DP	SQ M	485.000				
M4402000	PAVEMENT REM	SQ M	83,633.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
M4402010	DRIVE PAVEMENT REM	SQ M	37.000				
M4402040	COMB CURB GUTTER REM	METER	1,036.700				
M4402050	SIDEWALK REM	SQ M	252.000				
M4402060	APPROACH SLAB REM	SQ M	2,321.000				
M4402280	CONC BARRIER REMOV	METER	1,405.000				
M4402530	PAVED SHLD REMOVAL	SQ M	19,434.000				
M4402540	PAVT BREAKING	SQ M	8,416.000				
M4428420	CL D PATCH T4 200	SQ M	99.000				
M4428450	CL D PATCH T4 350	SQ M	415.000				
M4830360	PCC SHOULDERS 360	SQ M	15,836.000				
M5010240	CONC REM	CU M	429.700				
M5020100	STRUCTURE EXCAVATION	CU M	1,070.100				
M5030350	CONC STRUCT	CU M	279.480				
M5030380	RUSTICATION FINISH	SQ M	4,598.000				
M5030450	PROTECTIVE COAT	SQ M	92.700				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
M5041219	F&E P P CON I-BM 1219	METER	1,272.000				
M5080105	REINFORCEMENT BARS	KG	490.000				
M5080205	REINF BARS, EPOXY CTD	KG	18,390.000				
M542C212	RCP TEE 300P 300R	EACH	1.000				
M542C228	RCP TEE 600P 300R	EACH	1.000				
M542C236	RCP TEE 750P 300R	EACH	2.000				
M542C252	RCP TEE 1200P 300R	EACH	6.000				
M542C348	RCP TEE 1200P 375R	EACH	1.000				
M5502840	SS 1 RCP CL 4 300	METER	554.800				
M5502850	SS 1 RCP CL 4 375	METER	28.400				
M5502860	SS 1 RCP CL 4 450	METER	199.100				
M5502880	SS 1 RCP CL 4 600	METER	279.800				
M5502900	SS 1 RCP CL 3 750	METER	638.500				
M5502920	SS 1 RCP CL 3 900	METER	149.400				
M5502990	SS 1 RCP CL 1 1950	METER	88.200				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
M5503050	SS 2 RCP CL 3 300	METER	62.900				
M5503060	SS 2 RCP CL 3 375	METER	77.400				
M5503111	SS 2 RCP CL 3 750	METER	122.800				
M5503150	SS 2 RCP CL 3 1200	METER	340.000				
M5503190	SS 2 RCP CL 2 1800	METER	117.200				
M5503200	SS 2 RCP CL 2 1950	METER	203.400				
M5504800	SS CLEANED	METER	944.000				
M5505570	SS RG CL A 1 600	METER	12.000				
M5510015	STORM SEWER REM 200	METER	63.900				
M5510025	STORM SEWER REM 300	METER	2,387.200				
M5510035	STORM SEWER REM 375	METER	462.500				
M5510045	STORM SEWER REM 450	METER	222.300				
M5510060	STORM SEWER REM 600	METER	159.600				
M5510070	STORM SEWER REM 750	METER	37.400				
M5510100	STORM SEWER REM 1350	METER	56.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
M5611210	TAP VALVE & SLVE 150	EACH	1.000				
M5910100	GEOCOMPOSITE WALL DR	SQ M	4,328.000				
M6010110	PIPE DRAINS 150	METER	33.100				
M6010610	PIPE UNDERDRAINS 150	METER	4,204.500				
M6011105	P UNDR - STRUCT 150	METER	52.500				
M6021410	MAN A 1.2D T1F CL	EACH	5.000				
M6021610	MAN A 1.5D T1F CL	EACH	3.000				
M6021810	MAN A 1.8D T1F CL	EACH	3.000				
M6024410	VV TA 1.5MD T1F CL	EACH	1.000				
M6060500	COMB CC&G TB15.30	METER	60.000				
M6061500	COMB CC&G TB22.45	METER	13.000				
M6063610	CONC MED SURF 100 SP	SQ M	125.000				
M6111240	TAP VALVE & SLVE 600	EACH	2.000				
M6320030	GUARDRAIL REMOV	METER	1,227.900				
M6370175	CONC BAR 1F 1065HT	METER	125.800				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
M6370275	CONC BAR 2F 1065HT	METER	1,053.200				
M6370805	CONC BAR TRANS	METER	35.200				
M6371050	BARRIER BASE	METER	1,327.000				
M6380205	CONC GLARE SCREEN SPL	METER	22.800				
M6380600	MOD GLARE SCRN SYS	METER	4,881.000				
M6420015	SHOULDER RUMBLE STRIP	METER	4,552.000				
M6690100	BACKFILL PLUGS	CU M	7.000				
M6690400	SPL WAST GRD WAT DISP	LITER	11,088.000				
M7030240	TEMP PVT MK LINE 150	METER	2,175.000				
M7030520	PAVT MARK TAPE T3 100	METER	17,100.600				
M7030530	PAVT MARK TAPE T3 125	METER	3,359.100				
M7030550	PAVT MARK TAPE T3 200	METER	328.300				
M7030560	PAVT MARK TAPE T3 300	METER	49.000				
M7031000	WORK ZONE PAVT MK REM	SQ M	2,210.000				
M7040100	TEMP CONC BARRIER	METER	2,264.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
M7040210	REL TEMP CONC BAR SPL	METER	8,617.400				
M7200100	SIGN PANEL T1	SQ M	17.000				
M7200200	SIGN PANEL T2	SQ M	4.000				
M7200300	SIGN PANEL T3	SQ M	154.000				
M7230100	INSTALL EX SIGN PANEL	SQ M	9.000				
M7240330	REMOV SIGN PANEL T3	SQ M	3.000				
M7270100	STR STL SIN SUP BA	KG	540.000				
M7330020	OVHD SIN STR-SPAN T2A	METER	90.700				
M7330030	OVHD SIN STR-SPAN T3A	METER	27.000				
M7330500	OVHD SIN STR WALKWAY	METER	66.600				
M7340100	CONC FOUNDATION	CU M	2.900				
M7340200	DRILL SHAFT CONC FDN	CU M	56.400				
M7800605	EPOXY PVT MK LN 100	METER	8,795.100				
M7800610	EPOXY PVT MK LN 125	METER	2,099.400				
M7800620	EPOXY PVT MK LN 200	METER	1,245.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
M7800625	EPOXY PVT MK LN 300	METER	272.000				
M7802010	POLYUREA PM T1 LN 100	METER	4,552.400				
M7802012	POLYUREA PM T1 LN 125	METER	2,415.000				
M7802030	POLYUREA PM T1 LN 300	METER	173.400				
M7830100	PAVT MARKING REMOVAL	SQ M	911.000				
M8100260	CON T 50 PVC	METER	1,029.000				
M8100300	CON T 100 PVC	METER	2,974.000				
M8120120	CON EMB STR 50 GALVS	METER	58.000				
M8120130	CON EMB STR 65 GALVS	METER	96.000				
M8120230	CON EMB STR 50 PVC	METER	492.000				
M8120270	CON EMB STR 100 PVC	METER	50.000				
M8130203	JBX SS AS 300X610X200	EACH	4.000				
M8131400	JBX NM ES 525X275X200	EACH	19.000				
M8150200	TR & BKFIL F ELECT WK	METER	2,673.000				
XX001443	STL PLATE INST DR STR	EACH	12.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
XX004760	FIRE HYD W/A V VB & T	EACH	1.000				
XX005949	DR STRUCTURES CLEANED	EACH	25.000				
X0301229	ACCID INVESTIGAT SITE	CAL MO	4.000				
X0320333	ROADWAY CLEANING SPL	EACH	18.000				
X0322394	CONC FIL STL POST REM	EACH	10.000				
X0322917	PRO SS CONN TO EX MAN	EACH	10.000				
X0323426	SED CONT DR ST INL CL	EACH	1,316.000				
X0323817	SED CONT SILT CURTAIN	EACH	3.000				
X0324045	SED CON STAB CON EN R	EACH	6.000				
X0324587	NOIS AB WAL A-ROD ASY	EACH	438.000				
X0324698	APPLY DUST SUP AGENTS	UNIT	2,885.000				
X0324756	THRD T-BAR AS E C IN.	EACH	1,962.000				
X0324758	FW STUD SHR CON (IN.)	EACH	40,884.000				
X0324759	ANCHOR BOLT (IN.)	EACH	662.000				
X0324776	MASONRY COATING (IN.)	L SUM	1.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
X0325176	CONC FILL STEEL POST	EACH	14.000				
X0520100	JUNCTION BOX TY J	EACH	1.000				
X6020166	DR STR T1 SP 2T20F&G	EACH	10.000				
X7011015	TR C-PROT EXPRESSWAYS	L SUM	1.000				
X7013820	TR CONT SURVEIL EXPWY	CAL DA	240.000				
X7015000	CHANGEABLE MESSAGE SN	CAL MO	16.000				
X7330360	OVHD SIN STR-SPAN ARA	EACH	2.000				
Z0002600	BAR SPLICERS	EACH	36.000				
Z0013798	CONSTRUCTION LAYOUT	L SUM	1.000				
Z0018700	DRAINAGE STR REMOVED	EACH	24.000				
Z0029999	IMPACT ATTENUATOR REM	EACH	6.000				
Z0030240	IMP ATTN TEMP NRD TL2	EACH	8.000				
Z0030250	IMP ATTN TEMP NRD TL3	EACH	7.000				
Z0030260	IMP ATTN TEMP FRN TL3	EACH	2.000				
Z0030330	IMP ATTN REL FRD TL3	EACH	1.000				

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Z0030350	IMP ATTN REL NRD TL3	EACH	8.000				
Z0076600	TRAINEES	HOUR	500.000		0.800		400.000
20100210	TREE REMOV OVER 15	UNIT	120.000				
20101100	TREE TRUNK PROTECTION	EACH	10.000				
28000300	TEMP DITCH CHECKS	EACH	11.000				
28000500	INLET & PIPE PROTECT	EACH	8.000				
28000510	INLET FILTERS	EACH	188.000				
42001700	FURNISH PROFILOGRAPH	L SUM	1.000				
50104400	CONC HDWL REM	EACH	1.000				
50300440	ERECT ELAS BRG ASY T1	EACH	63.000				
50300450	ERECT ELAS BRG ASY T2	EACH	42.000				
50500305	ERECT STRUCT STEEL	L SUM	1.000				
51500100	NAME PLATES	EACH	5.000				
60100060	CONC HDWL FOR P DRAIN	EACH	4.000				
60207605	CB TC T8G	EACH	1.000				

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60248000	JUNCTION CHAMBER N1	EACH	1.000				
60248100	JUNCTION CHAMBER N2	EACH	1.000				
60248200	JUNCTION CHAMBER N3	EACH	4.000				
60248300	JUNCTION CHAMBER N4	EACH	2.000				
60248400	JUNCTION CHAMBER N5	EACH	2.000				
60250200	CB ADJUST	EACH	10.000				
60260100	INLETS ADJUST	EACH	1.000				
60266500	VV REMOVED	EACH	1.000				
60266910	VALVE BOX REMOVED	EACH	1.000				
60300105	FR & GRATES ADJUST	EACH	2.000				
60405740	FR & GRATES REMOVED	EACH	12.000				
60500040	REMOV MANHOLES	EACH	16.000				
60500050	REMOV CATCH BAS	EACH	44.000				
60500060	REMOV INLETS	EACH	110.000				
60500105	FILL MANHOLES	EACH	2.000				

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66900450	SPL WASTE PLNS/REPORT	L SUM	1.000				
66900530	SOIL DISPOSAL ANALY	EACH	1.000				
67100100	MOBILIZATION	L SUM	1.000				
70101800	TRAF CONT & PROT SPL	L SUM	1.000				
73600100	REMOV OH SIN STR-SPAN	EACH	1.000				
73700100	REM GR-MT SIN SUPPORT	EACH	2.000				
73700200	REM CONC FDN-GR MT	EACH	2.000				
73700300	REM CONC FDN-OVHD	EACH	2.000				
78100100	RAISED REFL PAVT MKR	EACH	812.000				
78200100	MONODIR PRIS BAR REFL	EACH	2,086.000				
78200530	BAR WALL MKR TYPE C	EACH	112.000				
81400200	HD HANDHOLE	EACH	14.000				
84200700	LIGHTING FDN REMOV	EACH	24.000				
89502380	REMOV EX HANDHOLE	EACH	3.000				

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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.

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.

(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.**

_____

_____

_____

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

TO BE RETURNED WITH BID

IV. DISCLOSURES

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

B. Financial Interests and Conflicts of Interest

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

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

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

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

C. Disclosure Form Instructions

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

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

CERTIFICATION STATEMENT

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

_____
(Bidding Company)

_____ _____
Name of Authorized Representative (type or print) Title of Authorized Representative (type or print)

_____ _____
Signature of Authorized Representative Date

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

If the bidder is a publicly traded entity subject to Federal 10K reporting, the 10K Report may be submitted to meet the requirements of Form A. If a bidder is a privately held entity that is exempt from Federal 10K reporting, but has more than 400 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any person or entity holding any ownership share that is in excess of 5%. If a bidder is not subject to Federal 10K reporting, the bidder must determine if any individuals are required by law to complete a financial disclosure form. To do this, the bidder should answer each of the following questions. A "YES" answer indicates Form A must be completed. If the answer to each of the following questions is "NO", then the NOT APPLICABLE STATEMENT on the second page of Form A must be signed and dated by a person that is authorized to execute contracts for the bidding company. Note: These questions are for assistance only and are not required to be completed.

1. Does anyone in your organization have a direct or beneficial ownership share of greater than 5% of the bidding entity or parent entity? YES ___ NO ___.
2. Does anyone in your organization have a direct or beneficial ownership share of less than 5%, but which has a value greater than $90,420.00? YES ___ NO ___.
3. Does anyone in your organization receive more than $90,420.00 of the bidding entity's or parent entity's distributive income? (Note: Distributive income is, for these purposes, any type of distribution of profits. An annual salary is not distributive income.) YES ___ NO ___.
4. Does anyone in your organization receive greater than 5% of the bidding entity's or parent entity's total distributive income, but which is less than $90,420.00? YES ___ NO ___.

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

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

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

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

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

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

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

D. Bidders Submitting More Than One Bid

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

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

_____

_____

RETURN WITH BID/OFFER

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form A
Financial Information & Potential Conflicts of Interest Disclosure

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

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

DISCLOSURE OF FINANCIAL INFORMATION

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

FOR INDIVIDUAL (type or print information)

NAME: _____

ADDRESS _____

_____

Type of ownership/distributable income share:

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

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

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

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

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

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

2. Are you currently appointed to or employed by any agency of the State of Illinois? If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds $90,420.00, (60% of the Governor's salary as of 7/1/01) provide the name the State agency for which you are employed and your annual salary. _____
_____

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 the 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 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 your spouse and/or minor children, the name of the State agency for which he/she is employed and his/her annual salary. _____
_____

3. If your spouse or any minor children is/are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds $90,420.00, (60% of the salary of the Governor as of 7/1/01) are you entitled to receive (i) more then 71/2% 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 minor children entitled to receive (i) more than 15 % in the aggregate of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of 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 States of America, or any unit of local government authorized by the Constitution of the State of Illinois or the statutes of the State of Illinois, which office entitles the holder to compensation in excess of the expenses incurred in the discharge of that office currently or in the previous 3 years. Yes ___No __

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

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

Yes ___No __.

RETURN WITH BID/OFFER

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

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

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

APPLICABLE STATEMENT

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

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

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

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

NOT APPLICABLE STATEMENT

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

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

_____
Name of Authorized Representative (type or print)

_____
Title of Authorized Representative (type or print)

_____ _____
Signature of Authorized Representative — Date

RETURN WITH BID/OFFER

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form B
Other Contracts & Procurement Related Information Disclosure

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

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

DISCLOSURE OF OTHER CONTRACTS AND PROCUREMENT RELATED INFORMATION

1. Identifying Other Contracts & Procurement Related Information. The BIDDER shall identify whether it has any pending contracts (including leases), bids, proposals, or other ongoing procurement relationship with any other State of Illinois agency: Yes ___ No ___.
If "No" is checked, the bidder only needs to complete the signature box on the bottom of this page.

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

THE FOLLOWING STATEMENT MUST BE SIGNED

_____
Name of Authorized Representative (type or print)

_____
Title of Authorized Representative (type or print)

_____ _____
Signature of Authorized Representative Date

SPECIAL NOTICE TO CONTRACTORS

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

CONSTRUCTION EMPLOYEE UTILIZATION PROJECTION

(a) All bidders on construction contracts shall complete and submit, along with and as part of their bids, a Bidder's Employee Utilization Form (Form BC-1256) setting forth a projection and breakdown of the total workforce intended to be hired and/or allocated to such contract work by the bidder including a projection of minority and female employee utilization in all job classifications on the contract project.

(b) The Department of Transportation shall review the Employee Utilization Form, and workforce projections contained therein, of the contract awardee to determine if such projections reflect an underutilization of minority persons and/or women in any job classification in accordance with the Equal Employment Opportunity Clause and Section 7.2 of the Illinois Department of Human Rights' Rules and Regulations for Public Contracts adopted as amended on September 17, 1980. If it is determined that the contract awardee's projections reflect an underutilization of minority persons and/or women in any job classification, it shall be advised in writing of the manner in which it is underutilizing and such awardee shall be considered to be in breach of the contract unless, prior to commencement of work on the contract project, it submits revised satisfactory projections or an acceptable written affirmative action plan to correct such underutilization including a specific timetable geared to the completion stages of the contract.

(c) The Department of Transportation shall provide to the Department of Human Rights a copy of the contract awardee's Employee Utilization Form, a copy of any required written affirmative action plan, and any written correspondence related thereto. The Department of Human Rights may review and revise any action taken by the Department of Transportation with respect to these requirements.

RETURN WITH BID

Illinois Department of Transportation

Contract No. 62114
COOK, IL-LAKE, IN Counties
Section 2626.2R-2
Route FAI 80/94
District 1 Construction Funds

PART I. IDENTIFICATION

Dept. Human Rights #_____ Duration of Project: _____

Name of Bidder: _____

PART II. WORKFORCE PROJECTION

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

TABLE A

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

TABLE C

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

FOR DEPARTMENT USE ONLY

*Other minorities are defined as Asians (A) or Native Americans (N).

Please specify race of each employee shown in Other Minorities column.

Note: See instructions on the next page

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IL 494-0454

RETURN WITH BID

Contract No. 62114
COOK, IL-LAKE, IN Counties
Section 2626.2R-2
Route FAI 80/94
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.

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RETURN WITH BID

Contract No. 62114
COOK, IL-LAKE, IN Counties
Section 2626.2R-2
Route FAI 80/94
District 1 Construction Funds

PROPOSAL SIGNATURE SHEET

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

Firm Name _____

(IF AN INDIVIDUAL) Signature of Owner _____

Business Address _____

_____

Firm Name _____

By _____

(IF A CO-PARTNERSHIP) Business Address _____

_____

Name and Address of All Members of the Firm:

_____ _____

_____ _____

Corporate Name _____

By _____

Signature of Authorized Representative

_____

Typed or printed name and title of Authorized Representative

(IF A CORPORATION)

Attest _____

Signature

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

_____

Corporate Name _____

By _____

Signature of Authorized Representative

_____

Typed or printed name and title of Authorized Representative

(IF A JOINT VENTURE)

Attest _____

Signature

Business Address _____

_____

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

RETURN WITH BID

Illinois Department of Transportation

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

_____
(Company Name)

By: _____
(Signature & Title)

SURETY

_____
(Company Name)

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

Illinois Department of Transportation

PROPOSALS

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

Item No.	Item No.	Item No.

Submitted By:

Name:
Address:
Phone No.

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

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

NOTICE

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

CONTRACTOR OFFICE COPY OF CONTRACT SPECIFICATIONS

NOTICE

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

Contract No. 62114
COOK, IL-LAKE, IN Counties
Section 2626.2R-2
Route FAI 80/94
District 1 Construction Funds

Illinois Department of Transportation

Illinois Department of Transportation

NOTICE TO BIDDERS

1. TIME AND PLACE OF OPENING BIDS. Sealed bids for the contract items described herein will be accepted at the District 1 Office, Executive Office, 4th Floor, 201 W. Center Ct., Schaumburg, IL 60196 by U.S. Mail, delivery service or hand deposit until 10:00 a.m. prevailing local time December 16, 2005, at which time the bids will be publicly opened and read in the lower level classroom of that office. The Department will not open or read bids received after the stated opening date and time.

2. DESCRIPTION OF WORK. The proposed improvement is identified and advertised for bids in the Invitation for Bids as:

Contract No. 62114
COOK, IL-LAKE, IN Counties
Section 2626.2R-2
Route FAI 80/94
District 1 Construction Funds

Construction of retaining walls, noise abatement walls, reconstruction of the bridges carrying I-80/94 over Hohman Avenue, Little Calumet River, Harrison Avenue and adding lanes to the mainline pavement with jointed and continuously reinforced concrete pavement, all along 2.5 km of I-80/94/U.S. 6 (Kingery-Borman Expressway) from Burnham Road to U.S. 41 (Calumet Avenue) in Lansing, Illinois and Hammond and Munster, Indiana.

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

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)

SUPPLEMENTAL SPECIFICATIONS

RECURRING SPECIAL PROVISIONS

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

TABLE OF CONTENTS

GENERAL INFORMATION

STATE OF ILLINOIS

SPECIAL PROVISIONS

The following Special Provisions supplement the "Standard Specifications for Road and Bridge Construction", Adopted January 1, 2002, the latest edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways", the "Manual of Test Procedures for Materials", in effect on the date of invitation for bids; the latest edition of the Indiana Department of Transportation Standard Specifications and supplements and the "Supplemental Specifications and Recurring Special Provisions" indicated on the Check Sheet included herein which apply to and govern the construction of I-80/94 EB & WB Inside Lanes (Mainline) East of Burnham Road to FAI Route 80/94, Section (2626.2-R-2), in Cook County, Illinois and Lake County, Indiana. In case of conflict with any part, or parts, of said specifications, the said Special Provisions shall take precedence and shall govern.

FAI-80/94 US-6 (Kingery-Borman Expressway)

SECTION: (2626.2-R-2)

COOK COUNTY, ILLINOIS

LAKE COUNTY, INDIANA

CONTRACT NO.: 62114

LOCATION OF PROJECT

The project begins at a point on the centerline of FAI-80/94 (Kingery-Borman Expressway) approximately 45 meters east of Burnham Road in Lansing, Illinois and extends in an easterly direction for a distance of 2580.6 meters to the end of the project approximately 25 meters east of Calumet Avenue (US 41) in Hammond, Indiana.

The project is located in the Village of Lansing in the County of Cook, Illinois and in the City of Hammond and the Town of Munster in Lake County, Indiana.

DESCRIPTION OF PROJECT

The project consists of pavement and shoulder removal, constructing new continuously reinforced concrete pavement and plain concrete shoulders. The roadway will be supported by retaining walls to be built in this project and having been built in previous projects. The existing storm sewer pump station and buildings will be demolished. The work will include removal and replacement of the eastbound element and westbound structure element of a multi-span structural steel bridge over the Little Calumet River for which steel girders have been previously acquired. Existing structures over Hohman Avenue and Harrison Street will be removed and replaced with pre-cast concrete girder bridges. The work will include retaining walls along portions of the north and south side of the roadway and extending from Harrison Street to the

Calumet Interchange on the south and from the State Line to the Calumet Interchange on the north. The work to be performed under this contract also includes earth excavation, furnished excavation, construction of storm sewers and drainage structures, pavement markings, landscaping, signing, erosion control and all incidental and collateral work necessary to complete the project as shown on the plans and described herein. Roadway Lighting and surveillance is being performed under a separate contract.

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.

INDIANA SPECIFICATIONS AND SUPPLEMENTS

It is the intent of this contract that work in the State of Indiana shall be controlled by the State of Indiana Standard Specifications, Standard Drawings, Recurring Special Provisions and Supplemental Specifications. Transient work including removals and Maintenance of Traffic will be governed by the Illinois Standard Specifications and related documents regardless of the location of the work. In the event of a conflict or redundancy in the specifications for the permanent work in Indiana the Indiana Documents shall control the work.

COORDINATION WITH ADJACENT AND/OR OVERLAPPING CONTRACTS

EFFECTIVE:	**DATE REVISED:**

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 #62111 - I-80/94 from west of Torrence Ave. to Burnham Ave. Mainline paving and bridge reconstruction during 2006.
   Critical Items affecting the above contract:
   A. The proposed I-80/94 EB right 3 lanes and adjacent shoulder from Burnham Ave. to Calumet Ave. (US 41) shall be completed and ready for traffic by June 4, 2006.

2. Contract #62743 – Beam fabrication contract for the I-80/94 bridge over the Little Calumet River, the I-94 WB bridge over Thorn Creek, and the I-80/94 bridge over Burnham Ave.
   Critical Items affecting the above contract
   A. See the Special Provision “Furnishing Structural Steel and Bearings (FIO)”

3. Contract #62664 Highway lighting and surveillance
   Critical Items affecting the above contract:
   A. The grading and paving of the communications hut site at the state line shall be completed by May 26, 2006.
   B. The installation of the proposed storm sewer between the Little Calumet River and the junction boxes near the existing pump station, and the abandoning of the existing mainline storm sewer system shall be completed by July 2006.

The following contracts also include critical work items that affect the staging of traffic and the completion dates of this Contract #62114. These critical items are listed after each contract.

1. Contract #62664 – Highway lighting and surveillance
   A. The existing pump station along with the communications tower needs to be removed prior to completing drainage, grading and retaining wall work.

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”.

PROGRESS SCHEDULE

Description. This work shall consist of preparing, revising and updating a detailed progress scheduled 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 CD/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.

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 $21,000, 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.

INCENTIVE PAYMENT PLAN

The Contractor shall be entitled to an incentive payment for completing all contract items and safely opening 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 $21,000 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

Date Completed	Incentive Payment	Cooperative Payment	Date Completed	Disincentive Deduction
October 29, 2006	*	*	October 29, 2006	*
October 28, 2006	$21,000	$21,000	October 30, 2006	$21,000
October 27, 2006	$42,000	$42,000	October 31, 2006	$42,000
October 26, 2006	$63,000	$63,000	November 1, 2006	$63,000
October 25, 2006	$84,000	$84,000	November 2, 2006	$84,000
October 24, 2006	$105,000	$105,000	November 3, 2006	$105,000
October 23, 2006	$126,000	$126,000	November 4, 2006	$126,000
October 22, 2006	$147,000	$147,000	November 5, 2006	$147,000
October 21, 2006	$168,000	$168,000	November 6, 2006	$168,000
October 20, 2006	$189,000	$189,000	November 7, 2006	$189,000
October 19, 2006	$210,000	$210,000	November 8, 2006	$210,000
October 18, 2006	$231,000	$231,000	November 9, 2006	$231,000
October 17, 2006	$252,000	$252,000	November 10, 2006	$252,000
October 16, 2006	$273,000	$273,000	November 11, 2006	$273,000
October 15, 2006	$294,000	$294,000	November 12, 2006	$294,000
October 14, 2006	$315,000	$315,000	November 13, 2006	$315,000
October 13, 2006	$336,000	$336,000		**
October 12, 2006	$357,000	$357,000		
October 11, 2006	$378,000	$378,000		
October 10, 2006	$399,000	$399,000		
October 9, 2006	$420,000	$420,000		
October 8, 2006	$441,000	$441,000		
October 7, 2006	$462,000	$462,000		
October 6, 2006	$483,000	$483,000		
October 5, 2006	$504,000	$504,000		
October 4, 2006	$525,000	$525,000		
October 3, 2006	$546,000	$546,000		
October 2, 2006	$567,000	$567,000		
October 1, 2006	$588,000	$588,000		
September 30, 2006	$609,000	$609,000		
September 29, 2006	$630,000	$630,000		

* 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: (0203.1 & 0312-708W)R-3
be completed, the Contractor shall be entitled to an additional $21,000 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: (0203.1 & 0312-708W)R-3
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.

MAINTENANCE OF ROADWAYS

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

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

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

STATUS OF UTILITIES TO BE ADJUSTED

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

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

Name of Utility	Type	Location	Estimated Dates for Start and Completion of Relocation or Adjustments
Village of Lansing	Water Main	Crossing I-80/94/US 6 @ Walter St, Roy St and Henry St.	Water mains are abandoned.
Village of Lansing	Water Main	Crossing I-80 @ William St.	No Conflict
Village of Lansing	Water Main	Crossing I-80/94/US 6 west of Wentworth.	Water main is abandoned.
Village of Lansing	Storm Sewer	Crossing I-80/94/US 6 west of Wentworth.	Existing sewer below proposed sewer.
Village of Lansing	Combined Sewer	East of and Parallel to Wentworth Avenue	Junction chamber to cross storm sewer
Village of Lansing	Storm Sewer	Crossing I-80/94/US 6 50 M West of State Line	Junction chamber to cross storm sewer.
Village of Lansing	Storm Sewer	Crossing I-80/94/US 6 10 M West of State Line	Sewer is abandoned.
Com Ed	Underground Cable	Crossing I-80/94 West of and parallel to Bernadine St.	To be abandoned.
Com Ed	Pole	North of River Drive, just south of stateline site plan.	No Conflict.
Com Ed	Service Connection	Existing Pump Station	Service will be removed when requested by IDOT.
Town of Munster	Water Main	Alley west of Forrest	Abandoned
Town of Munster	Water Main	East edge of Hohman	Relocate by December 2005.
Town of Munster	Water Service Line	North of River Drive east of State Line	Temporary connection during construction. Bury after construction.

Town of Munster	Sewer	Alley west of Forrest	To be abandoned by May 15, 2005.
Town of Munster	Sewer	Alley east of Forrest	To be abandoned by May 15, 2005.
Town of Munster	Sewer	In Hohman Ave	No Conflict
Town of Munster	Sewer	In Alley West of and Parallel to Kinsley	Gap in retaining wall piles to avoid conflict.
Town of Munster	Sanitary Sewer	North of River Drive east of State Line	Conflict with proposed sewers.
City of Hammond Waterworks Dept.	Water Main	Along Harrison Ave.	No Conflict
City of Hammond Sewer Department	Sewer	Crossing I-80/94 Between Little Calumet River and RR	No Conflict
City of Hammond Sewer Department	Sewer	Crossing I-80/94 East of RR	Abandoned
City of Hammond Sewer Department	Sewer	Crossing I-80/94 50 m West of Harrison	Abandoned
City of Hammond Sewer Department	Sewer	Crossing I-80/94 between Harrison & Van Buren	Abandoned
City of Hammond Sewer Department	Sewer	Crossing I-80/94 between Van Buren & Jackson	Abandoned
City of Hammond Sewer Department	Sewer	Crossing I-80/94 at Jackson	No Conflict.
City of Hammond Sewer Department	Sewer	Crossing I-80/94 at Monroe.	No Conflict.
NIPSCO Electric Distribution	Aerial Cable and pole (N. side)	Crossing I-80/94 along alley west of Forrest Avenue.	Pole removed. Cable will be relocated by mid December 2005.
NIPSCO Electric Distribution	Aerial Cable	Along Hohman & Harrison Ave.	No Conflict.
NIPSCO Electric Distribution	Street Light Poles	Along Hohman & Harrison Ave.	Relocate
NIPSCO Electric Transmission	Aerial Cable and two poles (N & S side)	Crossing I-80/94 between Little Calumet River and RR.	No Conflict. Previously relocated.

NIPSCO Electric Transmission	Aerial Cable and pole (N side)	Crossing I-80/94 between Jackson and Monroe.	No Conflict. Previously relocated.
NIPSCO Gas	Gas	North of River Drive east of State Line	Relocate by December 31, 2005.
NIPSCO Gas	Gas	Crossing I-80/94 along alley west of Forrest Avenue.	Abandoned
NIPSCO Gas	Gas	Along Hohman & Harrison Ave.	No Conflict
Comcast	Underground Cable	West edge and parallel to Hohman	Temporary splice during construction.
Comcast	Underground Cable	South of I-80/94 near Hohman Ave.	No conflict. Previously relocated.
Comcast	Underground and aerial cable	West edge and parallel to Harrison	Relocate by July 31, 2005.
Comcast	Underground Cable	South of River Drive east of State Line	Relocate by July 31, 2005 and abandon underground cable.
SBC/Ameritech	Underground and aerial cables.	West edge and parallel to Harrison	Relocate by July 1, 2005.
SBC/Ameritech	Underground cables.	North of River Drive east of State Line	Temporary connection during construction. Bury after construction.
Wide Open West (WOW)	Underground Fiber Optic Cable	West side and parallel to Harrison Ave.	Relocate by December 2005.
Cable TV	Underground Cable	South of River Drive east of State Line	Conflict with proposed storm sewers.

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

MAINTENANCE OF TRAFFIC

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 be 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:

Expressway	Direction	Location
I-80/94/US 6	EB	7+441.80 TO 7+550.00 RIGHT

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
STAY WITH YOUR DISABLED VEHICLE	100 100C 100 100C 100 100C 100 100C 100	900 MM X 900 MM BLACK/WHITE 15 MM BORDER	1	ONE SIGN AT EACH SITE

ACCIDENT INVESTIGATION SITE ½ MILE		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 AND PROTECTION (EXPRESSWAYS).

All signing work shall be paid for in accordance with TEMPORARY INFORMATION SIGNING.
DESIGNER'S NOTE: Designer must fill in categories of STANDARDS/DETAILS/RECURRING SPECIAL PROVISIONS/SPECIAL PROVISIONS for each specific project.

Designers Note: This special provision is to be inserted all contracts.

CHANGEABLE MESSAGE SIGNS

This item shall be as contained in the Special Provisions for "Portable Changeable Message Signs" except as follows:

2 signs will be required for this contract.

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

FAILURE TO OPEN 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.

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 State 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) 159th 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
FRIDAY	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.

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. 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.

STAGING AND INTERCHANGE RESTRICTIONS

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).

Ramp Closures

Temporary ramp closures at the interchange between I-80/94 and Calumet Ave. (US 41) 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”.

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 Contractor 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. Stage 1
   I-80/94 EB to Calumet Ave. SB
   The Contractor will be permitted to close this ramp once beginning the first day of the project and continuing through all of Stage 1.

2. Stage 1
   I-80/94 EB to Calumet Ave (US 41) NB
   The Contractor will be permitted to close this ramp once for a period of 21 consecutive calendar days to finish constructing the proposed ramp and the proposed right 3 lanes of I-80/94 EB. The suggested time period for closing this ramp is to close the ramp near the completion of Stage 1 work and reopen the ramp when traffic is switched into Stage 2.

3. Stage 3
   Calumet Ave (both NB and SB) to I-80/94 WB
   The Contractor will be permitted to close these two ramps beginning the day that westbound traffic is shifted to the eastbound lanes and continuing to the completion of the project.

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”.

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 mount signs, signs on temporary stands, truss mount signs, bridge mount signs, and overlay sign panels which cover portions of existing signs.

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

	Item	**Article/Section**
a.)	Sign Base (Notes 1 & 2)	1090
b.)	Sign Face (Note 3)	1091
c.)	Sign Legends	1092
d.)	Sign Supports	1093
e.)	Overlay Panels (Note 4)	1090.01

Note 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.

TRAFFIC CONTROL AND PROTECTION (EXPRESSWAYS)

Effective: 3/8/96 Revised: 08/19/03

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 15 meters (50 foot) centers along tangents and at 7.5 meters (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 300 mm (12 inches) or less from the travel lane, then the wall shall also have a 150 mm (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, 701426 and 701446 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 incidental 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:

   Adjusted contract price = .25P + .75P [1+(X-0.1)]

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

Where "X" = Difference between original and final sum total value of all work items for which traffic control and protection is required. / 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 will be measured and paid for according to Section 704.

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, 150 MM (6”).

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

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 FOR WORK ZONE AREAS
Effective: 9/14/95 Revised: 1/30/03

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 the plans 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 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 PLAN
Effective: September 30, 1985 Revised: October 1, 1995

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

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

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

STANDARDS:
701006, 701101, 701206, 701301, 701400, 701401, 701402, 701411, 701426, 701446, 701501, 701601, 701606, 701701, 701801, 702001 and 704001

DETAILS:
TC-8 FREEWAY ENTRANCE AND EXIT RAMP CLOSURE DETAILS
TC-9 TRAFFIC CONTROL DETAILS FOR FREEWAY SINGLE AND MULTILANE WEAVE
TC-10 TRAFFIC CONTROL AND PROTECTION FOR SIDE ROADS, INTERSECTIONS, AND DRIVEWAYS
TC-16 PAVEMENT MARKING LETTERS AND SYMBOLS FOR TRAFFIC STAGING
TC-17 TRAFFIC CONTROL DETAILS FOR FREEWAY SHOULDER CLOSURES PARTIAL RAMP CLOSURES
TC-18 SIGNING FOR FLAGGING OPERATIONS AT WORK ZONE OPENINGS
TC-22 TEMPORARY INFORMATION SIGNING

SPECIAL PROVISIONS:

COMPLETION DATE PLUS GUARANTEED WORKING DAYS
COORDINATION WITH ADJACENT AND/OR OVERLAPPING CONTRACTS
FAILURE TO COMPLETE THE WORK ON TIME
FAILURE TO OPEN TRAFFIC LANES TO TRAFFIC
FLAGGER VESTS
IMPACT ATTENUATORS, TEMPORARY
INCENTIVE PAYMENT PLAN
MAINTENANCE OF ROADWAYS
MINIMUM LANE WIDTH WITH LANE CLOSURE
PERSONAL PROTECTIVE EQUIPMENT
PORTABLE CHANGEABLE MESSAGE SIGNS
KEEPING THE EXPRESSWAY OPEN TO TRAFFIC
STAGING AND INTERCHANGE RESTRICTIONS
TEMPORARY INFORMATION SIGNING
TRAFFIC CONTROL DEFICIENCY/DEDUCTION
TRAFFIC CONTROL AND PROTECTION (EXPRESSWAYS)
TRAFFIC CONTROL SURVEILLANCE (EXPRESSWAYS)
TRAFFIC CONTROL AND PROTECTION (SPECIAL)
TRAFFIC CONTROL FOR WORK ZONE AREAS
WORK ZONE TRAFFIC CONTROL DEVICES
WORK ZONE SPEED LIMIT SIGNS
WORK ZONE PUBLIC INFORMATION SIGNS

WORK RESTRICTIONS
SERVICE PATROLS
ACCIDENT INVESTIGATION SITES
TEMPORARY CONCRETE BARRIER

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 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 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 STAGING

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 - I-80/94 WB

Traffic: Shift I-80 WB traffic to the right lanes and right shoulder from east of Calumet Ave. (US 41) to Hohman Ave. Signing and barricading shall be according to TC-9 and as shown in the plans (MOT, Stage 1). Lane closures will be needed on the night of the stage change to revise the pavement markings along I-80 WB. Signing and barricading shall be according to State Standards 701400, 701401, 701411, and 701446.
Work: Install the temporary concrete barrier, which divides traffic, and install reflectors and glare screen.

PRE-STAGE A - I-80/94 EB

Traffic: Close I-80 EB left shoulder from Railroad Ave. to east of Calumet Ave. (US 41).
Work: Revise the pavement markings and prepare crossovers. Install temporary signing. Patch the existing WB roadway if necessary. Install the temporary concrete barrier, which divides traffic, and install reflectors and glare screen. Install the temporary concrete barrier with reflectors, which separates the work zone from traffic.

STAGE 1 – I-80/94 EB

Traffic: Shift I-80/94 EB traffic to the existing westbound lanes according to the MOT, Stage 1 Plan sheets. Additional lane closures will be needed on the night of the stage change to revise the pavement markings at each crossover. These closures and the shifting of traffic shall be coordinated with the adjacent contractors. Signing and barricading shall be according to State Standards 701400, 701401, 701411, and 701446.
Work: Begin reconstructing the eastbound outside lanes and bridges.

STAGE 2A – I-80/94 EB

Traffic: Shift I-80/94 EB traffic from the existing WB lanes back to the proposed EB lanes west of Wentworth Ave. Signing, pavement markings and barricading shall be according to the MOT, Stage 2A Plan sheets. Lane closures will be needed on the night of the stage change to revise the pavement markings at the crossover. Signing and barricading shall be according to State Standards 701400, 701401, 701411, and 701446.
Work: Begin reconstructing the eastbound inside lanes and bridges.

<u>Stage 2B – I-80/94 EB</u>
Traffic: Shift I-80/94 EB traffic from the existing WB lanes back to the proposed EB lanes from west of Railroad Ave. to west of Wentworth Ave. Signing and barricading shall be according to the MOT, Stage 2B Plan sheets. Additional lane closures will be needed on the night of the stage change to revise the pavement markings at each crossover. These closures and the shifting of traffic shall be coordinated with the adjacent contractors. Signing and barricading shall be according to State Standards 701400, 701401, 701411, and 701446.
Work: Begin reconstructing the westbound inside lanes and bridges and continue working on the eastbound inside lanes.

Stage 3– I-80/94 WB

Traffic: Shift I-80/94 WB traffic from the existing WB lanes to the newly constructed EB inside lanes from east of Calumet Ave. (US 41) to west of Burnham Ave. Signing and barricading shall be according to the MOT, Stage 3 Plan sheets. Additional lane closures will be needed on the night of the stage change to revise the pavement markings at each crossover. These closures and the shifting of traffic shall be coordinated with the adjacent contractors. Signing and barricading shall be according to State Standards 701400, 701401, 701411, and 701446.

Work: Reconstruct all westbound lanes and bridges.

Upon completion of all westbound 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 westbound left lane remains closed (three lanes open) until the crossovers are removed and the permanent shoulders and concrete barrier are installed. Signing and barricading for this lane closure shall be according to State Standards 701400, 701401, 701411, and 701446. The opening of the I-80 WB lanes shall be coordinated with the three mainline I-80 Contractors.

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.

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 the jobsite. 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.

Designer's Note: This special provision is to be used for lump sum payment of traffic control and protection only when approved by the Bureau Chief.

CIVIL

APPROACH SLAB REMOVAL

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.

Posted: 4/25/02
Revised and Reposted: 04/10/03
Provided by: ACE

BITUMINOUS SURFACE REMOVAL (VARIABLE DEPTH)

This item shall consist of variable depth bituminous surface removal to the profiles and cross slopes shown on the plans, in accordance with the applicable portions of Section 440 of the Standard Specifications, and as directed by the Engineer.

Method of Measurement. Bituminous surface removal (variable depth) for subsequent resurfacing will be measured for payment in place and the area computed in square meters (square yards) for variable thickness of material removed.

Basis of Payment. This work will be paid for at the contract unit price per square meter (square yard) for BITUMINOUS SURFACE REMOVAL (VARIABLE DEPTH) which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

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 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, SPECIAL; and CONCRETE BARRIER TRANSITION.

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

CONCRETE BARRIER REMOVAL
Effective: December 13, 2001 Revised:

Description. This work shall consist of the removal and satisfactory disposal of the 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 sub grade. The removal of 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.

CONCRETE FILLED STEEL POST REMOVAL

Description. This item shall consist of the complete removal and satisfactory disposal of existing concrete filled steel post "bollard" at the locations shown on the plans or as directed by the Engineer.

Construction Requirements. All existing concrete filled steel posts shall be completely removed and disposed of as shown on the plans. The cutting of the posts 600mm (2 feet) below grade will not be allowed.

The void caused by the removal of the post shall be backfilled with trench backfill according to Section 208 of the Standard Specifications.

Method Of Measurement. Removal of Concrete Filled Steel Post will be measured for payment for each, in place regardless of length.

Basis of Payment. This work will be paid for at the contract unit price each for CONCRETE FILLED STEEL POST REMOVAL, which price shall include all labor, material, including trench backfill, and equipment to complete the work herein.

CONCRETE FILLED STEEL POST

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 Post 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 POST, which price shall include all labor, material, and equipment to complete the work herein.

CONCRETE MEDIAN SURFACE, 100MM (SPECIAL)

Description. This work shall consist of constructing a 100mm thick Portland Cement Concrete Median Surface at locations shown on the plans and as directed by the Engineer in accordance with Section 606 of the Standard Specification, except as modified herein. This is specialized concrete finishing work requiring experienced concrete finishers.

The concrete decorative surface shall be colored, sealed, and patterned in accordance with the following:

Coloring: A dry, shake type color hardener and release agent shall be applied to the concrete surface. The color hardener shall be Color 500 – Tile Red and the release agent shall be Color 200 – Medium Gray both by Rafco Products (800-483-9628, Rancho Cucamonga, California, 909-484-3399) or approved equal. The color of the hardener and the release agent shall meet with the approval of the District One Landscape Architect, Rick Wanner (847-705-4172) prior to ordering. Application shall be done in accordance to the manufacturer's specifications.

Patterning: A cobblestone pattern shall be stamped into the concrete surface. The texture shall be applied in a running bond cobblestone pattern in a direction as directed by Steve Lipkie (847-705-4173). The depth of the stamped area between the cobblestone shall be 13mm to 16mm. The surface of the concrete shall be high enough so that water will drain out of the grooves between the cobblestone pattern. The cobblestone pattern shall be Brickform Texture Mat FM-540 – London Cobble 430mm x 760m (17" x 30") and FM-560 – London Cobble Strip 150mm x 740mm (6" x 29") by Rafco Products (800-483-9628, Rancho Cucamonga, California, 909-484-3399), or approved equal. The texture shall meet with the approval of District One Landscape Architect, Rick Wanner (847-705-4172) prior to ordering. Application shall be done in accordance to the manufacturer's recommendations.

Sealer: A satin finish sealer shall be applied to the surface with four (4) light even coats of a premium stain resistant waterbase, such as Brickform Satinseal Sealer by Rafco Products, or approved equal. Application shall be done in accordance with the manufacturer's recommendations.

Method of Measurement. CONCRETE MEDIAN SURFACE, 100MM (SPECIAL) will be measured for payment in place and the area computed in square meters.

Basis of Payment. This work will be paid for at the contract unit price per square meter for CONCRETE MEDIAN SURFACE, 100MM (SPECIAL), which price shall include payment for coloring, patterning, sealing, furnishing, and installing all required joints, excavation, and backfill, as required to perform the work specified herein.

CONCRETE SIDEWALK, SPECIAL WITH NAME PLATE

Description. Structures constructed in Indiana to be maintained by the Illinois Department of Transportation will be distinguished by a brass name plate set in concrete. Furnishing and installing of a brass name plate shall be done in accordance with Section 515 of the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction. The concrete that will house the name plate shall be constructed in accordance with Section 424 of the Standard Specifications.

The concrete sidewalk shall have a depth of 300 mm. The concrete sidewalk dimensions will be 780mm X 980mm. The concrete sidewalk shall be placed flush to the proposed grade. The concrete and brass name plate shall be within 900mm of the drainage structure manhole covers. Four (4) concrete sidewalks with name plate will be required for drainage structure A99 and one (1) concrete sidewalk with name plate at drainage structure A101, as shown on the proposed drainage structure plans.

The name plate shall be embedded in the concrete and fastened by means of four brass bolts with countersunk heads, or four lugs cast integral with the plate. The bolts or lugs shall project at least 75 mm into the concrete beyond the back of the plate. The lettering on the plate shall follow the Highway Standard lettering for 5 lines and shall be placed horizontally and vertically centered on the plate. The information on the plate shall read and be placed as follows:

MAINTAINED BY THE
ILLINOIS DEPARTMENT
OF TRANSPORTATION

Method of Measurement. Concrete sidewalk will be measured for payment per square meter, Name plate will be measured for payment on an each basis.

Basis of Payment. Payment for PORTLAND CEMENT CONCRETE SIDEWALK, SPECIAL will be at the contract unit price per square meter, which price will include all materials, labor and equipment to complete the work.

Payment for NAME PLATE will be at the contract unit price per each.

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 APPLY DUST SUPPRESSION AGENTS.

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). 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). 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) 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.

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.

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:

Granular Subbase Gradations						
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).

FENCE REMOVAL

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 incidental to 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.

IMPACT ATTENUATOR REMOVAL
Effective: Date: August 12, 2003

Description: This work shall consist of removing the existing impact attenuators at locations shown on the plans. An impact attenuator is considered to be made of three parts: 1) barrel, 2) lid and 3) insert(s).

At the discretion of the Engineer, all reusable barrels, lids and inserts are to be transported to:

Bishop Ford Maintenance Yard – South Holland

Mr. Jim Arvia shall be contacted at (708) 331-4339 at least two (2) working days prior to transporting the above mentioned items. The contractor shall arrive at the IDOT Bishop Ford Maintenance Yard with all equipment and labor needed to unload the barrels, lids and inserts. The allowable time to deliver items to the Bishop Ford Maintenance Yard is 7:30 a.m. to 3:30 p.m., inclusive, Monday through Friday, Excluding holidays.

All barrels, lids and inserts that are not transported to the Bishop Ford Yard shall be disposed of in accordance with Section 200 of the Standard Specifications. Sand fill in the existing barrels and inserts shall be disposed of in accordance with Section 200 of the Standard Specifications.

Method of Measurement. This work shall be measured per each array for each location.

Basis of Payment. This work shall be paid for at the contract unit price per each array for IMPACT ATTENUATOR REMOVAL, which price shall include the removal the barrels and sand, salvage, and transport of the salvaged material, and all labor and equipment needed to complete this work as specified herein.

LIGHT POLE ANCHOR ROD ASSEMBLY, INSTALL ONLY

Description. This item shall consist of the installation of the light pole support anchor bolts in accordance with the applicable portions of Article 807.10 of the Indiana Department of Transportation Standard specifications, details in the plans and the coordination with the contractor providing the anchor rod assemblies.

The Contractor will obtain the anchor bolt assemblies from the Department as provided under a concurrent contract. The Contractor is required to coordinate the proper installation and location of the anchor bolts in the concrete median wall light pole foundation with the contractor that is to install the light poles.

Method of Measurement. The orientation and installation of the LIGHT POLE ANCHOR ROD ASSEMBLY, INSTALL ONLY will not be measured for payment.

Basis of Payment. No payment will be made for LIGHT POLE ANCHOR ROD ASSEMBLY, INSTALL ONLY. This work shall be considered as part of cost CONCRETE FOUNDATION WITH GROUNDING, 750mm DIAMETER X 1500MM (INDIANA) which will include all labor and coordination to properly install the work.

NOISE ABATEMENT WALL (ABSORPTIVE 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 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 locations for 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 an absorptive noise reduction system satisfying the acoustical requirements stated in these special provisions. Reflective or 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's sound transmission loss (STL) and noise reduction coefficient (NRC) for the absorptive noise reduction system as well as 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^{th} 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^2 (35 psf.) when located on bridge structures, retaining walls or traffic barriers. This loading can be reduced to 1.2 kN/m^2 (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.

The absorptive noise wall panels shall be designed to provide a sound transmission loss (STL) greater than 20 dB at every frequency, when tested in accordance with ASTM E-90. The sound absorptive material shall have a noise reduction coefficient (NRC) of 0.80 on the roadside and a 0.65 NRC on the residential side. The NRC shall be determined per ASTM E795, tested in accordance with ASTM C423 (mounting type A). The ratio of noise absorptive material on the panel surface to total wall area (including posts) shall be greater than 90%. NRC testing shall be performed on coated samples, utilizing the stain that will be applied for color and anti-graffiti purposes.

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.

Both faces of the panels shall provide sound absorptive treatment satisfying the criteria noted in the design section of this specification or otherwise stated in the contract plans. Absorptive material shall be permanently attached to their supporting elements and no external mechanical fastening systems such as frames or clips shall be used. 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).

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.

General. 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.

Materials. Anchor rods shall be in accordance with AASHTO specifications as shown in the plans.

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.

NON-SPECIAL WASTE WORKING CONDITIONS

This work shall be according to Article 669 of the Standard Specifications for Road and Bridge Construction adopted January 1, 2002 and the following:

Qualifications. The term environmental firm shall mean an environmental firm with at least five (5) documented leaking underground storage tank (LUST) cleanups or that is prequalified in hazardous waste by the Department. Documentation includes but not limited to verifying remediation and special waste operations for sites contaminated with gasoline, diesel, or waste oil in accordance with all Federal, State, or local regulatory requirements and shall be provided to the Engineer for approval.

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

The Contractor shall manage all contaminated materials as non-special waste as previously identified. This work shall include monitoring and potential sampling, analytical testing, and management of material contaminated by regulated substances.

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

1. Station 7+372 to Station 7+380 +/- 0 to 14 meters (0 to 46 feet) LT (Hazmat Incident - North Shoulder between Burnham Avenue and Wentworth Avenue). Contaminants of concern sampling parameters: PNAs.

Backfill plugs shall be place within the following locations.

1. Station 7+372 to Station 7+380 +/- 0 to 14 meters (0 to 46 feet) LT (Hazmat Incident - North Shoulder between Burnham Avenue and Wentworth Avenue). Contaminants of concern sampling parameters: PNAs.

OVERHEAD SIGN STRUCTURE-SPAN, ANCHOR ROD ASSEMBLY

Description. This item shall consist of fabricating, furnishing and installing overhead sign structure-span anchor rod assemblies for retaining wall structures in accordance with Articles 733.04, 733.07 and 734.03 of the Standard Specifications as shown on the plans or directed by the Engineer.

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

Item	Article/Section
(a) Anchor Rods	1094.03

CONSTRUCTION REQUIREMENTS

General. The Contractor shall furnish and install anchor rod assemblies for overhead sign structure-span according to Article 1094.03 of the standard specifications and as modified elsewhere in these Special Provisions.

Method Of Measurement. Overhead Sign Structure – Span 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 OVERHEAD SIGN STRUCTURE - SPAN, ANCHOR ROD ASSEMBLY, which shall be payment in full for the furnishing, installing, materials, identification and delivery to the jobsite.

Anchor rod assemblies for the overhead sign structures in the median barriers and the outside foundations not part of a retaining wall will not be paid for separately but shall be included in the cost of the Overhead Sign Structure – Span, of the Type and size specified.

PAINT PAVEMENT MARKING - LINE 125 MM (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 125 MM (SPECIAL).

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 Section 205.03 of the Standard Specification, 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.

PLANTING MIX FURNISH AND PLACE

Work under this item shall be performed in accordance with Section 200 of the Standard Specifications for Road and Bridge Construction except as modified herein.

Description. This work shall consist of furnishing, transporting, testing, preparing, and placing planting soil including finish grading to the depth specified in areas as shown in the plans or as directed by the Engineer.

General Requirements: In general the planting soil shall be two (2) parts pulverized top soil and one (1) part coarse sand. The sand, in the amount required to produce an acceptable planting soil, shall be added and mixed during the pulverization process only. The sand shall be of an FA 2 gradation.

Soil Stockpiling: The Contractor shall obtain the total quantity of planting soil required for this project and stockpile this material at an acceptable offsite location a minimum of 30 days in advance of placement. The stockpile must be covered to avoid excessive moisture content and erosion. The Contractor shall have the material tested following the guidelines presented below under Soil Testing and, if approved, this stockpile shall be the sole source for planting soil to be delivered to site. The test results along with a Request for Inspection form should be sent to the Engineer prior to delivering the material to site. This transmittal must also identify the location of the stockpile. If there are any changes in source the Contractor shall notify the Engineer immediately. There will be no additional time allowed for the completion of this project in order to substitute, test, and approve a new source of planting soil.

Delivery, Storage and Handling: Protect soil from absorbing excess water and from erosion at all times. Do not store materials unprotected from large rainfall events. Do not allow excess water to enter site prior.

Soil Testing: No planting soil shall be delivered to the site until the Engineer has reviewed test results and has accepted the planting soil. The Contractor shall employ a soil testing agency acceptable to the Engineer, which uses test methods approved by the Association of Agricultural Chemists. Test frequency shall be as follows:

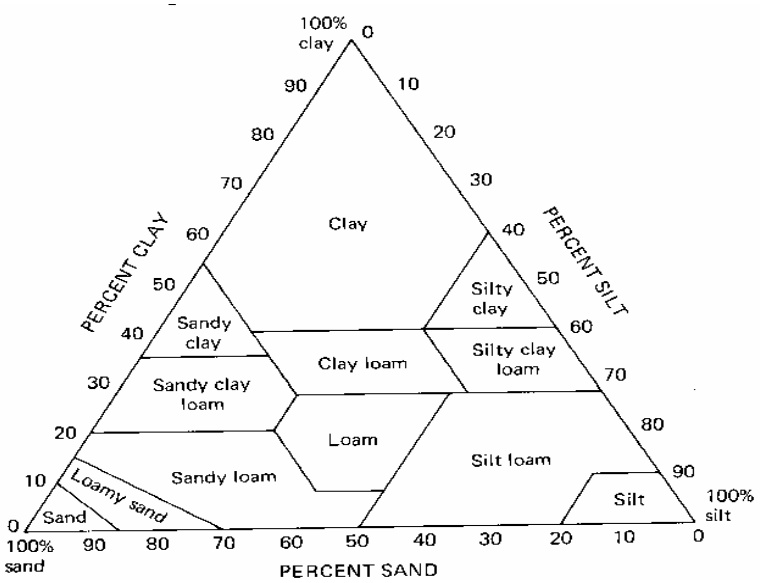
Quantity of Soil Placed (c.y.)	Number of Tests
1 - 200	1
200 – 1000	3
1000 <	((Quantity – 1000) / 500) + 3 round up to whole number

When more than one test is performed, the average of the test results will be used to determine acceptance.

The planting soil test report must obtain the following information:

		HIGH	LOW
Chemical Analysis:			
a.	pH	7.0	6.5
Mechanical Analysis			
a.	% clay	25%	0%
b.	% silt	77%	45%
c.	% sand	33%	25%

3. Additionally the following variables are required.
   a. cation exchange capacity (CEC)
   b. soluble salts
   c. organic matter
   d. phosphorous
   e. available potassium
   f. nutrients
   g. residual chemicals
   h. Recommendations to mitigate any issues from the results in items 3a through 3g.



The mechanical analysis should show that the % sand, % silt, and the % clay must yield a silt loam soil. See the attached Textural Classes diagram above. To determine the class plot a line parallel to the % clay axis starting the line at the value of the % silt. Plot another line parallel to the % sand axis starting the line at the value of the % clay. The intersection of these lines should be in the silt loam region, for the soil to be approved.

Preparation and Placement:

1. Perform or coordinate final adjustments of any utility structure.

2. Clean planters of all trash and debris before placement of soil mix. Remove and legally dispose of debris off site in accordance with Article 202.03. Repair to the satisfaction of the Engineer any portion of the geotechnical fabric or drainage layers prior to installation of planting soil mix.

3. Place, spread and rough grade specified planting soil to depths specified in all areas to be planted. Place planting soil mix in two level (2) lifts. The first lift shall contain 2/3 of the planter soil depth. After placing each lift, moisten the surface at a rate sufficient to hydraulically settle the soil, as determined by the Engineer. Allow water to thoroughly percolate through the soil before placing the next lift. Allow for settling, and place additional planting soil as necessary. Allow for placement and mixing of compost, as determined by the Engineer, but place enough soil mix to meet finish grades within =/- 0.10 foot of design grades.

4. Rake smooth and finish grade all planted areas. The removal of excess material or the addition of planting soil may be required prior to landscaping. This shall be considered incidental to planting soil. Grading will be to a tolerance +/- .10 foot of design grades. Any grade disturbed by irrigation installation shall be restored to finish grade and raked smooth.

5. All debris, litter, tire tracks, dirt, and unintended materials shall be removed, swept or washed off of all landscape, hard median surfaces, and pavement on a daily basis.

Planter Soil Acceptance:

The Engineer retains the right to visually inspect planting soil mix on site before placement. The Engineer may ask that material suspected of not meeting specification be removed from the site, until the material can be mechanically tested.

The final determination of the planter soil quality shall be based upon soil tests taken by the Engineer. The samples shall be taken at the time of planting soil installation. The samples will be tested by independent accredited agencies, for the Engineer. The test frequency shall be the same as listed above. When more than one test is required, the percentages of sand, silt and clay will be averaged. This averaged value will be used to determine the soil quality.
If the averaged test result for sand or silt content is outside the range specified by less than five (5%) percent, an adjusted unit price will be used in computing payment for the planting soil. The adjusted unit price will be a percentage of the contract unit price as given in the following schedule:

Average Sand or Silt Deficiency	Percent of Contract Payment
0 to 2	80
2.1 to 4	66
4.1 to 5	50

Clay content in excess of this specification by two (2%) percent or less: If the averaged result for clay is outside the range specified by less than two (2%) percent an adjusted unit price will be used in computing payment for the planting soil. The adjusted unit price will be sixty-six (66%) percent of the contract unit price.

The Contractor shall remove all planting soil and install material meeting this specification. The Contractor shall be responsible for all costs incurred to remove deficient material and install acceptable planting soil. The Contractor shall be responsible for any damage to plant material, irrigation system, waterproof membrane, or any other damage caused by this work. The Contractor shall be responsible for all additional traffic control. No addition time will be provided in the contract to perform remedial work.

Method of Measurement. Planting Mix Furnish and Place will be measured for payment in place to the depth specified in square yards. 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 meter (square yard) for PLANTING MIX FURNISH AND PLACE, of the thickness specified. Payment shall include all testing, furnishing, stockpiling, transporting of materials, all labor and equipment necessary, disposal and incidentals required to complete the work as specified herein and to the satisfaction of the Engineer. Furnishing and Placing Compost shall be paid for separately.

RECLAIMED ASPHALT PAVEMENT FOR NON-POROUS EMBANKMENT AND BACKFILL
Effective: April 1, 2001

Add the following sentence to Article 1004.06 (a) Description of the Standard Specifications for Road and Bridge Construction:

> "Reclaimed Asphalt Pavement (RAP) may be used as aggregate in Non-porous Granular Embankment and Backfill. 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.

Add the following sentence to Article 1004.06 (C) Gradation of the Standard Specifications for Road and Bridge Construction.

> "One hundred percent of the RAP when used shall pass the 75mm (3 inch) sieve. The RAP shall be well graded from coarse to fine. RAP that is gap-graded or single-sized will not be accepted.

REMOVAL OF EXISTING NOISE ABATEMENT WALL

Description. This work shall consist of the removal of the existing Noise Abatement Wall at the locations indicated on the plans and salvage to the location specified by the Indiana Department of Transpiration. The support posts shall not be cut off at the existing grade, but instead shall be completely removed, including the concrete footing. The holes that remain after the removal is complete shall be backfilled with crushed stone screenings. The materials removed shall be disposed of as specified in Article 202.03. Contact the Indiana Department of Transportation at least two weeks prior to wall removal for inventory of wall panels to be salvaged and location where salvage panels should be delivered.

Basis of Payment. This work will be paid for at the contract unit price for square meters of REMOVAL OF EXISTING NOISE ABATEMENT WALL, which price shall include payment in full for all labor, tools, equipment, disposal, fill, and incidentals required to perform the work as specified herein.

ROADWAY CLEANING (SPECIAL)

Designer Note:
Bituminous temporary pavement shall consist of two items, a base course or binder course making up the bulk of the thickness and a surface course for the riding surface. Make sure to include both items in the bituminous schedule.

For quantity estimation purposes, excavation quantities should be estimated assuming the thicker design if both design options are being shown in the plans

Description. 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. I-80/94 in both directions from I-294 to ½ mile east of Calumet Ave. (US 41) in Indiana.

2. The following ramps:
    a. I-80/94 EB exit to Torrence Ave.
    b. I-80/94 EB C-D Roadway from IL 394 to Railroad Ave.
    c. Torrence Ave. Entrance ramp to I-80/94 EB
    d. I-80/94 EB exit to Calumet Ave. (US 41) NB and SB
    e. Calumet Ave. SB entrance to I-80/94 WB
    f. Calumet Ave. NB entrance to I-80/94 WB
    g. I-80/94 WB exit to Torrence Ave.
    h. Torrence Ave. entrance to I-80/94 WB

3. 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 and be completed prior to switching eastbound traffic onto the westbound 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 monetary 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.

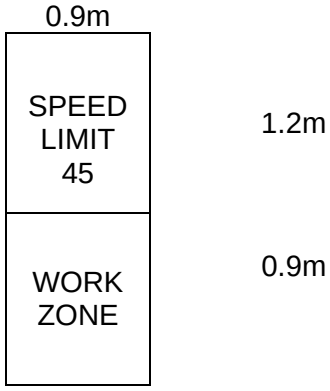
SPECIAL SIGNING

The Contractor shall furnish, install, maintain and relocate if necessary the work zone speed limit signs at the locations, which are shown on the table included herein. All signing work shall be performed and paid for in accordance with TEMPORARY INFORMATION SIGNING.

SIGN LOCATIONS REQUIRED

I-80	EB	RT	Sta. 7+250
I-80	EB	RT	Sta. 7+950
I-80	EB	RT	Sta. 8+650
I-80	WB	RT	Sta. 7+300
I-80	WB	RT	Sta. 7+900
I-80	WB	RT	Sta. 8+650
I-80	WB	RT	100m east of Calumet Ave.
I-80	WB	LT	100m east of Calumet Ave.
I-80	WB	RT	1/2 mile east of Calumet Ave
I-80	WB	LT	1/2 mile east of Calumet Ave

Sign legend and size:



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^2)

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 ± 5°F (71± 3°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 60º to 100ºF (16º to 38ºC) 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:

FIELD PERFORMANCE REQUIREMENTS AND REPLACEMENT OBLIGATIONS: Sheeting manufactured of standard colors and processed and applied to sign blank materials in accordance with sheeting manufacturer's recommendations, shall perform effectively for at least 12 years. The retroreflective sheeting will be considered unsatisfactory if it has deteriorated due to natural causes to the extent that: (1) the sign is ineffective for its intended purpose when viewed from a moving vehicle under normal day and night driving conditions; or (2) the coefficient of retroreflection is less than the minimum specified for that sheeting during that period listed.

80% of values listed in Table I up to 7 years and
70% of values listed in Table I up to 12 years

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.

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.

ELECTRICAL

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 is 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 360º 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 dank 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:

Nominal Duct Size	**Pullout Force** (1 hour at 70º F)	**Pullout Force** (24 hours at 70º F)
in	**Lbs**	**Lbs**
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.

CONDUIT ATTACHED TO STRUCTURE, PVC

Effective: July 8, 2004

Add the following paragraph to Article 811.02:

"(c) Rigid Nonmetallic Conduit……..1088.01(b)"

"The gasket shall be extruded directly onto the junction box cover."

Add the following paragraph to Article 811.03(d):

"All PVC conduits over 1.0 meter in length shall have expansion couplings. The relative position of the sides of the expansion couplings shall be adjusted to properly compensate for the thermal expansion of the conduit due to the ambient temperature at the time of installation."

Add the following paragraphs to Article 811.03:

"(e) Rigid Nonmetallic Conduit

"(1) General. Rigid nonmetallic conduit and fittings installed in exposed locations shall be Schedule 80. Rigid nonmetallic conduit installation shall be according to Article 810.0(b). Conduits terminating in junction and pull boxes shall be shall be terminated with hubs, integral box hubs, or integral box bosses.

"(2) Supports. Surface mounted rigid nonmetallic conduit shall be supported in compliance with Article 811.03(a)(2), except the reference to "NEC Article 346-12" shall be replaced with "NEC (2002 Edition) Article 352.30. The maximum distance between conduit supports shall be that shown in NEC (2202 Edition) Table 352.30(B)."

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 105º 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:	1,000 Hours Atlas Weatherometer
Temperature	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 105º 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; CONDUIT ATTACHED TO STRUCTURE, of the diameter specified, RIGID GALVANIZED STEEL, PVC COATED; or CONDUIT ATTACHED TO STRUCTURE, of the diameter specified, PVC, of the schedule type."

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 7th and 8th 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 Section 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 insulate 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.

HIGHWAY ADVISORY RADIO FLASHING BEACON ASSEMBLY, SOLAR

Description. This work shall consist of furnishing and installing a Solar Powered Highway Advisory Radio (HAR) Flashing Beacon Assembly in accordance with these Contract Documents. The HAR Flashing Beacon Assembly is attached to a Highway Advisory Radio (HAR) Sign at the location shown on the plans or as directed by the Engineer.

Materials. All materials furnished, assembled, fabricated, or installed shall be corrosion resistant. All components, including fasteners, cables, adapters, etc. that are required to provide a complete and operational HAR Flashing Beacon Assembly are to be included in this pay item even if they are not specifically identified herein. Each HAR Flashing Beacon Assembly shall consist of the following major components:

a) Beacon Controller

- The beacon controller shall be capable of communicating with the control equipment located at the IDOT Communications Center through the use of DTMF tones sent out through the HAR transmitters.

- The beacon controller shall be a digitally tuned AM broadcast receiver, tunable over the complete AM band, 530 kHZ to1720 kHZ. The beacon controller shall have a field programmable DTMF decoder and stainless steel whip type antenna.

- The beacon controller shall be supplied with a manual override switch for testing the beacon light.

- The beacon shall energize the yellow beacons when proper DTMF tones are received from the HAR transmitter radio station. The beacon shall have a 0 to 20 minute delay timer adjustable in increments of one minute or smaller. Once the HAR transmitter radio station ceases to send the proper DTMF tones the controller shall continue to energize the yellow beacons until the delay time has elapsed.

- The beacon controller shall operate from a 12V DC battery power source and be provided with a solar power collection and storage system. This will allow 60 hours of continuous emergency operation during dark conditions when fully charged..

- The solar panel shall be unbreakable and capable of powering the system and charging the batteries within 80% of their capacity in 20 days during the Chicago winter, when sunlight averages 1.47 sun hours per day.

- The batteries shall be of the Deep-cycle type and warranted for a minimum of 5 years for the intended use.

The beacon controller shall be fully compatible with the Highway Advisory Radio Station specified included “For Information Only” (FIO) elsewhere in these special provisions.

- The beacon controller shall power two beacon assemblies, and when the proper DTMF tone is received, it shall alternately energize the beacons for one second each. At no time between when the DTMF tone is received and the delay time expires shall both beacons be both on or both off.

b) Yellow Beacon (Quantity of two required per each HAR flashing beacon assembly)

- The beacon assembly shall be a single 200mm (8”) traffic signal head mounted to the HAR sign as indicated on the contract documents. The traffic signal head shall be manufactured by an IDOT District 1 approved traffic signal manufacturer.

- The beacon assembly shall have yellow polycarbonate housing.

- The beacon assembly shall have a polycarbonate tunnel type visor.

- The beacon assembly shall have an LED signal module with an integral yellow lens. The dominant wavelength shall be 590 nm. The LED signal module shall be Dialight 431-3130-005 or 433-3130-001 or Cooper Lighting CLB8YA.

c) Beacon Controller Cabinet

- The beacon controller cabinet shall be NEMA 250 Type 3R and constructed of aluminum, sized to accommodate all of the beacon controller components, with a full extruded-in-place door gasket and be provided with a padlocking mechanism. The receiving antenna shall pass through a weather tight fitting that maintains the NEMA rating of the enclosure.

- The beacon controller cabinet shall be designed for mounting to the sign support structure. All equipment required to mount the cabinet to the sign support is considered to be part of this item.

- The beacon controller cabinet shall be supplied with all shelving, brackets and fasteners required to mount the equipment inside the cabinet.

d) Conduit and cables

- The electrical conduit and cables attached to the structure from the beacon controller to the conduit and cables between the beacon controller cabinet and the yellow beacons shall be included in this pay item and will not be paid for separately.

- All Conduit mounted on the sign structure shall be PVC coated rigid galvanized steel conduit.

- All conductors for circuits of more than 30 volts to ground or that are not completely contained within the beacon controller cabinet shall be a minimum of 12 AWG with 600V Type EPR type RHW insulation. The electrical service or supply cables shall be a 3-conductor No. 6 AWG cable with 600 volt EPR type RHW insulation in a 30 mm (1¼”) unit duct or as shown on the plans.

CONSTRUCTION REQUIREMENTS

General. The Contractor shall prepare a shop drawing which details the complete Highway Advisory Radio Flashing Beacon assembly and all components to be supplied. The submittal shall fully document the interconnection of all of the components and the cabling. Detailed manufacturer's data sheets shall be furnished for all components except for incidental fasteners. Detailed drawings shall also be provided indicating the proposed layout of the cabinet. All components inside the beacon controller cabinet shall be fastened firmly in place so that no components move regardless of how the cabinet is rotated around any axis.

One copy of all operations and maintenance manuals for each Highway Advisory Radio Flashing Beacon assembly components shall be delivered for each assembly installed.

Operations training shall be provided for a minimum of 7 hours for a minimum of ten (10) operations personnel. The training shall include the operation of the system and basic troubleshooting procedures geared to pinpoint problems and remedies.

All components to be supplied under this specification shall be warranted for a minimum of two-years from the conclusion of the system acceptance test. This warranty shall include repair and/or replacement of all failed components via a factory authorized depot repair service. All items sent to the depot for repair shall be returned within two weeks of the date of receipt at the facility. The depot location shall be in the United States. Repairs shall not require more then two weeks from date of receipt and the provider of the warranty shall be responsible for all return shipping costs. The depot maintainer designated for each component shall be authorized by the original manufacturer to supply this service. A warranty certificate shall be supplied for each component from the designated depot repair site indicating the start and end dates of the warranty. The certificate shall be supplied at the conclusion of the system acceptance test and shall be for a minimum of two years after that date. The certificate shall name IDOT as the recipient of the service. IDOT shall have the right to transfer this service to other private parties who may be contracted to perform overall maintenance of the facility.

Installation. The beacon controller cabinet shall be delivered to the site fully assembled with the receiver and all other required components mounted firmly inside and all interconnections and cabling except for the field wiring complete. All connections to the cabinet and the yellow beacons shall made weathertight and shall maintain the NEMA rating of the cabinet. The beacon controller cabinet, yellow beacons and all conduits shall be firmly fastened to the sign support structure using stainless steel hardware that does not damage the structure and is approved by the Engineer. The beacon controller cabinet shall be mounted in a way that retains its NEMA rating.

Programming of the software used to transmit DTMF tones over the HAR station will be performed by IDOT. The Contractor shall tune the radio and program the DTMF decoders at the HAR flashing beacon sign.

Testing. The Engineer reserves the right to inspect and/or factory test any completed assemblies, prior to delivery of the material to the project site. The purpose of the test is to verify that all aspects of the HAR are fully compliant with the specifications. Any deviation from these specifications that is identified during such testing shall be corrected prior to shipment of the assembly to the project site.

When proper DTMF tones are received from the HAR station the yellow beacons shall turn on and flash as previously described. When the HAR station ceases to send the DTMF tones and the programmed delay time has elapsed, the beacons shall both remain off.

The manual activation toggle switch shall be tested to verify that it provides proper control of the yellow beacon operation.

Method of Measurement. This work shall be measured for payment for each HIGHWAY ADVISORY RADIO FLASHING BEACON ASSEMBLY, SOLAR furnished, installed, operational, and accepted.

Basis of Payment. The item shall be paid at the contract unit price each for HIGHWAY ADVISORY RADIO FLASHING BEACON ASSEMBLY, SOLAR which shall be payment in full for the material and work described herein.

HIGHWAY ADVISORY RADIO STATION (FIO)

Description. This work item shall consist of the furnishing and installation of a complete Highway Advisory Radio assembly at locations indicated in the contract documents.

Materials. The Highway Advisory Radio assembly shall consist of the following major components. The Contractor shall provide a totally operational assembly including all cabling, terminations, and miscellaneous hardware. All components supplied shall be matched, tuned, and be compatible to form a fully operational and optimized assembly for operation on the licensed frequency.

(a) Highway Advisory Radio Transmitter (HAR)

- The AM transmitter shall be FCC certified as accepted and eligible for licensing under Part 90.242 of the FCC rules and regulations.

- The AM transmitter shall utilize solid state circuitry for all components. All components shall be identified by industry standard nomenclature, except the manufacturer's LSI devices.

- The AM transmitter shall be capable of transmitting at frequencies from 530 kHz up to 1720 kHz. The transmitter to be supplied shall be setup for the frequency obtained during the licensing procedure detailed under the construction methods of this specification. However, as the result of the final licensing steps, the engineer reserves the right to order a change in this frequency, prior to factory test or delivery of the equipment to the project site.

- The AM transmitter shall be capable of providing the maximum allowable level of RF power to the antenna as detailed in part 97.242 sub-part (b) of the FCC rules.

- The transmitter shall include an audio limiter and a visual peak limiter.

(b) HAR Antenna System

The antenna assembly shall consist of an antenna, antenna support, grounding system, and optional antenna tuning unit. The antenna tuning unit shall not be required, if the antenna can be mechanically matched to the transmitter with a VSWR of better than 1:1.5.

- The antenna shall be a whip-type. The antenna shall be a vertically polarized, center loaded monopole, tuned for operation at the frequency required.

- The antenna shall be constructed of anodized aluminum with an adjustable stainless steel tuning tip. The antenna shall be capable of sustaining winds of 128 kilometers per hour, with 13 mm radial ice.

- The antenna support shall be a Class 4 or 5, 11 Meter wood Utility Pole or structure as shown on the plans. The antenna shall be mounted to the support structure to provide the maximum height of 15 meters permitted by the FCC. If required, the installer will cut the support to adjust the height in the field to match legal requirements.

- All hardware used in the antenna assembly shall be stainless steel except for the anchor bolts, which will comply with the contract plans.

- If the design includes an antenna tuning unit (ATU), it shall be designed to accept the maximum transmitter power on a continuous 100% duty cycle basis at 50 ohms unbalanced from the transmitter, The output impedance shall be variable from 0.5 to 65 ohms at 1:1 VSWR. The ATU shall be supplied in a lockable fiberglass weatherproof enclosure to mount on the non-metallic utility pole supporting the antenna

- A self-contained VSWR bridge and meter shall be provided. The meter shall read VSWR directly, and also directly read RF power delivered to the unit. This SWR /Power meter shall be an integral part of the permanent installation and shall remain in place after acceptance of the material.

- Components for a grounding system consisting of three perforated copper pipes shall be provided. Each pipe shall be 20' long and 2" in diameter. The perforation of the pipes shall consist of weep holes placed every 6 inches along the entire length of pipe. The holes shall be placed in an alternating pattern. Pipes shall be filled with a mixture of 3 parts sand to 1 part copper sulfate. Ground wire shall be #8 AWG bare tinned copper wire and shall be soldered to each pipe in at least 2 places.

(c) Digital Recorder/Announcer

All message recording and playback shall be accomplished with a digital recorder/announcer that shall be completely solid state and shall contain no moving parts. The device shall have one audio output channel and be able to retain a minimum of 40 minutes of voice messages. The message time shall be segmentable into up to

512 distinct messages which may be recorded or deleted independently. Sequences of up to 100 messages shall be possible. The digital recorder/announcer shall be capable of playing the current message sequence while new messages are being programmed into the system for subsequent replay. The messages shall be retained during a power failure of at least seven days, The digital recorder/announcer shall have an internal clock which can be utilized to schedule the message sequences on a 24 hour/7 day per week basis. The clock and message recorder shall be capable of being programmed and updated remotely via the DTMF telephone interface.

(d) Equipment Power Supply

The power system shall consist of the rack mounted power supply, circuit breaker, 120VAC GFI, and surge protection. The transmitter and local voice recorder shall each be supplied directly from the rack mounted power supply.

The rack mounted power supply shall provide the required DC voltage for the transmitter and recorder and shall operate from either 120VAC or a local battery supply. In the event of loss of AC power the power supply shall automatically switch to battery power. Batteries shall be provided to allow 6 days of continuous operation.

A 120 V AC single phase surge protector shall be installed as a precautionary measure against possible damage resulting from voltage surges on all incoming power lines. The 120 V AC single phase surge protector shall incorporate a series choke at a maximum clamp voltage of 340 V at 20 kA with 5 ns response. In addition, the surge protector shall have the capability of removing high energy surges and shall block high speed transients. The surge protector shall comply with the following specifications:

A. Peak Current: 20,000 amps (8x2O μs waveshape)
B. Occurrences: 20 times at peak current
C. Minimum Series Inductance: 200 micro henries
D. Continuous Series Current: 10 amps
E. Temperature Range: -40 to +85 degrees Celsius

(e) NEMA 3R Cabinet

The cabinet shall be a NEMA 3R aluminum (Grade 5052-H32), Single Door Enclosure possessing nominal outside dimensions adequate to house and subsequently maintain and adjust the hardware described in this specification. All surfaces of the cabinet shall be clean, free of holes or blemishes, smooth without burrs and with exterior corners rounded. The cabinet shall not be painted. The cabinet door shall incorporate hinges and hinge pins utilizing stainless steel fastening of hinges to the door(s) and cabinet. All pop-rivets, nuts, and bolts shall be stainless steel. Welding of hinges to cabinet and doors shall not be permitted. When the door is closed and latched, the door shall automatically lock. The latching mechanism shall be a 3 point draw roller type using an overlapping door design. Pushrods will be turned edgewise at the outward supports and shall have nominal dimensions of 60 mm by 19 mm constructed of metal. Rollers shall have

minimum diameter of 22 mm and shall be made of nylon. The center catch shall be fabricated from 5 mm metal minimum. An operating handle shall be furnished for the door. The handle will be stainless steel. The latching handle shall have a provision for padlocking in the closed position. The cabinet shall be supplied with a Corbin #2 dead bolt lock or equal. The key shall be removable in the lock position only. A heavy duty padlock and key shall be provided, which shall be utilized to provide additional security in addition to the standard handle assembly. All padlocks supplied for the project must utilize identical keys which shall allow maintenance technicians to carry only one key. A fluorescent fixture supplied with a lens or shield and a 20 watt Type T-12 430 ma lamp with cold weather, rapid start, high power factor ballast, shall be supplied and installed to the top front portion of the cabinet. A switch shall be installed on the inside of the cabinet door so that the lamp can be extinguished manually.

Construction Details. The contractor shall initiate the steps required to obtain a license to operate the HAR station using the proposed equipment and location specified in the plans. The contractor shall conduct any necessary frequency research and engineering, obtain and document signal strength contours, prepare the license application, submit it for signature to the engineer, and subsequently submit the application to the Federal Communications Commission (FCC). The contractor shall take all reasonable and customary follow-up steps necessary to secure the final license which will allow the station to be placed on the air with the specific equipment being proposed by the contractor. Based on the frequency research, the contractor shall advise IDOT of potentially available frequencies, prior to filing the application. IDOT shall have the opportunity of prioritizing the available frequencies and will provide direction to the contractor concerning which frequency should be requested. The contractor shall file the application and expeditiously follow-up with the appropriate licensing bodies to ensure that the application is approved in a timely fashion. The contractor shall be responsible for all fees associated with the license submission and approval process.

The Contractor shall prepare a shop drawing which details the complete Highway Advisory Radio assembly and all components to be supplied. In addition, the submittal shall include a copy of the license application required to legally operate the station. The submittal shall fully document the interconnection of all of the components and the cabling. Detailed drawings shall also be provided indicating the proposed layout of the cabinet.

The engineer reserves the right to inspect and/or factory test any completed assemblies, prior to delivery of the material to the project site. The purpose of the test is to verify that all aspects of the HAR are fully compliant with the specifications. Any deviations from these specifications that are identified during such testing shall be corrected prior to shipment of the assembly to the project site.

The contractor shall construct the antenna support base as detailed in the contract drawings. After construction of the base, the fiberglass antenna support and pole mounted equipment cabinet shall be installed on the pole. The antenna and all lead-in wire shall be attached according to the manufacturer's standard procedures.

The Contractor is responsible for minimizing disruption to the existing landscape and avoiding existing or proposed underground utilities or conduits. The contractor shall connect the HAR to electric and fiber optic communication service. The contractor shall make all arrangements with the utility companies and shall pay all connect fees associated with activation of service.

Subsequent to the installation of the equipment and obtainment of license, a Operational Standalone test shall be performed for each installed Highway Advisory Radio assembly. An HAR factory authorized and trained technician shall adjust each transmitter and test the system to insure compliance with FCC Part 90.242. After the transmitter is fine tuned, a minimum of 10 sites within the coverage area will be selected by the Engineer for testing. The test procedure shall demonstrate to the Engineer that an acceptable signal is being obtained throughout the coverage area for both day and night conditions. This shall be accomplished by taking field strength readings at each test site during the day and at night. If the tests reveal that the maximum field strength is not being obtained with the 10-watt input power setting, the supplier will prepare the necessary FCC applications to request a waiver which will allow the transmitter power to be increased to achieve the maximum field strength allowable under FCC Part 90.242.

The Operational Standalone test shall also verify that all functions of the system are fully operational. This procedure shall also include a test to verify that the Digital Recorder can be programmed and messages downloaded via the dial-up interface. A test procedure shall be supplied for approval by the Engineer a minimum of one week prior to the scheduled start of this test.

Operations training shall be provided for a minimum of 8 hours for a minimum of ten (10) operations personnel. The training shall include the operation of the system and basic troubleshooting procedures geared to pinpoint problems and remedies

All components to be supplied under this specification shall be warranted for a minimum of two years from the conclusion of the system acceptance test. This warranty shall include repair and/or replacement of all failed components via a factory authorized depot repair service. All items sent to the depot for repair shall be returned within two weeks of the date of receipt at the facility. The depot location shall be in the United States. Repairs shall not require more then two weeks from date of receipt and the provider of the warranty shall be responsible for all return shipping costs. The depot maintainer designated for each component shall be authorized by the original manufacturer to supply this service. A warranty certificate shall be supplied for each component from the designated depot repair site indicating the start and end dates of the warranty. The certificate shall be supplied at the conclusion of the system acceptance test and shall be for a minimum of two years after that point. The certificate shall name IDOT as the recipient of the service. IDOT shall have the right to transfer this service to other private parties who may be contracted to perform overall maintenance of the facility.

One copy of all operations and maintenance manuals for each Highway Advisory Radio assembly components shall be delivered for each assembly installed.

Method of Measurement. The Highway Advisory Radio Station bid item will be measured for payment by the actual number of Highway Advisory Radio assemblies furnished, installed, activated, tested, and accepted.

Basis of Payment. Payment will be made at the contract unit price each for HIGHWAY ADVISORY RADIO ASSEMBLY which shall include all equipment, material, testing, documentation, and labor detailed in the contract documents for this bid item. Conduit and wire required to connect the transmitter cabinet to utilities shall be paid for under other work items as identified on the plans. All other conduit and wiring required to connect internal components of the assembly shall be included as part of this bid item.

JUNCTION BOX TYPE "J"
Effective: March 10, 2004

Description. This item shall consist of furnishing and installing at a specific location a junction box with cover, Type "J", continuously welded, 6.3mm (1/4") thick, Type 316 stainless steel as specified.

CONSTRUCTION REQUIREMENTS

All junction boxes shall be watertight. Predrilled holes shall be provided for the applicable conduit size and location. Unless otherwise specified, conduits terminating at stainless steel boxes shall be terminated in conduit hubs.

The cover shall be recessed within an outside frame, and mounted flush with the surface of this frame, having a watertight gasket extruded in place and firmly adhered to the cover. Recessed stainless steel slot head screws shall secure the cover.

Junction Box Embedded in Concrete. (For example:) A stainless steel continually welded box 1.04m (41") X 305 mm (12") X 305 mm (12") with stainless steel 6.3 mm (1/4") type 316 cover and extruded neoprene gasket with a minimum of ten (10) 9.5 mm (3/8") 16 X 19 mm (3/4") flat head stainless steel slotted screws - Reference Traffic Surveillance Typical Drawings TY-1TSC-663#1.

Basis of Payment. This work will be paid for at the contract unit price each for furnishing and installing a stainless steel JUNCTION BOX, TYPE J, which price shall be payment in full for all labor and materials necessary to complete the work as described above.

JUNCTION BOX, STAINLESS STEEL
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."

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 or 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.

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."

UNDERGROUND RACEWAYS
Effective: June 1, 2003

Revise Article 810.03 of the Standard Specifications to read:

"Installation. All underground conduit shall have a minimum depth of 700 mm (30-inches) below the finished grade."

Add the following to Article 810.03 of the Standard Specifications:

"All metal conduit installed underground shall be Rigid Metal Conduit unless otherwise indicated on the plans."

Revise Article 810.05 of the Standard Specifications to read:

"810.05 Basis of Payment. This work will be paid for at the contract unit price per meter (foot) for CONDUIT IN TRENCH, of the diameter specified, RIGID GALVANIZED STEEL or CONDUIT PUSHED, of the diameter specified, RIGID GALVANIZED STEEL or POLYETHYLENE DUCT, BORED AND PULLED of the type and size specified, or CONDUIT ENCASED, of the type, diameter, and number of raceways wide by the number of raceways high specified."

DRAINAGE & UTILITIES

CATCH BASINS (OF THE SIZE SPECIFIED) SPECIAL, TYPE 20 FRAME AND GRATE

Description. This item shall consist of constructing catch basins, (of the size specified) special, type 20 frame and grate 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 CATCH BASINS, (of the size specified) SPECIAL, TYPE 20 FRAME AND GRATE, which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

CATCH BASINS (OF THE SIZE SPECIFIED) SPECIAL, TYPE 22 FRAME AND GRATE

Description. This item shall consist of constructing catch basins, (of the size specified) special, type 22 frame and grate 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 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.

CLEANING EXISTING DRAINAGE STRUCTURES
Effective: September 30, 1985 November 1, 1996

All existing storm sewers, pipe culverts, manholes, catch basins and inlets shall be considered as drainage structures insofar as the interpretation of this Special Provision is concerned. When specified for payment, the location of drainage structures to be cleaned will be shown on the plans.

All existing drainage structures which are to be adjusted or reconstructed shall be cleaned in accordance with Article 602.14 of the Standard Specifications. This work will be paid for in accordance with Article 602.15 of the Standard Specifications.

All other existing drainage structures which are specified to be cleaned on the plans will be cleaned in accordance with Article 602.14 of the Standard Specifications. This work will be paid for at the contract unit price each for DRAINAGE STRUCTURES TO BE CLEANED, and at the contract unit price per meter (foot) for STORM SEWERS TO BE CLEANED.

DRAINAGE STRUCTURE TO BE REMOVED

This work shall consist of the removal and satisfactory disposal of the existing concrete drainage structures as shown on the plans or as directed by the Engineer and in accordance with the applicable portions of Section 605 of the Standard Specification.

Basis of Payment This work will be paid for at the contract unit price each for DRAINAGE STRUCTURE TO BE REMOVED which price shall include removing and disposing of the existing structure, materials and labor to connect the existing or existing and propose storm sewers to maintain flow where necessary, and backfilling the hole with sand.

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 and District One Details CS-9 and CS-10, in accordance with the applicable portions of Sections 602 and 604 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.

DUCTILE IRON PIPE, STORM SEWER OF THE DIAMETER SPECIFIED

This work shall consist of the removal of the existing structure drainage system and the installation of the new structure drainage system as shown in the plans, as described herein, in accordance with Section 550 of the Standard Specifications, in accordance with the special provision for Drainage System and as directed by the engineer.

Material. The pipe and fittings shall be as described in the special provision for Drainage System.

Installation. The existing drainage system shall be removed as shown on the plans to an elevation three (3) meters of the proposed finished grade and disposed of. New ductile iron storm sewer shall be installed with cleanout fittings for each connection to the existing structure drainage system and connected to either existing or new drainage structures.

Shop Drawings Shop plans shall be submitted in accordance with Article 105.04.

Method of Measurement Ductile iron pipe storm sewer shall be measured per meter (foot) along the centerline of the sewer pipe. No measurement will be made for the removal of the existing structure drainage system, backfill and for connecting the storm sewer to either existing or proposed drainage structures or pipe.

Basis of Payment This work will be paid for at the contract unit price per meter (foot) for DUCTILE IRON PIPE, STORM SEWER of the diameter specified.

No additional payment will be paid for the removal of the existing structure drainage system, backfill and for connecting the storm sewer to either existing or proposed drainage structures or pipe.

DRAINAGE SYSTEM

Description. This item of work shall consist of the furnishing and installing a bridge drainage system as shown on the plans , including all piping, fittings, support brackets, inserts, bolts, and splash blocks when specified. Included in this work shall be painting of the exposed drainage system between bottom of the deck and the ground level.

Material. The pipe and fittings above an elevation three (3) meters above the finished grade shall be reinforced fiberglass according to ASTM D 2996 RTRP with a 207 MPa (30,000 psi) minimum short-time rupture strength hoop tensile stress. All pipes and fittings below an elevation three (3) meters above the finished grade shall be Extra Heavy Ductile Iron Pipe conforming to the requirements of ASTM A746 with plain end.

The reinforced fiberglass shall also have an apparent stiffness factor at 5 percent deflection exceeding 22.6 cu mm-kPa (200 cu in.-lbf/sq in) and a minimum wall thickness of 2.54 mm (0.10 in.). All pipe supports and associated hardware shall be hot dip galvanized according to AASHTO M232. The fiberglass pipe and fittings furnished shall be pigmented through out, or have a resin-rich pigmented exterior coat, specifically designed for overcoating fiberglass, as recommended by the manufacturer. The color shall be as specified by the Engineer. The resin in either case shall have an ultraviolet absorber designed to prevent ultraviolet degradation. The supplier shall certify that the materials supplied meet or exceed these requirements.

The exposed ductile iron piping and fittings shall be painted. The paint system and the color of the finish coat shall be as requested and approved by the Engineer. The paint shall consist of a washcoat pretreatment in accordance with the Steel Structures Painting Council's SSPC-SPI & SSPC-Paint 27 prior to finish coat.

Installation. All connections of pipes and fittings shown on the plans to facilitate future removal for maintenance cleanout or flushing shall be made with a threaded, gasketed coupler or a bolted gasketed flange system. Adhesive bonded joints will be permitted for runs of pipe between such connections. The end run connection shall feature a minimum nominal 150 mm (6 in.) female threaded fiberglass outlet. Straight runs may utilize a 45° degree reducing saddle bonded to the pipe. The female outlet shall be filled with a male threaded PVC plug.

Runs of pipe shall be supported at spacings not exceeding those recommended by the manufacturer of the pipe. Supports that have point contact or narrow supporting areas shall be avoided. Standard slings, clamps, clevis hangers and shoe supports designed for use with steel pipe may be used. A minimum strap width for hangers shall be 40 mm (1 ½ inch) for all pipe under 300 mm (12 inch) in diameter and 50 mm (2 inch) for diameters 300 mm (12 inch) or greater. Straps shall have 120 degrees of contact with the pipe. Pipes supported on less than 120 degrees of contact shall have a split fiberglass pipe protective sleeve bonded in place with adhesive.

Where the drainage system abuts or is suspended from a concrete surface, the pipe and related hardware shall be secured by bolting into the inserts in the concrete surface. When drilling holes for inserts or grouting threaded rods, care shall be taken so as not to cut or damage reinforcement bars. The Contractor shall submit his/her proposed method of locating reinforcement bars, for Engineer's approval, prior to drilling any holes in concrete surfaces.

Drilling of holes in the bridge deck will not be allowed. Concrete inserts shall be cast into the deck concrete for any supports to be attached to the bridge deck.

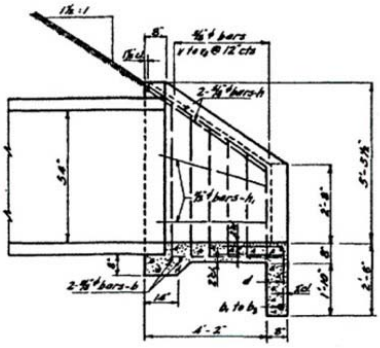
All reinforced fiberglass pipe, fittings, and expansion joints shall be handled and installed according to guidelines and procedures recommended by the manufacturer or supplier of the material.

Shop Drawings. Shop Plans shall be submitted in accordance Article 105.04

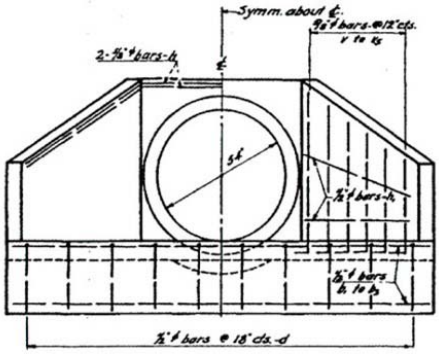
Basis of Payment. This work will be paid for at the contract lump sum price for DRAINAGE SYSTEM, which price shall be payment in full for furnishing all material, and installing the complete drainage system as shown on the plans and as specified herein including hangers, attachment hardware and painting.

EXISTING OUTFALL HEADWALL (FOR INFORMATION ONLY)

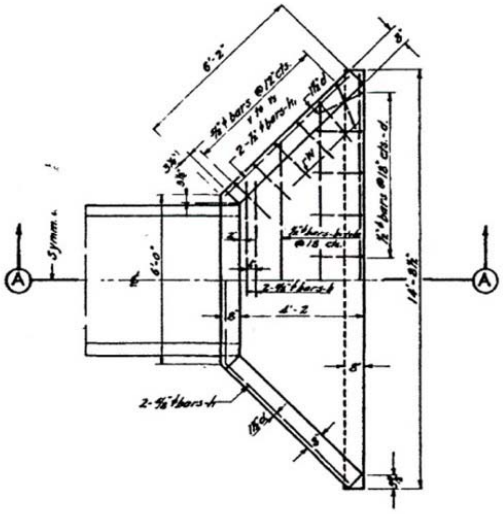
For Concrete Headwall Removal at the state line approximate station 7+950 left.



SECTION A–A



END ELEVATION

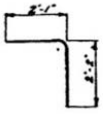


PLAN

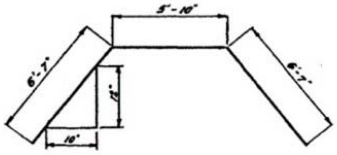
BILL OF MATERIAL.

Bar	No.	Size	Length	Remarks
d	10	5/8" ϕ	4'-3"	Bent bar
h	2	5/8" ϕ	19'-0"	" "
v	2	"	7'-6"	" "
v1	2	"	7'-0"	" "
v2	2	"	6'-6"	" "
v3	2	"	6'-0"	" "
v4	2	"	5'-6"	" "
v5	2	"	5'-0"	" "
b	2	"	7'-3"	Straight bar
b1	1	5/8" ϕ	9'-0"	" "
b2	1	"	12'-0"	" "
b3	2	"	14'-3"	" "
h1	4	"	6'-0"	" "
w	2	"	4'-0"	" "
Concrete Cu. Yds.				3.4
Reinf. bars, lbs.				215

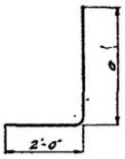
NOTE: Class "X" concrete to be used throughout.



5/8" ϕ BARS - d



5/8" ϕ BARS - h1



5/8" ϕ BARS - v to v5

DIMENSIONS OF v BARS.

Bars	a	Total Length
v	5'-6"	7'-6"
v1	5'-0"	7'-0"
v2	4'-6"	6'-6"
v3	4'-0"	6'-0"
v4	3'-6"	5'-6"
v5	3'-0"	5'-0"

STANDARD 1997.

Scale: 3/4" = 1'-0"

TRI-STATE SUPERHIGHWAY
PUMPING STATION
STRUCT. DETAIL @ OUTFALL HEADWALL

FRAMES AND GRATES TO BE REMOVED

Description. This work shall consist of the removal and disposal of the existing frames and grates over existing drainage structures at the locations as shown on the plans. This work shall be performed in a manner as not to damage the existing structure under the frame.

Materials shall be disposed of in a licensed landfill, recycled, reused, or otherwise disposed of as allowed by State or Federal solid waste disposal laws and regulations and solid waste determinations of the IEPA.

Basis of Payment. This work will be paid for at the contract unit price each for FRAMES AND GRATES TO BE REMOVED.

JUNCTION CHAMBER, NO. (SPECIFIED)

Description. This work shall consist of furnishing all labor, materials, tools, and equipment necessary to construct the junction chambers as shown on the plans or as directed by the Engineer, in accordance with the applicable portions of Sections 502, 503, 508, and 602 of the Standard Specifications.

Included in this work is all the excavation, backfilling, dewatering, Class SI Concrete, reinforcement bars, and all other incidental hardware as specified and detailed on the plans. Frames, grates or lids and risers shall be included the cost of the junction chamber.

The support and protection of the existing utility shall be maintained throughout the construction operation. The contractor shall submit a plan for support and protection of the existing utility to the Resident Engineer for review by the Utility prior to commencing the work. The Contractor shall brace or shore and dewater the excavation as part of the work.

Method of Measurement. This work will paid for each JUNCTION CHAMBER, NO. (SPECIFIED) complete and backfilled in place.

Basis of Payment. This work will be paid for at the contract unit price per each for JUNCTION CHAMBER, NO. (SPECIFIED), including the type of frames, grates or lids specified, which price shall be include all labor, equipment and materials necessary to complete the work as specified herein.

Excavation in rock will be paid for according to Section 502 of Rock Excavation for Structures.

PROPOSED STORM SEWER CONNECTION TO EXISTING MANHOLE

This item shall consist of the construction of proposed storm sewer connection to existing manholes at the locations shown on the plans and as directed by the engineer.

The new opening in the existing manhole shall be made in a manner to minimize any structural damage to the manhole. Any damage to the manhole shall be repaired to the Engineer's satisfaction at no additional cost to the department.

The storm sewer connection to the existing manhole shall be sealed with class SI concrete or concrete brick and suitable mortar to the satisfaction of the engineer.

Method of Measurement Proposed Storm Sewer Connection to Existing Manhole wick be measured for payment on a per each basis.

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 herein specified.

REMOVAL OF PUMPING STATION (FIO)
December 31, 2003

Description. This work consists of the removal of the existing pumping station and salvage of the listed equipment at the following locations, as described herein. The work at each location will be paid for separately.

Pumping Station No. 1, north of Interstate 80/94 near Station 7+925.

Pumping Station No. 6, northeast of existing Interstate 94 westbound ramp near Station 31+100.

Coordination. The contractor shall coordinate work with that of other contractors. The contractor shall proceed with demolition no later than 10 business days after station is taken out of service by other construction. The removal of the pumping stations shall be in accordance with the Special Provision for "Coordination with Adjacent and/or Overlapping Projects".

Asbestos Abatement. Pump Station No. 1 has asbestos-containing-material (ACM) present. The ACM in Pumping Station No. 1 shall be removed in compliance with the Special Provision for REMOVAL AND DISPOSAL OF NON-FRIABLE ASBESTOS, PUMPING STATION NO. 1. Asbestos abatement in Pumping Station No. 1 shall be completed prior to or as part of the demolition of Pump Station No. 1, as described in the Special Provision for REMOVAL AND DISPOSAL OF NON-FRIABLE ASBESTOS, PUMPING STATION NO. 1.

Pump Station No. 6 has asbestos-containing-material (ACM) present. The ACM in Pumping Station No. 6 shall be removed in compliance with the Special Provision for REMOVAL AND DISPOSAL OF FRIABLE ASBESTOS, PUMPING STATION NO. 6. Asbestos abatement in Pumping Station No. 6 shall be completed prior to the demolition of Pump Station No. 6, as described in the Special Provision for REMOVAL AND DISPOSAL OF NON-FRIABLE ASBESTOS, PUMPING STATION NO. 6

Materials. Fill material if required, shall comply with the first two paragraphs of Art. 205.04 and is included in the cost of this pay item and will not be paid for separately.

Salvage.

The following items are to be salvaged and delivered to IDOT from Pumping Station #1

a) Motor Control Center
b) Automatic Transfer Switch
c) Pump Control Cabinet
d) SCADA Panel including air bells and P.T's.
e) Generator including enclosure
f) Above ground Diesel Storage Tank
g) Gas detection meter with associated equipment
h) Automatic trashrack equipment as identified by the Engineer
i) Lighting fixtures
j) Bilco hatches
k) Heaters
l) Fiberglass ladder and cage
m) Bulletin board, Desk and Fire extinguisher
n) Floats
o) Fence

The following items are to be salvaged and delivered to IDOT from Pumping Station #6

a) SCADA Panel including air bells and P.T's.
b) Floats
c) Wet pit fixture
d) Antenna pole
e) Heater and air induction equipment
f) Pump starters and associated controls

All equipment to be salvaged and returned to the State shall be delivered by the Contractor to the maintenance facility located in District 1 as directed by the Engineer. Delivery shall be arranged not less than 72 hours in advance of intended delivery date and time, excluding Saturdays, Sundays, and all State holidays. No equipment will be accepted without a prior appointment. All equipment shall be delivered within 30 days of removal. The Contractor shall provide 5 copies of a list of the equipment and quantities that is to remain the property of the State, including model and serial numbers, where applicable, to the Engineer, and two copies of the equipment list and a copy of this Special Provision to the maintenance facility personnel at the time of delivery. The Contractor shall unload the equipment at the maintenance facility as directed by the maintenance personnel there, and shall provide the necessary equipment, operators, labor, and blocking material to deposit the equipment in the locations directed by the maintenance personnel. Equipment from the same location may be boxed together (equipment from different locations may not be mixed) and all boxes and equipment shall be clearly marked or labeled with the location from which they were removed. Boxes will be clearly labeled to identify each item contained, and items packed into boxes shall be protected from damage during normal shipping and handling. All marking shall be in letters no less than 25 mm (1") high. If the equipment is not returned in accordance with these requirements, the maintenance facility personnel will reject it. The Contractor shall be responsible for the condition of the removed equipment until the acceptance of the equipment and a receipt drawn by the State's Electrical Maintenance Contractor indicating the items have been returned in good condition.

If necessary, the Contractor shall safely store and arrange for pick up of all equipment to be returned to agencies other than the State. The Contractor shall package the equipment and provide all necessary documentation as stated above.

Removed equipment, which is lost or not returned to the Department for any reason shall be replaced with equipment equal to the equipment to be salvaged and approved by the engineer prior to purchase or fabrication.

Demolition. The contractor shall coordinate the disconnection of all utility services. The demolition work shall be in compliance with all applicable OSHA standards, including those regarding confined space entry. The contractor shall break up the bottom of the wells to permit normal drainage through the structure. All pipe entrances shall be sealed with grout a minimum of 2 meters into pipe. The above-grade structure shall be removed in its entirety in coordination with the asbestos abatement, which is paid for separately. Bricks and concrete may be used for fill as permitted in Art. 205.04. All other materials, fixtures, piping, ductwork, etc., not otherwise identified for salvage, shall not be used for fill, but shall become the property of the contractor and disposed of properly off of state property. The below-grade structure shall be removed at least 600m (2 ft.) below finished grade or grade at time of demolition, whichever is lower. Additional removal as required for new foundations in other contracts shall be performed as directed by the Engineer at no additional cost to the State.
for this work.

Site Restoration. The site shall be restored to match the surrounding grade. Fill material shall be compacted to not less than 95% of the standard laboratory density, in lifts of not more than 1m (3 ft.) thick. The top 600mm (2 ft.) shall consist of topsoil obtained from the site or complying with Art. 1081.05(a) of the standard specification, also compacted to 95% of the standard laboratory density. Topsoil shall be included in the cost of this pay item and shall not be paid for separately. Site restoration work shall be coordinated with other contractors to avoid performing final restoration that will be disturbed by subsequent work. The contractor shall, however, restore the site to the existing grade as soon as practical after the demolition work is complete.

Security. The Contractor shall be responsible for maintaining the security of the work site to prevent entry by anyone other that the Contractor's personnel, or those authorized by the Contractor or the Engineer. If the site is not attended by the Contractor's personnel at any time during the salvage, demolition, or restoration process, access shall be controlled by a complete and locked chain link fence equivalent to the existing fence at the site to the satisfaction of the Engineer, or by stationing security personnel charged with the duty of controlling access to the site. If the site is not secure to the satisfaction of the Engineer, the Contractor shall furnish personnel to guard the site within one hour of notification by the Engineer that security at the site is insufficient. If the Contractor does not furnish personnel within that time, the Engineer may furnish security personnel as required to secure the site. Payment for such security service will be deducted from the Contractor's payment.

Method of Measurement. This work shall be measured per each pump station removed, including accepted delivery of all equipment identified herein for salvage, structure demolition, site restoration, and disposal of material not identified for salvage or fill., as required and as described herein, with all salvaged equipment delivered in good condition to the designated location. The Contractor shall submit delivery documentation with the request for payment.

Basis of Payment. This work will be paid at the contract price each for REMOVAL OF PUMPING STATION as specified, which shall be payment in full for all material, labor, equipment, tools and all incidentals necessary for the completion of this work as described herein, performed to the satisfaction of the Engineer.

REMOVE AND PLUG ABANDONED WATER MAIN

Description. This work shall consist of the removal and disposal of the existing water main at the locations as shown on the plans. The water main shall be disposed of in according to 202.03. Portions of the water main to remain in place shall be plugged or capped with the installation of a mechanical joint or push on restrained joint.

Trenches resulting from the removal of the water main shall be backfilled according to the applicable requirements of Article 550.07.

Method of Measurement. Storm sewer removal of the various diameters will be measured for payment in meters (feet), measured as removed.

Trench backfill will be measured for payment as specified in Article 208.03.

Basis of Payment. This work will be paid for at the contract unit price per meter (foot) for REMOVE AND PLUG ABANDONED WATER MAIN, which work shall also include any required cutting of the existing main including for the various stages of construction.

Trench Backfill will be paid for as specified in Article 208.04.

SEWER OUTFALL SEPARATOR SYSTEM

Description. This work shall consist of furnishing and installing a storm water screening unit (SWSU) at the sewer out fall location as shown on the plans and in accordance with the applicable portions of Section 602 of the Standard Specifications. The storm water screening unit shall be a unit manufactured by CDS Technologies, Inc or an approved equivalent. The Contractor, and manufacturer shall furnish all labor, materials, equipment and items required to install the SEWER OUTFALL SEPARATOR SYSTEM and all necessary appurtenances including the weir, in accordance with the plans, specifications, its respective manufacturer's specifications and as approved by the Engineer. The units shall be as described below meeting the specifications as stated herein. Removal of portions of the existing concrete pump station shall consist of the removal and satisfactory disposal in accordance with the applicable portion of Section 501 of the Standard Specifications.

General

The SWSU shall be non-mechanical and gravity driven, requiring no external power requirements. The SWSU shall be equipped with a stainless steel expanded metal screen having a screen opening of 4700 microns (4.7 mm or 0.185 inches). The separation screen

shall be self-cleaning and non-blocking for all flows diverted to it, even when flows within the storm drain pipeline exceed the SWSU's design treatment flow capacity. When storm flows exceed the SWSU's design treatment flow capacity, a portion of this flow will bypass the SWSU system over the diversion weir.

The SWSU shall not raise the Hydraulic Grade Line of the inflow by more than 50 mm (2") and shall treat a minimum of flow as described below.

Units Required

Drainage Structure #, State
A98, Illinois
A110, Indiana

Storm Water Screening Unit Design

Hydraulic Treatment Capacity and Separation Screen Design:

A98, Illinois: A twin SWSU shall have a minimum treatment flow capacity of 510 l/s (18-cfs). This treatment system capacity shall be achieved without any flow bypassing the overflow weir of the treatment system and will also handle the peak flow of 2560 l/s (90.40 cfs) for the 1980 mm (78") RCP piping system.

A110, Indiana: The single SWSU shall have a minimum treatment flow capacity of 102 l/s (3.61-cfs). This treatment system capacity shall be achieved without any flow bypassing within the structure built in overflow diversion weir of the treatment system and will also handle the peak flow of 616 l/s (21.75 cfs) for the 600 mm (24") RCP piping system.

Storm Water Filtration Screening Unit Structure and Design:

The structure shall be designed to withstand H20 traffic and earth loadings to be experienced during the life of the SWSU.

The SWSU shall be furnished with the following sump capacities for each individual unit noted as same capacity for left and right hand orientation:

A98, Illinois: Each of the two SWSU's shall be furnished with a sump that has a minimum volume of 5.69 cubic meters (7.44 cubic yards) for storage of sediments, organic solids, and other settleable trash and debris.

A110, Indiana: The SWSU shall be furnished with a sump that has a minimum volume of 1.60 cubic meters (2.09 cubic yards) for storage of sediments, organic solids, and other settleable trash and debris.

Solids Removal Performance Requirements

The SWSU shall remove sediment from storm water during frequent wet weather events. The SWSU shall treat sediments, floatable material, gross pollutants, vegetative material without any loss of material at the bypass peak flow rate conditions. The SWSU must be capable of trapping silt and clay size particles in addition to large particles. The SWSU shall capture 100% of the floatables and 100% of all particles equal to or greater than the screen size opening 4.7mm (0.185 inches) for all flow conditions up to the unit's design treatment flow capacity, regardless of the particle's specific gravity. The SWSU shall capture 100% of all neutrally buoyant material equal to or greater than the screen size opening 4.7 mm (0.185 inches) for all flow conditions up to its design treatment flow capacity. There shall be no flow conditions up to the design treatment flow capacity of the SWSU; in which a flow path through the SWSU can be identified, that allows the passage of a particle equal to or larger than the screen for any neutrally buoyant object. The SWSU shall permanently retain all captured material for all flow conditions of the storm drains to include flood conditions. The SWSU shall not allow materials that have been captured within the unit to be flushed through or out of the unit during any flow condition to include flood and/or downstream high water level influences.

Materials Design for SWSU Manufacture

Concrete:

SWSU shall be manufactured from concrete and have a 28 day compressive strength of not less than 34.500 kPa (5,000 psi), using either Type 1 or Type 3 Portland Cement. Aggregates shall conform to ASTM Designation C33, except the requirement for gradation shall not apply. Reinforcement shall consist of wire conforming to ASTM Designation A185 or A497 of deformed bars Grade 60 steel conforming to ASTM Designation A615.

Hardware/Covers:

The separation screen shall be fabricated from stainless steel conforming to ASTM Designation A316. Fasteners used to install the screen or support structure shall be stainless steel, 316. PSW series screens may have Ultra high molecular weight (UHMW) or High Density Poly (HDPE) blocks may be fastened to the support structure and embedded into the concrete structure to facilitate screen installation.

The access cover for the unit shall be designed to withstand direct traffic loading (H-20) and shall provide an access cover of the dimensions shown on the drawings. Manholes covers shall include the logo of the manufacture with H-20 loading rates or approved equivalent.

Fiberglass:

Fiberglass components shall meet the National Bureau of Standards PS-15. Components shall be coated with isophalic polyester gelcoat and hand laid up to 4 layers of 56.7 g (2 oz.) mat and fabric on the mold. Cure 8-16 hours until completely dry before de-molding. The components are to be smoothed; if needed, of any rough edges to provide a clean product.

Submittals

Manufacturers Performance Certificate

The manufacturer of the SWSU shall submit four copies of details and shop drawings of sufficient detail of each unit for the Engineer to confirm that no available flow paths exist that would allow the passage of an object greater than the screen size opening 4.7 mm (0.185 “) used on the SWSU. Additionally, the manufacturer shall submit a “Manufacturers Performance Certificate” certifying that the SWSU shall achieve the specified removal efficiencies listed in these specifications. This Manufacturer’s Performance Certification of removal efficiencies shall clearly and unequivocally state that the listed removal efficiency shall be achieved throughout the entire treatment flow processed by the SWSU with no attenuation of removal efficiency as the flow increase up to the minimum treatment flow capacity specified above. The Contractor shall submit four copies of the operation and maintenance manual and of the maintenance information packet for each unit ordered to the Department.

Warranty

The manufacturer of the SWSU shall guarantee that the SWSU system is free from defects in materials and workmanship for a period one year following installation. Equipment supplied by the manufacturer shall be installed and used only in the particular application for which it was specifically designed.

Basis of Payment. The sewer outfall separator system installed complete in place will be paid for at the contract unit price lump sum for SEWER OUTFALL SEPARATOR SYSTEM or SEWER OUTFALL SEPARATOR SYSTEM (INDIANA), which price shall include all frames, grates, lids, concrete, reinforcement, sand cushion, weir and all excavation, backfilling and adjustments.

The removal of portions of concrete structures conflicting with the installation of the Sewer Outfall Separator System will be removed in the manner specified under Article 501.03 of the Standard Specifications and the disposal of the materials will be paid for at the contract unit price per cubic meter (cubic yard) for CONCRETE REMOVAL.

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.

The slip-on flat bottom check valves shall be of Series TF-1 as manufactured by the Red Valve Co., Inc. of Carnegie, PA 15106, or an approved equal.

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.

STEEL CASINGS

Description. This work shall consist of furnishing and installing steel casings of the diameter specified at the locations as shown on the plans or as directed by the Engineer. This work shall be done according to the following requirements:

Method of Measurement. The steel casings will be measured along the centerline of the casing from end of casing pipe to end of casing pipe in meters.

Basis of Payment. Steel casings shall be paid for at the contract unit price per meter for STEEL CASINGS of the specified diameter.

STEEL PLATES TO BE INSTALLED ON DRAINAGE STRUCTURE

Description. This work shall consist of the providing and installing flat steel plates on drainage structures that will remain in service in areas where pavement will be placed over the existing structures. The steel plate will remain in place until no longer required and will become the property of the Contractor.

Materials. The Steel will be flat stock in a minimum thickness of 6 mm (nominal) and will have yield strength of 400 MPa.

Installation. The steel plate shall be placed flat and level on the existing drainage structure. The Plate shall extend a minimum of 600 mm beyond the outside perimeter of the opening in the top of the Drainage Structure.

Basis of Payment. This work will be paid for at the contract unit price for each of STEEL PLATES TO BE INSTALLED ON DRAINAGE STRUCTURE which price shall include payment in full for all labor, tools, equipment, disposal, fill, and incidentals required to perform the work as specified herein.

STORM SEWERS TO BE GROUTED

Effective: April 28, 2001 Revised:

This work consists of filling existing sewers with a flowable grout mixture that completely fills the inside of pipe, at locations shown on the plans.

The material shall conform to the applicable portions of Recurring Special Provision Check Sheet No. 24 for Controlled Low-Strength Material.

The grout mixture shall be placed into the pipe by means of access holes cut into the top of the pipe at maximum 6 meter intervals. The excavated areas for the access holes shall be backfilled and compacted to the satisfaction of the Engineer.

Method of Measurement. This work will be measured for payment in place in cubic meters (cubic yard), according to Section 550.08 of the Standard Specification.

Basis of Payment. This work will be paid for at the contract unit price per cubic meter for STORM SEWERS TO BE GROUTED, of the diameters shown on the planes, which price shall be payment in full for all labor, materials and equipment necessary to complete the work as specified herein.

STORM SEWERS, RUBBER GASKET

This item shall consist of the construction of storm sewers, of the Type and Size specified at locations shown on the plans, in accordance with the applicable portions of Section 550 of the Standard Specification, and as directed by the Engineer.

The storm sewer shall have pipe materials as specified in Section 550 with a bell and spigot coupling and sealed with a preformed flexible compression gasket that will remain tight under all conditions and shall conform to the requirements of ASTM C 443.

Method of Measurement. Storm sewers, with rubber gaskets, of the different types and diameters will be measured for payment in place in meters (feet), according to Section 550.08 of the Standard Specification.

Basis of Payment. This work will be paid for at the contract unit price per meters (feet) for STORM SEWERS, RUBBER GASKET, of the Type and Size Specified which shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

Posted:
Provided by: IDOT-RDU

STRUCTURAL

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.

DRILLED SHAFTS
Effective: May 1, 2001 Revised: June 21, 2004

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 ± 25 mm (7 ± 1 in.). If concrete is placed to displace drilling fluid, or against temporary casing, the slump shall be 200 mm ± 25 mm (8 ± 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 washed sand only.

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/cement ratio shall be 1.0.

(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 centralizes 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 centralizes 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.

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 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.

Installation of floating bearings shall be paid for separately, and shall not be included in this item.

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 and this special provision.

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 included shim plates and neoprene pads for the bearings will be furnished and delivered under a separate fabrication 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 erection 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:

Bridge Construction Stage	Erection Contract	Construction Area	Delivery Dates
Phase 2 Stage 2	I-80/94 over little Calumet River	EB Outside lanes	May 16, 2005
Phase 3 Stage 2	I-80/94 over little Calumet River	EB Inside lanes	May 15, 2006
Phase 2 Stage 2	I-80/94 over little Calumet River	All WB Lanes	July 5, 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. 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 AND BEARINGS (FIO)
Date: April 7, 2004

Description. This work consists of furnishing, fabricating, shop painting, storing and delivering all structural steel, floating and elastomeric bearing assemblies, fixed steel bearings and shim plates 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 separate erection contracts.

This work shall include the furnishing of all materials including but not limited to steel beams, plate girders, splice plates, diaphragm steel, cross frames, floating and 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. Anchor Bolts and Stud Shear Connectors will be furnished and installed by Erection Contractors under a separate erection contracts.

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	Structure Construction Stage	Erection Contract	Construction Area	Delivery Dates
1	Stage 1	I-80/94 over Burnham Ave.	WB Outside Lanes	April 18, 2005
2	Phase 2 Stage 2	I-80/94 over Little Calumet River	EB Outside Lanes	May 16, 2005
3	Entire Structure	I-94 (NB) over Thorn Creek	Entire Structure	June 13, 2005
4	Stages 2 and 3	I-80/94 over Burnham Ave.	All EB Lanes	April 17, 2006
5	Phase 3 Stage 2	I-80/94 over Little Calumet River	EB Inside Lanes	May 15, 2006
6	Stage 4	I-80/94 over Burnham Ave.	WB Inside Lanes	June 19, 2006
7	Phase 3 Stage 3	I-80/94 over Little Calumet River	All WB Lanes	July 5, 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 Erection 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 Erection Contractors will provide the Fabrication 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 Bearings: 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 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-days period shall be measured and paid per storage unit as defined below.

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: 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 an UNIT 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 Plus Guaranteed Working Days".

Basis of Payment. The furnishing of elastomeric and floating bearing assemblies, storage of elastomeric and floating bearing assemblies, and furnishing of structural steel will be measured and paid for according to Sections 503 and 505 of the Standard Specifications and according to the Special Provision for "Floating Bearings". 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.

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.

REMOVE MECHANICALLY STABILIZED EARTH WALL

Description. This work shall consist of the removal and disposal of the existing concrete mechanically stabilized earth wall panels and any footings. The Contractor shall remove the wall panels by separating the panels from the constraining system and disposing of the panels. Any excavation necessary for the removal of the wall panels will be included in this work.

This item shall be performed at locations shown on the plans, in accordance with the applicable portions of Section 501 of the Standard Specifications and as directed by the Engineer.

Method of Measurement. The removal of the mechanically stabilized earth wall will be measured for payment on a per square meter (square yard) basis measured along the face of the existing wall. The removal of the stabilized earth subgrade and the constraint systems behind the concrete wall face will be considered as part of required excavation for the various excavations required for the installation of the retaining walls, drainage related operations, installation of electrical items and roadway grading.

Basis of Payment. Payment for the removal of the existing mechanically stabilized wall will be paid on a per square meter (square yard) basis for REMOVE MECHANICALLY STABILIZED EARTH WALL. No additional payment for the required excavations into the stabilized earth subgrade and the constraint systems behind the concrete wall face will be made.

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.

EROSION CONTROL

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.

EROSION AND SEDIMENT CONTROL CALL OUT
Effective: January 1, 2003

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.

Contractor Action	**Department Action**
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(l)."

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 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 SCHEDULE

Effective: January 1, 2003

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 inclimate 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.

EROSION AND SEDIMENT CONTROLS
Effective: January 1, 2003

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) Sediment Control, Drainage Structure Inlet Filter……..……...…..Article 1080.08

(q) 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.

280.006 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 paid for separately, but shall be included in the cost of Sediment Control, Stabilized Construction Entrance Maintenance.

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

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

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

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

(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.

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 specification 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^2
Cells per m^2	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.

SEDIMENT CONTROL, SILT CURTAIN (LOW CURRENT)

Description. This work shall consist of the furnishing, installing, maintaining, and removal of a flotation silt curtain assembly, designed to collect sediment from in-stream work areas at locations shown on the plans, or as directed by the Engineer.

Materials. The silt curtain should be of appropriate size to perform the required function of isolating the work area from the rest of the stream, with length being at least 300mm (1 ft) greater than the depth of water in all locations. The silt curtain assembly shall consist of the silt barrier with flotation segments or appropriate suspension devices and weighing devices and all required anchorage devices. It shall be in good working condition and meet the approval of the Engineer. A detail drawing in the plans depicts the curtain assembly.

The silt curtain shall meet the following physical and performance properties:

	Testing Method	Requirement
Grab tensile warp strength	ASTM D-4632	≥ 109 kg. (240 lbs.)
Elongation @ Break	ASTM D-4632	≥60%
Trapezoidal Tear	ASTM D-4533	≥ 41 kg. (90 lbs.)
Puncture Strength	ASTM D-4833	≥ 30 kg. (65 lbs.)
UV Stability @ 500 hrs	ASTM D-4355	≥70%
Permittivity	ASTM D-4491	≥0.1 sec^{-1}
Water Flow Rate	ASTM D-4491	≥ 448.2 lpm/^{m2} (11 gpm/ft^2)
AOS (US sieve #)	ASTM D-4751	≥ 0.106 mm (140 sieve)
Material construction		Nonwoven

All values are minimum average roll values.

Installation. The silt curtains shall be installed according to the manufacturer directions, and in a manner approved by the Engineer. Additional anchorage may be required as shown on the plans.

Requirements. The Contractor shall inspect the work site to review the stream characteristics where the work is to occur.

The silt curtain assembly shall be installed in the stream in a configuration that prevents silt from traveling beyond the work area, but does not cause flooding upstream of the work area. The silt curtain shall be installed in a manner sufficient to withstand ten-year flood water levels. The silt curtain shall not be installed across the entire stream.

Routine maintenance includes continually maintaining a properly working silt curtain. Also included is the regular removal and disposal of excess sediment in contact with either side of the curtain, as directed by the Engineer.

Pumping of water contained within the silt curtain or any other structure shall be done in a manner approved by the Engineer. Direct pumping of water back into the stream shall not be permitted. All water pumping operations must be approved by the Engineer.

The silt curtain assembly shall remain in place until the Engineer instructs the Contractor of the date and the required procedure for removal. The silt curtain assembly shall remain the property of the Contractor.

Method of Measurement. Flotation silt curtains will be measured for payment as individually installed, maintained, and uninstalled assemblies. Only properly working silt curtains will be measured for payment.

Basis of Payment. This work will be paid for at the contract unit price, per each, for SEDIMENT CONTROL, SILT CURTAIN. Water pumping and disposal of silt shall not be paid for separately but shall be included in the cost of SEDIMENT CONTROL, SILT CURTAIN.

Designer Notes: The silt curtain consists of a nonwoven, spunbonded material with a ballast chain embedded in the bottom of the curtain resting on the stream or lake floor. Appropriately sized rip rap that keeps the bottom of the curtain in contact with the bottom of the stream can be substituted for a sewn-in chain ballast. The curtain is to be at least one foot longer than the depth of the water to allow for movement in the curtain and water depth changes.

Silt curtains can be anchored with ropes and weights in streams with a velocity less than 0.15 m/s (0.5 ft/s), lakes, and ponds.

Streams with velocities between 0.15 m/s (0.5 ft/s) and 0.30 m/s (1.0 ft/s) may need additional mechanically driven pile anchoring. One pile, anchored into the upstream corner, with the other corner anchored with ropes and weights. The pile should be of adequate strength and material.

In streams of 0.30 m/s (1.0 ft/s) to 0.91 m/s (3.0 ft/s), two piles should be used; one in the upstream location and one in the downstream location. Steel piles should be used in streams exceeding 0.61 m/s (2.0 ft/s), otherwise timber of sufficient size can be substituted. Streams with velocities exceeding 0.91 m/s (3.0 ft/s) do not require silt curtains. The silt curtains will cause more harm than good in these fast moving streams. The performance of the strength of the timber and the overall performance of the anchoring are to be evaluated by the Resident Engineer.

A plan of the assembly should be included in the construction documents. It should indicate areas to protect and any necessary piles.

Water pumped from behind the silt curtain must be discharged at least 49 meters (160 feet) from the stream or lake and into a stable spill pad of rockfill, weighted timbers, or plywood, located in a well-vegetated area to prevent localized erosion.

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.

INDIANA DEPARTMENT OF TRANSPORTATION (DOT) SPECIAL PROVISIONS

INDOT - ANCHOR BOLT

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 711 of the Indiana Department of Transportation Standard Specifications and as directed by the engineer.

Method of Measurement. ANCHOR BOLT (INDIANA) will be measured for payment on per each basis.

Basis of Payment. Payment for ANCHOR BOLT (INDIANA) will be at the contract unit price per each, which price shall include all materials, labor and equipment to complete the work.

INDOT - AUTOMATIC DRAINAGE GATE

Description. This work shall consist of furnishing and placing cast-iron, automatic, hinged, flap-gate valves to the outlet ends of pipe or headwalls at locations and per details shown on the plans, in accordance with the applicable portions of Section 721 of the Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

Method of Measurement. Automatic drainage gates will be measured by the number of units installed.

Basis of Payment. This work will be paid for at the contract unit price per each for AUTOMATIC DRAINAGE GATE, of the size specified (INDIANA), complete in place.

INDOT - B BORROW

Description. This work shall consist of backfilling with borrow material to designated elevations of spaces excavated for structures and not occupied by permanent work at locations and per details shown on the plans, in accordance with the applicable portions of Sections 203 and 211 of the Indiana Department of Transportation Standard Specifications and as directed by the engineer.

Method of Measurement. B BORROW (INDIANA) will be measured for payment on a per cubic meter basis.

Basis of Payment. Payment for B BORROW (INDIANA) will be at the contract unit price per cubic meter, which price shall include all materials, labor and equipment to complete the work.

INDOT - BARRIER CONCRETE (OF THE TYPE SPECIFIED)

This work shall consist of the construction of concrete barriers in accordance with details and at locations shown on the plans, in accordance with the applicable portions of Section 602 of the Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

Method of Measurement. BARRIER, CONCRETE, 840 MM, MODIFIED (INDIANA); BARRIER, CONCRETE, 1145 MM (INDIANA); and BARRIER, CONCRETE, 1145 MM, MODIFIED (INDIANA) will be measured for payment on a per meter basis to the nearest meter along the centerline of the barrier.

Basis of Payment. Payment for BARRIER, CONCRETE, 840 MM, MODIFIED (INDIANA); BARRIER, CONCRETE, 1145 MM (INDIANA); and BARRIER, CONCRETE, 1145 MM, MODIFIED (INDIANA) will be paid on a per meter basis complete in place including the base.

INDOT - BARRIER DELINEATOR

Description: This work shall consist furnishing and installing barrier delineators at the locations and per details shown on the plans, in accordance with the applicable portions of Sections 602 and 926 of the Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

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

INDOT - BEARING ASSEMBLY, ELASTOMERIC TYPE 1

Description. This work shall consist furnishing and installing bearing assemblies at the locations and per details shown on the plans, in accordance with the applicable portions of Sections 726 and 915 of the Indiana Department of Transportation Standard and Recurring Special Provisions and as directed by the Engineer.

Method of Measurement. This work will be measured by the number of bearing assemblies furnished and installed complete in place.

Basis of Payment. This work will be paid for at the contract unit price per each for BEARING ASSEMBLY, ELASTOMERIC TYPE 1 (INDIANA), which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

INDOT - BORROW

Description. This item shall consist of providing borrow in accordance with the applicable portions of Sections 105.03 and 203 of the Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

Embankment Construction

This work consists of raising the grade and/or widening the existing roadway in accordance with 105.03, and 203 with the following additional requirements:

1. If materials other than naturally-occurring soils are used for embankment construction, prior approval is required. Samples shall be submitted to the INDOT Geotechnical Section for approval a minimum of three weeks prior to use in order to evaluate the compaction characteristics and suitability for use as borrow.

2. Benches, a minimum of 4 ft (1.2m) wide, shall be cut into the fore slopes of the existing embankment. The end height of the bench shall not be more than 5 ft (1.5m).

3. Every effort should be made to prevent the development of perched water at the interface between existing and new fills.

4. No direct payment will be made for items 1 thru 3.

Method of Measurement. Borrow will be measured for payment in place and the volume in cubic meters in accordance with Article 203.27 of the Indiana Department of Transportation Standard Specifications.

Basis of Payment. Borrow will be paid for at the contract unit price per cubic meter for BORROW (INDIANA).

INDOT - CASTING, 5, FURNISH AND ADJUST TO GRADE

This work shall consist of furnishing and installing new drainage structure castings to grade as shown on the plans, in accordance with the applicable portions of Section 720 of the Indiana Department of Transportation Standard Specifications and as directed by the engineer. This work shall consist of the removal and proper disposal from the jobsite of any steel plates that are covering the existing drainage stricture if required.

Materials. Materials. Will be in accordance with Article 720.02.

Method of Measurement. The removal and disposal of any steel plates covering the existing drainage structure, furnishing the type 5 casting and the adjustment to grade will be measured per each unit complete in place. No measurement will be made for structures adjusted in height in excess of 300 mm (12 in.).

Basis of Payment. Payment for CASTING, 5, FURNISH AND ADJUST TO GRADE will be at the contract unit price per each for CASTING, 5, FURNISH AND ADJUST TO GRADE (INDIANA) complete in place in accordance with this special provision and Section 720 of the Indiana Department of Transportation Standard Specifications.

INDOT - COMPACTED AGGREGATE, NO. 73

Description. This item shall consist of furnishing, placing, shaping and compacting aggregate on a prepared subgrade adjacent to the edges of the completed pavement structure in accordance with the applicable portions of Section 303 of the Indiana Department of Transportation Standard specifications, details in the plans.

Method of Measurement. The aggregate for constructing the shoulders will be measured for payment in square meters (square yards) for the thickness shown on the plans.

Basis of Payment. This work will be paid for at the contract unit price per square meter (square yard) for COMPACTED AGGREGATE, NO. 73 (INDIANA).

INDOT - CONCRETE BARRIER, TRANSITION

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 602 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the Engineer.

Method of Measurement. CONCRETE BARRIER, TRANSITION (INDIANA) will be measured for payment on a per each basis complete in place.

Basis of Payment. Payment for the concrete barrier transition will be paid on a per each basis complete in place for CONCRETE BARRIER, TRANSITION (INDIANA).

INDOT - CONCRETE FOUNDATION WITH GROUNDING

Description. This item shall consist of the installation of the concrete foundation with grounding in accordance with the applicable portions of Article 807.10 and 807.12 of the Indiana Department of Transportation Standard specifications and details in the plans.

Method of Measurement. The orientation and installation of the CONCRETE FOUNDATION WITH GROUNDING, 750MM DIA X 1500MM (INDIANA) will be measured for payment per each basis for each installed in place.

Basis of Payment. Payment for CONCRETE FOUNDATION WITH GROUNDING, 750MM DIA X 1500MM (INDIANA) will be at the contract unit price per each, which price will include all labor, concrete, reinforcement, installation of the light pole anchor bolts, conduit, excavation, backfilling and coordination to properly install the work. Anchor bolts will be provided for in accordance with the Special Provision “Light Pole Anchor Rod Assembly, Install Only”.

INDOT - CONCRETE, A, SUBSTRUCTURE

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 702 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the engineer.

Method Of Measurement. CONCRETE, A, SUBSTRUCTURE (INDIANA) will be measured for payment on per cubic meter basis.

Basis Of Payment. Payment for CONCRETE, A, SUBSTRUCTURE (INDIANA) will be at the contract unit price per cubic meter, which price shall include all materials, labor and equipment to complete the work.

INDOT - CONCRETE, C, SUPERSTRUCTURE

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 702 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the engineer.

Method Of Measurement. CONCRETE, C, SUPERSTRUCTURE (INDIANA) will be measured for payment on per cubic meter basis.

Basis Of Payment. Payment for CONCRETE, C, SUPERSTRUCTURE (INDIANA) will be at the contract unit price per cubic meter, which price shall include all materials, labor and equipment to complete the work.

INDOT - CURB AND GUTTER, C, CONCRETE, SPECIAL

This work shall consist of the construction of concrete curb and gutter in accordance with details and at locations shown on the plans, in accordance with the applicable portions of Section 605 of the Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

Method of Measurement. CURB AND GUTTER, C, CONCRETE, SPECIAL (INDIANA) will be measured for payment on a per meter basis to the nearest meter along the centerline of the barrier. Bed course material will not be measured separately for payment.

Basis of Payment. Payment for CURB AND GUTTER, C, CONCRETE, SPECIAL (INDIANA) will be paid on a per meter basis complete in place. Bed course material will not be paid for separately, but shall be included in the cost of the CURB AND GUTTER, C, CONCRETE, SPECIAL (INDIANA).

INDOT - DROP MANHOLE OF THE TYPE SPECIFIED

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 720 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the Engineer.

Method of Measurement.
DROP MANHOLE, C2 (INDIANA) will be measured for payment on a per each basis complete in place.
DROP MANHOLE, C4 (INDIANA) will be measured for payment on a per each basis complete in place.

Basis of Payment. Payment for
DROP MANHOLE, C2 (INDIANA) will be paid on a per each basis complete in place.
DROP MANHOLE, C4 (INDIANA) will be paid on a per each basis complete in place.

INDOT - EXCAVATION COMMON

Description. Common excavation shall consist of all excavation not included as rock excavation or excavation which is otherwise classified and shall be paid in accordance with Section 203 of the INDOT Standard Specifications (ISS).

Method of Measurement. EXCAVATION COMMON (INDIANA) will be measured in cubic meters (cubic yards) in accordance with the applicable portions of Article 203 of the ISS.

Basis of Payment. Excavation, Common will be paid for at the contract unit price per cubic meter (cubic yard) for EXCAVATION COMMON (INDIANA) in accordance with the applicable portions of Article 203 of the ISS.

INDOT - EXCAVATION DRY

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 206 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the engineer.

Method of Measurement. EXCAVATION DRY (INDIANA) will be measured for payment on a per cubic meter basis.

Basis of Payment. Payment for EXCAVATION DRY (INDIANA) will be at the contract unit price per cubic meter, which price shall include all materials, labor and equipment to complete the work.

INDOT - EXCAVATION FOUNDATION, UNCLASSIFIED

Description. This item shall consist of the excavation and backfill or disposal of all materials required for the foundations for substructures of the various structures in the contract in accordance with Section 206 of the INDOT Standard Specifications.

Method of Measurement. EXCAVATION FOUNDATION, UNCLASSIFIED (INDIANA) will be measured in cubic meters (cubic yards) in accordance with the applicable portions of Article 206.10 of the INDOT Standard Specifications.

Basis of Payment. Excavation, foundation, unclassified will be paid for at the contract unit price per cubic meter (cubic yard) for EXCAVATION FOUNDATION, UNCLASSIFIED (INDIANA), complete in place.

INDOT - EXCAVATION WET

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 206 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the engineer.

Method of Measurement. EXCAVATION WET (INDIANA) will be measured for payment on a per cubic meter basis.

Basis of Payment. Payment for EXCAVATION WET (INDIANA) will be at the contract unit price per cubic meter, which price shall include all materials, labor and equipment to complete the work.

INDOT - EXCAVATION, UNCLASSIFIED

Description. Common excavation shall consist of all excavation not included as rock excavation or excavation which is otherwise classified and shall be paid in accordance with Section 203 of the INDOT Standard Specifications (ISS).

Method of Measurement. EXCAVATION, UNCLASSIFIED (INDIANA) will be measured in cubic meters (cubic yards) in accordance with the applicable portions of Article 203 of the ISS.

Basis of Payment. Excavation, unclassified will be paid for at the contract unit price per cubic meter (cubic yard) for EXCAVATION, UNCLASSIFIED (INDIANA) in accordance with the applicable portions of Article 203 of the ISS.

INDOT - FENCE GATE, CHAIN LINK, 1220 MM X 3.7 M

Description. This work shall consist of the construction of a chain link fence gate at the locations and per details shown on the plans, in accordance with the applicable portions of

Section 603 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the Engineer.

Method of Measurement. The FENCE GATE, CHAIN LINK, 1220 MM X 3.7 M (INDIANA) will be measured for payment as each for complete units of the size and type specified.

Basis of Payment. This work will be paid for at the contract unit price per each for FENCE GATE, CHAIN LINK, 1220 MM X 3.7 M (INDIANA), which price shall include the cost and installation of the fence, post, concrete for posts and any miscellaneous hardware necessary to complete this work as specified herein.

INDOT - FENCE, CHAIN LINK, 1220 MM

Description. This work shall consist of the construction of a chain link fence at the locations and per details shown on the plans, in accordance with the applicable portions of Section 603 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the Engineer.

Method of Measurement. The FENCE, CHAIN LINK, 1220 MM (INDIANA) will be measured by the meter (linear foot) for the type specified. Measurement will be made along the top of the fence from outside to outside of end posts for each continuous run of fence.

Basis of Payment. This work will be paid for at the contract unit price per meter (linear foot) for FENCE, CHAIN LINK, 1220 MM (INDIANA), which price shall include the cost and installation of the fence, corner, end, line, pull posts, concrete for posts, braces, anchors and any miscellaneous hardware necessary to complete this work as specified herein.

INDOT - FIELD WELDED STUD SHEAR CONNECTOR

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 711 of the Indiana Department of Transportation Standard Specifications and as directed by the engineer.

Method of Measurement. FIELD WELDED STUD SHEAR CONNECTOR (INDIANA) will be measured for payment on per each basis.

Basis of Payment. Payment for FIELD WELDED STUD SHEAR CONNECTOR (INDIANA) will be at the contract unit price per each, which price shall include all materials, labor and equipment to complete the work.

INDOT - GRATES, BASINS, AND FITTINGS, CAST IRON

Description. This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Sections 702 and 704 of the Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

Method of Measurement. Cast iron drain pipes, grates, basins, and fittings will be measured by the kilogram (pound) based on the theoretical mass (weight) shown on the plans.

Basis of Payment. Payment for cast iron grates, basins, and fittings will be paid for at the contract unit price per kilogram (pound) for GRATES, BASINS, AND FITTINGS, CAST IRON (INDIANA) complete in place.

INDOT - HANDRAIL, STEEL

Description. This work shall consist of the fabrication furnishing and installation of steel railings on top of retaining walls in accordance with details shown on the plans and the applicable portions of the Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

Method of Measurement. The steel handrail will be measured by the meter (linear foot) from end to end along the centerline of the railing.

Basis of Payment. The steel railing will be paid for at the contract unit price per meter (linear foot) for HANDRAIL, STEEL (INDIANA) which price shall include installation of the anchor bolts in the concrete pad, furnishing and installing the handrail and galvanizing of the handrail assembly.

INDOT - IMPACT ATTENUATORS

Description. This item shall consist of the fabrication, assembly and installation of impact attenuators at locations as shown on the plans, in accordance with the applicable portions of Section 601 of the Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

Method of Measurement. Impact attenuators will be measured per each for the type, width and test level complete in place. Reflectorization of the end treatments will not be measured for payment.

Basis of Payment. This work will be paid for at the contract unit price each for IMPACT ATTENUATOR of the type, width, and test level specified (INDIANA).

The cost of Reflectorization of impact attenuators shall be included in the respective pay items.

INDOT - INLET OF THE TYPE SPECIFIED

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 720 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the Engineer.

Method of Measurement.
INLET TYPE HA (INDIANA) will be measured for payment on a per each basis complete in place.
INLET TYPE H, (SPECIAL) (INDIANA) will be measured for payment on a per each basis complete in place.
INLET TYPE HA, (SPECIAL) (INDIANA) will be measured for payment on a per each basis complete in place.
INLET TYPE HA, (MODIFIED) (INDIANA) will be measured for payment on a per each basis complete in place.
INLET TYPE H, (SPECIAL) WITH SLOTTED DRAIN (INDIANA) will be measured for payment on a per each basis complete in place.
INLET TYPE HA, (SPECIAL) WITH SLOTTED DRAIN (INDIANA) will be measured for payment on a per each basis complete in place.
INLET, TYPE HA, (MODIFIED) WITH SLOTTED DRAIN (INDIANA) will be measured for payment on a per each basis complete in place.

Basis of Payment. Payment for:
INLET TYPE HA (INDIANA) will be paid on a per each basis complete in place.
INLET TYPE H, (SPECIAL) (INDIANA) will be paid on a per each basis complete in place.
INLET TYPE HA, (SPECIAL) (INDIANA) will be paid on a per each basis complete in place.
INLET TYPE HA, (MODIFIED) (INDIANA) will be paid on a per each basis complete in place.
INLET TYPE H, (SPECIAL) WITH SLOTTED DRAIN (INDIANA) will be paid on a per each basis complete in place.
INLET TYPE HA, (SPECIAL) WITH SLOTTED DRAIN (INDIANA) will be paid on a per each basis complete in place.
INLET, TYPE HA, (MODIFIED) WITH SLOTTED DRAIN (INDIANA) will be paid on a per each basis complete in place.

INDOT - MANHOLE OF THE TYPE SPECIFIED

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 720 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the Engineer.

Method of Measurement.
MANHOLE, C2 (INDIANA) will be measured for payment on a per each basis complete in place.
MANHOLE, D2 (INDIANA) will be measured for payment on a per each basis complete in place.
MANHOLE, C4 (INDIANA) will be measured for payment on a per each basis complete in place.
MANHOLE, D4 (INDIANA) will be measured for payment on a per each basis complete in place.
MANHOLE, E4 (INDIANA) will be measured for payment on a per each basis complete in place.
MANHOLE, C2 WITH SLOTTED DRAIN (INDIANA) will be measured for payment on a per each basis complete in place.

Basis of Payment. Payment for
MANHOLE, C2 (INDIANA) will be paid on a per each basis complete in place.
MANHOLE, D2 (INDIANA) will be paid on a per each basis complete in place.
MANHOLE, C4 (INDIANA) will be paid on a per each basis complete in place.
MANHOLE, D4 (INDIANA) will be measured for payment on a per each basis complete in place.
MANHOLE, E4 (INDIANA) will be measured for payment on a per each basis complete in place.
MANHOLE, C2 WITH SLOTTED DRAIN (INDIANA) will be measured for payment on a per each basis complete in place.

INDOT - MASONRY COATING

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Sections 702, 709 and 728 of the Indiana Department of Transportation Standard and Recurring Specifications the following Special Provision and as directed by the engineer.

Description. This work shall consist of the preparation of the concrete surfaces, cleaning such surfaces by means of sandblasting, and furnishing and applying masonry coating as described herein. The masonry coating shall be applied to all concrete surfaces shown on the plans or as directed.

Method of Measurement. Only those measurements necessary to verify application rates will be made.

Basis of Payment. Masonry coating used on concrete bridge railing, bridge concrete median barrier, retaining wall parapet and on MSE wall parapet will be paid for at the contract lump sum price for MASONRY COATING (INDIANA). Surface seal will be paid for at the contract lump sum price for SURFACE SEAL (INDIANA).

The cost of masonry coating used on roadway concrete median barrier shall be included in the cost of such median barrier. The cost of surface preparation, furnishing and applying the material, labor, equipment, and necessary incidentals shall be included in the cost of this work.

INDOT - MONUMENT, D

Description. This work shall consist of furnishing and setting of alignment survey line monuments in accordance with the applicable portions of Section 615 of the Indiana Department of Transportation Standard specifications, details in the plans.

Method of Measurement. Survey line monuments will be measured by the number of units installed.

Basis of Payment. The accepted quantities of the monuments will be paid for at the contract unit price per each complete in place for MONUMENT, D (INDIANA).

INDOT - OVERHEAD SIGN STRUCTURE - SPAN, ANCHOR ROD ASSEMBLY

Description. This item shall consist of fabricating, furnishing and installing overhead sign structure-span anchor rod assemblies in the retaining walls for the Indiana sign structure foundations in accordance with Sections 802 and 910 of the Indiana Department of Transportation Standard Specifications as shown on the details in the plans or directed by the Engineer.

CONSTRUCTION REQUIREMENTS

General. The Contractor shall furnish and install anchor rod assemblies for overhead sign structure-span according to Section 910 of the Indiana Department of Transportation Standard Specifications and as modified elsewhere in these special provisions.

Method of Measurement. Overhead Sign Structure – Span, 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 OVERHEAD SIGN STRUCTURE - SPAN, ANCHOR ROD ASSEMBLY (INDIANA), which shall be payment in full for the furnishing, installing, materials, identification and delivery to the jobsite.

INDOT - OVERHEAD SIGN STRUCTURES

Description. This work shall consist designing, fabricating, furnishing, and erecting overhead sign structures (box truss), including supports on prepared foundations at the locations and per details shown on the plans, in accordance with the applicable portions of Sections 702, 703, 711, 802, 803, 910, and 919 of the Indiana Department of Transportation Standard Specifications, the Indiana Department of Transportation Standard Drawings and as directed by the Engineer.

General. The Contractor shall design the overhead sign structure, box trusses and end supports to the lengths shown in the plans. The design of each box truss shall be based on the Indiana Department of Transportation's Standard Drawings.

Shop Drawings: Six sets of shop drawings for each overhead sign structure shall be submitted to the Engineer for approval according to Section 711.05 of the INDOT Standard Specifications. If the no-load camber is not shown on the plans, the Contractor shall furnish this camber in the shop drawings.

Lighting Support Assembly. The Lumi Trak Sign Lighting System and the support brackets (L-Brackets) will be furnished and installed under Contract 62664. The Contractor shall coordinate the assembly and the erection of the sign structures with the highway lighting contractor.

Method of Measurement.

a) Sign Structures. This work will be measured for payment in meters from center to center of end supports. The end supports will be included with this measurement.

b) Concrete Sign Foundations. This work will be measured for payment according to Section 702.27 of the INDOT Standard Specifications.
c) Reinforcing Steel in Sign Foundations. This work will be measured for payment according to Section 703.07 of the INDOT Standard Specifications.

Basis of Payment. This work will be paid for at the contract unit prices per meter for SPAN OVERHEAD SIGN STRUCTURE, BOX TRUSS (INDIANA) and SPAN OVERHEAD SIGN STRUCTURE, BOX TRUSS SPECIAL (INDIANA), which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

This work will also be paid for at the contract unit prices per cubic meter for CONCRETE SIGN FOUNDATION (INDIANA) and per kilogram for REINFORCING STEEL, SIGN FOUNDATION (INDIANA), which price shall be payment in full for all labor, equipment and materials necessary to complete this work as specified herein.

The anchor rod assemblies for the overhead sign structure in the numbered retaining walls will be paid for separately in accordance with the special provision Overhead Sign Structure – Span, Anchor Rod Assembly (Indiana). The anchor rod assemblies for the overhead sign structure in the median barrier foundations and the outside foundations will not be paid for separately but shall be included in the cost of the span overhead sign structure, box truss (Indiana) and for span overhead sign structure, box truss special (Indiana).

INDOT - PAVEMENT TRAFFIC MARKINGS

Description. This work shall consist furnishing and installing pavement markings at the locations and per the details shown in the plans, in accordance with the applicable portions of Sections 808, 909 and 921 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the Engineer.

Method of Measurement. The solid lines and the broken lines of the type specified will be measured for payment in meters in accordance with the ISS, accepted, and measured in place. Pavement marking Words and Arrows shall conform to the sizes and dimensions specified in the Indiana plan details and will be measured in units of each in accordance with the ISS.

Basis of Payment. This work will be paid for at the contract unit prices per meter of applied line width, as specified, for LINE, EPOXY, SOLID, WHITE, (line width) (INDIANA); LINE, EPOXY, SOLID, YELLOW, (line width) (INDIANA); LINE, EPOXY, BROKEN, WHITE, (line width) (INDIANA); and/or square meter for PAVEMENT MESSAGE MARKING, EPOXY, WORD ONLY (INDIANA) and PAVEMENT MESSAGE MARKING, EPOXY, TURN ARROW (INDIANA), in accordance with Section 808 of the ISS, which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

INDOT - PILE, CONCRETE, STEEL SHELL ENCASED, 6.35MM, 356MM

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 701 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the engineer.

Method of Measurement. PILE, CONCRETE, STEEL SHELL ENCASED, 6.35MM, 356MM (INDIANA) will be measured for payment on per meter basis.

Basis of Payment. Payment for PILE, CONCRETE, STEEL SHELL ENCASED, 6.35MM, 356MM (INDIANA) will be at the contract unit price per meter, which price shall include all materials, labor and equipment to complete the work.

INDOT - PIPE INSTALLATION, TRENCHLESS, 600 MM

Description. This work shall consist of the installation of pipes underground using construction techniques that eliminate open cutting of pavement or of ground at locations and per details shown on the plans, in accordance with the applicable portions of Section 716 of the Indiana Department of Transportation Standard Specifications and as directed by the Engineer with the requirement that a steel casing pipe will be used for the carrier storm sewer pipe. The boring site location may consist of heavy ballast aggregate.

Method of Measurement. Pipe installed by Trenchless installation methods will be measured by the meter along the centerline of the pipe installed.

Basis of Payment. This work will be paid for at the contract unit price per meter for PIPE INSTALLATION, TRENCHLESS, 600 MM (INDIANA). The cost of all work as described above along with the cost of the steel casing pipe and the storm sewer pipe shall be included in the cost of pipe installation, Trenchless of which cost of boring the casing through any ballast aggregate shall be included in the unit price for PIPE INSTALLATION, TRENCHLESS, 600 MM (INDIANA).

INDOT - PIPE, SLOTTED DRAIN, 300 MM

This work shall consist of furnishing and installing of slotted drain pipe in the concrete shoulders as shown on the plans, in accordance with Section 715 of the Indiana Department of Transportation Standard Specifications and as directed by the engineer.

Installation. The contract shall install the slotted drain pipe on the prepared subbase consisting of 225 mm Subbase for PCCP and encased with PCC concrete a minimum of 150 mm (12 in.) below and 300 mm (12 in.) along the outside of the pipe structure for the slotted drain. The subbase will conform to Section 302 for Subbase for PCCP and the concrete for encasement shall conform to Section 501 for QC/QA PCCP. The QC/QA PCCP may be constructed monolithically with the adjacent pavement.

Method of Measurement. The accepted quantities of slotted drain pipe will be measured by the linear meter (linear foot), complete in place. The length of pipe to be measured for payment will be based on the net length of pipe used, which will be obtained by multiplying the nominal length of each pipe section by the number of sections used. If the pipe connects to manholes, inlets, or catch basins, the terminal sections will be field measured to the outside face of the structure. The Subbase for PCCP will be measured in square meters in place and the QC/QA PCCP will be measured in cubic meter (cubic yard) based on the theoretical volume to the neat lines as shown on the plans and the QC/QA PCCP will be measured by the square meter (square yard) of the thickness specified for the adjacent pavement thickness and as per the applicable portions of the special provision for INDOT – QC/QA PCCP of the Thickness Specified.

Reinforcing steel, straps, and hook bolts used in anchors will not be measured for payment.

Basis of Payment. The accepted quantities of slotted drain will be paid for at the contract unit price per linear meter (linear foot) for PIPE, SLOTTED DRAIN, 300 MM (INDIANA).

Payment for the aggregate subbase will be paid for as described in the special provision for INDOT – Subbase for PCCP.

Payment for the concrete constructed around the slotted drain will be paid for as described in the special provision for INDOT – QC/QA – PCCP of the Thickness Specified.

INDOT - PIPE TYPE 2, CIRCULAR, OF THE DIAMETER SPECIFIED

Description. This item shall consist of the construction of storm sewers at locations and per details shown on the plans, in accordance with the applicable portions of Sections 211 and 715 of the Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

Method of Measurement. PIPE TYPE 2, CIRCULAR, of the diameter specified (INDIANA), will be measured for payment on a per meter (foot) basis complete in place. The length of pipe to be measured for payment will be based on the net length of pipe used, which will be obtained by multiplying the nominal length of each pipe section by the number of sections used. If the pipe connects to manholes, inlets, or catch basins, the terminal sections will be field measured to the outside face of the structure.

Structure backfill, where required, will be measured by the cubic meter (cubic yard) as computed from the neat line limits shown on the plans.

Pipe end sections will be measured by the number of units of each size installed.

Basis of Payment. This work will be paid for at the contract unit price per meter (foot) for PIPE TYPE 2, CIRCULAR, of the diameter specified (INDIANA), which price shall include all materials, labor and equipment to complete the work except for structure backfill where required.

Structure backfill will be paid for at the contract unit price per cubic meter (cubic yard) for STRUCTURE BACKFILL (INDIANA).

Pipe end sections will be paid for at the contract unit price per each for PIPE END SECTION, of the size specified (INDIANA).

INDOT - PIPE, TYPE 2, DEFORMED, MIN. AREA OF THE DIAMETER SPECIFIED

Description. This item shall consist of the construction of storm sewers at locations and per details shown on the plans, in accordance with the applicable portions of Sections 211 and 715 of the Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

Method of Measurement. PIPE, TYPE 2, DEFORMED, MIN. AREA specified (INDIANA), will be measured for payment on a per meter (foot) basis complete in place. The length of pipe to be measured for payment will be based on the net length of pipe used, which will be obtained by multiplying the nominal length of each pipe section by the number of sections used. If the pipe connects to manholes, inlets, or catch basins, the terminal sections will be field measured to the outside face of the structure.

Structure backfill, where required, will be measured by the cubic meter (cubic yard) as computed from the neat line limits shown on the plans.

Basis of Payment. This work will be paid for at the contract unit price per meter (foot) for PIPE, TYPE 2, DEFORMED, MIN. AREA specified (INDIANA), which price shall include all materials, labor and equipment to complete the work except for structure backfill where required.

Structure backfill will be paid for at the contract unit price per cubic meter (cubic yard) for STRUCTURE BACKFILL (INDIANA).

INDOT - PIPE TYPE 4, CIRCULAR, OF THE DIAMETER SPECIFIED

Description. This item shall consist of the construction of pipe underdrains at locations and per details shown on the plans, in accordance with the applicable portions of Sections 715 and 718 of the Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

Method of Measurement. PIPE TYPE 4, CIRCULAR, of the diameter specified (INDIANA) will be measured for payment on a per meter (linear foot) basis complete in place. The length of pipe to be measured for payment will be based on the net length of pipe used, which will be obtained by multiplying the nominal length of each pipe section by the number of sections used. If the pipe connects to manholes, inlets, or catch basins, the terminal sections will be field measured to the outside face of the structure.

Aggregate for underdrains will be measured by cubic meter (cubic yard) complete in place. The pay limits will not extend beyond the neat lines shown on the plans.

Geotextiles will be measured by the square meter (square yard) based on the neat line limits shown on the plans.

Video inspections for underdrains will be measured by the meter (linear foot) as determined by the electronic equipment.

Basis of Payment. This work will be paid for at the contract unit price per meter (linear foot) for PIPE TYPE 4, CIRCULAR of the diameter specified (INDIANA).

Aggregate for underdrains will be paid for at the contract unit price per cubic meter (cubic yard) for AGGREGATE FOR UNDERDRAINS (INDIANA).

Geotextiles will be paid for at the contract unit price per square meter (square yard) for GEOTEXTILES FOR UNDERDRAIN (INDIANA) based on the neat line limits shown on the plans.

Video inspections for underdrains will be paid for at the contract unit price per meter (linear foot) for VIDEO INSPECTION FOR UNDERDRAINS (INDIANA) as determined by the electronic equipment.

INDOT - PIPE, UNDERDRAIN, PERFORATED, 1.63MM, 150MM

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 718 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the engineer.

Method of Measurement. PIPE, UNDERDRAIN, PERFORATED, 1.63MM, 150MM (INDIANA) will be measured for payment on per meter basis.

Basis of Payment. Payment for PIPE, UNDERDRAIN, PERFORATED, 1.63MM, 150MM (INDIANA) will be at the contract unit price per meter, in accordance with Section 718 of the ISS, which price shall include all materials, labor and equipment to complete the work.

INDOT - PRESENT STRUCTURE, STR. NO. (AS SPECIFIED), REMOVE

This item shall be performed at locations and per details shown on the plans, in accordance with SECTION 202 – REMOVAL OF STRUCTURES AND OBSTRUCTIONS of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the Engineer.

Method of Measurement. Payment for PRESENT STRUCTURE, STR. NO. as specified, REMOVE (INDIANA) will be made on a lump sum basis. As such no measurement shall be made.

Basis of Payment. Payment for PRESENT STRUCTURE, STR. NO. as specified, REMOVE (INDIANA) will be at the contract unit price per lump sum, in accordance with Section 202 of the ISS which price shall include all materials, labor and equipment to complete the work.

INDOT - QC/QA - PCCP OF THE THICKNESS SPECIFIED

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 500 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the engineer.

Method of Measurement. PCCP will be measured by the square meter (square yard) of the thickness specified. The area of PCCP will be the planned width of the pavement multiplied by the length of the pavement, or as directed in writing. The width of the pavement will be as shown on the typical cross section of the plans. The length of the pavement will be measured parallel to the surface of the pavement along the centerline of the roadway or ramp, excluding paving exceptions as shown on the plans.

Joints will be measured in accordance with Article 503.07 of the ISS.

Basis of Payment. The accepted quantities of PCCP will be paid for at the contract unit price per square meter (square yard) for QC/QA - PCCP, for the thickness specified (INDIANA), complete in place; at the contract lump sum price for PROFILOGRAPH, PCCP (INDIANA); at the contract unit price per meter (foot) for D-1 CONTRACTION JOINT (INDIANA) and for TERMINAL JOINT (INDIANA) and per each for RETROFITTED TIE BARS (INDIANA). The quality assurance adjustment quantity for thickness will be determined in accordance with 502.21(c). of the ISS.

INDOT - REINFORCED CONCRETE BRIDGE APPROACHES

Description. This work will consist of constructing reinforced concrete bridge approaches at locations and per details shown on the plans, in accordance with the applicable portions of Section 609 of the Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

Method of Measurement. Reinforced concrete bridge approaches will be measured by the square meter (square yard) of the surface area of the concrete bridge approach.

Basis of Payment. Reinforced concrete bridge approaches will be paid for at the contract unit price per square meter (square yard) for REINFORCED CONCRETE BRIDGE APPROACH, of the thickness required (INDIANA), or for REINFORCED CONCRETE BRIDGE APPROACH, of the thickness required SPECIAL (INDIANA) complete in place and shall include all reinforcement and bar splicers where required.

INDOT - REINFORCING BARS, EPOXY COATED

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 703 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the engineer.

Method of Measurement. REINFORCING BARS, EPOXY COATED (INDIANA) will be measured for payment on per kilogram basis.

Basis of Payment. Payment for REINFORCING BARS, EPOXY COATED (INDIANA) will be at the contract unit price per kilogram, in accordance with Section 703 of the ISS, which price shall include all materials, labor and equipment to complete the work.

INDOT - RIPRAP REVETMENT

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 616 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the engineer.

Method of Measurement. RIPRAP REVETMENT (INDIANA) will be measured for payment on per square meter basis.

Basis of Payment. Payment for RIPRAP REVETMENT (INDIANA) will be at the contract unit price per square meter, which price shall include all materials, labor and equipment to complete the work.

INDOT - RIPRAP, UNIFORM

Description. This item shall consist of Riprap, Uniform in accordance with Section 616 of the INDOT Standard Specifications except that only Type A shall be used.

Method of Measurement. Dumped, revetment, class 1 and class 2 uniform riprap obtained from outside the right-of-way will be measured by the square meter (square yard).

Geotextiles used under riprap will be measured by the square meter (square yard) complete in place.

Basis of Payment. Class 1, uniform riprap will be paid for at the contract unit price per square meter (square yard) for RIPRAP, UNIFORM (INDIANA), complete in place. Geotextiles will be paid for at the contract price per square meter (square yard) for GEOTEXTILES (INDIANA), complete in place.

INDOT - SIDEWALK, CONCRETE

Description. This work shall consist of constructing PCC sidewalks at locations as shown on the plans, in accordance with the applicable details in the plans and portions of Section 604 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the Engineer.

Method of Measurement. Concrete sidewalk will be measured by the square meter (square yard) of finished surface.

Basis of Payment. This work will be paid for at the contract unit price per square meter (square yard) for SIDEWALK, CONCRETE of the thickness specified (INDIANA) in accordance with the provisions of Section 604 of the ISS.

The cost of joint material will not be measured for payment but shall be included in the contract unit price for the sidewalk.

INDOT - SIGN LIGHTING MAINTENANCE SYSTEM, INDIANA (FIO)

Description. This work shall consist of furnishing and installing an Overhead Sign Lighting Maintenance System, or approved equivalent on the overhead sign structures located on the Borman Expressway in Indiana and detailed on the plans. The system shall be installed in accordance with the manufacturer's recommendations, the following requirements and as shown on the plans.

The configuration of the unit shall be as tested and approved in accordance with FHWA requirements.

Assembly and installation shall be supervised or performed at all times by an installer trained and certified by the unit's manufacturer, and shall be in accordance with the manufacturer’s recommendations at the locations shown on the plans. A copy of the installer's certificate shall be presented to the Engineer prior to the start of work.

The CONTRACTOR shall provide the Engineer and the Indiana Department of Transportation (DEPARTMENT) with Six (6) original copies of all necessary current manufacturers’ installation manuals and shop drawings for approval prior to beginning installation work. No installation work shall begin prior to the DEPARTMENT'S approval of the shop drawings. The manuals and drawings will remain the property of the DEPARTMENT.

In case of a dispute regarding installation, the manufacturer shall provide a properly trained representative, directly employed by the manufacturer, to ensure that the installation is performed in accordance with the manufacturer's recommendations. The manufacturer's representative shall be provided with no additional payment.

Method of Measurement. This work will be measured for payment in *each unit* installed, complete.

Basis of Payment. This work will be paid for at the contract unit price per *each f*or SIGN LIGHTING MAINTENANCE SYSTEM (INDIANA), which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein. The cost of the sign luminaires, track, turntable, support brackets (L-brackets), sign lighting wiring and connectors from the base of the sign structure to the end of the last luminaires and all necessary labor and incidentals will be included in the cost of the pay item.

INDOT - SIGN POSTS

Description. This work shall consist furnishing and installing 100mm X 150mm wood sign posts at the locations and per details shown on the plans, in accordance with the applicable portions of Sections 802, 910, and 911 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the Engineer.

General. The wood sign posts shall be installed with the 150mm dimension parallel to the adjacent edge of pavement.

All 100mm X 150mm wood posts shall be modified to satisfy the breakaway requirements by drilling 38mm diameter holes centered at 100mm and 450mm above the groundline and perpendicular to the centerline of the roadway.

Method of Measurement. Wood sign posts will be measured for payment in meters. The length to be measured will be the total length installed.

Basis of Payment. This work will be paid for at the contract unit prices per meter for SIGN POST, WOOD (INDIANA), which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

INDOT - SIGNING

Description. This work shall consist furnishing and installing traffic signs at the locations and per details shown on the plans, in accordance with the applicable portions of Sections 802, 910, and 919 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the Engineer.

“Welcome to Indiana” Sign. Prior to fabrication the Contractor shall submit two copies of the sign legend layout details and a full color rendering of this sign for approval by the Engineer. The legend layout details shall show the size, spacing and color of all letters and symbols on the sign. The full color rendering shall be of the proposed sign and reduced to fit on a 600mm X 900mm sheet of paper.

"Encapsulated Lens High Intensity Reflective Sheeting". The Contractor has the option of furnishing the following Stimsonite reflective sheeting in lieu of encapsulated lens high intensity sheeting: (Color) White, (Series) # 6210; Yellow, # 6220; Green, # 6230; Blue, # 6240; Red, #6250.

"Fire Hydrant Access" Signs. These signs shall be mounted to the noise abatement wall vertical support post using the wall mounted sign bracket as detailed in the plans. The cost of the brackets shall be included in the cost of the sheet sign

Method of Measurement. Sheet signs and panel signs will be measured by the square meter. Sheet signs will be measured as the smallest dimensions of a square or rectangle large enough to make the sign.

Basis of Payment. This work will be paid for at the contract unit prices per square meter for SIGN PANEL WITH LEGEND (INDIANA); SIGN, SHEET, ENCAPSULATED LENS WITH LEGEND, 2.54MM THICKNESS (INDIANA); SIGN, SHEET, ENCAPSULATED LENS WITH LEGEND, 3.18MM THICKNESS (INDIANA), in accordance with Section 802 of the ISS which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

INDOT - SLOPEWALL

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 616 of the Indiana Department of Transportation Standard Specifications and as directed by the engineer.

Method of Measurement. SLOPEWALL, CONCRETE, 100 mm (INDIANA) will be measured for payment on per square meter basis.

Basis of Payment. SLOPEWALL, CONCRETE, 100 mm (INDIANA) will be at the contract unit price per square meter, in accordance with Section 616 of the ISS which price shall include all materials, labor and equipment to complete the work.

INDOT - SNOWPLOWABLE RAISED PAVEMENT MARKERS

Description. This work shall consist furnishing and installing snowplowable raised pavement markers including the reflective lenses at the locations and per details shown on the plans, in accordance with the applicable portions of Sections 808 and 913 of the Indiana Department of Transportation Standard and Recurring Special Provisions and as directed by the Engineer.

Installation. The slots cut in the pavement and/or bridge decks for the raised pavement markers shall be in accordance to the manufacturer's recommendations.

Method of Measurement. Snowplowable Raised Pavement Markers shall be measured for per each unit installed in place.

Basis of Payment. This work will be paid for at the contract unit price per each for SNOWPLOWABLE RAISED PAVEMENT MARKER (INDIANA), in accordance with Section 808 of the ISS which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

INDOT - SOUND BARRIER SYSTEM TYPE 2

Description. This work shall consist of furnishing the design, details, shop drawings, materials and construction of a Type 2 sound barrier system at the locations details shown on the plans, in accordance with the applicable portions of the Special Provision for Sound Barrier Systems - Section 620, the applicable portions of the referenced Indiana Department of Transportation Standard Specifications and as directed by the Engineer.

General. Revise the first paragraph of Article 620.02 General Design Requirements (line 8 through line 10) to read:

> "The sound barrier system shall be either wall mounted or bridge mounted and shall consist of wall attachments, vertical support posts and sound barrier panels."

Revise the eighth paragraph of Article 620.03 Design Criteria, (line 70 through line 75) to read:

> "The post spacing for sound barriers mounted on any structure or barrier shall be designed to match the post spacings as designed and constructed for those structures. The Contractor is required to confirm all spacing of the support posts with that as constructed in this contract and from prior contracts. The wall and its supports are to be designed so that it does not overstress the structures. The allowable loads on a structure or barrier will be shown on the plans. If no allowable loads are shown, the Contractor shall contact the project designer for the information."

Delete paragraphs fourteen and fifteen of Article 620.03l Design criteria (lines 100 through lines 122) with the following:

> "The sound barrier system shall consist of a one-color system for the wall panels. The color for the wall panels shall be stained in accordance with the U. S. Federal Standard 595a color number 30233.
>
> The color of the vertical post supports shall be in accordance with U.S. Federal Standard 595a color number 30372.
>
> The wall design shall have a vertical fluted textured finish which closely resembles the existing designs installed along the adjacent INDOT sections of the I-80/94 Borman Expressway.

The Contractor/sound barrier manufacturer shall submit samples to the Department in accordance with the requirements in Article 620.04 Submittals."

Add the following to the end of Article 620.04 Submittals (after line 180):

"The Contractor shall provide three samples of both the roadway side and non-roadway side wall textures to the Department. All samples of the wall textures shall be 0.6 m x 0.6 m (2 ft x 2 ft). The Contractor shall provide 3 samples of the vertical support post measuring 0.6 m (2 ft) in length. each wall and vertical support post samples shall have the selected finish used through-out on either the roadway or non-roadway sides. The sound barrier system will be accepted for color, pattern and texture based on a visual comparison between the samples provided and that of the wall constructed in the adjacent INDOT sections of the I-80/94 Borman Expressway.

The Indiana Department of Transportation contact person for the designs and shop drawings of the sound wall system is Mr. John Wright (312) 232-5147."

Delete Article 620.06 Public Information Meeting (from line 240 through line 281).

Revise Article 620.09 Method of Measurement, (from line 368 through line 379) to read:

"Method of Measurement. The sound barrier system 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 (structure mounted) as shown of the contract plans."

Delete Article 620.10 Stockpiling (from line 380 through line 392).

Revise Article 620.11 Basis of Payment, (from line 393 through line 449) to read:

"Basis of Payment. This work will be paid for at the contract unit price per square meter for SOUND BARRIER SYSTEM, TYPE 2 (INDIANA) measured as provided above. This shall be payment in full for developing the wall design, preparation of shop drawings, all labor, equipment and material required for the manufacture, sampling and verification of the samples, testing, delivery and erection of the panels, metal posts, all fire hydrant access openings and coordination and the post connection system to the foundation (or structure)."

INDOT - SOUND BARRIER SYSTEMS - SECTION 620

R 5-10-05
620-R-483

SOUND BARRIER SYSTEMS**{** TC "SOUND BARRIER SYSTEMS" \f C \l "1" **}**

The Standard Specifications are revised as follows:

SECTION 620, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

SECTION 620 -- ~~BLANK~~ SOUND BARRIER SYSTEMS

620.01 Description

This work shall consist of furnishing materials and placement of a sound barrier system in accordance with 105.03.

620.02 General Design Requirements

The sound barrier system shall be either wall mounted, bridge mounted or ground mounted, and shall consist of wall attachments or post foundations, vertical support posts, and sound barrier panels.

All appurtenances behind, in front of, under, over, mounted upon, or passing through the wall, such as drainage structures, fire hydrant access, highway signage, emergency access, utilities or appurtenances shown on the plan, shall be accounted for in the design of the sound barrier system.

If the sound barrier manufacturer needs additional information to complete the design, the Contractor shall be responsible for obtaining such information. The Contractor shall be responsible for field verifying wall locations in areas of existing lighting poles. The wall shall be realigned and designed to box out openings were conflicts occur with the existing light pole. The Contractor shall establish the existing locations of all underdrain outlets in the final wall plans.

The sound barrier wall design shall follow the general dimensions of the wall envelope as shown on the plans. The top of the sound barrier shall be at or above the acoustical profile line shown, unless noted. Overhead utilities that are within 2 m (6 ft) from the barrier shall be permanently relocated.

A sound barrier system shall be selected from the Department's list of approved Sound Barrier Systems. Approved systems must be on the approved list at the time of letting. The materials used in the fabrication of the sound barrier system shall be the same as those used for approval of the sound barrier system.

620.03 Design Criteria

The structural design of the sound barrier system shall be in accordance with the AASHTO Guide Specifications for Structural Design of Sound Barriers, except as noted herein.

All materials shall have a minimum predicted maintenance free structural and acoustical lifespan of 20 years. All colorings and coatings shall have a minimum predicted maintenance free lifespan of 10 years.

The sound barrier system shall be designed to have a minimum noise reduction coefficient of 0.80 on the roadway side, and 0.70 on non-roadway side. The sound barrier system shall be tested for the noise reduction coefficient in accordance with ASTM C 423. The

ratio of sound absorptive material surface area to total surface area, including posts, shall be greater than 90 percent. Material samples for these tests shall be provided with the coating applied. The sample shall be mounted in accordance with ASTM E 795, type A.

The sound barrier system shall be designed to achieve a sound transmission loss equal to or greater than 20 decibels at all frequencies when tested in accordance with ASTM E 90.

The sound barrier system shall be designed to withstand wind pressure as shown on the plans, as applied perpendicular to the barrier, in each direction.

Caisson footings, vertical support posts, and connections for ground mounted sound barrier shall be designed for 5 m (15 ft) post spacing. The foundation design shall use the COM 624P or LPILE Program. The foundation design shall be based on the soil model shown on the plans based on cyclic loading and shall consider the effects of a sloping ground surface. The foundation design shall allow a maximum deflection of 25 mm (1 in.) per 3 m (10 ft) of wall height, at the top of the wall. The foundation depth shall not be less than 2.2 m (7.5 ft) and shall not exceed the depth of the soil model except where the Contractor elects to drill deeper borings to extend the model. The foundation diameter shall not be less than 450 mm (18 in.) and shall not be less than 150 mm (6 in.) larger than the diagonal dimension of the post being used. The foundation is to be designed by the sound barrier manufacturer.

Vertical support posts shall be attached to caisson footings by means of anchor bolts, or embedded wide flange steel posts. Vertical support posts, and connections may be redesigned for sound barrier parameters as recommended by the manufacturer. Redesigned members shall use the minimum wind loads specified in the plans.

The post spacing for sound barriers mounted on any structure or barrier shall be limited to a distance that does not overstress the existing structure or barrier. The spacing shall also be limited to a distance that allows the sound barrier to conform to the existing horizontal and vertical alignments. The allowable loads on a structure or barrier will be shown on the plans. If no allowable loads are shown, the Contractor shall contact the project designer for the information.

Fire hydrant access points shall be designed with additional reinforcement or bracing and protective coating around the opening as necessary to maintain structural integrity.

The bottom of ground mounted sound barrier shall be embedded a minimum of 150 mm (6 in.) into the ground. The bottom of wall mounted or bridge mounted sound barrier shall follow, within 75 mm (3 in.) a profile 150 mm (6 in.) below the top of the existing concrete barrier railing or wall. Changes in elevation shall be accomplished by stepping the sound barrier sections at the vertical support posts. Steps shall not exceed 1 m (3 ft).

Corrugations, ribs, or battens on sound barrier panels shall be oriented vertically when erected. The sound barrier shall be designed to prevent entrapment and ponding of water. The sound barrier shall not be designed with openings promoting the perching or nesting of birds, or the collection of dirt, debris, or water. The sound barrier shall not be designed with hand holds or grips promoting scaling or climbing of the system.

Sound barrier systems utilizing stacked panels shall have ship-lapped, or tongue and groove horizontal joints or any other design which arrests the passage of light and sound.

The ends of the sound barrier shall be tapered or stepped down to a height of 2.6 m (8 ft) within the sound barrier end transitions or as shown on the plans. Where guardrail energy absorbing terminals are to be attached to sound barrier, the sound barrier shall be designed to meet attachment requirements.

The sound barrier system can incorporate a single or two color combination. If a two-color combination is used then a designed repetitive pattern shall be used. This repetitive pattern shall be 70/30 or higher favoring one color. The Contractor/sound barrier manufacturer shall present at least five different colors and/or color combinations to the Design Division; Consultant's review section from the following colors.

(a) light and dark grey,
(b) light and dark brown,
(c) light and dark tan,
(d) light and dark taupe,
(e) beige,
(f) cream,
(g) coffee,
(h) yellow,
(i) blue

These colors will be narrowed down to a minimum of at least three colors that will be presented to the public for their input in accordance with 620.06. The color on each face of the same panel may be different. Vertical support posts shall match the sound barrier panel color unless directed by the Engineer. If a two-color pattern is selected then an additional elevation drawing will be required to show the color panel pattern on the final wall. This drawing shall clearly show the different colors by shading or hatching each similarly colored panel and listing them. The final wall pattern shall be approved before production of the wall panels.

Closure plates shall be provided where new sound barrier is constructed adjacent to existing sound barrier. Where bridge mounted walls cross over expansion joints, expansion closure plates shall be used. The wall manufacturer shall provide expansion closure plates for each expansion joint unless directed otherwise. The minimum thickness of closure plates shall be 4.5 mm (0.1875 in.).

The calculations for the sound barrier earth retaining panels will show that the walls are adequate for earth retention. The earth retention areas shall be shown on the plans. The exposed face of the sound barrier earth retaining panel will match the adjacent panel's color and texture.

620.04 Submittals

The Contractor shall submit one copy of the design computations for approval. If the computations are computer generated, one sample set of hand calculations, for one wall location shall also be submitted. The Contractor shall submit four sets of design drawings for approval after

the design computations are approved and before beginning wall construction operations. Design computations and design drawings shall be signed and sealed by a professional engineer.

(a) The design drawings shall include all details, dimensions, quantities and cross-sections necessary to construct the sound barrier systems and shall include but shall not be limited to the following:

1. A plan and elevation sheet or sheets for each sound barrier systems location

2. An elevation view of the sound barrier systems which shall include the elevation at the top of the wall at all horizontal and vertical break points at least every 15 m (50 ft) along the face of the wall

3. A plan view of the wall that indicates the offsets from the construction centerline to the face of the wall at all changes in horizontal alignment. A plan view and elevation view which detail the placing position

4. A typical cross section or cross sections showing elevation relationship between ground conditions and the sound barrier systems locations

5. All general notes required for constructing the wall

6. each sheet shall show the complete project identification number

7. All horizontal and vertical curve data affecting the wall

8. Aggregate pad with No. 8 coarse aggregate shall be included that extends 100 mm (4 in.) outside of each side of the panel and 100 mm (4 in.) below the bottom of the panel.

9. A listing of the summary of quantities on the elevation sheet for each wall

(b) The design computations shall include all structural design calculations, and vertical support post design calculations.

(c) The detailed plan of aesthetic treatment for the entire sound barrier system, manufacture recommended installation requirements and sequence of construction, and a detailed bill of materials shall be included with the design drawings.

(d) The design drawings shall accommodate all existing poles, i.e., utility, traffic, etc., drainage pipes, underdrain outlets, and bridge expansion joints.

MATERIALS

620.05 Materials. Materials shall be in accordance with the following:

Cast-in-Place Portland Cement Concrete, Class A 702
Coarse Aggregate, Class D or Higher, Size No. 8 904
Coarse Aggregate, Class A or Higher, Size No. 91.....904
Fine Aggregate, Size No. 23 904
Paint for metal 909.02
Portland Cement.....901.01(b)
Precast Portland Cement Concrete.....707
Reinforcing Steel 910.01
Structural Aluminum Posts .....910.14(d)
Structural Steel.....910
Water.....913.01

Steel structural components shall be in accordance with ASTM A 36. Structural steel components shall be hot dipped galvanized in accordance with ASTM A 123, coating grade 100 or painted in accordance with 619.11 and 619.12. Exposed surfaces of galvanized components shall be coated in accordance with 619.09(b). The galvanized surfaces shall be prepared using a light brush-off blast cleaning in accordance with SSPC SP7/NACE No. 4. The surface profile shall be 15 to 30 microns in accordance with ASTM D 4417, prior to painting.

All structural steel hardware shall be in accordance with ASTM A 325 and shall be hot dipped galvanized in accordance with ASTM A 153 or shall be made of nonferrous material or stainless steel. All other non-structural fastening devices shall be made of nonferrous metal or stainless steel. Plastic members shall be connected with either screws or bolts. Aluminum members shall be connected with stainless steel fasteners. Anchor bolts shall be of the size shown with a minimum of 250 mm (10 in.) of 7NC threads on the upper end. Anchor bolts shall be in accordance with ASTM F 1554. The threads, nuts, and washers shall be galvanized in accordance with ASTM A 153 or be mechanically galvanized and conform to the coating thickness, adherence, and quality requirements of ASTM A 153, where required.

Filler material used to increase sound absorption shall be manufactured in accordance with ASTM C 612. Mineral wool shall have a minimum density of 96 kg/m^3 (6lb/ft^3), shall absorb less than 1 percent of water when tested in accordance with ASTM C 553, and shall be noncorrosive and nonhygroscopic. The filler material shall be fastened to the sound barrier system so as to prevent sagging when in a saturated condition. Test reports shall be submitted from an appropriate independent agency verifying that the filler material does not sag if separated after saturation and draining of the sound barrier system when in service, and that the acoustic qualities of the material are in accordance with the requirements herein after completion of testing.

Solid portland cement concrete or composite concrete shall be coated and/or contain an integral pigment, as specified by the manufacturer and meeting the specified color requirements. The integral pigment shall be certified to be in accordance with ASTM C 979. The integral pigment and/or coating shall be tested for Accelerated Weathering. The test panel substrate shall be of the same portland cement concrete or composite concrete material used in the sound barrier system component. Cured coating or integral pigment shall not contain heavy metals that exceed the requirements of 40 CFR 261.24.

Certifications shall be provided for each of the materials to be supplied for the sound barrier system. Certifications shall be in accordance with a type C in accordance with 916, unless noted otherwise. All test reports required to substantiate compliance shall be in accordance with the test method/material requirements cited herein. A Department approved laboratory shall conduct the testing.

CONSTRUCTION

620.06 Public Information Meeting

The Contractor is responsible for planning and holding a public meeting to display and discuss the recommended sound barrier wall finishes and colors with the public. The meeting shall be arranged for in a locally available facility in or near the affected areas of the barrier walls at convenient times for the affected areas to review. The Contractor and the wall manufacturer shall be present at the meetings along with representatives from the Department.

The Contractor shall coordinate all meeting activities with the Department's Hearings Manager. The Hearings Manager will make all local media contacts two weeks prior to the meeting. The Contractor shall also notify the adjacent property owners and business, neighborhood associations, and local planning agencies two weeks prior to the meeting. The use of colored flyers with appropriate graphics shall be developed by the Contractor and coordinated with the Hearings Manager prior to distribution.

The Contractor shall present a minimum of three alternative textured finishes for the roadway side and non-roadway sides of the wall. each wall will have the recommended finish as determined by the Department. The textures alternatives shall consist of either a vertical fluted, an Ashlar stone finish or plain finish. Additional wall textures will be considered as long as the material specifications are in compliance with the requirements.

All molded finishes shall have a 25 mm (1.0 in.) minimum relief. Relief is defined by material that is provided in excess of the minimum wall thickness required to meet the Noise Reduction Coefficient required for that wall type. Fluted finishes shall be coped at each end to avoid cracking. each wall shall have the selected finished used through-out the wall on either the roadway or non-roadway sides.

The finishes shall consist of a rolled Ashlar finish or alternate design with a top of wall coping, a broomed finish, or a raked finish. A different selected finish may be used for each wall. each wall shall have one finished used on either the roadway or non-roadway sides through-out the length of the wall. Additional wall finishes are acceptable as long as the material specification of this specification can be met. All rolled finishes shall have a minimum 19 mm (0.75 in.) impression.

Wall colors photos shall be presented for each color in accordance with 620.03 along with photos of each available texture alternative. A minimum of three wall samples of both the roadway side and non-roadway side textures shall be presented. All samples of the wall textures shall be 0.6 m x 0.6 m (2 ft x 2 ft). each wall shall have the selected color(s) used through-out the entire wall on either the roadway or non-roadway sides.

Based on comments received during the meeting, the Department will select the final finishes and colors for each wall. The Contractor shall coordinate all sound barrier wall issues with the Engineer prior to ordering any materials.

620.07 Construction Requirements

The sound barrier supplier shall provide technical instruction, guidance in preconstruction activities including the preconstruction conference, and on site technical assistance during construction. The Contractor is responsible for following installation instructions from the supplier unless otherwise directed in writing.

Clearing and grading shall be in accordance with 202 as required.

The foundations for ground mounted sound barrier systems shall be constructed as shown on the shop drawings. Holes for footings shall be drained of free water prior to installing any components. Placing concrete shall be in accordance with 702.

The integrity of the sound barrier system continuity shall be such that no gaps will be visible through any vertical joint between sound barrier panel and vertical support post, through any horizontal joint between sound barrier panels, between the bottom of any ground mounted sound barrier and the adjacent ground, or between the bottom of any wall mounted sound barrier and the top of the adjacent wall.

Sound barrier wall posts shall be placed vertical with a tolerance of 13mm per 3 m (1/2 in. per 10 ft) on each axis. Sound barrier wall posts shall be placed at the distance indicated on the plans with a tolerance of 25 mm (1 in.) from centerline to centerline. Sound barrier wall posts shall be aligned to within 25 mm (1 in.) when measured from a straight line from the two adjacent posts. Sound barrier wall posts shall be at the height as shown on the plans. The posts shall project above the top sound barrier wall panel by 37 mm (1.5 in.) ± 13 mm (0.5 in.). The top of the sound barrier wall shall be at or above the acoustical profile. Steel posts embedded in concrete shall have bottom cover of 200 mm (8 in.) ± 100 mm (4 in.). Field cut steel posts shall be primed with an organic zinc primer and painted in accordance with 619.

After post erection the area shall be backfilled to within 150 mm (6 in.) of the required final grade or as specified in the plans. The aggregate pad shall be placed as required. Positive drainage of the work area shall be maintained.

Sound barrier wall panels shall be placed in accordance with the plans and centered between adjacent posts. The sound barrier wall panels shall be of sufficient length to span the entire length between posts less 1/2 the width of the smallest retaining flange. All sound barrier wall panels shall be ship-lapped or tongue and grove construction. Panels that are damaged during placement shall be repaired or replaced in accordance with the manufacturer’s guidance.

Panels may be field cut to facilitate erection in accordance with the manufacturer’s recommendation. Field cut panels shall be cut to have the least impact on any patterns present in the textured or colored finish. Field cut panels or other field cut components shall be painted in accordance with the manufacturer’s guidance.

The sound barrier system and sound barrier system components shall be maintained during construction. Elements of the sound barrier system that are damaged or destroyed shall be repaired or replaced as directed by the Engineer. Painted surfaces damaged during construction shall be repaired in accordance with the manufacture's guidance. Repairs shall be in accordance with the manufacturer's guidance.

After construction of the sound barrier system the site shall be restored to the original condition with grading, seeding and sodding in accordance with the plans.

620.08 Acceptance

The Contractor shall submit 0.6 m x 0.6 m (2 ft x 2 ft) sound barrier panel samples in the colors and textures proposed, and a 0.6 m (2 ft) sample of painted support post, prior to the approval of the shop plans. The samples will be used as a control sample to verify delivered products meet the aesthetic requirements. The sound barrier system will be accepted for color based on a visual comparison between the control sample and the color of the wall as constructed in place.

The sound barrier system will be accepted for quality based on a visual inspection of the components of the system by the Engineer. The sound barrier system shall be subject to rejection due to failure to be in accordance with the requirements specified herein. In addition, the following defects may also be sufficient cause for rejection.

a. Defects that indicate imperfect fabrication.

b. Defects in physical appearance such as cracks, checks, dents, scrapes, chips, stains, or color variations.

The Engineer will determine whether defective sound barrier shall be repaired or shall be cause for rejection. Repair, if permitted, shall be completed and approved by the Engineer.

One verification sample will be required for each 50 000 square meters (square feet) of wall. The sample will be cut from a delivered panel and will be of sufficient size to provide for testing of sound absorption requirements in accordance with ASTM C 423 and salt scaling resistance in accordance with ASTM C 672 as modified in the Obtaining Approval section, item 13 of the sample approved criteria. The verification sample will be randomly selected for testing by the Engineer in accordance with ITM 802. A testing laboratory independent from the manufacturer, supplier and the Contractor shall perform testing. This independent testing laboratory shall arrange for shipping and testing without the aid of the Contractor. The Contractor shall submit a type A certification in accordance with 916 prior to installation. Failed materials will be adjudicated as a failed material in accordance with normal Department practice in accordance with 105.03.

620.09 Method of Measurement

Sound barrier panels will be measured by the square meter (square foot) of wall surface area. The measured quantity will be based on the surface area of the roadway side of each panel.

Sound barrier erection will be measured by the square meter (square foot) of wall surface area. The pay quantity will be based on the neat line limits of the sound barrier envelope as shown on the plans. The vertical and horizontal distance for each section of the wall defines the sound barrier envelope. The vertical distance extends from the elevation at the bottom of the lowest panel to the elevation of the acoustic profile for each section of the wall. The horizontal distance extends for the centerline to centerline of adjacent posts for each section of wall.

620.10 Stockpiling.

Partial payment will be made for sound barrier panels stockpiled on the project site or at the Contractor's approved storage location within the State of Indiana. Partial payment will be based on the delivered cost of the sound barrier panels, as verified by invoices that includes freight charges. The Contractor shall furnish the invoices and all required certifications. Partial payment will not exceed 75% of the contract unit price for bridge mounted, ground mounted or wall mounted sound barrier panels. Prior to authorizing the partial payment, verification will be obtained that all required inspection has been made and that the panels are acceptable.

No sound barrier components shall be stored on the right-of-way unless written permission is given by the Department. Requests for permission to store materials on the right-of-way will not be accepted until after the contract has been awarded.

620.11 Basis of Payment

Wall mounted sound barrier panels, bridge mounted sound barrier panels, ground mounted sound barrier panels, wall mounted sound barrier erection, bridge mounted sound barrier erection, and ground mounted sound barrier erection will be paid for at the contract unit price per square meter (square foot).

The Department may choose to acquire additional sound wall panels in the colors and patterns selected on the project. A maximum of twelve panels of each type would be paid for at the invoice cost of the panels and shall be delivered to the District Office. A change order will be processed in accordance with 109.05 and shall be marked as a "Z" (federally non-participating) cost.

Payment for all costs associated with the collection of all information not shown on the plans, revisions due to conflicts, sound barrier system details, all additions or incidentals necessary to provide complete plans, any redesigning of plans or details, the public information meetings and public information planning and presentations will be paid for at the contract lump sum price for sound barrier design and layout.

Payment will be made under:

Pay Item	**Pay Unit Symbol**
Sound Barrier Design and Layout	LS
Sound Barrier Erection, ____ Type*	m2 (SFT)

Sound Barrier Panels, ____ ..... m2 (SFT)
Type*

*Type of sound barrier system: (BM) Bridge mounted, (GM) Ground mounted, (WM) Wall mounted.

The cost of sound barrier panel materials including vertical support posts, aggregate pad, fasteners, closures, expansion plates, openings and incidentals shall be included in the cost of the sound barrier panels for the type of sound barrier panels.

The cost of services including the testing laboratory, delivery to the testing laboratory, certified testing personnel, and the testing and inspection of the sound barrier panels shall be included in the cost of sound barrier panels for the type of sound barrier panels.

The cost of sampling, shipping and testing of verification samples shall be included in the cost of the sound barrier panels for the type of sound barrier panels.

The cost of the selected texture and selected color shall be included in the cost of the sound barrier panel for the type of sound barrier panels.

The cost of all labor and materials to prepare and erect the sound barrier shall be included in the cost of sound barrier erection for the type of sound barrier panels.

The cost of removal or construction of a bridge is not included in the cost of sound barrier erection, bridge mounted.

The cost of foundation preparation and construction with associated work shall be included in the cost of sound barrier, ground mounted.

The cost of removal or construction of concrete barrier walls is not included in the cost of sound barrier erection, wall mounted.

The cost of delivery of the extra sound barrier panels to the District Offices shall be included in the "Z" item cost of the sound panels for the type of sound barrier panels.

SOUND BARRIER SYSTEMS SOURCE APPROVAL CRITERIA

Obtaining Approval. The supplier requesting approval of a sound barrier system and inclusion on the Department's list of approved Sound Barrier Systems shall comply with the following.

1. The supplier shall send a letter to Materials and Tests Division, requesting approval of the Sound Barrier System. The letter will include supporting documents, all of which will be bound, organized and include the following:

   (a) a letter requesting approval of sound barrier system
   (b) list of sound barrier system installations
   (c) inspection report of sound barrier system
   (d) list of all materials, specification and manufacturer
   (e) test report of sound transmission loss

(f) test report of sound absorption average, roadway side
(g) test report of sound absorption average, non-roadway side
(h) test report for accelerated weathering
(i) test report for flame index and smoke index
(j) test report concrete resistance to scaling
(k) test report steel resistance to corrosion
(l) test report for filler material

2. The supplier shall ensure that all tests are performed within two years from the date of submission.

3. The supplier shall ensure that all tests are performed on samples selected from a production run of the product.

4. The supplier shall ensure that all tests are performed in an accredited independent testing laboratory. each test report shall be accompanied with proof of accreditation.

5. The supplier shall provide evidence of prior construction of a sound wall system of the type to be approved; including location, date, and purchaser.

6. The supplier shall submit an inspection report detailing the condition of a sound barrier system of the type to be approved. The inspection report shall identify the location and type of the sound wall system, and provide comments on the structural integrity of each component and the condition of any surface coatings. The inspection report shall be prepared and signed by a registered professional engineer independent from the supplier. The field location of the sound barrier system shall be in an area with a climate similar to Indiana. The sound barrier system shall have been subjected to at least two winters of exposure.

7. The supplier shall submit a list of all materials used in the manufacture and construction of the type of sound barrier system to be approved. The list shall include the material specification, which each material component meets, and the name of the manufacturer of each material component.

8. The supplier shall submit a test report that shows the sound barrier system has a sound transmission loss of 20 dbl or greater for each frequency in accordance with ASTM E 90.

9. The supplier shall submit a test report that shows the sound barrier system has a sound absorption average of 0.80 or greater on the roadway side in accordance with ASTM C 423 with specimens mounted in accordance with ASTM E 795, Type A.

10. The supplier shall submit a test report that shows the sound barrier system has a sound absorption average of 0.70 or greater on the non-roadway side in accordance with ASTM C 423 with specimens mounted in accordance with ASTM E 795, Type A.

11. The supplier shall submit a test report that shows the sound barrier system complies with the accelerated weathering requirements listed below when tested in accordance with ASTM D 6695 cycle 1. Four specimens shall be used in the test, one as a reference, one to be removed from the test and evaluated at 800, 1600 and 2400 hours. The color of the specimens shall be light blue, light brown, light green, or light grey. The test report shall include a color photo of each specimen at the time of evaluation.

    (a) no checking in accordance with ASTM D 660
    (b) no blistering in accordance with ASTM D 714
    (c) no loss of adhesion in accordance with D 3359
    (d) chalking of 7 or greater in accordance with ASTM D 4214, Method C
    (e) color difference of units or less as compared to the reference sample in accordance with ASTM D 2244

12. The supplier shall submit a test report that shows the sound barrier system has a flame spread index of 15 or less at 10 minutes, a flame spread index of 25 or less at 30 minutes, and a smoke developed index of 10 or less at 10 minutes in accordance with ASTM E 84.

13. The supplier shall submit a test report that shows the concrete components of the sound barrier system have a mass loss 91 g/0.0929 m2 (0.2 lbs/1.00 ft^2) or less in accordance with ASTM C 672 and as follows. At least three specimens each from a different production run shall be tested. The specimens shall have a testable surface area of 0.0929 m2 (1.00 ft^2) or more. The specimens shall be sealed around the edges to retain the salt solution to a depth of at least 6 mm (1/8 in.) over the entire surface. Before the start of the test each specimen shall be brushed clean. After each five cycles of the test all salt solution and all rinse water from each specimen shall be collected. After each five cycles the surface of each specimen shall be thoroughly rinsed to remove all loose particles. The collected liquid shall be filtered and all particles removed. The retained particles shall be dried to a constant mass and the mass determined to the nearest 1 g (0.01 lbs). The test report shall indicate the mass of particles after each five cycles and the total mass after 50 cycles for each specimen. The report shall include a color photo of each specimen before and after the test.

14. The supplier shall submit a test report that shows the steel components of the sound barrier system comply with the following corrosion requirements when tested in accordance with ASTM D 1654 and salt spray exposure in accordance with ASTM B 117. Four pairs of specimens shall be used in the test, one pair as a reference, one pair to be removed from the test and evaluated at 800, 1600 and 2400 hours. One specimen from each pair shall be scribed and one specimen shall be un-scribed. Scribed specimens shall be evaluated in accordance with procedure A, method 1. Un-scribed specimens shall be evaluated in accordance with procedure B and D. A color photo of each specimen at the time of evaluation shall be provided.

(a) corrosion rating shall not be less than 10
(b) no checking in accordance with ASTM D 660
(c) no blistering in accordance with ASTM D 714
(d) no loss of adhesion in accordance with D 3359
(e) no other defects in accordance with the above methods

15. The supplier shall submit a test report that shows the filler material for sound barrier system in a dry and saturated state does not sag, separate, delaminate, deform or otherwise create voids that allow sound to penetrate the component.

Maintaining Approved List

1. The supplier shall manage the continued approval of their Sound Barrier System.

2. The supplier shall notify Department of changes in material components.

3. The supplier shall ensure that all documents and test reports for their sound barrier system are current.

4. Sound barrier systems that have records at Materials and Tests Division in compliance with this procedure will be maintained on the Department's list of approved Sound Barrier Systems.

Removal From Approved List

1. Materials and Tests Division is responsible for removing sound barrier systems from the approved list.

2. Sound barrier systems that are not in compliance with this procedure will be removed from the approved list.

3. Sound barrier systems that exhibit poor field performance as determined by the Materials and Tests Division will be removed from the approved list.

INDOT - STRUCTURAL EXPANSION JOINT, SS

This work shall consist of furnishing and placing, for new construction, structural expansion joints of the type specified, in accordance with the plans and Section 724 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the engineer.

Method of Measurement. Structural expansion joints will be measured by the meter along and parallel to the plane of the finished joint surface.

Basis of Payment. Payment for STRUCTURAL EXPANSION JOINT, SS (INDIANA) will be at the contract unit price per meter, in accordance with Section 724 of the ISS, which price shall include all materials, labor and equipment to complete the work.

INDOT - STRUCTURE BACKFILL

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 211 of the Indiana Department of Transportation Standard Specifications and as directed by the engineer.

Materials. Materials will be in accordance with Article 211.02 except that RAP will not be permitted.

Method of Measurement. STRUCTURE BACKFILL will be measured for payment on a per cubic meter basis.

Basis of Payment. Payment for STRUCTURE BACKFILL will be at the contract unit price per cubic meter for STRUCTURE BACKFILL (INDIANA), which price shall include all materials, labor and equipment to complete the work.

INDOT - SUBBASE FOR PCCP

Description. This work shall be performed in accordance with Section 302 of the INDOT Standard Specifications (ISS).

Materials. The material shall conform to the INDOT requirements of Section 302.

Method of Measurement. Subbase for PCCP or dense graded subbase will be measured by the cubic meter (cubic yard) based on the theoretical volume to the neat lines as shown on the plans.

Basis of Payment. The accepted quantities of Subbase for PCCP or dense graded subbase, will be paid for at the contract unit price per cubic meter (cubic yard) for SUBBASE FOR PCCP, (225) (INDIANA), or at the contract unit price per cubic meter (cubic yard) for DENSE GRADED SUBBASE (INDIANA) complete in place in accordance with Section 302 “Subbase” of the ISS.

INDOT - SUBGRADE TREATMENT, TYPE 1A

Description. This work shall consist of the construction of the subgrade in accordance with the details shown on the plans, applicable portions of Section 207 of the Indiana Department of Transportation Standard Specifications, as described in this special provision and as directed by the engineer.

Materials. Materials shall be in accordance with the following.

Coarse Aggregate, Class D or Higher 53…….904
Water……..913.01

General Requirements. The subgrade shall be constructed uniformly transversely across the width of the pavement including 0.6 m (2 ft) outside the edge of shoulders or curbs unless shown otherwise on the plans, one of the following methods.

Aggregate No. 53 in accordance with Section 301.

Longitudinally, the treatment may vary depending on the method of construction.

During subgrade preparation, adequate drainage shall be provided at all times to prevent water from standing on the subgrade.

Even though the subgrade has been previously accepted, the condition of the subgrade at the time paving material is placed shall be in accordance with Articles 105.03 and 207.04. Just prior to placing the base course on the subgrade, proofrolling in accordance with Article 203.26 shall be completed. Undue distortion of the subgrade shall be avoided. If limits of the work make mechanical preparation of the subgrade impractical, appropriate hand methods may be used.

The grade and cross section of the subgrade shall be finished within a tolerance of 13 mm (1/2 in.) from the true subgrade. It is permissible to finish within this tolerance by blading or other mechanical means without the use of side forms. If these methods do not finish within this tolerance, side forms shall be used.

Subgrade Treatments. The subgrade treatment type shall be as specified on the contract plans.

Type IA. 300 mm (12 in.) of the subgrade excavated and replaced with coarse aggregate No. 53.

When conditions are encountered below the specified subgrade treatment depth that prevent achieving the specified subgrade compaction, such conditions shall be treated as directed.

Method of Measurement. Subgrade treatment will be measured in both cut and fill areas by the square meter (square yard) per type. Chemicals for modification, excavation, aggregates, and geogrid materials will not be measured.

Basis of Payment. The accepted quantities of subgrade treatment, will be paid for at the contract unit price per square meter (square yard) per type, complete in place.

The undercutting of rock, where encountered, will be paid for in accordance with Article 203.28.

Payment will be made under:

Pay Item	Metric Pay Unit Symbol (English Pay Unit Symbol)
SUBGRADE TREATMENT, TYPE 1A (INDIANA)	square meter (SYS)

The cost of subgrade treatments including testing, sampling, aggregates for cut or at-grade areas, water, and the excavation required for the methods chosen by the Contractor shall be included in the cost of the pay item for subgrade treatment, type.

Compacted aggregate used for subgrade treatment in fill areas will also be measured and paid for as either embankment or as borrow, as appropriate, in accordance with Articles 203.27 and 203.28.

Where conditions exist below the specified subgrade compaction depth that prevent achieving the specified compaction, payment for correcting such conditions will be made based on the directed method of treatment.

INDOT - SURFACE SEAL

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 709 of the Indiana Department of Transportation Standard Specifications and as directed by the engineer.

Method of Measurement. SURFACE SEAL (INDIANA) will be measured for payment on per lump sum basis.

Basis of Payment. Payment for SURFACE SEAL (INDIANA) will be at the contract unit price per lump sum, which price shall include all materials, labor and equipment to complete the work.

INDOT - TEST PILE, 356MM

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 701 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the engineer.

Method of Measurement. TEST PILE, 356MM (INDIANA) will be measured for payment on per each basis.

Basis of Payment. Payment for TEST PILE, 356MM (INDIANA) will be at the contract unit price per each, which price shall include all materials, labor and equipment to complete the work.

INDOT - THREADED TIE BAR ASSEMBLY, EPOXY COATED

This item shall be performed at locations and per details shown on the plans, in accordance with the applicable portions of Section 703 of the Indiana Department of Transportation Standard Specifications (ISS) and as directed by the engineer.

Method of Measurement. THREADED TIE BAR ASSEMBLY, EPOXY COATED (INDIANA) will be measured for payment on per each basis.

Basis of Payment. Payment for THREADED TIE BAR ASSEMBLY, EPOXY COATED (INDIANA) will be at the contract unit price per each, which price shall include furnishing AND installing in accordance with Section 703 of the ISS which price shall include all materials, labor and equipment to complete the work.

INDOT - 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 ox/ 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 (INDIANA), which price shall be payment in full for all labor, equipment and materials necessary to complete the work as specified herein.

INDOT - WIM STATION, 10 LANE SLC

SINGLE LOAD CELL (SLC) WEIGH-IN-MOTION (WIM) STATION

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ASTM DESIGNATION: E 1318-02 (*STANDARD SPECIFICATION FOR HIGHWAY WEIGH-IN-MOTION (WIM) SYSTEMS WITH USER REQUIREMENTS AND TEST METHODS*)

INDOT SINGLE LOAD CELL (SLC) WEIGH-IN-MOTION (WIM) STATION

INTENT

It is the intent of the INDOT, Program Development Division, to construct a new single load cell (slc) weigh-in-motion (wim) station at approximately station 8 + 337. Program Development Division currently has a statewide wim program and this station will be an additional station added to the current program.

WIM STATION SPECIAL PROVISION DEFINITIONS

(a) Any reference to Illinois Department of Transportation shall hereafter be referred to as *IDOT*.

(b) Any reference to Indiana Department of Transportation shall here after be referred to as *INDOT*.

(c) Any reference to the IDOT Standard Specifications for Road and Bridge Construction shall refer to the 2002 edition of this book and shall hereafter be referred to as *IDOT's Specifications*.

(d) Any reference to the Indiana Department of Transportation Standard Specifications shall refer to the copy released for contract lettings after September, 2005, and shall hereafter be referred to as *Standard Specifications*.

(e) Any reference to the Indiana Department of Transportation Revised Standard Drawings shall refer to the copy released for contract lettings after September, 2005, and shall hereafter be referred to as *Standard Drawings*. The following referenced Indiana Department of Transportation Revised Standard Drawings have been included in the plans by the drawing number and/or sheet title:

805-SGDH-02
805-SGCO-03

(f) Any reference to the National Fire Prevention Association (NFPA) National Electrical Code shall hereafter be referred to as *NEC* and refer to the 2005 edition of the code.

(g) Any reference to *single load cell scales* shall hereafter be referred to as *slc scales*.

(h) Any reference to *weigh-in-motion* shall hereafter be referred to as *wim*.

(i) Any reference to the Resident Engineer shall be hereafter referred to as the *RE*.

SCOPE

This specification covering materials, construction, and equipment for one proposed ten lane slc wim station shall at minimum provide the following:

- 20 – single load cell scales (two scales in each of the 10 proposed travel lanes), positioned and situated as shown on the plans.
- 20 - Proposed 1.82 m (6 ft) by 1.82 m (6 ft) loop detectors
- 10 - 3.35 m (11 ft) Class I piezo sensors
- 12 - Proposed detector housings as shown on the plans
- Signal loop lead cable for each proposed loop detector
- Eight wim station handholes
- Proposed 100 mm conduits as shown on the plans
- Proposed 76 mm conduits as shown on the plans
- Proposed 50 mm conduits as shown on the plans
- Two - R cabinets
- Two – log books
- Four - IRD 1068 or equivalent Wim electronics, modems, and Uninterruptible Power Sources (UPS)
- One - 100 amp electric service and wood utility pole to power both cabinets
- Four - Individual telephone lines, two terminated in each cabinet.

- Removal and replacement of 14 - pavement panels (shall include excavation and replacement) - 3.6 m (11.8 ft) wide by 5.5 m (18 ft) length pavement panels (The removal and excavation depth for 10 panels will be approximately 1169 mm (46 in.) deep with replacement pavement consisting of 305 mm (12 in.) of compacted aggregate #53 base in the bottom of the excavated area and 864 mm (34 in.) of approved QC/QA PCCP in accordance with section 500 of the INDOT Standard Specifications. The other four pavement panels shall be shoulder and median pavement depth QC/QA PCCP in accordance with section 500 of the INDOT Standard Specifications. The removal shall consist of removing the existing 400 mm (15.75 in.) concrete shoulder pavement with replacement shoulder pavement consisting of 400 mm (15.75 in.) of approved QC/QA PCCP in accordance with section 500 of the INDOT Standard Specifications.
- Four temperature sensors

GENERAL INFORMATION

The existing station location has been selected and coordinated with the designers of this project. No changes may be made without the express authorization of the RE.

All materials and equipment furnished under this specifications shall be new and of first quality, of the latest design and free from defects in material and/or poor workmanship.

All like pieces of equipment and materials shall be of the same type and manufacturer in order to minimize the requirement for training, the need for spare parts, and to assure uniformity, interchangeability of components, single responsibility and satisfactory service.

The Contractor shall ensure physical compatibility between all required electronic components and the R cabinet to be located at each wim station. The Contractor shall tailor each R cabinet (install terminal strips, adjust shelving, etc.) to properly contain all electronic equipment, including the modem and protective devices per the equipment manufacturer's recommendations.

Any item(s) not covered by this specification, but which is found to be necessary to properly complete the project, shall be considered incidental and shall be included in the bid price. The Contractor shall ensure that adequate material, equipment, parts and supplies are provided.

Upon acceptance by the resident engineer and the Indiana Department of Transportation, Program Development Division all material and equipment provided per this specification shall become the property of INDOT. Spare equipment in the wim station specification shall be delivered to INDOT at the following address:

Lowell Basey
Program Development Division
6400 East 30th Street, Suite A
Indianapolis, IN 46219
Phone: 317-591-5262
FAX: 317-591-5230
Email: lbasey@indot.state.in.us

Questions concerning this specification and plans should be directed to the RE and through the RE to:

Donn Klepinger
Program Development Division
6400 East 30th Street, Suite A
Indianapolis, IN 46219
Phone 317-591-5264
FAX 317-591-5230
Email: dklepinger@indot.state.in.us

The Contractor shall ensure handholes, detector housings, sensors, and sensor lead saw slots are not situated closer than 0.609 m (2 ft) either side of a D-1 contraction joint.

All transverse sensor lead saw slots crossing travel lane pavements shall be straight, true, and perpendicular to the roadway as shown on the plans. Angled sensor lead saw cuts to detector housings shall only be permitted on median and shoulder pavement panels.

The Contractor shall not install wim equipment, Single Load Cell Sensors, or piezo sensors until proper training from the wim system vendor has been provided unless a qualified representative for the wim system manufacturer is on site to ensure proper installation of the system components. This training shall include and not be limited to the manufacturer's approved procedures for site development and equipment installation. In the event equipment or sensors are installed prior to this training or without a qualified representative on site, The Contractor shall replace any necessary pavement, equipment and/or sensors at no additional cost.

WIM STATION UTILITIES

The Contractor shall arrange for electric service to be connected at the wim station. Telephone service shall be coordinated and arranged through Donn Klepinger of INDOT at the above address. It shall be the Contractor's responsibility to notify INDOT when the utility pole is in place and ready for connection of telephone lines.

Fees for the connection of utility services shall be included in the contract unit price for each wim station, 10 lane slc.

Monthly utility bills shall be the responsibility of the Program Development Division and shall be billed to the following address:

Pam Polston, Administrative Manager
Indiana Department of Transportation
Room IGCN901
100 N. Senate Ave
Indianapolis, IN 46204

SLC SCALE SHOP DRAWINGS

The Contractor shall provide six copies of the wim system manufacturer's shop drawings or brochures or both showing slc scale installation details to the RE for approval prior to beginning work at the wim station. The RE shall retain two copies for his use, two copies shall be sent to INDOT Program Development Division for review (Attn: Donn Klepinger at the above address), and the RE will distribute the remaining two copies. The RE will review the drawings or brochures or both, and either indicate approval subject to required changes, or return them to the Contractor for re-submittal. These items shall not be ordered or installed until shop drawings have been approved. Some shop plans, etc. may require plan revisions or adjustments or both to the contract price. Program Development Division will retain the two copies of the approved submittals. The RE will file one copy of all shop drawings and brochures as a part of the "as built" plans.

BASIS OF PAYMENT

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana). This work shall not require individual item measurement.

PAVEMENT SMOOTHNESS

Prior to wim Sensor installation during each construction stage, but after the pavement for the current stage is in place at the proposed location of the wim station, the Contractor shall test and verify pavement smoothness meets or exceeds the surface smoothness specifications as described in Section 6.1.5 of ASTM E1318-02 included with this special provision.

The Contractor shall document the procedure and test process used for this testing. Two copies of the summary along with the test results shall be provided. One copy shall be submitted to the RE and the other shall be transmitted to Donn Klepinger of INDOT at the above address.

In the event pavement smoothness testing does not comply with the ASTM recommended surface smoothness specifications, the Contractor shall take necessary corrective action to bring the pavement within tolerances of the ASTM surface smoothness guidelines.

Installation of wim system sensors shall not be initiated in each stage of construction until the RE is satisfied pavement smoothness complies with Section 6.1.5 of ASTM E1318-02.

CALIBRATION AND ACCURACY

Upon completion of all work at the wim station, the Contractor shall perform scale calibration in each lane of the wim station. This calibration procedure shall require a five-axle tractor-trailer with air ride suspension loaded with a non shifting load at near legal gross weight limit with a minimum weight of 75,000 pounds.

Prior to the start of calibration, the contractor shall have the truck weighed at a location with a certified scale to obtain individual single axle (i.e. steering axle, etc.) and grouped axle (i.e. tandem, tri-axle, etc.) weights for every axle/group of axles on the vehicle, as well as the overall vehicle gross weight. These weights shall be provided to the person performing the calibration so the actual weight of the vehicle is known prior to the start of calibration.

The truck shall be required to make a minimum of 15 passes over each lane to ensure that each lane is properly calibrated.

Upon completion of the calibration procedure, the contractor shall submit a summary of the calibration process to the RE, and to Donn Klepinger of INDOT, showing the weight of the truck from the certified scales, and the weight the system indicated each time the truck crossed over the scales. This summary shall include at minimum the last ten passes of the truck for each lane. The Contractor shall include in this summary the final ten passes of the 15 required passes in each lane previously mentioned, or the final ten passes for each lane, in the event more than 10 passes are required for calibration of a lane.

Utilizing two (2) Single Load Cell Scales in each lane, the system shall meet the following accuracy criteria:

	Mean Error	Standard Deviation
Steering Axles	+/- 3%	10%
Single Axles	+/- 3%	10%
Tandem Axles	+/- 3%	10%
Gross Vehicle Weight	+/- 2%	8%
Axle Spacing	+/- 2 in.	3 in.
Vehicle Length	+/- 12 in.	18 in.
Speed	+/- 1 MPH	2 MPH

The above accuracy specifications are to be based on a minimum sample of 10 vehicle passes, loaded to within 93 % of the legal allowable limit. Vehicle passes which traverse the scale with more than a 10 % speed variation shall not be considered. The accuracy will be based on a one standard deviation confidence level. This assumes that the errors are normally distributed, and subsequently, 68% of all samples fall within the above quoted limits.

In addition to the previous accuracy specifications, the system shall meet or exceed the requirements of ASTM E1318-02 for a Type II WIM System.

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

PREVENTATIVE MAINTENANCE

The recommended service interval for slc scales is every six months. Upon completion of stage 3 and removal of final stage temporary pavement markings, the contractor shall notify Donn Klepinger of INDOT that lane restrictions are removed in the event a preventative maintenance is required. It should be noted that it is the Contractor’s responsibility to ensure that scale maintenance is regularly performed and kept current throughout the contract period in the event that the contract overruns scheduled phase completion dates or the final completion date or both.

INDOT'S PROGRAM DEVELOPMENT FINAL ACCEPTANCE CHECK

After the Contractor has notified the RE that all work at the wim station has been completed, utilities have been connected, and the site has been calibrated, then, INDOT's Program Development Division shall schedule technicians to perform a thorough site inspection/operation test within ten (10) working days. Noted discrepancies, if any, will be reported to the RE and the Contractor shall correct these discrepancies before the site is accepted. It shall be the Contractor's responsibility to notify both the RE and Donn Klepinger of INDOT when all work is completed at the wim station to have the final acceptance check performed.

VENDER INFORMATION

The wim system and equipment provided per this specification shall be subject to IDOT and INDOT approval. Listed below are manufacturers/vendors who have previously provided and demonstrated equipment that is suitable for specified purposes. Other vendors do exist and are able to provide equivalent products. Appropriate equipment manufactured by other companies may also be available.

Sharon Keen Taylor (modems)
Ask Us
8530 Depot Drive
Indianapolis, IN 46217
Phone 317-865-3506
FAX 317-859-3688

Mark Okus (surge protection devices)
EDCO Incorporated of Florida
1805 NE 19th Avenue
P.O. Box 1778
Ocala, FL 34470
Phone 800-648-4076
FAX 352-867-1237

(WIM system, R cabinets/panels)
International Road Dynamics
702 – 43rd Street East
Saskatoon, Saskatchewan
Canada S7K 3T9
Phone: 306-653-6600
FAX: 306-242-5599

Bill Morris (RoadTrax BL class I piezos)
Measurement Specialties Corp (MSI)
1000 Lucas Way
Hampton, VA 23666
Phone: 757-766-4474
FAX: 757-766-4297

Mark Fayta
IRD/Pat America (piezo grout)
2402 Spring Ridge Drive
Suite E
Spring Grove, IL 60081
Phone: 815-675-1430
FAX: 815-675-1530

ELECTRONIC WIM EQUIPMENT

1.1 WIM ELECTRONICS

(A) DESCRIPTION:

The Contractor shall provide four IRD 1068 or equivalent Wim electronics.

(B) MATERIALS AND/OR EQUIPMENT:

1) PHYSICAL REQUIREMENTS: Each wim recorder shall be fully encased in a rigid, protective housing. Front and rear panels of “rack type” recorders may be included to complete the requirements of this specification.

(a) The housing shall effectively prevent foreign objects, including dust, dirt, rain, snow, vermin and insects, from gaining access to the interior of the recorder.

(b) This housing shall provide separation of circuit boards and other components in such a manner that electronic integrity is maintained.

(c) This housing shall be capable of protecting the electronics contained therein from physical damage during periods of transport.

(d) This housing shall provide maintenance technicians easy access to internal components for testing, maintenance, and repairs performed in the field.

(e) The requirement for each recorder to be fully encased does not preclude cooling vents as an integral part of case construction.

2) WIM ELECTRONICS POWER SOURCE: The Wim electronics and monitor shall operate from 120 VAC 60 Hz. In addition, the Contractor shall provide one uninterruptible Power source (UPS) powered by 120 VAC 60 Hz for backup power per each wim electronics provided. The UPS shall be as described below.

3) SENSOR INPUTS: Each wim electronics shall be equipped with sufficient cards and connectors to allow a minimum of six slc scales, six loop detectors, and three class I piezos to be connected to each recorder.

4) DATA STORAGE: Each wim recorder provided shall include a minimum of one 40.0 Gigabyte internal disk drive for data storage.

5) DATA TRANSFER: Stored data shall be transmittable …

(a) via a modem and single, standard communication line to multiple remote computers without interrupting the file currently being recorded.

(b) via both automatic and manual polling features.

(c) both individually and in batch mode.

(d) at the fastest available speed. Modems shall detect and automatically adjust to the recorder baud rate.

(e) via floppy diskette by an on-site technician at the wim station.

(f) via direct connect to a notebook computer on-site.

6) SELF DIAGNOSIS AND AUTOMATED MALFUNCTION WARNING: Each wim electronics shall have self-diagnostic capabilities. These capabilities shall be usable locally by technicians during on-site inspections and shall be visible in any lighting condition. Self-diagnostics shall include, but not be limited to:

(a) Loop Detector on/off indication

(b) Invalid measurement flag in the data file to alert the analyst of errors associated with any vehicle being recorded.

7) OPERATING SYSTEM: The operating system shall be MS-DOS 6.22 or later. The Contractor shall provide one original copy of the Wim electronics operating system, including installation disks and manuals for each Wim electronics provided by this specification.

8) MEMORY: Each wim recorder shall have a minimum of 128 megabytes of RAM.

9) PERIPHERALS: Each wim recorder shall have a minimum of one category 5 RJ-45 modular interface jack, two asynchronous RS-232C serial ports, one parallel centronics interface, one 3.5 in. 1.44 megabyte floppy disk drive, and one CD-ROM drive.

10) DISPLAY INTERFACE: The color monitor shall interface to the wim recorder by a 15 pin VGA connector.

11) MANUALS: One copy of the following manuals shall be provided for each Wim electronics provided:

(a) Operating or users manual

(b) Software manual

(c) Service or technical manual

12) SOFTWARE: A Windows XP Compatible Version of Software shall be provided that permits autopolling of data for a minimum of 100 wim stations. In the event that a Windows Version of software is unavailable, then software capable of operating within the Windows XP environment shall be provided and should a Windows XP version of software become available within the warranty period, it shall be provided at no additional cost to INDOT.
This software shall also provide reporting capabilities from stored databases as well as allow real time vehicle passage viewing of raw vehicle records.

Raw vehicle records shall include the following data elements:

- Site Identification
- Classification
- Time and Date of Passage
- Weight of all Axles or Axle Groups
- Lane Number
- Code for Invalid Measurement
- Vehicle Sequence Number
- Optional Graphic Configuration
- Vehicle Speed
- Equivalent Single Axle Load ESAL value

While connected to the site system via a telephone link, the user shall be able to perform at minimum the following tasks:

- Real time vehicle viewing selectable by lane (with optional graphical output)
- Resetting of the system clock (including date)
- Monitor system memory in terms of storage remaining
- Setup and initiate the generation of summary reports on data previously collected by the system
- View generated summary reports
- Generate and view error reports and status reports, including time down, system access, autocalibration, site configuration parameters, history and improperly completed records
- Transfer selected raw data files or generated reports from the site system to the office host computer
- Purge old data files from the system

The real time viewing option shall include both graphical and tabular display formats as follows:

<u>NORMAL DISPLAY FORMAT WITH GRAPHICAL DISPLAY MODE (Metric):</u>

4) LANE #1 TYPE 12 GVW 39.1 tonnes LENGTH 2284 cm
18-K ESAL 1.681 SPEED 104 kph Sat Jul 1 15:45:40 1989

```
<----------------------------------- 21.3 -------------------------------->
o                    o      o    o        o    o           o
5.9                      5.4      5.6   5.7      5.1  6.3           5.1
```

The length from axle to axle is shown on a linear scale with axle weights plotted below the scale line. The report operates in a scroll mode.

NORMAL DISPLAY FORMAT WITH TEXT DISPLAY MODE (Metric):

```
4) LANE #1   TYPE 12   GVW 39.1 tonnes   LENGTH 2284 cm
18-K ESAL 1.681 SPEED 104 kph Sat Jul 1 15:45:40 1989
UNIT SEPARATION WEIGHT
                 (cm)          (kg)
1                                    5082
2                438                 6325
3                169                 5133
4                552                 5713
5                185                 5562
6                323                 5408
7                460                 5905
```

The system shall be capable of generating output in the FHWA's TMG Card Format.

The operator shall be provided with the capability to define and generate a wide range of user-defined reports and tables.

The site system and the office computer running the office analysis software shall be able to perform a minimum of the following report generation options:

Summary reports based on user input values of:

- Daily, Weekly, Monthly, or Continuous Summaries in hourly increments by:
    - Vehicle Speed (Minimum 16 User Defined Bins)
    - Classification (Minimum 24 User Defined Classes)
    - Equivalent Single Axle Load (ESAL) Value by table or formula
- Daily, Weekly, Monthly, or Continuous Weight Summaries (both violating and non-violating) per vehicle class for:
    - Steering Axles
    - Single Axles
    - Tandem Axles
    - Tridem Axles
    - Quad Axles

- Gross Vehicle Weights
- ERROR Reports
- Autocalibration Report
- Site History Report
- Calibration History Report

(C) METHOD OF MEASUREMENT:

Each wim electronics provided shall consist of one 1068 IRD or equivalent wim recorder with internal power supply, one 104 key PS/2 keyboard, and one SVGA 15 in. or larger CRT color monitor.

Highway sensor interfaces and inputs on each recorder shall be provided for six slc inputs, four class I piezo inputs, and eight loop detector inputs.

All items described under the MATERIALS AND/OR EQUIPMENT sub-title in this section shall also be included with the Lump Sum item for WIM Station, 10 Lane SLC (Indiana).

(D) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

1.2 MODEM

(A) DESCRIPTION:

The Contractor shall provide four Multi-Tech Systems Model MT5656 ZDX or equivalent modems.

(B) MATERIALS AND/OR EQUIPMENT:

1) PHYSICAL REQUIREMENTS: Each modem shall be designed for external use and shall be fully encased in a rigid and protective housing.

This housing shall be capable of protecting the electronics contained therein from physical damage during periods of transport.

This housing shall effectively prevent foreign objects, including dust, dirt, rain, snow, vermin and insects, from gaining access to the interior of the modem.

Each modem shall have viewable indicators for the following functions:

- Transmit Data
- Receive Data

- Carrier Detect
- Off Hook
- Terminal Ready
- Power on/off

2) MODEM POWER SOURCE: Each modem provided shall be provided with an AC adapter power unit which shall plug into a standard 120 VAC outlet. Provision for back-up power for modems shall not be required.

3) SPEED: Each modem provided shall be a V.92 V.42bis 56 kilobytes per second Data/FAX Modem.

4) CABLES AND CONNECTORS: The modem shall be supplied with 1 external telephone cable which will plug into a standard RJ-11 modular telephone jack.

The modem shall have one female DB 25 (25 pin D-Sub) Serial RS-232 connector.

The modem shall have two RJ-11 modular female jacks, one for the external telephone cable/telephone line input, and one for an external telephone/handset.

(C) METHOD OF MEASUREMENT

This work will not be measured for separately but shall be considered as part of the Lump Sum item for the WIM Station, 10 Lane SLC (Indiana) which shall include the required modem with AC adapter and external telephone cable to be provided and installed.

(D) BASIS OF PAYMENT

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

1.3 UNINTERRUPTIBLE POWER SOURCE (UPS)

(a) DESCRIPTION

The Contractor shall provide four, one per each Wim electronics, Liebert GXT2-700RT120, 490 Watt, 120 VAC or equivalent uninterruptible power sources (UPS) for backup power.

(b) MATERIALS AND/OR EQUIPMENT

1. The UPS shall have a minimum power rating of 700 VA/490 W at 120VAC 60 Hz.

2. INPUT PROTECTION: The UPS shall have built-in protection against undervoltage, overcurrent, and overvoltage conditions including low-energy lightning surges, introduced on the primary AC source. The UPS shall sustain input surges without damage per criteria listed in IEEE 587 CAT. A & B. The UPS shall have input fuses or circuit breakers.

3. ON-LINE BATTERY TEST: The UPS shall be provided with an automatic battery test feature via a windows based PC configuration program (to be included with each UPS) which can be disabled or configured to operate every 7, 14, 21, or 28 days. The UPS shall display a warning message to indicate the internal batteries need replaced in the event the battery fails the test.

(c) METHOD OF MEASUREMENT

This work will not be measured for separately but will be considered as part of the Lump Sum item WIM Station, 10 Lane SLC (Indiana)

(d) BASIS OF PAYMENT

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

WEIGH-IN-MOTION (WIM) STATION CONSTRUCTION DETAILS

2.1 GENERAL INFORMATION

This section describes the specific installation instructions for the slc wim station. Revisions, deletions and additions to INDOT's Standard Specifications found in this section apply only to work performed on or at wim stations.

Applicable INDOT standard drawing numbers have been listed behind the heading title of this section for reference. Applicable standard drawings have been included as sheets of the plans.

2.2 SITE DEFINITION

Proposed wim station(s) covered by this specification shall each be a ten lane slc wim station. Detailed site drawings are included as part of the plans.

The following is a description of a ten lane slc wim station with more specific details and information provided in following sections for each of the items and work required:

The wim station shall have both electrical and telephone service points located on a wood utility pole. Telephone and electric utilities shall be provided to each “R” cabinet through underground 50 mm (2 in.) conduits as shown on the plans. The Contractor shall install two separate 50 mm (2 in.) galvanized steel conduits connecting the utility service points to the eastbound cabinet; one conduit shall be solely for the electrical service and the other shall be for the four required telephones lines. Two telephone lines shall terminate in the eastbound cabinet and the other two shall terminate in the westbound cabinet.

The Contractor shall install two 50 mm (2 in.) PVC conduits. These conduits shall completely transverse the roadway from the eastbound cabinet to the westbound cabinet to provide raceways for utility services to the westbound cabinet. One conduit shall be solely used for the electric service, and the other shall be solely used for the telephone service to the westbound cabinet. Both of these conduits for utility services routed to the westbound R cabinet shall pass through four wim station handholes as shown on the plans.

Each slc wim station provided by this specification shall have twelve detector housings and eight wim station handholes as shown on the plans. Two handholes shall be installed on either side of the median barrier wall and two handholes shall be located on each outside shoulder as shown on the plans. Four handholes shall be inter-connected by two 50 mm (2 in.) and two 76 mm (3 in.) PVC conduits under the pavement as shown on the plans. The remaining four handholes shall be connected to the four previously described handholes by 76 mm (3 in.) PVC Conduits under the medians and shoulders as shown on the plans

Each travel lane of the wim station shall have two 1.82 m (6 ft) by 1.82 m (6 ft) square loop detectors placed in each lane of the roadway with two slc scales and one 3.35 m (11 ft) class I piezo located between the trailing edge of the leading loop detector and the leading edge of the trailing loop detector as shown on the plans. These piezos shall be installed, situated and positioned from D-1 contraction joints as shown on the plans.

Loop detector lead wires and piezo coaxial leads shall pass from the sensors in the roadway to a detector dousing located off the roadway via saw slots as shown on the plans. Twelve detector housings shall be installed, situated and positioned from D-1 contraction joints only as shown on the plans.

Detector housings shall be as shown on Standard Drawing 805-SGDH-02 and installed as shown on the detector housing installation sheet of the plans. Detector housings shall be 0.65 m (2 ft) by 0.85 m (2.5 ft) in size.

Four temperature sensors shall be installed in the outside shoulders (two on the eastbound shoulder and the other two on the westbound shoulder) as shown on the plans providing shoulder pavement is the same as roadway pavement. In the event the pavements are different, temperature sensors shall

be installed in the travel lane nearest the outside shoulder of the roadway. Final placement of the temperature sensor shall be determined by the RE and based on the wim system manufacturer's recommendations.

2.3 SITE LOCATIONS

One slc wim station is proposed by this specification. It is located as follows:

Road	Location Description	Cabinet Side	Station
I-80 / I-94	Located approximately 0.25 miles east of the IN / IL State Line	Both Eastbound and Westbound	8 + 337

2.4 R CABINETS AND FOUNDATION (805-SGCF-01)

(a) DESCRIPTION:

The Contractor shall provide and install two R cabinets with foundations and concrete pads for housing the wim electronic equipment previously described. These cabinets shall be located in the bumpout for wim system located at sta. 8 + 336.972 as shown on the plans.

(b) MATERIALS AND/OR EQUIPMENT:

1. Each wim cabinet provided shall be an R type signal controller cabinet. R cabinets are comparable in width and depth to P-1 cabinets and both utilize the P-1 foundation. Cabinets shall be in accordance with Standard Specifications in section 922.01 of INDOT's specifications.

2. The Contractor shall provide a book style maintenance log in each wim cabinet. These logbooks shall be hard bound in water repellant material and shall contain no less than fifty pages. Each page shall be lined horizontally on both sides and shall be adequate for notes entered by technicians visiting the site for repairs and/or inventory. Each logbook shall measure approximately 140 mm by 200 mm when closed. One logbook shall be placed in each ATR "M" Type Controller Cabinet. Two maintenance log books shall be provided..

3. Each R cabinet shall have one IRD SQ-D power panel (part number 121136) installed in each R cabinet to provide surge protection for the wim electronics and ensure adequate protection and grounding is provided to maximize the efficiency of the data from the wim station. Each R cabinet shall have two IRD ground/surge protection panels (part number 121135) or equivalent with provision and surge protection for two telephone lines.

4. Each R cabinet shall have two IRD TPnl 500 mm (20 in.) by 500 mm (20 in.) 8L 4SLC TS IB6 lightning protection panels (part number 121012). These two panels combined shall provide sufficient terminal strips and connections for a minimum of

ten slc scales, ten loop detectors, and five class I piezos in each cabinet. Each panel shall include cable assemblies and terminals for interfacing six loop detectors and six slc scales to each wim electronics. Class I piezos shall be connected directly to the piezo input cards using BNC connectors.

5. Each R cabinet shall have one IRD TPnl 200 mm (8in.) by 200 mm (10in.) Cbnt GND w/Phoneline Surge Protector protection panels (part number 121135) with two RJ-11 telephone jacks and two Edco FAS-TEL 200T or equivalent telephone line surge protection devices.

6. In addition to the built-in #2 Corbin lock on the cabinet door, each cabinet shall have provision for a padlock on the outside of the cabinet. Two #2 Corbin lock keys shall be provided with each R cabinet covered by this specification. These keys shall be left in the R type cabinet.

7. Edco SRA 6LC or equivalent surge protection devices shall be installed in each R cabinet for each loop detector to protect the traffic recorder from damage caused by lightning strikes originating on any loop detector imbedded in the highway. Twenty of these devices shall be required for the wim station.

8. Ten International Road Dynamic Single Load Cell lightening protection cards shall be provided in each R cabinet provided.

(c) CONSTRUCTION REQUIREMENTS:

1. The Contractor shall install one P-1 foundation with concrete pad for each R cabinet provided. The concrete pad shall be 1.440 m wide by 2.340 m front to back by 140 mm (6 in.) in depth. The P-1 foundation inside the concrete pad shall measure 1400 mm in width by 800 mm front to back by 900 mm in depth with a maximum height of 150 mm above grade of the concrete pad.

2. The back side of the P-1 foundation (the side located nearest the sound wall) shall be positioned 305 mm (1 ft) plus/minus away from the retaining wall.

3. Each R cabinet shall be positioned so the door is fully operable without interference from obstructions (fences, trees, ground, etc.).

4. Each wim cabinet shall be configured the same. Installation and positioning of all equipment contained therein shall be consistent from cabinet to cabinet.

5. Proper circuit breaker size and cabinet wiring layout shall be determined by the equipment manufacturer.

6. Electrical wiring and grounding shall be in done in accordance with the NEC.

(d) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

The Standard Specifications are revised as follows:

SECTION 922, DELETE LINES 519 THROUGH 528

SECTION 922, BEGIN LINE 530, DELETE AND INSERT AS FOLLOWS:

The cabinet shall contain ~~one~~ *two* duplex convenience outlet*s* and a switch controlled lamp receptacle. The convenience outlet*s* shall be duplex, three prong, NEMA Type 5-15R grounding outlet in accordance with NEMA WD-6, with ground-fault circuit interruption as defined by the National Electrical Code. These units shall be protected with a 15 amp ~~cartridge fuse~~ *circuit breaker* ~~wired ahead of the multi-breakers~~ *on a branch circuit originating in the disconnect box on the power panel*.

SECTION 922, DELETE LINES 559 THROUGH 621

SECTION 922, BEGIN LINE 803, DELETE AND INSERT AS FOLLOWS:

4. ~~P-1~~ *R* Cabinet

The ~~P-1~~ *R* cabinet shall be ~~ground~~ mounted on a concrete foundation at locations and dimensions as shown on the plans with anchor bolts in accordance with 922.01(g)3. The ~~P-1~~ *R* cabinet shall ~~house an 8-phase traffic-actuated solid-state digital controller and shall~~ have two adjustable *double width* shelves with the first shelf located ~~20~~ *18* in. (~~508~~ *457* mm) below the top of the cabinet and the second located ~~7~~ *20* in. (~~178~~ *508* mm) below the first shelf. The cabinet shall be 44 in. (1118 mm) wide, ~~52~~ *77* in. (~~1321~~ *1956* mm) high, and 24 in. (610 mm) deep with a tolerance of ± 3 in. (75 mm) in all dimensions. Maximum exterior dimensions shall be 34 in. (864 mm) deep, 47 in. (1194 mm) wide, and ~~63~~ *78* in. (~~1600~~ *1981* mm) high.

The cabinet shall be in accordance with applicable provisions of 922.01(g)1 and 922.01(g)4. ~~It shall have one type 12 conflict monitor which shall be in accordance with NEMA Standards TS-1, Part 6.~~

~~Two 1.0 microfarad 600 volt, 10% capacitors shall be installed on the output field terminal strip for the left turn phases which are normally phases 1, 3, 5, and 7. One capacitor shall be connected from the green output terminal to AC negative terminal on each phase, and the other capacitor shall be connected from the yellow output terminal to 820 AC negative terminal on each phase.~~

The cabinet shall have a vent with a uniform 1 in (25 mm) thick filter which may be of any of the following sizes: 16 by 25 in. (405 by 635 mm); 15 by 20 in. (380 by 510 mm); or 16 by 20 in. (405 by 510 mm). ~~It shall contain 40 spare terminals~~.

In addition to the thermostatically controlled vent fan, each cabinet shall have a thermostatically controlled heater. The adjustment range of the thermostat shall be labeled in degrees Fahrenheit and shall include settings for 40°F to 80°F (4°C to 26°C).

2.5 GROUND RODS AND CONNECTIONS (805-SGGR-01 - 805-SGGR-03)

(a) DESCRIPTION:

The Contractor shall provide cabinet and electrical service point grounding as shown in Standard Drawings 805-SGGR-01, 805-SGGR-02, and 805-SGGR-03.

(b) MATERIALS AND/OR EQUIPMENT:

Grounding materials shall include but not be limited to 6 AWG solid bare copper wire, ground rod/electrodes measuring 13 mm (0.5 in) in diameter by 2.4 m (8 ft) long copper weld ground electrodes, threaded grounding bushings, and grounding lugs.

(c) CONSTRUCTION REQUIREMENTS:

1. Each electric utility service point and each cabinet shall be grounded as shown in the Standard Drawings 805-SGGR-01, 805-SGGR-02, and 805-SGGR-03.

2. All grounding connections shall be done in accordance with Standard Specifications in Sections 805.06 and 807.12 of the Standard Specifications and shall comply with requirements in article 250 of the NEC.

3. The Contractor shall ensure that each R cabinet is appropriately connected to the existing station grounding in accordance with Standard Specifications.

(d) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

2.6 WIM HANDHOLE (805-SGCF-04)

(a) DESCRIPTION:

The Contractor shall provide eight wim station handholes.

(b) MATERIALS AND/OR EQUIPMENT:

1. Wim station handhole tiles shall each consist of a class 3 reinforced concrete pipe and meet or exceed Standard Specifications in section 907.02.

2. Each wim station handhole flange, frame, and cover shall be a Neenah Manhole flange, frame, and solid lid assembly R-1672 or equivalent.

3. The lid shall be the solid lid with an ultimate load rating of 93, 600 lbs and a deflection of 0.098 inch. This lid shall have Neenah type F or equivalent underside hooks to secure the lid to the frame and flange assembly.

4. The lid shall have a cast in place legend which shall read “ATR/DCS/WIM SYSTEM” as shown on the plans.

5. Composite Concrete Junction Boxes shall not be utilized at wim stations.

(c) CONSTRUCTION REQUIREMENTS:

1. Wim station handholes shall be installed as shown in the wim station handhole details of the plans.

2. The frame shall be bolted to the flange with four 13.7 mm (0.5 in.) by 13 by 76 mm (3 in.) stainless steel bolts as shown on the wim station handhole details of the plans.

3. 76 mm (3 in) conduits shall enter handholes 150 mm (6 in) plus/minus below 50 mm (2 in) conduits.

4. In addition to other conduits, one additional 100 mm (4 in) or larger PVC conduit shall be installed at or below the level of the 76 mm (3 in) conduit near the bottom of each handhole tile. This 100 mm (4 in) or larger PVC conduit shall connect to the nearest Catch Basin in order to provide drainage for the handhole tile. The Contractor shall pay careful attention to the attitude of this conduit to ensure adequate slope for drainage is provided.

(d) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

The Standard Specifications are revised as follows:

SECTION 910 BEGIN LINE 357, DELETE AND INSERT AS FOLLOWS:

910.05 Castings

The casting design shall ~~be proof loaded to 40,000 (178 kN) in accordance with Federal Specification FF-F-621~~ *be a solid lid with an ultimate load rating of 93, 600 lbs and a deflection of 0.098 inch*. Castings shall be in accordance with the plan dimensions and to the following requirements for the designated materials. A certified inspection report shall be submitted by the manufacturer with each shipment of castings, except as otherwise provided herein. Inspection and testing shall be done by the manufacturer. The certified inspection report shall list the casting date, casting number, and the type of material, such as gray iron, ductile iron, etc. It shall state that inspection and testing has been preformed, that all parts shipped meet the pertinent specification requirements, and that all component parts fit. The supporting test

results, including proof load data, shall be retained and be available on request for a period of seven years. All castings shall have the manufacturer's identification and the date of manufacture cast on an exposed surface. Acceptance of castings will be based on the certified inspection report, visual inspection, and check measurements.

SECTION 922 BEGIN LINE 1765, DELETE AND INSERT AS FOLLOWS:

922.08 Castings for Handholes

The ~~ring and cover~~ *flange, frame, and lid assembly* for handholes shall be in accordance with 910.05(b).

2.7 DETECTOR HOUSINGS (805-SGDH-01 & 805-SGDH-02)

(a) DESCRIPTION:

12 Detector housings shall be installed at each wim site and shall connect to wim station handholes as shown on the plans. Three Detector Housings shall be required on each outside shoulder and median.

(b) MATERIALS AND/OR EQUIPMENT:

Detector housings shall meet or exceed Standard Specifications in section 922.11.

(c) CONSTRUCTION REQUIREMENTS:

Detector housings shown in standard drawing 805-SGDH-02 of the plans shall be installed as shown on the detector housing installation details sheet of the plans and described in Standard Specification in section 805.08. Placement shall be as shown in the plans and shall not be situated closer than 0.65 m (two ft) from any D-1 contraction joint as shown on the plans. The RE shall determine final placement.

(d) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

2.8 100 MM (2 IN.) PVC CONDUIT

(a) DESCRIPTION:

The contractor shall provide and install 100 mm (4 in.) PVC conduits as shown on the plans for wim handhole drainage.

(b) MATERIALS AND/OR EQUIPMENT:

1. It shall be the Contractor's responsibility to determine quantities and materials required

2. 100 mm (4 in) PVC conduit shall meet or exceed Standard Specifications in section 922.10.

(c) CONSTRUCTION REQUIREMENTS:

1. 100 mm (4 in) PVC Conduit shall be installed to connect wim handholes to the nearest catch basin or underdrain as shown on the plans.

2. The depth of 100 mm (4 in.) conduit shall be in accordance with section 805.12 of the Standard Specifications.

3. Extreme caution is to be utilized to avoid damaging subsurface drainage systems while installing this conduit.

(d) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

2.9 76 MM (3 IN.) PVC CONDUIT

(a) DESCRIPTION:

The contractor shall provide and install 76 mm (3 in.) PVC conduits as shown on the plans.

(b) MATERIALS AND/OR EQUIPMENT:

1. It shall be the Contractor’s responsibility to determine quantities and materials required.

2. 76 mm (3 in) PVC conduit shall meet or exceed Standard Specifications in section 922.10.

3. 76 mm (3 in) high density polyethylene EHMW pipe and fittings may be utilized in place of 76 mm (3 in) inch PVC conduit and fittings.

(c) CONSTRUCTION REQUIREMENTS:

1. 76 mm (3 in) PVC conduits shall be installed to interconnect handholes to each other and to connect handholes to the R cabinet foundations as shown on the plans.

2. The depth of 76 mm (3 in.) conduit shall be in accordance with section 805.12 of the Standard Specifications.

3. Extreme caution is to be utilized to avoid disturbing subsurface drainage systems while installing this conduit.

(d) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

2.10 50 MM (2 IN.) PVC CONDUIT

(a) DESCRIPTION:

The contractor shall provide and install 50 mm (2 in.) PVC conduits as shown on the plans.

(b) MATERIALS AND/OR EQUIPMENT:

1. It shall be the Contractor’s responsibility to determine quantities and materials required.

2. 50 mm (2 in) PVC conduit shall meet or exceed Standard Specifications in section 922.10.

3. 50 mm (3 in) high density polyethylene EHMW pipe and fittings may be utilized in place of 50 mm (2 in) inch PVC conduit and fittings.

(c) CONSTRUCTION REQUIREMENTS:

1. 50 mm (2 in) PVC Conduit shall be installed to connect detector housings to handholes as shown on the plans.

2. The depth of 50 mm (2 in.) conduit shall be in accordance with section 805.12 of the Standard Specifications.

3. Extreme caution is to be utilized to avoid disturbing subsurface drainage systems while installing this conduit.

(d) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

2.11 50 MM (2 IN.) GALVANIZED STEEL CONDUIT

(a) DESCRIPTION:

The contractor shall provide and install 50 mm (2 in.) galvanized steel conduits as shown on the plans.

(b) MATERIAL AND/OR EQUIPMENT:

1. It shall be the Contractor's responsibility to determine quantities and materials required.

2. 50 mm (2 in) galvanized steel conduits shall meet or exceed Standard Specifications in section 922.10.

(c) CONSTRUCTION DETAILS:

1. Underground depth of 50 mm (2 in.) galvanized steel conduit shall be in accordance with 805.11 of Standard Specifications.

2. Two separate conduit runs of 50 mm (2 in) galvanized steel conduit shall be utilized to connect the eastbound R cabinet to the electric and telephone service points on the wood utility pole. These two conduits shall exit the eastbound R cabinet foundation, be routed through existing sleeves in the retaining wall, and terminate at utility service points on the wood pole. One conduit is solely for electric service and shall terminate at the electrical service panel. The other conduit is for telephone service and shall terminate at the telephone riser.

3. One additional 50 mm (2 in) Galvanized steel conduit shall be installed from the eastbound R cabinet foundation, pass through an existing sleeve in the retaining wall, and be capped off for future use underground and outside of the retaining wall footer. The minimum length of conduit extending out of the sleeve in the retaining wall footer shall be 254 mm (10 in.).

4. Three separate 50 mm (2 in) galvanized steel conduits shall be installed from the westbound R cabinet foundation, pass through an existing sleeve in the retaining wall, and be capped off for future use underground and outside of the retaining wall footer. The minimum length of the conduit extending out of the sleeve in the retaining wall footer shall be 254 mm (10 in.).

5. The Contractor shall exercise extreme caution to avoid disturbing subsurface drainage systems while installing this conduit. Any subsurface drainage system damaged or otherwise disturbed shall be repaired or replaced as specified by the RE.

(d) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

2.12 LOOP DETECTOR INSTALLATION

(a) DESCRIPTION:

The Contractor shall install 20, 1.82 m (6 ft) by 1.82 m (6 ft) four loop detectors with four wraps of wire as shown in the plans and described below.

(b) MATERIALS AND/OR EQUIPMENT:

1. Roadway Loop wire shall be a 1 conductor #14 AWG, 104 strands of #34 wire. The wire insulation shall be a black high density polyethylene jacket of 0.032 in. nominal thickness. Ducted wire shall not be installed into saw slots.

2. The contractor may elect to used ducted roadway loop wire as described in the Standard Specifications, however, the wire shall be removed from the duct or outer sleeve prior to installation into the saw slot.

3. Foam backer rod shall be inserted prior to sealing in accordance with INDOT's Specifications.

(c) CONSTRUCTION REQUIREMENTS:

1. Installation of loop detectors shall be performed according to section 805.09 of the Standard Specifications.

2. Loop detectors shall be spaced and situated as shown on the plans.

3. The main side lengths of the loop detector body shall be a minimum of 1.21 m (4 ft) in length as shown in the loop dimension detail on the plans. At no time shall the body of a loop detector be placed in a pavement joint or patch joint.

4. The sawing and layout of the leading edges of all loop detectors are critical. The leading edge is the first transverse cut of a loop detector which a moving vehicle in the lane crosses. These cuts shall be parallel, straight and true.

5. Saw slots shall not exceed 3/8 in. in width, excepting where loop detector leads cross over a pavement joint and then they shall not exceed 5/8 in. in width as shown in the Joint Crossing Detail of the plans.

6. Loop detector lead saw slots shall be parallel to D1 Contraction Joints the entire distance from the loop detector to the shoulder or median. Angled saw slots to the detector housing shall only be permitted only on the shoulder and median as shown on the plans.

7. Wire splices are not permitted on the loop cable at any point in the saw cuts. Loop detector wire shall be a single continuous run of wire without any splices. The only wire splices permitted are the loop detector wire to lead-in cable splices located in the detector housings.
8. Loop detector sealants shall be placed into the saw cut making a watertight seal as describe in section 922.01(e)7c of the Standard Specifications.

9. Splices are to be soldered, covered with electrical waterproofing putty such as Aqua-seal or equivalent, taped with electrical tape, and then covered with a watertight insulation material such as 3M Scotchcote as shown on the plans in the Detector Housing Loop Splice Detail. Splices shall be individually sealed so that if maintenance is required in the future, one splice may be reworked without disturbing the others.

10. Testing of loop detectors shall be performed as indicated in Section 805.09 of the standard specifications and the results shall be recorded and retained in the cabinet at each location. Loop detector inductance shall be in the rage of 95 to 250 µh when measured in the detector housing without loop detector lead-in cable.

11. Both Loop Detectors in the same lane shall measure plus or minus 25 µh of each other, or the Contractor shall replace one or both loop detectors as the RE determines is necessary. Leakage resistance shall be a minimum of 10 Mega-ohms when measured in reference to earth ground. Loop Detectors failing to meet either of these technical requirements shall be replaced without any additional cost to IDOT.

(d) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

The standard specifications are revised as follows:

SECTION 805, BEGINNING LINE 263, DELETE AND INSERT AS FOLLOWS:

MATERIALS

Loop wire shall be in accordance with 922.06(e)7b. Loop detector sealant shall be in accordance with 922.06(e)7c.

Loops shall be of a regular ~~octagon~~ *square* shape with sides of ~~2.5~~ *4* ft ~~(0.75 m)~~ *(1.21 m)* in length. An outline shall be laid out and painted where the loops shall be sawed. The loop locations shall be subject to the review and approval of the ~~District Traffic Engineer~~ *RE*. The ~~District Traffic Engineer~~ RE shall be notified 48 h prior to such field review.

The slots shall be saw-cut as shown on the plans. Slots shall be thoroughly cleaned and dried before the installation of loop wires. The specified number of turns shall be placed in the slot and gently tamped with a blunt non-metallic tool. A sash cord or backer rod shall be placed above the wire after tamping. The number, size, arrangement, and locations of loops shall be as shown on the plans. ~~Loop spacing shall be adjusted to avoid pavement joints.~~ Loop wire shall be pressed into the saw slot with a blunt non-metallic tool. Loop wire shall only be bent at angles of 120° or greater. All loops shall be wired clockwise as viewed from above. Loops shall be wired with four turns and in a series unless otherwise specified. Joints shall be overlapped such that the saw cut at the corner is full depth. The sealant shall be poured into the saw cut making a water tight seal. The splice of the loop wire and lead-in cable shall be soldered and waterproofed at the detector housing. ~~Waterproofing shall consist of the use of heat shrink tubing which has an internal coating sealant material. The heat shrink tubing shall not be heated by means of a direct flame tool. Loop wire and lead-in cable shall be tagged according to the plans and 805.07. The black lead-in wire shall be spliced to the loop wire which goes back to the field. Such wire shall be tagged as "Out/Loop (No.)". The white lead-in wire shall be spliced to the loop wire which comes in from the field. Such wire shall be tagged as "In/Loop (No.)".~~ *Splices are to be soldered, covered with electrical waterproofing putty such as Aqua-seal or equivalent material, taped with electrical tape, and then covered with a watertight insulation material such as 3M Scotchcote or equivalent material. Splices shall be individually sealed so that if maintenance is required in the future, one splice may be reworked without disturbing the others. The Loop Detector Lead-in Cable shall be clearly labeled with the loop number on both ends to identify the appropriate Loop Detector. Loop Detector numbering shall be as shown on the plans. These labels shall be attached directly to the wire 152 mm (6 in.) plus/minus of the terminal connection and the splice.*

SECTION 805, BEGINNING LINE 292, DELETE AS FOLLOWS:

TESTING

The Contractor shall meter all new loop wire detectors ~~or a new bank of loop wire detectors~~ by means of instruments capable of measuring electrical values for installed loop wires and lead-in cables. The instruments shall measure inductance in microhenries, resistance in ohms, induced A.C. voltage in volts, and leakage resistance in mega-ohms. All measuring tests shall be performed at the detector housing before the loop wire is spliced to the lead-in cable, and at the cabinet after the loop wire is spliced to the lead-in cable.

SECTION 805, BEGINNING LINE 341, DELETE AND INSERT AS FOLLOWS:

1. Inductance shall be between ~~80 and 800~~ *95 to 250* µH *when measured at the Detector Housing prior to splicing. Both Detector loops in the same lane shall measure +/- 25 µh of each other or the Contractor shall replace one or both loop detectors loops as the RE determines is necessary*. Inductance shall be determined by means of digital readout meter which drives the field loop system.

SECTION 906, DELETE LINES 46 THROUGH 67

SECTION 906, AFTER LINE 45, INSERT AS FOLLOWS:

2. Hot Poured Joint Sealant

Hot poured joint sealants shall not be used.

SECTION 907, BEGINNING LINE 1717, DELETE AND INSERT AS FOLLOWS:

b. Roadway Loop Wire

Roadway loop wire shall be 14 AWG gauge IMSA 51-7 ~~duct-loop~~ wire with polyvinyl chloride or polyethylene outer jacket of 1/4 in. (6.3 mm) diameter.

SECTION 907, BEGINNING LINE 1721, DELETE AS FOLLOWS:

c. Sealant

Prior to installing roadway loop wire in the roadway saw cuts, the saw cuts shall be cleaned in accordance with the requirements for the joint sealant to be used. After proper cleaning and installation of the loop wire, the saw cut shall be sealed with a joint sealant material in accordance with 906.02(a)1 or 906.02(a)2. The joint sealant material to be used shall be compatible with the roadway materials. If polyethylene duct loop wire is used, only sealant in accordance with 906.02(a)1 shall be used. The joint sealant material shall be installed in accordance with the applicable sealant specification. However, the joint configuration shall not apply. A copy of the sealant manufacturer's written application instructions shall be submitted to the Engineer prior to any sealant operations. ~~If the Contractor elects to use a sealant complying with 906.02(a)2, the sealant material shall be heated in a kettle or melter constructed as a double boiler with the space between the inner and outer shells filled with oil or other heat-transfer medium. This melter shall have a positive temperature control and a mechanical agitator. A backer rod shall be used for both cold applied sealants and hot poured sealants. The sealant material shall fill the saw cut as shown on the plans. All significant or objectionable surplus joint sealant on the pavement surfaces shall be promptly removed.~~

2.13 LOOP DETECTOR LEAD-IN CABLE

(a) DESCRIPTION:

The Contractor shall provide loop detector lead in cable for each loop detector. Each detector loop shall have its own separate lead-in cable extending from the splice in the detector housing to the terminal located inside the R cabinet.

(b) EQUIPMENT AND/OR MATERIALS:

Loop detector lead-in cable shall be in accordance with section 922.06(e)7a of the Standard Specifications.

(c) CONSTRUCTION REQUIREMENTS:

1. This cable shall extend continuously and without splices from the splice in the detector housing to the R cabinet. Additional splices shall not be permitted.

2. The Contractor shall terminate lead-in cables on a terminal block inside the R cabinet.

3. The Contractor shall clearly label each lead-in cable with the appropriate loop detector number as shown on the plans. These labels shall be 150 mm (6 in.) plus or minus of the terminal connection inside the cabinet.

(d) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

2.14 CLASS I PIEZO

(a) DESCRIPTION:

The Contractor shall install ten 11 feet class I piezos with one being located in each of the ten lanes as shown on the plans.

(b) MATERIALS AND/OR EQUIPMENT.

1. Class I piezos shall be Measurement Specialties Corporation RoadTrax Series BL or equivalent. The Contractor shall not use piezos that require a saw slot for installation wider than 19 mm (0.75 in.) or deeper than 19 mm (0.75 in.) or both greater than 19 mm (0.75 in.).

2. It shall be the Contractors responsibility to determine the lead length required for each piezo to reach the cabinet without splicing any additional coaxial cable to the sensor.

3. Only materials and grouts approved for use by the piezo manufacturer shall be used for installing piezos.

4. Female BNC connectors shall be provided on each piezo lead in the R cabinet.

(c) CONSTRUCTION REQUIREMENTS.

1. The Contractor shall arrange for a qualified and authorized representative to be present at the first piezo installation to train installers how to install the Piezo Sensors. Piezos shall not be installed prior to this training.

2. The Contractor shall not install piezo elements across or in pavement joints and expansion/contraction joints.

3. Piezo slot depth shall not exceed 19 mm (0.75 in.).

4. Piezo slot width shall be 19 mm (0.75 in.) and shall be saw-cut with a single pass of the blade.

5. Piezo lead saw slots traversing longitudinal pavement joints shall be perpendicular to the joint at locations with PCC pavement.

6. Piezo slots shall be saw-cut as shown on the plans. Slots shall be thoroughly cleaned and dried before the installation of piezos.

7. The Contractor shall position the end of the piezo element closest to the center of the driving lane (6 ft, 6 in.) from the inside edge of the driving lane as shown on the plans.

8. The Contractor shall not splice piezo leads. The Contractor shall ensure each piezo has sufficient coaxial lead to reach into the cabinet without splicing additional coax to the sensor.

9. The Contractor shall not use hot applied joint sealants as piezo coax insulation will melt at 80 degrees Celsius (176 degrees Fahrenheit).

10. The Contractor shall only use grouts approved by the piezo manufacturer for piezo sensor element encapsulation.

11. Piezo failures have resulted in the past from piezo grout level being flush or below pavement grade. To prevent this from occurring, the Contractor shall surround and block up the piezo slot prior to installation of the piezo grout with multiple layers of duct tape or some type of material to ensure the cured grout level is approximately ¼ inch above the surface of the surrounding road pavement.

12. Once the grout hardens, the Contractor shall grind and shape the hardened piezo grout to a convex shape with a finished height 1/8 inch to 3/16 inch as shown on the piezo cross section on the plans.

13. The Contractor shall install one female BNC connector on the end of each piezo lead for connection to the piezo card on the wim electronics. These connectors shall not be installed until the piezo lead has been routed through conduits and are in cabinet.

14. The Contractor shall clearly label each piezo lead with the piezo number shown on the plans 150 mm (6 in.) plus or minus from the terminal connection inside the cabinet. Each piezo lead shall terminate at a terminal block on the inside left side panel of the cabinet.

(d) BASIS OF PAYMENT.

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

The standard specifications are revised as follows:

SECTION 906, DELETE LINES 46 THROUGH 67

SECTION 906, AFTER LINE 45, INSERT AS FOLLOWS:

2. Hot Poured Joint Sealant

Hot poured joint sealants shall not be used.

2.15 TEMPERATURE SENSOR

(a) DESCRIPTION:

The Contractor shall provide and install four temperature sensors as shown on the plans.

(b) MATERIALS AND/OR EQUIPMENT:

Temperature sensors shall be obtained from the Wim electronics manufacturer.

(c) CONSTRUCTION REQUIREMENTS:

The Contractor shall install four temperature sensors, two on each outside shoulder as shown in the plans. These sensors shall be situated close to a detector housing and shall terminate at the wim electronics. Each wim electronics shall require a separate temperature sensor.

(d) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

2.16 SIGNAL SERVICE ON WOOD POLE (805-SGCO-03)

(a) DESCRIPTION:

The Contractor shall provide one 100 AMP electric service on a wood utility pole to provide 120/240 VAC electric service to both R cabinets as shown in Standard Drawing 805-SGCO-03 of the plans.

(b) MATERIALS AND/OR EQUIPMENT:

1. The wood utility pole shall be a 10.7 m Class V wood pole.

2. The entrance switch shall be a Square D QO series rainproof load center, part number QO612L100RB or equivalent, with space for up to 6 circuit breakers. The entrance switch shall have provision for a padlock to be utilized to secure the box.
3. Four circuit breakers with a minimum rating of 30 amperes each shall be provided with the entrance switch. Two circuit breakers shall be used as main disconnect switches for each R cabinet.

4. Aluminum electrical cables shall not be used.

5. Only solid conductor copper cables shall be used.

6. It shall be the Contractor's responsibility to determine quantities and materials required to perform this work.

(c) CONSTRUCTION REQUIREMENTS:

1. One signal service on wood pole shall be constructed within 3 m (9.8 ft) plus/minus of the proposed entrance gate in the eastbound right away fence located at the north end of Kinsley Avenue and south of the interstate as shown in the plans near station 8 + 350. Final placement of both the service point and gate shall be determined by the RE. The electric service point shall meet or exceed Standard Specifications in section 805.08 and be constructed as shown in Standard Drawing 805-SGCO-03 of the plans.

2. One 100 AMP Service is required to provide power for both R cabinets. This will allow equipment to be powered from one phase and the cabinet light, cabinet fan, outlets, and heater to be powered from a second phase. Each of these lines shall be independent of each other and have separate breakers in the entrance box on the pole.

3. The Contractor shall install two separate three (3) conductor 6 AWG (3C6) electrical cables to power the R cabinet. One cable shall exit the entrance switch on the service pole and travel to the near side power panel in the eastbound R cabinet. The other cable shall exit the entrance switch on the pole, pass into the eastbound cabinet, enter the 50 mm PVC conduit under the roadway and terminate at the power panel in the westbound cabinet.

(d) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

2.17 TELEPHONE RISER

(a) DESCRIPTION:

In addition to the Electric Service riser, one additional Galvanized Steel Conduit riser shall be added to the signal service pole.

(b) MATERIALS AND/OR EQUIPMENT:

1. The Contractor shall install two separate standard 4C24 AWG (minimum 2 pair) telephone cables to each R cabinet.

2. It shall be the Contractor's responsibility to determine quantities and materials required to perform this work.

(c) CONSTRUCTION REQUIREMENTS:

1. The Contractor shall add one additional 50 mm (2 in) Galvanized steel conduit riser shall be added to the signal service pole for telephone lines. The conduit shall run from this riser on the Wood Pole via underground 50 mm (2 in) Galvanized steel conduit to the eastbound side R cabinet. This conduit shall carry/ provide a raceway for all four (4) telephone lines to be routed to the near side cabinet.

2. Inside the eastbound cabinet, the Contractor shall terminate two (2) telephone lines at separate RJ-11 or equivalent telephone jacks.

3. The other two (2) telephone lines will continue through a separate 50 mm (2 in) PVC conduit to the westbound side R cabinet where they will each terminate at a separate RJ-11 or equivalent telephone jacks.

4. The telephone service riser weather head shall be located approximately 2 m (6.5 ft) +/- above ground level. No entrance switch or other type of junction box is required for this run. The Contractor shall install a separate Standard 4C24 AWG (2 pair) phone cable for each telephone line provided. There shall be a minimum of 0.6 m (2 ft) of telephone cable for each telephone line extending from the weather head on the riser for the Telephone Company's use.

(d) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

2.18 SINGLE LOAD CELL (slc) SCALES

(a) DESCRIPTION:

The Contractor shall install 20 IRD or equivalent single load cell wim scales. Two scales shall be installed in each lane as shown on the plans.

(b) MATERIALS AND/OR EQUIPMENT:

It shall be the contractor's responsibility to determine individual quantities, materials, and equipment to perform this work.

(c) CONSTRUCTION REQUIREMENTS

1. Each lane shall have two single load cell scales situated between the leading Detector loop and the Class I Piezo as shown in the plans. The slc Scales shall be installed per manufacturers recommended procedures and as shown in shop drawings provided by the manufacturer. The Contractor shall arrange for a qualified and authorized representative to be present during installation to ensure proper installation.

    - A combined total of fourteen (14) entire 5.5 m (18 ft) ft by 3.6 m (11.8 ft) pavement panels shall require excavation during installation of the slc scales.

    - The sections of pavement where the scales shall be situated shall be excavated 1169 mm (46 in.) deep. The Contractor shall place 305 mm (12 in.) of compacted aggregate # 53 in the bottom of the 1169 mm (46 in.) excavation and 864 mm (34 in.) of approved QC/QA PCCP in accordance with section 500 of the INDOT Standard Specifications. Both median and outside shoulder pavement panels located right and left of the proposed scale locations shall also require excavation but only to the depth of the concrete pavement. The removal shall consist of removing the existing 400 mm (15.75 in.) concrete shoulder pavement with replacement shoulder pavement consisting of 400 mm (15.75 in.) of approved QC/QA PCCP in accordance with section 500 of the INDOT Standard Specifications.

2. Excavation shall span from Longitudinal Joint to Longitudinal Joint as well as from the D-1 Contraction Joint preceding the scales to the D-1 Contraction Joint trailing the scales. The scales shall be situated with the left end of the frame adjacent to the longitudinal joint on the left side of the scale for the left wheel path and with the right end of the frame adjacent to the longitudinal joint on the right side of the scale in the right wheel path. Pavement panels excavated for installation of slc Scales shall be concurrently replaced in their entirety.

3. During Stage 1, the Contractor shall excavate the three (3) 3.6 m (11.8 ft) by 5.5 m (18 ft) travel lane pavement panels in eastbound lanes 3, 4, and 5 where the proposed slc Scales are to be installed. In addition, the shoulder pavement panel adjacent to the panel in lane 5 which is situated between the same two D-1 Contraction Joints, shall also to be excavated in its entirety. In each of the three (3) travel lanes, excavation shall be 3.6 m (11.8 ft) by 5.5 m (18 ft) by 1169 mm (46 in.) deep. The Contractor shall place 305 mm (12 in.) of compacted aggregate # 53 in the bottom of the 1169 mm (46 in.) excavation and 864 mm (34 in.) of approved

QC/QA PCCP in accordance with section 500 of the INDOT Standard Specifications. Excavation of the pavement panels in the adjacent outside shoulder shall only be to the surface of the aggregate subbase approximately 400 mm (15.75 in.) deep with replacement shoulder pavement consisting of 400 mm (15.75 in.) of approved QC/QA PCCP in accordance with section 500 of the INDOT Standard Specifications. These four (4) sections of pavement shall be concurrently replaced in their entirety from the outside shoulder barrier wall to the left longitudinal joint for lane 3. It should be noted the left wheel path slc Scale Frame in lane 3 shall be set inward 203 mm (8 in.) to the right from the longitudinal joint as shown in the plans.

4. During stage 2, the Contractor shall excavate the two (2) 3.6 m (11.8 ft) by 5.5 m (18 ft) travel lane pavement panels in eastbound lanes 1, and 2 where the proposed slc Scales are to be installed. In addition, the median pavement panel adjacent to the panel in lane 1 which is situated between the same two D-1 Contraction Joints, shall also to be excavated in its entirety. In each of the two (2) travel lanes, excavation shall be 3.6 m (11.8 ft) by 5.5 m (18 ft) by 1169 mm (46 in.) deep. The Contractor shall place 305 mm (12 in.) of compacted aggregate # 53 in the bottom of the 1169 mm (46 in.) excavation and 864 mm (34 in.) of approved QC/QA PCCP in accordance with section 500 of the INDOT Standard Specifications. Excavation of the pavement panels in the adjacent median shall only be to the surface of the aggregate subbase approximately 400 mm (15.75 in.) deep with replacement shoulder pavement consisting of 400 mm (15.75 in.) of approved QC/QA PCCP in accordance with section 500 of the INDOT Standard Specifications. These three (3) sections of pavement shall be concurrently poured in their entirety from the median barrier wall to the left longitudinal joint in lane 3. It should be noted the right wheel path slc Scale Frame in lane 2 shall be set inward 203 mm (8 in.) to the left from the longitudinal joint as shown in the plans.

5. During stage 3, the Contractor shall excavate the five (5) 3.6 m (11.8 ft) by 5.5 m (18 ft) travel lane pavement panels in lanes 1, 2, 3, 4, and 5 where the proposed slc Scales are to be installed. In addition, the adjacent median and shoulder pavement panels between the same 2 D-1 Contraction Joints situated either side of the slc Scales are also to be excavated in their entirety. In each of the five (5) travel lanes, excavation shall be 3.6 m (11.8 ft) by 5.5 m (18 ft) by 1169 mm (46 in.) deep. The Contractor shall place 305 mm (12 in.) of compacted aggregate # 53 in the bottom of the 1169 mm (46 in.) excavation and 864 mm (34 in.) of approved QC/QA PCCP in accordance with section 500 of the INDOT Standard Specifications. Excavation of the pavement panels in the adjacent median and outside shoulder shall only be to the surface of the aggregate subbase approximately 400 mm (15.75 in.) deep with replacement shoulder pavement consisting of 400 mm (15.75 in.) of approved QC/QA PCCP in accordance with section 500 of the INDOT Standard Specifications. These seven sections of pavement shall be concurrently poured in their entirety from the median barrier wall to the outside shoulder barrier wall.

6. The Contractor shall install a drainage pipe for each slc Scale as shown in the plans. These drainage pipes shall terminate at the nearest catch Basin or pipe underdrain.

7. The Contractor shall install reinforced steel mats at three levels in the 864 mm (34 in.) deep scale pit QC/QA PCCP for the slc Scales. These steel mats shall be #4 Epoxy Coated Steel Bar 203.2 mm (8 in.) O.C. and placed 116 mm (4.5 in.), 406.4 mm (16 in.), and 78.7 mm (31 in.) below the top of the QC/QA PCCP scale pit pavement surface. Individual spacing between the mats shall be shown in the plans. Transverse dowel bars and longitudinal tie bars shall be installed in accordance with Section 503 of the INDOT Standard Specifications.

(d) BASIS OF PAYMENT:

All cost of this work shall be not be paid for separately but included in the contract unit price for Lump Sum WIM Station, 10 Lane SLC (Indiana).

Warranty

The contractor installing the wim station, 10 lane slc shall guarantee that the wim station, 10 lane slc system is free from defects in materials and workmanship for a period of one (1) year. Equipment supplied by the manufacturers shall be installed and used only in the particular application for which it was specifically designed.

The warranty shall start at the date of contract completion or from the date of INDOT acceptance of the WIM station, whichever is later. The warranty shall be provided to and in the name of the Indiana Department of Transportation, Program Development Division. Lane restrictions or closures necessary for the warranty work shall be included as part of the warranty and shall be coordinated with Donn Klepinger of INDOT. Lane closures shall be within the allowable lane closure times as provided by INDOT. All cost of materials and equipment to perform this work shall be included in the bid price for each wim station, 10 lane slc.

Basis of Payment for SINGLE LOAD CELL (SLC) WEIGH_IN_MOTION STATION

All work required for this item shall be paid for at the contract unit price Lump Sum for WIM STATION, 10 LANE SLC (INDIANA) which price shall include all labor, materials, shop drawings, various incidental items, meeting of the pavement smoothness, utility installations, calibration, preventive maintenance, certifications, testing, warranty and any necessary lane restrictions or closures required to complete this work as specified and detailed and installed in place.

Designation: E 1318 – 02

Standard Specification for Highway Weigh-In-Motion (WIM) Systems with User Requirements and Test Methods[1]

This standard is issued under the fixed designation E 1318; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 *Weigh-In-Motion*—This specification describes Weigh-In-Motion (WIM), the process of measuring the dynamic tire forces of a moving vehicle and estimating the corresponding tire loads of the static vehicle. Gross-vehicle weight of a highway vehicle is due only to the local force of gravity acting upon the composite mass of all connected vehicle components, and is distributed among the tires of the vehicle through connectors such as springs, motion dampers, and hinges. Highway WIM systems are capable of estimating the gross weight of a vehicle as well as the portion of this weight, called load in this specification, that is carried by the tires of each wheel assembly, axle, and axle group on the vehicle.

1.2 *Other Traffic Data*—Ancillary traffic data concerning the speed, lane of operation, date and time of passage, number and spacing of axles, and classification (according to axle arrangement) of each vehicle that is weighed in motion is desired for certain purposes. It is feasible for a WIM system to measure or calculate these traffic parameters and to process, summarize, store, display, record, hard-copy, and transmit the resulting data. Furthermore, differences in measured or calculated parameters as compared with selected control criteria can be detected and indicated to aid enforcement. In addition to tire-load information, a WIM system is capable of producing all, or specified portions of, these traffic data.

1.3 *Standard Specification*—Highway WIM systems generally have three applications: collecting statistical traffic data, aiding enforcement, and enforcement. This specification classifies four types of WIM systems according to their application and details their respective functional, performance, and user requirements. It is a performance-type (end product-type) specification. Exceptions and options to the specification may be included in any specification prepared by the user as part of the procurement process for WIM equipment or services, and vendors may offer exceptions and options in responding to an invitation to bid.

1.4 *Units*—The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units[2] which are provided for information only and are not considered standard.

1.5 The following precautionary caveat applies only to the test method portion, Section 7, of this specification. *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

E 867 Terminology Relating to Vehicle-Pavement Systems[3]

2.2 *AASHTO Standards:*

AASHO Interim Guide for Design of Pavement Structures—1972, 1981[4]

AASHTO Guide for Design of Pavement Structures—1986, 1993[4]

3. Terminology

3.1 *Definitions:*

3.1.1 *weigh-in-motion (WIM), n*—the process of estimating a moving vehicle's gross weight and the portion of that weight that is carried by each wheel, axle, or axle group, or combination thereof, by measurement and analysis of dynamic vehicle tire forces. (See Terminology E 867)

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *accuracy, n*—the closeness or degree of agreement (within a stated tolerance and probability of conformity) between a value measured or estimated by a WIM system and an accepted reference value.

3.2.2 *axle, n*—the axis oriented transversely to the nominal direction of vehicle motion, and extending the full width of the vehicle, about which the wheel(s) at both ends rotate.

3.2.3 *axle-group load, [lb (kg)], n*—the sum of all tire loads

[1] This specification is under the jurisdiction of ASTM Committee E17 on Vehicle-Pavement Systems and is the direct responsibility of Subcommittee E17.52 on Traffic Monitoring.

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[2] Standard Practice for Use of the International System of Units (SI): The Modern Metric System, IEEE/ASTM SI 10-1997, The Institute of Electrical and Electronics Engineers, Inc., 1828 L. St. NW, Suite 1202, Washington, DC 20036–5101,USA, and ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, USA, ISBN 1-55937-901-4.

[3] *Annual Book of ASTM Standards*, Vol 04.03.

[4] Available from American Association of State Highway and Transportation Officials, 444 N. Capitol St., NW, Suite 249, Washington, DC 20001.

of the wheels on a group of adjacent axles; a portion of the gross-vehicle weight.

3.2.3.1 *Discussion*—An axle group can be defined in terms of the number of axles included in the group and their respective interspaces.

3.2.4 *axle load [lb (kg)], n*—the sum of all tire loads of the wheels on an axle; a portion of the gross-vehicle weight.

3.2.5 *dynamic vehicle tire force, [lb (kg)], n*—the component of the time-varying force applied perpendicularly to the road surface by the tire of a moving vehicle.

3.2.5.1 *Discussion*—In addition to the force of gravity, this force can include the dynamic effects of influences such as road surface roughness, vehicle acceleration, out-of-round tires, dynamically-unbalanced wheels, tire inflation pressure, vehicle suspension and aerodynamic features, and wind. For purposes of this specification, the WIM System shall be adjusted or calibrated to indicate the magnitude of the measured dynamic vehicle tire force in units of mass, lb (kg). (See 3.2.13.1).

3.2.6 *gross-vehicle weight, [lb (kg)], n*—the total weight of the vehicle or the vehicle combination including all connected components; also, the sum of the tire loads of all wheels on the vehicle. (See 3.2.13.1).

3.2.7 *single-axle load, [lb (kg)], n*—the load transmitted to the road surface by the tires of all wheels lying between two parallel transverse vertical planes 3.3 ft (1 m) apart, extending across the full width of the vehicle; a portion of the gross-vehicle weight.

3.2.8 *tandem-axle load, [lb (kg)], n*—the total load transmitted to the road surface by the tires on all wheels of two consecutive vehicle axles that are more than 3.3 ft (1 m) and not more than 8 ft (2.4 m) apart; a portion of the gross-vehicle weight.

3.2.9 *tire load, [lb (kg)], n*—the portion of the gross-vehicle weight imposed upon the static tire at the time of weighing, expressed in units of mass, due only to the vertically-downward force of gravity acting on the total mass of the static vehicle.

3.2.10 *tolerance, n*—the defined limit of allowable departure of a value measured or estimated by a WIM system from an accepted reference value.

3.2.11 *triple-axle load, [lb (kg)], n*—the total load transmitted to the road surface by the tires on all wheels of three consecutive vehicle axles, with not more than 12 ft (3.7 m) between the two axles furthest apart; a portion of the gross-vehicle weight.

3.2.12 *weigh, v tr*—to measure the tire load on one or more tires by using a vehicle scale, an axle-load scale, a portable axle-load weigher, or a wheel-load weigher.

3.2.12.1 *Discussion*—Refer to Sec. 2.20, of *National Institute of Standards and Technology (NIST) Handbook 44* **(1)**[5] for a definition of each type of weighing device. These devices are usually subjected to field standard test weights at each locality of use and are adjusted to indicate units of mass (See Sec. 3.2, Appendix B, *NIST Handbook 44*).

3.2.13 *weight, [lb (kg)], n*—the external force of gravity acting vertically downwards upon a body with a magnitude equal to the body's mass multiplied by the local acceleration of free fall.[2]

3.2.13.1 *Discussion*—The force of gravity—thus, the acceleration of free fall—is different at various locations on or near the surface of Earth; therefore, weighing devices in commercial use or in official use by government agencies for enforcement of traffic and highway laws or collecting statistical information are usually used in one locality and are adjusted or calibrated to indicate mass at that locality. **(1)** The indicated mass can be converted to weight (in units of force) by multiplying by the local value of the acceleration of free fall, if it is known. The conventional value adopted by ISO is 32.174 049 ft/s^2 (9.806 65 m/s^2). Weight is a special case of force, as weight is due only to the local force of gravity, that is always directed vertically downwards. For purposes of this specification, and in accordance with common weighing practice, the WIM System shall be adjusted or calibrated to indicate the magnitude of estimated weight and load in units of mass, pounds [avoirdupois] (kilograms), and the direction of the associated force vector will always be downwards toward the approximate center of Earth.

3.2.14 *wheel load, [lb (kg)], n*—the sum of the tire loads on all tires included in the wheel assembly on one end of an axle; a wheel assembly may have a single tire or dual tires.

3.2.15 *WIM System, n*—a set of sensors and supporting instruments that measure the presence of a moving vehicle and the related dynamic tire forces at specified locations with respect to time; estimate tire loads; calculate speed, axle spacing, vehicle class according to axle arrangement, and other parameters concerning the vehicle; and process, display, store, and transmit this information. This standard applies only to highway vehicles.

4. Classification

4.1 *Types*—WIM systems shall be specified to meet the needs of the user for intended applications in accordance with the following types. Exceptions and options may be specified (See 1.3). All systems shall be designed to operate with the local electrical power of the country (that is, 110V, ac, 60-Hz power in North America). Lightning protection for affected system components shall be provided by the vendor. The user may specify as options a completely battery-powered system or battery-backup power in case of failure of normal power. All systems shall allow the user to select at the beginning of each data-taking session the units of measurement: either U.S. customary units or SI units[2]. The units setting shall remain where last assigned unless changed by the user at the beginning of a data-taking session. Load and weight values shall be expressed in units of mass: pounds [avoirdupois] in U.S. customary units, or kilograms in SI units. The SI recommends expressing large values of mass in megagrams, Mg. In commercial usage, which includes most applications and interpretations of WIM data, 1 Mg = 1000 kg = 1 metric ton = 1 tonne.

4.1.1 *Type I*—This type of WIM system shall be designed for installation in one or more lanes at a traffic data-collection site and shall be capable of accommodating highway vehicles moving at speeds from 10 to 80 mph (16 to 130 km/h), inclusive. For each vehicle processed, the system shall produce all data items shown in Table 1. A user-controlled feature of the

[5] The boldface numbers given in parentheses refer to a list of references at the end of the text.

TABLE 1 Data Items Produced by WIM System

1.	Wheel Load
2.	Axle Load
3.	Axle-Group Load
4.	Gross-Vehicle Weight
5.	Speed
6.	Center-to-Center Spacing Between Axles
7.	Vehicle Class (via axle arrangement)
8.	Site Identification Code
9.	Lane and Direction of Travel
10.	Date and Time of Passage
11.	Sequential Vehicle Record Number
12.	Wheelbase (front-most to rear-most axle)
13.	Equivalent Single-Axle Loads (ESALs)
14.	Violation Code

system shall allow tire-force information from the wheel(s) on only one end of an axle to be used to estimate axle load. Provisions shall be made for entering selected limits and tolerances for wheel, axle, axle-group (including bridge-formula grouping **(2)**) loads, and gross-vehicle weights as well as speed, and for detecting and indicating suspected violation of any of these limits by a particular vehicle. A feature shall be provided so that the user can determine whether or not the WIM system will prepare selected data items for display and recording. Use of this feature shall not inhibit the system from receiving and processing data. Data shall be processed on-site in such a way that all data items shown in Table 1 can be displayed in alphanumeric form for immediate review. This may be accomplished by connecting a portable (for example, laptop) computer, furnished and supported by the vendor as a part of the WIM-system equipment, directly to the on-site instruments. Means shall be provided for temporary, on-site storage of data items 1, 5, 6, 8, 9, 10, and 11 for each vehicle processed by the WIM system, or for only those vehicles with a front-axle or front-wheel load that exceeds a value set into the on-site system by the user at the beginning of a data-taking session. Also, means shall be provided for rapid, efficient transfer of these data to files made available on a compatible host computer (furnished by either the user or the vendor, as specified for the specific site by the user) at a remote location according to an appropriate time schedule and data format specified by the user. The vendor shall furnish, document, and support software for use on the host computer for processing the transferred data items in such a way that all data items shown in Table 1 can be displayed in alphanumeric form for immediate review and subsequent use by the host computer user. This same software shall be provided on the portable computer for use when it is connected directly to the on-site instruments. On-site presentation of a hard-copy of all data items produced by the system shall be an optional feature (Option 1) of the system. Option 2 for this type of WIM system shall additionally provide means for counting and for recording hourly the lane-wise count of all vehicles traveling in each lane, up to a maximum of ten lanes, at a data-collection site, including lanes without WIM sensors. Option 3 shall provide for counting, classifying (via axle arrangement), measuring the speed of, and recording the hourly totals concerning all such vehicles by class (according to axle arrangement) and by lane of travel.

4.1.2 *Type II*—This type of WIM system shall be designed for installation in one or more lanes at traffic data-collection sites and should be capable of accommodating highway vehicles moving at speeds from 15 to 80 mph (24 to 130 km/h), inclusive. For each vehicle processed, all data items shown in Table 1 except Item 1 shall be produced by the system. All other features and options of the Type II WIM system shall be identical to those described in 4.1.1 for the Type I WIM system.

4.1.3 *Type III*—This type of WIM system shall be designed with sensors installed in one or more lanes off the main highway lanes at weight-enforcement stations, or in one or more main highway lanes, to identify vehicles operating at speeds from 10 to 80 mph (16 to 130 km/h), inclusive, that are suspected of weight-limit or load-limit violation. When the sensors are installed in the main highway lane(s), the Type III system will not be required to measure vehicle acceleration. For each vehicle processed, the system shall produce all data items shown in Table 1 except 7, 12, and 13 and shall also estimate acceleration (while the vehicle is over the WIM-system sensors). Provisions shall be made for entering selected limits for wheel, axle, axle-group (including bridge-formula grouping **(2)**) loads, and gross-vehicle weight as well as speed and acceleration, and for detecting and indicating suspected violation of any of these limits by a particular vehicle. Means shall be provided for automatically controlling official traffic-control devices that will direct each suspect vehicle to a scale for confirmation weighing and guide all non-suspect vehicles past the scale without stopping. Manual operation of these official traffic-control devices shall be included as a feature of the Type III WIM system. Information used in determining a suspected violation shall be displayed in alphanumeric form for immediate review and recorded permanently. Option 1 shall provide means for presenting this information in hard-copy form if requested by the system operator. Option 2 may be specified to exempt the Type III WIM system from producing wheel-load information (Item 1 in Table 1) if this data item is not of interest for enforcement. Option 3 for this type of WIM system shall provide for recording the following data items shown in Table 1 for every vehicle processed by the system: 1 (2 in lieu of 1 when Option 2 is specified), 5, 6, 8, 9, 10, and 11. These basic-data items allow subsequent computation of statistical traffic data.

4.1.4 *Type IV*—This type of WIM system has not yet been approved for use in the United States, but for conceptual development purposes, it shall be designed for use at weight-enforcement stations to detect weight-limit or load-limit violations. Speeds from 2 to 10 mph (3 to 16 km/h), inclusive, shall be accommodated. A Type IV system that uses tire-force sensors (see 5.13) that support the entire tire-contact area(s) of all tires on a wheel assembly simultaneously shall also be capable of indicating the wheel load(s), if applicable, and individual axle loads for a stationary vehicle. For each vehicle that is processed, the system shall produce all data items shown in Table 1 except 7, 9, 12, and 13 and shall also estimate acceleration (while the vehicle is over the WIM-system sensors). Provisions shall be made for entering and displaying selected limits for wheel, axle, axle-group (including bridge-formula grouping **(2)**) loads, and gross-vehicle weights as well as speed and acceleration, and for detecting and indicating

violation of any of these limits by a particular vehicle. Information used in determining a violation shall be displayed in alphanumeric form for immediate review and recorded permanently. Option 1 shall provide means for presenting this information in hard-copy form if requested by the system operator. Option 2 may be specified to exempt the Type IV WIM system from producing wheel-load information (Item 1 in Table 1) if this data item is not of interest for enforcement.

5. Performance Requirements

5.1 *Accuracy*—Each type of WIM system shall be capable of performing the indicated functions within the accuracy shown in Table 2. A test method for determining compliance with these requirements under prevailing site conditions is given in Section 7. The stated accuracy should be maintained for ambient air temperatures at the WIM site from –20 to 120°F (–28 to 50°C); however, the user shall specify at the time of system procurement the range of temperatures within which the WIM system must operate properly. The vendor shall supply evidence that the system offered is capable of compliance. After computation of the data items shown in Table 2, no digit that indicates less than 100 lb (50 kg) (load or weight), 1 mph (2 km/h) (speed), or 0.1 ft (0.03 m) (axle spacing) shall be retained.

5.2 *Vehicle Class*—Vehicle classification according to axle arrangement shall be accomplished by Type I and Type II WIM systems. The vendor shall incorporate software within each Type I and Type II WIM system for using the available WIM-system axle-count and axle-spacing information for estimating the Federal Highway Administration (FHWA) Vehicle Types described briefly in Table 3. See *U.S. Department of Transportation Traffic Monitoring Guide* **(2)** for the complete description of FHWA Vehicle Types. The axle-spacing values used for this process shall be associated with each vehicle classified via the software. The values shall be made readily accessible to the user, and a means shall be provided for the user to modify the values easily. The FHWA Vehicle Type shall be indicated by the 2-Digit Code shown in Table 3. A user-defined Vehicle Type Code 14 shall be provided for application by the user. A Vehicle Type Code 15 shall be applied to any vehicle that the software fails to assign to one of the types described.

5.3 *Site Identification Code*—Provisions shall be made in Type I, Type II, Type III, and Type IV WIM systems for entering, displaying, and recording a ten-character alphanumeric site identification code for each data-taking session. This code can be used to incorporate information required for FHWA Truck Weight Data Collection **(2)**.

TABLE 3 FHWA Vehicle Types

2-Digit Code	Brief Description
01	Motorcycles
02	Passenger Cars
03	Other Two-Axle, Four-Tire Single Unit Vehicles
04	Buses
05	Two-Axle, Six-Tire, Single Unit Trucks
06	Three-Axle, Single Unit Trucks
07	Four-or-More Axle Single Unit Trucks
08	Four-or-Less Axle Single Trailer Trucks
09	Five-Axle Single Trailer Trucks
10	Six-or-More Axle Single Trailer Trucks
11	Five-or-Less Axle Multi-Trailer Trucks
12	Six-Axle Multi-Trailer Trucks
13	Seven-or-More Axle Multi-Trailer Trucks

5.4 *Lane and Direction Code*—A lane and direction-of-travel code for each vehicle processed by Type I, Type II, and Type III WIM systems shall consist of a number beginning with 1 for the right-hand northbound or eastbound traffic lane and continuing until all the lanes in that direction of travel have been numbered; the next sequential number shall be assigned to the lanes in the opposite direction of travel beginning with the left-hand lane and continuing until all lanes have been numbered. Provision shall be made for 12 numbers in the code. This code may be used to incorporate information required for FHWA Truck Weight Data Collection **(2)**.

5.5 *Date*—Date of passage shall be indicated numerically in each vehicle record processed by Type I, Type II, Type III, and Type IV WIM systems. The date format(s) used by the WIM system to produce the vehicle record shall be clearly documented and defaulted to the generally accepted format in the country of use. In the United States, the MM/DD/YY format, where MM is the month, DD is the day, and YY is the year, is generally accepted.

5.6 *Time*—Time of passage shall be indicated numerically for each vehicle processed by Type I, Type II, Type III, and Type IV WIM systems in the following format: hh:mm:ss, where hh is the hour beginning with 00 at midnight and continuing through 23, mm is the minute, and ss is the second.

5.7 *Vehicle Record Number*—Type I, Type II, Type III, and Type IV WIM systems shall provide sequential-numbering (user-adjustable) for each recorded vehicular data set.

5.8 *Wheelbase*—Type I and Type II WIM systems shall compute wheelbase as the sum of all axle spacings between centers of the front-most and the rear-most axles on the vehicle or combination that have tires in contact with the road surface at the time of weighing. This value shall be rounded to an integer value (in feet) (or to the nearest 0.1 m) before display or recording.

TABLE 2 Functional Performance Requirements for WIM Systems

Function	Tolerance for 95 % Probability of Conformity				
	Type I	Type II	Type III	Type IV	
				Value ≥lb (kg)[A]	±lb (kg)
Wheel Load	±25 %		±20 %	5000 (2300)	300 (100)
Axle Load	±20 %	±30 %	±15 %	12 000 (5400)	500 (200)
Axle-Group Load	±15 %	±20 %	±10 %	25 000 (11 300)	1200 (500)
Gross-Vehicle Weight	±10 %	±15 %	±6 %	60 000 (27 200)	2500 (1100)
Speed	±1 mph (2 km/h)				
Axle-Spacing	±0.5 ft (0.15 m)				

[A] Lower values are not usually a concern in enforcement.

5.9 *ESALs*—Type I and Type II WIM systems shall compute Equivalent Single-Axle Loads (ESALs) using American Association of State Highway and Transportation Officials (AASHTO) axle load equivalence factors (see 2.2 and **(3, 4, 6, 7)**) for single, tandem, and triple axles for flexible or for rigid pavements. Provision shall be made for the user to select one of these pavement types for application at the beginning of any given data-processing session. The computations must be made using only U.S. customary units. The system shall compute the total ESALs for each vehicle or vehicle combination and prepare these data for display as part of each vehicle record. When displayed, this value shall be rounded to two significant digits following the decimal and presented in the following format: FESAL = for flexible pavements, and RESAL = for rigid pavements. The parameter for serviceability at the end of time t, p_t, shall be adjustable by the user, but 2.5 shall be programmed as a default value. Similarly, the value for structural number, $\overline{SN}$, used for computing flexible pavement equivalence factors shall be user adjustable, but shall be defaulted to 5.0 (see 2.2). The value for thickness of rigid pavement slab, D, used in computing rigid pavement equivalence factors shall be user adjustable, and shall be defaulted to 9.0 in. (see 2.2) in the WIM-system program. Provision shall be made in the program to list on demand all parameters actually utilized in the ESAL computation during any given data-processing session. The user shall specify the method(s) (see 5.9.2 and 5.9.3) that will be provided by the vendor in the WIM-system software for applying LEFs to compute ESALs. Every Type I and Type II WIM system shall include software for performing the computation of ESALs by the method described in 5.9.3.

5.9.1 *Computation of LEFs*—Equations for calculating the AASHTO axle load equivalence factor (LEF) for each axle type (single, tandem, triple) and load are presented in Annex A1. These equations may be used to calculate directly the LEF for an individual axle load and type, terminal serviceability, and pavement strength characteristic ($\overline{SN}$ for flexible or D for rigid) in lieu of using the tabular (previously calculated from the equations for selected increments of the variables) values presented in the AASHTO pavement design guides (see 2.2). The equations were derived from statistical analysis of data taken during the AASHO (now AASHTO) Road Test **(3, 4)**; therefore, the applicability of the equations to model the relationship among the included variables is limited to the nature and range of each variable that was observed at the AASHO Road Test. The axle load that was included as a variable in the derivation of the regression equations was only the load on axles of the test trucks that were called load axles. The observed change in pavement serviceability that resulted from the steering axle on each test truck, except pickup-type trucks, that was run at the AASHO Road Test was not assessed separately, but was incorporated into that which was attributed in the regression equations to the loads on the other axles (single or tandem) on each test truck. The steering axle and the rear axle on pickup-type test trucks were both called load axles and provided data points for direct inclusion of the effects of 2000-lb single-tire, single-axle loads in developing the regression equations.

5.9.2 *Applying LEFs to Compute ESALs: Method Using AASHO Road Test Concepts*—By AASHTO's concept, Equivalent Single Axle Loads (ESALs) are the cumulative number of applications of an 18 000-lb single-axle load (a common denominator) that will have an equivalent effect on pavement serviceability of a specified pavement structure as all applications of the axle loads on single, tandem, and triple axles on all vehicles in a defined mixed-traffic stream. AASHTO ESALs are determined by calculating the LEF for each axle set on all vehicles in a measured or assumed mixed-traffic stream according to its axle type (single, tandem, triple) and magnitude of load for a defined pavement structure and terminal serviceability, and summing the LEFs. Except for axle loads of 2000 lb or less on the axles of two-axle vehicles, the LEF calculated for a single axle is not applicable to the steering axle in calculating ESALs. The nominal values of steering axle loads at the AASHO Road Test ranged from 2000 to 12 000 lb. Thus, no steering axle load exceeded 12 000 lb, nominal. So, for steering axles loaded to less than 12 000 lb (as at the AASHO Road Test) no LEF should be applied to the steering-axle load; its effect has already been accounted for. But, for steering axles loaded to 12 000 lb or more (not used at the AASHO Road Test), an appropriate, single-tire LEF should be applied, and these ESALs should be accumulated along with those from the other (non-steering) axle(s) on the vehicle. **(7)**

5.9.3 *Applying LEFs to Compute ESALs: Method Used for the Examples in AASHTO Guides*—The method that is illustrated by numerical examples shown in 2.2 for applying load equivalence factors in calculating ESALs have been followed by state agencies and FHWA since 1972. So that ESALs values comparable to those already on file will be produced by future WIM systems that comply with this specification, the illustrated methodology shall, as a minimum, be implemented in every such system. In the numerical examples in the guides, the steering axle is considered to be a "single" axle along with other single axles on a vehicle. In calculating the total ESALs for all vehicles in an observed or assumed mixed-traffic stream, for each vehicle class, the number of axles, according to axle type, in various load classes is listed, and then a tabular value (calculated from the regression equations by using the middle value in the load range) for the "Traffic Equivalency Factor" (called herein a Load Equivalence Factor, LEF) is multiplied by the number of observed axles, according to axle type, in each load class to yield the "A 18 Kip EAL's" (Average 18-Kip Equivalent Axle Loads) attibutable to each axle type for all observed axles. The sum of the EALs for all observed axles is divided by the number of observed vehicles in the class to yield an average number of equivalent axle loads, EALs, per vehicle of that class.

5.10 *Violations*—Violations of all user-set parameters shall be determined by Type I, Type II, Type III, and Type IV WIM systems. A 2-character violation code, such as shown in Table 4, shall be used for each detected violation and shall be included in the displayed data. Provision shall be made for the user to define up to 15 violation codes. An additional optional feature that calls attention to any data items that are in violation of user-set limits may be specified by the user, for example, flashing, underlining, bold-facing, or audio tones.

TABLE 4 Violation Code

Violation	Code
Wheel Load	WL
Axle Load	AL
Axle—Group Load	AG
Gross-Vehicle Weight	GV
Bridge—Formula Load	BF
Over Speed	OS
Under Speed	US
Acceleration	AC
Deceleration	DE

5.11 *Acceleration*—Type III and Type IV WIM systems shall measure vehicle acceleration, which is a change in velocity. Negative acceleration is also called deceleration. The forces acting on a vehicle to produce acceleration can effect significant change in the distribution of the gross-vehicle weight among the axles and wheels of the vehicle as compared to the distribution when the vehicle is static. Therefore, any severe acceleration while the vehicle is passing over the WIM-system sensors can invalidate wheel and axle loads estimated by the system. Average acceleration of 2 ft/s^2 (0.6 m/s^2) or greater during the time that the wheelbase (see 5.8) of the vehicle is passing over the tire-force sensors should be considered as a violation. This value shall be user-adjustable, but the vendor shall program 2 ft/s^2 (0.6 m/s^2) as the default value in these WIM systems.

5.12 *User-Assignable Code*—For Type I, Type II, Type III, and Type IV WIM systems, provision shall be made to allow manual entry of a user-assignable three-digit code into any vehicular data set prior to recording.

5.13 *Tire-Force Sensor*—As the tires of a vehicle being weighed in motion might travel anywhere between the instrumented traffic lane edges, it is necessary for the magnitude of the signal from the tire-force sensor(s) in the lane to be the same (within tolerance) for a given applied tire force(s), regardless of the lateral position of the tire(s) within the lane, if consistent load and weight estimates are to be made by a WIM system.

5.13.1 Therefore, the user shall specify that every tire-force sensor installed for use with a Type I, Type III, or Type IV WIM system shall be certified by the vendor to have been tested prior to installation and found to produce signals that were linearly proportional, within 2 % of the applied load, to a simulated tire load. The simulated tire load shall be applied at three levels: 10, 50, and 90 % of rated sensor capacity. Each level of applied load shall be measured such that its magnitude is known to be within 0.25 % of its true value, for example, via a NIST-certified load cell. Loads shall be applied at the approximate longitudinal center (in the direction of traffic movement) of the sensor and at three equally spaced intervals laterally between the ends of each half-lane-width portion (nominally, 6 ft (1.8 m)) of the sensor. The maximum allowable difference (tolerance) between the highest and the lowest of the three signal values recorded at any load level shall be 2 % of the highest value.

5.13.2 The user shall specify that every sensor, usually a piezo-type axle-load sensor, nominally 12 ft (3.6 m) long to cover a full lane width, installed for use with a Type II WIM system shall be certified by the vendor to have been tested under known impact loads applied at multiple, evenly-spaced intervals of 1 ft (0.3 m) or less along the length of the sensor prior to installation and found to meet Class I signal-uniformity tolerances (better than seven percent) **(5)**.

6. User Requirements

6.1 *Site Conditions*—In order for any WIM system to perform properly, the user must provide and maintain an adequate operating environment for the system's sensors and instruments. Construction or selection of each WIM site, as well as continuing maintenance of the site and the sensors, are extremely important user considerations. The following site conditions, or better, shall be provided by the user if the performance criteria given in this specification are to be consistently realized. The user must recognize that the performance of the WIM system depends uniquely upon the quality of the sensors and their prevailing operating environment. System performance is degraded by less-than-ideal site conditions, even though the WIM-system sensors, instruments, and algorithms are capable of high-quality performance. The user can require quality of performance only in proportion to the quality of the site conditions provided.

6.1.1 *Horizontal Alignment*—The horizontal curvature of the roadway lane for 200 ft (60 m) in advance of and 100 ft (30 m) beyond the WIM-system sensors shall have a radius not less than 5700 ft (1.7 km) measured along the centerline of the lane for all types of WIM systems.

6.1.2 *Longitudinal Alignment (Profile)*—The longitudinal gradient of the road surface for 200 ft (60 m) in advance of and 100 ft (30 m) beyond the WIM system sensors shall not exceed 2 % for Type I, Type II, and Type III WIM-system installations, and shall not exceed 1 % for Type IV installations.

6.1.3 *Cross Slope*—The cross-slope (lateral slope) of the road surface for 200 ft (60 m) in advance of and 100 ft (30 m) beyond the WIM-system sensors shall not exceed 3 % for Type I, Type II, and Type III WIM system installations, and shall not exceed 1 % for Type IV installations.

6.1.4 *Lane Width and Markings*—The width of the paved roadway lane for 200 ft (60 m) in advance of and 100 ft (30 m) beyond the WIM-system sensors shall be between 12 and 14 ft (3.6 and 4.3 m), inclusive. For Type III, except those with sensors in the main highway lanes, and Type IV WIM systems, the edges of the lane throughout this distance shall be marked with solid white longitudinal pavement marking lines 4 to 6 in. (100 to 150 mm) wide. At least 3 ft (1 m) of additional clear space for wide loads shall be provided on each side of the WIM-system lane.

6.1.5 *Surface Smoothness*—To allow reliable WIM-system performance within the tolerances shown in Table 2, the surface of the paved roadway 200 ft (60 m) in advance of and 100 ft (30 m) beyond the WIM-system sensors shall be smooth before sensor installation and maintained in a condition such that a 6-in. (150-mm) diameter circular plate 0.125-in. (3 mm) thick cannot be passed beneath a 20-ft (6-m) long straightedge when the straightedge is positioned and maneuvered in the following manner:

6.1.5.1 Beginning at the longitudinal center of the WIM-system sensors, or sensor array, place the straightedge along each respective lane edge with the end furthest from the

sensors at the distances from the longitudinal center of the sensors as indicated below. Then pivot the straightedge about this end, and sweep the end nearest the sensors between the lane edges while checking clearance beneath the straightedge with the circular plate.

Lane Edge	Longitudinal distance from Center of Sensors, ft (m)
Right	20, 30, 44, 60, 76, 92, 108, 124, 140, 156, 172, 188, 204 (6, 9, 13, 18, 23, 28, 33, 38, 43, 48, 53, 58, 62)
Left	20, 36, 52, 68, 84, 100, 116, 132, 148, 164, 180, 196, 212 (6, 11, 16, 21, 26, 30, 35, 40, 45, 50, 55, 60, 65)

6.1.6 *Pavement Structure*—The user shall provide and maintain an adequate pavement structure and surface smoothness to accommodate the WIM-system sensors throughout their service life and shall install and maintain the sensors in accordance with the recommendations of the system vendor. Experience has indicated that a Portland cement concrete (also called rigid) pavement structure generally retains its surface smoothness over a longer period of time than a bituminous (also called flexible) pavement structure under heavy traffic at a WIM site. Consideration should be given to providing a 300-ft (90-m) long continuously reinforced concrete pavement (CRCP) or a jointed concrete pavement (JCP), with transverse joints spaced 20 ft (6 m) or less apart, at permanent WIM sites on freeways and principal arterial highways. (See Terminology E 867 for definitions of pavement types.) The surface of every such rigid pavement should be ground smooth after curing and before installing WIM sensors. The user should assure that the skid resistance (See Terminology E 867) of the surface after grinding is at least as good as that of the adjacent surfaces. At a site with flexible pavement, a 50-ft (15-m) long section comprising full-depth-asphalt, or black-base, design should be considered for installation at each end of the Portland cement concrete pavement structure to effect a stiffness transition between the two pavement structural types. Maintenance, replacement, or repair activity at a WIM site under traffic is hazardous and expensive; therefore, the installation should be done right the first time.

6.1.7 *Instrument Environment*—The user shall provide and maintain a climatic environment for the WIM-system instruments in accordance with those specified by the user and agreed upon by the system vendor.

6.1.8 *Power*—The user shall provide and maintain an adequate electrical power supply at each WIM site, or specify an optional battery-powered system as described in 4.1, or both.

6.1.9 *Data Communication*—The user shall provide and maintain an adequate data communication link between the WIM site and the remote host computer where data will be processed. This link can also serve to monitor the performance of the WIM system and adjust its settings from a remote location.

6.1.10 *Temperature Range*—The user shall specify the reasonable maximum and minimum ambient air temperatures in which the WIM system being procured will be operated, and the vendor shall supply evidence that the system offered is capable of performing properly within this temperature range.

6.2 *Options, Exceptions, and Additional Features*—Any desired optional features described in Sections 4 and 5, any exceptions, and any additional features of the WIM system shall be specified by the user. The user shall also specify the data items to be included in the display, the number of vehicle records to be displayed simultaneously, and whether the ability to hold a selected record(s) on display without interference with continuous data taking by the system is required. The user should note that the number of data items selected will affect the number of vehicle records that can be displayed simultaneously.

6.3 *Recalibration*—The user shall recalibrate every WIM system following any significant maintenance or relocation. Recalibration shall be performed no less frequently than annually. Abrupt or unusual changes in data patterns can also indicate the need for recalibration. Recalibration of system Types I, II, and III shall be performed in accordance with the method presented in 7.5, and system Type IV shall be recalibrated in accordance with the method presented in 7.4.5 to ensure consistent performance.

6.4 *Acceptance Test*—As part of every new WIM system procurement contract, or any major modification contract on an existing system, the user shall specify the test method and the schedule for testing that will be accomplished prior to final acceptance by the user and final payment to the vendor. This test shall be conducted on-site by the user or the user's authorized representative in cooperation with the vendor, after the system has been installed or modified and calibrated (see 7.5). The specification shall state clearly the proportions of initial-calibration and acceptance-test expenses to be borne by the user and by the vendor, including the expenses for providing and operating test vehicles and for traffic control. The On-site Acceptance Test described in 7.6 may be referenced for this purpose.

6.4.1 *Implications of a Type-Approval Test*—The acceptance-test specification should require that the WIM system being offered by the vendor pass a rigorous Type-Approval Test, conducted under excellent site conditions (see 6.1), to demonstrate that the system is capable of performing adequately under such conditions. This test verifies the functionality of all features of the system, as well as its highest potential accuracy when the sensors are subjected to loads from a wide range of vehicle types. If the vendor provides credible evidence that the type and model of system being offered has already successfully passed the applicable Type-Approval Test described in Section 7 and the user provides site conditions that meet or exceed those given in 6.1, the system will be expected to perform at the site within the tolerances stated in Section 5. If it fails to perform within these tolerances in an on-site acceptance test where the site conditions meet or exceed those given in 6.1, the indication is that the installed system is faulty and the vendor shall be responsible for corrective action. However, if the vendor does not provide evidence of previous Type-Approval testing, the user will not be assured of the capability of the system and shall either require conduct of a Type-Approval Test (expenses to be negotiated) wherein the user shall provide appropriate site conditions (see 6.1), or reach an agreement with the vendor before the on-site acceptance test begins as to the specific, quantified tolerance values that will be acceptable if the site conditions provided by the user do not

meet or exceed those given in 6.1. In the latter case, the responsibility for inadequate WIM-system performance can lie with the vendor, the user, or both.

6.4.2 *On-Site Acceptance Test*—The On-Site Acceptance Test described in 7.6 may be used in lieu of a full Type-Approval Test under the circumstances outlined in 6.4.1. It is an abbreviated form of the Type-Approval Test that indicates primarily the effects of the prevailing site conditions upon the performance of a capable WIM system.

7. Test Methods for WIM System Performance

7.1 *Scope*—Test methods for evaluating the performance of each type of WIM systems are presented in this section. Procedures are given for conducting a Type-Approval Test (see 7.2, 7.3, 7.4) for any new or modified type or model WIM system, and an On-Site Acceptance Test (see 7.6) for newly-installed equipment at a site. Also included in this section is a Calibration Procedure for on-site calibration (see 7.5)—to remove as much bias as practicable from the weight, load, and axle-spacing estimates—to be used at the time of system installation or whenever site conditions or equipment have changed. Both tests and the calibration procedure require weighing and measuring static vehicles to determine reference values against which WIM-system-estimated values will be compared. The recommended procedure for weighing static vehicles is outlined next.

7.1.1 *Apparatus for Weighing Static Vehicles*—All apparatus used for weighing static vehicles shall be certified as meeting the applicable maintenance tolerance specified in *NIST Handbook 44* **(1)** within 30 days prior to use. When wheel-load data are required from the WIM system, the corresponding reference tire-load values for Type I, Type III, and Type IV WIM systems shall be determined with wheel-load weighers that meet the respective tolerance specification of *NIST Handbook 44*. **(1)** The minimum number of wheel-load weighers required is 2 and the preferred minimum number is 6. Alternatively, an axle-load scale or a multi-platform vehicle scale that has approaches and aprons adjacent to the load-receiving platform(s) that can support the tire-pavement contact surfaces of all tires on the vehicle being weighed as described in 7.1.2 may be used to weigh wheel loads on one end of an axle by positioning the wheel(s) on the other end of the axle on the adjacent apron. When this alternative technique is used, the wheel loads on both ends of the axle shall be determined, and then used only to apportion the measured axle load between the wheels on each end of the axle. When wheel-load data are not required, axle-load scales, multi-platform vehicle scales, portable axle-load weighers, or a pair of wheel-load weighers that meet the respective tolerance specification of *NIST Handbook 44*, **(1)** shall be used for obtaining reference tire-load values for Type II and Type III WIM systems. Either an axle-load scale or a multi-platform vehicle scale, along with wheel-load weighers if required, shall be used for measuring reference tire-load values for Type III and Type IV WIM systems.

7.1.2 *Use of Apparatus for Weighing Static Vehicles*—The tire-pavement contact surfaces of all tires on the vehicle being weighed shall be within 0.25 in. (6 mm) of a plane passing through the load-receiving surface(s) of the multi-platform vehicle scale, wheel-load weighers, portable axle-load weighers, or axle-load scales whenever any tire-load measurement is made. The maximum slope of this plane from horizontal shall be 2 %. Suitable blocking or mats may be utilized, or the weighing device(s) may be recessed into the pavement surface to provide the required vertical orientation of the tire-pavement contact surfaces. When wheel-load information is required, wheel and axle load shall be measured simultaneously using a pair of wheel-load weighers. When wheel-load information is not required, axle-load shall be determined by positioning each axle to be weighed either simultaneously or successively on an axle-load scale(s), a multi-platform vehicle scale, a portable axle-load weigher(s), or a pair(s) of wheel-load weighers. Axle-group load shall be determined either by positioning all axles in the group simultaneously on the required number of weighing devices (preferred) or by successively positioning each axle in the group on a pair of wheel-load weighers or on an axle-load weighing device. The number of movements of the vehicle to accomplish the successive tire-load measurements shall be minimized. A tire-load measurement shall be made only when the brakes of the vehicle being weighed are fully released and all tires are properly positioned on the load-receiving surface(s) of the weighing device(s). Suitable means (for example, chocks) shall be used to keep the tires properly positioned while the brakes are released. Gross-vehicle weight shall be the sum of all wheel loads or axle loads for the vehicle. No tire-load measurement shall be taken until oscillations induced by inertial forces (for example, via a load of undulant liquid) of the vehicle have subsided to a point that indicated tire load is changing less than three scale divisions in 3 s. If more than 6 s are required to reach this stable condition when making any tire-load measurement after the brakes on the vehicle being weighed are fully released, the vehicle shall be eliminated from the Test Unit for Type-Approval Test Loading. (see 7.2.4, 7.3.4, and 7.4.4.)

7.1.3 *Procedure for Weighing and Measuring Test Vehicles to Obtain Reference Values*—Two test vehicles (see 7.5.3) are used for the Calibration Procedure, the Type-Approval Test, and the On-Site Acceptance Test. The following procedure shall be applied for obtaining reference load, weight, and axle-spacing values for each of the static test vehicles.

7.1.3.1 Measure the center-to-center spacing between successive axles on each test vehicle and record these data to the nearest 0.1 ft (0.03 m) as axle-spacing reference values.

7.1.3.2 Weigh each test vehicle a minimum of three times, with brakes released, as described in 7.1.1 and 7.1.2 to measure tire loads for the wheel(s) on each end of every axle on the static vehicle. Move the vehicle completely away from the scale or weigher before beginning a new set of tire-load measurements, and always approach the weighing devices from the same direction for weighing. Sum the applicable tire loads to determine wheel, axle, and tandem-axle loads as well as gross-vehicle weight each time the vehicle is weighed.

7.1.3.3 Calculate the arithmetic mean for all wheel load, axle-load, tandem-axle-load, and gross-vehicle-weight values that resulted from weighing each test vehicle three or more times; also calculate the difference, in percent, from this mean of each individual value used in calculating the respective mean.

7.1.3.4 Compare these percent differences from the mean to the following specified limits for each applicable load or weight value for each test vehicle: gross-vehicle weight = ± 2 %, tandem-axle load = ± 3 %, axle load = ± 4 %, and wheel load = ± 5 %. These limits define a practicable range into which an individual observation must fall in order to demonstrate that the weighing process for the static vehicle is producing results that are suitable for use as reference-value loads and weights against which WIM-system estimates will be evaluated.

7.1.3.5 If any of the measured or calculated load or weight values exceeded the specified range, correct deficiencies in the reference-value weighing process and weigh each test vehicle a minimum of three more times.

7.1.3.6 Repeat 7.1.3.5 until the weighing process yields reference-value loads and weights that are within the specified range.

7.1.3.7 For reference-value loads and weights against which to compare WIM-system estimates, use the calculated arithmetic mean value for the respective wheel load, axle-load, tandem-axle-load, and gross-vehicle-weight values that resulted from successfully weighing each test vehicle three or more times.

7.2 *Type-Approval Test for Type I and Type II WIM Systems*:

7.2.1 *Scope*—The Type-Approval Test described here is for evaluating the performance capabilities of a new type or model WIM system under excellent site conditions and under traffic loading that is representative of that which will be of interest where Type I and Type II WIM systems will usually be applied. Performance requirements for each type of WIM system are given in Section 5 of this specification, and associated user requirements are given in Section 6. The WIM system being evaluated in the Type-Approval Test shall be subjected to a loading test unit comprising two test vehicles (see 7.5.3) plus approximately 51 additional vehicles selected from the traffic stream at the Type-Approval Test site. Other types of vehicles may be added to the loading test unit by the user who is conducting the test at any Type-Approval Test site where large numbers of vehicles in classes not already included are operating. Likewise, the user conducting the test may eliminate vehicles of a particular class(s) from the loading test unit if none appears at the site within a practicable duration of the test. For each vehicle eliminated, one of another class prevalent at the site shall be added to maintain a total of 51 vehicles in the loading test unit. Vehicles determined to be carrying a shifting or undulating load at the time of reference-value weighing (see 7.1.2) may also be eliminated. Another vehicle of the same class shall be substituted for the one eliminated. The two test vehicles, that will make multiple passes over the WIM-system sensors at the minimum and at the maximum speed specified by the user between 10 and 80 mph (16 and 130 km/h), and at intermediate speeds, provide a basis for evaluating the performance of the WIM system over a range of speeds. The additional vehicles included in the loading test unit serve the function of subjecting the WIM system to loading by a representative variety of vehicle classes. All vehicles comprising the loading test unit shall be weighed statically on certified weighing devices as described in 7.1.1, 7.1.2, and 7.1.3 at a suitable site within reasonable proximity to the Type-Approval Test site.

7.2.2 *Significance and Use*—Interpretation of the results from the Type-Approval Test will allow the user to determine whether the tested Type I or Type II WIM system is capable of meeting or exceeding the performance requirements stated in Section 5. This can also indicate the potential upper limit of performance that can be achieved by the particular type and model of system, as the road surface conditions that potentially affect the location and magnitude of dynamic tire forces significantly, shall be the best available for conducting the Type-Approval Test and shall, as a minimum, satisfy the user requirements given in Section 6.

7.2.3 *Site for Type-Approval Test*—Both the user (or a recognized representative of user's interests) and the vendor shall approve the Type-Approval Test site as well as the WIM-system installation prior to conducting the test. The actual road-surface and WIM-system sensor conditions that prevail in each lane during type-approval testing shall be documented in terms that verify compliance with the user requirements given in 6.1.

7.2.4 *Test Unit for Type-Approval Test Loading*—The test unit for loading the WIM system being evaluated in the Type-Approval Test shall comprise two test vehicles (see 7.5.3) that will make multiple runs over the WIM-system sensors at prescribed speeds along with other vehicles selected in random order from the traffic stream at the Type-Approval Test site. The number of vehicles in each Vehicle Class (see 5.2) to be selected in random order from the traffic stream for inclusion in the test unit is shown in Table 5. See 7.2.1 concerning modification of the loading test unit.

7.2.5 *Calibration*—Within 48 h prior to beginning the Type-Approval Test, the WIM system shall be calibrated in accordance with the calibration procedure presented in 7.5.

7.2.6 *Procedure*—The user shall be in responsible charge and shall include the following steps in conducting the Type-Approval Test.

7.2.6.1 As a joint effort between the user (or a recognized representative of user's interests) and the vendor, select the best available WIM-system site that, as a minimum, meets the applicable requirements stated in 6.1.

7.2.6.2 Ensure that a suitable site for weighing vehicles statically is available within a reasonable distance of the WIM site, that traffic can be controlled safely at this location, and that test vehicles can turn around safely and conveniently for

TABLE 5 Composition of Test Unit for Type-Approval Test Loading of WIM Systems

Vehicle Class	Number of Selected Vehicles (Total = 51)
05	5
06	5
08 (2S1)[A]	4
08 (2S2)	4
08 (3S1)	4
09 (3S2)	20
11 (2S1-2)	3
12 (3S1-2)[B]	3
13	3

[A] Two-axle tractor, single-axle semi trailer.
[B] Three-axle tractor, single-axle semi trailer, two-axle full trailer.

multiple passes. Obtain approval from the public authority having jurisdiction over the site for the traffic control procedures that will be used during testing. Provide facilities at this site for weighing all vehicles in the loading test unit (see 7.1.1).

7.2.6.3 Install the WIM system in accordance with the vendor's recommendations and execute the calibration procedure that is presented in 7.5.

7.2.6.4 After agreement by both the user and the vendor, install the settings defined in 7.5.5.5 on the WIM-system.

7.2.6.5 Using traffic control procedures approved by the appropriate public authority and other reasonable safety precautions, have each test vehicle make five or more runs over the sensors in each lane at an attempted speed approximately 5 mph (8 km/h) less than the maximum speed, and then five or more additional runs at an attempted speed approximately 5 mph (8 km/h) greater than the minimum speed, used during calibration (see 7.5.5.3). At each speed, one or more runs shall be made with the test vehicle tires near the left-hand lane edge, and one or more runs with the test vehicle tires near the right-hand lane edge. The other runs shall be made with the test vehicle approximately centered in the lane. Weigh each test vehicle statically after or before every run over the WIM sensors (see 7.1.2). Record all data, and correlate the WIM-system vehicle record number for every run of each test vehicle with the corresponding static weighing record.

7.2.6.6 For reference speed values, measure the speed of the test vehicle each time it passes over the WIM-system sensors with a calibrated radar speed meter or by some other means (such as wheelbase/time) acceptable to both the user (or a recognized representative of user's interests) and the vendor, and record the observed speed. The radar speed meter, if used, shall be calibrated by the method recommended by its vendor within 30 days prior to use.

7.2.6.7 Make the calculations shown in 7.2.7 for the 20 or more runs (five or more runs at two speeds by two vehicles) of the test vehicles and compare the functions and performance of the WIM system with all specification requirements, including speed and axle spacing. See Section 4 for functions and Section 5 for performance tolerances.

7.2.6.8 If any WIM-system function or more than 5 % of the load, weight, or axle-spacing values resulting from all test-vehicle runs fails to satisfy the specification, the user who is in responsible charge of conducting the Type-Approval Test shall consider the fact that at least 95 % of all WIM-system-estimated values, including those resulting from runs already made by the two test vehicles plus the runs that will be made by the 51 additional vehicles to be selected from the traffic stream must meet the specified tolerances for type approval of the system, and then decide whether to continue the test.

7.2.6.9 If continuation is approved, select vehicles from the traffic stream to complete the makeup of the test unit for Type-Approval Test loading as specified in 7.2.4.

7.2.6.10 Allow each of the selected vehicles to pass over the WIM-system sensors at normal speed and require each vehicle to stop for weighing (see 7.1.1 and 7.1.2) and for measurement of axle spacing (see 7.1.3.1).

7.2.6.11 Make the calculations shown in 7.2.7 and compare the performance of the WIM system with the specification requirements stated in Section 5 for the two test vehicles and the remainder of the vehicles in the Type-Approval Test loading unit (see 7.2.4).

7.2.6.12 Interpret and report the results as described in 7.2.8.

7.2.7 *Calculation*—Calculation is needed for defining the reference-value loads and weights of the static vehicle with which to compare WIM-system-estimated values, and evaluating conformity of data items produced by the WIM-system to specification requirements.

7.2.7.1 *Procedure for Calculating Reference-Value Loads and Weights*—Only certified weighing devices (see 7.1.1) shall be utilized for determining reference-value tire loads. Reference-value loads and weights are calculated by summing tire loads. For WIM systems that produce estimates of wheel loads, calculate reference-value axle load by summing two wheel loads, axle-group load by summing the wheel loads for all wheels in each axle group, and gross-vehicle weight by summing the wheel loads for all wheels on the vehicle. For WIM systems that do not produce estimates of wheel loads, sum the appropriate axle loads to calculate axle-group loads and gross-vehicle weight, if wheel-load weighers are not used. If wheel-load weighers are used, use the procedure stated above for summing tire loads.

7.2.7.2 *Procedure for Calculating Percent of Non-Conforming Data Items*—For each data item that is produced by the WIM system and shown in Table 2, calculate the percent difference in the value and the corresponding reference value by the following relationship:

$$d = 100[(C - R)/R] \quad (1)$$

where:

d = difference in the value of the data item produced by the WIM system and the corresponding reference value expressed as a percent of the reference value, %,
C = value of the data item produced by the WIM system, and
R = corresponding reference value for the data item.

7.2.7.3 Determine the number of calculated differences that exceeded the tolerance shown in Table 2 for each data item and express this number as a percent of the total number of observed values of this item by the following relationship:

$$P_{de} = 100[n/N] \quad (2)$$

where:

P_{de} = percent of calculated differences that exceeded the specified tolerance value,
n = number of calculated differences that exceeded the specified tolerance value, and
N = total number of observed values of the data item.

7.2.8 *Interpretation of Test Results and Report*—If any specified WIM-system function failed, or if more than 5 % of the calculated differences for any applicable data item (specified in Section 4) resulting from all passes of the two test vehicles (each vehicle made five or more passes at two difference speeds) and from the single pass of each selected vehicle over the sensors at normal speed exceed the specified tolerance (specified in Section 5) for that item, declare the WIM system dysfunctional or inaccurate and report that it

failed the Type-Approval Test. Regardless of whether the system fails or passes the Type-Approval Test, tabulate all data used in making the determination, including the surface conditions, and send the results to ASTM Committee E17 on Vehicle-Pavement Systems within 90 days after completion of on-site data collection so that statements about bias and precision of the test can be formulated as experience is accumulated.

7.2.9 *Precision and Bias*—A statement about precision and bias of a test method should allow potential users of the test to assess in general terms its usefulness for a particular purpose. It is intended to provide guidance as to the amount of variation that can be expected in test results when the test is conducted in one or more comparable laboratories or situations. This is a test method that produces pass-or-fail results. The precision and bias of the procedure and calculations in this acceptance test for Type I and Type II WIM systems are being determined.

7.3 *Type-Approval Test for Type III WIM Systems*:

7.3.1 *Scope*—A procedure is given for conducting a Type-Approval Test of a Type III WIM system. This type system is designed for installation at weight-enforcement stations with sensors off the main highway lanes, or in one or more main highway lanes, to identify vehicles operating within a user-specified range of speeds between 10 and 80 mph (16 and 130 km/h), inclusive, that are suspected of weight-limit or load-limit violation. The system must also control official traffic-control devices that direct suspect vehicles to a scale for confirmation weighing and measurement and direct non-suspect vehicles past the scales without stopping. The Type-Approval Test shall be conducted under excellent site conditions and under traffic that includes vehicles that are representative of the vehicle classes of interest where Type III WIM systems will usually be installed. Performance requirements for this type system are presented in Section 5, and user requirements are given in Section 6. Tolerances for Type III WIM systems are somewhat smaller than for Types I and II, as the required reference-value weighing devices are continually available for on-site calibration at any chosen time. Test loading for the Type-Approval Test is designed to allow evaluation of the variability in measured or calculated loads and weights of static vehicles as well as the accuracy of WIM-system estimates of the various data items produced by the system. Capability of the system to detect excessive acceleration of a vehicle while it is over the off-main-lane WIM-system sensors is also evaluated. All vehicles used for test loading the Type III WIM system shall be weighed statically as described in 7.1.1 and 7.1.2 using the certified scales installed at the weight-enforcement site where the Type-Approval Test is conducted. When the sensors of the Type III WIM system are installed in the main highway lanes, the Type-Approval Test procedure shall be basically the same as described herein except that the deceleration testing described in 7.3.6.1 will not be conducted. The Type III system shall accommodate the same speed criteria as a Type I system, and the tolerances for 95 % probability of conformity shown in Table 2 for load and weight values for a Type III system shall be satisfied.

7.3.2 *Significance and Use*—Interpretation of the results from the Type-Approval Test will allow the user to determine whether the tested Type III WIM system is capable of meeting or exceeding the performance requirements stated in Section 5. This can also indicate the potential upper limit of performance that can be achieved by the particular type of system as the road surface conditions that potentially affect the location and magnitude of dynamic tire forces significantly shall be the best available for conducting the Type-Approval Test and shall, as a minimum, satisfy the user requirements shown in Section 6.

7.3.3 *Site for Type-Approval Test*—See 7.2.3.

7.3.4 *Test Unit for Type-Approval Test Loading*—The test unit for loading the WIM system being evaluated in the Type-Approval Test shall be the same as specified in 7.2.4, except that each vehicle selected from the traffic stream for inclusion in the loading test unit shall have one or more of the following loads or weights that is at least 80 % of the applicable legal limit: gross-vehicle weight, axle-group load, axle load, or wheel load.

7.3.5 *Calibration*—See 7.2.5.

7.3.6 *Procedure*—The procedure for conducting the Type-Approval Test for Type III WIM systems shall be the same as described in 7.2.6 with the following exceptions:

7.3.6.1 After 7.2.6.8, if continuation is approved, verify the ability of the WIM system with sensors installed off the main highway lanes to detect excessive acceleration by having the driver of each loaded test vehicle approach the WIM-system sensors at a speed between 30 and 40 mph (50 and 60 km/h), inclusive, and apply heavy braking for approximately 1 s while the vehicle is passing over the sensor array. Excessive negative acceleration (deceleration) should be indicated by the Violation Code DE (see Table 4). Compare the WIM-system estimates of weights for these runs with those for steady-speed runs and include these comparisons in the data reported to ASTM Committee E17 on Vehicle-Pavement Systems. Proceed with 7.2.6.9.

7.3.7 *Calculation*—See 7.2.7.

7.3.8 *Interpretation of Test Results and Report*—See 7.2.8.

7.3.9 *Precision and Bias*—The precision and bias of the procedure and calculations in this Type-Approval Test for the Type III WIM system are being determined.

7.4 *Type-Approval Test for Type IV WIM Systems*:

7.4.1 *Scope*—The Type IV WIM system is designed to detect weight-limit or load-limit violations by highway vehicles for enforcement purposes. Even though this type WIM system has not yet been approved for use in the United States, a procedure for type-approval testing to determine conformity with the performance requirements specified in Section 5 is presented. The procedure includes data collection needed for evaluating the variability in reference-value tire loads measured by certified wheel-load weighers, axle-load scales, a multi-platform vehicle scale, or a combination thereof, as well as the performance of the WIM-system in either measuring the tire loads of a vehicle stopped on the WIM-system sensors or estimating the tire loads and dimensions of a static vehicle from measurements made with the vehicle moving at a steady speed of 10 mph (16 km/h) or less. Reference-value tire loads shall be measured by a multi-platform vehicle scale or an axle-load scale (see 7.1.1) when Option 2, exempting the Type

IV WIM system from producing wheel-load information, (see 4.1.4) has been specified for the Type IV WIM system under test. When this option has not been specified, wheel-load values are required, and reference-value tire loads shall be measured by placing wheel-load weighers directly on the load-receiving surface of the multi-platform vehicle scale or the axle-load scale and raising all tire-pavement contact surfaces approximately into the same plane as described in 7.1.2. The sum of the tire-load values from the wheel-load weighers should compare, within applicable tolerances, with the corresponding value from the scale upon which they are placed; then, the wheel-load-weigher indications should be used only to apportion the axle load indicated by the scale between the wheels on the axle. Alternatively, an axle-load scale or a multi-platform vehicle scale that has approaches and aprons adjacent to the load-receiving platform(s) that can support the tire-pavement contact surfaces of all tires on the vehicle being weighed as described in 7.1.2 may be used to weigh wheel loads on one end of an axle by positioning the wheel(s) on the other end of the axle on the adjacent apron. When this alternative technique is used, the wheel loads on both ends of the axle shall be determined, and then used only to apportion the measured axle load between the wheels on each end of the axle.

7.4.2 *Significance and Use*—Interpretation of the results from the Type-Approval Test will allow the user to determine whether the tested Type IV WIM system is capable of meeting or exceeding the performance requirements stated in Section 5. This can also indicate the potential upper limit of performance that can be achieved by the particular type of system as the test conditions at the weight-enforcement site shall be the best available for conducting the Type-Approval Test and shall, as a minimum, satisfy the user requirements shown in Section 6.

7.4.3 *Site for Type-Approval Test*—Either an axle-load scale or a multi-platform vehicle scale is required at the site. Other site requirements are the same as 7.2.3. Neither the longitudinal profile nor the cross slope shall exceed 1 %.

7.4.4 *Test Unit for Type-Approval Test Loading*—See 7.3.4.

7.4.5 *Calibration*—Within seven days prior to beginning the Type-Approval Test, every Type IV system that uses tire-force sensors (see 5.13) that support the entire tire-contact area(s) of all tires on a wheel assembly simultaneously shall, when subjected to field standard test weights (see 5.13.1), be adjusted to meet the acceptance tolerance for wheel-load weighers or for portable axle-load weighers as stated in *NIST Handbook 44* **(1)**, depending upon whether wheel-load data or only axle-load data (4.1.4, Option 2) are of interest. Type IV systems that use tire-force sensors that support only part of the tire-contact area(s) at one time during dynamic tire-force measurements shall be calibrated within this same time period as described in 7.5, except the speeds (see 7.5.5.3) shall be 2 and 10 mph (3 and 16 km/h) (see 4.1.4). All weighing apparatus used in the Type-Approval Test for determining reference-value tire loads shall be certified as meeting the applicable maintenance tolerance specified in *NIST Handbook 44* **(1)** within 30 days prior to beginning the Type-Approval Test.

7.4.6 *Procedure*—The procedure for conducting the Type-Approval Test for Type IV WIM systems shall be the same as described in 7.2.6 with the following exceptions:

7.4.6.1 In 7.2.6.2, also ensure that an axle-load scale or a multi-platform vehicle scale is available at or near the site,

7.4.6.2 In 7.5.5.3, 7.2.6.5 and 7.2.6.10, the respective minimum, intermediate, and maximum speeds of the test vehicles shall be 2, 6, 8, and 10 mph (3, 10, 13, and 16 km/h),

7.4.6.3 In 7.2.6.9, calculate the difference in each load or weight from the arithmetic mean and compare the difference to one-half the applicable tolerance for a Type IV WIM system shown in Table 2.

7.4.6.4 After 7.2.6.8, if continuation is approved, verify the ability of the WIM system to detect excessive acceleration by having the driver of each loaded test vehicle approach the WIM-system sensors at a speed between 8 and 10 mph (12 and 16 km/h) and apply heavy braking for approximately 1 s while the vehicle is passing over the sensor array. Excessive negative acceleration (deceleration) should be indicated by the Violation Code DE (see Table 4). Compare the WIM-system estimates of loads and weights for these runs with those for steady-speed runs and include these comparisons in the data reported to ASTM Committee E17 on Vehicle-Pavement Systems. Proceed with 7.2.6.9.

7.4.6.5 In 7.2.7.2, calculate the differences in WIM-estimated load and weight values from their respective reference values and express the differences in pounds (kilograms), rather than percent..

7.4.7 *Calculation*—See 7.2.7 except as described in 7.4.6.5.

7.4.8 *Interpretation of Test Results and Report*—See 7.2.8.

7.4.9 *Precision and Bias*—The precision and bias of the procedure and calculations in this Type-Approval Test for the Type IV WIM system are being determined.

7.5 *Calibration Procedure for Type I, Type II, and Type III WIM Systems*:

7.5.1 *Scope*—A procedure is given for on-site calibration of Type I, Type II, and Type III WIM systems. This procedure shall be conducted by the user with cooperation of the vendor, or by their authorized representatives as a fundamental part of every Type-Approval Test and is recommended for inclusion in every On-site Acceptance Test (see 7.6). It requires that two loaded, pre-weighed and measured (see 7.1.3) test vehicles each make multiple runs over the WIM-system sensors in each lane at specified speeds.

7.5.2 *Significance and Use of Calibration*—The tire-force sensors of a WIM system are typically designed to produce a signal, with respect to time, that is linearly proportional to the magnitude of the component of dynamic tire force applied perpendicularly to the road surface by the tires of a moving vehicle. The function of calibration is to define factors, that will be subsequently applied within WIM-system calculations to correlate the observed vehicle speed and tire-force signals with the corresponding tire-load and axle-spacing values for the static vehicle. The dynamic tire force results from a complex interaction among the vehicle components, the WIM-system sensors, the road surface surrounding the sensors, and other factors. Road-surface profiles and sensor installation are different at every WIM site, and every vehicle has unique tire, suspension, mass, and speed characteristics. Therefore, it is

necessary to recognize the effects of these site-specific, speed-specific, and vehicle-specific influences on WIM-system performance and attempt to compensate for their adverse effects as much as is practicable via on-site calibration. The calibration procedure shall be applied immediately after the initial installation of a Type I or Type II, or Type III WIM system at every site. It shall be applied again when a system is reinstalled or whenever site conditions or WIM-system components (including software and settings) have changed significantly. Recalibration shall be performed no less frequently than annually.

7.5.3 *Test Unit for Calibration Loading*—The test unit for calibration loading shall comprise two loaded, pre-weighed, and measured test vehicles that will make multiple runs over the WIM-system sensors in each lane at prescribed speeds. One of the loaded test vehicles shall be Class 05 and the other Class 09 (see Table 3). These test vehicles shall have a suspension type (leaf spring, air, other) that is deemed by the user to be representative of most vehicles of their type operating at the site. They shall be loaded to at least 90 % of their respective registered gross-vehicle weight with a non-shifting, approximately-symmetric (side-to-side) load and shall be in excellent mechanical condition. Special care shall be exercised to ensure that the tires on the test vehicles are in excellent condition (preferably dynamically balanced) and inflated to recommended pressures. Reference-value weighing and measurement of the two test vehicles shall be in accordance with 7.1.3.

7.5.4 *Site Conditions*—Before initial calibration begins, the existing site conditions (see 6.1) in each lane where WIM-system sensors are installed shall be described quantitatively and made a matter of permanent record for future reference (see 6.1.5 for surface smoothness measurement). Estimates of the location and magnitude of each observed pavement surface deviation greater than the 0.125 in. (3 mm) measured beneath the straightedge with the circular plate should be documented. Record the time and the approximate ambient air temperature at the beginning, during, and at the end of the calibration process. After initial calibration, alternative means of measuring the surface smoothness of the paved roadway 200 ft (60 m) in advance of and 100 ft (30 m) beyond the WIM-system sensors may be used to avoid closing the traffic lane. Data from suitable inertial profiling instruments analyzed via computer simulation of the 20-ft (6-m) straightedge and circular plate is suggested as a possible alternative measurement technique.

7.5.5 *Procedure*—The following steps are involved in the on-site calibration process for each instrumented lane:

7.5.5.1 Adjust all WIM-system settings to vendor's recommendations or to a best estimate of the proper setting based upon previous experience.

7.5.5.2 With a calibrated radar speed meter or by some other means (such as wheelbase/time) that is acceptable to both the user (or a recognized representative of user's interests) and the vendor, measure the speed of each test vehicle every time it passes over the WIM-system sensors. The radar speed meter, if used, shall be calibrated by the method recommended by its vendor within 30 days prior to use.

7.5.5.3 Using traffic control procedures approved by the appropriate public authority and other reasonable safety precautions, have each test vehicle (see 7.5.3) make a series of three or more runs over the WIM-system sensors at the minimum and at the maximum speed specified by the user who is conducting the test between 10 and 80 mph (16 and 130 km/h) for Type I, Type II, and Type III systems. The maximum specified speed shall be less than the legal speed limit at the site. These two speeds should differ by at least 20 mph (30 km/h) and should be above and below the average speed of vehicles operating at the site. Then, have each test truck pass over the sensors three or more times at an intermediate speed that is representative of the prevailing speed of truck traffic at the site. At each speed, one or more runs shall be made with the test vehicle tires near the left-hand lane edge, and one or more runs with the test vehicle tires near the right-hand lane edge. The other runs shall be made with the test vehicle approximately centered in the lane. Record all data, and note the vehicle record number for every run of each test vehicle.

7.5.5.4 Calculate the difference in the WIM-system estimate and the respective reference value for the two test vehicles for each speed, wheel-load, axle-load, tandem-axle load, gross-vehicle-weight, and axle-spacing value, express the difference in percent (see 7.2.7), and find a mean value for the differences for each set of values.

7.5.5.5 Make the necessary changes, according to the vendor's recommendations, to the WIM-system settings that will adjust the mean value of the respective differences for each value to equal approximately zero. For WIM systems that estimate wheel load (Type I and perhaps other types), the adjustment will be to wheel-load estimates on each side of the vehicles, separately. For systems that estimate axle loads only, the adjustment will be for axle loads. Some WIM systems allow calibration factors to be defined and applied for selected wheels, axles, or axle groups in relation to their respective location on the vehicle or combination; this is a feature that can potentially improve WIM-system tire-load estimates. It is also important for the WIM system to include a feature that invokes the proper set of calibration factors for use in estimating load, weight, and axle spacing values when the observed vehicle is running at a particular, measured speed. These factors can be derived from the measurements made when the two test vehicles each made three or more runs at three different speeds. Every vehicle interacts with the road surface differently at different speeds, but about the same at the same speed. Adjustment to the speed setting will probably affect axle-spacing estimates.

7.6 *On-Site Acceptance Test for Type I, Type II, and Type III WIM Systems*:

7.6.1 *Scope*—This test method provides the WIM-system user with a practicable means for determining whether or not a new or modified Type I, Type II, or Type III system that has been installed at a particular site meets or exceeds specified functional and performance requirements (see Sections 4 and 5) and defines for the user and the vendor the test method that will be applied for evaluating the installed WIM system. It also requires the user to quantify and document the site conditions that exist at the site (see 6.1 and 7.5.4) when the test is conducted. It uses two test vehicles for the test loading unit and is an abbreviated form of the more-rigorous Type-Approval

Test (see 7.2 and 7.3) for these WIM-system types that may be used in lieu of a full Type-Approval Test under the circumstances outlined in 6.4.1.

7.6.2 *Significance and Use*—In procuring a new WIM system or in contracting for a major modification to an existing system for use at a particular site, the user shall specify (see 6.4) an acceptance test method and the schedule of testing that will be accomplished prior to final acceptance of the product or service by the user and final payment to the vendor. The On-site Acceptance Test described here may be referenced for this purpose in the specification.

7.6.3 *Procedure*—The test shall be conducted on-site by the user or the user's authorized representative, in cooperation with the vendor, immediately after a Type I, Type II, or Type III WIM System has been installed or modified. The following steps are required for each instrumented lane.

7.6.3.1 Execute the Calibration Procedure as presented in 7.5 and install the settings defined in 7.5.5.5 on the WIM-system. If agreed upon in advance by both the user and the vendor, another calibration procedure may be used in lieu of the one presented in 7.5 for conducting the On-site Acceptance Test.

7.6.3.2 With the settings agreed upon by both the user and the vendor installed on the WIM system, have each of the two test vehicles (see 7.5.3) make five or more runs over the sensors in each lane at an attempted speed approximately 5 mph (8 km/h) less than the maximum speed, and then five or more additional runs at an attempted speed approximately 5 mph (8 km/h) greater than the minimum speed, used during calibration (see 7.5.5.3). At each speed, one or more runs shall be made with the test vehicle tires near the left-hand lane edge, and one or more runs with the test vehicle tires near the right-hand lane edge. The other runs shall be made with the test vehicle approximately centered in the lane. With a calibrated radar speed meter, or by some other means (such as wheelbase/time) that is acceptable to both the user and the vendor, measure the speed of each test vehicle every time it passes over the WIM-system sensors. Record all data, and note the vehicle record number for every run of each test vehicle. The radar speed meter, if used, shall be calibrated by the method recommended by its vendor within 30 days prior to use.

7.6.4 *Calculation*—Make the calculations shown in 7.2.7 for the 20 or more runs (five or more runs at two speeds by two vehicles) of the test vehicles and compare the functions and performance of the WIM system with all specification requirements, including speed and axle spacing. See Section 4 for functions and 4.1.3, Section 5, and 6.4.1 for performance tolerances.

7.6.5 *Interpretation of Test Results and Report*—All specified data-collection features, data-processing features, and options of the system type described in Section 4 shall be demonstrated to function properly before the system is accepted. If any of these fails to function properly, or if more than 5 % of the calculated differences for any applicable data item resulting from all passes of the two test vehicles exceeded the tolerance specified in 4.1.3, Section 5, or 6.4.1 for that item and WIM-system type, declare that the WIM system was dysfunctional or inaccurate and record the fact that it failed the On-Site Acceptance Test. Regardless of whether the system fails or passes the test, tabulate all data used in making the determination, including the surface conditions, and send the results to ASTM Committee E17 on Vehicle-Pavement Systems within 90 days after completion of on-site data collection so that statements about bias and precision of the test can be formulated as experience is accumulated.

7.6.6 *Precision and Bias*—This is a new test method that produces pass-or-fail results. The precision and bias of the procedure and calculations in this On-site Acceptance Test for Type I, Type II, and Type III WIM systems are being determined.

8. Keywords

8.1 axle load; pavement and bridge; traffic; vehicle; weighing vehicles; weigh-in-motion; weight enforcement; WIM

ANNEX

(Mandatory Information)

A1. COMPUTATION OF EQUIVALENT SINGLE-AXLE LOADS (ESALs) BY WIM SYSTEMS

A1.1 Load Equivalence Factors and ESALs

A1.1.1 A numerical factor that defines the number of applications of a chosen standard axle load and type that is expected to cause damage to a specified pavement structure equivalent to the damage that will be caused by one pass of an axle load and type under consideration is called a Load Equivalence Factor (LEF). The vehicle records produced by Type I and Type II WIM systems (see 4.1.1 and 4.1.2) include data for defining axle load (see 3.2.4) and type (front, single, tandem, triple) for each individual axle or axle set (see 3.2.7, 3.2.8, 3.2.11).

A1.1.2 Equivalent Single Axle Loads (ESALs) are the cumulative number of applications of the chosen standard single-axle load that will have an equivalent effect on pavement serviceability as all applications of various axle loads and types by vehicles in a mixed-traffic stream. ESALs are determined by summing the calculated LEF for each individual axle or axle set according to axle load and type on all vehicles in the measured or assumed mixed-traffic stream for the defined pavement structure.

A1.1.3 *AASHTO Load Equivalence Factors*—The load equivalence factors, LEFs, that were derived from statistical analysis of data taken during the AASHO (now AASHTO) Road Test **(3, 4)** are frequently used for pavement design and analysis. For use in the *AASHO Interim Guides for Design of Pavement Structures, 1972 and 1981*, and in subsequent

AASHTO Guides for Design of Pavement Structures, 1986 and 1993, (see 2.2), an 18 000-lb single axle was chosen as the standard axle load and type for calculating LEFs for flexible and rigid pavements. In addition to axle load and axle type, each LEF depends on the structural capacity (structural number, $\overline{SN}$) of a flexible pavement or on the thickness, D, of a rigid pavement, plus the terminal condition that is chosen to define failure of the pavement structure (terminal serviceability, p_t). The AASHTO equations for calculating LEFs for both flexible and rigid pavements are presented in the following sections.

A1.2 AASHTO Axle Load Equivalence Factors and ESALs for Flexible Pavements

A1.2.1 *AASHTO Design Equations*—The design equations for flexible pavements presented in the *AASHO Interim Guide for Design of Pavement Structures, 1972, Appendix C* (see 2.2), are:

$$\log W_t = 5.93 + 9.36 \log (\overline{SN} + 1) - 4.79 \log (L_1 + L_2) + 4.33 \log L_2 + \frac{G_t}{\beta} \quad \text{(A1.1)}$$

$$\beta = 0.40 + \frac{0.081\,(L_1 + L_2)^{3.23}}{(\overline{SN} + 1)^{5.19}\, L_2^{3.23}} \quad \text{(A1.2)}$$

$$G_t = \log \left[\frac{4.2 - p_t}{4.2 - 1.5} \right] \quad \text{(A1.3)}$$

where:

W_t = number of axle load applications at the end of time t for axles with dual tires,
$\overline{SN}$ = structural number, an index number derived from analysis of traffic, roadbed soil conditions, drainage, and regional factor that may be converted to a thickness of flexible pavement layers through the use of suitable layer coefficients that are related to the layer thickness and modulus of the material being used in each layer of the pavement structure,
L_1 = load on one single axle, or on one tandem-axle set, lb/1000,
L_2 = axle-type code: 1 for a single axle, 2 for a tandem-axle set,
β = a function of design and load variables that influences the shape of the P versus W serviceability curve,
G_t = a function (the logarithm) of the ratio of loss in serviceability at time t to the potential loss taken to a point where $p_t = 1.5$, and
p_t = serviceability at the end of time t; terminal serviceability. (Serviceability is the ability of a pavement at the time of observation to serve high-speed, high-volume automobile and truck traffic.).

A1.2.2 *Calculation of AASHTO LEFs*—The design equation (Eq A1.1) for flexible pavements can be arranged into a ratio format and solved to calculate a load equivalence factor. The number of applications of an 18 000-lb single-axle load $W_{t_{18,1}}$ that is expected to cause an equivalent change in serviceability to a flexible pavement with the same structural number $\overline{SN}$ and terminal serviceability p_t as one application $W_{t_{L_i,n}} = 1$ of an axle load under consideration L_i and axle type n is called the Load Equivalence Factor, $LEF_{L_i n}$. This load equivalence factor can be calculated by solving the following equations. **(6)**

$$LEF_{L_i,n} = \frac{W_{t_{18,1}}}{W_{t_{L_i,n}}} = \left[\frac{(L_i + n)^{4.79}}{(18 + 1)^{4.79}} \right] \left[\frac{10^{G_t/\beta_{18,1}}}{(10^{G_t/\beta_{L_i,n}})\,(n^{4.331})} \right] \quad \text{(A1.4)}$$

$$\beta_{L_i,n} = 0.40 + \frac{0.081(L_i + n)^{3.23}}{(\overline{SN} + 1)^{5.19}\,(n^{3.23})} \quad \text{(A1.5)}$$

$$\beta_{18,1} = 0.40 + \frac{1094}{(\overline{SN} + 1)^{5.19}} \quad \text{(A1.6)}$$

where:

$LEF_{L_i n}$ = Load Equivalence Factor; the number of 18 000-lb single-axle load applications that will have an equivalent effect upon pavement serviceability as one application of a load L_i on a type n axle for the given flexible pavement structural number $\overline{SN}$ and terminal serviceability p_t,
L_i = load i on the axle set (type) under consideration, lb/1000,
n = axle-type code: 1 for a single axle, 2 for a tandem-axle set, or 3 for a triple-axle set, (Support for using $n = 3$ to calculate LEFs for triple-axle sets is presented in *AASHTO 1986, Vol 2, Appendix MM*, see 2.2.),
G_t = see (Eq A1.3).

A1.2.3 *Calculation of AASHTO ESALs*—Equivalent Single Axle Loads (ESALs), by AASHTO's concept, are the cumulative number of applications of an 18 000-lb single-axle load (a common denominator) that will have an equivalent effect on pavement serviceability of a specified pavement structure as all applications of various axle loads and types by vehicles in a mixed-traffic stream. AASHTO ESALs are determined by calculating the LEF for each axle set on all vehicles in a measured or assumed mixed-traffic stream according to its axle type (single, tandem, triple) and magnitude of load for a defined pavement structure and terminal serviceability, and summing the LEFs. The LEF calculated for a single axle is applicable only to nonsteering axles and to single-tire single axles on two-axle vehicles loaded to 2000 lb or less, as the regression equations developed from analysis of the AASHO Road Test data are based only on such axles. The damaging effect of the steering (front) axles, with single tires, on the test trucks was not evaluated separately, but instead was incorporated into the effects resulting from the other axles on the test trucks, called load axles. The regression coefficients in the AASHTO design equations are sensitive to the units of measurement for load; therefore, AASHTO ESALs must be calculated only in U.S. customary units.

A1.3 AASHTO Axle Load Equivalence Factors and ESALs for Rigid Pavements

A1.3.1 *AASHTO Design Equations*—The design equations for rigid pavements presented in the *AASHO Interim Guide for Design of Pavement Structures, 1972, Appendix D, Revised 1981* (see 2.2), are:

$$\log W_t = 5.85 + 7.35 \log (D + 1) - 4.62 \log (L_1 + L_2) + 3.28 \log L_2 + \frac{G_t}{\beta} \quad \text{(A1.7)}$$

$$\beta = 1.0 + \frac{3.63(L_1 + L_2)^{5.20}}{(D + 1)^{8.46} L_2^{3.52}} \quad \text{(A1.8)}$$

$$G_t = \log \left[\frac{4.5 - p_t}{4.5 - 1.5} \right] \quad \text{(A1.9)}$$

where:

D = thickness of rigid pavement slab, in.

All other terms in these equations are as defined in A1.2.1.

A1.3.2 *Calculation of AASHTO LEFs*—The design equation (Eq A1.7) for rigid pavements can be arranged into a ratio format and solved to calculate a load equivalence factor. The number of applications of an 18 000-lb single-axle load $W_{t_{18},1}$ that is expected to cause an equivalent change in serviceability to a rigid pavement with the same slab thickness D and terminal serviceability p_t as one application $W_{t_{L_i n}} = 1$ of an axle load under consideration L_i and axle type n is called the Load Equivalence Factor, $LEF_{L_i n}$. This load equivalence factor can be calculated by solving the following equations. **(6)**

$$LEF_{L_i, n} = \frac{W_{t_{18},1}}{W_{t_{L_i, n}}} = \left[\frac{(Li + n)^{4.62}}{(18 + 1)^{4.62}} \right] \left[\frac{10^{G_t/\beta_{18,1}}}{(10^{G_t/\beta_{L_i, n}})\,(n^{3.28})} \right] \quad \text{(A1.10)}$$

$$\beta_{L_i, n} = 1.0 + \frac{3.63(L_i + n)^{5.20}}{(D + 1)^{8.46}\,(n^{3.52})} \quad \text{(A1.11)}$$

$$\beta_{18,1} = 1.0 + \frac{1.620 \times 10^7}{(D + 1)^{8.46}} \quad \text{(A1.12)}$$

where:

$LEF_{L_i n}$ = Load Equivalence Factor; the number of 18 000-lb single-axle load applications that will have an equivalent effect upon pavement serviceability as one application of a load L_i on a type n axle for the given rigid pavement slab thickness D and terminal serviceability p_t,

D = thickness of rigid pavement slab, in.

L_i = load i on the axle set (type) under consideration, lb/1000,

n = axle-type code: 1 for a single axle, 2 for a tandem-axle set, or 3 for a triple-axle set, (Support for using $n = 3$ to calculate LEFs for triple-axle sets is presented in *AASHTO 1986, Vol 2, Appendix MM*, see 2.2.),

G_t = see (Eq A1.9).

A1.3.3 *Calculation of AASHTO ESALs*—See A1.2.3.

REFERENCES

(1) "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices," *National Institute of Standards and Technology (NIST) Handbook 44*, U.S. Government Printing Office, Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402-9328, ISBN 0-16-049313-7.

(2) *Traffic Monitoring Guide, Third Edition*, February 1995, U.S. Department of Transportation, Federal Highway Administration, Office of Highway Information Management, Washington, DC 20590.

(3) Highway Research Board, "The AASHO Road Test," Report 5, Pavement Research, *Highway Research Board Special Report 61E*, 1962.

(4) Highway Research Board, "The AASHTO Road Test," Proceedings of a conference held May 16–18, 1962, St. Louis, Missouri, *Special Report 73*, Washington, DC 1962.

(5) Halvorsen, Don, "Finger on the Pulse, Piezos on the Rise," *Traffic Technology International*, UK & International Press, Abinger House, Church Street, Dorking, Surrey RH4 1DF, UK, ISSN 1356-9252, June/July 1999, pp. 52-57.

(6) Highway Research Board, "Evaluation of AASHO Interim Guides for Design of Pavement Structures," *National Cooperative Highway Research Program Report 128*, 1972, p. 20.

(7) Carmichael III, R.F., Roberts, F.L., Jodahi, P.R., Treybig, H.J., and Finn, F.N., "Effects of Changes in Legal Load Limits on Pavement Costs: Volume 1—Development of Evaluation Procedure," *Federal Highway Administration Report No. FHWA-RD-78-98*, July 1978.

INDIANA DOT RECURRING SPECIAL PROVISIONS

APPROVED EXPANSION JOINT SS DEVICES

Only the following expansion devices will be considered acceptable for use as expansion joint SS in accordance with 724.

(a) The Strupco 40SS as manufactured by the Structural Rubber Products Company, 2245 South Ninth, Springfield, Illinois, 62705, and detailed as Alternate A on Bridge Standard Sheet "SS-1A Joints", adopted December, 1994

(b) The SE-400 as manufactured by the Watson Bowman and Acme Corporation, 95 Pineview Drive, Amherst, New York, 14120, and detailed as Alternate B on Bridge Standard Sheet "SS-1A Joints", adopted December, 1994

(c) The Steelflex SSA as manufactured by the D. S. Brown Company, 300 E. Cherry Street, North Baltimore, Ohio, 45872, and detailed as Alternate C on Bridge Standard Sheet "SS-1B Joints", adopted December, 1994

(d) The RJ-400 as manufactured by R.J. Watson, Inc., P.O. Box 85, East Amherst, New York, 14051, and detailed as Alternate D on Bridge Standard Sheet SS-1B Joints, adopted December, 1994

Expansion joints SS other than those listed above will not be accepted for use. Expansion joints SS manufactured by the above listed companies which are not in accordance with the details shown on the referenced standard sheet will not be permitted.

BASIS FOR USE OF APPROVED OR PREQUALIFIED MATERIALS

The Standard Specifications are revised as follows:

SECTION 106, AFTER LINE 47, INSERT AS FOLLOWS:

The basis for use of materials shown in the List of Approved or Prequalified Materials will be the Engineer’s verification that the materials provided are included in the List of Approved or Prequalified Materials.

BEARING ASSEMBLIES

The Standard Specifications are revised as follows:

SECTION 726, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 726 – BEARING ASSEMBLIES

726.01 Description

This work shall consist of furnishing and installing bearing assemblies in accordance with the applicable requirements of 915.04, the details shown on the plans, the manufacturer's recommendations, or as directed.

726.02 Materials

Materials shall be in accordance with 915.04.

726.03 Construction Requirements

Masonry plates for polytetrafluoroethylene bearings shall be perfectly level. The tolerance between the top face of the masonry plate and the bottom face of the top plate shall be a maximum of 1/16 in. (1.6 m), measured at the ends of a diameter of the bottom plate of the bearing assembly. Other dimensional tolerances shall be as shown on the plans or in accordance with 915.04(d).

726.04 Method of Measurement

This work will be measured by the number of bearing assemblies complete in place.

726.05 Basis of Payment

This work will be paid for at the contract unit price per each for bearing assemblies of the type shown on the Schedule of Pay Items.

Payment will be made under:

Pay Item	Pay Unit Symbol
Bearing Assembly, ____ type	EACH

The cost of having a manufacturer's representative at the job site during installation, and all necessary incidentals shall be included in the cost of this work.

SECTION 915, AFTER LINE 284, INSERT AS FOLLOWS:

915.05 Polytetrafluoroethylene Bearing Assemblies

A copy of the manufacturer's design manual shall be submitted for approval when directed.

All steel components shall be in accordance with ASTM A 709 Grade 36 (ASTM A 709M Grade 250) unless otherwise shown on the plans. Where these assemblies are to be used in conjunction with self-weathering steel bridges, the steel components shall be in accordance with ASTM A 709 Grade 50W (ASTM A 709M Grade 345W). Stainless steel mating surfaces shall be 14 gage minimum ASTM A 240 type 304 sheets with a maximum surface roughness of 20 Rms.

The polytetrafluoroethylene shall be 100% virgin unfilled polymer or 15% glass filled and etched on the bonding side. The properties of the polytetrafluoroethylene shall be in accordance with the following:

REQUIREMENT	TEST METHOD	VALUE
Hardness at 78°F (25°C)	ASTM D 5212	50-65 Durometer
Tensile Strength, minimum	ASTM D 638	2,500 psi (17.24 MPa)
Elongation, min. percent	ASTM D 638	200
Specific Gravity	ASTM D 792	2.1 to 2.3

Polytetrafluoroethylene, where required, shall be bonded to grit blasted steel. The polytetrafluoroethylene guides shall be bonded and mechanically fixed into place. The bonding compound used to bond polytetrafluoroethylene or elastomeric pads to steel plates shall be in accordance with ASTM D 429, Method B.

All steel surfaces exposed to the environment shall be zinc metallized and shall be 7 mils (175 µm) thick in accordance with CSA G-189, or painted with structural primer in accordance with 909.02(a). The finish coat for painted steel shall be in accordance with 909.02(d). The color shall be in accordance with Federal Color Standard 595a, color No. 30045.

All required materials shall be covered by a type B certification in accordance with 916.

EXTENSION OF CAST IRON FLOOR DRAINS

This work shall consist of extension of cast iron floor drains by 1 ft (305 mm) with polyvinylchloride pipe as shown on the plans.

This work will not be measured for payment. This work will be paid for at the contract lump sum price for extension of cast iron drains for the structure number shown on the Schedule of Pay Items. The costs of furnishing, transporting, necessary storage of materials, all labor equipment, tools, and incidentals necessary shall be included in the cost of this work.

GENERAL BRIDGE REQUIREMENTS

The Standard Specifications are revised as follows:

SECTION 206, BEGIN LINE 136, INSERT AS FOLLOWS:

206.08 Preparation of Foundation Surfaces

Excavation for foundations on rock without piles shall extend a minimum of 2 ft (600 mm) into solid rock. All rock or other hard material, if

SECTION 702, AFTER LINE 21, INSERT AS FOLLOWS:

Concrete in superstructure, integral bents, and railings shall be class C. Concrete in bent caps, unless poured integrally with the superstructure; pier caps; abutment caps; pier stems; abutment walls; mudwalls; columns; crashwalls; collision walls; and wingwalls, unless poured with integral end bents, shall be class A. Concrete in footings shall be class B.

SECTION 702, BEGIN LINE 559, DELETE AND INSERT AS FOLLOWS:

Forms for exposed concrete edges shall be ~~filleted and~~ chamfered ~~as shown on the plans and~~ 1 in. (25 mm). Forms shall be given a bevel or draft ~~for~~ in the case of all projections, such as girders and copings, to ensure easy removal.

SECTION 702, BEGIN LINE 1423, INSERT AS FOLLOWS:

The cost of forms, polyvinyl chloride deck drains, falsework, falsework piling, centering, expansion joints, waterproofing, curing, finishing, and necessary incidentals shall be included in the cost of the pay items. The cost of placing epoxy resin adhesive on existing concrete surfaces shall

SECTION 703, BEGIN LINE 49, INSERT AS FOLLOWS:

703.06 Placing and Fastening

Reinforcing steel shall not be ordered for piers or bents to be founded on soil or rock until the foundation conditions have been investigated. The bottom elevations of such footings will then be determined. Written permission will then be given to order such reinforcing steel. Sufficient excavation and all necessary soundings shall be made as directed so that exact bottom elevations of footings may be determined.

All dimensions shown on the plans for spacing of reinforcing bars apply to

SECTION 707, AFTER LINE 162, INSERT AS FOLLOWS:

Voids in precast concrete members shall be formed of approved material. Voids shall be vented during curing. All voids shall be drained by means of an approved method.

SECTION 707, AFTER LINE 175, INSERT AS FOLLOWS:

top of the curb section shall be finished in accordance with 702.21. The outside faces of fascia beams and the tops of all beams shall be sealed in accordance with 702.21. Such faces shall not be rubbed.

MASONRY COATING

The Standard Specifications are revised as follows:

SECTION 728, BEGIN LINE 1, INSERT AS FOLLOWS:

SECTION 728 – MASONRY COATING

728.01 Description

This work shall consist of the preparation of the concrete surfaces, cleaning such surfaces by means of sandblasting, and furnishing and applying masonry coating as described herein. The masonry coating shall be applied to all concrete surfaces shown on the plans or as directed.

MATERIALS

728.02 Materials

Materials shall be in accordance with 909.13.

CONSTRUCTION REQUIREMENTS

728.03 Surface Preparation

The surfaces to be masonry coated shall be given a finish in accordance with 702.21. Such surfaces shall then be sealed with a concrete sealer in accordance with 709. Air pockets of up to 1/4 in. (6 mm) in width and depth will not require grouting prior to application of the masonry coating. Air pockets larger than 1/4 in. (6 mm) in width and depth shall be filled with a grout mix composed of one part portland cement, two parts screened and washed sand graded to pass the No. 16 (1.18 mm) sieve with not more than 5% retained on the No. 30 (600 µm) sieve, and sufficient water to produce a thick liquid mix. The grout shall be applied to fill the air pockets and voids by using burlap pads, float sponges or other acceptable methods. As soon as the grout has taken its initial set, the surface shall be brushed to remove all loose grout, leaving the surface smooth and free of air pockets and voids. Prior to the application of the masonry coating, regardless of whether the concrete surface has been previously sealed, the surface to be coated shall be lightly sandblasted to remove flaking coatings, dirt, oil and other substances deleterious to the applied finish coating. Overblasting, exposing additional air pockets, or disfiguring the surface shall be prevented. Final cleaning shall be done with compressed air. The air compressor shall be equipped with suitable separators, traps, or filters which shall remove water, oil, grease, or other substances from the air line.

Prior to application of the finish coating, the surfaces shall have been prepared in accordance with the manufacturer's recommendations and shall be in a condition consistent with the manufacturer's requirements.

728.04 Application

The application, including equipment used, shall be in accordance with the manufacturer's recommendations. The material shall be applied by qualified personnel experienced in the work.

The material shall be thoroughly mixed in its original container. If skins have formed, the material will be rejected. The material shall not be thinned. The masonry coating may be applied over a damp, but not wet, surface. It shall be applied at a uniform film thickness at a rate of 45 ± 5 sft/gal. (1.1 ± 0.1 m^2/L) or as recommended by the manufacturer and approved by the Engineer. In either case, the application rate shall be sufficient to produce a uniform color and texture. The material shall be applied only when the ambient temperature is between 45°F (7°C)

and rising, and 100°F (38°C). It shall not be applied onto frozen surfaces or if rain is imminent. If rain occurs on a freshly applied surface, recoating may be required based on the extent of rain damage.

The material shall not be applied if dusty conditions exist in the vicinity of the surfaces to be coated. When dust conditions are beyond the control of the Contractor, or are generated off-site, application shall not take place until more favorable conditions exist. The application of the masonry coating shall be scheduled as one of the final finishing operations to minimize construction generated dust. A wet edge shall be maintained at all times to prevent lap marks. Stopping and starting in the middle of a section of concrete will not be permitted. If applying the coating with a roller, the material shall initially be applied in vertical strokes, cross rolled for even film and appearance, then finished with vertical strokes.

After application, the coating shall be dry to the touch within 48 h. The coating shall achieve a final cure within two to three weeks under ideal conditions.

728.05 Finishing

The coating material in the finished state shall be capable of accommodating the thermal and elastic expansion ranges of the substrate without cracking.

The texture of the completed finish coat shall be generally similar to that of rubbed concrete. The completed finish coat shall be tightly bonded to the structure to present a uniform appearance and texture. If necessary, additional coats shall be applied to produce the desired surface texture and uniformity.

Coatings shall be entirely removed from the structure upon their failure to positively adhere without chipping, flaking or peeling, or attaining the desired surface appearance. The finish coat shall be reapplied after proper surface preparation until the desired finished product is achieved. The average thickness of the completed finish coat shall not exceed 1/8 in. (3 mm).

The manufacturer shall submit, for each batch of material used, the product analysis data as follows:

(a) Weight per gallon (Mass per liter).
(b) Viscosity in Kreb units.
(c) Mass percent pigment.
(d) Mass percent vehicle solids.
(e) Infrared spectra of vehicle solution.

728.06 Method of Measurement

Only those measurements necessary to verify application rates will be made.

728.07 Basis of Payment

Masonry coating used on concrete bridge railing or bridge concrete median barrier will be paid for at the contract lump sum price for masonry coating. Concrete sealer will be paid for in accordance with 709.08.

Payment will be made under:

Pay Item	Pay Unit Symbol
Masonry Coating	LS
Surface Seal	LS

The cost of masonry coating used on roadway concrete median barrier shall be included in the cost of such median barrier. The cost of surface preparation, furnishing and applying the material, labor, equipment, and necessary incidentals shall be included in the cost of this work.

SECTION 909, AFTER LINE 617, INSERT AS FOLLOWS:

909.13 Masonry Coating Material

Masonry coating material shall be a commercial product designed specifically for coating concrete. The material shall be suitable for application on damp concrete, or concrete which is not fully cured. Only one coating material shall be used on an individual structure. It shall be delivered to the project site in sealed containers bearing the manufacturer's original labels. The brand, color, and type shall be clearly marked on each container. All material shall be from the same lot or batch unless otherwise authorized. A copy of the manufacturer's printed instructions shall be made available.

The coating material shall be stored in airtight, upright containers. The containers shall be stored in a dry enclosure where the temperature is above 45°F (7°C) and less than 100°F (38°C). Material which has been subjected to freezing will be rejected.

The masonry coating shall have a shelf life of not less than 12 months.

The color of the applied masonry coating shall be in accordance with Federal Color Standard No. 595a. Such color shall match the color identification number shown on the plans.

(a) Material Testing

All testing shall be performed by a qualified commercial testing laboratory acceptable to the Division of Materials and Tests.

The applied finish coating shall be subjected to and shall satisfy the requirements of the tests listed below, prior to use on a structure. The masonry coating manufacturer shall certify that the coating is compatible with the sealer used on the concrete surface.

1. Freeze-Thaw Tests

The applied finish coating shall be subjected to freeze-thaw cycle tests as follows:

a. Three concrete specimens, not less than 4 in. by 6 in. by 6 in. (100 mm by 150 mm by 150 mm), of the mix design for the structure shall be cast and cured. Fourteen days moist curing with a drying period at room temperature, 60°F to 80°F (16°C to 27°C), for 24 h will be required before the specimens are coated with the applied finish. There shall be no excessive oil on specimen forms.

The finish coating shall be applied to the sides of specimens at a spreading of 50 ± 10 sft/gal. (1.2 ± 0.2 m^2/l). Brush application will be permitted. Cementitious coatings shall be cured at room temperature and 50% relative humidity for 24 h, at room temperature and 90% relative humidity for 48 h, at room temperature and 50% relative humidity for four days for a total curing time of seven days. Other coatings shall be cured at room temperature for 48 h after the completing of curing.

b. The specimens shall be immersed in water at room temperature for 3 h, then removed.

c. The specimens shall be placed in cold storage at -15°F (-26°C) for 1 h, then removed.

d. The specimens shall be thawed at room temperature for 1 h.

e. Steps c. and d. above shall be repeated for a total of 50 cycles. At the end of 50 cycles, the specimens shall show no visible defects.

2. Accelerated Weathering

The applied finish coating shall be subjected to a 5,000 h exposure test in a Twin-Carbon-Arc-Weatherometer, ASTM G 23, Type D, at an operating temperature of 145°F (63°C). The test shall be made at 20 minute cycles consisting of 17 minutes of light and 3 minutes of water spray plus light. At the end of the exposure test, the exposed samples shall show no chipping, flaking, or peeling. The panels for this test shall be prepared by means of applying the coating at a spreading rate of 50 ± 10 sft/gal. (1.2 ± 0.2 m^2/l) to both sides and edges. Panels shall be cut from asbestos cement shingles in accordance with Federal Specification SS-S-346, Type I. Curing time shall be in accordance with 908.12(b)1.

3. Fungus Growth Resistance

The applied finish coating shall pass a fungus resistance test in accordance with Federal Specification TT-P-29g. Fungus growth shall not be indicated after a minimum incubation period of 21 days.

4. Abrasion Resistance

The applied finish coating shall pass the 3,000 liter sand abrasion test in accordance with Method 6191 Abrasion Resistance – Falling Sand, Federal Test Method Standard 141a. The specimens for this test shall be prepared by means of applying the coating to a cleaned steel panel at a spreading rate of 50 ± 10 sft/gal. (1.2 ± 0.2 m^2/l). The specimens shall be cured at room temperature for 21 days.

5. Impact Resistance

The coating shall be applied to a concrete panel prepared in accordance with Federal Test Method Standard 141a, Method 2051, at a spreading rate of 50 ± 10 sft/gal. (1.2 ± 0.2 m^2/l), and permitted to cure for 21 days at room temperature. The test shall then be run using the Gardner Mandrel Impact Tester in accordance with ASTM D 2794 using a 1/2 in. (13 mm) indenter with an impact load of 24 in.·lbs (2.7 joules). The coating shall show no chipping under this impact load.

6. Salt-Spray Resistance Test

A concrete specimen shall be coated at the rate of 50 ± 10 sft/gal. (1.2 ± 0.2 m^2/l) and cured for 21 days at room temperature. The coated specimen shall be exposed to a 5% salt solution in accordance with ASTM B 117 for 300 h where the atmospheric temperature is maintained at 90°F ± 2°F (32°C ± 1°C). At the end of 300 h of exposure, the coating shall show no ill effects, loss of adhesion, or deterioration.

7. Flexibility Test

A sheet metal specimen shall be coated with the applied finish coating at a rate of 45 ± 10 sft/gal. (1.1 ± 0.2 m^2/l) and permitted to cure for 48 h at room temperature. The coated specimen shall be bent 180 degrees over a 1 in. (25 mm) diameter mandrel. After bending, the coating shall show no breaking.

(b) Certification

Before material is applied, a type B certification in accordance with 916 shall be furnished attesting that the commercial product furnished is in accordance with the same formula as that previously subject to the tests specified below and approved. Copies of the test reports shall be attached to the certification. Reports for tests made more than four years prior to shipment to the contract will not be accepted.

A service record shall be supplied which shows that the finish coating material has a satisfactory service record on sealed concrete surfaces for a period of not less than five years prior to the date of submission of the service record. The finish coating shall also have shown satisfactory service characteristics without peeling, chipping, flaking, or non-uniform change in texture or color. A specific structure for the specific product shall be named for the service record.

RECYCLED FOUNDRY SAND

Description

Recycled foundry sand (RFS) consist of a mixture of residual materials used from ferrous or non-ferrous metal castings and natural sands. The Contractor shall have the option of incorporating RFS into applicable operations in accordance with 105.03.

Materials

RFS sources are to be selected from the Department's list of approved Foundry Sand Sources. RFS may be substituted for B borrow (211), Borrow (203) or Structure Backfill (211) upon the approval of the Department's Geotechnical Section.

The Contractor shall provide the Engineer with a copy of the Material Safety Data Sheet (MSDS) and a copy of the Indiana Department of Environmental Management's (IDEM) waste classification certification for Type III or IV residual sands prior to use. IDEM certification and MSDS shall clearly identify the stockpiles with regard to their extent and geographical location.

The Contractor shall provide the Engineer with a type A certification in accordance with 916 for RFS prior to use of the materials. The type A certification shall consist of applicable laboratory tests results of gradation and permeability. Consultants on the Department's list of approved Geotechnical Consultants shall perform the testing of RFS materials.

RFS use is restricted to the following additional requirements:

1. RFS derived from Type III residual sand shall not be permitted within 30 m (100 ft) horizontally, of a stream, river, lake, reservoir, wetland or any other protected environmental resource area.
2. RFS derived from Type III or Type IV residual sand shall not be placed within 50 meters (150 ft), horizontally, of a well, spring, or other ground source of potable water.
3. RFS shall not be permitted adjacent to metallic pipes, or other metallic structures.
4. RFS shall not be used as encasement material.
5. RFS shall not be used in MSE wall applications.

If RFS is used in embankment, excavation and replacement operations as a replacement for B borrow, borrow, or structure backfill, the following additional requirements shall be considered.

1. Borrow: RFS shall be in accordance with 903.
2. B borrow: RFS shall be in accordance with 211.
3. Structure Backfill: RFS shall be in accordance with 211 and shall have a minimum permeability of 10 m/day (30 ft/day) tested in accordance with AASHTO T 215 on samples that are compacted to a minimum of 95% of the maximum dry density in accordance with AASHTO T 99.

Construction Requirements

RFS shall be transported in a manner that prevents the release of fugitive dust and loss of material. Adequate measures shall be taken during construction operations to control fugitive dust from RFS. RFS shall not be applied when wind conditions create problems in adjacent areas or create a hazard to traffic on any adjacent roadway. The spreading of RFS shall be limited to an amount that can be encased within the same workday. If weather causes stoppage of work or exposes the RFS to washing or blowing, additional RFS may be spread when the work resumes. Spraying with water, limewater, or other sealing type sprays will be considered to be acceptable methods for dust control.

When RFS is used as borrow, B borrow, or structure backfill, compaction of the materials shall be in accordance with the respective uses in 203. If compaction operations are deemed to be insufficient, the Contractor shall arrange with the Department's Geotechnical Section, to develop and conduct alternative compaction means. Nuclear density testing of RFS is not allowed.

When RFS is used in embankment construction, the sideslopes of the RFS shall be encased with 1 ft (0.3 m) of borrow materials. The encasement materials shall be placed and compacted concurrently with the RFS lifts. Encasement materials not meeting the AASHTO M 145 Classifications of A-4, A-5, A-6, and A-7 shall be submitted to the Department's Geotechnical Section for approvals.

Method Of Measurement

RFS applications will be measured in accordance to the respective uses for borrow, B borrow, or structure backfill.

Basis Of Payment

RFS will be paid for at the contract unit price in accordance to the respective uses for borrow, B borrow or structure backfill.

No payment will be made for the transportation, handling, or any special construction requirements such as alternative compaction means or encasement activities, when using RFS materials.

The cost of the use of water, limewater, sprays, or other activities necessary for dust control, shall be included in the cost of the respective pay item.

The cost of geotechnical testing for the use of RFS materials shall be included in the cost of the respective pay item.

RECYCLED FOUNDRY SAND SOURCES APPROVAL CRITERIA

The following procedures covers the requirements for Foundry Sand source approvals or otherwise prescribed subject matter to be added, maintained and removed from a Department's approved list.

Products covered by the procedures may involve hazardous materials, operations, and equipment. These procedures do not purport to address all of the safety problems associated with the use of the product. The source's responsibility is to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

General Requirements

1. A source, requesting approval for addition to a Department's list, shall provide to the Material and Tests Division the following:

   (a) Name and location of source or manufacturer,
   (b) List of material and specification reference for the material that the approval is being requested,
   (c) Average monthly production of the material by size, type or grade,
   (d) Name, address and telephone number of responsible contact person,
   (e) Facility layout or production process of the material,

(f) Quality parameters of the material,
(g) Raw material sampling and testing frequency,
(h) Procedures for conforming materials which provides a positive linkage between the furnished materials and the quality control test data,
(i) Procedures for non-conforming materials,
(j) Procedures for marking and tracking materials,
(k) Procedures for documentation maintenance,
(l) Finished material sampling and testing frequency,
(m) Procedures for reviewing and updating the source operations,
(n) Testing laboratory quality system,
(o) Names, titles and qualifications of sampling and testing personnel,
(p) Location and telephone number of the laboratory testing office,
(q) Laboratory equipment and calibration frequency,
(r) Test methods, procedures and laboratory equipment used for each type of material,
(s) Sample management describing procedures for samples identification, maintenance of the samples prior to testing, sample retention and disposal of samples,
(t) Testing report procedures,
(u) Methods used to identify improper test results and procedures followed when testing deficiencies occur,
(v) Statistical analysis of test results, and
(w) Maintenance of test records.

The application shall be signed and dated by the source's or manufacturer's representative at the time it is submitted for acceptance. The application shall be maintained to reflect the current status and revisions shall be provided to the Department in writing.

2. Testing may be required which will be performed outside the Department's laboratories. A recognized laboratory shall be the following:

(a) A State transportation agency testing laboratory,
(b) A testing laboratory regularly inspected by the AMRL, or
(c) A testing facility approved by the Department

Approval Requirements

In addition to the general requirements, the source shall also submit the following to the Materials and Tests Division.

(a) A current MSDS and summary of results of all specified tests for the previous year's production shall be submitted. No test results shall be more than two years old at time of submission.
(b) Name of Testing Facility
(c) Dates Samples were obtained
(d) Dates Samples were tested
(e) Test method used for IDEM classification

(f) Letter from IDEM indicating the waste classification of the materials.
(g) Test results for Leachate
(h) Test results for Microtox™ in accordance with ITM 215
(i) Stockpile sampling locations, including depths and available historical testing results.
(j) Gradation test results
(k) Hydraulic conductivity (permeability) test results
(l) Recycled Foundry Sand Source Certification

The Recycled Foundry Sand source certification is included as Attachment A. A new approval submission shall be required when re-sampling is required in accordance with 329 IAC 10-9-4(e)(3). (In accordance with 329 IAC 10-9-4 (e)(3) for foundry waste, re-sampling is conducted: at two year intervals; whenever the process changes; or according to a schedule for re-sampling by the IDEM Commissioner based on variability noted in previous sampling and other factors affecting the predectability of waste characteristics.)

When metal concentration of the Type III residual sand exceeds 80% of the allowable limits within IDEM classification, an indemnification clause is required and a " Recycled Foundry Sand (RFS) Indemnification Clause" is included as Attachment B. Residual sand shall be analyzed for metal concentration using Microtox™ (ITM 215) test criteria.

Maintaining Approval

Test reports shall be generated in accordance with specification requirements for the material and submitted monthly to the Materials and Tests Division. If the material is not produced by the source in a given month, the monthly submittal shall state:

“No _____ was manufactured during _____.”
Material month/year

Samples of material may be obtained randomly for verification at the source or at the point of incorporation into the work in accordance with 106.02.

The source shall provide written notification of any changes, revisions or updates of their operations, MSDS, source name or address, contact person or product name to the Materials and Tests Division.

To maintain approval, a summary of new stockpile test results for Microtox™ testing in accordance with ITM 215, and the acceptance analysis will be submitted monthly indicating testing on a lot-by-lot basis. Tested and approved RFS stockpiles shall be properly signed for easy identification. If no new stockpiles are created in a given month, a letter indicating, "no new RFS stockpiles for month/year were created" shall be submitted to the Materials and Tests Division.

Removal From Approved List

A source will be removed from the approved list for the following, but not limited to, reasons:

(a) Test failures determined by Department verification sampling,

(b) Monthly test reports not provided for three consecutive months,

(c) Test reports generated by the source which show non-compliance with specification requirements, and

(d) Performance of product no longer meets intended purpose.

Attachment A

RECYCLED FOUNDRY SAND (RFS) SOURCE CERTIFICATION

This is to certify recycled foundry sand (RFS) stockpiles geographically located as follows:
RFS _____
_____

RFS was produced by the _____ _____ Company located in _____(City), and _____ (State) and was shipped for use on Indiana Department of Transportation projects is Type _____ (III or IV) material according to IDEM's restricted waste criteria and that the material has passed Microtox™ (ITM 215) test criteria. If any metal concentration exceeds 80% of the allowable limits for a Type III the foundry shall provide the Department with an acceptable indemnification clause. The _____ RFS source also agree that processes and stockpiles associated with the production of such RFS may be inspected and sampled at regular intervals by properly identified representatives of the Department or a duly assigned representative.

_____ (Date of Signing) _____ (RFS Producer)
_____(Title) _____(Signature)
State of _____) SS:
County of _____)

Subscribed and sworn to before me by _____ of the firm of _____ this _____ day of _____ 20__.

_____ Notary Public
My Commission Expires: _____

This certification has been reviewed and approved by:

_____Date_____
(Materials and Tests Division representative)

Attachment B

RECYCLED FOUNDRY SAND (RFS) INDEMNIFICATION CLAUSE

_____ RFS producer shall indemnify, defend, exculpate, and hold harmless the State of Indiana, it officials, and employees from any liability of the State of Indiana for loss, damage, injury, or other casualty of whatever kind or to whomever caused, arising out of or resulting from a violation of the federal or Indiana Occupational Safety and Health Acts (OSHA), the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), or any other environmental law, regulation, ordinance, order or decree (collectively referred to hereinafter as "Environmental Laws"), as a result of the supply, testing, and application of residual sand or other materials supplied under this Contract by _____ source, whether due in whole or in part of the negligent acts or omissions of: (1) _____ Foundry, its agents, officers, or employees, or other persons engaged in the performance of the contract; or (2) the joint negligence of them and the State Of Indiana, its officials, agents, or employees.

This contract shall include, but not be limited to, indemnification from: (1) any environmental contamination liability due to the supply, testing, and application of residual sand in road base, embankments, or other projects designated by the Department as agreed to by the parties, and (2) any liability for the clean up or removal of residual sand, or materials incorporating such sand, pursuant to any Environmental Law.

The RFS producer also agrees to defend any such action on behalf of the State of Indiana, to pay all reasonable expenses and attorneys fees for such defense, and shall have the right to settle all such claims. Provided, however, that no liability shall arise for any such fees or expenses incurred prior to the time that _____ Foundry shall have first received actual and timely written notice of any claim against the State which is covered by this Indemnification Agreement. If timely written notice of any claim hereunder is not received by _____ Foundry, and _____ Foundry is thereby prejudiced in its ability to defend or indemnify, then to the extent of such prejudice, this Indemnification Agreement shall be void.

This Indemnification Agreement does not create any rights in any third party, and is solely for the benefit of the State Of Indiana and its agents, officials, and employees.

RECYCLING EXISTING CONCRETE PAVEMENT

The Standard Specifications are revised as follows:

SECTION 202, AFTER LINE 228, INSERT AS FOLLOWS:

The Contractor will be permitted to reclaim and process removed concrete pavement into aggregates. Aggregate produced from crushed portland cement concrete shall not be used in new portland cement concrete pavement, Subbase for PCCP, or Dense Graded Subbase.

Production, sampling and testing shall be in accordance with 917.

Aggregate produced from crushed portland cement concrete may be used in borrow or subgrade treatment. If there is insufficient recycled concrete aggregate to complete the subgrade treatment, the Contractor shall supply the necessary materials to complete this work.

Foreign materials such as reinforcement and other steel materials, asphalt, and joint materials shall not be allowed in the processed materials. When the aggregate to be produced is for coarse aggregate, an aggregate with a No. 53 gradation in accordance with 904 shall be manufactured.

Waste materials from the recycling operations shall remain the property of the Contractor.

SECTION 202, AFTER LINE 512, INSERT AS FOLLOWS:

Recycled concrete aggregates will not be measured for payment.

SECTION 202, AFTER LINE 731, INSERT AS FOLLOWS:

No payment will be made for recycled concrete aggregates.

REFLECTIVE LENSES FOR SNOWPLOWABLE RAISED PAVEMENT MARKERS

Reflective lenses for snowplowable raised pavement markers manufactured by the following companies will be considered approved to meet the requirements of this contract.

Model Number	Manufacturer
Stimsonite #944	Avery Dennison/Stimsonite
Ray-O-Lite #2004	PAC-TEC, Inc.
3M #190	3M Corporation

REINFORCED BARS

The Standard Specifications are revised as follows:

SECTION 703, AFTER LINE 6, INSERT AS FOLLOWS:

If the Contractor desires to substitute english dimensioned reinforcing bars for the metric dimensioned reinforcing bars shown on the plans, a written request shall be submitted to the Engineer. This substitution will be allowed providing the Contractor provides adequate documentation that metric dimensioned reinforcing bars are not available in sufficient quantities, due to the requirements of 106.01(c), and that the cross sectional area of the english dimensioned reinforcing bars is equal to or greater than the cross sectional area of the metric dimensioned reinforcing bars as shown on the plans. If the Contractor desires to revise the bar spacing or the method of splicing from that as shown on the plans, it shall submit revised detailed drawings and engineering calculations prepared by a professional engineer to the Engineer for approval. Placement of english dimensioned reinforcing bars shall not begin until written approval has been received by the Contractor.

SECTION 703, BEGIN LINE 151, INSERT AS FOLLOWS:

specified bars had been used. All costs associated with the substitution of english dimensioned reinforcing bars for metric dimensioned reinforcing bars including the engineering fees necessary to produce the revised detailed drawings and calculations to support a revised spacing or method of splicing request shall be included in the cost of the reinforcing steel.

SNOWPLOWABLE RAISED PAVEMENT MARKERS

Snowplowable raised pavement markers manufactured by the following companies will be considered approved to meet the requirements of this contract. The slots cut in the pavement shall be in accordance with the manufacturer's recommendations.

Stimsonite Corporation 6565 W. Howard Street Niles, Illinois 60714	Models detailed on Standard Sheets 808-MKRM-10 or 808-MKRM-11
Hallen Products Ltd. 39960 N. Millcreek Rd. Wadsworth, Illinois 60083.	Iron Star Model 664H

STOCKPILED MATERIALS

The Standard Specifications are revised as follows:

SECTION 111, BEGIN LINE 9, DELETE AND INSERT AS FOLLOWS:

incorporated into the work and delivered in the vicinity of the project, or stored in approved storage facilities. Such materials shall be limited to structural steel, concrete structural members, pavement reinforcing steel, pavement contraction joints, granular base and subbase materials, aggregates for HMA and concrete pavements, and structural supports for signals, signs, and luminaires.

In addition to the aforementioned, the Department will consider the stockpiling of other steel products, such as guardrail, culvert pipe, etc if it has been determined that a critical shortage of material would cause delay to the project.

SECTION 111, BEGIN LINE 114, DELETE AS FOLLOWS:

Approval of partial payment for stockpiled materials will not constitute final acceptance of such materials for use in completing the work. Structural steel members and pavement reinforcing steel may be subjected to additional inspection and testing prior to final acceptance and incorporation into the work. All other stockpiled pay items will be subjected to additional inspection and testing prior to final acceptance and incorporation into the work.

VILLAGE OF LANSING SPECIAL PROVISIONS
William Street 24 inch Water Main Relocation

Special Provisions

SCOPE OF WORK

This project shall consist of the relocation of a 600mm Village of Lansing ductile iron water main at William Street. The existing 600mm water main under I-80 will be abandoned as shown on the plans. These relocations need to occur in order to avoid conflict with the I-80 reconstruction and reconfiguration.

DUCTILE IRON WATER MAIN RESTRAINED JOINT TYPE

This work shall consist of the construction of 600mm and 150mm ductile iron water main at locations indicated on the plans or as directed by the Engineer. The water main shall be "Ductile Iron," ANSI thickness Class 52, Clow "Super Bell-Tite", “Push On Joint”, or approved equal, and must meet all applicable requirements of ANSI A21.51 (AWWA C151)[pipe]; ANSI A21.10 (AWWA C110) or AWWA C153; [fittings], ANSI A21.11 (AWWA C111)[joints], and ANSI A21.4 (AWWA C104)[pipe lining] specifications. Alloyed steel bolts shall be used to prevent corrosion. All water mains shall be wrapped in 8-mil thick polyethylene encasement (ANSI/AWWA C105/A21.5) Method B, with pipe and joints wrapped separately.

The use of thrust blocking will not be allowed and all joints must be restrained. All joint restraints shall be incorporated in the design of a follower gland. The gland shall be manufactured of ductile iron conforming to ASTM A 536. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell and tee-head bolts conforming to AWWA C111 and C153. Restrained joints shall be TR Flex or Lok Tyte as manufactured by U.S. Pipe, Lok-Fast or Lok-Ring as manufactured by American Pipe or Super-Lok as manufactured by Clow. Restrained ductile iron pipe shall be rated for 24.6 kg/cm^2 (350 psi) in accordance with ANSI/AWWA C111/A21.11 *Rubber-Gasket Joints for Ductile Iron Pipe and Fittings*.

All design associated with joint restraints shall be completed by the contractor and his supplier. Design calculations shall be submitted to the Engineer for review and approval prior to the ordering of materials. The cost for designing, furnishing, installing, adjusting, and testing of joint restraints will not be compensated for separately but shall be considered incidental to the contract.

All water main fittings shall be made from gray-iron or ductile iron and furnished with mechanical joint ends. All fittings shall have a pressure rating of 17.5 kg/cm^2 (250 psi) and shall be wrapped with an 8-mil thick polyethylene material per AWWA Standard C105. At locations indicated on the plans or as directed by the Engineer, the water main shall be constructed around existing utility structures or other obstacles by use of tees, bends or other appropriate fittings. Gasket material identical to that described above shall be utilized at all joints and fittings. The cost for all fittings shall not be paid for separately but shall be included in the unit price for water main.

Trench backfill shall be provided and paid for in accordance with Section 208 of the Standard Specifications.

Hydrostatic testing and disinfection of the water main shall be in accordance with Section 561 of the Standard Specifications.

Measurement for payment shall be made along the centerline of water main installed. The cost for furnishing all labor, materials and equipment necessary for excavation, construction of the new water main, fittings, restrained joints, wrapping the water main, hydrostatic testing and disinfection will be paid for at the contract unit price per meter for DUCTILE IRON WATER MAIN RESTRAINED JOINT TYPE [SIZE].

DUCTILE IRON WATER MAIN RESTRAINED JOINT TYPE, 600MM IN STEEL CASING PIPE, 1050MM AUGURED

The Contractor is advised to review the site and familiarize himself with the soil conditions prior to finalizing his bid for this portion of the work. Soil borings for the retaining walls in the area of the water main construction are available for review. No additional compensation shall be allowed for changes in the construction method due to ground conditions that may exist at the time of construction.

This work shall consist of auguring a steel casing and installing the restrained joint water main within the casing at the location and at the line and grades provided on the plans or as where directed by the Engineer. The Contractor shall field verify the elevations and locations of any and all utilities that may cross beneath or over the proposed augur prior to ordering structures or beginning the augur operation so as to not damage the existing utilities during augur operations. No additional compensation shall be given for any modifications required to be made to the proposed water main design (including but not limited to re-ordering/restocking structures) or for any delay time incurred due to a difference in assumed and actual elevations of the existing utilities.

The Contractor shall take all necessary precautions to prevent the undermining of roadways, structures, embankments, or property including the utilization of trench boxes, sheeting, etc. to properly maintain the augur and receiving pit excavations such that underlying soils between the pavement edge etc. and augur limits are prevented from entering the excavation. In the event that settlement or any other damage occurs to adjacent roadways, property or structures between the time the auguring is completed and the entire contract is completed, the Contractor shall be fully responsible for any repairs deemed necessary by the Engineer.

This work shall consist of furnishing spiral welded, steel casing of the thickness listed in the table below and of the outer diameter specified on the plans or as directed by the Engineer. The casing shall meet ASTM A139 and ANSI/AWWA C200, Grade B, minimum yield strength of 2461 kg/cm^2 (35,000 psi). Casings shall extend at least 3 meters (10 feet) beyond the outer edge of the existing pavement or sewer pipe, as indicated in the detail drawings, unless otherwise approved by the Engineer. All work shall be performed in accordance with Section 552 of the Standard Specifications except as described in the Special Provisions.

After installation of the steel casing is completed, the proposed water main shall be constructed in place within the casing. The water main shall be inserted and centered by use of model CCS stainless steel casing spacers as manufactured by Cascade Waterworks Mfg. Co. of Yorkville, IL or approved equal at a maximum spacing of 3 meters (10 feet). Casing spacers shall be bolt on style with a two-piece shell made from T-304 stainless steel of a minimum 14-gauge thickness. Each shell section shall have bolt flanges formed with ribs for added strength. Each connecting flange shall have a minimum of three 5/16" T-304 bolts. The shell shall be lined with a ribbed PVC extrusion with a retaining section that overlaps the edge of the shell and prevents slippage. Bearing surfaces (runners) made from UHMW polymer with a static coefficient of friction of 0.11-0.13 shall be attached to support structures (risers) at appropriate positions to properly support the carrier within the casing and to ease installation. The runners shall be attached mechanically by T-304 threaded fasteners inserted through the punched riser section and TIG welded for strength. Risers shall be made of T-304 14 gauge stainless steel. All risers over 51 mm (two inches (2")) in height shall be reinforced. Risers shall be MIG welded to the shell. All metal surfaces shall be fully passivated. The ends of the casing shall be sealed using a method approved by the Engineer.

The water main within the casing shall be "Ductile Iron," ANSI thickness Class 52, Clow "Super Bell-Tite", “Push On Joint”, or approved equal, and must meet all applicable requirements of ANSI A21.51 (AWWA C151)[pipe]; ANSI A21.10 (AWWA C110) or AWWA C153; [fittings], ANSI A21.11 (AWWA C111)[joints], and ANSI A21.4 (AWWA C104)[pipe lining] specifications. Alloyed steel bolts shall be used to prevent corrosion. All water mains shall be wrapped in 8-mil thick polyethylene encasement (ANSI/AWWA C105/A21.5) Method B, with pipe and joints wrapped separately. Joint restraint for ductile iron pipe installed within the casing shall be Field Lok 350, for Tyton Joint pipe and fittings, TR Flex pipe and fittings, or other engineer-approved equal. Restrained ductile iron pipe shall be rated for 24.6 kg/cm^2 (350 psi) in accordance with ANSI/AWWA C111/A21.11 *Rubber-Gasket Joints for Ductile Iron Pipe and Fittings*.

All design associated with joint restraints shall be completed by the contractor and his supplier. Design calculations shall be submitted to the Engineer for review and approval prior to the ordering of materials. The cost for designing, furnishing, installing, adjusting, and testing of joint restraints will not be compensated for separately but shall be considered incidental to the contract.

All water main fittings shall be made from gray-iron or ductile iron and furnished with mechanical joint ends. All fittings shall have a pressure rating of 17.5 kg/cm^2 (250 psi) and shall be wrapped with an 8-mil thick polyethylene material per AWWA Standard C105. Gasket material identical to that described above shall be utilized at all joints and fittings. The cost for all fittings shall not be paid for separately but shall be included in the unit price for water main.

Hydrostatic testing and disinfection of the water main shall be in accordance with Section 561 of the Standard Specifications.

This work shall consist of excavation, shoring, backfilling, dewatering (if necessary) and stabilization of the jacking and receiving pits to allow auguring of the steel casing under the expressway as indicated on the plans. After the installation of the casing and pipe is complete,

the jacking pit shall be back filled with trench backfill in accordance with Article 208 of the Standard Specifications. The cost for the excavation, furnishing, placing, removing and disposing of excess material, and backfilling shall be included in the unit price for the steel casing.

The cost for casing spacers and furnishing and installing the water main and the steel casing shall be incidental to the contract unit price for the steel casing. Unless otherwise shown on the plans, steel casings shall be of the size and thickness shown in the table below:

Standard Sizes of Steel Sleeves Used As Casings*

Carrier Pipe ID in mm	Casing Wall Thickness in mm	Casing Outside Diameter in mm
600mm	15.875mm	1050mm

*Adapted from City of Chicago, IL Water Department Standard Specifications

The cost of furnishing and installing the steel casing, and all incidental work necessary for its installation, including the labor, material and equipment necessary for the auguring of the casing pipe, installation of the restrained joint water main, wrapping the water main, casing spacers, hydrostatic testing and disinfection of the water main, excavation and backfill of the jacking and receiving pits will be paid for at the contract unit price per meter for DUCTILE IRON WATER MAIN RESTRAINED JOINT TYPE, 600mm IN STEEL CASING PIPE, 1050mm AUGURED.

TAPPING VALVES AND SLEEVES

Tapping sleeves and valves shall be installed at the locations indicated in the plans or as directed by the Engineer. Taping sleeves shall be stainless steel. Valves shall be centered directly under the vault lid opening unless otherwise approved by the Engineer. Valve vaults shall conform to ASTM C478. Valve vaults shall have an inside diameter as detailed on the plan sheets.

No more than two (2) precast concrete adjusting rings with 15.25 cm (six (6) inch) maximum height adjustment shall be allowed. Rubber adjusting rings instead of concrete adjusting rings are desired for valve vaults located in pavement areas. All joints between vaults sections shall be sealed with mastic and McWrap or equal shall be used around the outside wall of the vault at the joints.

All 300mm and smaller valves shall be East Jordan, Mueller, or approved equal resilient wedge type abiding to AWWA C509 and AWWA C550.

All proposed valves larger than 300mm shall be Pratt butterfly type with extension stem and ground level position indicator, or approved equal iron body, rubber seat butterfly valve, Class 150B, counter clockwise to open, conforming to AWWA C504 and approved by the Lansing Director of Public Works.

All vaults shall be provided with a heavy duty Type 1 frame and closed lid. The manhole frame and cover shall be an East Jordan 1022Z3 embossed “WATER”.

Corporation stops or other tap shall be installed in the vaults in order to aid in the chlorination and flushing of the main. The taps shall be large enough to provide a velocity of at least .76 meters per second (2.5 feet per second) in the main. Valve vault construction shall be as specified in the detail drawings and as shown in the plans. Measurement for payment shall be per each for TAPPING VALVES AND SLEEVES, [SIZE] installed. The VALVE VAULTS, [TYPE, SIZE], shall not be included in this item but will be paid for separately.

BLIND FLANGE CAP

This work consists of the furnishing and installation of mechanical joint or push on restrained plug. These shall be installed on the abandoned water main lines as indicated on the plans. This work, including the cutting and plugging of the existing main and all associated backfill is to be paid for at the contract unit price bid per each for BLIND FLANGE CAP [SIZE].

FIRE HYDRANT WITH AUXILIARY VALVE, VALVE BOX AND TEE

This work shall consist of the installation of new hydrants, auxiliary valves, valve boxes, tees and associated pipe and fittings at the locations indicated in the plans or as directed by the Engineer. Hydrants shall be as manufactured by Mueller, or equal as approved by the Village of Lansing Director of Public Works and Fire Chief. The cost for pipe, if any, needed for offsetting the hydrant from the water main shall be incidental to the hydrant construction.

All hydrants shall be painted as directed by the Village of Lansing Public Works Department. The cost for this work will be paid for at the contract unit price per each for FIRE HYDRANT WITH AUXILIARY VALVE, VALVE BOX AND TEE.

STORM SEWER (WATER MAIN REQUIREMENTS) 300MM

Because of separation issues with the proposed watermain, at locations indicated on the plans the existing storm sewer will be replaced with water main quality pipe.

Measurement for payment shall be made along the centerline of sewer main installed. The cost for furnishing all labor, materials and equipment necessary for excavation, construction of the new sewer main, connection to the existing sewer main, and disposal of the existing pipe, will be paid for at the contract unit price per meter for STORM SEWER (WATER MAIN REQUIREMENTS) 300mm.

REMOVE AND PLUG ABANDONED WATER MAIN

At locations indicated on the plans the existing water main to be abandoned shall be cut and capped and the appropriate section as marked and removed. Trench backfill shall be provided in the trench after the water main is removed and shall be provided and paid for in accordance with Article 208 of the Standard Specifications. The cost for this work including excavation, pipe removal, and pipe disposal shall be paid for at the contract unit price per meter for REMOVE AND PLUG ABANDONED WATER MAIN [SIZE].

ABANDON WATER MAIN IN PLACE

At locations indicated on the plans the existing water main to be abandoned (approximately 75 meters in length) shall be filled with controlled low strength material and abandoned in place. The controlled low-strength material (CLSM) shall be provided and paid for in accordance with Check Sheet #24 in the Recurring Special Provisions. The cost for this work including the labor for the excavation, pipe locating and filling shall be paid for at the contract unit price per lump sum for ABANDON WATER MAIN IN PLACE, 600mm.

VALVE VAULTS TO BE REMOVED

Valve vaults specified on the plans to be removed shall be removed and disposed of appropriately including both the valve and the valve vault structure. If the water main containing the valve vault to be removed is to be abandoned in place, plugs shall be installed on either side of the valve removal. The excavation shall be filled with trench backfill and compacted accordingly. This work will be paid for at the unit price per each for VALVE VAULTS TO BE REMOVED.

VALVE BOXES TO BE REMOVED

Valve boxes specified on the plans to be removed shall be removed and disposed of appropriately including both the valve and the valve box structure. If the water main containing the valve box to be removed is to be abandoned in place, plugs shall be installed on either side of the valve removal. The excavation shall be filled with trench backfill and compacted accordingly. This work will be paid for at the unit price per each for VALVE BOXES TO BE REMOVED.

PERMITS
ACOE NATIONWIDE PERMIT

DEPARTMENT OF THE ARMY
CHICAGO DISTRICT, CORPS OF ENGINEERS
111 NORTH CANAL STREET
CHICAGO, ILLINOIS 60606-7206

REPLY TO
ATTENTION OF

OCT 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

RECEIVED
NOV 05 2004
DIST. ONE - DESIGN

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 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,

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.[1]

_____ _____

PERMITTEE DATE

Upon completion of the activity authorized by this permit and any mitigation required by the permit, this certification must be signed and returned to the following address:

U.S. Army Corps of Engineers
Chicago District, Regulatory Branch
111 North Canal Street, 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.

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[1] If compensatory mitigation was required as part of your authorization, you are certifying that the mitigation area has been graded and planted in accordance with the approved plan. You are acknowledging that the maintenance and monitoring period will begin after a site inspection by a Corps of Engineers representative or after thirty days of the Corps' receipt of this certification. You agree to comply with all permit terms and conditions, including additional reporting requirements, for the duration of the maintenance and monitoring period.

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 — 10-26-07

PERMITTEE — DATE

Diane M. O'Keefe
Illinois Department of Transportation
District Engineer
201 West Center Court
Schaumburg, Illinois 60196-1096

This authorization becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

27 Oct 07

FOR AND ON BEHALF OF — DATE

Gary E. Johnston
Colonel, U.S. Army
District Engineer

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.

TRANSFEREE — DATE

ADDRESS

TELEPHONE

6

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

ROD R. BLAGOJEVICH, GOVERNOR RENEE CIPRIANO, DIRECTOR

217/782-3362

July 15, 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. # 200300468]

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.

ROCKFORD – 4302 North Main Street, Rockford, IL 61103 – (815) 987-7760 • DES PLAINES – 9511 W. Harrison St., Des Plaines, IL 60016 – (847) 294-4000
ELGIN – 595 South State, Elgin, IL 60123 – (847) 608-3131 • PEORIA – 5415 N. University St., Peoria, IL 61614 – (309) 693-5463
BUREAU OF LAND - PEORIA – 7620 N. University St., Peoria, IL 61614 – (309) 693-5462 • CHAMPAIGN – 2125 South First Street, Champaign, IL 61820 – (217) 278-5800
SPRINGFIELD – 4500 S. Sixth Street Rd., Springfield, IL 62706 – (217) 786-6892 • COLLINSVILLE – 2009 Mall Street, Collinsville, IL 62234 – (618) 346-5120
MARION – 2309 W. Main St., Suite 116, Marion, IL 62959 – (618) 993-7200

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 does not grant immunity from any enforcement action found necessary by this Agency to meet its responsibilities in prevention, abatement, and control of water pollution.

Sincerely,

Bruce J. Yurdin
Manager, Watershed Management Section
Bureau of Water

BY:TJF:0378-03.doc

cc: IEPA, Records Unit
IEPA, DWPC, FOS, Des Plaines
IDNR, OWR, Bartlett
USEPA, Region 5
Mr. John Kos, IDOT District 1
Mr. Ken Eng, IDOT District 1

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 2 5 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.

Under Federal regulations, no fee is required for permits issued to agencies or instrumentalities of Federal, state cr 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

MITCHELL A. 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 2 5 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.

ACOE LITTLE CALUMET BRIDGE

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
BOX 1027
DETROIT, MICHIGAN 48231-1027

October 20, 2004

IN REPLY REFER TO

Engineering & Technical Services
Regulatory Office
File No. 04-075-000-0

Project: 2014080
From: Corps of Engineers
To: ACE / INDOT
Descr. Corps Permit Bridge
CC. TAE, JW, IBS
ORIG: File

Carole Korbly Scott
Indiana Department of Transportation
100 N. Senate Avenue
Room N848
Indianapolis, Indiana 46204

Dear Ms. Scott:

Reference your application for a Department of the Army permit for temporary discharge of fill associated with I 80/94 bridge replacement over the Little Calumet River at I-80/94, in Munster, Indiana (Section 13, Township 36N, Range 10W). We previously authorized work for storm water outfalls related to this work on July 19, 2004. Subsequent discussions with the engineering firm, American Consulting Engineers, LLC, have shown that steel sheeting and, potentials, temporary cofferdams in the Little Calumet River may be needed to facilitate the removal of two concrete piers in the river that support the existing highway bridge.

We have verified that the project is authorized by nationwide permit as published in the Federal Register. As indicated on the enclosed plans prepared August 18, 2004, the following work is authorized under NW33: Install approximately 202 feet of temporary sheet pilings on the south side of the river, and temporarily discharge fill material as needed to construct a cofferdam, if required; after completion of work and removal of temporary structures and fill material on the south side of the river, install 154 feet of temporary sheet piling on the north side of the river, and temporarily discharge fill material to construct a cofferdam, if needed.

This authorization is contingent upon compliance with the following terms and conditions:

a. The enclosed nationwide permit(s) and the general conditions.

b. The following special conditions:

1. All dredged and/or excavated materials, including any concrete removed from the existing bridge piers, shall be disposed of at an upland location above the Ordinary High Water Mark with no placement in, or return to, any waterway or wetland.

2. All temporary fills shall be removed in their entirety upon completion of the

project.

3. That cofferdams shall extend no more than one-half the width of the channel at any one crossing site. Cofferdam embankments shall be stabilized with stone or other retention material to prevent erosion of soil into the waterway.

4. Erosion controls, such as straw bale berms or filter fabric, shall be placed to prevent discharge material from entering wetlands or waters. These must be erected prior to commencement of work and maintained until all work at the site is completed and the area is stabilized against erosion.

5. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

We also direct your attention to Paragraph D.2 under Further Information, which states, "NWPs do not obviate the need to obtain other Federal, state, or local permits, approvals, or authorizations required by law." We suggest that you contact the Indiana Department of Natural Resources, Indianapolis, Indiana, telephone 317-232-4160, to determine if state approval is required. Work should not commence until State approval is obtained.

Any construction activity other than that shown on the plans may not qualify for the authorization. If you contemplate any changes or additional activities from those depicted on the plans, please submit them to this office for authorization review prior to any construction. Upon completion of the work, fill in and return the enclosed COMPLETION REPORT.

This verification is valid for 2 years from the date of this letter unless the Nationwide Permit is modified, suspended, or revoked. If you have any questions on this matter, contact me at (313) 226-2221 and refer to File Number: 04-075-000-0.

Sincerely,

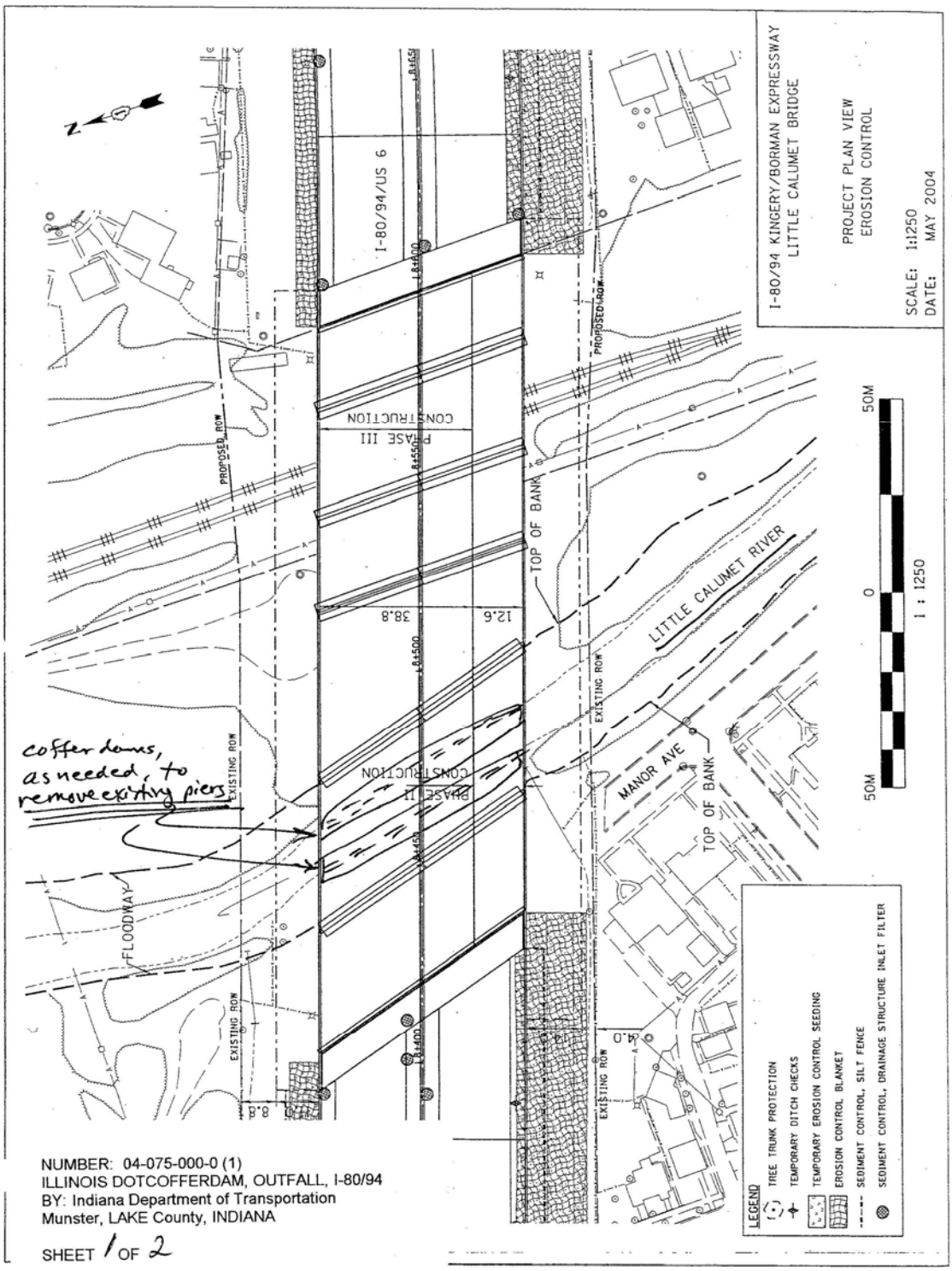
ORIGINAL SIGNED BY

Thomas E. Allenson
Project Manager
Permit Evaluation Branch A

Enclosures

Copy Furnished

IDNR, Mike Neyer, w/encl.
IDEM, Marty Maupin, w/encl.
American Consulting Engineers, LLC., w/encls. ✓


I-80/94 KINGERY/BORMAN EXPRESSWAY
LITTLE CALUMET BRIDGE
PROJECT PLAN VIEW
EROSION CONTROL
SCALE: 1:1250
DATE: MAY 2004
I-80/94/US 6
PROPOSED ROW
EXISTING ROW
PHASE III CONSTRUCTION
PHASE II CONSTRUCTION
TOP OF BANK
LITTLE CALUMET RIVER
MANOR AVE
FLOODWAY
38.8
12.6
8.0
4.0
50M
0
1 : 1250
coffer dams, as needed, to remove existing piers
LEGEND
TREE TRUNK PROTECTION
TEMPORARY DITCH CHECKS
TEMPORARY EROSION CONTROL SEEDING
EROSION CONTROL BLANKET
SEDIMENT CONTROL, SILT FENCE
SEDIMENT CONTROL, DRAINAGE STRUCTURE INLET FILTER
NUMBER: 04-075-000-0 (1)
ILLINOIS DOTCOFFERDAM, OUTFALL, I-80/94
BY: Indiana Department of Transportation
Munster, LAKE County, INDIANA
SHEET 1 OF 2

EXISTING PIERS, TO BE REMOVED
ELEVATION
PLAN
FLOODWAY
FLOODPLAIN
TEMPORARY SHEET PILING
Construction Access / Working Platform
In Stream Work: It is expected that during the course of construction, In-Stream work will be required in the vicinity of Piers 1 and 2. The In-stream work may consist of constructing temporary sheet piling or cofferdams within the streambed or constructing temporary by pass channels and working platforms at one of the two piers prior to proceeding to the next pier. Dewatering of the construction area will be required.
NUMBER: 04-075-000-0 (1)
ILLINOIS DOTCOFFERDAM, OUTFALL, I-80/94
BY: Indiana Department of Transportation
Munster, LAKE County, INDIANA
SHEET 2 OF 2
Project Description
I-80/94/IL 394
Tollway to US 41
Location: I-80/94 over Little Calumet River
Date: April 19, 2004
Sheet 4 of 5
Exhibit 4
Revised April 20, 2004

NATIONWIDE PERMIT.

Nationwide Permit No. 33. Temporary Construction, Access and Dewatering. Temporary structures, work and discharges, including cofferdams, necessary for construction activities or access fills or dewatering of construction sites; provided that the associated primary activity is authorized by the Corps of Engineers or the USCG, or for other construction activities not subject to the Corps or USCG regulations. Appropriate measures must be taken to maintain near normal downstream flows and to minimize flooding. Fill must be of materials, and placed in a manner, that will not be eroded by expected high flows. The use of dredged material may be allowed if it is determined by the District Engineer that it will not cause more than minimal adverse effects on aquatic resources. Temporary fill must be entirely removed to upland areas, or dredged material returned to its original location, following completion of the construction activity, and the affected areas must be restored to the pre-project conditions. Cofferdams cannot be used to dewater wetlands or other aquatic areas to change their use. Structures left in place after cofferdams are removed require a Section 10 permit if located in navigable waters of the US (See 33 CFR part 322). The permittee must notify the District Engineer in accordance with the □*Notification*□ General Condition. The *notification* must also include a restoration plan of reasonable measures to avoid and minimize adverse effects to aquatic resources. The District Engineer will add Special Conditions, where necessary, to ensure environmental adverse effects is minimal. Such conditions may include: limiting the temporary work to the minimum necessary; requiring seasonal restrictions; modifying the restoration plan; and requiring alternative construction methods (e.g. construction mats in wetlands where practicable.). (Sections 10 and 404)

C. Nationwide Permit General Conditions

The following General Conditions must be followed in order for any authorization by an NWP to be valid:

1. Navigation. No activity may cause more than a minimal adverse effect on navigation.

2. Proper Maintenance. Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.

3. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

4. Aquatic Life Movements. No activity may substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

5. Equipment. Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.

6. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state or tribe in its Section 401 Water Quality Certification and Coastal Zone Management Act consistency determination.

7. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a "study river" for possible inclusion in the system, while the river is in an official study status; unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

8. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

9. Water Quality. (a) In certain states and tribal lands an individual 401 Water Quality Certification must be obtained or waived (See 33 CFR 330.4(c)).

(b) For NWPs 12, 14, 17, 18, 32, 39, 40, 42, 43, and 44, where the state or tribal 401 certification (either generically or individually) does not require or approve water quality management measures, the permittee must provide water quality management measures that will ensure that the authorized work does not result in more than minimal degradation of water quality (or the Corps determines that compliance with state or local standards, where applicable, will ensure no more than minimal adverse effect on water quality). An important component of water quality management includes stormwater management that minimizes degradation of the downstream aquatic system, including water quality (refer to General Condition 21 for stormwater management requirements). Another important component of water quality management is the establishment and maintenance of vegetated buffers next to open waters, including streams (refer to General Condition 19 for vegetated buffer requirements for the NWPs).

This condition is only applicable to projects that have the potential to affect water quality. While appropriate measures must be taken, in most cases it is not necessary to conduct detailed studies to identify such measures or to require monitoring.

10. Coastal Zone Management. In certain states, an individual state coastal zone management consistency concurrence must be obtained or waived (see 33 CFR 330.4(d)).

11. Endangered Species. (a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or

endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. Non-federal permittees shall notify the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or is located in the designated critical habitat and shall not begin work on the activity until notified by the District Engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that may affect Federally-listed endangered or threatened species or designated critical habitat, the notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. As a result of formal or informal consultation with the FWS or NMFS the District Engineer may add species-specific regional endangered species conditions to the NWPs.

(b) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS and NMFS or their world wide web pages at http://www.fws.gov/r9endspp/endspp.html and http://www.nfms.noaa.gov/prot_res/overview/es.html respectively.

12. Historic Properties. No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the District Engineer has complied with the provisions of 33 CFR part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)). For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the notification must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

13. Notification.

(a) Timing; where required by the terms of the NWP, the prospective permittee must notify the District Engineer with a preconstruction notification (PCN) as early as possible. The District Engineer must determine if the notification is complete within 30 days of the date of receipt and can request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the District Engineer will notify the prospective permittee that the notification is still incomplete and the PCN review process will not commence until all of the requested information has been received by the District Engineer. The prospective permittee shall not begin the activity:

(1) Until notified in writing by the District Engineer that the activity may proceed under the NWP with any special conditions imposed by the District or Division Engineer; or

(2) If notified in writing by the District or Division Engineer that an Individual Permit is required; or

(3) Unless 45 days have passed from the District Engineer's receipt of the complete notification and the prospective permittee has not received written notice from the District or Division Engineer. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Notification: The notification must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) Brief description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), Regional General Permit(s), or Individual Permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP (Sketches usually clarify the project and when provided
result in a quicker decision.);

(4) For NWPs 7, 12, 14, 18, 21, 34, 38, 39, 40, 41, 42, and 43, the PCN must also include a delineation of affected special aquatic sites, including wetlands, vegetated shallows (e.g., submerged aquatic vegetation, seagrass beds), and riffle and pool complexes (see paragraph 13(f));

(5) For NWP 7 (Outfall Structures and Maintenance), the PCN must include information regarding the original design capacities and configurations of those areas of the facility where maintenance dredging or excavation is proposed;

(6) For NWP 14 (Linear Transportation Projects), the PCN must include a compensatory mitigation proposal to offset permanent losses of waters of the US and a statement describing how temporary losses of waters of the US will be minimized to the maximum extent practicable;

(7) For NWP 21 (Surface Coal Mining Activities), the PCN must include an Office of Surface Mining (OSM) or state-approved mitigation plan, if applicable. To be authorized by this NWP, the District Engineer must determine that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are minimal both individually and cumulatively and must notify the project sponsor of this determination in writing;

(8) For NWP 27 (Stream and Wetland Restoration Activities), the PCN must include documentation of the prior condition of the site that will be reverted by the permittee;

(9) For NWP 29 (Single-Family Housing), the PCN must also include:

(I) Any past use of this NWP by the Individual Permittee and/or the permittee's spouse;

(ii) A statement that the single-family housing activity is for a personal residence of the permittee;

(iii) A description of the entire parcel, including its size, and a delineation of wetlands. For the purpose of this NWP, parcels of land measuring 1/4-acre or less will not require a formal on-site delineation. However, the applicant shall provide an indication of where the wetlands are and the amount of wetlands that exists on the property. For parcels greater than 1/4-acre in size, formal wetland delineation must be prepared in accordance with the current method required by the Corps. (See paragraph 13(f));

(iv) A written description of all land (including, if available, legal descriptions) owned by the prospective permittee and/or the prospective permittee's spouse, within a one mile radius of the parcel, in any form of ownership (including any land owned as a partner, corporation, joint tenant, co-tenant, or as a tenant-by-the-entirety) and any land on which a purchase and sale agreement or other contract for sale or purchase has been executed;

(10) For NWP 31 (Maintenance of Existing Flood Control Facilities), the prospective permittee must either notify the District Engineer with a PCN prior to each maintenance activity or submit a five year (or less) maintenance plan. In addition, the PCN must include all of the following:

(I) Sufficient baseline information identifying the approved channel depths and configurations and existing facilities. Minor deviations are authorized, provided the approved flood control protection or drainage is not increased;

(ii) A delineation of any affected special aquatic sites, including wetlands; and,

(iii) Location of the dredged material disposal site;

(11) For NWP 33 (Temporary Construction, Access, and Dewatering), the PCN must also include a restoration plan of reasonable measures to avoid and minimize adverse effects to aquatic resources;

(12) For NWPs 39, 43 and 44, the PCN must also include a written statement to the District Engineer explaining how avoidance and minimization for losses of waters of the US were achieved on the project site;

(13) For NWP 39 and NWP 42, the PCN must include a compensatory mitigation proposal to offset losses of waters of the US or justification explaining why compensatory mitigation should not be required. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;

(14) For NWP 40 (Agricultural Activities), the PCN must include a compensatory mitigation proposal to offset losses of waters of the US. This NWP does not authorize the relocation of greater than 300 linear-feet of existing serviceable drainage ditches constructed in non-tidal streams unless, for drainage ditches constructed in intermittent non-tidal streams, the District Engineer waives this criterion in writing, and the District Engineer has determined that the project complies with all terms and conditions of this NWP, and that any adverse impacts of the project on the aquatic environment are minimal, both individually and cumulatively;

(15) For NWP 43 (Stormwater Management Facilities), the PCN must include, for the construction of new stormwater management facilities, a maintenance plan (in accordance with state and local requirements, if applicable) and a compensatory mitigation proposal to offset losses of waters of the US. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;

(16) For NWP 44 (Mining Activities), the PCN must include a description of all waters of the US adversely affected by the project, a description of measures taken to minimize adverse effects to waters of the US, a description of measures taken to comply with the criteria of the NWP, and a reclamation plan (for all aggregate mining activities in isolated waters and non-tidal wetlands adjacent to headwaters and any hard rock/mineral mining activities);

(17) For activities that may adversely affect Federally-listed endangered or threatened species, the PCN must include the name(s) of those endangered or threatened species that may be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work; and

(18) For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

(c) Form of Notification: The standard Individual Permit application form (Form ENG 4345) may be used as the notification but must clearly indicate that it is a PCN and must include all of the information required in (b) (1)-(18) of General Condition 13. A letter containing the requisite information may also be used.

(d) District Engineer's Decision: In reviewing the PCN for the proposed activity, the District Engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. The prospective permittee may submit a proposed mitigation plan with the PCN to expedite the process. The District Engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. If the District Engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the District Engineer will notify the permittee and include any conditions the District Engineer deems necessary. The District Engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee is required to submit a compensatory mitigation proposal with the PCN, the proposal may be either conceptual or detailed. If the prospective permittee elects to submit a

compensatory mitigation plan with the PCN, the District Engineer will expeditiously review the proposed compensatory mitigation plan. The District Engineer must review the plan within 45 days of receiving a complete PCN and determine whether the conceptual or specific proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the District Engineer to be minimal, the District Engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP.

If the District Engineer determines that the adverse effects of the proposed work are more than minimal, then the District Engineer will notify the applicant either: (1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an Individual Permit; (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level; or (3) that the project is authorized under the NWP with specific modifications or conditions. Where the District Engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level. When conceptual mitigation is included, or a mitigation plan is required under item (2) above, no work in waters of the US will occur until the District Engineer has approved a specific mitigation plan.

(e) Agency Coordination: The District Engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

For activities requiring notification to the District Engineer that result in the loss of greater than □-acre of waters of the US, the District Engineer will provide immediately (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy to the appropriate Federal or state offices (USFWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the District Engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the District Engineer will wait an additional 15 calendar days before making a decision on the notification. The District Engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The District Engineer will indicate in the administrative record associated with each notification that the resource agencies' concerns were considered. As required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act, the District Engineer will provide a response to NMFS within 30 days of receipt of any Essential Fish Habitat conservation recommendations. Applicants are encouraged to provide the Corps multiple copies of notifications to expedite agency notification.

(f) Wetland Delineations: Wetland delineations must be prepared in accordance with the current method required by the Corps (For NWP 29 see paragraph (b)(9)(iii) for parcels less than (1/4-acre in size). The permittee may ask the Corps to delineate the special aquatic site. There may be some delay if the Corps does the delineation. Furthermore, the 45-day period will not start until the wetland delineation has been completed and submitted to the Corps, where
appropriate.

14. Compliance Certification. Every permittee who has received NWP verification from the Corps will submit a signed certification regarding the completed work and any required mitigation. The certification will be forwarded by the Corps with the authorization letter and will include:

(a) A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions;

(b) A statement that any required mitigation was completed in accordance with the permit conditions; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

15. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the US authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit (e.g. if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the US for the total project cannot exceed 1/3-acre).

16. Water Supply Intakes. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in the proximity of a public water supply intake except where the activity is for repair of the public water supply intake structures or adjacent bank stabilization.

17. Shellfish Beds. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4.

18. Suitable Material. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the CWA).

19. Mitigation. The District Engineer will consider the factors discussed below when determining the acceptability of appropriate and practicable mitigation necessary to offset adverse effects on the aquatic environment that are more than minimal.

(a) The project must be designed and constructed to avoid and minimize adverse effects to waters of the US to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing or compensating) will be required to the extent necessary to ensure

that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland impacts requiring a PCN, unless the District Engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement. Consistent with National policy, the District Engineer will establish a preference for restoration of wetlands as compensatory mitigation, with preservation used only in exceptional circumstances.

(d) Compensatory mitigation (i.e., replacement or substitution of aquatic resources for those impacted) will not be used to increase the acreage losses allowed by the acreage limits of some of the NWPs. For example, 1/4-acre of wetlands cannot be created to change a 3/4-acre loss of wetlands to a □-acre loss associated with NWP 39 verification. However, □-acre of created wetlands can be used to reduce the impacts of a □-acre loss of wetlands to the minimum impact level in order to meet the minimal impact requirement associated with NWPs.

(e) To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferably in the same watershed.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., easements, deed restrictions) of vegetated buffers to open waters. In many cases, vegetated buffers will be the only compensatory mitigation required. Vegetated buffers should consist of native species. The width of the vegetated buffers required will address documented water quality or aquatic habitat loss concerns. Normally, the vegetated buffer will be 25 to 50 feet wide on each side of the stream, but the District Engineers may require slightly wider vegetated buffers to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the Corps will determine the appropriate compensatory mitigation (e.g., stream buffers or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where vegetated buffers are determined to be the most appropriate form of compensatory mitigation, the District Engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland impacts.

(g) Compensatory mitigation proposals submitted with the "notification" may be either conceptual or detailed. If conceptual plans are approved under the verification, then the Corps will condition the verification to require detailed plans be submitted and approved by the Corps prior to construction of the authorized activity in waters of the US.

(h) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases that require compensatory mitigation, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

20. Spawning Areas. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., excavate, fill, or smother downstream by substantial turbidity) of an important spawning area are not authorized.

21. Management of Water Flows. To the maximum extent practicable, the activity must be designed to maintain preconstruction downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore, the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters) and the structure or discharge of dredged or fill material must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and provide for not increasing water flows from the project site, relocating water, or redirecting water flow beyond preconstruction conditions. Stream channelizing will be reduced to the minimal amount necessary, and the activity must, to the maximum extent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site, unless the activity is part of a larger system designed to manage water flows. In most cases, it will not be a requirement to conduct detailed studies and monitoring of water flow.

This condition is only applicable to projects that have the potential to affect waterflows. While appropriate measures must be taken, it is not necessary to conduct detailed studies to identify such measures or require monitoring to ensure their effectiveness. Normally, the Corps will defer to state and local authorities regarding management of water flow.

22. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to the acceleration of the passage of water, and/or the restricting its flow shall be minimized to the maximum extent practicable. This includes structures and work in navigable waters of the US, or discharges of dredged or fill material.

23. Waterfowl Breeding Areas. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

24. Removal of Temporary Fills. Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

25. Designated Critical Resource Waters. Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, National Wild and Scenic Rivers, critical habitat for Federally listed threatened and endangered species, coral reefs, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the District Engineer after notice and opportunity for public comment. The District Engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Except as noted below, discharges of dredged or fill material into waters of the US are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, and 44 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. Discharges of dredged or fill materials into waters of the US may be authorized by the above NWPs in National Wild and Scenic Rivers if the activity complies with General Condition 7. Further, such discharges may be authorized in designated critical habitat for Federally listed threatened or endangered species if the activity complies with General Condition 11 and the USFWS or the NMFS has concurred in a determination of compliance with this condition.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with General Condition 13, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The District Engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

26. Fills Within 100-Year Floodplains. For purposes of this General Condition, 100-year floodplains will be identified through the existing Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps or FEMA-approved local floodplain maps.

(a) Discharges in Floodplain; Below Headwaters. Discharges of dredged or fill material into waters of the US within the mapped 100-year floodplain, below headwaters (i.e. five cfs), resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, 43, and 44.

(b) Discharges in Floodway; Above Headwaters. Discharges of dredged or fill material into waters of the US within the FEMA or locally mapped floodway, resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, and 44.

(c) The permittee must comply with any applicable FEMA-approved state or local floodplain management requirements.

27. Construction Period. For activities that have not been verified by the Corps and the project was commenced or under contract to commence by the expiration date of the NWP (or modification or revocation date), the work must be completed within 12-months after such date (including any modification that affects the project).

For activities that have been verified and the project was commenced or under contract to commence within the verification period, the work must be completed by the date determined by the Corps.

For projects that have been verified by the Corps, an extension of a Corps approved completion date maybe requested. This request must be submitted at least one month before the previously approved completion date.

D. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other Federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project.

Corps Regional Conditions Applicable to all NWPs within Indiana:

a. Excavation/dredging from areas of known or suspected contamination requires:

1. Placement of the material in a Confined Disposal Facility or Class II landfill; or
2. Placement of the material by other Corps' approved method; or
3. Testing to demonstrate that the material is not contaminated. If the material is determined to be contaminated, it must be disposed of in a. or b. above.

b. Notification in accordance with Condition 13. is required to the Corps for all activities which would cause, alter, or affect diversion of water from the Great Lakes basin.

c. Notification in accordance with Condition 13. is required to the Corps for all activities affecting waters identified below:

Designated Salmonid Waters:

1. Trail Creek & tributaries upstream of US Highway 35.
2. East Branch of the Little Calumet River and its tributaries downstream to Lake Michigan via Burns Ditch.
3. Kintzele Ditch (Black Ditch) from Beverly Drive downstream to Lake Michigan.
4. Salt Creek above its confluence with the Little Calumet River.
5. Galena River and its tributaries in Laporte County.
6. The St. Joseph River and its tributaries in St. Joseph County from the Twin Branch Dam in Mishawaka downstream to the Indiana/Michigan state line.

Waterbodies which have been designated all or partially as Outstanding State Resource Waters:

1. The Blue River in Washington, Crawford, and Harrison counties.
2. Cedar Creek in Allen and DeKalb counties.
3. The North Fork of Wildcat Creek in Carroll and Tippecanoe counties.
4. The South Fork of Wildcat Creek in Tippecanoe County.
5. The Indiana portion of Lake Michigan.
6. All waters incorporated in the Indiana Dunes National Lakeshore.

Streams which have designated all or partially as Exceptional Use Streams:

1. Big Pine Creek in Warren County.
2. Mud Pine Creek in Warren County.
3. Fall Creek in Warren County.
4. Indian Creek in Montgomery County.
5. Clifty Creek in Montgomery County.
6. Bear Creek in Fountain County.
7. Rattlesnake Creek in Fountain County.
8. The small tributary to Bear Creek in Fountain County within the Portland Arch Nature Preserve which enters Bear Creek at the sharpest bend and has formed the small natural bridge called Portland Arch.
9. Blue River from the confluence of the West Middle Forks of the Blue River in Washington County.
10. The South Fork of the Blue River in Washington County.
11. Lost River and all surface and underground tributaries upstream from the Orangeville Rise (T2N, R1W, Section 6) and the Rise of Lost River (T2N, R1W, Section 7) and the mainstream of the Lost River from Orangeville Rise downstream to its confluence with the East Fork of the White River.

Critical Wetlands and Critical Special Aquatic Sites

1. Bogs- including Acid Bogs and Circumneutral Bogs
2. Cypress Swamps
3. Dune & Swales
4. Fens
5. Flats- including Muck and Sand
6. Marl Beaches
7. Sinkhole ponds
8. Sinkhole swamps

NATIONWIDE PERMIT COMPLETION REPORT
Detroit District, Corps of Engineers

CELRE-RG-A 04-075-000-0

Commander
U.S. Army Engineer District, Detroit
ATTN: Regulatory Office
P.O. Box 1027
Detroit, Michigan 48231-1027

Dear Sir:

This is in regard to Department of the Army File No. 04-075-000-0, issued to Indiana Department of Transportation on October 20, 2004, to temporary discharge of fill associated with I 80/94 bridge replacement in Little Calumet River () at Munster, Indiana. I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the permit, and mitigation (if required) was completed in accordance with the permit conditions.

The work was completed on: _____ .
(Date work completed)

_____ _____
(Signature of Permittee) (Date)

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the above address, within 10 days after completion of work.

Please note that your permitted activity is subject to compliance inspection by the U.S. Army Corps of Engineers' representatives. If you fail to comply with this permit you are subject to permit suspension, modification or revocation.

ACOE OUTFALL WORK

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0100987
I 80/94

RECEIVED
AUG 09 2004
AMERICAN CONSULTING ENGINEERS, L.L.C.

DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
BOX 1027
DETROIT, MICHIGAN 48231-1027

July 19, 2004

IN REPLY REFER TO

Engineering & Technical Services
Regulatory Office
File No. 04-075-000-0

Carole Korbly Scott
Indiana Department of Transportation
100 N. Senate Avenue
Room 642 North
Indianapolis, Indiana 46204

Dear Ms. Scott:

Reference your application for a Department of the Army permit to discharge fill associated with removal and replacement of an existing highway storm water outfall in the Little Calumet River at I-80/94, Munster, Indiana (Section 13, Township 36N, Range 10W).

We have verified that the project is authorized by nationwide permit as published in the Federal Register. As indicated on the enclosed plans prepared June 15, 2004, the following work is authorized under NW03 and NW33:

Discharge fill associated with the removal and replacement of an existing highway storm water outfall for the Kingery Borman (I- 80/94)in the Little Calumet River, so that the outfall extends approximately 6 meters from the bank as opposed to the existing 22 feet; discharge approximately 50 cubic yards of riprap in a 7 meter by 6 meter portion of the river bed.

This authorization is contingent upon compliance with the following terms and conditions:

a. The enclosed nationwide permit(s) and the general conditions.

b. The following special conditions:

1. All dredged and/or excavated materials shall be disposed of at an upland location above the Ordinary High Water Mark with no placement in, or return to, any waterway or wetland.

2. All temporary fills and structures shall be removed in their entirety upon completion of the project.

3. During construction, standard erosion controls shall be in place and upon

completion of earthwork operations, all exposed slopes, fills, and disturbed areas must be given sufficient protection by appropriate means such as landscaping, or planting and maintaining vegetative cover, to prevent subsequent erosion.

4. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

We also direct your attention to Paragraph D.2 under Further Information, which states, "NWPs do not obviate the need to obtain other Federal, state, or local permits, approvals, or authorizations required by law." We suggest that you contact the Indiana Department of Natural Resources, Indianapolis, Indiana, telephone 317-232-4160, to determine if state approval is required. Work should not commence until State approval is obtained.

Any construction activity other than that shown on the plans may not qualify for the authorization. If you contemplate any changes or additional activities from those depicted on the plans, please submit them to this office for authorization review prior to any construction. Upon completion of the work, fill in and return the enclosed COMPLETION REPORT.

This verification is valid for 2 years from the date of this letter unless the Nationwide Permit is modified, suspended, or revoked. If you have any questions on this matter, contact me at (313) 226-2221 and refer to File Number: 04-075-000-0.

Sincerely,

Thomas E. Allenson

Thomas E. Allenson
Project Manager
Permit Evaluation Branch A

Enclosures

Copy Furnished

IDEM, Marty Maupin, w/encl.
IDNR, Mike Neyer, w/encl.
American Consulting Engineers, LLC., w/encl.

NATIONWIDE PERMIT.

Nationwide Permit No. 3. Maintenance. Activities related to:

(i) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area including those due to changes in materials, construction techniques, or current construction codes or safety standards which are necessary to make repair, rehabilitation, or replacement are permitted, provided the adverse environmental effects resulting from such repair, rehabilitation, or replacement are minimal. Currently serviceable means useable as is or with some maintenance, but not so degraded as to essentially require reconstruction. This NWP authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the District Engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

(ii) Discharges of dredged or fill material, including excavation, into all waters of the US to remove accumulated sediments and debris in the vicinity of, and within, existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.) and the placement of new or additional riprap to protect the structure, provided the permittee notifies the District Engineer in accordance with General Condition 13. The removal of sediment is limited to the minimum necessary to restore the waterway in the immediate vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend further than 200 feet in any direction from the structure. The placement of rip rap must be the minimum necessary to protect the structure or to ensure the safety of the structure. All excavated materials must be deposited and retained in an upland area unless otherwise specifically approved by the District Engineer under separate authorization. Any bank stabilization measures not directly associated with the structure will require a separate authorization from the District Engineer.

(iii) Discharges of dredged or fill material, including excavation, into all waters of the US for activities associated with the restoration of upland areas damaged by a storm, flood, or other discrete event, including the construction, placement, or installation of upland protection structures and minor dredging to remove obstructions in a water of the US. (Uplands lost as a result of a storm, flood, or other discrete event can be replaced without a Section 404 permit provided the uplands are restored to their original pre-event location. This NWP is for the activities in waters of the US associated with the replacement of the uplands.) The permittee must notify the District Engineer, in accordance with General Condition 13, within 12-months of the date of the damage and the work must commence, or be under contract to commence, within two years of the date of the damage. The permittee should provide evidence, such as a recent topographic survey or photographs, to justify the extent of the proposed restoration. The restoration of the damaged areas cannot exceed the contours, or ordinary high water mark, that existed before the damage. The District Engineer retains the right to determine the extent of the pre-existing conditions and the extent of any restoration work authorized by this permit. Minor dredging to remove obstructions from the adjacent waterbody is limited to 50 cubic yards below the plane of the ordinary high water mark, and is limited to the amount necessary to restore the pre-existing bottom contours of the waterbody. The dredging may not be done primarily to obtain fill for any restoration activities. The discharge of dredged or fill material and all related work needed to restore the upland must be part of a single and complete project. This permit cannot be used in conjunction with NWP 18 or NWP 19 to restore damaged upland areas. This permit cannot be used to reclaim historic lands lost, over an extended period, to normal erosion processes.

This permit does not authorize maintenance dredging for the primary purpose of navigation and beach restoration. This permit does not authorize new stream channelization or stream relocation projects. Any work authorized by this permit must not cause more than minimal degradation of water quality, more than minimal changes to the flow characteristics of the stream, or increase flooding (See General Conditions 9 and 21). (Sections 10 and 404)

Note: This NWP authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Section 404(f) exemption for maintenance.

C. Nationwide Permit General Conditions

The following General Conditions must be followed in order for any authorization by an NWP to be valid:

1. Navigation. No activity may cause more than a minimal adverse effect on navigation.

2. Proper Maintenance. Any structure or fill authorized shall be properly maintained, including maintenance to ensure public safety.

3. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

4. Aquatic Life Movements. No activity may substantially disrupt the necessary life-cycle movements of

those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

5. Equipment. Heavy equipment working in wetlands must be placed on mats, or other measures must be taken to minimize soil disturbance.

6. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state or tribe in its Section 401 Water Quality Certification and Coastal Zone Management Act consistency determination.

7. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System; or in a river officially designated by Congress as a ''study river" for possible inclusion in the system, while the river is in an official study status; unless the appropriate Federal agency, with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation, or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

8. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

9. Water Quality. (a) In certain states and tribal lands an individual 401 Water Quality Certification must be obtained or waived (See 33 CFR 330.4(c)).

(b) For NWPs 12, 14, 17, 18, 32, 39, 40, 42, 43, and 44, where the state or tribal 401 certification (either generically or individually) does not require or approve water quality management measures, the permittee must provide water quality management measures that will ensure that the authorized work does not result in more than minimal degradation of water quality (or the Corps determines that compliance with state or local standards, where applicable, will ensure no more than minimal adverse effect on water quality). An important component of water quality management includes stormwater management that minimizes degradation of the downstream aquatic system, including water quality (refer to General Condition 21 for stormwater management requirements). Another important component of water quality management is the establishment and maintenance of vegetated buffers next to open waters, including streams (refer to General Condition 19 for vegetated buffer requirements for the NWPs).

This condition is only applicable to projects that have the potential to affect water quality. While appropriate measures must be taken, in most cases it is not necessary to conduct detailed studies to identify such measures or to require monitoring.

10. Coastal Zone Management. In certain states, an individual state coastal zone management consistency concurrence must be obtained or waived (see 33 CFR 330.4(d)).

11. Endangered Species. (a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. Non-federal permittees shall notify the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or is located in the designated critical habitat and shall not begin work on the activity until notified by the District Engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that may affect Federally-listed endangered or threatened species or designated critical habitat, the notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. As a result of formal or informal consultation with the FWS or NMFS the District Engineer may add species-specific regional endangered species conditions to the NWPs.

(b) Authorization of an activity by a NWP does not authorize the ''take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with ''incidental take" provisions, etc.) from the USFWS or the NMFS, both lethal and non-lethal ''takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS and NMFS or their world wide web pages at http://www.fws.gov/r9endspp/endspp.html and http://www.nfms.noaa.gov/prot_res/overview/es.html respectively.

12. Historic Properties. No activity which may affect historic properties listed, or eligible for listing, in the National Register of Historic Places is authorized, until the District Engineer has complied with the provisions of 33 CFR part 325, Appendix C. The prospective permittee must notify the District Engineer if the authorized activity may affect any historic properties listed, determined to be eligible, or which the prospective permittee has reason to believe may be eligible for listing on the National Register of Historic Places, and shall not begin the activity until notified by the District Engineer that the requirements of the National Historic Preservation Act have been satisfied and that the activity is authorized. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places (see 33 CFR 330.4(g)). For

activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the notification must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

13. Notification.

(a) Timing; where required by the terms of the NWP, the prospective permittee must notify the District Engineer with a preconstruction notification (PCN) as early as possible. The District Engineer must determine if the notification is complete within 30 days of the date of receipt and can request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the District Engineer will notify the prospective permittee that the notification is still incomplete and the PCN review process will not commence until all of the requested information has been received by the District Engineer. The prospective permittee shall not begin the activity:

(1) Until notified in writing by the District Engineer that the activity may proceed under the NWP with any special conditions imposed by the District or Division Engineer; or

(2) If notified in writing by the District or Division Engineer that an Individual Permit is required; or

(3) Unless 45 days have passed from the District Engineer's receipt of the complete notification and the prospective permittee has not received written notice from the District or Division Engineer. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Notification: The notification must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) Brief description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), Regional General Permit(s), or Individual Permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP (Sketches usually clarify the project and when provided
result in a quicker decision.);

(4) For NWPs 7, 12, 14, 18, 21, 34, 38, 39, 40, 41, 42, and 43, the PCN must also include a delineation of affected special aquatic sites, including wetlands, vegetated shallows (e.g., submerged aquatic vegetation, seagrass beds), and riffle and pool complexes (see paragraph 13(f));

(5) For NWP 7 (Outfall Structures and Maintenance), the PCN must include information regarding the original design capacities and configurations of those areas of the facility where maintenance dredging or excavation is proposed;

(6) For NWP 14 (Linear Transportation Projects), the PCN must include a compensatory mitigation proposal to offset permanent losses of waters of the US and a statement describing how temporary losses of waters of the US will be minimized to the maximum extent practicable;

(7) For NWP 21 (Surface Coal Mining Activities), the PCN must include an Office of Surface Mining (OSM) or state-approved mitigation plan, if applicable. To be authorized by this NWP, the District Engineer must determine that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are minimal both individually and cumulatively and must notify the project sponsor of this determination in writing;

(8) For NWP 27 (Stream and Wetland Restoration Activities), the PCN must include documentation of the prior condition of the site that will be reverted by the permittee;

(9) For NWP 29 (Single-Family Housing), the PCN must also include:

(I) Any past use of this NWP by the Individual Permittee and/or the permittee's spouse;

(ii) A statement that the single-family housing activity is for a personal residence of the permittee;

(iii) A description of the entire parcel, including its size, and a delineation of wetlands. For the purpose of this NWP, parcels of land measuring 1/4-acre or less will not require a formal on-site delineation. However, the applicant shall provide an indication of where the wetlands are and the amount of wetlands that exists on the property. For parcels greater than 1/4-acre in size, formal wetland delineation must be prepared in accordance with the current method required by the Corps. (See paragraph 13(f));

(iv) A written description of all land (including, if available, legal descriptions) owned by the prospective permittee and/or the prospective permittee's spouse, within a one mile radius of the parcel, in any form of ownership (including any land owned as a partner, corporation, joint tenant, co-tenant, or as a tenant-by-the-entirety) and any land on which a purchase and sale agreement or other contract for sale or purchase has been executed;

(10) For NWP 31 (Maintenance of Existing Flood Control Facilities), the prospective permittee must either notify the District Engineer with a PCN prior to each maintenance activity or submit a five year (or less) maintenance plan. In addition, the PCN must include all of the following:

(I) Sufficient baseline information identifying the approved channel depths and configurations and existing facilities. Minor deviations are authorized, provided the approved flood control protection or drainage is not increased;

(ii) A delineation of any affected special aquatic sites, including wetlands; and,

(iii) Location of the dredged material disposal site;

(11) For NWP 33 (Temporary Construction, Access, and Dewatering), the PCN must also include a restoration plan

of reasonable measures to avoid and minimize adverse effects to aquatic resources;

(12) For NWPs 39, 43 and 44, the PCN must also include a written statement to the District Engineer explaining how avoidance and minimization for losses of waters of the US were achieved on the project site;

(13) For NWP 39 and NWP 42, the PCN must include a compensatory mitigation proposal to offset losses of waters of the US or justification explaining why compensatory mitigation should not be required. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;

(14) For NWP 40 (Agricultural Activities), the PCN must include a compensatory mitigation proposal to offset losses of waters of the US. This NWP does not authorize the relocation of greater than 300 linear-feet of existing serviceable drainage ditches constructed in non-tidal streams unless, for drainage ditches constructed in intermittent non-tidal streams, the District Engineer waives this criterion in writing, and the District Engineer has determined that the project complies with all terms and conditions of this NWP, and that any adverse impacts of the project on the aquatic environment are minimal, both individually and cumulatively;

(15) For NWP 43 (Stormwater Management Facilities), the PCN must include, for the construction of new stormwater management facilities, a maintenance plan (in accordance with state and local requirements, if applicable) and a compensatory mitigation proposal to offset losses of waters of the US. For discharges that cause the loss of greater than 300 linear feet of an intermittent stream bed, to be authorized, the District Engineer must determine that the activity complies with the other terms and conditions of the NWP, determine adverse environmental effects are minimal both individually and cumulatively, and waive the limitation on stream impacts in writing before the permittee may proceed;

(16) For NWP 44 (Mining Activities), the PCN must include a description of all waters of the US adversely affected by the project, a description of measures taken to minimize adverse effects to waters of the US, a description of measures taken to comply with the criteria of the NWP, and a reclamation plan (for all aggregate mining activities in isolated waters and non-tidal wetlands adjacent to headwaters and any hard rock/mineral mining activities);

(17) For activities that may adversely affect Federally-listed endangered or threatened species, the PCN must include the name(s) of those endangered or threatened species that may be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work; and

(18) For activities that may affect historic properties listed in, or eligible for listing in, the National Register of Historic Places, the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property.

(c) Form of Notification: The standard Individual Permit application form (Form ENG 4345) may be used as the notification but must clearly indicate that it is a PCN and must include all of the information required in (b) (1)-(18) of General Condition 13. A letter containing the requisite information may also be used.

(d) District Engineer's Decision: In reviewing the PCN for the proposed activity, the District Engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. The prospective permittee may submit a proposed mitigation plan with the PCN to expedite the process. The District Engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed work are minimal. If the District Engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the District Engineer will notify the permittee and include any conditions the District Engineer deems necessary. The District Engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee is required to submit a compensatory mitigation proposal with the PCN, the proposal may be either conceptual or detailed. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the District Engineer will expeditiously review the proposed compensatory mitigation plan. The District Engineer must review the plan within 45 days of receiving a complete PCN and determine whether the conceptual or specific proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the District Engineer to be minimal, the District Engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP.

If the District Engineer determines that the adverse effects of the proposed work are more than minimal, then the District Engineer will notify the applicant either: (1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an Individual Permit; (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation proposal that would reduce the adverse effects on the aquatic environment to the

minimal level; or (3) that the project is authorized under the NWP with specific modifications or conditions. Where the District Engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation proposal that would reduce the adverse effects on the aquatic environment to the minimal level. When conceptual mitigation is included, or a mitigation plan is required under item (2) above, no work in waters of the US will occur until the District Engineer has approved a specific mitigation plan.

(e) Agency Coordination: The District Engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

For activities requiring notification to the District Engineer that result in the loss of greater than ½-acre of waters of the US, the District Engineer will provide immediately (e.g., via facsimile transmission, overnight mail, or other expeditious manner) a copy to the appropriate Federal or state offices (USFWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will then have 10 calendar days from the date the material is transmitted to telephone or fax the District Engineer notice that they intend to provide substantive, site-specific comments. If so contacted by an agency, the District Engineer will wait an additional 15 calendar days before making a decision on the notification. The District Engineer will fully consider agency comments received within the specified time frame, but will provide no response to the resource agency, except as provided below. The District Engineer will indicate in the administrative record associated with each notification that the resource agencies' concerns were considered. As required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act, the District Engineer will provide a response to NMFS within 30 days of receipt of any Essential Fish Habitat conservation recommendations. Applicants are encouraged to provide the Corps multiple copies of notifications to expedite agency notification.

(f) Wetland Delineations: Wetland delineations must be prepared in accordance with the current method required by the Corps (For NWP 29 see paragraph (b)(9)(iii) for parcels less than (1/4-acre in size). The permittee may ask the Corps to delineate the special aquatic site. There may be some delay if the Corps does the delineation. Furthermore, the 45-day period will not start until the wetland delineation has been completed and submitted to the Corps, where appropriate.

14. Compliance Certification. Every permittee who has received NWP verification from the Corps will submit a signed certification regarding the completed work and any required mitigation. The certification will be forwarded by the Corps with the authorization letter and will include:

(a) A statement that the authorized work was done in accordance with the Corps authorization, including any general or specific conditions;

(b) A statement that any required mitigation was completed in accordance with the permit conditions; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

15. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the US authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit (e.g. if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the US for the total project cannot exceed 1/3-acre).

16. Water Supply Intakes. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in the proximity of a public water supply intake except where the activity is for repair of the public water supply intake structures or adjacent bank stabilization.

17. Shellfish Beds. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4.

18. Suitable Material. No activity, including structures and work in navigable waters of the US or discharges of dredged or fill material, may consist of unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.) and material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the CWA).

19. Mitigation. The District Engineer will consider the factors discussed below when determining the acceptability of appropriate and practicable mitigation necessary to offset adverse effects on the aquatic environment that are more than minimal.

(a) The project must be designed and constructed to avoid and minimize adverse effects to waters of the US to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland impacts requiring a PCN, unless the District Engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific

waiver of this requirement. Consistent with National policy, the District Engineer will establish a preference for restoration of wetlands as compensatory mitigation, with preservation used only in exceptional circumstances.

(d) Compensatory mitigation (i.e., replacement or substitution of aquatic resources for those impacted) will not be used to increase the acreage losses allowed by the acreage limits of some of the NWPs. For example, 1/4-acre of wetlands cannot be created to change a 3/4-acre loss of wetlands to a ½-acre loss associated with NWP 39 verification. However, ½-acre of created wetlands can be used to reduce the impacts of a ½-acre loss of wetlands to the minimum impact level in order to meet the minimal impact requirement associated with NWPs.

(e) To be practicable, the mitigation must be available and capable of being done considering costs, existing technology, and logistics in light of the overall project purposes. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferably in the same watershed.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., easements, deed restrictions) of vegetated buffers to open waters. In many cases, vegetated buffers will be the only compensatory mitigation required. Vegetated buffers should consist of native species. The width of the vegetated buffers required will address documented water quality or aquatic habitat loss concerns. Normally, the vegetated buffer will be 25 to 50 feet wide on each side of the stream, but the District Engineers may require slightly wider vegetated buffers to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the Corps will determine the appropriate compensatory mitigation (e.g., stream buffers or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where vegetated buffers are determined to be the most appropriate form of compensatory mitigation, the District Engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland impacts.

(g) Compensatory mitigation proposals submitted with the "notification" may be either conceptual or detailed. If conceptual plans are approved under the verification, then the Corps will condition the verification to require detailed plans be submitted and approved by the Corps prior to construction of the authorized activity in waters of the US.

(h) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases that require compensatory mitigation, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

20. Spawning Areas. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., excavate, fill, or smother downstream by substantial turbidity) of an important spawning area are not authorized.

21. Management of Water Flows. To the maximum extent practicable, the activity must be designed to maintain preconstruction downstream flow conditions (e.g., location, capacity, and flow rates). Furthermore, the activity must not permanently restrict or impede the passage of normal or expected high flows (unless the primary purpose of the fill is to impound waters) and the structure or discharge of dredged or fill material must withstand expected high flows. The activity must, to the maximum extent practicable, provide for retaining excess flows from the site, provide for maintaining surface flow rates from the site similar to preconstruction conditions, and provide for not increasing water flows from the project site, relocating water, or redirecting water flow beyond preconstruction conditions. Stream channelizing will be reduced to the minimal amount necessary, and the activity must, to the maximum extent practicable, reduce adverse effects such as flooding or erosion downstream and upstream of the project site, unless the activity is part of a larger system designed to manage water flows. In most cases, it will not be a requirement to conduct detailed studies and monitoring of water flow.

This condition is only applicable to projects that have the potential to affect waterflows. While appropriate measures must be taken, it is not necessary to conduct detailed studies to identify such measures or require monitoring to ensure their effectiveness. Normally, the Corps will defer to state and local authorities regarding management of water flow.

22. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to the acceleration of the passage of water, and/or the restricting its flow shall be minimized to the maximum extent practicable. This includes structures and work in navigable waters of the US, or discharges of dredged or fill material.

23. Waterfowl Breeding Areas. Activities, including structures and work in navigable waters of the US or discharges of dredged or fill material, into breeding areas for migratory waterfowl must be avoided to the maximum extent practicable.

24. Removal of Temporary Fills. Any temporary fills must be removed in their entirety and the affected areas returned to their preexisting elevation.

25. Designated Critical Resource Waters. Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves,

National Wild and Scenic Rivers, critical habitat for Federally listed threatened and endangered species, coral reefs, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the District Engineer after notice and opportunity for public comment. The District Engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Except as noted below, discharges of dredged or fill material into waters of the US are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, and 44 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. Discharges of dredged or fill materials into waters of the US may be authorized by the above NWPs in National Wild and Scenic Rivers if the activity complies with General Condition 7. Further, such discharges may be authorized in designated critical habitat for Federally listed threatened or endangered species if the activity complies with General Condition 11 and the USFWS or the NMFS has concurred in a determination of compliance with this condition.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with General Condition 13, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The District Engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

26. Fills Within 100-Year Floodplains. For purposes of this General Condition, 100-year floodplains will be identified through the existing Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps or FEMA-approved local floodplain maps.

(a) Discharges in Floodplain; Below Headwaters. Discharges of dredged or fill material into waters of the US within the mapped 100-year floodplain, below headwaters (i.e. five cfs), resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, 43, and 44.

(b) Discharges in Floodway; Above Headwaters. Discharges of dredged or fill material into waters of the US within the FEMA or locally mapped floodway, resulting in permanent above-grade fills, are not authorized by NWPs 39, 40, 42, and 44.

(c) The permittee must comply with any applicable FEMA-approved state or local floodplain management requirements.

27. Construction Period. For activities that have not been verified by the Corps and the project was commenced or under contract to commence by the expiration date of the NWP (or modification or revocation date), the work must be completed within 12-months after such date (including any modification that affects the project).

For activities that have been verified and the project was commenced or under contract to commence within the verification period, the work must be completed by the date determined by the Corps.

For projects that have been verified by the Corps, an extension of a Corps approved completion date maybe requested. This request must be submitted at least one month before the previously approved completion date.

D. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other Federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project.

Corps Regional Conditions Applicable to all NWPs within Indiana:

a. Excavation/dredging from areas of known or suspected contamination requires:

1. Placement of the material in a Confined Disposal Facility or Class II landfill; or

2. Placement of the material by other Corps' approved method; or

3. Testing to demonstrate that the material is not contaminated. If the material is determined to be contaminated, it must be disposed of in a. or b. above.

b. Notification in accordance with Condition 13. is required to the Corps for all activities which would cause, alter, or affect diversion of water from the Great Lakes basin.

c. Notification in accordance with Condition 13. is required to the Corps for all activities affecting waters identified below:

Designated Salmonid Waters:

1. Trail Creek & tributaries upstream of US Highway 35.

2. East Branch of the Little Calumet River and its tributaries downstream to Lake Michigan via Burns Ditch.

3. Kintzele Ditch (Black Ditch) from Beverly Drive downstream to Lake Michigan.

4. Salt Creek above its confluence with the Little Calumet River.

5. Galena River and its tributaries in Laporte County.

6. The St. Joseph River and its tributaries in St. Joseph County from the Twin Branch Dam in Mishawaka downstream to the Indiana/Michigan state line.

Waterbodies which have been designated all or partially as Outstanding State Resource Waters:

1. The Blue River in Washington, Crawford, and Harrison counties.
2. Cedar Creek in Allen and DeKalb counties.
3. The North Fork of Wildcat Creek in Carroll and Tippecanoe counties.
4. The South Fork of Wildcat Creek in Tippecanoe County.
5. The Indiana portion of Lake Michigan.
6. All waters incorporated in the Indiana Dunes National Lakeshore.

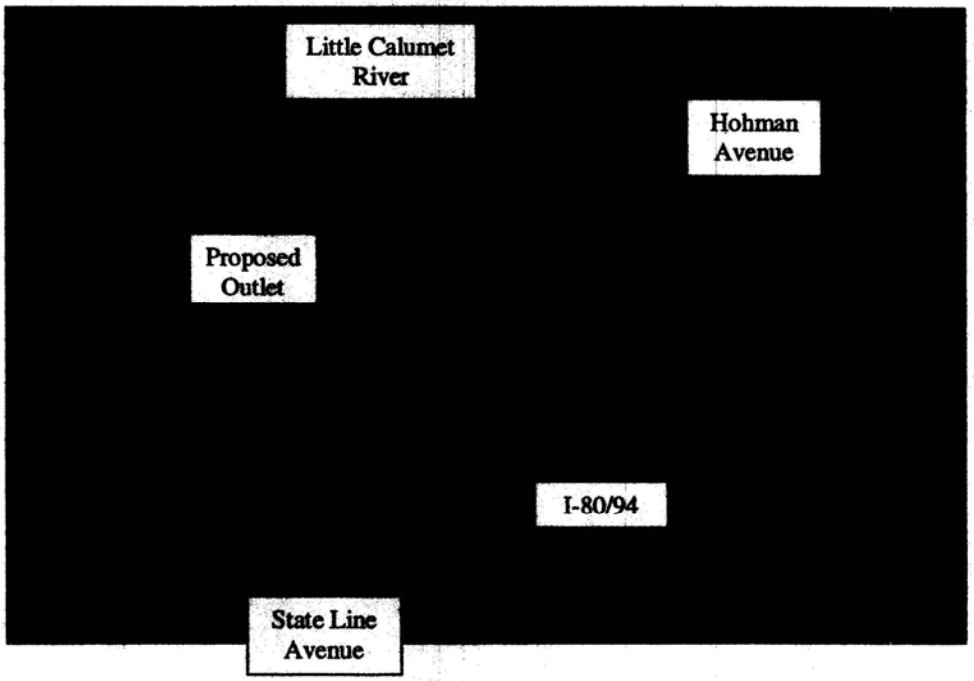
Streams which have designated all or partially as Exceptional Use Streams:

1. Big Pine Creek in Warren County.
2. Mud Pine Creek in Warren County.
3. Fall Creek in Warren County.
4. Indian Creek in Montgomery County.
5. Clifty Creek in Montgomery County.
6. Bear Creek in Fountain County.
7. Rattlesnake Creek in Fountain County.
8. The small tributary to Bear Creek in Fountain County within the Portland Arch Nature Preserve which enters Bear Creek at the sharpest bend and has formed the small natural bridge called Portland Arch.
9. Blue River from the confluence of the West Middle Forks of the Blue River in Washington County.
10. The South Fork of the Blue River in Washington County.
11. Lost River and all surface and underground tributaries upstream from the Orangeville Rise (T2N, R1W, Section 6) and the Rise of Lost River (T2N, R1W, Section 7) and the mainstream of the Lost River from Orangeville Rise downstream to its confluence with the East Fork of the White River.

Critical Wetlands and Critical Special Aquatic Sites

1. Bogs- including Acid Bogs and Circumneutral Bogs
2. Cypress Swamps
3. Dune & Swales
4. Fens
5. Flats- including Muck and Sand
6. Marl Beaches
7. Sinkhole ponds
8. Sinkhole swamps

Location



Aerial Photograph

NUMBER: 04-075-000-0
ILLINOIS DOT- COFFERDAM, OUTFALL, I-80/94
BY: Indiana Department of Transportation,
in Munster, LAKE County, INDIANA

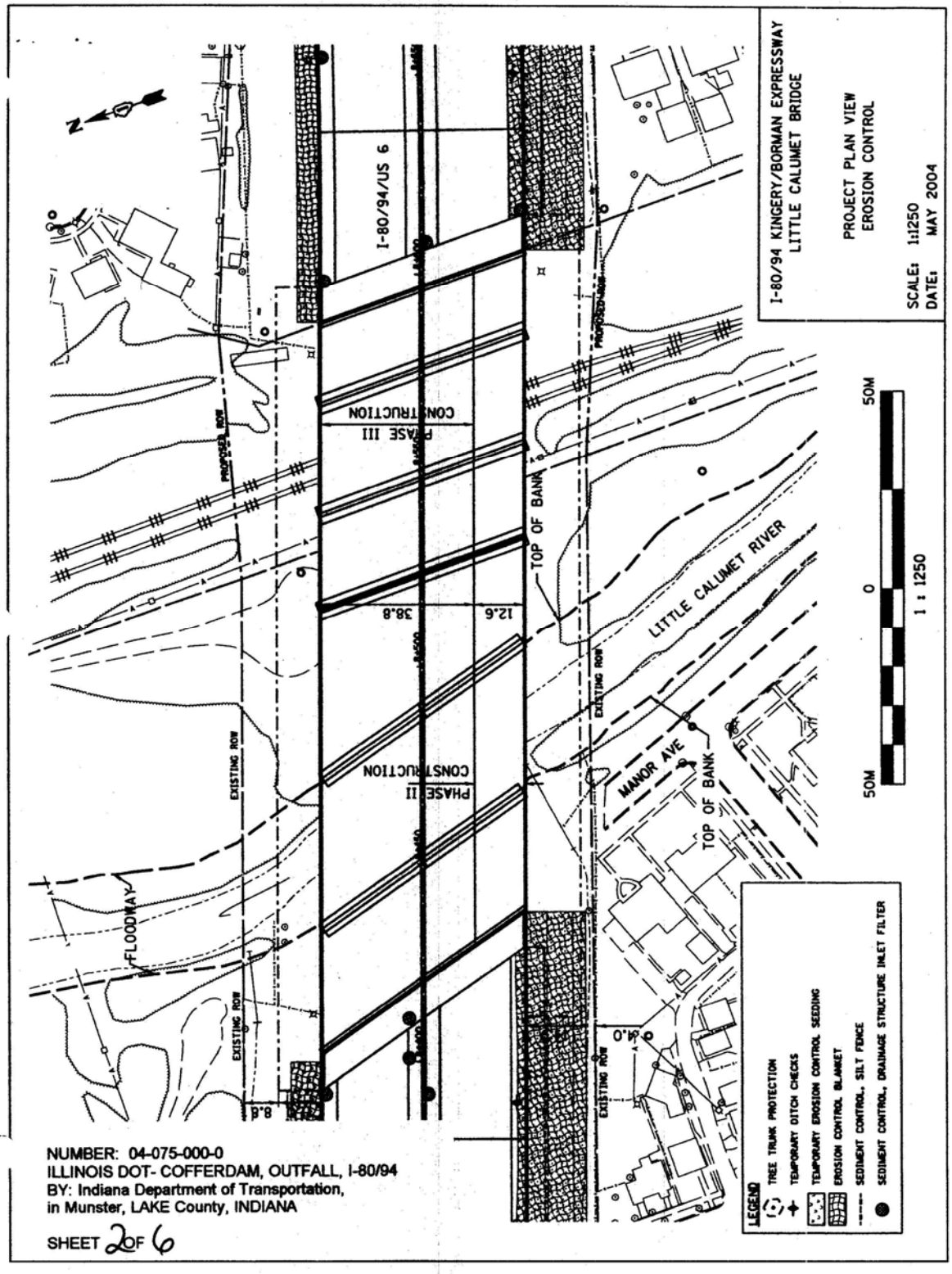
SHEET 1 OF 6

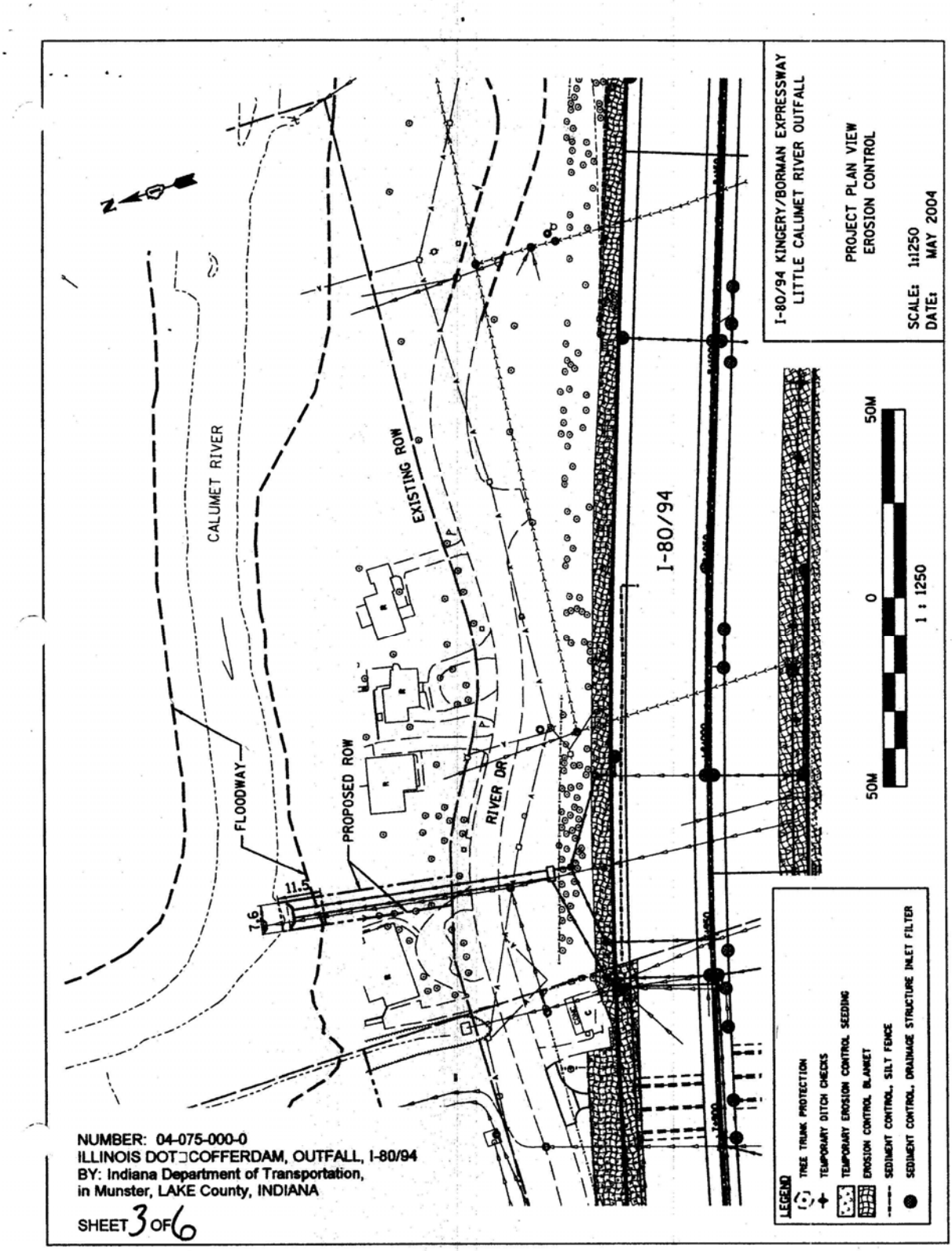
N

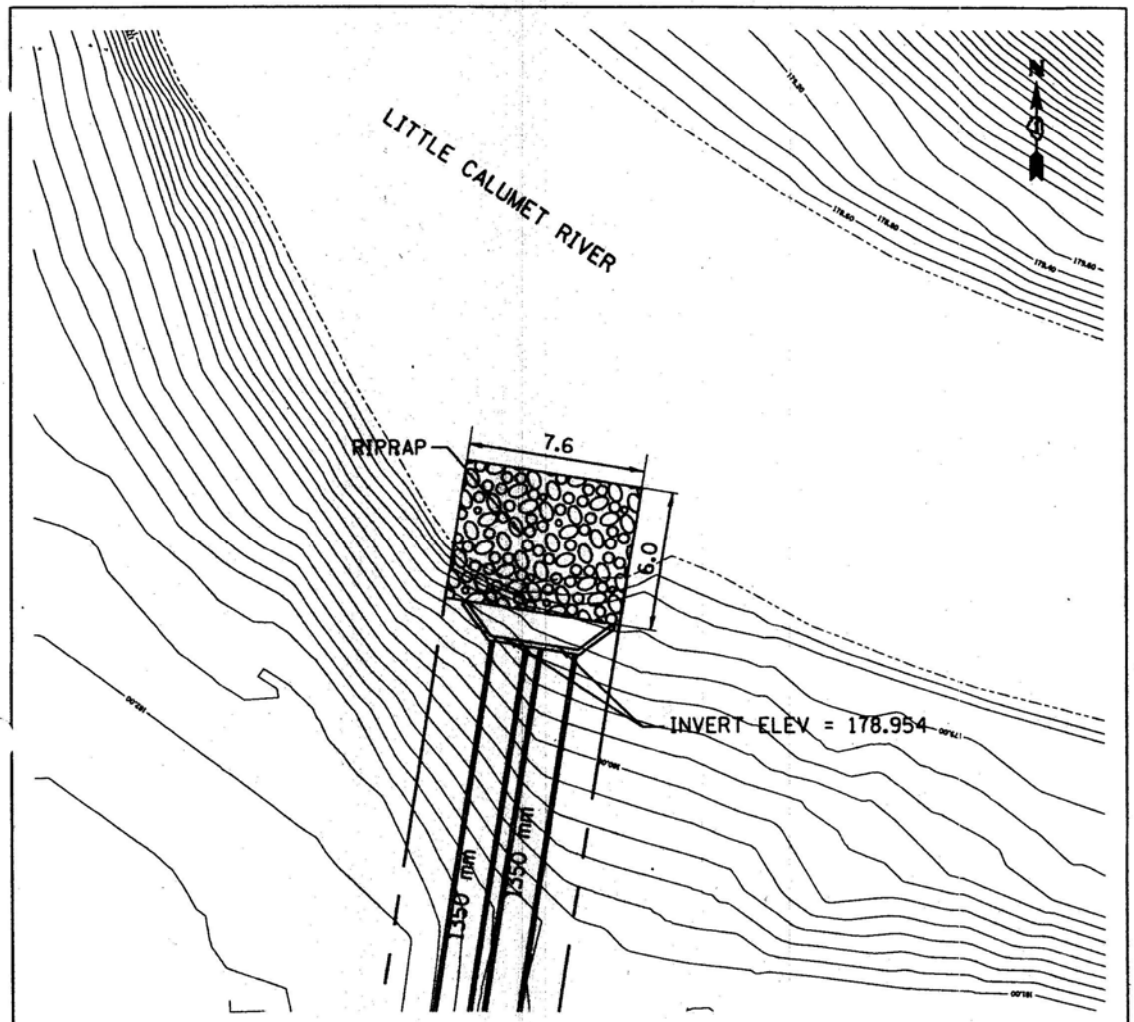
I-80/94 Kingery/Borman Expressway

Location: Location Map
Outlet to Little Calumet River

Date: May 2004 Sheet 1 of 2


I-80/94 KINGERY/BORMAN EXPRESSWAY
LITTLE CALUMET BRIDGE
PROJECT PLAN VIEW
EROSION CONTROL
SCALE: 1:1250
DATE: MAY 2004
I-80/94/US 6
PHASE III CONSTRUCTION
PHASE II CONSTRUCTION
PROPOSED ROW
EXISTING ROW
TOP OF BANK
LITTLE CALUMET RIVER
MANOR AVE
FLOODWAY
38.8
12.6
8.8
4.0
50M
0
50M
1 : 1250
LEGEND
TREE TRUNK PROTECTION
TEMPORARY DITCH CHECKS
TEMPORARY EROSION CONTROL SEEDING
EROSION CONTROL BLANKET
SEDIMENT CONTROL, SILT FENCE
SEDIMENT CONTROL, DRAINAGE STRUCTURE INLET FILTER
NUMBER: 04-075-000-0
ILLINOIS DOT- COFFERDAM, OUTFALL, I-80/94
BY: Indiana Department of Transportation,
in Munster, LAKE County, INDIANA
SHEET 2 OF 6


I-80/94 KINGERY/BORMAN EXPRESSWAY
LITTLE CALUMET RIVER OUTFALL
PROJECT PLAN VIEW
EROSION CONTROL
SCALE: 1:1250
DATE: MAY 2004
CALUMET RIVER
EXISTING ROW
PROPOSED ROW
FLOODWAY
RIVER DR
I-80/94
50M
0
50M
1 : 1250
LEGEND
TREE TRUNK PROTECTION
TEMPORARY DITCH CHECKS
TEMPORARY EROSION CONTROL SEEDING
EROSION CONTROL BLANKET
SEDIMENT CONTROL, SILT FENCE
SEDIMENT CONTROL, DRAINAGE STRUCTURE INLET FILTER
NUMBER: 04-075-000-0
ILLINOIS DOT□COFFERDAM, OUTFALL, I-80/94
BY: Indiana Department of Transportation,
in Munster, LAKE County, INDIANA
SHEET 3 OF 6

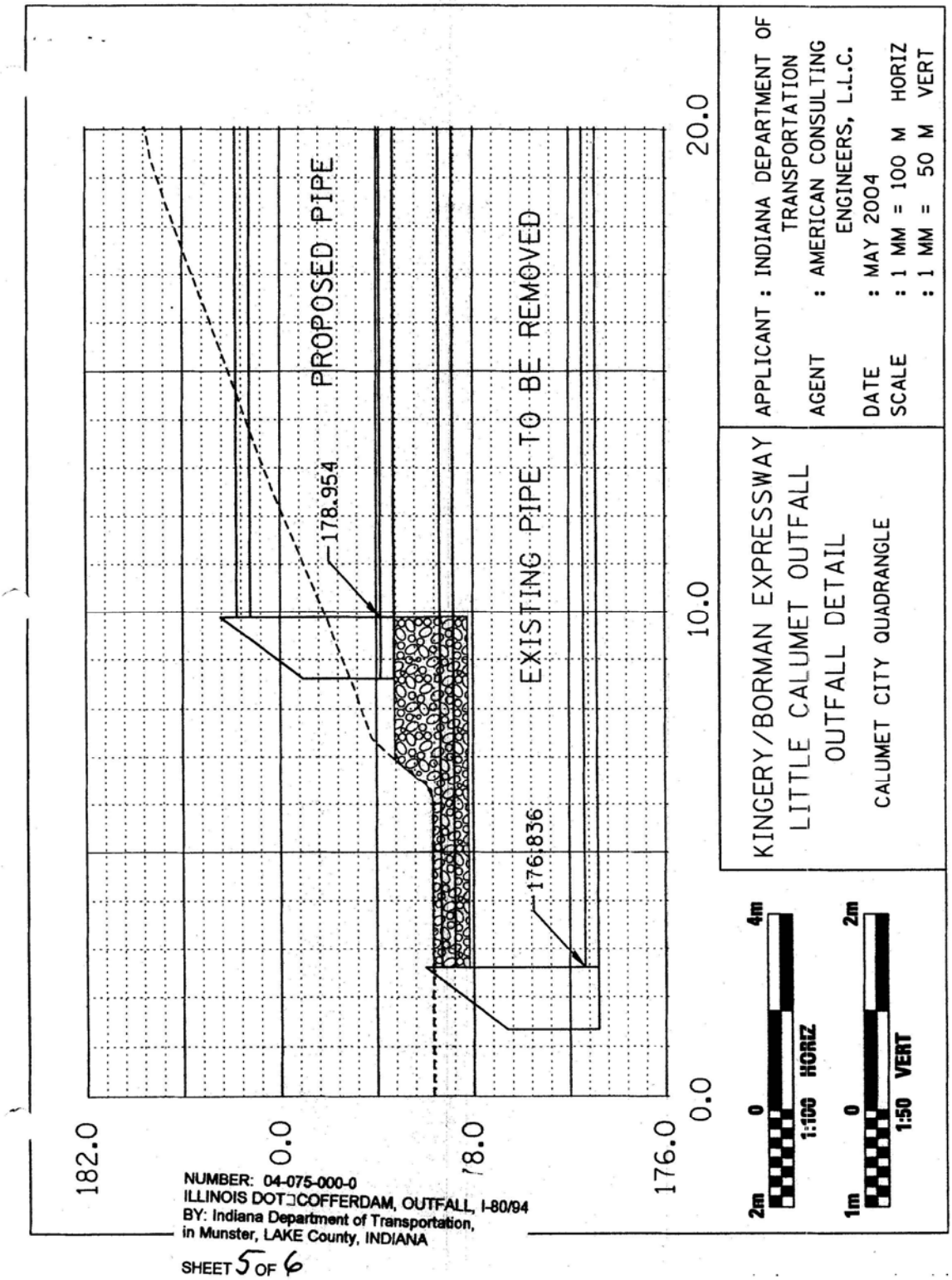


KINGERY/BORMAN EXPRESSWAY
LITTLE CALUMET OUTFALL
OUTFALL DETAIL

NUMBER: 04-075-000-0
ILLINOIS DOT COFFERDAM, OUTFALL, I-80/94
BY: Indiana Department of Transportation,
in Munster, LAKE County, INDIANA

SHEET 4 OF 6

APPLICANT : INDIANA DEPARTMENT OF TRANSPORTATION
AGENT : AMERICAN CONSULTING ENGINEERS, L.L.C.
DATE : MAY 2004
SCALE : 1 MM = 250 M


PROPOSED PIPE
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EXISTING PIPE TO BE REMOVED
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0.0
178.0
176.0
0.0
10.0
20.0
KINGERY/BORMAN EXPRESSWAY
LITTLE CALUMET OUTFALL
OUTFALL DETAIL
CALUMET CITY QUADRANGLE
APPLICANT : INDIANA DEPARTMENT OF TRANSPORTATION
AGENT : AMERICAN CONSULTING ENGINEERS, L.L.C.
DATE : MAY 2004
SCALE : 1 MM = 100 M HORIZ
: 1 MM = 50 M VERT
4m
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2m
0
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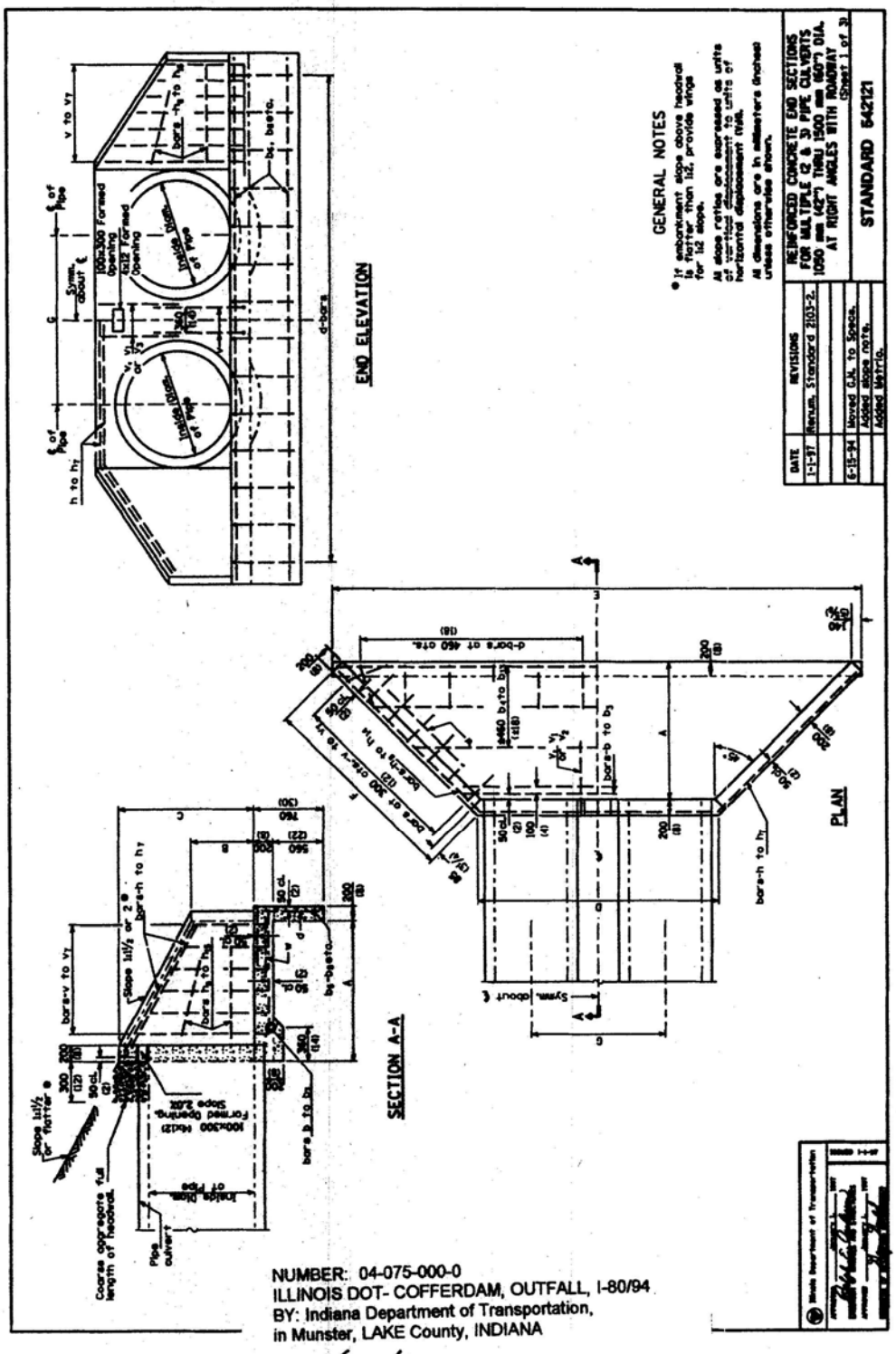
1:50 VERT
NUMBER: 04-075-000-0
ILLINOIS DOT□COFFERDAM, OUTFALL, I-80/94
BY: Indiana Department of Transportation,
in Munster, LAKE County, INDIANA
SHEET 5 OF 6


END ELEVATION
GENERAL NOTES
PLAN
SECTION A-A
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STANDARD 542121
REVISIONS
DATE
1-1-97 Renum. Standard 280?-2.
6-15-94 Moved C/L to Spans.
Added slope note.
Added Metric.
NUMBER: 04-075-000-0
ILLINOIS DOT- COFFERDAM, OUTFALL, I-80/94
BY: Indiana Department of Transportation,
in Munster, LAKE County, INDIANA

SHEET 6 OF 6

NATIONWIDE PERMIT COMPLETION REPORT
Detroit District, Corps of Engineers

CELRE-RG-A 04-075-000-0

Commander
U.S. Army Engineer District, Detroit
ATTN: Regulatory Office
P.O. Box 1027
Detroit, Michigan 48231-1027

Dear Sir:

This is in regard to Department of the Army File No. 04-075-000-0, issued to Indiana Department of Transportation on July 15, 2004, to discharge fill associated with removal and replacement of an existing highway storm water outfall in Little Calumet River () at Munster, Indiana. I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the permit, and mitigation (if required) was completed in accordance with the permit conditions.

The work was completed on: _____ .
(Date work completed)

_____ _____
(Signature of Permittee) (Date)

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the above address, within 10 days after completion of work.

Please note that your permitted activity is subject to compliance inspection by the U.S. Army Corps of Engineers' representatives. If you fail to comply with this permit you are subject to permit suspension, modification or revocation.

IDEM RULE 5 NOI

INDIANA DEPARTMENT OF TRANSPORTATION
100 North Senate Avenue
Room N642
Indianapolis, Indiana 46204-2217
(317) 232-7977 *FAX: (317) 233-4929*
An Equal Opportunity Employer ● http:// www.in.gov/dot

MITCHELL E. DANIELS, JR., Governor
THOMAS O. SHARP, Commissioner

Writer's Direct Line
317-232-7977

June 6, 2005

Indiana Department of Environmental Management
Office of Water Management
100 N. Senate Avenue
Room 1255
Indianapolis, IN 46204

Attention: Permits Section

RE: Proj. No.: IM-0801 (161)
On: I-80/94 between the Indiana/Illinois State Line & Calumet Ave.
Des. No.: 0100987
In: Lake County

Dear Sirs:

This letter is our Notice of Intent (N.O.I.) indicating our intention to comply with the terms of the general permit for construction Activity (soil erosion control), 327-IAC-15-5 in lieu of applying for an individual NPDES Permit.

> "I certify that this document and all attachments were prepared under the process established by INDOT which complies with the philosophy and methods of the Indiana Handbook for Erosion Control in Developing Areas. This handbook was published by the Division of Soil Conservation of the Indiana Department of Natural Resources. This process ensures that qualified personnel properly gather and evaluate the information submitted. To the best of my knowledge, the information is accurate and complete. The methods of erosion control submitted with this document may have to be altered during the construction of the project based on the methods of sequence of construction chosen the contractor."

The erosion control measures included in the erosion control plan comply with the requirements of 327-IAC-15-5-9 complies with the county erosion control requirements. The erosion control measures will be local authority and the soil and water conservation district office have been sent a copy of the plan for review (a copy of the transmittal letter attached). Implementation of the erosion control plan will be conducted by personnel trained in erosion control practices.

If you have questions call Carole Korbly Scott at (317) 232-7977.

Sincerely,
Merril E. Dougherty
Hydraulics Engineer Supervisor

MED/CKS/mp

cc: Tom Engel – American Consulting Engr. Lake County SWCD
Russ Brittain - Design
Kim Peters - Design
Margie Nieman – Program Development
Permits file idem

ORIG 2014080
INDOT
CC ACE
NOI from INDOT
CC: JBS, TJW
File

Construction/Stormwater Pollution Prevention Plan Technical Review and Comment *(Form 1)*

Project Information

Project Name: I-80/94 Kingery/Borman Expansion (DES # 0100987 **County:** Lake
Plan Submittal Date: 05/12/05 **Hydrologic Unit Code:** O712OOO3O3OO6O
Project Location Description: Located on I-80/94 between the Indiana/Illinois State line and Calumet Avenue
Latitude and Longitude:
Civil Township: Highland **Quarter:** NW **Section:** 13 **Township:** 36 N **Range:** 10 W

Project Owner Name: Indiana Department of Transportation
Contact: Carole Korbly Scott
Address: 100 North Senate Avenue, Room N642
City: Indianapolis **State:** Indiana **Zip:** 46204-2217
Phone: 317.232.7977 **FAX:** 317.233.4929 **E-Mail:** cscott@indot.state.in.us

Plan Preparer Name: American Consulting Engineers, LLC
Affiliation: Consulting Engineer
Address: 5440 North Cumberland Avenue, Suite 111
City: Chicago **State:** Illinois **Zip:** 60656
Phone: 773-314-1200 **FAX:** 773-314-1201 **E-Mail:**

Plan Review

Review Date: 05/17/05
Principal Plan Reviewer: Brandon Shidler, Resource Specialist
Agency: Indiana Department of Natural Resources - Division of Soil Conservation
Address: 211 East Drexel Parkway
City: Rensselaer **State:** IN **Zip:** 47978-7294
Phone: 219.866.8554 **FAX:** 219.866.5507 **E-Mail:** bshidler@dnr.IN.gov
Assisted By:

☑ **PLAN IS ADEQUATE: A comprehensive plan review has been completed and it has been determined that the plan satisfies the minimum requirements and intent of 327 IAC 15-5.**

- ☐ **Please refer to additional information included on the following page(s).**
- ☑ **Submit Notice of Intent (NOI):** *Attach a copy of this cover page when submitting the NOI to the Indiana Department of Environmental Management. Construction activities may begin 48 hours following the submittal of the NOI. A copy of the NOI must also be sent to the Reviewing Authority (e.g. SWCD, DNR).*

☐ **A preliminary plan review has been completed; a comprehensive review will not be completed within the 28-day review period. The reviewing authority reserves the right to perform a comprehensive review at a later date and revisions to the plan may be required at that time to address deficiencies.**

- ☐ **Please refer to additional information included on the following page(s).**
- ☐ **Submit Notice of Intent (NOI):** *Attach a copy of this cover page when submitting the NOI to the Indiana Department of Environmental Management. Construction activities may begin 48 hours following the submittal of the NOI. A copy of the NOI must also be sent to the Reviewing Authority (e.g. SWCD, DNR).*

☐ **PLAN IS DEFICIENT: Significant deficiencies were identified during the plan review.**

- ☐ **Please refer to additional information included on the following page(s).**
- ☐ **DO NOT file a Notice of Intent for this project.**
- ☐ **DO NOT commence land disturbing activities until all deficiencies are adequately addressed, the plan re-submitted, and notification has been received that the minimum requirements have been satisfied.**

☐ **Plan Revisions** ☐ **Deficient Items should be mailed or delivered to the Principal Plan Reviewer identified in the Plan Review Section above.**

Construction/Stormwater Pollution Prevention Plan - Technical Review and Comment ***(Form 1)***

Project Name: I-80/94 Kingery/Borman Expansion (DES # 0100987
Date Reviewed: 05/17/05

The technical review and comments are intended to evaluate the completeness of the Construction/Stormwater Pollution Prevention Plan for the project. The Plan submitted was not reviewed for the adequacy of the engineering design. All measures included in the plan, as well as those recommended in the comments should be evaluated as to their feasibility by a qualified individual with structural measures designed by a qualified engineer. The Plan has not been reviewed for other local, state, or federal permits that may be required to proceed with this project. Additional information, including design calculations may be requested to further evaluate the Plan.

All proposed stormwater pollution prevention measures and those referenced in this review must meet the design criteria and standards set forth in the "Indiana Stormwater Quality Manual" from the Indiana Department of Natural Resources, Division of Soil Conservation or similar Guidance Documents.

Please direct questions and/or comments regarding this plan review to:
Brandon Shidler, Resource Specialist
Please refer to the address and contact information identified in the Plan Review Section on page 1.

Assessment of Construction Plan Elements *(Section A)*

The Construction Plan Elements are adequately represented to complete a plan review:
☑ **Yes** ☐ **No**

The items checked below are deficient and require submittal to meet the requirements of the rule.

A			A		
☐	1	Index showing locations of required Plan Elements	☐	2	11 by 17 inch plat showing building lot numbers/boundaries and road layout/names
☐	3	Narrative describing the nature and purpose of the project	☐	4	Vicinity map showing project location
☐	5	Legal Description of the Project Site (Include Latitude and Longitude - NOI Requirement)	☐	6	Location of all lots and proposed site improvements (roads, utilities, structures, etc.)
☐	7	Hydrologic unit code (14 Digit)	☐	8	Notation of any State or Federal water quality permits
☐	9	Specific points where stormwater discharge will leave the site	☐	10	Location and name of all wetlands, lakes and water courses on and adjacent to the site
☐	11	Identification of all receiving waters	☐	12	Identification of potential discharges to ground water (abandoned wells, sinkholes, etc.)
☐	13	100 year floodplains, floodways, and floodway fringes	☐	14	Pre-construction and post construction estimate of Peak Discharge (10 Year storm event)
☐	15	Adjacent landuse, including upstream watershed	☐	16	Locations and approximate boundaries of all disturbed areas (Construction Limits)
☐	17	Identification of existing vegetative cover	☐	18	Soils map including soil descriptions and limitations
☐	19	Locations, size and dimensions of proposed stormwater systems (e.g. pipes, swales and channels)	☐	20	Plans for any off-site construction activities associated with this project (sewer/water tie-ins)
☐	21	Locations of proposed soil stockpiles and/or borrow/disposal areas	☐	22	Existing site topography at an interval appropriate to indicate drainage patterns
☐	23	Proposed final topography at an interval appropriate to indicate drainage patterns			

Construction/Stormwater Pollution Prevention Plan - Technical Review and Comment ***(Form 1)***

Project Name: I-80/94 Kingery/Borman Expansion (DES # 0100987
Date Reviewed: 05/17/05

Assessment of Stormwater Pollution Prevention Plan *(Sections B & C)*

Stormwater Pollution Prevention Plan - Construction Component *(Section B)*

Adequate	Deficient	Not Applicable	B	*The construction component of the Stormwater Pollution Prevention Plan includes stormwater quality measures to address erosion, sedimentation, and other pollutants associated with land disturbance and construction activities. Proper implementation of the plan and inspections of the construction site are necessary to minimize the discharge of pollutants. The Project Site Owner should be aware that unforeseen construction activities and weather conditions may affect the performance of a practice or the effectiveness of the plan. The plan must be a flexible document, with provisions to modify or substitute practices as necessary.*
☑	☐		1	**Description of potential pollutant sources associated with construction activities**
☑	☐		2	**Sequence describing stormwater quality measure implementation relative to land disturbing activities**
☑	☐		3	**Stable construction entrance locations and specifications (at all points of ingress and egress)**
☑	☐	☐	4	**Sediment control measures for sheet flow areas**
☑	☐	☐	5	**Sediment control measures for concentrated flow areas**
☑	☐	☐	6	**Storm sewer inlet protection measure locations and specifications**
☑	☐	☐	7	**Runoff control measures** (*e.g. diversions, rock check dams, slope drains, etc .*)
☑	☐	☐	8	**Storm water outlet protection specifications**
☑	☐	☐	9	**Grade stabilization structure locations and specifications**
☑	☐		10	**Location, dimensions, specifications, and construction details of each stormwater quality measure**
☑	☐		11	**Temporary surface stabilization methods appropriate for each season** (*include sequencing*)
☑	☐		12	**Permanent surface stabilization specifications** (*include sequencing*)
☑	☐		13	**Material handling and spill prevention plan**
☑	☐		14	**Monitoring and maintenance guidelines for each proposed stormwater quality measure**
☐	☐	☑	15	**Erosion & sediment control specifications for individual building lots**

Stormwater Pollution Prevention Plan - Post Construction Component *(Section C)*

Adequate	Deficient	Not Applicable	C	*The post construction component of the Stormwater Pollution Prevention Plan includes the implementation of stormwater quality measures to address pollutants that will be associated with the final landuse. Post construction stormwater quality measures should be functional upon completion of the project. Long term functionality of the measures are critical to their performance and should be monitored and maintained.*
☑	☐		1	**Description of pollutants and their sources associated with the proposed land use**
☑	☐		2	**Sequence describing stormwater quality measure implementation**
☑	☐		3	**Description of proposed post construction stormwater quality measures** *(Include a written description of how these measures will reduce discharge of expected pollutants)*
☑	☐		4	**Location, dimensions, specifications, and construction details of each stormwater quality measure**
☑	☐		5	**Description of maintenance guidelines for post construction stormwater quality measures**

Indiana Department of Environmental Management
Notice of Intent (NOI)
Storm Water Runoff Associated with Construction Activity
NPDES General Permit Rule 327 IAC 15-5 **(Rule 5)**

Submission of this Notice of Intent letter constitutes notice that the project site owner is applying for coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit Rule for Storm Water Discharges Associated with Construction Activity. Permitted project site owners are required to comply with all terms and conditions of the General Permit Rule 327 IAC 15-5 (Rule 5).

Check the type of Submittal: [x] Initial [ ] Amendment, [ ] Renewal [ ] Extension

Project Name and Location:

Project Permit # _____ Project Name: I-80/94 Kingery/Borman Exp County: Lake

Brief Description of Project Location: I-80/94 from State Line to Calumet Avenue

Latitude 41° 34' 31" and Quarter NW Section 13

Longitude 87° 31' 10" Township 36N Range 10W

Does [x] all or [ ] part of this project lie within the jurisdictional boundaries of a Municipal Separate Storm Sewer System (MS4) as defined in 327 IAC 15-13? [ ] Yes [ ] No If yes, please name the MS4(s):
Village of Munster, Village of Hammond

Project Site Owner and Project Contact Information:

Company Name (If Applicable): INDOT

Project Site Owner's Name (An Individual): Merril Dougherty Title/Position: Hydraulics Engineer

Address: 100 N. Senate Avenue Room 642N

City: Indianapolis State: IN Zip: 46204

Phone: 317-232-7977 FAX: 317-233-4929 E-Mail Address (If Available): _____

Ownership Status (check one): Governmental Agency: [ ] Federal [x] State [ ] Local

Non-Governmental: [ ] Public [ ] Private [ ] Other (Explain): _____

Contact Person: Carole Scott Affiliation with Project Site Owner: INDOT

Address (if different from above): _____

City: _____ State: _____ Zip: _____

Phone: _____ FAX: _____ E-Mail Address (If Available): _____

Project Description:

[ ] Residential-Single Family [ ] Residential-Multi-Family [ ] Commercial [ ] Industrial [x] Other Expressway

Discharge Information:

Name of Receiving Water: Little Calumet River
(If applicable, name of municipal operator of storm sewer. Please note that even if a retention pond is present on the property, the name of the nearest possible receiving water is required).

Project Acreage: 13.5 Ha 11.0 Ha

Total Acreage: 33.4 Acres Proposed Acreage to be Disturbed: 27.2 Acres

Total Impervious Surface Area (Estimated for Completed Project): 861,000 Square Feet 8 Ha

Timetable (Maximum of 5 Years):

Start Date: Nov. 1, 2005 and Estimated End Date for all Land Disturbing Activity: Dec. 30, 2006

(Continued on Reverse Side)

Construction Plan Certification:

By signing this Notice of Intent letter, I certify the following:

A. The storm water quality measures included in the Construction Plan comply with the requirements of 327 IAC 15-5-6.5, 327 IAC 15-5-7, and 327 IAC 15-5-7.5;
B. the storm water pollution prevention plan complies with all applicable federal, state, and local storm water requirements;
C. the measures required by section 7 and 7.5 of this rule will be implemented in accordance with the storm water pollution prevention plan;
D. if the projected land disturbance is One (1) acre or more, the applicable Soil and Water Conservation District or other entity designated by the Department, has been sent a copy of the Construction Plan for review;
E. storm water quality measures beyond those specified in the storm water pollution prevention plan will be implemented during the life of the permit if necessary to comply with 327 IAC 15-5-7; and
F. implementation of storm water quality measures will be inspected by trained individuals.

In addition to this form, I have enclosed the Following:

☐ Verification by the reviewing agency of acceptance of the Construction Plan.

☐ Proof of publication in a newspaper of general circulation in the affected area that notified the public that a construction activity is to commence, including all required elements contained in 327 IAC 15-5-5 (9).

☐ $100 check or money order payable to the Indiana Department of Environmental Management. If the project lies solely within the permitted jurisdiction of an MS4 and is regulated by the MS4 under 327 IAC 15-13 – a fee is not required with submittal of this Notice of Intent.

A permit issued under 327 IAC 15-5 is granted by the commissioner for a period of five (5) years from the date coverage commences. Once the five (5) year permit term duration is reached, a general permit issued under this rule will be considered expired, and, as necessary for construction activity continuation, a new Notice of Intent letter would need to be submitted ninety (90) days prior to the termination of coverage.

Project Site Owner Responsibility Statement:

By signing this Notice of Intent letter, 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 gather and evaluate 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 or violating the provisions of 327 IAC 15-5, including the possibility of fine and imprisonment for knowing violations.

Printed Name of Project Owner Merril E Daugherty

Signature of Project Owner Merril E Daugherty Date: 6-6-05

This Notice of Intent must be signed by an individual meeting the signatory requirements in 327 IAC 15-4-3(g)

Mail this form to: Indiana Department of Environmental Management
Office of Water Quality, Storm Water (Rule 5) Desk
100 North Senate Avenue, P.O. Box 6015
Indianapolis, IN 46206-6015

327 IAC 15-5-6 (a) also requires a copy of the completed Notice of Intent letter be submitted to the local Soil and Water Conservation District or other entity designated by the Department, where the land disturbing activity is to occur.

Questions regarding the development of the Construction Plan and/or field implementation of 327 IAC 15-5 may be directed to your local Soil and Water Conservation District office or the Department of Natural Resources at 317-233-3870. Questions regarding the Notice of Intent may be directed to the Rule 5 contact person at 317/233-1864 or 800/451-6027 ext 31854.

State Form 47487 (R3 / 12-03)

Form Prescribed by State Board of Accounts — General Form No. 99 P (Rev. 1987)

I-80/94 0100987

IND DEPT OF TRANSPORTATION PT5131 To POST-TRIBUNE Dr.
(Government Unit)
LAKE County, Indiana 1433 E. 83RD AVE., MERRILLVILLE, IN 46410-6307

PUBLISHER'S CLAIM

LINE COUNT

Display Matter (Must not exceed two actual lines, neither of which shall total more than four solid lines of the type in which the body of the advertisement is set) number of equivalent lines.

Head - number of lines.

Body - number of lines.

Tail - number of lines.

Total number of lines in notice

COMPUTATION OF CHARGES
21.00 lines, 1 columns wide equals 21.00 equivalent lines at .3290 cents per line $ 6.91

Additional charge for notices containing rule or tabular work (50 percent of above amount)

Charge for extra proofs of publication ($1.00 for each proof in excess of two)

TOTAL AMOUNT OF CLAIM $ 6.91

DATA FOR COMPUTING COST
Width of single column 8.8 ems
Size of type 5.5 point
Number of insertions 1

Pursuant to the provisions and penalties of Ch. 155, Acts 1953,
I hereby certify that the foregoing account is just and correct, that the amount claimed is legally due, after allowing all just credits, and that no part of the same has been paid.

Date May 23, 20 05

Title CREDIT MANAGER

PUBLISHER'S AFFIDAVIT

State of Indiana)
) SS
Lake County)

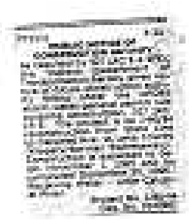
Personally appeared before me, a notary public in and for said county and state, the undersigned D.A. MILLER who, being duly sworn, says that he/she is CREDIT MANAGER of the POST-TRIBUNE a DAILY newspaper of general circulation printed and published in the English language in the city of MERRILLVILLE in state and county aforesaid, and that the printed matter attached hereto is a true copy, which was duly published in said paper for 1 time(s), the dates of publication being as follows:

PROJ NO. I-80/94
5/20

Subscribed and sworn to before me this 23 day of May, 20 05

Notary Public

My commission expires April 26, 2008



INDNR CONSTRUCTION IN A FLOODWAY

01/04/2005 TUE 12:22 FAX 317 233 4579 IN DNR\DIV OF WATER 002/007

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES

CERTIFICATE OF APPROVAL
CONSTRUCTION IN A FLOODWAY

APPLICATION # : FW-22987

STREAM : Little Calumet River

APPLICANT : *Indiana Department of Transportation
Carole Korbly Scott
100 North Senate Avenue, Room N642
Indianapolis, IN 46204-2249

AGENT : American Consulting Engineers, LLC
Tom Engle
5440 North Cumberland Avenue
Suite 111
Chicago, IL 60656-1452

AUTHORITY : IC 14-28-1 with 312 IAC 10 and IC 14-29-1 with 312 IAC 6

DESCRIPTION : The existing bridge carrying I-80/94/US 6 across the river and across a railroad right-of-way will be replaced with a new structure composed of 2 superstructure units; a 3-span continuous plate girder bridge with span lengths of 98.4', 124.7', and 114.8' crossing the Little Calumet River and a 3-span continuous rolled shape with span lengths of 78.7', 91.8', and 65.6' crossing a railroad right-of-way. The structure will have an out-to-out length of 581.3' and a clear roadway width of 165.4'. The abutments will have 2:1 side slopes armored with riprap placed over geotextile fabric. The west abutment and piers 1 and 2 will be skewed 30 degrees to align with the streamflow. The east abutment and piers 3,4, and 5 will be skewed 20 degrees to align with the railroad. The approach roads will be elevated a maximum of 4.9' above the existing grade. Also, a new stormwater outfall structure will be constructed near the Indiana/Illinois state line to replace an existing outfall structure in Illinois. Two (2) 54" pipes will run from I-80/94 north to the river and will terminate with a headwall that will conform to the bank slope. An energy dissipater will be constructed at the toe of the wall and will consist of a concrete apron and riprap placed over a geotextile fabric. Details of the project are contained in information and plans received at the Division of Water on July 15, 2004, July 29, 2004, August 9, 2004, August 19, 2004, December 16, 2004, December 21, 2004, and January 4, 2005.

LOCATION : DOWNSTREAM: Along the southwest bank approximately 114' east of the State Line near Munster, North Township, Lake County
SE¼, SE¼, Section 13, T 36N, R 10W, Calumet City, IL-IN Quadrangle
UTM Coordinates: Downstream 4602598 North, 456711 East
UPSTREAM: Beginning at I-80/94/US 6 river crossing and continuing upstream approximately 200'

UTM Coordinates: Upstream 4602852 North, 456247 East

APPROVED BY : _____
James J. Hebenstreit, P.E., Assistant Director
Division of Water

APPROVED ON : January 4, 2005

Attachments: Notice Of Right To Administrative Review, General Conditions, Special Conditions, Service List

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES

NOTICE OF RIGHT TO ADMINISTRATIVE REVIEW

APPLICATION #: FW- 22987

This signed document constitutes the issuance of a permit by the Department of Natural Resources, subject to the conditions and limitations stated on the pages entitled "General Conditions" and "Special Conditions".

The permit or any of the conditions or limitations which it contains may be appealed by applying for administrative review. Such review is governed by the Administrative Orders and Procedures Act, IC 4-21.5, and the Department's rules pertaining to adjudicative proceedings, 312 IAC 3-1.

In order to obtain a review, a written petition must be filed with the Division of Hearings within 18 days of the mailing date of this notice. The petition should be addressed to:

Mr. Stephen L. Lucas, Director
Division of Hearings
Room W272
402 West Washington Street
Indianapolis, Indiana 46204

The petition must contain specific reasons for the appeal and indicate the portion or portions of the permit to which the appeal pertains.

If an appeal is filed, the final agency determination will be made by the Natural Resources Commission following a legal proceeding conducted before an Administrative Law Judge. The Department of Natural Resources will be represented by legal counsel.

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES

GENERAL CONDITIONS

APPLICATION #: FW- 22987

(1) If any archaeological artifacts or human remains are uncovered during construction, federal law and regulations (16 USC 470, et seq.; 36 CFR 800.11, et al) and State Law (IC 14-21-1) require that work must stop and that the discovery must be reported to the Division of Historic Preservation and Archaeology within 2 business days.

Division of Historic Preservation and Archaeology
Room W274
402 West Washington Street
Indianapolis, IN 46204

Telephone: (317) 232-1646, FAX: (317) 232-8036

(2) This permit must be posted and maintained at the project site until the project is completed.

(3) This permit does not relieve the permittee of the responsibility for obtaining additional permits, approvals, easements, etc. as required by other federal, state, or local regulatory agencies.These agencies include, but are not limited to:

Agency	Telephone Number
*US Army Corps of Engineers, Detroit District	(313) 226-2218
Lake County Drainage Board	(219) 755-3755
Little Calumet River Basin Development Commission	(219) 763-0696
Indiana Department of Environmental Management	(317) 233-8488 or (800) 451-6027
Local city or county planning or zoning commission	

(4) This permit must not be construed as a waiver of any local ordinance or other state or federal law.

(5) This permit does not relieve the permittee of any liability for the effects which the project may have upon the safety of the life or property of others.

(6) This permit may be revoked by the Department of Natural Resources for violation of any condition, limitation or applicable statute or rule.

(7) This permit shall not be assignable or transferable without the prior written approval of the Department of Natural Resources. To initiate a transfer contact:

Mr. Michael W. Neyer, PE, Director
Division of Water
Room W264
402 West Washington Street
Indianapolis, IN 46204

Telephone: (317) 232-4160, Toll Free: (877) 928-3755
FAX: (317) 233-4579

(8) The Department of Natural Resources shall have the right to enter upon the site of the permitted activity for the purpose of inspecting the authorized work.

(9) The receipt and acceptance of this permit by the applicant or authorized agent shall be considered as acceptance of the conditions and limitations stated on the pages entitled "General Conditions" and "Special Conditions".

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES

SPECIAL CONDITIONS

APPLICATION #: FW- 22987

PERMIT VALIDITY : This permit is valid for 60 months from the "Approved On" date shown on the first page. If work has not been initiated by January 04, 2010 the permit will become void and a new permit will be required in order to continue work on the project.

This permit becomes effective 18 days after the "MAILED" date shown on the first page. If both a petition for review and a petition for a stay of effectiveness are filed before this permit becomes effective, any part of the permit that is within the scope of the petition for stay is stayed for an additional 15 days.

CONFORMANCE : Other than those measures necessary to satisfy the "General Conditions" and "Special Conditions", the project must conform to the information received by the Department of Natural Resources on: July 15, 2004, July 29, 2004, August 9, 2004, August 19, 2004, December 16, 2004 and January 3, 2005. Any deviation from the information must receive the prior written approval of the Department.

Number	Special Condition
(1)	minimize and contain within the project limits inchannel disturbance and the clearing of trees and brush
(2)	revegetate "low maintenance" areas with a mixture of grasses (excluding all varieties of tall fescue), legumes, and native shrub and hardwood tree species as soon as possible upon completion; low endophyte tall fescue may be used in "high maintenance" areas only
(3)	do not cut any trees suitable for Indiana bat roosting (greater than 14 inches in diameter, living or dead, with loose hanging bark) from April 15 through September 15
(4)	appropriately designed measures for controlling erosion and sediment must be implemented to prevent sediment from entering the stream or leaving the construction site; maintain these measures until construction is complete and all disturbed areas are stabilized
(5)	seed and protect all disturbed streambanks and slopes that are 3:1 or steeper with erosion control blankets (follow manufacturer's recommendations for selection and installation) or use an appropriate structural armament; seed and apply mulch on all other disturbed areas
(6)	protect the area around and below any concentrated discharge points, down to the waterway's normal flow level, with an appropriate structural armament such as riprap
(7)	do not excavate or place fill in any riparian wetland
(8)	except for the material used as backfill as shown on the above referenced project plans on file at the Division of Water, place all excavated material landward of the floodway *
(9)	do not leave felled trees, brush, or other debris in the floodway *
(10)	all outfall structures and riprap placed for bank stabilization must conform to the bank
(11)	upon completion of the project, remove all construction debris from the floodway *

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES

SPECIAL CONDITIONS

APPLICATION #: FW- 22987

(12) contact the Division of Water, Surveying and Mapping Section at (317) 232-4160 or toll free at (877) 928-3755, at least 30 days prior to construction so that the bench mark tablet located on the existing structure can be relocated

(13) issuance of this Certificate does not constitute approval of any temporary causeways, coffer dams, runarounds, access bridges or borrow areas associated with the proposed bridge construction; separate written approval must be obtained from the Department for these types of projects prior to beginning any work within the floodway

(14) * NOTE: for regulatory purposes, the floodway is defined as that shown on PANEL 7 of the City of Hammond Flood Boundary and Floodway Map dated March 16, 1981

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES

SERVICE LIST

APPLICATION #: FW- 22987

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Crown Point, IN 46307-4848

Munster Plan Commission
Town Hall
Munster, IN 46321

Staff Assignment:

Administrative	: Becky S. Davis
Technical	: Becky S. Davis
Environmental	: Christie L. Kiefer

STORM WATER POLLUTION PLAN FORM

Illinois Department of Transportation

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

12-20-02 — Date

District Eng. — Title

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 159th 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; 176th Place from 217 m west of IL 83 to IL 83; 170th Street from 290 m west of I-94 to 295 m east of I-94; Van Dam Road from 170th Street to 110 m north of 170th Street and from 384 m south of 159th Street to 183 m south of 159th Street; Bernice Avenue from IL 83 to Wentworth Avenue, net length 1918 m; 175th 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 175th 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, 170th 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, 170th Street, Burnham Avenue, and Wentworth Avenue pavements will be replaced with jointed concrete pavement. Existing pavements on 175th Street, Bernice Avenue, Thornton-Lansing, Dorchester Avenue, Van Dam Road and 176th 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 159th 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 may 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 has 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 170th 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 175th Street from IL 83 to Wentworth Avenue and portions of 175th 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

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 a real 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.

g. 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.

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

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 basis 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 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.
5. 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.
6. 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.
7. 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.
8. Bridges will be designed to reduce the potential for scouring.
9. 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.
10. 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

b. enter or exit the site shall be inspected for evidence of off site sediment tracking.

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

c. changes to this plan resulting from the required inspections shall be implemented within 7 calendar days following the inspection.

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

d. 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.

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

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 retailing 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.

An additional source of non-storm water discharge during construction is the slurry from washing out redi-mix concrete trucks. Redi-mix concrete trucks should wash out in designated areas surrounded by silt fence. After all PCC items have been constructed, the dried concrete wash material should be cleaned up and properly disposed of. It will be the contractor's responsibility to secure these designated areas for the duration of their use. The Engineer must approve the locations.

On site maintenance of equipment must be performed in accordance with environmental law, such as proper storage and no dumping of old engine oil or other fluids on site.

Good Housekeeping

1. An effort will be made to store only enough product required to do the job.
2. All materials stored on site will be stored in a neat, orderly manner in their appropriate containers, and if possible, under a roof or other enclosure.
3. Products will be kept in their original containers with the original manufacturer's label.
4. Substances will not be mixed with one another unless recommended by the manufacturer.
5. The site superintendent will inspect daily to ensure proper use and disposal of materials on the site.
6. Whenever possible, all of a product will be used up before disposing of the container.
7. Follow manufacturer's recommended practices for use and disposal.

Illinois Department of Transportation

Contractor Certification Statement

This certification statement is a part of the Storm Water Pollution Prevention Plan for the project described below, in accordance with NPDES Permit No. ILR10, issued by the Illinois

Project Information:

Route FAI 80/94 and IL 394 Marked I-80/94, Bishop Ford

Sectio See individual contract Project No.

County Cook, Illinois and Lake, Indiana

I certify under penalty of law that I understand the terms of the general National Pollutant Discharge Elimination System (NPDES) permit (ILR 10) that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this

Signature Date

Title

Name of Firm

Street Address

City State

Zip Code

Telephone Number

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

cal 8-11-04 + pa

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.

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.

This certification does not grant immunity from any enforcement action found necessary by this Agency to meet its responsibilities in prevention, abatement, and control of water pollution.

Sincerely,

Bruce J. Yurdin
Manager, Watershed Management Section
Bureau of Water

BY:TJF:0378-03.doc

cc: IEPA, Records Unit
IEPA, DWPC, FOS, Des Plaines
IDNR, OWR, Bartlett
USEPA, Region 5
Mr. John Kos, IDOT District 1
Mr. Ken Eng, IDOT District 1

INDOT PAY ITEMS CONTRACTOR PROVIDED INFORMATION

Pay items that are paid for 100% by the Indiana Department of Transportation (INDOT) that are governed by INDOT Special Provisions, and non-specified auxiliary items, which refer to INDOT specifications, shall be governed by this Special Provision.

The contractor shall be required to comply with the following submittal requirements for approval of shop drawings and/or catalog cut submittals or details/designs prepared by the contractor for permanent or temporary items to be constructed in Indiana, which are required to be signed and sealed by an Indiana Professional Engineer. These submittals shall also be signed and sealed by an Illinois Structural Engineer.

This requirement will not be paid for separately, but shall be included in the cost of the pay item in which it accompanies. The following is a list of the items that require or have items of work that require sealed approval. This list is intended for the contractor's assistance, but may not be all inclusive. Any items to be constructed in Indiana which are not listed in this Special Provision, but require the approval of an Illinois Structural Engineer when constructed in Illinois and are included with structural work, shall follow this requirement.

1. Excavation Foundation, Unclassified (Indiana)
2. Excavation Wet (Indiana)
3. Excavation Dry (Indiana)
4. Pile, Concrete, Steel Shell Encased
5. Structural Expansion Joint, SS (Indiana)
6. Noise Abatement Wall Anchor Rod Assembly
7. Anchor Bolt (Indiana)
8. Sound Barrier System, Type 2 (Indiana)
9. Bearing Assembly, Elastometric, Type I
10. Bearing Assembly, Elastometric, Type II
11. Erecting Structural Steel
12. Furnish and Erecting Precast, Prestressed Concrete I-Beams
13. Reinforcing Steel, Sign Foundation (Indiana)
14. Concrete, Superstructure
15. Pipe End Sections, Storm Sewers
16. Bridge Deck forming System Designs
17. Proposed Changes to Plan Specified Pouring Sequences
18. Temporary Support Systems

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:

(b) Qualifications. At the time of the preconstruction conference, the Contractor shall provide the following documentation:

(4) 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.

(5) 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.

(6) 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:

(9) 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.

(10) 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.

(11) 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.

(12) 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.

(13) 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.

(14) 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.

(15) 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.

(16) 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:

(f) The drilled shaft portland cement concrete shall be according to Section 1020, except the mix design shall be as follows:

(13) 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.

(14) 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.

(15) 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.

(16) The maximum water/cement ratio shall be 0.44.

(17) 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).

(18) The slump at point of placement shall be 175 mm ± 25 mm (7 ± 1 in.). If concrete is placed to displace drilling fluid, or against temporary casing, the slump shall be 200 mm ± 25 mm (8 ± 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.

(19) An air entraining admixture shall be required and the air content range shall be 4.0 to 7.0 percent.

(20) 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.

(21) A retarding admixture shall be required.

(22) A water-reducing or high range water-reducing admixture shall be required.

(23) An accelerating admixture may be used with the permission of the Engineer in extraordinary situations.

(24) 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:

(5) 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.

(6) The fine aggregate shall be according to Articles 1003.01 and 1003.02.

(7) The water shall be according to Section 1002.

(8) 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:

(b) Construction Tolerances. The following construction tolerances shall apply to all drilled shafts unless otherwise stated in the contract documents:

(8) 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.

(9) 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.

(10) The out of vertical plumbness of the shaft shall not exceed 1.5 percent.

(11) The out of vertical plumbness of the shaft reinforcement cage shall not exceed 0.83 percent.

(12) 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.

(13) 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.

(14) 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.

(c) 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:

(6) 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.

(7) 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.

(8) 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.

(9) 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.

(10) 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.

(k) 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.

(l) 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.

(m) 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.

(n) 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.

(o) 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.

(p) 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.

(q) 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 centralizes 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 centralizes 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.

(r) 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:

(4) 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.

(5) 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.

(6) 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.

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:

Item	Article
(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.

SURFACE PREPARATION AND PAINTING REQUIREMENTS FOR WEATHERING STEEL
Effective: November 21, 1997 Revised: June 21, 2004

Description. This work consists of surface preparation of structural steel on bridges built with AASHTO M270M Grade 345W (AASHTO Grade 50W) weathering steel. Also included is the protection and cleaning of the substructure. When field painting of the structural steel or portions thereof is specified on the plans it shall be according to the Special Provision for "Cleaning and Painting New Metal Structures" except as modified herein.

The galvanizing requirement of Article 506.04(j) of the Standard Specifications shall not apply to AASHTO M164 Type 3 bolts.

All materials for the paint system used shall be supplied by the same paint manufacturer. The color of the finish coat supplied shall match the Federal Color Standard 595a 20045.

Construction Requirements

Surface Preparation. All steel shall be cleaned of any surface contamination according to SSPC-SP1 (Solvent Cleaning) and then given a blast cleaning according to SSPC-SP6 (Commercial Blast Cleaning) except areas to be painted shall be given a blast cleaning according to SSPC-SP10 (Near-White Blast Cleaning).

Water Washing. After blasting and painting, all areas of the steel to remain unpainted shall be sprayed with a stream of potable water to ensure uniform weathering.

Protection and Cleaning of Substructure. The piers and abutments shall be protected during construction to prevent rust staining of the concrete. This can be accomplished by temporarily wrapping the piers and abutments with polyethylene covering. Any rust staining of the piers or abutments shall be cleaned to satisfaction of the Engineer after the bridge deck is complete.

Basis of Payment. Surface preparation of structural steel, protection and cleaning of the substructure and painting of structural steel when specified will be considered as included in the cost for fabrication and erection of structural steel and will not be paid for separately.

TEMPORARY SHEET PILING
Effective: September 2, 1994 Revised: October 14, 2005

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.

This work shall only apply to Temporary Sheet Piling installed within the state of Illinois. Temporary Sheet Piling installed within the state of Indiana shall be included with Excavation, Foundation, Unclassified (INDIANA), and shall conform to the 2006 Indiana Standard Specifications.

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 it's 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.

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) ±, the location of the rustication joints shall be within 13 mm (1/2 inch) ±, the maximum variation of a joint from a straight line shall be 6 mm (1/4 inch) ± 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.

PIPE UNDERDRAINS FOR STRUCTURES

Effective: May 17, 2000 Revised: June 22, 2005

Description. This work shall consist of furnishing and installing a pipe underdrain system as shown on the plans, as specified herein, and as directed by the Engineer.

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

The perforated pipe drain shall be according to Article 601.02 of the Standard Specifications. Outlet pipes or pipes connecting to a separate storm sewer system shall not be perforated.

The drainage aggregate shall be a combination of one or more of the following gradations, FA1, FA2, CA5, CA7, CA8, CA11, or CA13 thru 15, according to Sections 1003 and 1004 of the Standard Specifications.

The fabric surrounding the drainage aggregate shall be Geotechnical Fabric for French Drains according to Article 1080.05 of the Standard Specifications.

Construction Requirements. All work shall be according to the applicable requirements of Section 601 of the Standard Specifications except as modified below.

The pipe underdrains shall consist of a perforated pipe drain situated at the bottom of an area of drainage aggregate wrapped completely in geotechnical fabric and shall be installed to the lines and gradients as shown on the plans.

Method of Measurement. Pipe underdrains for structures shall be measured for payment in 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 drainage aggregate, geotechnical fabric, forming holes in structural elements and any excavation required, will not be paid for separately, but shall be included in the cost of the pipe underdrains for structures.

BITUMINOUS BASE COURSE / WIDENING SUPERPAVE (BDE)

Effective: April 1, 2002 Revised: August 1, 2005

Description. This work shall consist of constructing bituminous base course Superpave and bituminous concrete base course widening Superpave according to Sections 355 and 356 respectively, of the Standard Specifications and the special provision, “Quality Control/Quality Assurance of Bituminous Concrete Mixtures” except as modified herein.

Revise Article 355.02(d) of the Standard Specifications to read:

"(d) RAP Material (Note 3)"

Revise Note 2 of Article 355.02 of the Standard Specifications to read:

"Note 2. Unless otherwise specified on the plans, the bituminous material shall be performance graded (PG) asphalt cement (AC) , PG58-22. When more than 15 percent RAP is used, a softer PG binder may be required as determined by the Engineer. When the pavement has a structural number (D_t) of 3.00 or less, the low temperature grade of the asphalt cement shall be lowered one grade (i.e. PG58-28 replaces PG58-22)."

Add the following to the end Article 355.02 of the Standard Specifications:

"Note 3. RAP shall meet the requirements of the special provision "RAP for Use in Bituminous Concrete Mixtures"."

Revise Article 355.05 of the Standard Specifications to read:

"**355.05 Mixture Design.** The Contractor shall submit mix designs for approval, for each required mixture. Mix designs shall be developed by Level III personnel who have completed the course, “Superpave Mix Design Upgrade”. The mixtures shall be designed according to the respective Illinois Modified AASHTO references listed below:

AASHTO MP 2 Standard Specification for Superpave Volumetric Mix Design

AASHTO R 30 Standard Practice for Mixture Conditioning of Hot-Mix Asphalt (HMA)

AASHTO PP 28 Standard Practice for Designing Superpave HMA

AASHTO T 209 Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures

AASHTO T 312 Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave 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:

Ingredient	Percent by Dry Weight
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:

Ingredient	Percent by Dry Weight
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 seives: 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 Maximum Specific Gravity of Mixture	 1 per day 1 per day	 Illinois-Modified AASHTO T 312 Illinois-Modified AASHTO T 209

Note 1. The Engineer may waive the ignition oven requirement for AC content if the aggregates to be used are known to have ignition AC content calibration factors which exceed 1.5 percent. If the ignition oven requirement is waived, other Department approved methods shall be used to determine AC content.

During production, the ratio of minus 75 µm (#200) sieve material to total asphalt cement shall be not less than 0.6 nor more than 1.6, and the moisture content of the mixture at discharge from the mixer shall not exceed 0.5 percent. If at any time the ratio of minus 75 µm (#200) material to asphalt or moisture content of the mixture falls outside the stated limits, production of the mix shall cease. The cause shall be determined and corrective action satisfactory to the Engineer shall be initiated prior to resumption of production.

During production, mixture containing an anti-stripping additive will be tested by the Engineer for stripping according to Illinois Modified AASHTO T 283. If the mixture fails to meet the TSR criteria for acceptance, no further mixture will be accepted until the Contractor takes such action as is necessary to furnish a mixture meeting the criteria.

(c) Control Charts/Limits. Control charts/limits shall be according to QC/QA requirements for Non-Class I Mixtures, except air voids and density shall be plotted on the control charts within the following control limits:

Individual Test Control Limits	
Voids	±1.2%
Density[1/]	93.0 – 97.4% of G_{mm}

1/ Except when placed as first lift over unimproved subgrade. When the exception applies, the first lift over unimproved subgrade shall be compacted to an average density of not less than 95 percent nor greater than 102 percent of the target density obtained on the growth curve.

Revise Article 355.08 of the Standard Specifications to read:

"**355.08 Placing.** The bituminous mixture shall be placed with a spreading and finishing machine. The minimum compacted thickness of each lift shall be according to the following table:

Nominal Maximum Aggregate Size of Mixture	Minimum Compacted Lift Thickness
CA 10 - 19 mm (3/4 in.)	57 mm (2 1/4 in.)
CA 6 – 25 mm (1 in.)	76 mm (3 in.)

The maximum compacted thickness of each lift shall be 100 mm (4 in.). If the Contractor elects to substitute an approved vibratory roller for one of the required rollers, the maximum compacted thickness of the each lift, excluding the top lift, may be increased to 150 mm (6 in.) provided the required density is obtained.

The surface of each lift shall be clean and dry before succeeding lifts are placed."

Revise Article 355.13 of the Standard Specifications to read:

"**355.13 Basis of Payment.** This work will be paid for at the contract unit price per square meter (square yard) for BITUMINOUS BASE COURSE SUPERPAVE of the thickness specified."

Revise Article 356.02 of the Standard Specifications to read:

"**356.02 Materials.** The materials for the bituminous concrete mixture shall meet the requirements of Article 355.02, be designed according to Article 355.05 and produced according to Article 355.06. Bituminous concrete binder course Superpave mixture IL-25.0 or IL-19.0 meeting the requirements of the special provision, "Superpave Bituminous Concrete Mixtures" may also be used. The minimum compacted lift thickness specified therein shall apply."

Revise the first paragraph of Article 356.06 of the Standard Specifications to read:

"**356.06 Base Course Widening.** The bituminous concrete mixture shall be transported according to Article 406.14."

Revise the second sentence of the fifth paragraph of Article 356.06 of the Standard Specifications to read:

"The minimum compacted thickness of each lift shall be according to the table shown in Article 355.08."

Revise the first paragraph of Article 356.11 of the Standard Specifications to read:

"**356.11 Basis of Payment.** Where the Department requires that bituminous concrete be used, this work will be paid for at the contract unit price per square meter (square yard) for BITUMINOUS CONCRETE BASE COURSE WIDENING SUPERPAVE of the thickness specified."

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 Equipment.....1103.17(k)"

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[4/ 9/]".

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[6/ 9/]".

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 m (No. 200) sieve shall be 2 ± 2."

Revise the title of Article 1004.06 of the Standard Specifications to read:

"Coarse Aggregate for Blotter, Embankment, Backfill, Trench Backfill, French Drains, and Bedding."

Add the following to the end of subparagraph (c) of Article 1004.06 of the Standard Specifications:

"Backfill, bedding, and trench backfill for pipe culverts and storm sewers CA 6, CA 10, and CA 18"

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
Cast-in-Place Concrete: [11/]			
Pavement Shoulder	1020.13(a)(1)(2)(3)(4)(5) [3/ 5/]	3	1020.13(c)
Base Course Base Course Widening	1020.13(a)(1)(2)(3)(4)(5) [1/ 2/]	3	1020.13(c)
Driveway Median Curb Gutter Curb and Gutter Sidewalk Slope Wall	1020.13(a)(1)(2)(3)(4)(5) [4/ 5/]	3	1020.13(c) [16/]
Paved Ditch Catch Basin Manhole Inlet Valve Vault	1020.13(a)(1)(2)(3)(4)(5) [4/]	3	1020.13(c)
Pavement Patching	1020.13(a)(1)(2)(3)(4)(5) [2/]	3 [12/]	1020.13(c)
Pavement Replacement	1020.13(a)(1)(2)(3)(4)(5) [1/ 2/]	3	442.06(h) and 1020.13(c)
Railroad Crossing	1020.13(a)(3)(5)	1	1020.13(c)
Piles	1020.13(a)(3)(5)	7	1020.13(e)(1)(2)(3)
Footings Foundation Seals	1020.13(a)(1)(2)(3)(4)(5) [4/ 6/]	7	1020.13(e)(1)(2)(3)
Substructure	1020.13(a)(1)(2)(3)(4)(5) [1/ 7/]	7	1020.13(e)(1)(2)(3)
Superstructure (except deck)	1020.13(a)(1)(2)(3)(5) [8/]	7	1020.13(e)(1)(2)
Deck	1020.13(a)(5)	7	1020.13(e)(1)(2) [17/]
Retaining Walls	1020.13(a)(1)(2)(3)(4)(5) [1/ 7/]	7	1020.13(e)(1)(2)
Pump Houses	1020.13(a)(1)(2)(3)(4)(5) [1/]	7	1020.13(e)(1)(2)
Culverts	1020.13(a)(1)(2)(3)(4)(5) [4/ 6/]	7	1020.13(e)(1)(2) [18/]
Other Incidental Concrete	1020.13(a)(1)(2)(3)(5)	3	1020.13(c)
Precast Concrete: [11/]			
Bridge Beams Piles Bridge Slabs Nelson Type Structural Member	1020.13(a)(3)(5) [9/ 10/]	As required. [13/]	504.06(c)(6), 1020.13(e)(2) [19/]
All Other Precast Items	1020.13(a)(3)(4)(5) [2/ 9/ 10/]	As required. [14/]	504.06(c)(6), 1020.13(e)(2) [19/]
Precast, Prestressed Concrete: [11/]			
All Items	1020.13(a)(3)(5) [9/ 10/]	Until strand tensioning is released. [15/]	504.06(c)(6), 1020.13(e)(2) [19/]

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 ºC (32 ºF), or lower, or if the actual temperature drops to 0 ºC (32 ºF), 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 ºC (45 ºF), or if the actual temperature drops below 7 ºC (45 ºF), 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.

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 contact. 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 [1/ 2/] Property	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 ºC (158 ºF)	100 ºC (212 ºF)
		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 [3/] 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 ± 2ºC (73 ± 4ºF) 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)	19,300 (2800)
D 638M (D 638)	Elongation, min %	200
D 792	Specific Gravity	2.15-2.20
D 2240	Hardness, Durometer D	50-65
D 621	Deformation Under Load	
	23 ºC/690 kPa/24 hrs (73 ºF/100 psi/24 hrs), %	2-3
	50 ºC/8,300 kPa/24 hrs (122 ºF/1200 psi/24 hrs), %	4-8
	23 ºC/13,800 kPa/24 hrs (73 ºF/2000 psi/24 hrs), %	15 max.
D 570	Water Absorption, %	0.01 max.
	Static Coef. of Friction	
	at 3450 kPa (500 psi) bearing pressure	
	on stainless steel, max	0.07
D 429, B	Adhesion to Steel	
	Peel Strength, N/mm (lb/in.)	4.4 (25)

(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 ± 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.

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, 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 Cementitous 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 μm (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) ±15%
Whales (holes)	ASTM D 3887	7.5 ± 2 holes/25 mm (1 in.)
Chorses (holes)	ASTM D 3887	15.5 ± 2holes/25 mm (1 in.)
Instronball Burst	ASTM D 3887	830 kPa (120 psi) min.
Thickness	ASTM D 1777	1.0 ± 0.1 mm (0.040 ± 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."

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 Cementitous 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 sublot 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 sublot. 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:

$$S = \sqrt{\frac{\sum \left(x_i - \bar{x}\right)^2}{n-1}}$$ where $\Sigma(x_i - \bar{x})^2 = (x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + \ldots + (x_{10} - \bar{x})^2$

Determine the Lower Quality Index to the nearest two decimal places using:

$$Q_L = \frac{\left(\bar{x} - LSL\right)}{S}$$

Determine the percentage that will fall above the Lower Specification Limit (LSL) by going to the attached Table and utilizing calculated Q_L. Read the appropriate PWL value from the Table. For Q_L values less than zero the value shown in the table must be subtracted from 100 to obtain PWL.

Pay Adjustment. The following pay adjustment equation will be used to determine (to the nearest two decimal places) the pay factor for each lot.

Pay Factor (PF) in percent = 55 + 0.5 (PWL)

If $\bar{x}$ for a lot is less than the plan thickness, the maximum pay factor for that lot will be 100 percent.

Total Payment. The payment will be based on the appropriate pay items in Sections 407, 420, and 421. The final payment will be adjusted according to the following equation:

Total Payment = TPF[CUP (TOTPAVT - 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 sublot 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_L)*	Percent Within Limits (PWL)	Quality Index (Q_L)*	Percent Within Limits (PWL)	Quality Index (Q_L)*	Percent Within Limits (PWL)	Quality Index (Q_L)*	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_L values less than zero, subtract the table value from 100 to obtain PWL

Percent Within Limits (continued)					
Quality Index (Q_L)*	Percent Within Limits (PWL)	Quality Index (Q_L)*	Percent Within Limits (PWL)	Quality Index (Q_L)*	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	$\geq$ 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_L 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.

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. Ployurea 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 ± 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	490	475	485	539
Y	470	438	425	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 ±2.8 °C (±5 ºF) 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 ºF) 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

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.

End Stirrup Bars - not more than 50 mm from the end of the beam	
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
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.	
End Stirrup Bars - not more than 2" from the end of the beam	
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."

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). Reinforcment 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 [1/]	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 [4/]	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 Reinforcment. 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 reinforcment 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."

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 Perennial Ryegrass Audubon Red Fescue Rescue 911 Hard Fescue Fults Salt Grass*	70 (60) 20 (20) 20 (20) 20 (20) 70 (60)
2A	Salt Tolerant Roadside Mixture 7/	Alta Fescue or Ky 31 Perennial Ryegrass Audubon Red Fescue Rescue 911 Hard Fescue Fults Salt Grass 1/	70 (60) 20 (20) 20 (30) 20 (30) 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 ºC (80 ºF) 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 ºC (80 ºF) 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 Buchloe Dactyloides	30%
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:

Aggregate Blend Expansion = (a/100 x A) + (b/100 x B) + (c/100 x C) + ……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 ± 50 mm (± 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:

Aggregate Blend Expansion = (a/100 x A) + (b/100 x B) + (c/100 x C) + ……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 ± 50 mm (± 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."

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 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:

Ingredient	Percent by Dry Weight
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:

Ingredient	Percent by Dry Weight
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 seives: 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 Maximum Specific Gravity of Mixture	 1 per day 1 per day	 Illinois-Modified AASHTO T 312 Illinois-Modified AASHTO T 209

Note 1. The Engineer may waive the ignition oven requirement for AC content if the aggregates to be used are known to have ignition AC content calibration factors which exceed 1.5 percent. If the ignition oven requirement is waived, other Department approved methods shall be used to determine the AC content.

During production, the ratio of minus 75 µm (#200) sieve material to total asphalt cement shall be not less than 0.6 nor more than 1.6, and the moisture content of the mixture at discharge from the mixer shall not exceed 0.5 percent. If at any time the ratio of minus 75 µm (#200) material to asphalt or moisture content of the mixture falls outside the stated limits, production of the mix shall cease. The cause shall be determined and corrective action satisfactory to the Engineer shall be initiated prior to resumption of production.

During production, mixture containing an anti-stripping additive will be tested by the Engineer for stripping according to Illinois Modified AASHTO T 283. If the mixture fails to meet the TSR criteria for acceptance, no further mixture will be accepted until the Contractor takes such action as is necessary to furnish a mixture meeting the criteria.

(c) Control Charts/Limits. Control charts/limits shall be according to QC/QA requirements for Non-Class I Mixtures except air voids and density shall be plotted on the control charts within the following control limits:

Individual Test Control Limits	
Voids	±1.2%
Density[1/]	93.0 – 97.4% of G_{mm}

1/ Except when placed as first lift over unimproved subgrade. When the exception applies, the first lift over unimproved subgrade shall be compacted to an average density of not less than 95 percent nor greater than 102 percent of the target density obtained on the growth curve.

Replace Article 312.10 of the Standard Specifications with the following:

"**312.10 Placing.** After the subgrade has been compacted and is acceptable to the Engineer, the bituminous aggregate mixture shall be spread upon it with a mechanical spreader. The maximum compacted thickness of each lift shall be 150 mm (6 in.) provided the required density is obtained. The minimum compacted thickness of each lift shall be according to the following table:

Nominal Maximum Aggregate Size of Mixture	Minimum Compacted Lift Thickness
CA 12 – 12.5 mm (1/2 in.)	38 mm (1 1/2 in.)
CA 10 - 19 mm (3/4 in.)	57 mm (2 1/4 in.)
CA 6 – 25 mm (1 in.)	76 mm (3 in.)

The surface of each lift shall be clean and dry before succeeding lifts are placed."

Revise Article 482.02 of the Standard Specifications to read:

"**482.02 Materials.** Materials shall meet the requirements of Article 312.03. For the top lift, the aggregate used shall meet the gradation requirements for a CA 10 or CA 12. Blending of aggregates to meet these gradation requirements will be permitted."

Revise the first paragraph of Article 482.04 of the Standard Specifications to read:

"**482.04 General.** For pavement and shoulder resurfacing projects, Superpave binder and surface course mixtures may be used in lieu of bituminous aggregate mixture for the resurfacing of shoulders, at the option of the Contractor, or shall be used when specified on the plans."

Revise Article 482.04(c) of the Standard Specifications to read:

"(c) Mixture 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"."

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 Ndesign $\geq$ 90, at least 50 percent of the required fine aggregate fraction shall consist of either stone sand, slag sand, or steel slag sand meeting the FA/FM 20 gradation.

(b) Reclaimed Asphalt Pavement (RAP). If the Contractor is allowed to use more than 15 percent RAP, as specified in the plans, a softer performance-graded binder may be required as determined by the Engineer.

RAP shall meet the requirements of the special provision, "RAP for Use in Bituminous Concrete Mixtures".

RAP will not be permitted in mixtures containing polymer modifiers.

RAP containing steel slag will be permitted for use in top-lift surface mixtures only.

(c) Bituminous Material. The asphalt cement (AC) shall be performance-graded (PG) or polymer modified performance-graded (SBS-PG or SBR-PG) meeting the requirements of Article 1009.05 of the Standard Specifications for the grade specified on the plans.

The following additional guidelines shall be used if a polymer modified asphalt is specified:

(1) The polymer modified asphalt cement shall be shipped, maintained, and stored at the mix plant according to the manufacturer's requirements. Polymer modified asphalt cement shall be placed in an empty tank and shall not be blended with other asphalt cements.

(2) The mixture shall be designed using a mixing temperature of 163 ± 3 °C (325 ± 5 °F) and a gyratory compaction temperature of 152 ± 3 °C (305 ± 5 °F).

(3) Pneumatic-tired rollers will not be allowed unless otherwise specified by the Engineer. A vibratory roller meeting the requirements of Article 406.16 of the Standard Specifications shall be required in the absence of the pneumatic-tired roller.

Laboratory Equipment.

(a) Superpave 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 Gyratory 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.

TABLE 1. MIXTURE COMPOSITION (% PASSING)[1/]

Sieve Size	IL-25.0 mm		IL-19.0 mm		IL-12.5 mm[4/]		IL-9.5 mm[4/]	
	min	max	min	max	Min	max	min	max
37.5 mm (1 1/2 in.)		100						
25 mm (1 in.)	90	100		100				
19 mm (3/4 in.)		90	82	100		100		
12.5 mm (1/2 in.)	45	75	50	85	90	100		100
9.5 mm (3/8 in.)						89	90	100
4.75 mm (#4)	24	42[2/]	24	50[2/]	28	65	28	65
2.36 mm (#8)	16	31	20	36	28	48[3/]	28	48[3/]
1.18 mm (#16)	10	22	10	25	10	32	10	32
600 μm (#30)								
300 μm (#50)	4	12	4	12	4	15	4	15
150 μm (#100)	3	9	3	9	3	10	3	10
75 μm (#200)	3	6	3	6	4	6	4	6

1/ Based on percent of total aggregate weight.

2/ The mixture composition shall not exceed 40 percent passing the 4.75 mm (#4) sieve for binder courses with Ndesign ≥ 90.

3/ The mixture composition shall not exceed 40 percent passing the 2.36 mm (#8) sieve for surface courses with Ndesign ≥ 90.

4/ The mixture composition for surface courses shall be according to IL-12.5 mm or IL-9.5 mm, unless otherwise specified by the Engineer.

One of the above gradations shall be used for leveling binder as specified in the plans and according to Article 406.04 of the Standard Specifications.

It is recommended that the selected combined aggregate gradation not pass through the restricted zones specified in Illinois Modified AASHTO MP 2.

(b) Dust/AC Ratio for Superpave. The ratio of material passing the 75 μm (#200) sieve to total asphalt cement shall not exceed 1.0 for mixture design (based on total weight of mixture).

(c) Volumetric Requirements. The target value for the air voids of the hot mix asphalt (HMA) shall be 4.0 percent at the design number of gyrations. The VMA and VFA of the HMA design shall be based on the nominal maximum size of the aggregate in the mix and shall conform to the requirements listed in Table 2.

TABLE 2. VOLUMETRIC REQUIREMENTS

	Voids in the Mineral Aggregate (VMA), % minimum				Voids Filled with Asphalt (VFA), %
Ndesign	**IL-25.0**	**IL-19.0**	**IL-12.5**	**IL-9.5**	
50	12.0	13.0	14.0	15	65 - 78
70					65 - 75
90					
105					

(d) Determination of Need for Anti-Stripping Additive. The mixture designer shall determine if an additive is needed in the mix to prevent stripping. The determination will be made on the basis of tests performed according to Illinois Modified T 283 using 4 in. Marshall bricks. To be considered acceptable by the Department as a mixture not susceptible to stripping, the ratio of conditioned to unconditioned split tensile strengths (TSRs) shall be equal to or greater than 0.75. Mixtures, either with or without an additive, with TSRs less than 0.75 will be considered unacceptable.

If it is determined that an additive is required, the additive may be hydrated lime, slaked quicklime, or a liquid additive, at the Contractor's option. The liquid additive shall be selected from the Department's list of approved additives and may be limited to those which have exhibited satisfactory performance in similar mixes.

Dry hydrated lime shall be added at a rate of 1.0 to 1.5 percent by weight of total dry aggregate. Slurry shall be added in such quantity as to provide the required amount of hydrated lime solids by weight of total dry aggregate. The exact rate of application for all anti-stripping additives will be determined by the Department. The method of application shall be according to Article 406.12 of the Standard Specifications.

Personnel. The QC Manager and Level I Technician shall have successfully completed the Department's "Superpave Field Control Course".

Required Plant Tests. Testing shall be conducted to control the production of the bituminous mixture. The Contractor shall use the test methods identified to perform the following mixture tests at a frequency not less than that indicated in Table 3.

TABLE 3. REQUIRED PLANT TESTS for SUPERPAVE

Parameter		Frequency of Tests	Test Method
Aggregate Gradation Hot bins for batch and continuous plants Individual cold-feeds or combined belt-feed for drier drum plants. (% passing sieves: 12.5 mm (1/2 in.), 4.75 mm (No. 4), 2.36 mm (No. 8), 600 µm (No. 30), 75 µm (No. 200))		1 dry gradation per day of production (either morning or afternoon sample). And 1 washed ignition oven test on the mix per day of production (conduct in afternoon if dry gradation is conducted in the morning or vice versa). NOTE. The order in which the above tests are conducted shall alternate from the previous production day (example: a dry gradation conducted in the morning will be conducted in the afternoon on the next production day and so forth). The dry gradation and washed ignition oven test results shall be plotted on the same control chart.	Illinois Procedure (See Manual of Test Procedures for Materials).
Asphalt Content by Ignition Oven (Note 1.)		1 per half day of production	Illinois Modified AASHTO T 308
Air Voids	Bulk Specific Gravity of Gyratory Sample	1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)	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:

TABLE 4 – MINIMUM COMPACTED LIFT THICKNESS

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:

TABLE 5 – LEVELING BINDER

Nominal, Compacted, Leveling Binder Thickness, mm (in.)	Mixture
≤ 32 (1 1/4)	IL-9.5
32 (1 1/4) to 50 (2)	IL 9.5 or IL-12.5

Density requirements shall apply for leveling binder when the nominal, compacted thickness is 32 mm (1 1/4 in.) or greater for IL-9.5 mixtures and 38 mm (1 1/2 in.) or greater for IL-12.5 mixtures.

(c) Full-Depth Pavement. The compacted thickness of the initial lift of binder course shall be 100 mm (4 in.). The compacted thickness of succeeding lifts shall meet the minimums specified in Table 4 but not exceed 100 mm (4 in.).

If a vibratory roller is used for breakdown, the compacted thickness of the binder lifts, excluding the top lift, may be increased to 150 mm (6 in.) provided the required density is obtained.

(d) Bituminous Patching. The minimum compacted lift thickness for constructing bituminous patches shall be according to Table 4.

Control Charts/Limits. Control charts/limits shall be according to QC/QA Class I requirements, except density shall be plotted on the control charts within the following control limits:

TABLE 6. DENSITY CONTROL LIMITS		
Mixture	Parameter	Individual Test
12.5 mm / 9.5 mm	Ndesign ≥ 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 sublot, 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 sublot 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 sublot 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 sublot 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 sublot 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 sublot(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 sublot of mainline pavement, per the Smoothness Assessment Schedule. Assessments will be based on the average profile index of each sublot prior to performing any corrective work unless the Contractor has chosen to remove and replace the sublot. 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 sublot
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 sublot
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 sublot
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."

SUSPENSION OF SLIPFORMED PARAPETS (BDE)
Effective: June 11, 2004

The slipforming option, as stated in Article 503.17(e)(1) of the Standard Specifications will not be allowed on this project.

TEMPORARY CONCRETE BARRIER (BDE)
Effective: October 1, 2002 Revised: November 1, 2003

Revise Section 704 of the Standard Specifications to read:

"**SECTION 704. TEMPORARY CONCRETE BARRIER**

704.01 Description. This work shall consist of furnishing, placing, maintaining, relocating and removing precast concrete barrier at temporary locations as shown on the plans or as directed by the Engineer.

704.02 Materials. Materials shall meet the requirements of the following Articles of Section 1000 - Materials:

Item	Article/Section
(a) Portland Cement Concrete	1020
(b) Reinforcement Bars (Note 1)	1006.10(a)(b)
(c) Connecting Pins and Anchoring Pins	1006.09

(d) Connecting Loop Bars (Note 2)
(e) Rapid Set Mortar (Note 3)

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

Note 2. Connecting loop bars shall be smooth bars conforming to the requirements of ASTM A 36.

Note 3. Rapid set materials shall be obtained from the Department's approved list of Packaged, Dry, Rapid Hardening Cementitous Materials for Concrete Repairs. For a rapid set mortar mixture, one part packaged rapid set cement shall be combined with two parts fine aggregate, by volume or a packaged rapid set mortar shall be used. Mixing of the rapid set mortar shall be according to the manufacturer's instructions.

CONSTRUCTION REQUIREMENTS

704.03 General. Precast concrete barrier produced after October 1, 2002 shall meet National Cooperative Highway Research Program (NCHRP) Report 350, Category 3, Test Level 3 requirements and have the F shape. Precast concrete barrier shall be constructed according to the Bureau of Materials and Physical Research's Policy Memorandum "Quality Control/Quality Assurance Program for Precast Concrete Products", applicable portions of Sections 504 and 1020, and to the details shown on the plans.

Precast units shall not be removed from the casting beds until a flexural strength of 2,000 kPa (300 psi) or a compressive strength of 10,000 kPa (1400 psi) is attained. When the concrete has attained a compressive strength according to Article 1020.04, and not prior to four days after casting, the units may be loaded, shipped and used.

704.04 Installation. F shape barrier units shall be seated on bare, clean pavement or paved shoulder and pinned together in a smooth, continuous line at the exact locations provided by the Engineer. The barrier unit at each end of the installation shall be secured to the pavement or paved shoulder using six anchoring pins and protected with an impact attenuator as shown on the plans.

F shape and New Jersey shape barrier units shall not be mixed in the same run.

Barrier units or attachments damaged during transportation or handling, or by traffic during the life of the installation, shall be repaired or replaced by the Contractor at his/her expense. The Engineer will be the sole judge in determining which units or attachments require repair or replacement.

The temporary barriers shall be removed when no longer required by the contract. After removal, all anchoring holes in the pavement or paved shoulder shall be filled with a rapid set mortar. Only enough water to permit placement and consolidation by rodding shall be used and the material shall be struck-off flush.

704.05 New Jersey Shape Barrier. New Jersey shape barrier produced prior to October 1, 2002 according to earlier Department standards, may be used until January 1, 2008.

Barrier units or attachments damaged during transportation or handling, or by traffic during the life of the installation, shall be repaired or replaced by the Contractor at his/her expense. The Engineer will be the sole judge in determining which units or attachments require repair or replacement.

F shape and New Jersey shape barrier units shall not be mixed in the same run.

The barrier unit at each end of the installation shall be secured to the pavement or paved shoulder using six dowel bars and protected with an impact attenuator as shown on the plans.

The temporary barriers shall be removed when no longer required by the contract. After removal, all anchoring holes in the pavement or paved shoulder shall be filled with a rapid set mortar. Only enough water to permit placement and consolidation by rodding shall be used and the material shall be struck-off flush.

704.06 Method of Measurement. Temporary concrete barrier will be measured for payment in meters (feet) in place along the centerline of the barrier. When temporary concrete barrier is relocated within the limits of the jobsite, the relocated barrier will be measured for payment in meters (feet) in place along the centerline of the barrier.

704.07 Basis of Payment. When the Contractor furnishes the barrier units, this work will be paid for at the contract unit price per meter (foot) for TEMPORARY CONCRETE BARRIER or RELOCATE TEMPORARY CONCRETE BARRIER.

When the Department furnishes the barrier units, this work will be paid for at the contract unit price per meter (foot) for TEMPORARY CONCRETE BARRIER, STATE OWNED or RELOCATE TEMPORARY CONCRETE BARRIER, STATE OWNED.

Impact attenuators will be paid for separately."

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.

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 a 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:

$$A = 1.0 - \left(\frac{B-C}{B}\right); \text{ Where } A \le 1.0; \left(\frac{B-C}{C}\right) > 0.50\% \text{ (0.70\% for aggregates)}$$

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:

Adjusted Net Weight = A x 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:

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:** _____

ILLINOIS DEPARTMENT OF LABOR

PREVAILING WAGES FOR
COOK, IL AND LAKE, IN COUNTIES
EFFECTIVE JULY 2005

The Prevailing rates of wages are included in the Contract proposals which are subject to Check Sheet #5 of the Supplemental Specifications and Recurring Special Provisions. The rates have been ascertained and certified by the Illinois Department of Labor for the locality in which the work is to be performed and for each craft or type of work or mechanic needed to execute the work of the Contract. As required by Prevailing Wage Act (820 ILCS 130/0.01, et seq.) and Check Sheet #5 of the Contract, not less than the rates of wages ascertained by the Illinois Department of Labor and as revised during the performance of a Contract shall be paid to all laborers, workers and mechanics performing work under the Contract. Post the scale of wages in a prominent and easily accessible place at the site of work.

If the Illinois Department of Labor revises the prevailing rates of wages to be paid as listed in the specification of rates, the contractor shall post the revised rates of wages and shall pay not less than the revised rates of wages. Current wage rate information shall be obtained by visiting the Illinois Department of Labor web site at http://www.state.il.us/agency/idol/ or by calling 312-793-2814. It is the responsibility of the contractor to review the rates applicable to the work of the contract at regular intervals in order to insure the timely payment of current rates. Provision of this information to the contractor by means of the Illinois Department of Labor web site satisfies the notification of revisions by the Department to the contractor pursuant to the Act, and the contractor agrees that no additional notice is required. The contractor shall notify each of its subcontractors of the revised rates of wages.

Cook County Prevailing Wage for December 2005

Trade Name	RG	TYP	C	Base	FRMAN	*M-F>8	OSA	OSH	H/W	Pensn	Vac	Trng
ASBESTOS ABT-GEN		ALL		30.150	30.900	1.5	1.5	2.0	6.860	3.940	0.000	0.170
ASBESTOS ABT-MEC		BLD		23.300	24.800	1.5	1.5	2.0	7.860	4.910	0.000	0.000
BOILERMAKER		BLD		36.820	40.140	2.0	2.0	2.0	6.920	6.260	0.000	0.210
BRICK MASON		BLD		33.250	36.580	1.5	1.5	2.0	6.450	7.020	0.000	0.440
CARPENTER		ALL		35.320	37.320	1.5	1.5	2.0	6.760	5.310	0.000	0.490
CEMENT MASON		ALL		36.600	37.850	2.0	1.5	2.0	6.110	4.920	0.000	0.150
CERAMIC TILE FNSHER		BLD		27.200	0.000	2.0	1.5	2.0	5.400	5.200	0.000	0.100
COMM. ELECT.		BLD		31.440	33.940	1.5	1.5	2.0	6.300	5.290	0.000	0.700
ELECTRIC PWR EQMT OP		ALL		34.950	40.720	1.5	1.5	2.0	7.420	8.730	0.000	0.260
ELECTRIC PWR GRNDMAN		ALL		27.260	40.720	1.5	1.5	2.0	5.790	6.820	0.000	0.210
ELECTRIC PWR LINEMAN		ALL		34.950	40.720	1.5	1.5	2.0	7.420	8.730	0.000	0.260
ELECTRICIAN		ALL		35.150	37.750	1.5	1.5	2.0	8.680	6.850	0.000	0.750
ELEVATOR CONSTRUCTOR		BLD		38.995	43.870	2.0	2.0	2.0	7.275	3.420	2.340	0.370
FENCE ERECTOR		ALL		24.840	26.090	1.5	1.5	2.0	6.650	6.740	0.000	0.000
GLAZIER		BLD		31.400	32.400	1.5	2.0	2.0	6.490	9.050	0.000	0.500
HT/FROST INSULATOR		BLD		32.800	34.550	1.5	1.5	2.0	7.860	8.610	0.000	0.310
IRON WORKER		ALL		36.250	37.750	2.0	2.0	2.0	8.970	10.77	0.000	0.300
LABORER		ALL		30.150	30.900	1.5	1.5	2.0	6.860	3.940	0.000	0.170
LATHER		BLD		35.320	37.320	1.5	1.5	2.0	6.760	5.310	0.000	0.490
MACHINIST		BLD		35.630	37.630	2.0	2.0	2.0	3.880	4.750	2.460	0.000
MARBLE FINISHERS		ALL		25.750	0.000	1.5	1.5	2.0	6.070	7.020	0.000	0.580
MARBLE MASON		BLD		33.250	36.580	1.5	1.5	2.0	6.450	7.020	0.000	0.580
MILLWRIGHT		ALL		35.320	37.320	1.5	1.5	2.0	6.760	5.310	0.000	0.490
OPERATING ENGINEER		BLD	1	39.550	43.550	2.0	2.0	2.0	6.450	5.150	1.800	0.650
OPERATING ENGINEER		BLD	2	38.250	43.550	2.0	2.0	2.0	6.450	5.150	1.800	0.650
OPERATING ENGINEER		BLD	3	35.700	43.550	2.0	2.0	2.0	6.450	5.150	1.800	0.650
OPERATING ENGINEER		BLD	4	33.950	43.550	2.0	2.0	2.0	6.450	5.150	1.800	0.650
OPERATING ENGINEER		FLT	1	42.700	42.700	1.5	1.5	2.0	6.050	4.850	1.800	0.000
OPERATING ENGINEER		FLT	2	41.200	42.700	1.5	1.5	2.0	6.050	4.850	1.800	0.000
OPERATING ENGINEER		FLT	3	36.650	42.700	1.5	1.5	2.0	6.050	4.850	1.800	0.000
OPERATING ENGINEER		FLT	4	30.500	42.700	1.5	1.5	2.0	6.050	4.850	1.800	0.000
OPERATING ENGINEER		HWY	1	37.750	41.750	1.5	1.5	2.0	6.450	5.150	1.800	0.650
OPERATING ENGINEER		HWY	2	37.200	41.750	1.5	1.5	2.0	6.450	5.150	1.800	0.650
OPERATING ENGINEER		HWY	3	35.150	41.750	1.5	1.5	2.0	6.450	5.150	1.800	0.650
OPERATING ENGINEER		HWY	4	33.750	41.750	1.5	1.5	2.0	6.450	5.150	1.800	0.650
OPERATING ENGINEER		HWY	5	32.550	41.750	1.5	1.5	2.0	6.450	5.150	1.800	0.650
ORNAMNTL IRON WORKER		ALL		33.600	35.350	2.0	2.0	2.0	7.250	10.09	0.000	0.750
PAINTER		ALL		33.550	37.560	1.5	1.5	1.5	5.800	5.400	0.000	0.340
PAINTER SIGNS		BLD		25.530	28.660	1.5	1.5	1.5	2.600	2.040	0.000	0.000
PILEDRIVER		ALL		35.320	37.320	1.5	1.5	2.0	6.760	5.310	0.000	0.490
PIPEFITTER		BLD		36.100	38.100	1.5	1.5	2.0	7.910	6.100	0.000	0.800
PLASTERER		BLD		32.100	33.600	1.5	1.5	2.0	6.240	6.600	0.000	0.400
PLUMBER		BLD		38.400	40.400	1.5	1.5	2.0	7.170	3.940	0.000	0.790
ROOFER		BLD		32.800	34.800	1.5	1.5	2.0	5.570	3.000	0.000	0.330
SHEETMETAL WORKER		BLD		33.400	36.070	1.5	1.5	2.0	6.460	7.850	0.000	0.590
SIGN HANGER		BLD		23.750	24.600	1.5	1.5	2.0	3.880	2.000	0.000	0.000
SPRINKLER FITTER		BLD		34.500	36.500	1.5	1.5	2.0	7.000	5.550	0.000	0.500
STEEL ERECTOR		ALL		36.250	37.750	2.0	2.0	2.0	8.970	10.77	0.000	0.300
STONE MASON		BLD		33.250	36.580	1.5	1.5	2.0	6.450	7.020	0.000	0.440
TERRAZZO FINISHER		BLD		27.950	0.000	1.5	1.5	2.0	6.150	5.560	0.000	0.220
TERRAZZO MASON		BLD		32.050	35.050	1.5	1.5	2.0	6.150	7.140	0.000	0.120
TILE MASON		BLD		33.000	37.000	2.0	1.5	2.0	5.400	6.400	0.000	0.180
TRAFFIC SAFETY WRKR		HWY		22.800	24.400	1.5	1.5	2.0	3.078	1.875	0.000	0.000
TRUCK DRIVER	E	ALL	1	28.700	29.350	1.5	1.5	2.0	5.000	3.700	0.000	0.000
TRUCK DRIVER	E	ALL	2	28.950	29.350	1.5	1.5	2.0	5.000	3.700	0.000	0.000
TRUCK DRIVER	E	ALL	3	29.150	29.350	1.5	1.5	2.0	5.000	3.700	0.000	0.000
TRUCK DRIVER	E	ALL	4	29.350	29.350	1.5	1.5	2.0	5.000	3.700	0.000	0.000
TRUCK DRIVER	W	ALL	1	28.700	29.250	1.5	1.5	2.0	5.900	3.300	0.000	0.000

TRUCK DRIVER	W	ALL	2	28.850	29.250	1.5	1.5	2.0	5.900	3.300	0.000	0.000
TRUCK DRIVER	W	ALL	3	29.050	29.250	1.5	1.5	2.0	5.900	3.300	0.000	0.000
TRUCK DRIVER	W	ALL	4	29.250	29.250	1.5	1.5	2.0	5.900	3.300	0.000	0.000
TUCKPOINTER		BLD		34.500	35.500	1.5	1.5	2.0	4.710	6.340	0.000	0.400

Legend:

M-F>8 (Overtime is required for any hour greater than 8 worked each day, Monday through Friday.

OSA (Overtime is required for every hour worked on Saturday)

OSH (Overtime is required for every hour worked on Sunday and Holidays)

H/W (Health & Welfare Insurance)

Pensn (Pension)

Vac (Vacation)

Trng (Training)

Explanations

COOK COUNTY

TRUCK DRIVERS (WEST) - That part of the county West of Barrington Road.

The following list is considered as those days for which holiday rates of wages for work performed apply: New Years Day, Memorial/Decoration Day, Fourth of July, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. Generally, any of these holidays which fall on a Sunday is celebrated on the following Monday. This then makes work performed on that Monday payable at the appropriate overtime rate for holiday pay. Common practice in a given local may alter certain days of celebration such as the day after Thanksgiving for Veterans Day. If in doubt, please check with IDOL.

EXPLANATION OF CLASSES

ASBESTOS - GENERAL - removal of asbestos material/mold and hazardous materials from any place in a building, including mechanical systems where those mechanical systems are to be removed. This includes the removal of asbestos materials/mold and hazardous materials from ductwork or pipes in a building when the building is to be demolished at the time or at some close future date.
ASBESTOS - MECHANICAL - removal of asbestos material from mechanical systems, such as pipes, ducts, and boilers, where the mechanical systems are to remain.

CERAMIC TILE FINISHER

The grouting, cleaning, and polishing of all classes of tile, whether for interior or exterior purposes, all burned, glazed or unglazed products; all composition materials, granite tiles, warning detectable tiles, cement tiles, epoxy composite materials, pavers, glass, mosaics, fiberglass, and all substitute materials, for tile made in tile-like units; all mixtures in tile like form of cement, metals, and other materials that are for and intended for use as a finished floor

surface, stair treads, promenade roofs, walks, walls, ceilings, swimming pools, and all other places where tile is to form a finished interior or exterior. The mixing of all setting mortars including but not limited to thin-set mortars, epoxies, wall mud, and any other sand and cement mixtures or adhesives when used in the preparation, installation, repair, or maintenance of tile and/or similar materials. The handling and unloading of all sand, cement, lime, tile, fixtures, equipment, adhesives, or any other materials to be used in the preparation, installation, repair, or maintenance of tile and/or similar materials. Ceramic Tile Finishers shall fill all joints and voids regardless of method on all tile work, particularly and especially after installation of said tile work. Application of any and all protective coverings to all types of tile installations including, but not be limited to, all soap compounds, paper products, tapes, and all polyethylene coverings, plywood, masonite, cardboard, and any new type of products that may be used to protect tile installations, Blastrac equipment, and all floor scarifying equipment used in preparing floors to receive tile. The clean up and removal of all waste and materials. All demolition of existing tile floors and walls to be re-tiled.

COMMUNICATIONS ELECTRICIAN - Installation, operation, inspection, maintenance, repair and service of radio, television, recording, voice sound vision production and reproduction, telephone and telephone interconnect, facsimile, data apparatus, coaxial, fibre optic and wireless equipment, appliances and systems used for the transmission and reception of signals of any nature, business, domestic, commercial, education, entertainment, and residential purposes, including but not limited to, communication and telephone, electronic and sound equipment, fibre optic and data communication systems, and the performance of any task directly related to such installation or service whether at new or existing sites, such tasks to include the placing of wire and cable and electrical power conduit or other raceway work within the equipment room and pulling wire and/or cable through conduit and the installation of any incidental conduit, such that the employees covered hereby can complete any job in full.

MARBLE FINISHER

Loading and unloading trucks, distribution of all materials (all stone, sand, etc.), stocking of floors with material, performing all rigging for heavy work, the handling of all mateiral that may be needed for the installation of such materials, building of scaffolding, polishing if needed, patching, waxing of material if damaged, pointing up, caulking, grouting and cleaning of marble, holding water on diamond or Carborundum blade or saw for setters cutting, use of tub saw or any other saw needed for preparation of material, drilling of holes for wires that anchor material set by setters, mixing up of molding plaster for installation of material, mixing up thin set for the installation of material, mixing up of sand to cement for the installatin of material and such other work as may be required in helping a Marble Setter in the handling of all material in the erection or installation of interior marble, slate, travertine, art marble, serpentine, alberene stone, blue stone, granite and other stones (meaning as to stone any foreign or domestic materials as are specified and used in building interiors and experiors and customarily known as stone in the trade), carrara, sanionyx, vitrolite and similar opaque glass and the laying of all marble tile, terrazzo tile, slate tile and precast tile, steps, risers treads, base, or any other materials that may be used as substitutes for any of the aforementioned materials and which are used on interior and experior which sare installed in a similar manner.

TERRAZZO FINISHER

The handling of sand, cement, marble chips, and all other materials that may be used by the Mosaic Terrazzo Mechanic, and the mixing, grinding, grouting, cleaning and sealing of all Marble, Mosaic, and Terrazzo work, floors, base, stairs, and wainscoting by hand or machine, and in addition, assisting and aiding Marble, Masonic, and Terrazzo Mechanics.

TRAFFIC SAFETY

Work associated with barricades, horses and drums used to reduce lane usage on highway work, the installation and removal of temporary lane markings, and the installation and removal of temporary road signs.

TRUCK DRIVER - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION - EAST & WEST

Class 1. Two or three Axle Trucks. A-frame Truck when used for transportation purposes; Air Compressors and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry-alls; Fork Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors 2-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Power Mower Tractors; Self-propelled Chip Spreader; Skipman; Slurry Trucks, 2-man operation; Slurry Truck Conveyor Operation, 2 or 3 man; TEamsters Unskilled dumpman; and Truck Drivers hauling warning lights, barricades, and portable toilets on the job site.

Class 2. Four axle trucks; Dump Crets and Adgetors under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-mix Plant Hopper Operator, and Winch Trucks, 2 Axles.

Class 3. Five axle trucks; Dump Crets and Adgetors 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnatrailers or turnapulls when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, 1-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long; Slurry trucks, 1-man operation; Winch trucks, 3 axles or more; Mechanic--Truck Welder and Truck Painter.

Class 4. Six axle trucks; Dual-purpose vehicles, such as mounted crane trucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front.

OPERATING ENGINEERS - BUILDING

Class 1. Mechanic; Asphalt Plant; Asphalt Spreader; Autograde; Backhoes with Caisson attachment; Batch Plant; Benoto; Boiler and Throttle Valve; Caisson Rigs; Central Redi-Mix Plant; Combination Back Hoe Front End-loader Machine; Compressor and Throttle Valve; Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Paver; Concrete Placer; Concrete Placing Boom; Concrete Pump (Truck Mounted); Concrete Tower; Cranes, All; Cranes, Hammerhead; Cranes, (GCI and similar Type); Creter Crane; Crusher, Stone, etc.; Derricks, All; Derricks, Traveling; Formless Curb and Gutter Machine; Grader, Elevating; Grouting Machines; Highlift Shovels or Front Endloader 2-1/4 yd. and over; Hoists, Elevators, outside type rack and pinion and similar machines; Hoists, one, two and three Drum; Hoists, Two

Tugger One Floor; Hydraulic Backhoes; Hydraulic Boom Trucks; Hydro Vac (and similar equipment); Locomotives, All; Motor Patrol; Pile Drivers and Skid Rig; Post Hole Digger; Pre-Stress Machine; Pump Cretes Dual Ram; Pump Cretes; Squeeze Cretes-screw Type Pumps; Raised and Blind Hole Drill; Roto Mill Grinder; Scoops - Tractor Drawn; Slip-form Paver; Straddle Buggies; Tournapull; Tractor with Boom and Side Boom; Trenching Machines.

Class 2. Bobcat (over 3/4 cu. yd.); Boilers; Brick Forklift; Broom, All Power Propelled; Bulldozers; Concrete Mixer (Two Bag and Over); Conveyor, Portable; Forklift Trucks; Greaser Engineer; Highlift Shovels or Front Endloaders under 2-1/4 yd.; Hoists, Automatic; Hoists, inside Freight Elevators; Hoists, Sewer Dragging Machine; Hoists, Tugger Single Drum; Laser Screed; Rock Drill (self-propelled); Rock Drill (truck mounted); Rollers, All; Steam Generators; Tractors, All; Tractor Drawn Vibratory Roller; Winch Trucks with "A" Frame.

Class 3. Air Compressor; Combination - Small Equipment Operator; Generators; Heaters, Mechanical; Hoists, Inside Elevators - (Rheostat Manual Controlled); Hydraulic Power Units (Pile Driving, Extracting, and Drilling); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Pumps, Well Points; Welding Machines (2 through 5); Winches, 4 small Electric Drill Winches; Bobcat (up to and including 3/4 cu. yd.).

Class 4. Bobcats and/or other Skid Steer Loaders; Oilers; and Brick Forklift.

OPERATING ENGINEERS - FLOATING

Class 1. Craft foreman (Master Mechanic), diver/wet tender, engineer (hydraulic dredge).

Class 2. Crane/backhoe operator, mechanic/welder, assistant engineer (hydraulic dredge), leverman (hydraulic dredge), and diver tender.

Class 3. Deck equipment operator (machineryman), maintenance of crane (over 50 ton capacity) or backhoe (96,000 pounds or more), tug/launch operator, loader, dozer and like equipment on barge, breakwater wall, slip/dock or scow, deck machinery, etc.

Class 4. Deck equipment operator (machineryman/fireman), (4 equipment units or more) and crane maintenance 50 ton capacity and under or backhoe weighing 96,000 pounds or less, assistant tug operator.

OPERATING ENGINEERS - HEAVY AND HIGHWAY CONSTRUCTION

Class 1. Craft Foreman; Asphalt Plant; Asphalt Heater and Planer Combination; Asphalt Heater Scarfire; Asphalt Spreader; Autograder/GOMACO or other similar type machines; ABG Paver; Backhoes with Caisson attachment; Ballast Regulator; Belt Loader; Caisson Rigs; Car Dumper; Central Redi-Mix Plant; Combination Backhoe Front Endloader Machine, (1 cu. yd. Backhoe Bucket or over or with attachments); Concrete Breaker (Truck Mounted): Concrete Conveyor; Concrete Paver over 27E cu. ft.; Concrete Placer; Concrete Tube Float; Cranes, all attachments; Cranes, Hammerhead, Linden, Peco & Machines of a like nature; Crete Crane; Crusher, Stone, etc.; Derricks, All; Derrick Boats; Derricks, Traveling; Dowell machine with Air Compressor; Dredges; Field Mechanic-Welder; Formless Curb and Gutter Machine; Gradall and Machines of a like nature; Grader, Elevating; Grader, Motor Grader, Motor Patrol, Auto Patrol, Form Grader, Pull Grader, Subgrader; Guard Rail Post Driver Mounted; Hoists, One, Two and Three Drum; Hydraulic Backhoes; Backhoes with

shear attachments; Mucking Machine; Pile Drivers and Skid Rig; Pre-Stress Machine; Pump Cretes Dual Ram; Rock Drill - Crawler or Skid Rig; Rock Drill - Truck Mounted; Roto Mill Grinder; Slip-Form Paver; Soil Test Drill Rig (Truck Mounted); Straddle Buggies; Hydraulic Telescoping Form (Tunnel); Tractor Drawn Belt Loader (with attached pusher - two engineers); Tractor with Boom; Tractaire with Attachments; Trenching Machine; Truck Mounted Concrete Pump with Boom; Raised or Blind Hole; Drills (Tunnel Shaft); Underground Boring and/or Mining Machines; Wheel Excavator; Widener (APSCO).

Class 2. Batch Plant; Bituminous Mixer; Boiler and Throttle Valve; Bulldozers; Car Loader Trailing Conveyors; Combination Backhoe Front Endloader Machine (less than 1 cu. yd. Backhoe Bucket or over or with attachments); Compressor and Throttle Valve; Compressor, Common Receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S Series to and including 27 cu. ft.; Concrete Spreader; Concrete Curing Machine, Burlap Machine, Belting Machine and Sealing Machine; Concrete Wheel Saw; Conveyor Muck Cars (Haglund or Similar Type); Drills, All; Finishing Machine - Concrete; Greaser Engineer; Highlift Shovels or Front Endloader; Hoist - Sewer Dragging Machine; Hydraulic Boom Trucks (All Attachments); Hydro-Blaster; All Locomotives, Dinky; Pump Cretes; Squeeze Cretes-Screw Type Pumps, Gypsum Bulker and Pump; Roller, Asphalt; Rotory Snow Plows; Rototiller, Seaman, etc., self-propelled; Scoops - Tractor Drawn; Self-Propelled Compactor; Spreader - Chip - Stone, etc.; Scraper; Scraper - Prime Mover in Tandem (Regardless of Size); Tank Car Heater; Tractors, Push, Pulling Sheeps Foot, Disc, Compactor, etc.; Tug Boats.

Class 3. Boilers; Brooms, All Power Propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer (Two Bag and Over); Conveyor, Portable; Farm-Type Tractors Used for Mowing, Seeding, etc.; Fireman on Boilers; Forklift Trucks; Grouting Machine; Hoists, Automatic; Hoists, All Elevators; Hoists, Tugger Single Drum; Jeep Diggers; Pipe Jacking Machines; Post-Hole Digger; Power Saw, Concrete Power Driven; Pug Mills; Rollers, other than asphalt; Seed and Straw Blower; Steam Generators; Stump Machine; Winch Trucks with "A" Frame; Work Boats; Tamper - Form-Motor Driven.

Class 4. Air Compressor; Combination - Small Equipment Operator; Directional Boring Machine; Generators; Heaters, Mechanical; Hydraulic Power Unit (Pile Driving, Extracting, or Drilling); Hydro-Blaster; Light Plants, All (1 through 5); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Pumps, Well Points; Tractaire; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 5. Bobcats (all); Brick Forklifts, Oilers.

Other Classifications of Work:

For definitions of classifications not otherwise set out, the Department generally has on file such definitions which are available. If a task to be performed is not subject to one of the classifications of pay set out, the Department will upon being contacted state which neighboring county has such a classification and provide such rate, such rate being deemed to exist by reference in this document. If no neighboring county rate applies to the task, the Department shall undertake a special determination, such special determination being then deemed to have existed under this determination. If a project requires these, or any classification not listed, please contact IDOL at 618/993-7271 for wage rates or clarifications.

LANDSCAPING

Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.