THIS BID MUST BE FILED IN DUPLICATE IN A SEALED BID ENVELOPE

SPECIFICATIONS AND BID

FOR

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY
FORT BEND GRAND PARKWAY TOLL ROAD
SH 99, Segment D

Control: 3510-04-043
Section 1: West Riverpark Drive Overpass
From 0.66 mile south of West Riverpark Drive to
0.40 mile north of West Riverpark Drive

Notice To Bidder: ALL BIDS ARE TO BE SUBMITTED TO THE FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY, C/O PROFESSIONAL PROJECT MANAGEMENT SERVICES, 19875 SOUTHWEST FREEWAY, SUITE 270, SUGAR LAND, TEXAS, 77479 BY 2:00 P.M. ON THURSDAY, JULY 14, 2011.

BIDDER IS REQUIRED TO FILL IN INFORMATION BELOW:

Texas Sterling Construction Co.
BIDDER (Company Name)

TOTAL AMOUNT OF BID $ 10,440,498.99 TW

FORT BEND COUNTY, TEXAS

BID TO
FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY

FORT BEND GRAND PARKWAY TOLL ROAD
SH 99, Segment D
Section 1: West Riverpark Drive Overpass
From 0.66 mile south of West Riverpark Drive to
0.40 mile north of West Riverpark Drive

The undersigned, as bidder, declare that the only person or parties interested in this bid as principals are those named herein; that this bid is made without collusion with any other person, firm, or corporation, that he has carefully examined the form of contract, instructions to bidders, profiles, grades, specifications, and the plans therein referred to, and has carefully examined the location and local conditions of and the classes of materials prescribed for, the proposed work, and agree that he will perform the work and services and furnish the materials, supplies, and equipment, and incidentals necessary to complete the contract, if awarded, in a good and workmanlike manner in accordance with this bid and with the plans, specifications and special provisions if any, incorporated therein.
It is further agreed that the quantities of work to be performed and materials to be furnished may be increased or diminished as may be necessary in the opinion of the Engineer to complete the work fully as planned and contemplated, and that all quantities of work and materials, whether increased or decreased, are to be performed or furnished at the unit prices set forth below except as provided for in the specifications, but such changes shall be made only in strict accord with the specifications and contract, and in no other manner.

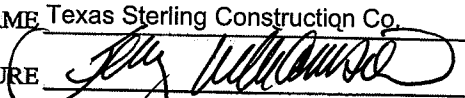
The undersigned agree and pledge himself/themselves to complete the work in full within the time stated in the specifications.

Accompanying this bid is a bid bond or cashier's check payable to the order of Fort Bend Grand Parkway Toll Road Authority (FBGPTRA), for Five Percent of Total Bid Amount dollars ($ 5%), said check to be returned to the bidder, unless this bid is accepted and he shall fail to execute a contract and file a bond within ten (10) days of its acceptance and the award of a contract, in which case the bidder herein now agrees said check shall be forfeited and become the property of FBGPTRA, as payment for agreed and liquidated damages due to delay and other inconveniences suffered by the FBGPTRA on account of failure of the bidder to execute a contract and file the bond required by law and the specifications. It is understood that FBGPTRA reserves the right to reject any and all bids. The work proposed to be done shall be accepted only when fully completed and finished to the entire satisfaction of the Engineer and the FBGPTRA and in strict compliance with the provisions of the specifications and contract.

It is further agreed that the work is to be completed in full in 400 calendar days.

The undersigned lists the following work of similar character completed by him:

COMPANY NAME Texas Sterling Construction Co.

AUTHORIZED SIGNATURE 

TITLE President

NOTE: Signatures to comply with the Specifications & Letter of Evidence. ORIGINAL SIGNATURE MUST APPEAR ON THIS FORM.

STREET ADDRESS 20810 Fernbush Ln., Houston, Texas 77073

MAILING ADDRESS Same as Street Address

PHONE 281-821-9091

CONTRACT WITH FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY

THE STATE OF TEXAS §
COUNTY OF FORT BEND §

Contractor hereby contracts and agrees with Fort Bend Grand Parkway Toll Road Authority to perform the work and services and to furnish the materials, supplies, and equipment, and incidentals necessary to complete this contract in a good and workmanlike manner in accordance with his bid and with the plans, specifications, and special provisions prepared by the Engineer, for

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY
FORT BEND GRAND PARKWAY TOLL ROAD
SH 99, Segment D
Section 1: West Riverpark Drive Overpass

Unit and Section

The Contractor represents to the Fort Bend Grand Parkway Toll Road Authority (FBGPTRA) that he has carefully examined this contract and the plans, specifications, and special provisions attached to and made a part of this contract on which his bid is based, and is thoroughly familiar therewith.

The FBGPTRA agrees to pay to the Contractor for the performance of all the obligations of this contract in a good and workmanlike manner in accordance with the plans, specifications, and special provisions, the several installments, at the rates and at the times and in the manner specified therein, not exceeding in the aggregate the sum of ten million, four hundred forty thousand, four hundred dollars ($ 10,440,498.99). ninety-eight dollars and ninety-nine cents

The Contractor agrees to begin the performance of the work on the date fixed in the contract requisition when it shall have been issued, and to prosecute it diligently to completion.

The deposit of a copy of the contract requisition in the United States mail addressed to the Contractor at 20810 Fernbush Ln., Houston, Texas 77073 shall be sufficient notice of the issuance of such requisition and of the date performance shall begin.

Wherever any notice to the Contractor by the FBGPTRA may be required or desirable under the terms of this agreement and related documents, such notice shall be sufficient if it be in writing, addressed to the Contractor at the above address, and deposited in the United States mail.

This contract and all obligations therein are performable in Fort Bend County, Texas. Executed at Sugar Land, Texas, this 14th day of July 2011.

ATTEST: _____

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY
FORT BEND COUNTY, TEXAS

BY: _____
Chairman

July 14, 2011

BY: Texas Sterling Construction Co.
Contractor

BY: _____

RECOMMENDED FOR APPROVAL

_____
(ENGINEER)

President
(TITLE)

NOTICE TO CONTRACTORS

Sealed bids will be received by the undersigned for Fort Bend Grand Parkway Toll Road Authority until 2:00 P.M., Thursday, July 14, 2011, at the Fort Bend Grand Parkway Toll Road Authority, c/o Professional Project Management Services, 19875 Southwest Freeway, Suite 270, Sugar Land, Texas, 77479 for:

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY

FORT BEND GRAND PARKWAY TOLL ROAD
SH 99, Segment D
Section 1: West Riverpark Drive Overpass
From 0.66 mile south of West Riverpark Drive to
0.40 mile north of West Riverpark Drive

A non-mandatory pre-bid meeting will be held on June 30, 2011 at 9:30 a.m. at the office of Professional Project Management Services, 19875 Southwest Freeway, Suite 270, Sugar Land, Texas 77479. The construction site will be available for inspection at all times.

SPECIAL NOTICE: Unit prices must be shown for each individual bid item. This unit price will be the determining factor in the final analysis of the official bid amount. If a bidder fails to bid on any item, the Authority, at its option, reject such bid as incomplete.

Plans and specifications are available at www.civcastusa.com.

NOTICE: A bid bond or cashier's check for 5% of the amount bid, payable to Fort Bend Grand Parkway Toll Road Authority, must accompany each bid as a guarantee that the bidder, if successful, will enter into contract and make bond in accordance with the requirements of the specifications. Fort Bend Grand Parkway Toll Road Authority reserves the right to reject any and all bids.

Bids must be filed in duplicate in a bid envelope, and sealed, plainly marked Bids for

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY

FORT BEND GRAND PARKWAY TOLL ROAD
SH 99, Segment D
Section 1: West Riverpark Drive Overpass

All bids will be retained by the Authority and will not be returned to the bidders. No bid tendered later than the time specified will be accepted.

IMPORTANT NOTICE TO CONTRACTORS

The successful contractor on this project shall have TEN DAYS after the date of receipt of their contract and bond documents to have same executed by their bonding company and returned to the office of the Fort Bend Grand Parkway Toll Road Authority, c/o Professional Project Management Services, 19875 Southwest Freeway, Suite 270, Sugar Land, Texas.

PLEASE NOTE: In order for this bid to be considered and valid, the following must be adhered to:

Bidder must sign "Bid to Fort Bend Grand Parkway Toll Road Authority"

Bidder must fill in "Bid Sheets" in total

Bidder must submit a 5% Bid Bond or Cashier's Check with Bid

Bidder must acknowledge receipt of all Addendums in space provided below

NOTICE: Escalation Provisions or other alternations included in bid documents will render the bid invalid.

ACKNOWLEDGMENT OF ADDENDA

The Contractor hereby acknowledges the receipt of the following Addenda:

Addendum No. 1: _____ Dated: July 8, 2011

Addendum No. 2: _____ Dated: _____

Addendum No. 3: _____ Dated: _____

SALES TAX EXEMPTION

NOTICE TO CONTRACTORS

The Contractor's attention is directed to TEX. TAX CODE ANN. 151.311, which was amended by the Texas Legislature, effective October 1, 1993.

Under Section 151.311, as amended, tangible personal property purchased by a contractor for use in the performance of a contract for the improvement of real property for an organization such as Fort Bend Grand Parkway Toll Road Authority (FBGPTRA) is exempt from the payment of sales and use tax thereon when the property is incorporated into the realty in the performance of the contract. Building materials, etc., are exempt from tax if they are: (1) necessary and essential for the performance of the contract; and (2) completely consumed at the job site (i.e., after being used once for their intended purpose they are used up or destroyed). Items that can be re-used on other jobs are not tax exempt.

Services purchased by a contractor are also tax exempt, where: (1) the contract is for an improvement to real estate for an exempt organization; and (2) the contract expressly requires the specific service to be provided or purchased by the person performing the contract; or (3) the service is integral to the performance of the contract.

Machinery and equipment, including repair and replacement parts for the same, are not tax exempt when used in the performance of a contract for the improvement of real estate for FBGPTRA.

The Contractor should be aware that the Texas Comptroller of Public Accounts issues rules interpreting applicable provisions of the tax code from time to time. The rules should be consulted when answering specific questions. The Contractor can obtain additional information concerning the applicable sales and use tax, as well as sales tax permits and information regarding resale certificates, from the State Comptroller's Office, at (800) 252-5555.

BIDDER MUST COMPLETE THIS FORM AND

ATTACH BID CHECK OR BOND

All bid checks or bonds must be for the required amount and be payable to Fort Bend Grand Parkway Toll Road Authority.
(DO NOT MAKE CHECK OR BOND PAYABLE TO ANY INDIVIDUAL).

Authorization for Fort Bend Grand Parkway Toll Road Authority to return our bid check without liability of any kind or nature to address listed below, via regular mail if:

1. We are unsuccessful bidder
2. Bond posted in lieu of bid check
3. Upon completion of contract

Bid for: _____

_____

Bond)

Cashier's Check No.) _____ drawn on _____ Company Bank of

_____ dated _____, 2011 Amount $ _____

BIDDER

Name: Texas Sterling Construction Co.

Signature: _____

Mailing Address: 20810 Fernbush Ln.

City and State: Houston, Texas Zip Code: 77073

(Cashiers) (~~Bond~~)
Mark Out One

BIDDER'S CERTIFICATION

The Texas Government Code Chapter 2252 relates to bids by non resident bidders. A portion of the Act has been extracted and is as follows:

Section 2252.001

(3) "Nonresident bidder" refers to a person who is not a resident.

(4) "Resident bidder" refers to a person whose principal place of business is in this state, including a contractor whose ultimate parent company or majority owner has its principal place of business in this state.

Section 2252.002

A governmental entity may not award a governmental contract to a nonresident bidder unless the nonresident underbids the lowest bid submitted by a responsible resident bidder by an amount that is not less than the amount by which a resident bidder would be required to underbid the nonresident bidder to obtain a comparable contract in the state in which the nonresident's principal place of business is located.

I certify that Texas Sterling Construction Co. is a Resident bidder of
(Company Name)

Texas as defined in Chapter 2252 of the Government Code.

Signature: _____

Print Name: Terry Williamson

I certify that _____ is a Nonresident bidder as
(Company Name)

defined in Chapter 2252 of the Government Code and our principal place of business is

_____ City and State.

Signature: _____

Print Name: _____

AFFIDAVIT INSTRUCTIONS

1. If the Proposal is submitted by an individual, he shall sign the affidavit.

2. If the Proposal is submitted by a general partnership, any partner may sign the Affidavit.

3. If the Proposal is submitted by a limited partnership, any general partner acting within the scope of the document creating the limited partnership may sign the Affidavit. A CERTIFIED COPY OF SAID DOCUMENT MUST BE ATTACHED TO THE AFFIDAVIT.

4. If the Proposal is submitted by a corporation, a person authorized by the bylaws or by the Board of Directors may sign the Affidavit. A CERTIFIED COPY OF THE BYLAWS OR BOARD OF DIRECTORS AUTHORIZATION MUST BE ATTACHED TO THE AFFIDAVIT.

5. If the Proposal is submitted by a joint venture composed of individuals, any individual may sign the affidavit.

6. If the Proposal is submitted by a joint venture composed of individuals and partnerships, the Affidavit may be signed by the individual or by any general partner of any partnership, acting within the scope of the document creating the joint venture. A CERTIFIED COPY OF SAID DOCUMENT MUST BE ATTACHED TO THE AFFIDAVIT.

7. If the Proposal is submitted by a joint venture in which a corporation is a party, separate Affidavits must be executed, one by each corporation and one by each individual or partnership, each pursuant to the requirements set forth above.

AFFIDAVIT

THE STATE OF TEXAS

COUNTY OF HARRIS

Before me, the undersigned authority, on this day personally appeared Terry Williamson who being by me duly sworn upon oath says: that he is duly qualified and authorized to make this affidavit for and on behalf of Texas Sterling Construction Co. ("Contractor"), Harris County, Texas, of and is fully cognizant of the facts herein set out; that Contractor has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the contract for the above referenced toll road project.

Terry Williamson, President
NAME TITLE

SWORN TO AND SUBSCRIBED BEFORE ME by the said Terry Williamson, this 14th day of July, 2011, to certify which witness my hand and seal of office.

Notary Public in and for the

State of TEXAS

Alma Delia Martinez
Notary Public, State of Texas
My Commission Expires:
August 1, 2012

EXAMPLES

BID PRICES SUBMITTED BY HAND WRITTEN FORMAT

ALT	ITEM-CODE			UNIT BID PRICE ONLY WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC NO	S.P. NO.				
	190	026		RED OAK 1 1/2" - 1 3/4" GAL BB EXAMPLE One hundred fifty DLRS and No CENTS	EA LE	9.000	1

Unit price for each plant in place

	249	014		FLEX BASE(DEL)(DENSCOT)(TY A GR4 CL2) EXAMPLE Seven DLRS and Fifty three CENTS	TON LE	56,787.00	14

Unit price for each ton of Flexible Base

	430	001	001	CL A CONC FOR EXT STR (CULV) EXAMPLE Three hundred five DLRS and No CENTS	CY LE	45.000	27

Unit price for each cubic yard of Concrete

	610	007	001	RDWY ILL ASSEM(TY ST 50T-8-8)(.4 KW)S EXAMPLE Fourteen hundred sixteen DLRS and Thirty seven CENTS	EA LE	13.000	7

Unit price of each Roadway Illumination Assembly

ALT	ITEM	DESC	SP	Bid Item Description	Unit	Quantity	Bid Price	Amount	Seq
	104	509		REMOV CONC (SDWLK)	SY	266.400	$10.000	$2,664.00	1

EXAMPLE

Total Bid Amount $2,664.00

Signed _____
Title _____
Date _____

Additional Signature for Joint Venture:

Signed _____
Title _____
Date _____

EXAMPLE OF BID PRICES SUBMITTED BY COMPUTER PRINTOUT

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY
FORT BEND GRAND PARKWAY (SH 99) – SEGMENT D, SECTION 1

COUNTY: FORT BEND

PROPOSAL SHEET
FBGPTRA

AUTH USE ONLY

ALT.	TxDOT ITEM-CODE ITEM NO.	TxDOT ITEM-CODE DESC. CODE	UNIT BID PRICE ONLY, WRITTEN IN WORDS	UNIT	APPROX. QUANTITIES
	100	2002	PREPARING ROW two hundred DLRS. and zero CENTS	STA	56.00
	104	2001	REMOVING CONC (PAV) three DLRS. and zero CENTS	SY	9052.00
	104	2021	REMOVING CONC (CURB) three DLRS. and twenty CENTS	LF	511.00
	104	2023	REMOVING CONC (CTB) two DLRS. and forty five CENTS	LF	1398.00
	105	2043	REMOVING STAB BASE & ASPH PAV (0 - 6") two DLRS. and forty nine CENTS	SY	9052.00
	110	2001	EXCAVATION (ROADWAY) two DLRS. and eighty five CENTS	CY	15693.00
	132	2006	EMBANKMENT (FINAL) (DENS CONT) (TY C) six DLRS. and zero CENTS	CY	131103.00
	132	2036	EMBANK (FINAL) (DC) (TY E) (CSBE) two DLRS. and forty CENTS	CY	16720.00

COUNTY: FORT BEND

PROPOSAL SHEET
FBGPTRA

AUTH USE ONLY

ALT.	TxDOT ITEM-CODE ITEM NO.	TxDOT ITEM-CODE DESC. CODE	UNIT BID PRICE ONLY, WRITTEN IN WORDS	UNIT	APPROX. QUANTITIES
	132	2037	EMB (FNL) (DC) (TYE) (CSBE) (RWALL FND IMPR) twenty four DLRS. and zero CENTS	CY	5927.00
	161	2017	COMPOST MANUF TOPSOIL (BIP) (4") zero DLRS. and seventy CENTS	SY	38966.00
	162	2002	BLOCK SODDING two DLRS. and thirty eight CENTS	SY	2678.00
	162	2003	STRAW OR HAY MULCH zero DLRS. and ten CENTS	SY	38966.00
	164	2039	DRILL SEEDING (PERM) (URBAN) (CLAY) zero DLRS. and eight CENTS	SY	38966.00
	166	2001	FERTILIZER three hundred and seventy eight DLRS. and zero CENTS	AC	8.10
	168	2001	VEGETATIVE WATERING ten DLRS. and zero CENTS	MG	1217.00
	260	2006	LIME TRT (EXST MATL) (6") two DLRS. and zero CENTS	SY	51556.00

COUNTY: FORT BEND

PROPOSAL SHEET
FBGPTRA

AUTH

USE ONLY

ALT.	TxDOT ITEM-CODE ITEM NO.	TxDOT ITEM-CODE DESC. CODE	UNIT BID PRICE ONLY, WRITTEN IN WORDS	UNIT	APPROX. QUANTITIES
	260	2012	LIME (HYD, COM OR QK) (SLRY) OR QK (DRY) one hundred forty DLRS. and zero CENTS	TON	1718.00
	276	2224	CEM TRT (PLNT MX) (CL N) (TY E) (GR 4) (6") seven DLRS. and zero CENTS	SY	54660.00
	292	2017	ASPHALT STAB BASE (GR 4) (PG 64) seventy DLRS. and zero CENTS	TON	3013.00
	360	2003	CONC PVMT (CONT REINF - CRCP) (10") forty eight DLRS. and zero CENTS	SY	7349.00
	360	2005	CONC PVMT (CONT REINF - CRCP) (12") fifty two DLRS. and zero CENTS	SY	43850.00
	360	2018	CURB(TYPE II) two DLRS. and fifty CENTS	LF	3143.00
	368	2001	WIDE FLANGE PAVEMENT TERMINALS four hundred forty DLRS. and zero CENTS	LF	194.00
	400	2001	STRUCT EXCAV two DLRS. and nineteen CENTS	CY	5927.00

COUNTY: FORT BEND

PROPOSAL SHEET
FBGPTRA

ALT.	TxDOT ITEM-CODE ITEM NO.	TxDOT ITEM-CODE DESC. CODE	UNIT BID PRICE ONLY, WRITTEN IN WORDS	AUTH USE ONLY UNIT	AUTH USE ONLY APPROX. QUANTITIES
	400	2005	CEM STABIL BKFL twenty four DLRS. and zero CENTS	CY	1842.00
	402	2001	TRENCH EXCAVATION PROTECTION zero DLRS. and fifty CENTS	LF	1991.00
	416	2004	DRILL SHAFT (36 IN) ninety five DLRS. and zero CENTS	LF	1560.00
	416	2008	DRILL SHAFT (60 IN) two hundred fifty DLRS. and zero CENTS	LF	960.00
	420	2003	CL C CONC (ABUT) five hundred DLRS. and zero CENTS	CY	136.00
	420	2004	CL C CONC (BENT) seven hundred DLRS. and zero CENTS	CY	233.60
	420	2039	CL D CONC (MISC) one hundred forty DLRS. and zero CENTS	CY	1.60
	422	2001	REINF CONC SLAB twelve DLRS. and zero CENTS	SF	28470.00

COUNTY: FORT BEND

PROPOSAL SHEET
FBGPTRA

AUTH USE ONLY

ALT.	TxDOT ITEM-CODE ITEM NO.	TxDOT ITEM-CODE DESC. CODE	UNIT BID PRICE ONLY, WRITTEN IN WORDS	UNIT	APPROX. QUANTITIES
	423	2004	RETAINING WALL (MSE) (FRAC FIN) twenty eight DLRS. and zero CENTS	SF	58413.00
	425	2068	PRESTR CONC GIRDER (TX54) one hundred twenty five DLRS. and zero CENTS	LF	3510.00
	428	2001	CONC SURF TREAT (CLASS I) zero DLRS. and ninety two CENTS	SY	3008.00
	432	2039	RIPRAP (MOW STRIP) (4 IN) two hundred seventy five DLRS. and zero CENTS	CY	15.00
	432	2084	RIPRAP (CONC) (CL B) (4") two hundred sixty five DLRS. and zero CENTS	CY	651.00
	432	2085	RIPRAP (CONC) (CL B) (6") two hundred forty DLRS. and zero CENTS	CY	20.00
	442	2048	STRUCTURAL STEEL (MISC NON-BRIDGE) nine DLRS. and zero CENTS	LB	836.00
	450	2013	RAIL (TY SSTR) thirty three DLRS. and zero CENTS	LF	2658.00

COUNTY: FORT BEND

PROPOSAL SHEET
FBGPTRA

AUTH USE ONLY

ALT.	TxDOT ITEM-CODE ITEM NO.	TxDOT ITEM-CODE DESC. CODE	UNIT BID PRICE ONLY, WRITTEN IN WORDS	UNIT	APPROX. QUANTITIES
	450	2039	RAIL (TY SSTR) (MOD) one hundred DLRS. and zero CENTS	LF	151.00
	450	2109	RAIL (TY SSTR) W / DRAIN SLOTS thirty four DLRS. and zero CENTS	LF	4158.00
	454	2002	SEALED EXPANSION JOINT (4 IN) (SEJ - P) one hundred thirty five DLRS. and zero CENTS	LF	190.00
	464	2003	RC PIPE (CL III) (18 IN) thirty DLRS. and zero CENTS	LF	160.00
	464	2005	RC PIPE (CL III) (24 IN) thirty five DLRS. and zero CENTS	LF	1680.00
	464	2007	RC PIPE (CL III) (30 IN) forty five DLRS. and zero CENTS	LF	445.00
	464	2009	RC PIPE (CL III) (36 IN) sixty DLRS. and zero CENTS	LF	55.00
	464	2022	RC PIPE (CL IV) (24 IN) forty DLRS. and zero CENTS	LF	266.00

COUNTY: FORT BEND

PROPOSAL SHEET
FBGPTRA

AUTH USE ONLY

ALT.	TxDOT ITEM-CODE ITEM NO.	TxDOT ITEM-CODE DESC. CODE	UNIT BID PRICE ONLY, WRITTEN IN WORDS	UNIT	APPROX. QUANTITIES
	464	2036	RC PIPE (CL V) (24 IN) forty five DLRS. and zero CENTS	LF	322.00
	465	2003	INLET (COMPL) (TY H) one thousand nine hundred fifty DLRS. and zero CENTS	EA	6.00
	465	2013	MANH (COMPL) (TY A) three thousand DLRS. and zero CENTS	EA	10.00
	465	2098	INLET (COMPL) (TY C1) four thousand one hundred DLRS. and zero CENTS	EA	1.00
	465	2121	MANH (COMPL) (TY B) six thousand nine hundred sixty five DLRS. and zero CENTS	EA	12.00
	465	2180	INLET (COMPL) (TY AZR) 2 GRATES five thousand four hundred DLRS. and zero CENTS	EA	6.00
	465	2342	INLET (COMPL) (TY A) (SPL) one thousand nine hundred fifty DLRS. and zero CENTS	EA	1.00
	465	2603	INLET (COMPL) (TY AZR) 2 GRATES (SPCL) four thousand five hundred fifty DLRS. and zero CENTS	EA	22.00

COUNTY: FORT BEND

PROPOSAL SHEET
FBGPTRA

AUTH USE ONLY

ALT.	TxDOT ITEM-CODE ITEM NO.	TxDOT ITEM-CODE DESC. CODE	UNIT BID PRICE ONLY, WRITTEN IN WORDS	UNIT	APPROX. QUANTITIES
	467	2292	SET (TY II) (36 IN) (RCP) (6:1) (P) two thousand nine hundred DLRS. and zero CENTS	EA	1.00
	479	2003	ADJ MANHS & INLETS six hundred DLRS. and zero CENTS	EA	13.00
	496	2002	REMOV STR (INLET) four hundred DLRS. and zero CENTS	EA	6.00
	500	2001	MOBILIZATION nine hundred fifty thousand TW ~~zero million~~ DLRS. and zero CENTS	LS	1.00
	502	2001	BARRICADES, SIGNS AND TRAFFIC HANDLING four thousand six hundred DLRS. and zero CENTS	MO	14.00
	506	2002	ROCK FILTER DAMS (INSTALL) (TY 2) twenty five DLRS. and eighty CENTS	LF	55.00
	506	2009	ROCK FILTER DAMS (REMOVE) sixteen DLRS. and zero CENTS	LF	55.00
	506	2016	CONSTRUCTION EXITS (INSTALL) (TY 1) fourteen DLRS. and zero CENTS	SY	180.00

COUNTY: FORT BEND

PROPOSAL SHEET
FBGPTRA

AUTH USE ONLY

ALT.	TxDOT ITEM-CODE ITEM NO.	TxDOT ITEM-CODE DESC. CODE	UNIT BID PRICE ONLY, WRITTEN IN WORDS	UNIT	APPROX. QUANTITIES
	506	2019	CONSTRUCTION EXITS (REMOVE) eight DLRS. and zero CENTS	SY	180.00
	506	2034	TEMPORARY SEDIMENT CONTROL FENCE one DLRS. and twenty five CENTS	LF	2470.00
	508	2002	CONSTRUCTING DETOURS fifty five DLRS. and zero CENTS	SY	5049.00
	512	2004	PORT CTB (FUR & INST) (SNGL SLP) (TY 1) one DLRS. and zero CENTS	LF	7047.00
	512	2022	PORT CTB (MOVE) (SNGL SLP) (TY 1) zero DLRS. and fifty CENTS	LF	2564.00
	512	2040	PORT CTB (REMOVE) (SNGL SLP) (TY 1) zero DLRS. and fifty CENTS	LF	6209.00
	514	2045	PERM CONC TRF BARR (SGL SLP) (J - J) (36") forty two DLRS. and zero CENTS	LF	805.00
	514	9001	RAIL (TY SSCB) (SPCL X1) one hundred DLRS. and zero CENTS	LF	397.00

COUNTY: FORT BEND

PROPOSAL SHEET
FBGPTRA

AUTH USE ONLY

ALT.	TxDOT ITEM-CODE ITEM NO.	TxDOT ITEM-CODE DESC. CODE	UNIT BID PRICE ONLY, WRITTEN IN WORDS	UNIT	APPROX. QUANTITIES
	514	9002	RAIL (TY SSCB) (SPCL X2) one hundred DLRS. and zero CENTS	LF	289.00
	540	2001	MTL W - BEAM GD FEN (TIM POST) nineteen DLRS. and sixty CENTS	LF	125.00
	540	2011	MTL BEAM GD FEN TRANS (THRIE - BEAM) one thousand four hundred twenty DLRS. and zero CENTS	EA	3.00
	542	2001	REMOVING METAL BEAM GUARD FENCE one DLRS. and fifty CENTS	LF	150.00
	542	2003	RM MTL BM GD FEN TRANS (THRIE - BEAM) one hundred fifty DLRS. and zero CENTS	EA	1.00
	544	2001	GUARDRAIL END TREATMENT (INSTALL) one thousand nine hundred eighty five DLRS. and zero CENTS	EA	3.00
	544	2003	GUARDRAIL END TREATMENT (REMOVE) two hundred fifty DLRS. and zero CENTS	EA	1.00
	545	2001	CRASH CUSH ATTEN (INSTL) five thousand DLRS. and zero CENTS	EA	5.00

COUNTY: FORT BEND

PROPOSAL SHEET
FBGPTRA

AUTH USE ONLY

ALT.	TxDOT ITEM-CODE ITEM NO.	TxDOT ITEM-CODE DESC. CODE	UNIT BID PRICE ONLY, WRITTEN IN WORDS	UNIT	APPROX. QUANTITIES
	545	2002	CRASH CUSH ATTEN (MOVE & RESET) one thousand five hundred DLRS. and zero CENTS	EA	2.00
	545	2003	CRASH CUSH ATTEN (REMOVE) two hundred fifty DLRS. and Zero CENTS	EA	4.00
	662	2064	WK ZN PAV MRK REMOV (W) 4" (BRK) Zero DLRS. and Seventy CENTS	LF	2730.00
	662	2067	WK ZN PAV MRK REMOV (W) 4" (SLD) Zero DLRS. and fifty one CENTS	LF	7785.00
	662	2099	WK ZN PAV MRK REMOV (Y) 4" (SLD) Zero DLRS. and fifty two CENTS	LF	11405.00
	672	2010	REFL PAV MRKR TY I - A two DLRS. and eight five CENTS	EA	33.00
	672	2017	REFL PAV MRKR TY II - C - R two DLRS. and seventy five CENTS	EA	372.00
	677	2001	ELIM EXT PAV MRK & MRKS (4") zero DLRS. and twenty CENTS	LF	1080.00

COUNTY: FORT BEND

PROPOSAL SHEET
FBGPTRA

AUTH USE ONLY

ALT.	TxDOT ITEM-CODE ITEM NO.	TxDOT ITEM-CODE DESC. CODE	UNIT BID PRICE ONLY, WRITTEN IN WORDS	UNIT	APPROX. QUANTITIES
	677	2002	ELIM EXT PAV MRK & MRKS (6") Zero DLRS. and twenty seven CENTS	LF	14726.00
	678	2001	PAV SURF PREP FOR MRK (4") Zero DLRS. and five CENTS	LF	23635.00
	678	2003	PAV SURF PREP FOR MRK (8") Zero DLRS. and ten CENTS	LF	3678.00
	678	2004	PAV SURF PREP FOR MRK (12") Zero DLRS. and fifteen CENTS	LF	1830.00
	678	2007	PAV SURF PREP FOR MRK (ARROW) Seven DLRS. and Zero CENTS	EA	4.00
	678	2008	PAV SURF PREP FOR MRK (DBL ARROW) ten DLRS. and Zero CENTS	EA	2.00
	678	2018	PAV SURF PREP FOR MRK (WORD) Seven DLRS. and Zero CENTS	EA	4.00
	678	2037	PAV SURF PREP FOR MRK (7") Zero DLRS. and Seven CENTS	LF	1710.00

COUNTY: FORT BEND

PROPOSAL SHEET
FBGPTRA

AUTH USE ONLY

ALT.	TxDOT ITEM-CODE ITEM NO.	TxDOT ITEM-CODE DESC. CODE	UNIT BID PRICE ONLY, WRITTEN IN WORDS	UNIT	APPROX. QUANTITIES
	4521	2001	TRENCH DRAIN two hundred ten TW DLRS. and zero CENTS	LF	330.00
	5049	2002	BIODGRD EROSION CONTROL LOGS (18" DIA) three DLRS. and Sixty five CENTS	LF	540.00
	6834	2001	PORTABLE CHANGEABLE MESSAGE SIGN twenty five DLRS. and zero CENTS	DAY	60.00
	6986	2002	PREFB PV MK W / WNTY TY B (W) (4") (SLD) two DLRS. and ninety CENTS	LF	10645.00
	6986	2003	PREFB PV MK W / WNTY TY B (W) 7" (BRK) CNTST five DLRS. and forty six CENTS	LF	1710.00
	6986	2012	PREFB PV MK W / WNTY TY B (Y) (4") (SLD) two DLRS. and ninety CENTS	LF	12990.00
	6986	9001	PREFB PV MK W / WNTY TY B (W) (8") (SLD) five DLRS. and seventy one CENTS	LF	2928.00
	6986	9002	PREFB PV MK W / WNTY TY B (W) (12") (SLD) nine DLRS. and three CENTS	LF	1420.00

COUNTY: FORT BEND

PROPOSAL SHEET
FBGPTRA

AUTH

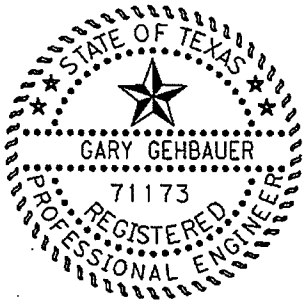
USE ONLY

ALT.	TxDOT ITEM-CODE ITEM NO.	TxDOT ITEM-CODE DESC. CODE	UNIT BID PRICE ONLY, WRITTEN IN WORDS	UNIT	APPROX. QUANTITIES
	6986	9003	PREFB PV MK W / WNTY TY B (Y) (8") (SLD) five DLRS. and seventy one CENTS	LF	750.00
	6986	9004	PREFB PV MK W / WNTY TY B (Y) (12") (SLD) nine DLRS. and three CENTS	LF	410.00
	6986	9005	PREFB PV MK W / WNTY TY C (W) (ARROW) three hundred seventy five DLRS. and zero CENTS	EA	4.00
	6986	9006	PREFB PV MK W / WNTY TY C (W) (DBL ARROW) five hundred forty four DLRS. and zero CENTS	EA	2.00
	6986	9007	PREFB PV MK W / WNTY TY C (W) (WORD) four hundred ninety six DLRS. and zero CENTS	EA	4.00
	9200	2001	MEGAPIXEL ROBOTIC WEBCAMERA twenty seven thousand five hundred DLRS. and zero CENTS	EA	1.00

Highway Fort Bend Grand Parkway Toll Road
SH 99, Segment D (Section 1)
County Fort Bend

The enclosed Texas Department of Transportation Specifications, Special Provisions, General Notes and Specification Data in this document have been selected by me, or under my responsible supervision, as being applicable to this project(s).

NOTE: For the purpose of constructing this Proposal and the attached form of Contract, the Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges, as adopted by the Texas Department of Transportation on June 1, 2004, hereinafter referred to are approved and incorporated herein by reference for all purposes by the Fort Bend Grand Parkway Toll Road Authority as official specifications, together with and to be modified by the Special Provisions and Special Specifications as are listed herein.



Gary Gehbauer, PE
Brown & Gay Engineers, Inc.
Program Manager

Date: 6-20-2011

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY
FORT BEND GRAND PARKWAY (SH 99) - SEGMENT D, SECTION 1

PROPOSAL SHEET
FBGPTRA

COUNTY: FORT BEND

TxDOT ITEM-CODE	Description	Units	Approx. Qty	Unit Price	Extended Total
100 2002	PREPARING R-O-W	STA	56	$200.00	$11,200.00
104 2001	REMOVING CONC (PAV)	SY	9052	$3.00	$27,156.00
104 2021	REMOVING CONC (CURB)	LF	511	$3.20	$1,635.20
104 2023	REMOVING CONC (CTB)	LF	1398	$2.45	$3,425.10
105 2043	REMOVING STAB BASE & ASPH PAV (0-6")	SY	9052	$2.49	$22,539.48
110 2001	EXCAVATION (ROADWAY)	CY	15693	$2.85	$44,725.05
132 2006	EMBANKMENT (FINAL) (DENS CONT) (TY C)	CY	131103	$6.00	$786,618.00
132 2036	EMBANK (FINAL) (DC) (TY E) (CSBE)	CY	16720	$2.40	$40,128.00
132 2037	EMB (FNL) (DC) (TY E) (CSBE) (RWALL FND IMP	CY	5927	$24.00	$142,248.00
161 2017	COMPOST MANUF TOPSOIL (BIP) (4")	SY	38966	$0.70	$27,276.20
162 2002	BLOCK SODDING	SY	2678	$2.38	$6,373.64
162 2003	STRAW OR HAY MULCH	SY	38966	$0.10	$3,896.60
164 2039	DRILL SEEDING (PERM) (URBAN) (CLAY)	SY	38966	$0.08	$3,117.28
166 2001	FERTILIZER	AC	8.1	$378.00	$3,061.80
168 2001	VEGETATIVE WATERING	MG	1217	$10.00	$12,170.00
260 2006	LIME TRT (EXST MATL) (6")	SY	51556	$2.00	$103,112.00
260 2012	LIM (HYD, COM OR QK) (SLRY) OR QK (DRY)	TON	1718	$140.00	$240,520.00
276 2224	CEM TR (PLNT MX) (CL N) (TY E) (GR 4) (6")	SY	54660	$7.00	$382,620.00
292 2017	ASPHALT STAB BASE (GR 4) (PG 64)	TON	3013	$70.00	$210,910.00
360 2003	CONC PVMT (CONT REINF - CRCP) (10")	SY	7349	$48.00	$352,752.00
360 2005	CONC PVMT (CONT REINF - CRCP) (12")	SY	43850	$52.00	$2,280,200.00
360 2018	CURB (TYPE II)	LF	3143	$2.50	$7,857.50
368 2001	WIDE FLANGE PAVEMENT TERMINALS	LF	194	$440.00	$85,360.00
400 2001	STRUCT EXCAV	CY	5927	$2.19	$12,980.13
400 2005	CEM STABIL BKFL	CY	1842	$24.00	$44,208.00
402 2001	TRENCH EXCAVATION PROTECTION	LF	1991	$0.50	$995.50
416 2004	DRILL SHAFT (36 IN)	LF	1560	$95.00	$148,200.00
416 2008	DRILL SHAFT (60 IN)	LF	960	$250.00	$240,000.00
420 2003	CL C CONC (ABUT)	CY	136	$500.00	$68,000.00
420 2004	CL C CONC (BENT)	CY	233.6	$700.00	$163,520.00

PROPOSAL SHEET
FBGPTRA

COUNTY: FORT BEND

TxDOT ITEM-CODE	Description	Units	Approx. Qty	Unit Price	Extended Total
420 2039	CL D CONC (MISC)	CY	1.6	$140.00	$224.00
422 2001	REINF CONC SLAB	SF	28470	$12.00	$341,640.00
423 2004	RETAINING WALL (MSE) (FRAC FIN)	SF	58413	$28.00	$1,635,564.00
425 2068	PRESTR CONC GIRDER (TX54)	LF	3510	$125.00	$438,750.00
428 2001	CONC SURF TREAT (CLASS I)	SY	3008	$0.92	$2,767.36
432 2039	RIP-RAP (MOW STRIP) (4 IN)	CY	15	$275.00	$4,125.00
432 2084	RIP-RAP (CONC) (CL B) (4")	CY	651	$265.00	$172,515.00
432 2085	RIP-RAP (CONC) (CL B) (6")	CY	20	$240.00	$4,800.00
442 2048	STRUCTURAL STEEL (MISC NON-BRIDGE)	LB	836	$9.00	$7,524.00
450 2013	RAIL (TY SSTR)	LF	2658	$33.00	$87,714.00
450 2039	RAIL (TY SSTR) (MOD)	LF	151	$100.00	$15,100.00
450 2109	RAIL (TY SSTR) W/DRAIN SLOTS	LF	4158	$34.00	$141,372.00
454 2002	SEALED EXPANSION JOINT (4 IN) (SEJ-P)	LF	190	$135.00	$25,650.00
464 2003	RC PIPE (CL III) (18 IN)	LF	160	$30.00	$4,800.00
464 2005	RC PIPE (CL III) (24 IN)	LF	1680	$35.00	$58,800.00
464 2007	RC PIPE (CL III) (30 IN)	LF	445	$45.00	$20,025.00
464 2009	RC PIPE (CL III) (36 IN)	LF	55	$60.00	$3,300.00
464 2022	RC PIPE (CL IV) (24 IN)	LF	266	$40.00	$10,640.00
464 2036	RC PIPE (CL V) (24 IN)	LF	322	$45.00	$14,490.00
465 2003	INLET (COMPL) (TY H)	EA	6	$1,950.00	$11,700.00
465 2013	MANH (COMPL) (TY A)	EA	10	$3,000.00	$30,000.00
465 2098	MANH (COMPL) (TY CI)	EA	1	$4,100.00	$4,100.00
465 2121	MANH (COMPL) (TY B)	EA	12	$6,965.00	$83,580.00
465 2180	INLET (COMPL) (TY AZR) 2 GRATES	EA	6	$5,400.00	$32,400.00
465 2342	INLET (COMPL) (TY A) (SPL)	EA	1	$1,950.00	$1,950.00
465 2603	INLET (COMPL) (TY AZR) 2 GRATES (SPCL)	EA	22	$4,550.00	$100,100.00
467 2292	SET (TY II) (36 IN) (RCP) (6:1) (P)	EA	1	$2,900.00	$2,900.00
479 2003	ADJ MANHS & INLETS	EA	13	$600.00	$7,800.00
496 2002	REMOV STR (INLET)	EA	6	$400.00	$2,400.00
500 2001	MOBILIZATION	LS	1	~~$1,000,000.00~~ $950,000.00	~~$1,000,000.00~~ $950,000.00 TW

PROPOSAL SHEET
FBGPTRA

COUNTY: FORT BEND

TxDOT ITEM-CODE	Description	Units	Approx. Qty	Unit Price	Extended Total
502 2001	BARRICADES, SIGNS & TRAFFIC HANDLING	MO	14	$4,600.00	$64,400.00
506 2002	ROCK FILTER DAMS (INSTALL) TY 2)	LF	55	$25.80	$1,419.00
506 2009	ROCK FILTER DAMS (REMOVE)	LF	55	$16.00	$880.00
506 2016	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	180	$14.00	$2,520.00
506 2019	CONSTRUCTION EXITS (REMOVE)	SY	180	$8.00	$1,440.00
506 2034	TEMPORARY SEDIMENT CONTROL FENCE	LF	2470	$1.25	$3,087.50
508 2002	CONSTRUCTION DETOURS	SY	5049	$55.00	$277,695.00
512 2004	PORT CTB (FUR & INST) (SNGL SLP) (TY 1)	LF	7047	$1.00	$7,047.00
512 2022	PORT CTB (MOVE) (SNGL SLP) (TY 1)	LF	2564	$0.50	$1,282.00
512 2040	PORT CTB (REMOVE) (SNGL SLP) (TY 1)	LF	6209	$0.50	$3,104.50
514 2045	PERM CONC TRF BARR (SGL SLP) (J - J) (36")	LF	805	$42.00	$33,810.00
514 9001	RAIL (TY SSCB) (SPCL X1)	LF	397	$100.00	$39,700.00
514 9002	RAIL (TY SSCB) (SPCL X2)	LF	289	$100.00	$28,900.00
540 2001	MTL W - BEAM GD FEN (TIM POST)	LF	125	$19.60	$2,450.00
540 2011	MTL BEAM GD FEN TRANS (THRIE - BEAM)	EA	3	$1,420.00	$4,260.00
542 2001	REMOVING METAL BEAM GUARD FENCE	LF	150	$1.50	$225.00
542 2003	RM MTL BM GD FEN TRANS (THRIE - BEAM)	EA	1	$150.00	$150.00
544 2001	GUARDRAIL END TREATMENT (INSTALL)	EA	3	$1,985.00	$5,955.00
544 2003	GUARDRAIL END TREATMENT (REMOVE)	EA	1	$250.00	$250.00
545 2001	CRASH CUSH ATTEN (INSTL)	EA	5	$5,000.00	$25,000.00
545 2002	CRASH CUSH ATTN (MOVE & RESET)	EA	2	$1,500.00	$3,000.00
545 2003	CRASH CUSH ATTN (REMOVE)	EA	4	$250.00	$1,000.00
662 2064	WK ZN PAV MRK REMOVE (W) 4" (BRK)	LF	2730	$0.70	$1,911.00
662 2067	WK ZN PAV MRK REMOVE (W) 4" (SLD)	LF	7785	$0.51	$3,970.35
662 2099	WK ZN PAV MRK REMOVE (Y) 4" (SLD)	LF	11405	$0.52	$5,930.60
672 2010	REFL PAV MRKR TY 1-A	EA	33	$2.85	$94.05
672 2017	REFL PAV MRKR TY II -C-R	EA	372	$2.75	$1,023.00
677 2001	ELIM EXT PAV MRK & MRKS (4")	LF	1080	$0.20	$216.00
677 2002	ELIM EXT PAV MRK & MRKS (6")	LF	14726	$0.27	$3,976.02
678 2001	PAV SURF PREP FOR MRK (4")	LF	23635	$0.05	$1,181.75

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY
FORT BEND GRAND PARKWAY (SH 99) - SEGMENT D, SECTION 1

PROPOSAL SHEET
FBGPTRA

COUNTY: FORT BEND

TxDOT ITEM-CODE	Description	Units	Approx. Qty	Unit Price	Extended Total
678 2003	PAV SURF PREP FOR MRK (8")	LF	3678	$0.10	$367.80
678 2004	PAV SURF PREP FOR MRK (12")	LF	1830	$0.15	$274.50
678 2007	PAV SURF PREP FOR MRK (ARROW)	EA	4	$7.00	$28.00
678 2008	PAV SURF PREP FOR MRK (DBL ARROW)	EA	2	$10.00	$20.00
678 2018	PAV SURF PREP FOR MRL (WORD)	EA	4	$7.00	$28.00
678 2037	PAV SURF PREP FOR MRK (7")	LF	1710	$0.07	$119.70
4521 2001	TRENCH DRAIN	LF	330	$210.00	$69,300.00
5049 2002	BIRDGRD EROSION CONTROL LOGS (18" DIA)	LF	540	$3.65	$1,971.00
6834 2001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	60	$25.00	$1,500.00
6986 2002	PREFB PV MK W/WNTY TY B (W)(4")(SLD)	LF	10645	$2.90	$30,870.50
6986 2003	PREFB PV MK W/WNTY TY B (W) 7"(BRK) CNTST	LF	1710	$5.46	$9,336.60
6986 2012	PREFB PV MK W/WNTY TY B (Y)(4")(SLD)	LF	12990	$2.90	$37,671.00
6986 9001	PREFB PV MK W/WNTY TY B (W)(8")(SLD)	LF	2928	$5.71	$16,718.88
6986 9002	PREFB PV MK W/WNTY TY B (W)(12")(SLD)	LF	1420	$9.03	$12,822.60
6986 9003	PREFB PV MK W/WNTY TY B (Y)(8")(SLD)	LF	750	$5.71	$4,282.50
6986 9004	PREFB PV MK W/WNTY TY B (Y)(12")(SLD)	LF	410	$9.03	$3,702.30
6986 9005	PREFB PV MK W/WNTY TY C (W)(ARROW)	EA	4	$375.00	$1,500.00
6986 9006	PREFB PV MK W/WNTY TY C (W)(DBL ARROW)	EA	2	$544.00	$1,088.00
6986 9007	PREFB PV MK W/WNTY TY C (W)(WORD)	EA	4	$496.00	$1,984.00
9200 2001	MEGAPIXEL ROBOTIC WEBCAMERA	EA	1	$27,500.00	$27,500.00
					$10,490,498.99

Signed

Terry Williamson

Title President

Texas Sterling Construction, Co.

Date July 14, 2011

Design Section: 1
County: Fort Bend
Highway: Fort Bend Grand Parkway Toll Road (SH 99)

GENERAL NOTES

If fixed features require, the governing slopes shown may vary between the limits shown and to the extent determined by the Engineer.

Notify the Engineer immediately if discrepancies are discovered in the horizontal control or the benchmark data.

References to manufacturer's trade name or catalog numbers are for the purpose of identification only. Similar materials from other manufacturers are permitted if they are of equal quality, comply with the specifications for this project, and are approved, except for roadway illumination, electrical, and traffic signal items.

The cost for materials, labor, and incidentals to provide for traffic across the roadway and for ingress and egress to private property in accordance with Section 7.7 of the standard specifications is subsidiary to the various bid items. Restore access roadways to their original condition upon completing construction.

Clearly mark or highlight on the shop drawings, the items being furnished for this project. Submit required shop drawings in accordance with the shop drawing distribution list shown in the note for Item 5 for review and distribution.

Stencil the National Bridge Inventory (NBI) number on each existing bridge shown on these plans. The NBI number is shown above the title block for each bridge layout.

Unless otherwise shown on the plans or otherwise directed, commence work after sunrise and ensure construction equipment is off the road by sunset.

General: Site Management

Mark stations every 100 ft. and maintain the markings for the project duration. Remove the station markings at the completion of the project. This work is subsidiary to the various bid items.

Do not mix or store materials, or store or repair equipment, on top of concrete pavement or bridge decks unless authorized by the Engineer. Permission will be granted to store materials on surfaces if no damage or discoloration will result.

Personal vehicles of employees are not permitted to park within the right of way, including sections closed to public traffic. Employees may park on the right of way at the Contractor's office, equipment, and materials storage yard sites.

Assume ownership of debris and dispose of at an approved location. Do not dispose of debris on private property unless approved in writing by the Fort Bend Grand Parkway Toll Road Authority (FBGPTRA).

Control the dust caused by construction operations. For sweeping the base material in preparation for laying asphalt and for sweeping the finished concrete pavement, use one of the following types of sweepers or equal:

Design Section: 1
County: Fort Bend
Highway: Fort Bend Grand Parkway Toll Road (SH 99)

Tricycle Type	Truck Type - 4 Wheel
Wayne Series 900	M-B Cruiser II
Elgin White Wing	Wayne Model 945
Elgin Pelican	Mobile TE-3
	Mobile TE-4
	Murphy 4042

General: Traffic Control and Construction

Schedule work so that the base placement operations follow the subgrade work as closely as practical to reduce the hazard to the traveling public and to prevent undue delay caused by wet weather.

When design details are not shown on the plans, provide signs and arrows conforming to the latest "Standard Highway Sign Designs for Texas" manual.

General: Utilities

Consider the locations of underground utilities depicted in the plans as approximate and employ responsible care to avoid damaging utility facilities. Depending upon scope and magnitude of planned construction activities, advanced field confirmation by the utility owner or operator may be prudent. Where possible, protect and preserve permanent signs, markers, and designations of underground facilities.

If the Contractor damages or cause damage (breaks, leaks, nicks, dents, gouges, etc.) to the utility, contact the utility facility owner or operator immediately.

Install or remove poles and luminaires located near overhead or underground electrical lines using established industry and utility safety practices. Consult the appropriate utility company before beginning such work.

If overhead or underground power lines need to be de-energized, contact the electrical service provider to perform this work. Costs associated with de-energizing the power lines or other protective measures required are at no expense to the FBGPTRA.

If working near power lines, comply with the appropriate sections of Texas State Law and Federal Regulations relating to the type of work involved.

Perform electrical work in conformance with the National Electrical Code (NEC) and TxDOT standard sheets.

Item 5: Control of the Work

Before contract letting, electronically generated earthwork cross-section data will be furnished free of charge to the prospective bidders on a compact high-density disk, in an ASCII print format. This will be available through the FBGPTRA Program Management Consultant. The

earthwork cross-section data provided above is for non-construction purposes only and it is the responsibility of the prospective bidder to validate the enclosed data with the appropriate plans, specifications, and estimates for the projects.

Submit shop drawings electronically for the fabrication of items as documented in Table 1 below. Send all electronic shop drawing submittals to the FBGPTRA Program Management Consultant at pvoiles@browngay.com. References to 11 in. x 17 in. sheets in individual specifications for structural items imply electronic CAD sheets.

Table 1

2004 Construction Specification Required Shop/Working Drawing Submittals

Spec Item No.'s	Product	Submittal Required	Approval Required (Y/N)	Contractor/ Fabricator P.E. Seal Required
7.8	Construction Load Analyses	Y	Y	Y
400	Excavation and Backfill for Structures (cofferdams)	Y	N	Y
403	Temporary Special Shoring	Y	N	Y
420	Formwork/Falsework	Y	N	Y
423	Retaining Walls, (calcs req'd.)	Y	Y	Y
425	Optional Design Calculations (Prstrs Bms)	Y	Y	Y
425	Prestr Concr Sheet Piling	Y	Y	N
425	Prestr Concr Beams	Y	Y	N
425	Prestr Concr Bent	Y	Y	N
426	Post Tension Details	Y	Y	N
434	Elastomeric Bearing Pads (All)	Y	Y	N
441	Bridge Protective Assembly	Y	Y	N
441	Misc Steel (various steel assemblies)	Y	Y	N
441	Steel Pedestals (bridge raising)	Y	Y	N
441	Steel Bearings	Y	Y	N
441	Steel Bent	Y	Y	N
441	Steel Diaphragms	Y	Y	N
441	Steel Finger Joint	Y	Y	N
441	Steel Plate Girder	Y	Y	N
441	Steel Tub-Girders	Y	Y	N
441	Erection Plans	Y	N	Y
449	Sign-Structure Anchor Bolts	Y	Y	N
450	Railing	Y	Y	N
462	Concrete Box Culvert	Y	Y	N
462	Concrete Box Culvert (Alternate Designs Only,calcs reqd.)	Y	Y	Y
464	Reinforced Concrete Pipe (Jack and Bore only; ONLY when requested)	Y	Y	Y
465	Pre-cast Junction Boxes, Grates, and Inlets	Y	Y	N
465	Pre-cast Junction Boxes, Grates, and Inlets (Alternate Designs Only, calcs req'd.)	Y	Y	Y
466	Pre-cast Headwalls and Wingwalls	Y	Y	N
467	Pre-cast Safety End Treatments	Y	Y	N
495	Raising Existing Structure (calcs reqd.)	Y	Y	Y
610	Roadway Illumination Supports	Y	Y	Y
613	High Mast Illumination Poles (Non-standard only, calcs reqd.)	Y	Y	Y
627	Treated Timber Poles	Y	Y	N
644	Special Non-Standard Supports (Bridge Mounts, Barrier Mounts, Etc.)	Y	Y	Y
647	Large Roadside Sign Supports	Y	Y	Y

650	Cantilever Sign Structure Supports - Alternate Design Cacls.	Y	Y	Y
650	Sign Structures	Y	Y	N
652	Highway Sign Lighting Fixtures	Y	Y	N
654	Sign Walkways	Y	Y	N
680	Installation of Highway Traffic Signals	Y	Y	N
682	Vehicle and Pedestrian Signal Heads	Y	Y	N
684	Traffic Signal Cables	Y	Y	N
685	Roadside Flashing Beacon Assemblies	Y	Y	N
686	Traffic Signal Pole Assemblies (Steel)	Y	Y	Y
687	Pedestal Pole Assemblies	Y	Y	N
688	Detectors	Y	Y	N
784	Repairing Steel Bridge Members	Y	Y	Y
SS	Prestr Concr Crown Span	Y	Y	N
SS	Sound Barrier Walls	Y	Y	N
SS	Camera Poles	Y	Y	Y
SS	Pedestrian Bridge (Calcs req'd.)	Y	Y	Y
SS	Screw-In Type Anchor Foundations	Y	Y	N
SS	Fiber Optic/Communication Cable	Y	Y	N
SS	Spread Spectrum Radios for Signals	Y	Y	N
SS	VIVDS System for Signals	Y	Y	N
SS	CTMS Equipment	Y	Y	N

Item 7: Legal Relations and Responsibilities

Do not initiate activities in a Project Specific Location (PSL), associated with a U.S. Army Corps of Engineers (USACE) permit area, that have not been previously evaluated by the USACE as part of the permit review of this project. Such activities include those pertaining to, but are not limited to, haul roads, equipment staging areas, borrow and disposal sites. Associated defined here means materials are delivered to or from the PSL. The permit area includes the waters of the U.S. or associated wetlands affected by activities associated with this project. Special restrictions may be required for such work. Assume responsibility for consultations with the USACE regarding activities, including PSLs that have not been previously evaluated by the USACE. Provide the Engineer with a copy of consultations or approvals from the USACE before initiating activities.

The Contractor may proceed with activities in PSLs that do not affect a USACE permit area if a self-determination has been made that the PSL is non-jurisdictional or if proper USACE clearances have been obtained in jurisdictional areas or have been previously evaluated by the USACE as part of the permit review of this project. The Contractor is solely responsible for documenting any determinations that their activities do not affect a USACE permit area. Maintain copies of their determinations for review by the Engineer or any regulatory agency.

Document and coordinate with the USACE, if required, before hauling any excavation from or hauling any embankment to a USACE permit area by either 1 or 2 below:

1. **Restricted Use of Materials for the Previously Evaluated Permit Areas.** Document both the Project Specific Locations (PSL) and their authorization. Maintain copies for review by the FBGPTRA or any regulatory agency. When an area within the project limits has been evaluated by the USACE as part of the permit process for this project:

a. Suitable excavation of required material in the areas shown on the plans and cross sections as specified in the Item, "Excavation" is used for permanent or temporary fill (under the Item, "Embankment") within a USACE permit area.
b. Suitable embankment (under the Item, "Embankment") from within the USACE permit area is used as fill within a USACE evaluated area.
c. Unsuitable excavation or excess excavation, "Waste" (under the Item, "Excavation"), that is disposed of at a location approved within a USACE evaluated area.

2. **Contractor Materials from Areas Other than Previously Evaluated Areas.** Provide the FBGPTRA with a copy of USACE coordination or approvals before initiating any activities for an area within the project limits that has not been evaluated by the USACE or for any off right of way locations used for the following, but not limited to, haul roads, equipment staging areas, borrow and disposal sites:
   a. The Item, "Embankment" used for temporary or permanent fill within a USACE permit area.
   b. Unsuitable excavation or excess excavation, "Waste" (under the Item, "Excavation"), that is disposed of outside a USACE evaluated area.

The total area disturbed for this project is more than 5 acres. The disturbed area in this project, the project locations in the Contract, and Contractor project specific locations (PSLs) within 1 mile of the project limits for the Contract, will further establish the authorization requirements for storm water discharges. The Contractor will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain required authorization from the TCEQ for Contractor PSLs for construction support activities on or off the ROW. When the total area disturbed in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, provide a copy of the Contractor NOI for PSLs on the ROW to the Engineer (to the appropriate MS4 operator when on an off-state system route) and to the local government that operates a separate storm drain system.

This project does not require a U.S. Army Corps of Engineers (USACE) Section 404 Permit before letting, but if a permit is needed during construction, assume responsibility for preparing the permit application. Submit the permit application to the FBGPTRA for approval. Once the permit application is approved, the FBGPTRA will submit it to the USACE. Assume responsibility for the requested revisions, in coordination with the FBGPTRA.

Maintain the roadway slope stability. Maintaining slope stability is subsidiary to the various bid items.

Item 8: Prosecution and Progress

Working days will be charged Sunday through Saturday, including all holidays, regardless of weather conditions, material availability, or other conditions not under the control of the Contractor. Work on national holidays will not be permitted without written permission of the Engineer.

Design Section: 1
County: Fort Bend
Highway: Fort Bend Grand Parkway Toll Road (SH 99)

Item 100: Preparing Right of Way

Clean existing ditches under fill sections of undesirable materials including grass, muck, and trash. Perform this work in accordance with the Construction section of the Item, "Preparing Right of Way." This work is subsidiary to this bid Item.

The Item, "Preparing Right of Way" will be measured for payment only in those designated areas shown on the plans. Preparing right of way necessary to perform construction that is outside designated areas is subsidiary to this bid Item.

Remove abandoned utilities that are in conflict with the new utilities, at no expense to the FBGPTRA.

Remove and assume ownership of the existing ground mounted signs within the limits of roadway construction unless otherwise noted or directed. This work is subsidiary to the Item, "Preparing Right of Way."

Item 104: Removing Concrete

Removing concrete curb is paid as a separate bid item if the existing pavement on which it rests is not removed at the same time.

Item 105: Removing Stabilized Base and Asphalt Pavement

Removing curb on cement-stabilized base or on cement treatment being removed at the same time is subsidiary to this bid Item.

Item 104: Removing Concrete
Item 105: Removing Stabilized Base and Asphalt Pavement

Removing the concrete pavement material is paid under the Item, "Removing Concrete."

Removing the base material is paid under the Item, "Removing Stabilized Base and Asphalt Pavement."

Item 110: Excavation

If manipulating the excavated material requires moving the same material more than once to accomplish the desired results, the excavation is measured and paid for only once regardless of the manipulation required.

Transition the ditch grades and channel bottom widths at structure locations. Use only approved channel excavation in the embankment.

Item 132: Embankment

Before paving occurs, embankment shall be allowed to settle for four months after embankment construction is completed.

If salvaged base is used for the embankment material, break it into small pieces to achieve the required density and to facilitate placing in the embankment. Obtain approval of the material before placing in the embankment.

Furnish Type C material with a maximum Liquid Limit (LL) of 65, a minimum Plasticity Index (PI) of 5, and composed of suitable earth material such as loam, clay, or other materials that form a suitable embankment.

The embankment material used on the project which has a Liquid Limit exceeding 45 will be tested for Liquid Limits at the rate of one test per 20,000 cu. yd. or per total quantity less than 20,000 cu. yd., unless otherwise directed. Only use material that passes the above tests.

Provide a finished grade with the top 4 in. capable of sustaining vegetation. Use fertile soil that is easily cultivated, free from objectionable material and highly resistant to erosion. This work is paid under the Item, "Topsoil."

An optional embankment source is the Fort Bend County Drainage District's (FBCDD) Big Creek, Segment 4 (from Booth Line Road to FM 2977), excavation project which has approximately 100,000 cubic yards of material available for use on this project. Preliminary testing indicates that the material proposed to be excavated meets the Type C requirements after mixing. However, the Contractor shall still be responsible for meeting the testing requirements of this item. Contractor will be responsible for surveying and excavating to lines and grades as required by FBCDD, as well as hauling. Contact Mr. Jeff Janecek, Fort Bend County Drainage District, at 281-342-2863, for additional information.

Item 161: Compost
Item 162: Sodding for Erosion Control
Item 164: Seeding for Erosion Control
Item 166: Fertilizer
Item 168: Vegetative Watering

Refer to the "Fertilizer, Seed, Sod, Straw, Compost, and Water" standard sheet for material specifications, application rates, and for watering requirements.

Item 204: Sprinkling

Perform subsidiary sprinkling as required under various other items in accordance with the Item, "Sprinkling."

Sprinkling for dust control is subsidiary to the various bid items.

Item 260: Lime Treatment (Road-Mixed)

For slurry placing, before discharging through the distributors, sufficiently agitate or mix the lime and water to place the lime in suspension and to obtain a uniform mixture.

The Engineer will observe the lime treatment that the Contractor elects to open to construction traffic immediately after compaction. If the construction traffic damages the subgrade, route the traffic off the damaged section in accordance with the standard specification. If the construction

traffic does not damage the subgrade, cure the subgrade until other courses of material cover it. Apply these courses within 14 days with a maximum curing period of 7 days.

Place the hydrated and the commercial lime as a water suspension or slurry according to the slurry placing method shown in Section 260.4.C.2, "Slurry Placement."

Use the type of lime at particular locations as directed.

Place the quicklime dry or as a slurry.

For the dry quicklime, a spreader box is not required if the lime material is evenly distributed.

In limited areas, the Contractor may construct the lime slurry subgrade under a sequence of work in which the application, mixing, and compaction are completed in the same working day, if approved by the Engineer.

Provide documentation from certified public scales showing gross, tare, and net weights. Provide producer's delivery tickets also showing gross, tare, and net weights. Completely empty the lime trailers at the project site. The Engineer may direct the Contractor to reweigh any shipment of lime on certified scales. The cost of this operation is subsidiary to the Item, "Lime Treatment (Road-Mixed)."

The percentage of lime shown on the plans is estimated on the basis of engineering tests. If soil tests made during construction indicate properties different than those originally anticipated, the Engineer may vary the percentage of the lime to provide soil characteristics similar to those of the preliminary tests.

Mix the lime with the new base material in an approved pugmill type stationary mixer.

Item 276: Cement Treatment (Plant-Mixed)

Before placing the new base, wet and coat the vertical construction joints between the new base and the previously placed base with dry cement.

If the total thickness of the cement treatment is greater than 8 in., compact it in multiple lifts in accordance with Section 276.4.C, "Compaction." Place the courses in the same working day unless otherwise approved.

If using a 100 percent crushed stone aggregate for the proposed base or other aggregate, it must contain 4.5 percent cement based on the dry weight of the aggregate. There is no minimum compressive strength requirement for this Item.

The requirement for core drilling to determine the thickness of cement treatment is waived if using less than 500 sq. yd. at one location.

For widening the existing pavement, the Engineer may waive the requirements for preparing the subgrade by scarifying and compacting if the as-cut subgrade can be maintained to the density of the natural ground and to a uniform consistency when placing the base course. Keep the subgrade wet.

Design Section: 1
County: Fort Bend
Highway: Fort Bend Grand Parkway Toll Road (SH 99)

Compact in accordance with the standard specifications and complete the finishing operations within a period of 5 hours after adding the cement to the base material.

Cure the final course of cement treatment using an asphalt distributor that distributes the approved curing material and water mixture material at a rate of 0.25 gallons per square-yard evenly and smoothly or as recommended by the manufacturer at the recommended dilution rate, under a pressure necessary for proper distribution. Provide a curing material meeting the requirements of the Item, "Asphalts, Oils, and Emulsions" for curing the cement treatment. Use the following materials for curing the courses of cement treatment:

Curing Material	Application
Water	All courses, except final course
PCE	Final course

Continue curing until placing another course or opening the finished section to traffic.

Spread the material so that the layers of base are uniform in depth and in loose density before compacting.

Type E material consists of Type A material, crushed concrete (except under flexible pavement), or Reclaimed Asphalt Pavement (RAP) meeting the requirements of the Item, "Flexible Base." If approved, the 20 percent maximum RAP limitation may be waived.

Unless otherwise directed, place the next pavement layer within 7 working days of placing the base.

If using crushed stone for the Type E material under this Item, ensure it meets the requirements for the Item, "Flexible Base," Type A, Grade 1. Texas Test Method TEX-117-E is not required for this Item.

If using Recycled Type E cement treatment under proposed flexible pavement, produce it using the existing base salvaged from within this project and salvaged asphalt concrete pavement. Do not use crushed concrete under flexible pavement.

If using Recycled Type E cement treatment under proposed concrete pavement, produce it using the existing base salvaged from within this project, salvaged asphalt concrete pavement, or crushed concrete. If using crushed concrete as an aggregate, meet the requirements of Grade 3.

If using salvaged existing base and asphalt concrete pavement as described above, size it so that all the material, except the existing individual aggregate, passes the 2-in. sieve and is of a gradation that allows satisfactory compaction. Provide salvaged material that does not contain deleterious material such as clay or organic material. Provide material passing the No. 40 sieve, defined as soil binder, with a maximum Plasticity Index of 10 and a maximum Liquid Limit of 35 when tested in accordance with test method TEX-106-E.

Item 292: Asphalt Treatment (Plant-Mixed)

If using the iron ore topsoil as the primary aggregate, meaning 80 percent or more by weight of the total mixture, the requirements for the water susceptibility test are waived.

Design Section: 1
County: Fort Bend
Highway: Fort Bend Grand Parkway Toll Road (SH 99)

Mixtures containing the iron ore topsoil are exempted from test methods TEX-217-F (Part I, separation of deleterious material and Part II, decantation test for coarse aggregate) and TEX-203-F (Sand Equivalent Test).

Assume responsibility for proportioning the materials entering the asphalt mixture, regardless of the type of plant used.

Furnish the mix designs for approval.

Compact the courses to a minimum density of 95 percent of the maximum density as determined using test method TEX-126-E.

Meet the following grading requirements:

Sieve Size	Percent Passing Grade 4 (Bondbreaker)
1-3/4 in.	-
1 in.	-
1/2 in.	100
No. 4	30 - 70
No. 40	15 - 45

Physical requirements are as follows:

Maximum Plasticity Index (PI) = 8
Maximum Liquid Limit (LL) = 35
Maximum Wet Ball Mill = 50 (crushed stone)
Maximum LA Abrasion = 50 (iron ore)

If blending the materials, perform the Wet Ball Mill test for the composite aggregate.

Form the asphalt material from 3.5 to 7 percent of the mixture by weight.

For nominal aggregate size less than 0.5 in., design the mix in accordance with test method TEX 204-F. The minimum stability is 30 percent with a laboratory molded density of 96 percent plus or minus 1.5 percent.

If the layer thickness after placing is 1.25 in. or less, the bondbreaker is exempt from the in-place density control described in Section 292.4.E, "Compaction."

Item 360: Concrete Pavement

Where the pavement curb is left off for a later tie, provide the dowels or the tie bars as indicated on the paving detail sheets. The dowel bars and tie bars are subsidiary to the various bid items.

Repair portions of the concrete pavement surfaces that are damaged while in a plastic state before that area receives permanent pavement markings and opens to traffic. Perform repairs that are structurally equivalent to and cosmetically uniform with the adjacent undamaged areas. Do not repair by grouting onto the surface.

On pavement widening, hand finishing in place of the longitudinal float will be permitted.

Where existing pavement is widened with new pavement, place the new pavement a minimum of 2 ft. wide.

Equip the batching plants to proportion by weight, aggregates and bulk cement, using approved proportioning devices and approved automatic scales.

For mono curb, the curb height transitions will be paid at the contract unit price of the larger curb height in the transition. The 2.5-in. laydown curbs for driveways will be paid at the unit price bid for the Item, "Mono Curb (6 in.)."

High-early strength cement may be used for frontage road and city street intersection construction.

Do not use limestone dust of fracture as fine aggregate.

If the concrete design requires greater than 5.5 sacks of cementitious material per cubic yard, obtain written approval. If placing concrete pavement mixes from April 1 to October 31, inclusive, use a minimum of 25 percent by weight of Class F Fly Ash.

The pay limits for concrete pavements with traffic rails extends to the outside edge or back of the traffic rail.

Perform saw cutting as shown on the plans in accordance with Section 360.4.J, "Sawing Joints." This saw cutting is subsidiary to this bid Item.

Use coarse aggregate to produce concrete with a Coefficient of Thermal Expansion (CTE) of less than $6.0x10^{-6}$ in/in/ °F. Before construction, submit test specimens to FBGPTRA, as directed by the Engineer, for aggregate acceptance. Provide samples or test specimens as directed. FBGPTRA will perform the testing. Test results are final. Testing is required for naturally occurring aggregates.

Items 360, 420, and 421: All Concrete Items

For concrete cylinder split samples, transport the test cylinders as directed by the Engineer. Transporting the test cylinders is subsidiary to the various bid items.

The approach pavement is paid for under the Item, "Concrete Pavement."

Item 400: Excavation and Backfill for Structures

Plugging existing pipe culverts is subsidiary to the various bid items.

If Recycled Cement Treatment (Type D) is included in the plans, the following additional requirements apply:

1. Use only approved sand, crushed concrete, or salvaged base free from deleterious matter, as aggregate for cement-stabilized backfill

2. Provide crushed concrete or salvaged base backfill material in accordance with the Item, "Cement Treatment (Plant-Mixed)(Type D)" (base or crushed concrete), except the recycled Type D material must not contain Reclaimed Asphalt Pavement (RAP).

3. For backfill material below the spring line of pipes, use cement-stabilized sand rather than Recycled Type D backfill material.

4. For the cement-stabilized sand backfill, use a minimum of 7 percent of hydraulic cement based on the dry weight of backfill material. The cement content for the crushed concrete and salvaged base is specified in the Item, "Cement Treatment (Plant-Mixed) (Type D)."

5. Place and compact the stabilized backfill material using a gradation that provides a dense mass without segregating and is impervious to passing of water.

Item 416: Drilled Shaft Foundations

Include the cost for furnishing and installing anchor bolts mounted in the drilled shafts in the unit bid price for the various diameter drilled shafts.

FBGPTRA may test using ultrasonic methods the anchor bolts for overhead sign supports, light standards, and traffic signal poles after they are installed. Replace faulty anchor bolts as directed. Do not weld the anchor bolts.

Item 420: Concrete Structures

Unless otherwise noted, use Class C concrete with an ordinary surface finish for signal, lighting, or sign structure foundations.

Item 421: Hydraulic Cement Concrete

Entrained air is required in all slip formed concrete (bridge rail, concrete traffic barrier, pavement, etc.), but is not required for other structural concrete. Adjust the dosage of air entraining agent for low air content as directed or allowed by the Engineer. If entrained air is provided where not required, only the upper limits of the Special Provision will be enforced.

Item 423: Retaining Walls

Provide a fractured fin finish on retaining walls with color as shown on plans.

Place concrete riprap mow strips for retaining walls as shown on the plans and in accordance with the Item, "Riprap." Use Class B concrete reinforced with No. 4 bars spaced at 18 in. centers each direction and placed 2 in. below the surface. This work is paid for under the Item, "Riprap."

Provide and maintain positive drainage away from the earth wall system, including the leveling pad, for the contract duration.

The following Mechanically Stabilized Earth (MSE) wall systems are approved:

Design Section: 1
County: Fort Bend
Highway: Fort Bend Grand Parkway Toll Road (SH 99)

Reinforced Earth Walls
The Reinforced Earth Company
1331 Airport Freeway, Suite 302
Euless, Texas 76010-4150
(817) 283-5503

Retained Earth Walls
Foster Geotechnical
901 North Highway 77
Hillsboro, Texas 76645
(254) 580-9100

Reinforced Soil Embankment Walls
Texas Welded Wire, Inc.
645 West Hurst Boulevard
Hurst, Texas 76053
(817) 282-4560

Tricon Retained Soil Walls
Tricon Precast, Ltd.
15055 Henry Road
Houston, Texas 77060
(281) 931-9832

Strengthened Earth Walls
Hanson Concrete Products
3500 Maple Avenue
Dallas, Texas 75219
(214) 525-5877

Strengthened Soil Walls
Shaw Technologies, Inc.
P.O. Box 271448
Flower Mound, Texas 75027
(817) 490-1924

VP Wall System
Valley Prestress Products, Inc.
P.O. Box 1367
Mission, Texas 78573
(956) 584-5701

Tensar Retaining Wall System
Tensar Earth Technologies, Inc.
5883 Glenridge Drive, Suite 200
Atlanta, Georgia 30328
(888) 828-5126

Stabilized Earth Wall
T&B Structural Systems, Inc.
6800 Manhattan Blvd.
Fort Worth, Texas 76120
(888) 280-9858 (Toll Free)

Structural Embankment Systems
Robertson Engineering, Inc.
327 North Denton Street, Suite 100
Weatherford, Texas 76088
(817) 596-7500

Item 427: Surface Finishes for Concrete

Provide a Surface Area I finish for structures. Use concrete paint for the surface finish.

Item 428: Concrete Surface Treatment

Provide a Class I surface treatment to the following elements: The upper surfaces of the bridge slab (including direct traffic culverts), bridge sidewalks and medians, and the inside face of curbs.

Item 450: Railing

Add a 3/4-in. longitudinal chamfer to the SSTR railing. Provide a continuous chamfer typically located 6 in. above the final grade. The cost of this is subsidiary to the Item, "Railing."

Design Section: 1
County: Fort Bend
Highway: Fort Bend Grand Parkway Toll Road (SH 99)

Item 464: Reinforced Concrete Pipe

Concrete collars are subsidiary to the various bid items except for those specified on the plans for stage construction, which are paid for under the Item, "Concrete Structures" as "Cl C Conc (Collar)."

Rubber gaskets are required for concrete pipe joints except for connections of safety end treatments, driveway culverts, and joints between the existing pipes and extensions.

If performing the work under the Item, "Jacking, Boring, or Tunneling Pipe or Box," use tongue and groove pipe instead of rubber gaskets at these locations.

Provide leave-outs or holes in the proposed storm drain structures and pipes for drainage during interim construction. This work is subsidiary to the various bid items.

The flowline elevations of side road structures are based on the proposed ditches. Field-verify these elevations and adjust them as necessary to meet the field conditions. Before placing these structures, prepare and submit for approval, the data (revised elevation, alignment, length, etc.) for the adjusted structures.

If groundwater is encountered while installing the storm drain system, install a suitable dewatering system to facilitate construction of the storm drains. The costs for materials and labor required to install and maintain this system are subsidiary to the Item, "Reinforced Concrete Pipe."

Item 465: Manholes and Inlets

If required on the plans, build manholes and inlets to stage 1 construction, cover with temporary pavement, and complete in a later phase of construction. This temporary covering and pavement are subsidiary to the various bid items.

If building manholes or inlets in graded areas, first construct them to an elevation at least 4 in. above the top of the highest entering pipe and cover with a wooden cover. Complete the construction of such manholes or inlets to the finished elevation when completing the grading work for such manholes or inlets. Adjust the final elevation, if required, since this elevation is approximate.

Construct manholes and inlets in paved areas to an elevation so their temporary wooden covers are flush with the surface of the base material.

Do not leave excavations or trenches open over night.

Items 496: Removing Structures

Do not permit debris resulting from the structure removal or construction activities to enter a natural or manmade waterway such as drainage channels, rivers, streams, bays, etc. Remove debris which falls into such waterways. This work is subsidiary to the Item, "Removing Structures."

Design Section: 1
County: Fort Bend
Highway: Fort Bend Grand Parkway Toll Road (SH 99)

Item 502: Barricades, Signs, and Traffic Handling

Use a traffic control plan for handling traffic through the various phases of construction. Follow the phasing sequence unless otherwise agreed upon by the Area Engineer and the Project Manager. Ensure this plan conforms to the latest "Texas Manual on Uniform Traffic Control Devices" and the latest Barricade and Construction (BC) Standard Sheets.

Submit changes to the traffic control plan to the Area Engineer. Provide a layout showing the construction phasing, signs, striping, and signalizations for changes to the original traffic control plan.

Furnish and maintain the barricades and warning signs, including the necessary temporary and portable traffic control devices, during the various phases of construction. Place and construct these barricades and warning signs in accordance with the latest "Texas Manual on Uniform Traffic Control Devices" for typical construction layouts.

Cover work zone signs when work related to the signs is not in progress, or when any hazard related to the signs no longer exists.

Keep the delineation devices, signs, and pavement markings clean. This work is subsidiary to the Item, "Barricades, Signs, and Traffic Handling."

If a section is not complete before the end of the workday, pull back the base material to the existing pavement edge on a 6H: 1V slope. Edge drop-offs during the hours of darkness are not permitted.

Before detouring traffic onto the mainlane shoulders, remove dirt, debris, vegetation, and other deleterious material from the surface of the shoulders. Appropriately sign the detour in an approved manner. This work is subsidiary to the various bid items.

Cover or remove the permanent signs and construction signs that are incorrect or that do not apply to the current situation for a particular phase.

Replace the overhead signs, informational signs, and exit signs to be removed, with temporary signs providing the correct information to the traveling public. Size the replacement signs and include them in the traffic control plan.

Do not mount signs on drums or barricades, except those listed in the latest Barricades and Construction standard sheets.

Use traffic cones for daytime work only. Replace the cones with plastic drums during nighttime hours.

Place positive barriers to protect drop-off conditions greater than 2 ft. within the clear zone that remain overnight.

Use shadow vehicles with Truck Mounted Attenuators (TMA) for lane closures during construction. Do not reduce the existing number of lanes open to traffic except as shown on the following time schedule:

Design Section: 1
County: Fort Bend
Highway: Fort Bend Grand Parkway Toll Road (SH 99)

One Lane Closure

Day	Closure Hours
Weekdays	7:00PM to 5:00 AM 9:00 AM to 4:30 PM
Weekends	All Day

The above times are approved for the traffic control conditions listed. The Engineer may approve other closure times if traffic counts warrant. The Area Engineer may reduce the above times for special events.

Provide portable changeable message signs (PCMS) as shown on the Traffic Control Plan and the Special Specification Item, "Portable Changeable Message Signs." PCMS shall be placed a minimum of one (1) week prior to any road closures. PCMS Messages to be approved by the Engineer.

Close West Riverpark Drive for overhead work during off-peak hours only.

Item 504: Field Office and Laboratory

A field office is not required for this project.

If an asphalt mix plant is located at the project site, provide a Type D structure with the dimensions of a Type C structure, at the project site to perform the asphalt mix quality control tests.

If a commercial source is used for the asphalt mix, provide a Type D structure with the dimensions of a Type C structure, at the commercial source site to perform the asphalt mix quality control tests.

Equip each lab with a fire extinguisher and first aid kit. Also equip the labs with an eye wash station. Provide equipment that meets the minimum OSHA requirements. At a minimum, furnish 20 lb. fire extinguishers that are rated for Type A, B, and C fires.

Item 506: Temporary Erosion, Sedimentation and Environmental Control

A Storm Water Pollution Prevention Plan (SW3P) is required. Since the disturbed area is more than 5 acres, a "Notice of Intent" (NOI) is also required.

Use appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area. Remove and dispose of materials in compliance with State and Federal laws.

Before starting construction, review with the Engineer the SW3P used for temporary erosion control as outlined on the plans. Before construction, place the temporary erosion and sedimentation control features as shown on the SW3P.

Schedule the seeding or sodding work as soon as possible. The project schedule provides for a vegetation management plan.

After completing earthwork operations, restore and reseed the disturbed areas in accordance with TxDOT's specifications for permanent or temporary erosion control.

Implement temporary and permanent erosion control measures to comply with the National Pollution Discharge Elimination System (NPDES) general permit under the Clean Water Act.

Before starting grading operations and during the project duration, place the temporary or permanent erosion control measures to prevent sediment from leaving the right of way.

Item 512: Portable Concrete Traffic Barrier

Use only the J-J Hook type connection between barriers.

Item 514: Permanent Concrete Traffic Barrier

Add a 3/4-in. longitudinal chamfer to the Single Slope Concrete Barrier (SSCB) railing. Provide a continuous chamfer typically located 6 in. above the final grade. The cost of this is subsidiary to the Item, "Permanent Concrete Traffic Barrier."

Item 529: Concrete Curb, Gutter, and Combined Curb and Gutter

An air-entraining admixture is not required.

For concrete curbs, use Grade 7 aggregate conforming to Section 421.2 of the Item, "Hydraulic Cement Concrete."

Item 540: Metal Beam Guard Fence

Painting the timber posts is not required.

Use timber posts for galvanized steel metal beam guard fence, except for anchorage at turned down ends. Turn down free ends of galvanized steel metal beam guard fence unless otherwise shown on the plans.

Furnish and install wood blocks between the rail elements and the timber posts as detailed on the plans. These block-outs are subsidiary to this bid Item.

The quantity of the metal beam guard fence is subject to change.

Provide a mow strip as shown on the plans, at metal beam guard fence locations, including any guardrail end treatments. This work is subsidiary to this bid Item.

Item 542: Removing Metal Beam Guard Fence

Remove and assume ownership of unsalvageable metal beam guard fence rail elements and posts. Transport and store any functional, salvageable rail elements, including steel posts, which are not reused in this project.

Replace removed wood posts which are unusable because of damage by the Contractor, at no expense to the FBGPTRA.

Design Section: 1
County: Fort Bend
Highway: Fort Bend Grand Parkway Toll Road (SH 99)

Item 556: Pipe Underdrains

Do not use crushed blast furnace slag.

Lay the underdrain pipe on a slope to insure proper drainage.

Tie the under drain pipe into the inlets as shown on the plans.

If filter material is processed gravel, use the following material requirements:

Square Sieve	Percent Retained
1/2 in.	0
No. 4	10 - 35
No. 40	55 - 85

If filter material is approved concrete sand, use the following material requirements:

Square Sieve	Percent Retained
5/8 in.	0
No. 4	0 - 40
No. 40	40 - 90
No. 100	90 - 100

Item 585: Ride Quality for Pavement Surfaces

To eliminate the need for corrective action due to excessive deviations in the final surface layers, exercise caution to ensure satisfactory profile results in the intermediate paving layers (mixture).

Milling will not be allowed as a corrective action for excessive deviations I the final surface layer of hot-mix asphalt.

For Continuously Reinforced Concrete Pavement (CRCP) mainlanes, use Surface Test Type B and Pay Adjustment Schedule 2. For ramps use Surface Test Type A.

Item 662: Work Zone Pavement Markings

At the end of each day's work, mark roadways that remain open to traffic during construction operations with standard pavement markings, in accordance with the latest "Texas Manual on Uniform Traffic Control Devices."

Using raised markers for removable work zone pavement markings on final concrete surfaces is optional.

For transition lane lines and detour lane lines, use raised pavement markers as shown for solid lines on the latest Barricade and Construction standard sheet for "Work Zone Pavement Marking Details."

If using paint and bead markings as described above, purchase the traffic paint from the open market.

Design Section: 1
County: Fort Bend
Highway: Fort Bend Grand Parkway Toll Road (SH 99)

Item 662: Work Zone Pavement Markings
Item 666: Reflectorized Pavement Markings
Item 6986: Longitudinal Prefabricated Pavement Markings (PPM) with Warranty

Use Type III glass beads for thermoplastic and multipolymer pavement markings.

Use a 0.100 in. (100 mil) thickness for thermoplastic pavement markings, measured to the top of the thermoplastic, not including the exposed glass beads.

For roadways with asphalt surfaces to be striped with work zone or permanent thermoplastic markings, the Contractor has the option to apply paint and beads markings for a maximum 30-day period until placing the thermoplastic markings, or until starting the succeeding phase of work on the striped area. Maintain the paint and beads markings, at no expense to the FBGPTRA, until placing the thermoplastic markings or starting the succeeding phase of work on the striped area. The work zone markings, whether paint and beads or thermoplastic, are paid under the Item, "Work Zone Pavement Markings" and the markings are paid for only once for the given phase of construction.

If using paint and bead markings as described above, purchase the traffic paint from the open market.

If the Type II markings become dirty and require cleaning by washing, brushing, compressed air, or other approved methods before applying the Type I thermoplastic markings, this additional cleaning is subsidiary to the Item, "Reflectorized Pavement Markings."

Establish the alignment and layout for work zone striping and permanent striping.

Stripe roadways before opening them to traffic.

Place pavement markings under these items in accordance with details shown on the plans, the latest "Texas Manual on Uniform Traffic Control Devices," or as directed.

Item 677: Eliminating Existing Pavement Markings and Markers

Remove existing pavement markings on concrete or asphalt surfaces by flail milling or as directed.

Design Section: 1
County: Fort Bend
Highway: Fort Bend Grand Parkway Toll Road (SH 99)

Basis of Estimate

Item	Description	Limit and Rate	Unit
260	Lime Treatment (Road-Mixed) For materials used as subgrade ** • Lime(HYD, COM, or QK)(SLRY) or QK(DRY)	 6 % by weight based on 100 Lb. / Cu. Ft. subgrade	TON
292	Asphalt Treatment (Plant-Mixed) • Asphalt • Aggregate	110 Lb. / Sq. Yd.-In. 5 % by weight 95 % by weight	TON
3224	Dense-Graded Hot Mix Asphalt (QC/QA) • Asphalt • Aggregate	110 Lb. / Sq. Yd.-In. 6 % by weight 94 % by weight	TON

* For Contractor's information only (non-pay item).
** If used in existing roadway base, rate will be determined on a case by case basis.

GOVERNING SPECIFICATIONS AND SPECIAL PROVISIONS

All Specifications and Special Provisions applicable to this Project are identified as follows:

STANDARD SPECIFICATIONS

Adopted by the Texas Department of Transportation June 1, 2004. Standard Specifications are incorporated into the Contract by reference and a copy may be purchased from TxDOT.

Items 1- 9	General Requirements and Covenants
Item 100	Preparing Right of Way
Item 104	Removing Concrete
Item 105	Removing Stabilized Base and Asphalt Pavement
Item 110	Excavation (132)
Item 132	Embankment (100)(160)(204)(210)(216)(400)
Item 161	Compost (160)
Item 162	Sodding For Erosion Control (166)(168)
Item 164	Seeding for Erosion Control (162)(166)(168)
Item 166	Fertilizer
Item 168	Vegetative Watering
Item 260	Lime Treatment (Road-Mixed) (105)(132)(204)(210)(216)(300)(310)(520)
Item 276	Cement Treatment (Plant-Mixed) (204)(210)(216)(247)(300)(310)(520)
Item 292	Asphalt Treatment (Plant Mixed) (300)(301)(320)(520)(585)
Item 360	Concrete Pavement (300)(420)(421)(438)(440)(529)(585)
Item 368	Concrete Pavement Terminals (260)(276)(292)(300)(360)(400)(420)(421)(440)(442)
Item 400	Excavation and Backfill for Structures(132)(401)(420)(421)
Item 402	Trench Excavation Protection
Item 416	Drilled Shaft Foundations (420)(421)(440)(448)
Item 420	Concrete Structures (400)(421)(426)(427)(428)(438)(440)(441)(448)(454)
Item 422	Reinforced Concrete Slab (420)(421)(424)(426)(440)
Item 423	Retaining Walls (110)(132)(400)(420)(421)(424)(440)(445)(458)(556)
Item 425	Precast Prestressed Concrete Structural Members (420)(421)(424)(426)(427)(434)(440)(442)
Item 428	Concrete Surface Treatment (427)
Item 432	Riprap (247)(420)(421)(440)
Item 434	Elastomeric Bridge Bearings
Item 442	Metal For Structures (441)(447)(448)
Item 450	Railing (420)(421)(424)(440)(540)
Item 454	Bridge Expansion Joints (442)
Item 464	Reinforced Concrete Pipe (400)
Item 465	Manholes and Inlets (400)(420)(421)(440)(471)
Item 496	Removing Structures (430)
Item 500	Mobilization
Item 502	Barricades, Signs, and Traffic Handling
Item 504	Field Office and Laboratory
Item 506	Temporary Erosion, Sedimentation, and Environmental Controls (556)
Item 508	Constructing Detours
Item 512	Portable Concrete Traffic Barrier (420)(421)(424)(440)(442)

Item 514	Permanent Concrete Traffic Barrier (400)(416)(420)(421)(424)(440)(442)(448)
Item 529	Concrete Curb, Gutter and Combined Curb and Gutter (360)(420)(421)(440)
Item 540	Metal Beam Guard Fence (421)(445)(529)(542)(544)
Item 544	Guardrail End Treatments
Item 556	Pipe Underdrains (402)(432)
Item 662	Work Zone Pavement Markings (666)(668)(672)(677)
Item 666	Reflectorized Pavement Markings (662), (677), (678)
Item 677	Eliminating Existing Pavement Markings and Markers (300)(302)

SPECIAL PROVISIONS

Special Provisions will govern and take precedence over the Specifications enumerated hereon wherever in conflict therewith. All Special Provisions are included herein.

General - FBGPTRA
Special Provision to Item 4 – Scope of Work (FBGPTRA)
Special Provision to Item 005-004
Special Provision to Item 006-030
Special Provision to Item 7 – Legal Relations and Responsibilities (FBGPTRA)
Special Provision to Item 8 – Prosecution and Progress (FBGPTRA)
Special Provision to Item 9 – Measurement and Payment (FBGPTRA)
Special Provision to Item 100-002
Special Provision to Item 132-005
Special Provision to Item 161-006
Special Provision to Item 164-004
Special Provision to Item 166-001
Special Provision to Item 247-040
Special Provision to Item 260-002
Special Provision to Item 300-032
Special Provision to Item 360-007
Special Provision to Item 368-001
Special Provision to Item 420-002
Special Provision to Item 421-035
Special Provision to Item 424-002
Special Provision to Item 425-001
Special Provision to Item 428-001
Special Provision to Item 434-003
Special Provision to Item 440-005
Special Provision to Item 441-006
Special Provision to Item 442-016
Special Provision to Item 447-002
Special Provision to Item 448-002
Special Provision to Item 450-001
Special Provision to Item 464-003
Special Provision to Item 465-001
Special Provision to Item 500-005
Special Provision to Item 502-033
Special Provision to Item 506-013

Special Provision to Item 512-002
Special Provision to Item 540-023
Special Provision to Item 672-034

SPECIAL SPECIFICATIONS

All Special Specifications are included herein.

Item 4521	Trench Drains
Item 5049	Biodegradable Erosion Control Logs
Item 6834	Portable Changeable Message Sign
Item 6986	Longitudinal Prefabricated Pavment Markings (PPM) with Warranty (677)(8094)
Item 8094	Mobile Retroreflectivity Data Collection for Pavement Markings
Item 9200	Megapixel Robotic WebCamera

General: The above-listed specification items are those under which payment is to be made. These, together with such other pertinent items, if any, as may be referred to in the above-listed specification items, and including the Special Provisions listed above, constitute the complete specifications for this contract.

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY
SPECIAL PROVISION – GENERAL

For this project, the following sections of the Texas Standard Specifications ("TSS") are hereby modified with respect to the clauses cited below and no other clauses or requirements of the TSS are waived or changed hereby.

Global – All references to "State" or "Department" are replaced with "Authority."

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY
SPECIAL PROVISION TO ITEM 4

For this project, the following sections of the Texas Standard Specifications ("TSS") are hereby modified with respect to the clauses cited below and no other clauses or requirements of the TSS are waived or changed hereby.

Article 4.2. Changes in the Work The following second paragraph is inserted:

For purposes of extra work, the following individuals have the authority shown to approve extra work. The Authority has no obligation to pay for extra work unless the Contractor secures written authorization executed by the appropriate person prior to commencement of the work. Extra work may not be split or severed to avoid the requirements of this section.

Mike Stone (Operations Manager) or Bill Jameson (General Manager):	$ 50,000 or less
Board of Directors:	greater than $ 50,000

Article 4.4. Requests and Claims for Additional Compensation The Article is deleted and replaced with the following:

In the event the Contractor requests additional compensation for work not clearly covered in the contract, the contractor shall notify the Authority in writing of his intention to make a claim for additional compensation before beginning such work, within 21 days of the day Contractor knows or should have known of such claim. The Contractor must provide a written estimate of the amount of the claim or assessment of damages within 30 days of timely notice of the claim. If such notice is not given, then the Contractor waives his right to file a claim for such work. Notice of claim by the Contractor knows or should have known of such claim. Notice of such claim by the Contractor and the documentation of the cost of the claim work by Contractor shall not be construed as proof or substantiation of the validity of such claim. All such claims must be approved in writing by the Board of Directors of the Authority.

No claims for delay damages may be made nor will the Authority ever be obligated to pay delay damages. Contractor's sole remedy for damages caused by delay is an extension of the contract time. This limitation applies to delay caused by the Authority and delay caused by third parties only. Contractor will not be entitled to extension of time for delays resulting in whole or part from the Contractors actions or omissions.

Item 4 is supplemented by the addition of the following Article

Article 4.7. Change Orders. The unit prices Bid shall govern for additions to, or deductions from the Contract. If materials or labor are required for which no unit price is bid, the price shall be that reached by agreement by the Authority and the Contractor after definite evidence is furnished by the Contractor to the Authority that the price is the current prevailing price in the area. If the Authority and the Contractor cannot agree, the Engineer shall determine the price for changes.

No compensation shall be allowed under a Change Order for any person not actively engaged in the performance of the specified work.

No extra work shall be paid for without an approved Change Order prior to the start of the extra work.

If additional time is required by reason of the Change, the number of days for completion provided for in this Contract shall be adjusted at the time the Change Order is entered into, and if no adjustment is made on the Change Order form, any additional time is to be considered waived by the Contractor.

Any extension of time given shall not release the Contractor or the Surety from their Performance and Payment Bonds or from all obligations hereunder, which shall remain in full force until the discharge of the Contract.

All time limits stated in the Contract Documents are the essence of the agreement. The provisions of this Article 4.7 shall not exclude recovery of damage (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs for delay by either party.)

SPECIAL PROVISION

005---004

Control of the Work

For this project, Item 005, "Control of the Work," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 5.2 Plans and Working Drawings, is supplemented with the following:

Submit shop drawings electronically for the fabrication of structural items as documented in the "Guide to Electronic Shop Drawing Submittal" available on the internet at ftp://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/bridge/e_submit_guide.pdf and as directed by the Engineer for other items required by the standard specifications. References to 11 x 17 sheets in individual specifications for structural items imply electronic CAD sheets.

SPECIAL PROVISION

006---030

Control of Materials

For this project, Item, Item 006, "Control of Materials," of the Standard Specifications is amended hereby with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 6.9. Recycled Materials is voided and replaced by the following:

The Department will not allow hazardous wastes, as defined in 30 TAC 335, proposed for recycling. Use nonhazardous recyclable materials (NRMs) only if the Specification for the Item does not disallow or restrict use. Determine if NRMs are regulated under 30 TAC 312, 330, 332, 334, or 335, and comply with all general prohibitions and requirements. Use NRMs in accordance with DMS-11000, "Evaluating and Using Nonhazardous Recyclable Materials Guidelines," and furnish all documentation required by that Specification.

Article 6.10. Hazardous Materials is voided and replaced by the following:

Use materials that are free of hazardous materials as defined in Item 1, "Definition of Terms."

Notify the Engineer immediately when a visual observation or odor indicates that materials in required material sources or on sites owned or controlled by the Department may contain hazardous materials. Except in the case of Section 6.10.A.1.a, "Cleaning and Painting Steel" below, the Department is responsible for testing and removing or disposing of hazardous materials not introduced by the Contractor on sites owned or controlled by the Department as indicated below. The plans will indicate locations where paint on steel is suspected to contain hazardous materials and where regulated asbestos containing materials have been found. The Engineer may suspend work wholly or in part during the testing, removal, or disposition of hazardous materials on sites owned or controlled by the Department, except in the case of Section 6.10.A.1.a.

When a visual observation or odor indicates that materials delivered to the work locations by the Contractor may contain hazardous materials, have an approved commercial laboratory test the materials for contamination. Remove, remediate, and dispose of any of these materials found to be contaminated. Testing, removal, and disposition of hazardous materials introduced onto the work locations by the Contractor will be at the Contractor's expense. Working day charges will not be suspended and extensions of working days will not be granted for activities related to handling hazardous material delivered by the Contractor.

A. **Painted Steel Requirements.** As shown on the plans, existing paint on steel may contain hazardous materials. Perform work in accordance with the following:

   1. **Removing Paint from Steel.**

a. **Cleaning and Painting Steel.** For contracts that are primarily for painting existing steel, perform the work in accordance with Item 446, "Cleaning and Painting Steel."

b. **Other Contracts.** For all other projects when an existing paint must be removed to perform other work, perform paint removal work in accordance with Item 446, "Cleaning and Painting Steel" unless the paint is shown or determined to contain hazardous materials. If the paint is shown or determined to contain hazardous materials, the Department will provide for a separate contractor to remove paint prior to or during the Contract to allow dismantling of the steel for the Contractor's salvaging, reuse, or recycling or where paint must be removed to perform other work. For steel that is dismantled by unbolting, no paint stripping will be required. Use care to not damage existing paint. When dismantling is performed using flame or saw-cutting methods to remove steel elements coated with paint containing hazardous materials, the plans will show stripping locations. Coordinate with the separate contractor for stripping work to be performed during the Contract.

2. **Removal and Disposal of Painted Steel.** For Contracts where painted steel is to be removed and disposed of by the Contractor, painted steel may be reused or disposed of at a steel recycling or smelting facility. If the paint is shown or determined to contain hazardous materials, maintain and make available to the Engineer invoices and other records showing the reuse owner or for recycling, records obtained from the recycling or smelting facility showing the received weight of the steel and the facility name. Painted steel to be retained by the Department will be shown on the plans.

B. **Asbestos Requirements.** The plans will indicate locations or elements where asbestos containing materials (ACM) have been found. At these locations or at locations where previously unknown ACM has been found, the Department will arrange for abatement by a separate contractor during the Contract. For work at these locations, notify the Engineer of proposed dates of demolition or removal of structural elements with ACM at least 60 days before work is to begin to allow the Department sufficient time to abate the asbestos.

When the work by a separate contractor for removal of paint or asbestos abatement is to be performed during the Contract, provide traffic control as shown on the plans and coordinate and cooperate with the separate contractor. Continue other work detailed in the plans not directly involved in the paint removal or asbestos abatement work. Coordinate with the Department the timing of the separate contractor's work in advance in order to allow the Department to schedule work with the separate contractor. Work for the traffic control and other work will not be paid for directly but will be subsidiary to pertinent Items.

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY
SPECIAL PROVISION TO ITEM 7
LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC

For the Work, Item 7 of the Texas Standard Specifications is hereby modified with respect to the clauses sited below and no other clauses or requirements of this item are waived or changed hereby.

Article 7.1, Laws to be Observed, is supplemented by the addition of the following:

It is the intent of the Authority that all construction work shall be accomplished with minimum disturbance and inconvenience to the public.

The operation of heavy construction equipment over adjacent streets shall be avoided to the greatest extent practicable. If such operation is unavoidable, care shall be taken to prevent the creation of any nuisance, including, but not limited to, the tracking of dirt or the blowing of dust from uncovered loads.

If sites, buildings, and locations of historical, archaeological, educational, or scientific interests are discovered after construction operations are begun, operation in that particular area shall cease immediately and the sites, buildings, or location shall be investigated or evaluated by the Fort Bend Grand Parkway Toll Road Authority (FBGPTRA). An extension of time will be granted, if necessary, for delays caused by these investigations and evaluations. It is specifically understood, however, that if the Contractor is delayed by virtue of an investigation and evaluation that this delay will not be considered as basis for claim for damages or additional compensation of any kind by the Contractor, and that an extension of time will be sole remedy of Contractor for such delay.

Article 7.4, Insurance and Bonds, is revised to read in its entirety as follows;

7.4 Insurance. The Contractor shall not commence work under any contract until he has furnished the Authority with satisfactory proof of insurance of such character and in such amounts as set forth below.

The Contractor shall purchase and maintain in full force and effect until completion of the Work and the expiration of the applicable Texas statute of limitations such insurance as will cover the obligation and liabilities of himself, his agents, employees, and subcontractors which may arise from operation under this Contract. All such insurance must be written with companies satisfactory to the Authority.

The minimum insurance required as set forth below shall also apply to all subcontractors, and it shall be the responsibility of the Contractor to ensure their compliance therewith.

The Contractor shall secure and maintain until the expiration of the applicable Texas statute of limitations, in his own name, the following minimum amount of insurance in the companies

satisfactory to the Authority and to provide the Authority with Certificates of Insurance, with original signatures:

The Contractor shall provide and maintain liability insurance which protects him from claims under Workers' Compensation Acts and from any other claims for damages of personal injury, including death. Protection will cover any claim resulting from performance of the work, whether by himself, any Subcontractor, or anyone directly or indirectly employed by either. Insurance must be maintained with a company or companies to whom the FBGPTRA has no reasonable objection.

The Contractor shall provide and maintain statutory Workers' Compensation and Employer's Liability Insurance with limits of not less than five hundred thousand dollars ($500,000.00) for accidental injury to one or more person in any one accident or occurrence and where the compensation law does not provide for Occupational Disease, then the Employer's Liability Occupational Disease Insurance shall be provided with limits of not less than five hundred thousand dollars ($500,000.00) per accident or occurrence. The policy shall include, when appropriate:

a. All States endorsement, and

b. United States Longshoremen and Harbor Workers' Compensation Act.

Contractor shall provide Comprehensive General Liability Insurance to the FBGPTRA and its employees as additional insureds. This general liability insurance will include contractual liability insurance required to meet the Contractor's obligations under the provision for indemnification.

Contractor shall provide and maintain Comprehensive General Public Liability policy covering premises and operations, contractual liability, personal injury liability, products and completed operations, and if an exposure exists, elevator liability and watercraft liability with limits of not less than two million dollars ($2,000,000.00) per occurrence, including, where the exposure exists, coverage for blasting and explosions, blowout and crating and underground damage.

Comprehensive Automobile Liability Insurance will be provided by the Contractor. Such Comprehensive Automobile Liability Insurance shall include hired cars and non-owner coverages with limits of not less than one million dollars ($1,000,000.00) per person and not less than two million dollars ($2,000,000.00) per occurrence and Automobile Property Damage with limits of not less than one million dollars ($1,000,000.00) per occurrence.

Owner's and Contractor's Protective Policy, naming the FBGPTRA as the insured, with combined single limits of $2,000,000.00

The designation of the Contractor in this policy shall be the name of the Contractor and his/their Subcontractors.

The Comprehensive General Liability Insurance and Owner's Protection or Protective Liability Insurance Policies shall also provide coverage for legal liability arising from operations under

this Contract for property damage due to the collapse of or structural injury to any building or structure, and to any underground facilities and utilities.

Contractor shall provide Builder's Risk Insurance (Building Construction Only) to cover all storm, fire, explosion, and similar damage. The insurance will incorporate Texas Form No. 21 as currently approved by the Texas State Board of Insurance. This type will provide constant insurance at one hundred (100) percent of all insurable values as created during construction. This insurance shall include as named insureds the Fort Bend Grand Parkway Toll Road Authority, its directors, employees, and all subcontractors as their interests may appear and shall insure against loss from the perils of the fire and those risks included under "Extended Coverage". It shall include "All Risk" insurance for physical loss or damage including, without duplication of coverage, at least theft, vandalism, malicious mischief and transit damage. The Contractor shall increase limits of coverage, if necessary, to reflect estimated replacement costs. The Contractor shall be responsible for any co-insurance penalties or deductibles.

Insurance shall not be canceled or lapsed and account of partial occupancy prior to substantial completion. The insurance carrier shall include in each of the insurance policies required herein, the following statement:

> "The policy will not be canceled or materially changed during the period of coverage without at least thirty (30) days prior written notice to the Fort Bend Grand Parkway Toll Road Authority, P.O. Box 546, Richmond, Texas 77406; Attention: Mike Stone".

The Fort Bend Grand Parkway Toll Road Authority, its directors, and employees shall be added as additional named insureds to all coverages required above. All policies written on behalf of the Contractor shall contain a "Waiver of Subrogation Endorsement" and the Contractor shall "Hold Harmless" the FBGPTRA.

Irrespective of the requirements as to insurance to be carried by the Contractor as provided herein, insolvency, bankruptcy, or failure of any insurance company to pay all claims accruing, shall not relieve the Contractor of any obligations herein.

Contractor and his Subcontractors and suppliers shall waive all rights against each other and the FBGPTRA, its directors, and its employees for damages caused by perils covered by insurance. This waiver shall not be effective to the extent of any loss not covered by insurance.

Contractor shall save harmless the FBGPTRA and all its representatives from all damages, expenses, suits, actions, and claims of every kind and character whatsoever which the FBGPTRA may suffer directly or indirectly due to any bankruptcy, State or Federal tax levies or liens, other legal proceedings or other matters, similar or dissimilar, affecting the Contractor in which the FBGPTRA may become in any way involved, whether related to the Contractor and/or the Contractor's performance or non-performance under the Contract. The Contractor shall not be released from said liability until the work shall have been completed and accepted by the FBGPTRA. Any unpaid monies due the said Contactor or surety on under and by virtue of his Contract may be retained by the FBGPTRA and held until all such claims have been finally resolved, either by Court action or settlement and suitable evidence to that effect furnished to the FBGPTRA.

The Contractors construction activities may require his employees, agents, subcontractors, equipment, and material deliveries to cross railroad properties and tracks.

The Contractor shall issue to owners of such railroad properties written description of planned activities and timing, shall obtain owner's permission, and shall comply with owner's insurance and other requirements. The Contractor shall conduct his operations on railroad properties in such a manner as not to interfere with, hinder or obstruct the railroad companies in any manner whatsoever in the use or operation of its/their trains or other property. Such operations on railroad properties may require the Contractor to execute a "right of entry agreement" with the particular railroad company or companies involved, and to this end the Contractor should satisfy himself as to the requirements with the railroad company and be prepared to execute such right of entry agreements with railroad companies if said companies so require. The requirements specified herein likewise relate to the Contractors' use of private and/or construction access roads crossing said railroad companies' properties.

Whenever work under the Contract involves construction activities that require the Contractor's employees, agents, subcontractors, equipment and material to cross or temporarily occupy railroad properties and tracks, the Contractor shall secure and maintain in his own name types of insurance to minimum amounts as required by owners of such railroad properties and tracks in companies satisfactory to the FBGPTRA and to the railroad companies.

Neither the approval by the FBGPTRA of any insurance supplied by a Contractor nor the failure to disapprove the insurance shall relieve the Contractor from full responsibility for liability, damage, and accidents as set forth herein.

No special payments shall be made for any insurance that the Contractor may be required to carry, but all costs thereof shall be included in the price bid for the various items included in the Proposal. Bidders shall determine all the kinds and the cost of insurance that may be required before submitting their bids and shall submit acceptable evidence of the same to the Authority pursuant to the provisions of Article 3.4, Execution of Contract, Bonds, and Certificates of Insurance.

Article 7.8. Hauling and Loads on Roadways and Structures is supplemented by the following:

D. Stockpiling of Materials. Do not store or stockpile material on bridge structures without written permission. If required, submit a structural analysis and supporting documentation by a licensed professional engineer for review by the Engineer. Permission may be granted if the Engineer finds that no damage or overstresses in excess of those normally allowed for occasional overweight loads will result to structures that will remain in use after Contract completion. Provide temporary matting or other protective measures as directed.

Article 7.12, Responsibility of Damage Claims. The article is revised as follows:

To the fullest extent permitted by laws and regulations, the Contractor agrees to indemnify and save harmless the FBGPTRA, the Project Engineer, the Section Engineer(s), Construction Phase Engineer, and their contractors, subcontractors, agents, and employees from all suits, action or

claims and from all liability and damages for any and all injuries or damages sustained by any person or property in consequence of any neglect in the performance of the contract by the Contractor and from any claims or amounts arising or recovered under the "Workers' Compensation Laws", Article 6252-19, V.T.C.S. (Texas Tort Claims Act), or any other laws. The Contractor shall further so indemnify and be responsible for all damages or injury to property of any character occurring during the prosecution of work resulting from any act, omission, neglect or misconduct on his part in manner or method of executing the work; or from failure to properly execute the work; or form defective work or materials. The Contractor shall not be released from these responsibilities until all claims have been settled and suitable evidence to that effect furnished to the FBGPTRA. The Contractor shall not be obligated to indemnify or save harmless the Project Engineer, the Section Engineer(s), Construction Phase Engineer, or their contractors, subcontractors, agents, and employees for damages caused by or resulting solely from defects in plans, designs, or specifications prepared by them or solely form the negligence of them in rendition or conduct of professional duties called for or arising out of the Contract Documents.

The Contractor's attention is directed to the fact that pipelines and other underground installations as may be shown on the plans have been taken from the best available information. There may be other pipelines or installations. The Contractor shall save harmless the FBGPTRA, Project Engineer, Section Engineer(s), Construction Phase Engineer, contractors, and subcontractors from any and all suits or claims resulting form damage by his operations to any pipeline or underground installation.

Where any gas, water, or other utility installations will be affected by the work to be carried on by the Contractor, he shall see that amply notice is given to the owners, operators, or persons in charge to the end that the prosecution of the work under this contract shall not be delayed.

If the Contractor asserts any claim or brings any type of legal action (including an original action, third-party action, or cross-claim) against any director or individual employee or agent of the FBGPTRA for any cause of action or claim for alleged negligence arising from the Contract, the Contractor will be ineligible to bid on any proposed Contract with the FBGPTRA during the pendency of the claim or legal action.

Article 7.14. Contractor's Responsibility for Work, Section B. Appurtenances is voided and replaced by the following:

B. Appurtenances.

1. Unreimbursed Repair. Except for destruction (not reusable) due to hurricanes, reimbursement will not be made for repair of damage to the following temporary appurtenances, regardless of cause:
   - signs,
   - barricades,
   - changeable message signs, and
   - other work zone traffic control devices.

Crash cushion attenuators and guardrail end treatments are the exception to the above listing and are to be reimbursed in accordance with Section 7.14.B.2, "Reimbursed Repair."

For the devices listed in this section, reimbursement may be made for damage due to hurricanes. Where the contractor retains replaced appurtenances after completion of the project, the Department will limit the reimbursement to the cost that is above the salvage value at the end of the project.

2. Reimbursed Repair. Reimbursement will be made for repair of damage due to the causes listed in Section 7.14.A, "Reimbursable Repair," to appurtenances (including temporary and permanent crash cushion attenuators and guardrail end treatments).

Article 7.14, Contractor's Responsibility for Work, is supplemented by the addition of the following paragraph:

G. Contractor shall be responsible for any damage and/or delay to work performed by any other independent Contractor of the FBGPTRA which is proximately caused by the negligence or willful act of the Contractor, his agents, employees, subcontractors and invitees.

Article 7.15. Electrical Requirements, Section A. Definitions, Section 3. Certified Person is voided and replaced by the following:

3. Certified Person. A certified person is a person who has passed the test from the TxDOT course TRF450, "TxDOT Roadway Illumination and Electrical Installations" or other courses as approved by the Traffic Operations Division. Submit a current and valid TRF certification upon request. On June 1, 2011, Texas Engineering Extension Service (TEEX) certifications for "TxDOT Electrical Systems" course will no longer be accepted. All TRF 450 certifications that have been issued for "TxDOT Roadway Illumination and Electrical Installations" course that expire before June 1, 2011 will be accepted until June 1, 2011.

Article 7.15. Electrical Requirements, Section A. Definitions, Section 4. Licensed Electrician is voided and replaced by the following: 4. Licensed Electrician. A licensed electrician is a person with a current and valid unrestricted master electrical license, or unrestricted journeyman electrical license that is supervised or directed by an unrestricted master electrician. An unrestricted master electrician need not be on the work locations at all times electrical work is being done, but the unrestricted master electrician must approve work performed by the unrestricted journeyman. Licensed electrician requirements by city ordinances do not apply to on state system work.

The unrestricted journeyman and unrestricted master electrical licenses must be issued by the Texas Department of Licensing and Regulation or by a city in Texas with a population of 50,000 or greater that issues licenses based on passing a written test and demonstrating experience.

The Engineer may accept other states' electrical licenses. Submit documentation of the requirements for obtaining that license. Acceptance of the license will be based on sufficient evidence that the license was issued based on:

- passing a test based on the NEC similar to that used by Texas licensing officials, and
- sufficient electrical experience commensurate with general standards for an unrestricted master and unrestricted journeyman electrician in the State of Texas.

Article 7.17, Personal Liability of Public Officials, is revised to read in its entirety as follows:
7.17 Personal Liability. In carrying out provisions of the Contract Documents or in exercising any power or authority granted there under, there shall be no liability for the Project Engineer, the Section Engineer(s), Construction Phase Engineer, their respective officers, employees, subcontractors, or authorized assistants, either personally or otherwise, as they are agents and representatives of the Authority, and there shall be no liability, either personal or otherwise for any member of the Commissioners' Court, of the FBGPTRA or any of the FBGPTRA's officers, employees, or consultants. Neither the Contract Document nor FBGPTRA's or Contractor's course of conduct shall be deemed to create the relationship of principal and agent by and between the FBGPTRA and the Contractor.

Article 7.19. Preservation of Cultural and Natural Resources and the Environment is supplemented by the following:

G. Asbestos Containing Material. In Texas, the Department of State Health Services (DSHS), Asbestos Programs Branch, is responsible for administering the requirements of the National Emissions Standards for Hazardous Air Pollutants, 40 CFR, Subpart M (NESHAP) and the Texas Asbestos Health Protection Rules (TAHPR). Based on EPA guidance and regulatory background information, bridges are considered to be a regulated "facility" under NESHAP. Therefore, federal standards for demolition and renovation apply.

Provide notice to the Department of demolition or renovation to the structures listed in the plans at least 30 calendar days prior to initiating demolition or renovation of each structure or load bearing member. Provide the scheduled start and completion date of structure demolition, renovation, or removal.

When demolition, renovation, or removal of load bearing members is planned for several phases, provide the start and completion dates identified by separate phases.

DSHS requires that notifications be postmarked at least 10 working days prior to initiating demolition or renovation. If the date of actual demolition, renovation, or removal is changed, the Department will be required to notify DSHS at least 10 days in advance of the work. This notification is also required when a previously scheduled (notification sent to DSHS) demolition, renovation or removal is delayed. Therefore, if the date of actual demolition, renovation, or removal is changed, provide the Engineer, in writing, the revised dates in sufficient time to allow for the Department's notification to DSHS to be postmarked at least 10 days in advance of the actual work.

Failure to provide the above information may require the temporary suspension of work under Article 8.4, "Temporary Suspension of Work or Working Day Charges," due to reasons under the control of the Contractor. The Department retains the right to determine the actual advance notice needed for the change in date to address post office business days and staff availability.

Item 7 is supplemented by the addition of the following Articles:

Article 7.20 Contractor's Responsibility of Safety. In accordance with generally accepted construction practices, the Contractor will be solely and completely responsible for conditions at the job site, including the safety of all persons and property during performance of the Work. The requirement will apply continuously and shall not be limited to normal working hours.

Article 7.21 Third Party Beneficiary. It is specifically agreed between the parties hereto that it is not intended by any of the provisions of any part of the contract or of the Contract Documents to create in the public or in any member thereof any third party beneficiary rights hereunder, or to authorize anyone not a party to the Contract to maintain a suit for personal injuries, property damage, or any other relief in law or equity pursuant to the terms and provisions of the Contract Documents. The duties, obligations, and responsibilities of the parties to this Contract with respect to third parties shall remain as imposed by law.

Article 7.22 Indemnification and Hold Harmless for Telecommunications. The contractor shall indemnify and hold harmless the FBGPTRA from and against all costs, liability, and expense whatsoever (including, without limitation, attorney's fees, court costs and expense) arising out of any act or omission of the contractor, its agents and/or employees, that causes or contributes to (1) any damage to or destruction of any telecommunications system on the FBGPTRA property, and (2) any injury to or death of any person employed by or on behalf of any telecommunications company, and/or its contractor, agents and/or employees, on the FBGPTRA property. Contractor shall not have or seek recourse against the FBGPTRA for any claim or cause of property. Contractor shall not have or seek recourse against the FBGPTRA for any claim or cause of action alleged loss of profits or revenue or loss of service or other consequential damage to a telecommunication company using the FBGPTRA's property or a customer or user of services of the fiber optic cable on the FBGPTRA's property.

REQUIRED WORKERS COMMPENSATION COVERAGE

"The law requires that each person working on this site or providing services related to this construction project must be covered by workers compensation insurance. This includes persons providing, hauling, or delivering equipment or materials, or providing transportation or other services related to the project, regardless of the identity of their employer or status as an employee."

"Call the Texas Workers Compensation Commission at 512-440-3789 to receive information on the legal requirements for coverage, to verify whether your employer has provided the required coverage, or to report any employer's failure to provide coverage."

The Contractor shall contractually require each person with whom it contracts to provide services on a project, to:

a. provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of the Texas Labor Doe, Section 401.011 (44) for all of its employees providing services on the project, for the duration of all the project;

b. provide to the contractor, prior to that person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project;

c. provide the contractor, prior to the end of the coverage period. A new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate ends during the duration of the project.

d. obtain from each other person with whom it contracts, and provide the contractor:

   1. a certificate of coverage, prior to the other person beginning work on the project and

   2. a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

e. retain all required certificates of coverage on file for the duration of the project and for one year thereafter;

f. notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of the coverage of any person providing services on the project; and

g. contractually require each person with whom it contracts, to perform as required by paragraphs (1) – (7), with the certificates of coverage to be provided to the person for whom they are providing services.

By signing this contract or providing or causing to be provided a certificate or coverage, the Contractor is representing to the governmental entity that all employees of the contractor who will provide services on the project will be covered by workers compensation coverage for the duration of the project, that the coverage will be based on the proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of the self-insured, with the Commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the contractor to administrative penalties, criminal penalties, or other civil actions.

The contractor's failure to comply with any of these provisions is a breach of contract by the contractor which entitles the governmental entity to declare the contract void if the contractor does not remedy the breach within ten days after receipt of notice of breach from the governmental entity.

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY

SPECIAL PROVISION TO ITEM 8

PROSECUTION AND PROGRESS

For this project, Item 8 of the Texas Department of Transportation Standard Specifications is hereby amended with respect to the articles cited below and no other articles or requirements of this Item are waived or changed hereby.

Article 8.1, Prosecution of Work, is revised by removing the first three sentences and replacing as follows:

8.1 Prosecution of Work. Prior to beginning construction operations, a preconstruction conference between the Contractor and the Engineer will be conducted. Prior to the preconstruction conference, The Contractor shall submit to the Engineer a preliminary CPM progress schedule which details the first 100 days of the contract in accordance with the requirements of Article 8.2, Progress Schedules. Within 30 calendar days following the preconstruction conference, the contractor shall submit the final version of the Contract Schedule. If the contractor fails to submit the initial schedule within the 30 days, the Engineer may withhold $1,000 per day until an initial (baseline) schedule that complies with the specifications is submitted. The engineer will review the schedule within 7 days, and determine if the schedule is acceptable. If the schedule is not acceptable, the contractor will have 7 days to make the necessary changes. If the contractor fails to submit the revised and corrected initial schedule within the 30 days, the Engineer may withhold $1,000 per day until an initial schedule that complies with the specifications is submitted.

Article 8.2B, Construction Contracts, is revised to read in its entirety as follows:

8.2B Construction Contracts. The Contractor must furnish a Critical Path Method schedule. Each schedule submittal must be accompanied by an electronic backup copy of the schedule. Schedules must be submitted at least monthly and must accompany each pay application. The schedule shall include all planned work activities and sequences. The initial schedule must utilize all of the contract time allowed in the contract. The schedule should incorporate major material procurements including preparation of shop drawings, submittals, fabrication and delivery of long lead items, known utility relocations, and other activities that may affect the completion of the Contract in the progress schedule. Each activity will be assigned a dollar value, the sum of which shall be equal to the adjusted contract value. The schedule activities must generally have durations shorter than one month and the work divided into discrete increments to allow easy identification of the specific task and simplify the updating process.

The Contractor may use Phoenix CPM Scheduling Software or Primavera P6. Schedules prepared and submitted in any other format will not be accepted.

The Engineer may require the Contractor to develop more detailed schedules for certain phases of the project such as major traffic changes, work requiring lane closures, or recovery schedules if the project falls behind schedule etc.

The contractor must provide a person proficient in CPM analysis to create and maintain the project schedule and be available when requested to meet with the Owner's Representative.

The CPM schedule must generally comply with construction industry standards as presented in "CPM in Construction" by James J. O'Brien or the AGC Guide to "Construction Planning and Scheduling". The schedule must have a clearly identifiable Critical Path. The Critical Path is defined as the longest path. It is the Fort Bend Grand Parkway Toll Road Authority's (the Authority) intention to conduct regular schedule update and review meetings with the Contractor to identify potential conflicts and opportunities on the project. The schedules submitted throughout the project will be essential elements in any delay claim.

The project schedule shall include but is not limited to the following:

- Begin the project schedule on the start date of contract time or start of compensable work on the project, whichever occurs first;
- Show the sequence and interdependence of activities required for complete performance of the work;
- Ensure all work sequences are logical and show a coordinated plan of the work;
- Show a predecessor and successor for each activity
- Clearly and accurately identify the critical path as the longest continuous path
- Provide a legend for all abbreviations and include the schedule filename, run date, data date, project start date, and project completion date in the title block of each schedule submittal;
- Through the use of calendars, incorporate seasonal weather conditions into the schedule for work (e.g., earthwork, concrete paving, structures, asphalt, drainage, etc.) that may be influenced by temperature or precipitation. Also, incorporate non work periods such as holidays, weekends, or other non-work days as identified in the Contract;
- No constraints or negative lags will be allowed.
- Show submittal and procurement periods.

For each activity on the project schedule provide:

- A logical activity number utilizing an alphanumeric designation system tied to the sequence of work and traffic control plans;
- A concise description of the work represented by the activity;
- An activity duration in days;
- The estimated quantity of work;

- Plan and incorporate resources, such as crews and heavy equipment, for each activity. Accurately represent the planned labor and equipment hours necessary to achieve the estimated productivity rates;

- Code the activities so that organized plots of the schedule may be produced;

The project schedule will be maintained for use by both the contractor and the Engineer. It will become an as-built record of the daily progress achieved on the project. In order to maintain an accurate as-built record of each activity, the actual start dates and finish dates must be recorded contemporaneously as they occur. If continuous progress of an activity is interrupted for any reason except non-work periods, such as holidays, weekends, or interference from temperature or precipitation, then the activity will be broken into a subsequent activity (or activities, based on the number of interruptions) similarly numbered with successive alpha character as necessary. The original duration of the subsequent activity will be that of the remaining duration of the original activity. Relationships of the subsequent activity will match those of the original activity so that the integrity of the project schedule logic is maintained. Once established the original durations and actual dates of all activities will remain unchanged.

Revisions to the schedule may be made as necessary. The project schedule shall be revised when changes in construction phasing and sequencing, changes in Traffic Control Plan, or other changes that cause deviation from the original project schedule occur. Any revisions to the schedule must be listed in the monthly updated narrative with the purpose of the revision and description of the impact on the schedule's critical path and project completion date.

The cut-off day for recording monthly progress will be established by the Project Engineer. Submit the updated schedule no later than the 1st work day of the following month.

A monthly update narrative will be included in the monthly schedule update. This narrative should include but is not limited to the following:

- The status of the project completion date, listing reasons why any change may have occurred;

- List all activities that have been added, deleted, or otherwise changed in the schedule with explanations for the modifications and description of the impacts each has on the project schedule;

- Any revisions that may have been performed to the schedule, providing the purpose of the revision and description of the impact to the project critical path and completion dates; and

- The status of the critical path, explaining reasons for any changes in critical path, impacts to the critical path that occurred during the period represented, or identifying any potential impacts that may occur in the next 3 months, including but not limited to material deliveries, utility and right way clearances, or other potential impacts.

No direct compensation will be made for fulfilling these requirements, as this work is considered subsidiary to the Item 500-2001, Mobilization. If the contractor does not submit the monthly schedule update by the 1st workday of the following month, the Engineer may withhold $1,000 per day until an updated schedule that complies with the specifications is submitted.

Any amounts withheld by the Engineer for failure to comply with any part of Article 8.2 may be deducted from the Contract Amount by the Engineer at his discretion.

Article 8.3, Computation of Contract Time for Completion, is revised to read in its entirety as follows:

8.3 Computation of Contract Time for Completion. Time is of the essence of this Contract. All references to days are references to calendar days unless expressly stated otherwise. Calculation of Contract Time will commence on the Notice to Proceed date and run continuously for the duration of the contract.

The Contractor must achieve Substantial Completion within the contract duration specified.

The Contractor must achieve Final Completion no more than the number of days specified by the Engineer from the date of Substantial Completion.

Work shall begin on the date fixed in the Contract requisition. It shall be prosecuted regularly and without interruption until completion. The entire work shall be finished and fully completed to the satisfaction of the Engineer in **FOUR HUNDRED (400) CALENDAR DAYS.**

Article 8.5, Failure to Complete Work on Time, is revised to read in its entirety as follows:

8.5 Failure to Complete Work on Time. Failing to achieve Final Completion within the days specified by the Engineer the Contractor will be assessed liquidated damages of $1,500 per day which will be withheld from any amount owed the Contractor. If the amount owed the Contractor is insufficient to withhold the amount, the Contractor shall pay the difference to the Authority.

The Project, of which the Work forms an essential part, is to be operated as a controlled access toll road project, and delay in completion of the Work of this Contract will cause delay in opening the Project to traffic and will cause losses to the Authority, including, but not limited to, lost revenue, interest on monies borrowed, increased administrative, legal and engineering costs, and other tangible and intangible losses. The liquidated damages set forth above are to cover partially such losses and expenses.

The Engineer may waive the collection of liquidated damages if the Work in its entirety, or any portion of the Work for which a date of completion is stipulated, has been substantially completed within the prescribed time of completion therefore.

If the Contractor fails to complete the Work within the time fixed by the Contract, or extensions thereof, and if the Engineer shall, nevertheless, permit the Contractor to continue and complete same, such permission shall neither modify nor waive any liability of the Contractor for damages arising from non-completion of the Work within the said time, but all such liabilities shall continue in full force against the Contractor

Item 8 is supplemented by the addition of the following Article:

8.11 Extension of Time - Control of the contract duration, completion date, and contract amount are essential elements of this contract and shall only be adjusted in writing by Change Order. A

Change Order amending the contract duration and the contract completion date or the contract amount shall only be considered after the Contractor has made such a request in a timely manner accompanied by proper documentation supporting such a request. The contract duration, completion date, and amount may not be adjusted by any other means.

Reasons for adjustment. The Engineer will consider adjustment of the contract duration, completion date, and contract amount for any changed condition or event which in the sole opinion of the Engineer is beyond the control of the Contractor; could not have been reasonably foreseen; and impacts the longest path on the properly prepared and submitted CPM schedule for the project.

Longest Path. Extensions of time will be granted only to the extent the changed conditions impact the longest path of the properly prepared CPM schedule. No extension of time will be granted for any change that does not impact the longest path, nor will any extension of time be granted for that portion of any delay event that is absorbed by float within the schedule.

Delays affecting activities not on the longest path by definition can not affect the completion date of the project and will not be considered as a reason to adjust the contract duration or the contract completion date but may be considered for cost impacts. In cases of non-critical delays the Contractor must provide timely documentation of the condition giving rise to the non-critical delay and documentation on the how the delay is causing the cost impact. All notice requirements contained in this provision pertain equally to critical as well as non-critical impacts without exception.

Timely notice of any impact is an essential element of this contract. The Contractor must provide the Engineer with notice of any delay which may impact the project completion date or impact cost within 7 calendar days from the commencement of the delay, or 7 calendar days from the date the Contractor should have reasonably been aware of the delay. Initial notice of the delay must be in writing and must generally describe the event or condition causing the delay and must specifically identify the schedule activities by activity ID and description which are being impacted, and generally the types and amounts of cost per day being incurred. The Contractor's initial notice shall also provide a brief explanation of why an alternative construction sequence eliminating or minimizing the delay is not possible or practical. This initial notice may be a letter containing all of the elements described above. The Engineer may request an immediate schedule review meeting with the Contractor upon notice of any delay to review the current CPM schedule and consider all possible alternatives.

FAILURE TO PROVIDE WRITTEN NOTICE WITHIN 7 CALENDAR DAYS OF THE COMMENCEMENT OF ANY DELAY MAY RESULT IN THE DENIAL OF ANY REQUEST FOR AN ADJUSTMENT TO THE CONTRACT DURATION, COMPLETION DATE, OR CONTRACT AMOUNT RESULTING FROM THAT DELAY.

The Impact of the Delay will be evaluated using the Time Impact Analysis method. A Time Impact Analysis consists of the following steps:

Step 1. Establish the status of the project immediately prior to the delay event or impact, or as near as practical prior to the commencement of the delay.

Step 2. Using the schedule produced in Step 1, add an activity to the schedule for the delay event with an estimated duration, or the actual duration of the delay event in the case of delay which has ended. Logically connect the added activity representing the delay event to the appropriate predecessor and successor activities to determine the impact to the completion date.

Step 3. Track the effects of the impact on the schedule during the occurrence by progressing the schedule monthly including the delay activity included in Step 2.

Step 4. Immediately after the conclusion of the delay event, or as near as practical after the delay event has ended, establish the status of the project and provide details identifying any mitigating actions or circumstances used to keep the project ongoing during the impact period.

Submit Step 1 and 2 with the Notice of Potential Time Impact. Incorporate Step 3 into schedule updates until impact is complete. Submit Step 4 with the Final Documentation, no later than 10 days after the completion of the impact.

Determine the time impact by comparing the status of the work prior to the impact (Step 1) to the prediction of the effect of the impact (Step 2), and to the actual effects of the impact once it is complete (step 4). All four steps of the Time Impact Analysis shall be completed before consideration of a Contract time extension or adjustment of milestone date will be provided.

Final Documentation. After the delay event or condition has ended the Contractor has 10 days to prepare and submit the final documentation of the impact of the delay including all cost impacts. An additional 30 days to prepare the final statement of impacts may be granted by the Engineer if requested by the Contractor in writing prior to the conclusion of the initial 10 day period. This documentation shall include a concise Time Impact Analysis Statement prepared using the submitted CPM schedules and a statement of all additional costs incurred as a result of the delay event or condition with backup documentation to support the claimed cost.

FAILURE TO PROVIDE WRITTEN DOCUMENTATION OF THE TIME AND COST IMPACT OF ANY DELAY WITHIN 10 DAYS OF THE CONCLUSION OF ANY DELAY MAY RESULT IN THE SUBSEQUENT DENIAL OF ANY REQUEST FOR AN ADJUSTMENT TO THE CONTRACT COMPLETION DATE OR COST IMPACTS.

END OF SPECIAL PROVISION

FORT BEND GRAND PARKWAY TOLL ROAD AUTHORITY

SPECIAL PROVISION TO ITEM 9

MEASUREMENT AND PAYMENT

For the project, Item 9, "Measurement and Payment", of the Standard Specifications, is hereby modified with respect to the clauses cited below and no other clauses or requirements of this Item are waived or changed hereby.

Article 9.5 A. Labor is revised to read in its entirety as follows:

The Contractor will receive an additional 15% as compensation based on the total wages paid said laborers and foremen. For cost of premiums on public-liability and workers compensation insurance, social security and unemployment insurance taxes, an amount equal to 55 percent of the sum of the labor cost, excluding the 15 percent compensation provided above, will be paid to the Contractor.

Article 9.5 C. Materials is revised to read in its entirety as follows:

The Contractor will receive the actual cost, including freight charges, of the materials used on such work to which cost will be added a sum equal to 15 percent thereof as compensation.

Article 9.6, Progress Payments. The first paragraph is voided and replaced by the following:

Once each month on a set day agreed to at the beginning of the contract, the Contractor shall provide the Engineer with his monthly estimate for quantities installed during the preceding month and the value thereof at the Contract unit prices.

In addition to the above, an estimate shall be made and included for acceptable structural steel, concrete members or units, and certain other structural components, and the Contractor shall furnish an affidavit that the material is stored in a bonded facility approved by the Fort Bend Grand Parkway Toll Road Authority (FBGPTRA). The estimate shall be made and included for 75 percent of the invoice material cost and invoice freight cost of materials involved after the Contractor has furnished the engineer with a copy of the paid invoices. Only materials requiring approved shop drawings, or where shop drawings are permitted due to quantities of units or because of stage construction, which are completely constructed and/or fabricated on the Contractor's order for a specific project, and on which an approved Test Report has been issued are eligible.

The Contractor shall submit, with each request for partial payment, an updated and current backup copy of the CPM Schedule per the Special Specification for CPM Schedules, 1310. No request for payment will be processed without the appropriate schedule update.

Article 9.8 Final Payment. The following paragraphs are added:

The Contractor shall after completion of his contract submit his final estimate for quantities installed during the construction period and the value thereof at the Contract unit prices.

The Engineer shall approve and submit the final estimate to the Commissioners' Court and the County shall at such time or within thirty (30) days from and after the date of said estimate as the County may elect, pay the entire sum so found to be due after audit and approval by the County Auditor, after deducting therefrom all previous payments and all amounts to be kept and all amounts to be retained under the provisions of the Contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment. It is mutually agreed between the parties to the Contract that no estimate or payment made under the Contract, except the final payment, shall exclude any claim of the County or shall constitute conclusive evidence of acceptable performance of the Contract either wholly or in part by the County; and no payments shall be construed to be an acceptance of any defective work or improper materials, or a release from any claims for damages. The Contractor hereby further agrees that the payment of the final amount due under the Contract and adjustment and payment of the bill rendered for any work done in accordance with any alterations to the Contract on a Change In Contract form shall release the County and the Engineer from any and all claims or liability on account of work performed under the Contract or alterations thereof. The Contractor agrees to examine the final estimate and, if he finds it correct, to execute thereon his release in full of all claims due by Fort Bend County, and to certify under oath to the payment by him of all claims against him for labor, materials, and supplies furnished by the Contractor by all persons and firms in the performance of the Contract.

Item 9 is supplemented by the addition of the following Article:

Article 9.10 Tax Exemptions. The bidder obligates himself, if awarded the Contract, to use reasonable diligence to obtain for the FBGPTRA any and all exemptions from State or Federal excise or other tax if required to pay such taxes or if such taxes are paid, to assist the FBGPTRA in any necessary way to obtain refund of such taxes so paid and to execute any required documents necessary to obtain refunds or to assert such exemptions.

SPECIAL PROVISION

100---002

Preparing Right of Way

For this project, Item 100, "Preparing Right of Way," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 100.4. Payment. The second paragraph is voided and replaced by the following:

Total payment of this Item will not exceed 10% of the original contract amount until final acceptance. The remainder will be paid on the estimate after the final acceptance under Article 5.8, "Final Acceptance."

SPECIAL PROVISION

132---005

Embankment

For this project, Item 132, "Embankment," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 132.2. Materials is supplemented with the following:

- **Type E.** Cement stabilized material consisting of Type C select backfill meeting the requirements of Article 423.2.C.2.Table 2. Select Backfill Gradation Limits and hydraulic cement meeting the requirements of DMS-4600, "Hydraulic Cement," and the Department's Hydraulic Cement Quality Monitoring Program (HCQMP). Sources not on the HCQMP will require testing and approval before use.

Article 132.2. Materials. The last paragraph is voided and not replaced.

Article 132.3.C. Embankment Adjacent to Culverts and Bridges is voided and replaced by the following:

Article 132.3.C. Embankment Adjacent to Culverts and Bridges. Except as noted below, in Article 132.3.D, compact embankments adjacent to culverts, under bridge approach slabs, and adjacent to abutments where using Wide Flange Terminal Anchorage systems but not cement stabilized embankment, in accordance with Item 400, "Excavation and Backfill for Structures."

Article 132.3.D. Compaction Methods. The first paragraph is supplemented by the following:

When cement stabilized backfill embankment, reinforced volume embankment, retaining wall foundation improvements, or embankment foundation improvements are shown on the plans, compact each layer to the required density, in accordance with Article 276.4.C, "Compaction."

Article 132.3.Construction is supplemented with the following:

G. Cement Stabilized Backfill Embankment (CSBE). Provide Type E material for cement stabilized backfill embankment. Place CSBE for embankments, retaining wall foundation improvements, embankment foundation improvements and backfill material placed between the reinforced volume of retaining walls in accordance with the requirements of Article 423.2.C.4, "Cement Stabilized Backfill" at the locations shown on the plans or as directed.

Article 132.5. Payment. The first paragraph is voided and replaced by the following:

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Embankment (Final)," "Embankment (Original)," or "Embankment (Vehicle)," of the compaction method and type specified. Where Cement Stabilized Backfill Embankment (CSBE) is shown on the plans, it will be paid for at the unit price bid for "Embankment (Final) (CSBE)", "Embankment (Final)(CSBE)(Retaining Wall Foundation Improvement)," "Embankment (Final)(CSBE)(Embankment Foundation Improvement)," or "Embankment (Final)(CSBE) (Reinforced Volume of Retaining Walls) of the compaction method and type shown on the plans. When the embankment adjacent to the cement stabilized reinforced volume is not cement stabilized, the cement stabilized reinforced volume will be paid as "Embankment (Final)" of the compaction method and type shown on the plans. This price is full compensation for all cement, cement treatment and stabilization, furnishing embankment, hauling, placing, compacting, curing, finishing, and reworking; disposal of waste material; and equipment, labor, tools, and incidentals.

SPECIAL PROVISION
161---006
Compost

For this project, Item 161, "Compost," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 161.2. Materials. Table 1 and following two paragraphs are voided and replaced by the following:

Table 1
Physical Requirements for Compost

Property	Test Method	Requirement
Particle Size	TMECC[1] 02.02-B, "Sample Sieving for Aggregate Size Classification"	95% passing 5/8 in. 70% passing 3/8 in.
Heavy Metals Content	TMECC 04.06, "Heavy Metals and Hazardous Elements": 04.06-As, Arsenic 04.06-Cd, Cadmium 04.06-Cu, Copper 04.06-Pb, Lead 04.06-Hg, Mercury 04.06-Mo, Molybdenum 04.06-Ni, Nickel 04.06-Se, Selenium 04.06-Zn, Zinc	Pass
Salinity	TMECC 04.10-A, "1:5 Slurry Method, Mass Basis"	5.0 dS/m Max[2]
pH	TMECC 04.11-A, "1:5 Slurry pH"	5.5-8.5
Maturity	TMECC 05.05-A, "% Emergence and Relative Seedling Vigor"	> 80%
Organic Matter Content	TMECC 05.07-A, "Loss-On-Ignition Organic Matter Method"	25-65% (dry mass)
Stability	TMECC 05.08-B, "Carbon Dioxide Evolution Rate"	≤ 8
Fecal Coliform	TMECC 07.01-B, "Fecal Coliforms"	1,000 MPN/g Max

1. "Test Methods for the Examination of Composting and Compost," published by the United States Department of Agriculture and the USCC.
2. A soluble salt content up to 10.0 dS/m for compost used in compost-manufactured topsoil will be acceptable.

Maintain compost in designated stockpiles at the producer's site. The Department reserves the right to sample compost at the jobsite. Material may be tested to verify compliance with this Specification by an STA-certified lab. Make payment to the STA-certified lab approved by the Department. Submit lab invoices for passing tests to the Department for reimbursement. Maintain a complete record of all test reports for the previous and current calendar year.

SPECIAL PROVISION

164---004

Seeding for Erosion Control

Item 164, "Seeding for Erosion Control," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 164.2.D. Cellulose Fiber Mulch is voided and replaced by the following:

Use only bonded fiber matrix that are on the approved list published in "Field Performance of Erosion Control Products," available from the Maintenance Division. Use material of the class and type as shown on the plans and provide a copy of the manufacturer's label for the selected product.

Article 164.3. Construction. The following is added after the first sentence:

Use approved equipment to vertically track the seedbed as shown on the plans or as directed by the Engineer.

Article 164.3.C. Cellulose Fiber Mulch Seeding is voided and replaced by the following:

C. **Bonded Fiber Matrix Seeding.** Plant seed according to Section 164.3.A, "Broadcast Seeding". Immediately after planting the seed or seed mixture, apply the bonded fiber matrix uniformly over the seeded area using suitable equipment. Applications should be made in accordance to the Product Installation Sheet published in "Field Performance of Erosion Control Products" available from the Maintenance Division.

Article 164.5. Payment is voided and replaced by the following:

The work performed and the materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Broadcast Seeding (Perm)" of the rural or urban seed mixture and sandy or clay soil specified, "Broadcast Seeding (Temp)" of warm or cool season specified, "Straw or Hay Mulch Seeding (Perm)" of the rural or urban seed mixture and sandy or clay soil specified, "Straw or Hay Mulch Seeding (Temp)" of warm or cool season specified, "Bonded Fiber Matrix Seeding (Perm)" of the rural or urban seed mixture and sandy or clay soil specified, "Bonded Fiber Matrix Seeding (Temp)" of warm or cool season specified, "Drill Seeding (Perm)" of the rural or urban seed mixture and sandy or clay soil specified, "Drill Seeding (Temp)" of warm or cool season specified, and "Straw or Hay Mulching." This price is full compensation for furnishing materials, including water for hydro-seeding and hydro-mulching operations, mowing, labor, equipment, tools, supplies, and incidentals. Fertilizer will not be paid for directly but will be subsidiary to this Item. Water for irrigating the seeded area, when specified, will be paid for under Item 168, "Vegetative Watering."

SPECIAL PROVISION

166---001

Fertilizer

Item 166, "Fertilizer," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 166.2. Materials is voided and replaced by the following:

Use a complete fertilizer containing nitrogen (N), phosphoric acid (P), and potash (K) nutrients unless otherwise specified on the plans. At least 50% of the nitrogen component must be a slow–release sulfur coated urea. Ensure that fertilizer is in an acceptable condition for distribution in containers labeled with the analysis. Fertilizer is subject to testing by the Texas A&M Feed and Fertilizer Control Service in accordance with the Texas Fertilizer Law.

Article 166.3. Construction is voided and replaced by the following:

Deliver and apply the complete fertilizer uniformly at a rate equal to 60 lb. of nitrogen per acre or at the analysis and rate specified on the plans.

Apply fertilizer as a dry material and do not mix with water to form a slurry.

Incorporate fertilizer during seedbed preparation as specified in the plans.

SPECIAL PROVISION

247---040

Flexible Base

For this project, Item 247, "Flexible Base," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 247.2. Materials, Section A. Aggregate, Table 1. Material Requirements is replaced by the following:

Table 1
Material Requirements

Property	Test Method	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Master gradation sieve size (cumulative % retained)	Tex-110-E					
2-1/2 in.		–	0	0	As shown on the plans	0
1-3/4 in.		0	0–10	0–10		0-5
7/8 in.		10–35	–	–		10–35
3/8 in.		30–50	–	–		35–65
No. 4		45–65	45–75	45–75		45–75
No. 40		70–85	60–85	50–85		70–90
Liquid Limit, % max.[1]	Tex-104-E	35	40	40	As shown on the plans	35
Plasticity Index, max.[1]	Tex-106-E	10	12	12	As shown on the plans	10
Plasticity index, min.[1]		As shown on the plans				
Wet ball mill, % max.[2]	Tex-116-E	40	45	–	As shown on the plans	40
Wet ball mill, % max. increase passing the No. 40 sieve		20	20	–	As shown on the plans	20
Classification, max. [3]	Tex-117-E	When shown on the plans	When shown on the plans	–	As shown on the plans	-
Min. compressive strength, psi	Tex-117-E				As shown on the plans	
lateral pressure 0 psi		45	35	–		–
lateral pressure 3 psi		–	–	–		90
lateral pressure 15 psi		175	175	–		175

1. Determine the plastic index in accordance with Tex-107-E (linear shrinkage) when liquid limit is unattainable as defined in Tex-104-E.
2. When a soundness value is required by the plans, test material in accordance with Tex-411-A.
3. When Classification is required by the plans, a triaxial Classification of 1.0 or less for Grades 1 and 2.3 or less for Grade 2 is required. The Classification requirement for Grade 4 will be as shown on the plans.

Article 247.2. Materials, Section A. Aggregate, Section 3. Recycled Material, Section b. Recycled Material (Including Crushed Concrete) Requirements, Section (1), Contractor Furnished Recycled Materials is supplemented by the following:

Provide recycled materials that have a maximum sulfate content of 3000 ppm when tested in accordance with Tex-145-E.

Article 247.4. Construction, Section C. Compaction is supplemented by the following:

Before final acceptance, the Engineer will select the locations of tests and measure the flexible base depth in accordance with Tex-140-E when Complete in Place measurement is specified. Correct areas deficient by more than 1/2 in. in thickness by scarifying, adding material as required, reshaping, recompacting, and refinishing at the Contractor's expense.

Article 247.4. Construction, Section C. Compaction, Section 2. Density Control first paragraph is replaced by the following:

Compact to at least 100% of the maximum dry density determined by Tex-113-E, unless otherwise shown on the plans. Maintain moisture during compaction at not less than 1 percentage point below the optimum moisture content determined by Tex-113-E. Determine the moisture content of the material in accordance with Tex-115-E or Tex-103-E during compaction daily and report the results the same day to the Engineer, unless otherwise shown on the plans or directed.

Article 247.4. Construction. is supplemented with the following:

F. Lime Treatment. When type B flexible base (Complete In Place) is shown on the plans, furnish lime that meets the requirements of DMS-6350, "Lime and Lime Slurry," and DMS-6330, "Lime Sources Prequalification of Hydrated Lime and Quicklime," of the type and quantity specified in the plans. Construct in accordance with Item 260, "Lime Treatment (Road Mixed)".

G. Ride Quality. This section applies to the final travel lanes that receive a 1 or 2 course surface treatment for the final surface, unless otherwise shown on the plans.

Measure ride quality of the base course after placement of the prime coat and before placement of the surface treatment. Use a high speed or lightweight inertial profiler certified at the Texas Transportation Institute. Provide the Engineer with equipment certification documentation. Display a current decal on the equipment indicating the certification expiration date. Use a certified profiler operator from the Construction Division's approved list. When requested, furnish the Engineer documentation for the person certified to operate the profiler.

Within 3 days after placement of the prime coat, provide all profile measurements to the Engineer in electronic data files using the format specified in Tex-1001-S. The Engineer will use Department software to evaluate longitudinal profiles to determine areas requiring corrective action. Correct 0.1-mi.sections having an average international roughness index (IRI) value greater than 125.0 in. per mile to an IRI value of 125.0 in. per mile or less for each wheelpath, unless otherwise shown on the plans.

Re-profile and correct sections that fail to meet ride quality after placement of the prime coat, as directed by the Engineer. Correct re-profiled sections until specification requirements are met Perform this work at no additional expense to the Department.

Article 247.6. Payment. Section A. Flexible Base (Complete In Place), is replaced with the following:

Payment will be made for the type and grade specified. For cubic yard measurement, "In Vehicle," "In Stockpile," or "In Final Position" will be specified. For square yard measurement, a depth will be specified. This price is full compensation for lime, lime treatment, furnishing materials, temporary stockpiling, assistance provided in stockpile sampling and operations to level stockpiles for measurement, loading, hauling, delivery of materials, spreading, blading, mixing, shaping, placing, compacting, reworking, finishing, correcting locations where thickness is deficient, curing, furnishing scales and labor for weighing and measuring, and equipment, labor, tools, and incidentals.

SPECIAL PROVISION

260---002

Lime Treatment (Road-Mixed)

For this project, Item 260, "Lime Treatment (Road-Mixed)," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 260.2. Materials, Section A. Lime. The first two sentences are voided and replaced by the following:

A. Lime. Furnish lime that meets the requirements of DMS-6350 "Lime and Lime Slurry," and DMS-6330, "Prequalification of Lime Sources." Use hydrated lime, commercial lime slurry, quicklime, or carbide lime slurry as shown on the plans.

Article 260.3. Equipment, Section B. Slurry Equipment. The last sentence of the second paragraph is voided and replaced by the following:

Equip the distributor truck with a sampling device in accordance with Tex-600-J, Part I, when using commercial lime slurry or carbide lime slurry.

Article 260.4. Construction, Section C. Application of Lime, Section 2. Slurry Placement. The first paragraph is voided and replaced with the following:

Provide slurry free of objectionable materials, at or above the minimum dry solids content, and with a uniform consistency that will allow ease of handling and uniform application. Deliver commercial lime slurry or carbide lime slurry to the jobsite, or use hydrated lime or quicklime to prepare lime slurry at the jobsite or other approved location, as specified. When dry quicklime is applied as a slurry, use 80 percent of the amount shown on the plans.

Article 260.5. Measurement, Section A. Lime is supplemented by the following:

4. Carbide Lime Slurry. Lime slurry will be measured by the ton (dry weight) as calculated from the minimum percent dry solids content of the slurry, multiplied by the weight of the slurry in tons delivered.

Article 260.6. Payment. The first paragraph is voided and replaced by the following:

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid in accordance with Section 260.6.A, "Lime," and Section 260.6.B, "Lime Treatment."

Article 260.6. Payment, Section A. Lime. The first sentence is voided and replaced by the following:

A. Lime. Lime will be paid for at the unit price bid for "Lime" of one of the following types:

- Hydrated Lime (Dry),
- Hydrated Lime (Slurry),
- Commercial Lime Slurry,
- Quicklime (Dry),
- Quicklime (Slurry), or
- Carbide Lime Slurry.

Article 260.6. Payment, Section B. Lime Treatment is voided and replaced by the following:

B. Lime Treatment. Lime treatment will be paid for at the unit price bid for "Lime Treatment (Existing Material)," "Lime Treatment (New Base)," or "Lime Treatment (Mixing Existing Material and New Base)," for the depth specified. No payment will be made for thickness or width exceeding that shown on the plans. This price is full compensation for shaping existing material, loosening, mixing, pulverizing, spreading, applying lime, compacting, finishing, curing, curing materials, blading, shaping and maintaining shape, replacing mixture, disposing of loosened materials, processing, hauling, preparing secondary subgrade, water, equipment, labor, tools, and incidentals.

SPECIAL PROVISION

300---032

Asphalts, Oils, and Emulsions

For this project, Item 300, "Asphalts, Oils, and Emulsions," of the Standard Specifications is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 300.2. Materials. The first paragraph is voided and replaced by the following:

Provide asphalt materials that meet the stated requirements when tested in accordance with the referenced Department, AASHTO, and ASTM test methods. Unless otherwise shown in the plans and specifications, provide asphalt materials that have been preapproved for use by the Construction Division, in accordance with Tex-545-C, "Asphalt Binder Quality Program."

SPECIAL PROVISION

360---003

Concrete Pavement

For this project, Item 360, "Concrete Pavement," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 360.3. Equipment, Section E. Curing Equipment. The third sentence is voided and replaced by the following:

Provide curing equipment that is independent of all other equipment when required to meet the requirements of Article 360.4.I, "Curing."

Article 360.4. Construction, Section H. Spreading and Finishing, Section 2. Maintenance of Surface Moisture. The first and second sentences are voided and replaced by the following:

Prevent surface drying of the pavement before application of the curing system by means that may include water fogging, the use of wind screens and the use of evaporation retardants.

Article 360. 4. Construction, Section I. Curing. The first sentence is voided and replaced by the following:

Keep the concrete pavement surface from drying as described in Section 360.4.H.2, "Maintenance of Surface Moisture," until the curing material has been applied.

Article 360. 4. Construction, Section I. Curing, Section 1. Membrane Curing. The first paragraph is voided and replaced by the following:

Spray the concrete surface uniformly with 2 coats of membrane curing compound at an individual application rate of not more than 180 sq. ft. per gallon. Do not allow the concrete surface to dry before applying the curing compound. Use a towel or absorptive fabric to remove any standing pools of bleed water that may be present on the surface before applying the curing compound. Apply the first coat within 10 min. after completing texturing operations. Apply the second coat within 30 min. after completing texturing operations.

SPECIAL PROVISION

360---007

Concrete Pavement

For this project, Item 360, "Concrete Pavement," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 360.3. Equipment, Section E. Curing Equipment. The third sentence is voided and replaced by the following:

Provide curing equipment that is independent of all other equipment when required to meet the requirements of Article 360.4.I, "Curing."

Article 360.4. Construction, Section H. Spreading and Finishing, Section 2. Maintenance of Surface Moisture. The first and second sentences are voided and replaced by the following:

Prevent surface drying of the pavement before application of the curing system by means that may include water fogging, the use of wind screens and the use of evaporation retardants.

Article 360.4. Construction, Section H. Spreading and Finishing, Section 3. Surface Texturing is voided and replaced by the following:

Complete final texturing before the concrete has attained its initial set. Drag the carpet longitudinally along the pavement surface with the carpet contact surface area adjusted to provide a satisfactory coarsely textured surface. Prevent the carpet from getting plugged with grout. Do not perform carpet dragging operations while there is excessive bleed water.

A metal-tine texture finish is required for all areas with a posted speed limit in excess of 45 mph. A metal-tine texture finish is required unless otherwise shown on the plans for areas with a posted speed limit less than 45 mph. Immediately following the carpet drag, apply a single coat of evaporation retardant at a rate recommended by the manufacturer. Provide the metal-tine finish immediately after the concrete surface has set enough for consistent tining. Operate the metal-tine device to obtain grooves spaced at 1 in., approximately 3/16 in. deep, with a minimum depth of 1/8 in., and approximately 1/12 in. wide. Do not overlap a previously tined area. Use manual methods to achieve similar results on ramps and other irregular sections of pavements. Repair damage to the edge of the slab and joints immediately after texturing. Do not tine pavement that will be overlaid or that is scheduled for blanket diamond grinding or shot blasting.

When carpet drag is the only surface texture required by the plans, ensure that adequate and consistent micro-texture is achieved by applying sufficient weight to the carpet and keeping the carpet from getting plugged with grout, as directed by the Engineer. Target a carpet drag texture of .04 in., as measured by Tex 436-A Correct any location with a texture less than .03 in. by

diamond grinding or shot blasting. The Engineer will determine the test locations at points located transversely to the direction of traffic in the outside wheel path.

Article 360. 4. Construction, Section I. Curing. The first sentence is voided and replaced by the following:

Keep the concrete pavement surface from drying as described in Section 360.4.H.2, "Maintenance of Surface Moisture," until the curing material has been applied.

Article 360. 4. Construction, Section I. Curing, Section 1. Membrane Curing. The first paragraph is voided and replaced by the following:

Spray the concrete surface uniformly with 2 coats of membrane curing compound at an individual application rate of not more than 180 sq. ft. per gallon. Do not allow the concrete surface to dry before applying the curing compound. Use a towel or absorptive fabric to remove any standing pools of bleed water that may be present on the surface before applying the curing compound. Apply the first coat within 10 min. after completing texturing operations. Apply the second coat within 30 min. after completing texturing operations.

SPECIAL PROVISION

368---001

Concrete Pavement Terminals

For this project, Item 368, "Concrete Pavement Terminals," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 368.5. Payment. The second paragraph is voided and replaced with the following:

This price is full compensation for excavation, disposal of waste material, backfilling, 12 in. cement treatment, hydraulic cement concrete (sleeper slab and support slab) underneath the concrete pavement, joint material, reinforcing steel, wide-flange beams, equipment, materials, labor, tools and incidentals.

The last sentence of the third paragraph is voided.

SPECIAL PROVISION

420---002

Concrete Structures

For this project, Item 420, "Concrete Structures," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 420.4. Construction, Section I, "Finish of Bridge Slabs". The tenth paragraph is supplemented with the following:

For bridge approach slabs the carpet drag, burlap drag, or broom finish may be applied either longitudinally or transversely.

Article 420.4. Construction, Section I, "Finish of Bridge Slabs". The first sentence of the fourteenth paragraph is voided and replaced by the following:

Unless noted otherwise, saw-cut grooves in the hardened concrete of bridge slabs, bridge approach slabs, and direct-traffic culverts to produce the final texturing after completion of the required curing period.

Article 420.4. Construction, Section I, "Finish of Bridge Slabs". The fourteenth paragraph is amended by the following:

When saw-cut grooves are not required in the plans, provide either a carpet drag or broom finish for micro-texture. In this case insure that an adequate and consistent micro-texture is achieved by applying sufficient weight to the carpet and keeping the carpet or broom from getting plugged with grout. For surfaces that do not have adequate texture, the Engineer may require corrective action including diamond grinding or shot blasting.

Article 420.4. Construction, Section J. Curing Concrete. The first sentence of the fourth paragraph is voided and replaced by the following:

For upper surfaces of bridge slabs, bridge approach slabs, median and sidewalk slabs, and culvert top slabs constructed using Class S concrete, apply interim curing using a Type 1-D curing compound before the water sheen disappears but no more than 45 minutes after application of the evaporation retardant. Do not allow the concrete surface to dry before applying the interim cure, and do not place the interim cure over standing water.

Article 420.6 Payment. The pay adjustment formula given in the sixth bullet of the fourth paragraph is voided and replaced by the following:

$$A = Bp[-5.37(Sa/Ss)^2 + 11.69(Sa/Ss) - 5.32]$$

Where:
A = Amount to be paid
Sa = Actual strength from cylinders or cores
Ss = Specified design strength
Bp = Unit bid price

SPECIAL PROVISION

421---035

Hydraulic Cement Concrete

For this project, Item 421, "Hydraulic Cement Concrete," of the Standard Specifications is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 421.2.D. Water, Table 1. Chemical Limits for Mix Water is voided and replaced by the following:

Table 1
Chemical Limits for Mix Water

Contaminant	Test Method	Maximum Concentration (ppm)
Chloride (Cl)	ASTM C 114	
Prestressed concrete		500
Bridge decks and superstructure		500
All other concrete		1,000
Sulfate (SO_4)	ASTM C 114	2,000
Alkalies ($Na_2O + 0.658K_2O$)	ASTM C 114	600
Total Solids	ASTM C 1603	50,000

Article 421.2.B. Supplementary Cementing Materials (SCM) is supplemented with the following:

6. **Modified Class F Fly Ash (MFFA).** Furnish MFFA conforming to DMS-4610, "Fly Ash."

Article 421.2.D. Water, Table 2. Acceptance Criteria for Questionable Water Supplies is voided and replaced by the following:

Table 2
Acceptance Criteria for Questionable Water Supplies

Property	Test Method	Limits
Compressive strength, min. % control at 7 days	ASTM C 31, ASTM C 39[1,2]	90
Time of set, deviation from control, h:min.	ASTM C 403[1]	From 1:00 early to 1:30 later

1. Base comparisons on fixed proportions and the same volume of test water compared to the control mix using 100% potable water or distilled water.
2. Base comparisons on sets consisting of at least two standard specimens made from a composite sample.

Article 421.2.E.1 Coarse Aggregate. The fourth paragraph is voided and replaced by the following:

Unless otherwise shown on the plans, provide coarse aggregate with a 5-cycle magnesium sulfate soundness when tested in accordance with Tex-411-A of not more than 25% when air

entrainment is waived and 18% when air entrainment is not waived. Crushed recycled hydraulic cement concrete is not subject to the 5-cycle soundness test.

Article 421.2.E.2 Fine Aggregate. The fifth paragraph is voided and replaced by the following:

Acid insoluble (%) = {(A1)(P1)+(A2)(P2)}/100
where:

A1 = acid insoluble (%) of aggregate 1
A2 = acid insoluble (%) of aggregate 2
P1 = percent by weight of aggregate 1 of the fine aggregate blend
P2 = percent by weight of aggregate 2 of the fine aggregate blend

Article 421.2.E.2. Fine Aggregate. The final paragraph is voided and replaced by the following:

For all classes of concrete, provide fine aggregate with a fineness modulus between 2.3 and 3.1 as determined by Tex-402-A.

Article 421.2.E. Aggregate is supplemented by the following:

4. **Intermediate Aggregate.** When necessary to complete the concrete mix design, provide intermediate aggregate consisting of clean, hard, durable particles of natural or lightweight aggregate or a combination thereof. Provide intermediate aggregate free from frozen material and from injurious amounts of salt, alkali, vegetable matter, or other objectionable material, and containing no more than 0.5% clay lumps by weight in accordance with Tex-413-A.

   If more than 30% of the intermediate aggregate is retained on the No. 4 sieve, the retained portion must meet the following requirements:

   - must not exceed a wear of 40% when tested in accordance with Tex-410-A.
   - must have a 5-cycle magnesium sulfate soundness when tested in accordance with Tex-411-A of not more than 25% when air entrainment is waived and 18% when air entrainment is not waived.

   If more than 30% of the intermediate aggregate passes the 3/8" sieve, the portion passing the 3/8" sieve must not show a color darker than standard when subjected to the color test for organic impurities in accordance with Tex-408-A and must have an acid insoluble residue, unless otherwise shown on the plans, for concrete subject to direct traffic equal to or greater than the value calculated with the following equation:

$$\mathrm{AI}ia \geq \frac{60 - (\mathrm{AI}fa)(\mathrm{P}fa)}{(\mathrm{P}ia)}$$

   where:

   AI*fa* = acid insoluble (%) of fine aggregate or fine aggregate blend
   P*fa* = percent by weight of the fine aggregate or fine aggregate blend as a percentage of the total weight of the aggregate passing the 3/8" sieve in the concrete mix design
   P*ia* = percent by weight of the intermediate aggregate as a percentage of the total weight of the aggregate passing the 3/8" sieve in the concrete mix design

Article 421.2.F. Mortar and Grout is supplemented by the following:

Section 421.4.A.6, "Mix Design Options," does not apply for mortar and grout.

Article 421.3.A. Concrete Plants and Mixing Equipment is supplemented by the following:

When allowed by the plans or the Engineer, for concrete classes not identified as structural concrete in Table 5 or for Class C concrete not used for bridge-class structures, the Engineer may inspect and approve all plants and trucks in lieu of the NRMCA or non-Department engineer sealed certifications. The criteria and frequency of Engineer approval of plants and trucks is the same used for NRMCA certification.

Article 421.3.A.2. Volumetric Mixers is supplemented by the following:

Unless allowed by the plans or the Engineer, volumetric mixers may not supply classes of concrete identified as structural concrete in Table 5.

Article 421.4.A Classification and Mix Design. The first paragraph is voided and replaced by the following:

Unless a design method is indicated on the plans, furnish mix designs using ACI 211, "Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete," Tex-470-A, or other approved procedures for the classes of concrete required in accordance with Table 5. Perform mix design and cement replacement using the design by weight method unless otherwise approved. Do not exceed the maximum water-to-cementitious-material ratio.

Article 421.4.A. Classification and Mix Design, Table 5 Concrete Classes is voided and replaced by the following:

Table 5
Concrete Classes

Class of Concrete	Design Strength, Min. 28-day f'_c (psi)	Maximum W/C Ratio[1]	Coarse Aggregate Grades[2,3]	General Usage[4]
A	3,000	0.60	1–4, 8	Inlets, manholes, curb, gutter, curb & gutter, conc. retards, sidewalks, driveways, backup walls, anchors
B	2,000	0.60	2–7	Riprap, small roadside signs, and anchors
C[5]	3,600	0.45	1–6	Drilled shafts, bridge substructure, bridge railing, culverts except top slab of direct traffic culverts, headwalls, wing walls, approach slabs, concrete traffic barrier (cast-in-place)
C(HPC)[5]	3,600	0.45	1-6	As shown on the plans
D	1,500	0.60	2–7	Riprap
E	3,000	0.50	2–5	Seal concrete
F[5]	Note 6	0.45	2–5	Railroad structures; occasionally for bridge piers, columns, or bents
F(HPC)[5]	Note 6	0.45	2–5	As shown on the plans
H[5]	Note 6	0.45	3–6	Prestressed concrete beams, boxes, piling, and concrete traffic barrier (precast)
H(HPC)[5]	Note 6	0.45	3–6	As shown on the plans
S[5]	4,000	0.45	2–5	Bridge slabs, top slabs of direct traffic culverts

Class of Concrete	Design Strength, Min. 28-day f'_c (psi)	Maximum W/C Ratio[1]	Coarse Aggregate Grades[2,3]	General Usage[4]
S(HPC)[5]	4,000	0.45	2–5	As shown on the plans
P	See Item 360	0.45	2–3	Concrete pavement
DC[5]	5,500	0.40	6	Dense conc. overlay
CO[5]	4,600	0.40	6	Conc. overlay
LMC[5]	4,000	0.40	6–8	Latex-modified concrete overlay
SS[5]	3,600[7]	0.45	4–6	Slurry displacement shafts, underwater drilled shafts
K[5]	Note 6	0.45	Note 6	Note 6
HES	Note 6	0.45	Note 6	Note 6

1. Maximum water-cement or water-cementitious ratio by weight.
2. Unless otherwise permitted, do not use Grade 1 coarse aggregate except in massive foundations with 4-in. minimum clear spacing between reinforcing steel bars. Do not use Grade 1 aggregate in drilled shafts.
3. Unless otherwise approved, use Grade 8 aggregate in extruded curbs.
4. For information only.
5. Structural concrete classes.
6. As shown on the plans or specified.
7. Use a minimum cementitious material content of 650 lb/cy of concrete. Do not apply Table 6 over design requirements to Class SS concrete.

Article 421.4.A. Classification and Mix Design, Table 6 Over Design to Meet Compressive Strength Requirements. Footnote 3 is supplemented by the following:

For Class K and concrete classes not identified as structural concrete in Table 5 or for Class C concrete not used for bridge-class structures, the Engineer may designate on the plans an alternative over-design requirement up to and including 1,000 psi for specified strengths less than 3,000 psi and up to and including 1,200 psi for specified strengths from 3,000 to 5,000 psi.

Article 421.4.A.1. Cementitious Materials is supplemented by the following:

The upper limit of 35% replacement of cement with Class F fly ash specified by mix design Options 1 and 3 may be increased to a maximum of 45% for mass placements, high performance concrete, and precast members when approved.

Article 421.4.A.3. Chemical Admixtures is supplemented by the following:

When a corrosion-inhibiting admixture is required, use a 30% calcium nitrite solution. The corrosion-inhibiting admixture must be set neutral unless otherwise approved. Dose the admixture at the rate of gallons of admixture per cubic yard of concrete shown on the plans.

Article 421.4.A.4 Air Entrainment is voided and replaced by the following:

Air entrain all concrete except for Class B and concrete used in drilled shafts unless otherwise shown on the plans. Unless otherwise shown on the plans, target an entrained air content of 4.0% for concrete pavement and 5.5% for all other concrete requiring air entrainment. To meet the air-entraining requirements, use an approved air-entraining admixture. Unless otherwise shown on the plans, acceptance of concrete loads will be based on a tolerance of ± 1.5% from the target air content. If the air content is more than 1.5 but less than 3.0% above the target air, the concrete

may be accepted based on strength tests. For specified concrete strengths above 5,000 psi, a reduction of 1% is permitted.

Article 421.4.A Table 7 Air Entrainment is voided.

Article 421.4.A.6. Mix Design Options. The first and second paragraphs are voided and replaced by the following:

For structural concrete identified in Table 5 and any other class of concrete designed using more than 520 lb. of cementitious material per cu. yd., use one of the mix design Options 1–8 shown below, unless otherwise shown on the plans.

For concrete classes not identified as structural concrete in Table 5 and designed using less than 520 lb. of cementitious material per cu. yd., use one of the mix design Options 1–8 shown below, except that Class C fly ash may be used instead of Class F fly ash for Options 1, 3, and 4 unless sulfate-resistant concrete is shown on the plans.

Do not use mix design Options 6 or 7 when High Performance Concrete (HPC) is required. Option 8 may be used when HPC is required provided: a minimum of 20% of the cement is replaced with a Class C fly ash; Tex-440-A, "Initial Time of Set of Fresh Concrete" is performed during mix design verification; the additional requirements for permeability are met; and the concrete is not required to be sulfate-resistant.

Article 421.4.A.6.b. Option 2 is voided and replaced by the following:

b. Option 2. Replace 35 to 50% of the cement with GGBFS or MFFA.

Article 421.4.A.6.c. Option 3 is voided and replaced by the following:

c. Option 3. Replace 35 to 50% of the cement with a combination of Class F fly ash, GGBFS, MFFA, UFFA, metakaolin, or silica fume; however, no more than 35% may be fly ash, and no more than 10% may be silica fume.

Article 421.4.A.6.f. Option 6 is voided and replaced by the following:

f. Option 6. Use lithium nitrate admixture at a minimum dosage determined by testing conducted in accordance with Tex-471-A, "Lithium Dosage Determination Using Accelerated Mortar Bar Testing." Before use of the mix, provide an annual certified test report signed and sealed by a licensed professional engineer, from a laboratory on the Department's List of Approved Lithium Testing Laboratories, certified by the Construction Division as being capable of testing according to Tex-471-A, "Lithium Dosage Determination Using Accelerated Mortar Bar Testing."

Article 421.4.A.6.g. Option 7 is voided and replaced by the following:

g. Option 7. When using hydraulic cement only, ensure that the total alkali contribution from the cement in the concrete does not exceed 3.5 lb. per cubic yard of concrete when calculated as follows:

$$\text{lb. alkali per cu. yd.} = \frac{(\text{lb. cement per cu. yd.}) \times (\%\ Na_2O \text{ equivalent in cement})}{100}$$

In the above calculation, use the maximum cement alkali content reported on the cement mill certificate.

Do not use Option 7 when any of the aggregates in the concrete are listed on the Department's List of Aggregate Sources Excluded from Option 7 ASR Mitigation.

Article 421.4.A.6.h. Option 8 is voided and replaced by the following:

h. Option 8. For any deviations from Options 1–5, perform annual testing on coarse, intermediate, and fine aggregate separately in accordance with ASTM C 1567. Before use of the mix, provide a certified test report signed and sealed by a licensed professional engineer, from a laboratory on the Department's List of Approved ASTM C 1260 Laboratories, demonstrating that the ASTM C 1567 test result for each aggregate does not exceed 0.08% expansion at 14 days.

Do not use Option 8 when any of the aggregates in the concrete are listed on the Department's List of Aggregate Sources Excluded from Option 8 ASR Mitigation. When HPC is required, provide a certified test report signed and sealed by a licensed professional engineer demonstrating that AASHTO T 277 test results indicate the permeability of the concrete is less than 1,500 coulombs tested immediately after either of the following curing schedules:

- Moist cure specimens 56 days at 73°F.
- Moist cure specimens 7 days at 73°F followed by 21 days at 100°F.

Article 421.4.B. Trial Batches is supplemented by the following:

Once a trial batch substantiates the mix design, the proportions and mixing methods used in the trial batch become the mix design of record.

Article 421.4.B. Trial Batches. The fourth sentence of the second paragraph is voided and replaced by the following:

Test at least one set of design strength specimens, consisting of two specimens per set, at 7-day, 28-day, and at least one additional age.

Article 421.4.D. Measurement of Materials, Table 9 is voided and replaced by the following:

Table 9
Measurement Tolerances – Non-Volumetric Mixers

Material	Tolerance (%)
Cement, wt.	-1 to +3
SCM wt.	-1 to +3
Cement + SCM (cumulative weighing), wt.	-1 to +3
Water, wt. or volume	±3
Fine aggregate, wt.	±2
Coarse aggregate, wt.	±2
Fine + coarse aggregate (cumulative weighing), wt.	±1
Chemical admixtures, wt. or volume	±3

Article 421.4.E. Mixing and Delivering Concrete. The first paragraph is supplemented with the following:

Do not top-load new concrete onto returned concrete.

Article 421.4.E.3. Truck-Mixed Concrete. The first paragraph is voided and replaced by the following:

Mix the concrete in a truck mixer from 70 to 100 revolutions at the mixing speed designated by the manufacturer to produce a uniform concrete mix. Deliver the concrete to the project in a thoroughly mixed and uniform mass and discharge the concrete with a satisfactory degree of uniformity. Additional mixing at the job site at the mixing speed designated by the manufacturer is allowed as long as the requirements of Section 421.4.A.5, "Slump" and Section 421.4.E, "Mixing and Delivering Concrete" are met.

SPECIAL PROVISION

424---002

Precast Concrete Structures (Fabrication)

For this project, Item 424, "Precast Concrete Structures (Fabrication)," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 424.3. Construction, Section B. Fabrication, Section 4. Quality of Concrete. The first paragraph is voided and replaced by the following:

Provide concrete in accordance with Item 421, "Hydraulic Cement Concrete," except for the following:

- Air-entrained concrete will not be required in precast concrete members, unless otherwise shown on the plans.
- Use a minimum of 25% Class F fly ash with mix design Option 1 from Section 421.4.A.6, "Mix Design Options," for all precast concrete members.
- Do not use mix design Options 6, 7, or 8 from Section 421.4.A.6., "Mix Design Options" for all precast concrete members.

For each type of structure or unit, use the class of concrete shown on the plans or in the pertinent Item.

SPECIAL PROVISION

425---001

Precast Prestressed Concrete Structural Members

For this project, Item 425, "Precast Prestressed Concrete Structural Members," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 425.2. Materials is supplemented by the following:

For bridges with Type Tx28, Tx34, Tx40, Tx46, Tx54, Tx62 and/or Tx70 prestressed concrete girders, the contractor can submit an alternate design for approval using other TxDOT prestressed concrete girder shapes . Alternate designs must be signed, sealed, and dated by a Licensed Professional Engineer and submitted to the Engineer for review and approval. Use the same live load as the original design and adhere to the current versions of the AASHTO LRFD Bridge Design Specifications and the TxDOT LRFD Bridge Design Manual. Alternate bridge designs can differ from the original design only by type of girder used. Do not raise the roadway grade or lower the structure bottom chord elevation to accommodate the alternate girders. No other changes to the original geometry, including bent locations, are allowed. Substructure re-design may be necessary to accommodate the alternate girders.

Article 425.5. Payment is supplemented by the following:

No additional compensation will be made for alternate designs or for any increase in quantities required to accommodate alternate designs, including quantities paid for under other Items.

SPECIAL PROVISION

428---001

Concrete Surface Treatment

For this project, Item 428, "Concrete Surface Treatment," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 428.3. Construction, Section B. Surface Treatment Class II. The second paragraph is voided and replaced by the following:

- Clean the concrete surfaces using shot or abrasive blasting, unless otherwise restricted, followed by vacuuming and air-blasting as needed, to remove all visible curing compound, oils, and any other contaminants that retard or prevent penetration of the mixture before treatment application. Completely remove all spent abrasive media. Demonstrate the method of cleaning to the Engineer.

Do not damage the concrete surface to the point that the coarse aggregate is exposed. Acceptance of the entire cleaned surface by the Engineer is required before the application of the treatment material.

SPECIAL PROVISION

434---003

Elastomeric Bridge Bearings

For this project, Item 434, "Elastomeric Bridge Bearings," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 434.1. Description. The third bullet is voided and replaced by the following:

- **Sliding Elastomeric Bearings.** Consisting of a steel top (sole) plate with a stainless steel facing (upper component) bearing on a lower component. The lower component may be either a layer of polytetrafluoroethylene (PTFE) bonded to a preformed fabric pad or a layer of PTFE recessed and bonded to a steel plate that is vulcanized to the top of a laminated elastomeric bearing pad with or without special components (steel guide bars and bottom plate).

Article 434.2. Materials, Section A. Plain and Laminated Elastomeric Bearings, Section 1. Elastomer. The fifth paragraph is voided and replaced by the following:

Plain sample bearings must measure 9 in. × 19 in. × 1 in. with 70-durometer hardness. Laminated sample bearings must measure 9 in. × 14 in. × 1-1/2 in. with the following number of steel laminates:

- 50 durometer--3 steel laminates,
- 60 durometer--2 steel laminates, and
- 70 durometer--2 steel laminates.

Article 434.2. Materials, Section A. Plain and Laminated Elastomeric Bearings is supplemented by the following:

5. Coatings. Provide coating materials as required in accordance with Item 445, "Galvanizing," and Item 446, "Cleaning and Painting Steel."

Article 434.2. Materials, Section B. Sliding Elastomeric Bearings, Section 1. Lower Component, Section b. PTFE. The second sentence is voided and not replaced.

Article 434.2. Materials, Section B. Sliding Elastomeric Bearings, Section 1. Lower Component is supplemented by the following:

c. Laminated Elastomeric Bearing Pad. Furnish laminated elastomeric bearing pads produced by a manufacturer prequalified by the Construction Division. Provide elastomer for laminated elastomeric bearing pads in accordance with Section 434.2.A.1, "Elastomer." Provide steel laminates for laminated elastomeric bearing pads in accordance with Section 434.2.A.2, "Steel Laminates." Provide steel plates for laminated elastomeric bearing pads in accordance with Section 434.2.A.3, "Steel Top Plates."

Article 434.2. Materials, Section B. Sliding Elastomeric Bearings is supplemented by the following:

4. Coatings. Provide coating materials as required in accordance with Item 445, "Galvanizing," and Item 446, "Cleaning and Painting Steel."

Article 434.3. Construction, Section A. Plain and Laminated Elastomeric Bearings, Section 4. Field Methods. The second paragraph is voided and replace by the following:

Field-weld as required in accordance with Item 448, "Structural Field Welding." Do not damage the elastomer when welding near bearings. Replace bearings damaged by field welding at the Contractor's expense.

Article 434.3 Construction, Section B. Sliding Elastomeric Bearings is voided and replaced by the following:

B. Sliding Elastomeric Bearings. Before fabrication of sliding elastomeric bearings, prepare and submit clear and legible shop drawings for the complete assembly in accordance with the plans and Section 441.3.A.6.b(2), "Non-Bridge Structures." Provide a bearing layout with the shop drawings.

Attach the stainless steel sheet to the steel top (sole) plate by continuous fillet-welding around the edges with an approved welding electrode. Do not extend the weld above the sliding surface. Protect the sliding surface from weld spatter. Provide the finished stainless surface flat to a tolerance of 1/32 in. After attachment to the steel plate, polish the stainless steel sheet to a bright mirror finish less than 20 micro-in. rms, and solvent-clean to remove traces of polishing compound.

For lower components with laminated elastomeric bearing pads, fabricate the laminated elastomeric bearing pads according to Section 434.3.A, "Plain and Laminated Elastomeric Bearings." Vulcanize the laminated elastomeric bearing pad to the PTFE faced steel plate. Machine the steel plate recessed surface flat to a tolerance of 1/32 in. and within 1/32 in. of required depth. Bond the PTFE material to the steel plate recessed surface with an approved adhesive. Fit the PTFE material into the recessed surface with not more than 1/32-in. gaps around the perimeter.

For lower components with preformed fabric pads, provide preformed fabric pads within the following tolerances from plan dimension:

- length and width: +1/4 in., -0 in., and
- thickness: +/-5%.

Bond the PTFE material to the preformed fabric pad using approved adhesive methods or by vulcanizing through an appropriate polychloroprene interlayer.

Perform required welding in accordance with Item 441, "Steel Structures." Manufacture guide bars when required so that adjacent top and bottom bar surfaces are parallel to within 1/16 in. in the assembled position. The tolerance for diameter of anchor bolt holes is +1/8 in., -0 in. The maximum deviation for flatness of steel top (sole) plates, except at stainless steel attached surfaces, is 1/16 in. in any 24 in.

1. **Markings.** Mark the bearing type on the surface of each sliding elastomeric bearing. The marking must remain legible until placement in the structure. Permanently mark the laminated elastomeric bearing pad with the information specified in Section 434.3.A.1, "Markings."

2. **Testing and Acceptance.** For lower components with laminated elastomeric bearing pads, test a minimum of 10% of the sliding elastomeric bearing assemblies to an average compressive strength of 2,250 psi or a stress approved by the Engineer. Provide calibrated equipment per ASTM E 4 for this compression testing. No tested sliding elastomeric bearing may show visible damage to the PTFE or stainless steel surfaces nor evidence of bond failure between the:
   - PTFE faced steel plate and laminated elastomeric bearing pad,
   - steel laminates and elastomer within the laminated elastomeric bearing pad, and
   - steel plate and PTFE.

   Perform check tests if necessary on the steel, laminated elastomeric bearing pads, preformed fabric pads, or PTFE material to verify the properties required under Section 434.2.B, "Sliding Elastomeric Bearings."

   Bearings represented by test specimens passing the requirements of this Item will be approved for use in the structure subject to on-site inspection by the Engineer for visible defects.

   a. **Lower Component.** Manufacture 1 additional bearing lower component for testing purposes. After bearings have been manufactured for a project, notify the Construction Division, which will sample a bearing lower component at random from the lot. The Construction Division will perform a 90° peel test (adhesion test) to ensure that the sample meets a minimum required peel strength of:
      - 20 lb. per inch between the PTFE material and steel plate when tested per Tex 601-J, and
      - 25 lb. per inch between the PTFE material and preformed fabric pad when tested per ASTM D 429, Method B.

      The Construction Division will also determine adhesion between the PTFE faced steel plate and laminated elastomeric bearing pad per Tex-601-J.

   b. **Documentation.** Furnish copies of certified mill test reports for the steel top (sole) plate, stainless steel, PTFE faced steel plate, and any required steel special components. Provide a manufacturer's certification that the preformed fabric pad and PTFE material meet the requirements of this Item. Furnish certified laboratory test results on the elastomer properties of each batch or lot of compound for laminated elastomeric bearing pads.

3. **Storage.** Store sliding elastomeric bearings horizontally in a dry, sheltered area. Provide moisture- and dust-resistant wrapping maintained in good condition until installation. Lift bearings only from the undersides. Protect bearings from damage, dirt, oil, grease, and other foreign substances.

4. **Field Methods.** Provide concrete surfaces for bearing areas under sliding elastomeric bearings in accordance with Section 420.4.H, "Treatment and Finishing of Horizontal Surfaces Other Than Bridge Slabs."

Field-weld as required in accordance with Item 448, "Structural Field Welding." Avoid damage to the laminated elastomeric bearing pad or preformed fabric pad when welding near bearings. Bearings damaged by field welding will be replaced by the Contractor at the Contractor's expense.

Article 434.5. Payment, Section B. Sliding Elastomeric Bearings is voided and replaced by the following:

B. Sliding Elastomeric Bearings. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Sliding Elastomeric Bearing" of the type specified. This price is full compensation for the stainless steel faced top plate, the PTFE faced steel plate vulcanized to the top of a laminated elastomeric bearing pad or the PTFE faced preformed fabric pad, the steel special components, the anchor bolts required to connect the bearing between superstructure and substructure; installation; and tools, equipment, labor, and incidentals.

SPECIAL PROVISION

440---005

Reinforcing Steel

For this project, Item 440, "Reinforcing Steel" of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 440.2 Materials, Section A. Approved Mills is supplemented by the following:

Contact the Construction Division with the name and location of the producing mill for stainless steel reinforcement at least 4 weeks prior to ordering any material.

Article 440.2. Materials, Section D. Weldable Reinforcing Steel is supplemented by the following:

Do not weld stainless reinforcing steel without permission from the Engineer. If welding is required, provide stainless steel reinforcing suitable for welding and submit welding procedures and electrodes to the Engineer for approval.

Article 440.2. Materials, Section G. Mechanical Couplers is voided and replaced by the following:

When mechanical splices in reinforcing steel bars are shown on the plans, use couplers of the type specified in DMS-4510, "Mechanical Couplers for Reinforcing Steel," Article 4510.5.A, "General Requirements."

Furnish only couplers produced by a manufacturer pre-qualified in accordance with DMS-4510. Do not use sleeve-wedge type couplers on coated reinforcing. Sample and test couplers for use on individual projects in accordance with DMS-4510. Furnish couplers only at locations shown on the plans.

Furnish couplers for stainless reinforcing steel with the same alloy designation as the reinforcing steel.

Article 440.2. Materials is supplemented by the following:

H. Fibers. When allowed by the plans, supply fibers at the minimum dosage listed on the Material Producer List maintained by the Materials and Pavements Section of the Construction Division. When shown on the plans, use fibers that do not corrode due to carbonation of concrete or the use of deicing salts.

I. Stainless Steel. When stainless reinforcing steel is required in the plans, provide deformed steel bars of the types listed below and conforming to ASTM A 955, Gr. 60 or higher.

UNS Designation	S31653	S31803	S24100	S32304
AISI Type	316LN	2205	XM-28	2304

Article 440.3.Construction, Section A. Bending is supplemented by the following:

Bend stainless reinforcing steel in accordance with ASTM A955.

Article 440.3.Construction, Section C. Storage is supplemented by the following:

Do not allow stainless steel reinforcement to be in direct contact with uncoated steel reinforcement, nor with galvanized reinforcement. This does not apply to stainless steel wires and ties. Store stainless steel bar reinforcement separately, off the ground on wooden supports.

Article 440.3. Construction, Section D. Splices. The fifth bullet is voided and replaced by the following:

- For box culvert extensions with less than 1 ft. of fill, lap the existing longitudinal bars with the new bars as shown in Table 5. For extensions with more than 1 ft. of fill, lap at least 1 ft. 0 in.

Article 440.3. Construction, is supplemented by the following:

G. Handling and Placing Stainless Steel Reinforcing.
Handle, cut, and place stainless steel bar reinforcement using tools that are not used on carbon steel. Do not use carbon steel tools, chains, slings, etc. when handling stainless steel. Use only nylon or polypropylene slings. Cut stainless steel using shears, saws, abrasive cutoff wheels, or torches. Remove any thermal oxidation using pickling paste. Do not field bend stainless steel without approval.

Use 16 gauge fully annealed stainless steel tie wire conforming to the material properties listed in 440.2.I. "Stainless Steel". Support all stainless steel on solid plastic, stainless steel, or epoxy coated steel chairs. Do not use uncoated carbon steel chairs in contact with stainless steel.

SPECIAL PROVISION

441---006

Steel Structures

For this project, Item 441, "Steel Structures," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 441.3, "Construction," Section A, "General Requirements," Section 1, "Applicable Codes," is voided and replaced by the following:

Perform all fabrication in accordance with AASHTO/NSBA Steel Bridge Collaboration S2.1, including fabrication of non-bridge members. Follow all applicable provisions of the appropriate AWS code (D1.5 or D1.1) except as otherwise noted in the plans or in this Item. Weld sheet steel (thinner than 1/8 in.) in accordance with ANSI/AWS D1.3, Structural Welding Code—Sheet Steel. Unless otherwise stated, requirements of this Item are in addition to the requirements of S2.1. In case of a conflict between this Item and S2.1, follow the more stringent requirement. Perform all bolting in accordance with Item 447, "Structural Bolting."

Article 441.3, "Construction," Section A, "General Requirements," Section 5, "Qualification of Plant, Laboratories, and Personnel," Section b, "Nondestructive Examination (NDE)," is voided and replaced by the following:

Personnel performing NDE must be qualified in accordance with the applicable AWS code. Current certification in accordance with ASNT SNT-TC-1A is required for an inspector to be considered qualified. Testing agencies and individual third-party contractors must also successfully complete periodic audits for compliance, performed by the Department. In addition, ultrasound technicians must pass a hands-on test administered by the Construction Division. A technician who fails the hands-on test must wait 6 months before taking the test again. Qualification to perform ultrasonic testing for the Department will be revoked when the technician's employment is terminated, and recertification based on a new hands-on test will be required.

Article 441.3, "Construction," Section A, "General Requirements," Section 9, "Inspection." The second paragraph is voided and replaced by the following:

Provide the Inspector with the helpers and equipment needed to move material to allow inspection. QC is solely the responsibility of the Contractor. The Contractor must have a QC staff qualified in accordance with the applicable AWS code. Welding inspectors must be current AWS Certified Welding Inspectors. The QC staff must provide inspection of all materials and workmanship prior to inspection by the Department.

Article 441.3, "Construction," Section B, "Welding," Section 5, "Nondestructive Examination (NDE)," Section c, "Magnetic Particle Testing." The first sentence is voided and not replaced.

Article 441.3, "Construction," Section D, "Dimensional Tolerances," Section 2, "Flange Straightness." The second sentence is voided and replaced by the following:

Rolled material must meet this straightness requirement before being laid out or worked.

Article 441.3, "Construction," Section D, "Dimensional Tolerances," Section 3, "Alignment of Deep Webs in Welded Field Connection." The first sentence is voided and replaced by the following:

For girders 48 in. deep or deeper, the webs may be slightly restrained while checking compliance with tolerances of S2.1 for lateral alignment at welded field connections.

Article 441.3, "Construction," Section D, "Dimensional Tolerances," Section 4, "Bearings," Section c, "Shoes," is supplemented by the following:

- For a pin and rocker type expansion shoe, the axis of rotation coincides with the central axis of the pin.
- When the shoe is completely assembled, as the top bolster travels through its full anticipated range, no point in the top bolster plane changes elevation by more than 1/16 in. and the top bolster does not change inclination by more than 1 degree, for the full possible travel.

Article 441.3, "Construction," Section D, "Dimensional Tolerances," Section 4, "Bearings," is supplemented by the following:

d. Beam supports. Fabricate beam support planes true to the box girder bearing to 1/16 in. in the short direction and true to the vertical axis of the nesting girders to 1/16 in.

Article 441.3, "Construction," Section G, "Shop Assembly," Section 1, "General Shop Assembly." The first paragraph is voided and replaced by the following:

1. General Shop Assembly. Shop-assemble field connections of primary members of trusses, arches, continuous beam spans, bents, towers (each face), plate girders, field connections of floor beams and stringers (including for railroad structures), field-bolted plate diaphragms for curved plate girders and railroad underpasses, and rigid frames. Field-bolted crossframes and rolled-section diaphragms do not require shop assembly. Complete fabrication, welding (except for shear studs), and field splice preparation before members are removed from shop assembly. Obtain approval for any deviation from this procedure. The Contractor is responsible for accurate geometry.

SPECIAL PROVISION

442---016

Metal for Structures

For this project, Item 442, "Metal for Structures," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 442.2, "Materials," Section A, "Structural Steel," Section 1, "Bridge Structures." The third sentence is voided and not replaced.

Article 442.5, "Payment," is voided and replaced by the following:

442.5. Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Structural Steel" of the type (Rolled Beam, Plate Girder, Tub Girder, Box Girder, Railroad Through-Girder, Railroad Deck-Girder, Miscellaneous Bridge, Miscellaneous Non-Bridge) specified. This price is full compensation for materials, fabrication, transportation, erection, paint, painting, galvanizing, equipment, tools, labor, and incidentals.

SPECIAL PROVISION

447---002

Structural Bolting

For this project, Item 447, "Structural Bolting," of the Standard Specifications is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 447. Section 4. Construction, Section C. Preparation of Faying Surfaces. The second paragraph is voided and replaced by the following:

Perform blast-cleaning or painting of faying surfaces in accordance with Item 446, "Cleaning and Painting Steel." Provide an SSPC-SP 10 blast cleaning prior to shipment if surfaces to be in contact after final bolting will be left unpainted. Do not wire-brush uncoated faying surfaces. Roughen galvanized faying surfaces by hand wire-brushing. For main girder splices, perform a brush-blast to provide an SSPC-SP 6 finish not sooner than 48 hours prior to assembling the connection unless otherwise approved.

Article 447.4. Construction, Section D. Bolt Installation, Section 3. Tension Bolts is supplemented by the following:

Tension all bolts in a connection within 10 days of installation. Bolts not tensioned within 10 days of installation are subject to field R-C testing. Relubricate or replace any installed bolts that do not have sufficient lubrication as determined by the field R-C test.

Article 447.4. Construction, Section E. Bolt Tensioning, Section 1. Turn-of-the-Nut Method, Table 2. Note 1 below Table 2 is voided and replaced by the following:

1. Nut rotation is relative regardless of the element (nut or bolt) being turned. The tolerance is –0°, +30° for bolts installed by 1/2 turn or less and –0°, +45° for bolts installed by 2/3 turn or more.

SPECIAL PROVISION

448---002

Structural Field Welding

For this project, Item 448, "Structural Field Welding," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 448.3 Equipment is voided and replaced by the following:

Provide electrode drying and storing ovens that can maintain the required temperatures specified in Section 448.4.C.1, "Electrode Condition." Each oven must have a door that is sealed and can be latched. Each oven must have a small port that may be opened briefly to insert a thermometer or the oven must be equipped with a thermometer that allows for direct reading of temperature inside the oven without opening the oven. Provide equipment able to preheat and maintain the temperature of the base metal as required and as shown on the plans. Provide approved equipment, temperature indicator sticks, infrared thermometer, etc., for checking preheat and interpass temperatures at all times while welding is in progress. Provide welding equipment meeting the requirements of the approved welding procedure specifications (WPS), if required, and capable of making consistent high-quality welds.

Article 448.4.B.2.Certified Steel Structures Welder. The second bulleted item is voided and replaced by the following:

- Use metal for test plates that meets Item 442, "Metal for Structures," with a minimum yield point of 36 ksi. The minimum width of test plate must be sufficient to accommodate the radiograph inspection of 6 continuous inches of the weld, not counting the ends of the weld.

Article 448.4.C.5. Welding Practice. The second paragraph is voided and replaced by the following:

Use the stringer-bead technique where possible for groove welds. In vertical welding passes, progress upward using a back-step sequence keeping the end of the low-hydrogen electrode contained within the molten metal and shield of flux, unless the electrode manufacturer's specifications indicate otherwise

Article 448.4.C.7. Radiographic Inspection is supplemented by the following:

Meet the requirements specified in Section 441.3.B.5.a, "Radiographic Testing" for radiograph film quality.

SPECIAL PROVISION
450---001
Railing

For this project, Item 450, "Railing," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 450.2. Materials is supplemented with the following:

Where epoxy anchors are allowed or required, provide an approved Type III, Class C epoxy in accordance with DMS-6100, "Epoxies and Adhesives," for installing drilled and epoxied rail anchorage reinforcement or rail anchor bolts. Use other materials if shown in the plans. Provide only dual cartridge epoxy systems mixed with a static mixing nozzle supplied by the epoxy adhesive manufacturer and dispensed with a tool supplied by the epoxy adhesive manufacturer. Do not use bulk epoxies. Drill and install anchorage reinforcement or anchor bolts to the embedment depth shown in the plans or the depth recommended by the manufacturer, whichever is deeper. No additional payment will be made for providing embedment deeper than shown in the plans. If no resistance or embedment depth is specified in the plans, select an embedment depth capable of developing the yield strength of the steel anchor.

Article 450.3. Construction, Section B. Concrete Railing. The last paragraph is voided and replaced by the following:

Obtain approval to slipform railing. Slipforming equipment must be approved. Do not slipform railing with cast-in-place anchor bolts unless noted otherwise. Provide additional reinforcing, at Contractor's expense, as needed to prevent movement of the reinforcement cage. Clear cover and epoxy coating requirements for additional reinforcement are the same as shown for the rail reinforcement. The rail reinforcing cage may be tack welded to the rail anchorage reinforcement provided the rail and anchorage reinforcement are not epoxy coated and weld locations measured along the rail are no closer than 3 ft. If epoxy coated reinforcement is required for the railing proposed to be slipformed, tie all bar intersections. Provide a wire line to maintain vertical and horizontal alignment of the slipform machine. Attach a grade line gauge or pointer to the machine so a continuous comparison can be made between the rail being placed and the established grade line. Rails or supports at the required grade are allowed instead of sensor controls. Prior to placing concrete, make one or more passes with the slipform over the rail segment to ensure proper operation and maintenance of grades and clearances. Provide slipformed rail within a vertical and horizontal alignment tolerance of +/- ¼ in. in 10 ft. Construct rail with a smooth and uniform appearance. Consolidate concrete so it is free of honeycomb. Provide concrete with a consistency that will maintain the shape of the rail without support. Minimize starting and stopping of the slipform operation by ensuring a continuous supply of concrete.

Do not exceed the manufacturer's recommended speed for the slipform machine. If slipforming causes movement of the reinforcement such that plan clearances are not achieved, stop slipforming and take remedial action. Remove and replace unsatisfactory slipformed rail at the Contractor's expense.

Install epoxy adhesive anchorages in accordance with the manufacturer's instructions including hole size, drilling equipment and method, hole cleaning equipment and method, mixing and dispensing epoxy, and anchor insertion. Do not alter the manufacturer's mixing nozzle or dispenser. Anchorage bars or bolts must be clean and free of grease, oil, or any other foreign material. Do not weld to an anchor bar or anchor bolt that is anchored with epoxy adhesive. Do not expose rail to traffic until epoxy adhesive has cured.

Article 450.3. Construction, Section C. Tests is supplemented with the following:

The Engineer will select three anchor bars or bolts of the first day's production to be tested after the epoxy has cured. Test the bars or bolts in the presence of the Engineer in accordance with ASTM E 1512, using a restrained test, to evaluate the epoxy adhesive's bond strength. Verify that the anchor bars or bolts develop the required pullout resistance in the plans or 75 percent of the yield strength of the bars or bolts, whichever is less, without a bond failure of the epoxy. The Engineer may require additional tests during production. If any of the tests do not meet the required test load, perform corrective measures to provide adequate capacity. Repair damage from testing.

Article 450.5. Payment is voided and replaced with the following:

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Railing" of the type specified. This price will be full compensation for furnishing, preparing, and placing concrete, expansion joint material, reinforcing steel, structural steel, aluminum, cast steel, pipe, anchor bolts or bars, testing of epoxy anchors, and all other materials required in the finished railing; removal and disposal of salvageable materials; and hardware, paint and painting of metal railing, galvanizing, equipment, labor, tools, and incidentals.

SPECIAL PROVISION

464---003

Reinforced Concrete Pipe

For this project, Item 464, "Reinforced Concrete Pipe," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 464.2. Materials, Section A. Fabrication is voided and replaced by the following:

Fabrication plants must be approved by the Construction Division in accordance with DMS-7310, "Reinforced Concrete Pipe Fabrication and Plant Qualification" before furnishing precast reinforced concrete pipe for Department projects. The Construction Division maintains a list of approved reinforced concrete pipe plants.

Furnish material and fabricate reinforced concrete pipe in accordance with DMS-7310, "Reinforced Concrete Pipe Fabrication and Plant Qualification."

Article 464.2. Materials, Section B. Design. 1. General. Table 2 is voided and replaced with the following:

Table 2
Arch Pipe

Design Size	Equivalent Diameter (in.)	Rise (in.)	Span (in.)
1	18	13-1/2	22
2	21	15-1/2	26
3	24	18	28-1/2
4	30	22-1/2	36-1/4
5	36	26-5/8	43-3/4
6	42	31-5/16	51-1/8
7	48	36	58-1/2
8	54	40	65
9	60	45	73
10	72	54	88

Article 464.2. Materials, Section C. Physical Test Requirements is voided and not replaced.

Article 464.2. Materials, Section D. Markings. The first paragraph is voided and replaced with the following:

Furnish each section of reinforced concrete pipe marked with the following information specified in DMS-7310, "Reinforced Concrete Pipe Fabrication and Plant Qualification":

- class or D-Load of pipe,
- ASTM designation,
- date of manufacturer,
- name or trademark of manufacturer and plant location,
- designated manufacturer's approval marking,
- pipe to be used for jacking and boring (when applicable), and
- pipe meeting sulfate-resistant concrete plan requirements (when applicable).

Article 464.2. Materials, Section E. Inspection is voided and replaced with the following:

Provide access for inspection of the finished pipe at the project site before and during installation.

Article 464.2. Materials, Section F. Causes for Rejection is voided and replaced by the following:

Individual sections of pipe may be rejected for any of the conditions stated in the annex of DMS-7310, "Reinforced Concrete Pipe Fabrication and Plant Qualification."

Article 464.2. Materials, Section G. Repairs is voided and replaced by the following:

Make repairs if necessary as stated in the annex of DMS-7310, "Reinforced Concrete Pipe Fabrication and Plant Qualification."

Article 464.2. Materials, Section H. Rejections is voided and not replaced.

SPECIAL PROVISION

465---001

Manholes and Inlets

For this project, Item 465, "Manholes and Inlets," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 465.2, Materials. The second paragraph is voided and replaced by the following:

Precast manholes, inlets, risers, and appurtenances are acceptable unless otherwise shown. Alternate designs for precast items must be acceptable to the Engineer and must conform to functional dimensions and dimensions for plan wall, slab and edge beam thicknesses, and reinforcing steel areas. Alternate designs must be designed and sealed by a licensed professional engineer.

SPECIAL PROVISION

500---005

Mobilization

For this project, Item 500, "Mobilization," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 500.1. Description is supplemented by the following:

Work for this Item includes submissions required by the Contract.

Article 500.3. Payment, Section A is voided and replaced by the following:

A. Payment will be made upon presentation of a paid invoice for the payment, performance, or retainage bonds, and required insurance. The combined payment for bonds and insurance will be no more than 10% of the mobilization lump sum or 1% of the total Contract amount, whichever is less.

Article 500.3. Payment, Section F is voided and replaced by the following:

F. Upon final acceptance, 97% of the mobilization lump sum bid will be paid. Previous payments under this Item will be deducted from this amount.

Article 500.3. Payment is supplemented by the following:

G. Payment for the remainder of the lump sum bid for "Mobilization" will be made after all submittals are received, final quantities have been determined and when any separate vegetative establishment and maintenance, test and performance periods provided for in the Contract have been successfully completed.

SPECIAL PROVISION

502---033

Barricades, Signs, and Traffic Handling

For this project, Item 502, "Barricades, Signs, and Traffic Handling," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 502.4. Payment, Section C. Maximum Total Payment Prior to Acceptance is voided and replaced by the following:

C. Maximum Total Payment Prior to Acceptance. The total payment for this Item will not exceed 10% of the total Contract amount before final acceptance in accordance with Article 5.8, "Final Acceptance." The remaining balance will be paid in accordance with Section 502.4.E, "Balance Due."

SPECIAL PROVISION

506---013

Temporary Erosion, Sedimentation, and Environmental Controls

For this project, Item 506, "Temporary Erosion, Sedimentation, and Environmental Controls," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 506.2. Materials. Section I. Sandbags. Table 1 is replaced with the following:

Table 1
Sand Gradation

Sieve #	Retained (% by Weight)
4	MAXIMUM 3%
100	MINIMUM 80%
200	MINIMUM 95%

Article 506.4 Construction, B. General, 2. Maintenance, is voided and replaced by the following:

B. General.

2. **Maintenance.** Perform maintenance in accordance with the plans and the TPDES General Permit. Correct ineffective control measures. Implement additional controls as directed.

   An Inspector will perform a regularly scheduled SWP3 inspection once a month. Make corrections as soon as possible before the next anticipated rain event or within 7 calendar days after being able to enter the site to work on each control device. A control device site being "too wet to work" during the entire 7 calendar day time period is the only acceptable reason for not accomplishing the corrections within the 7 calendar day time limit. Provide documentation on the Department's inspection form developed from the Department's inspections or through other approved methods.

   If maintenance corrections are not made within this timeframe, work on the project may be suspended by the Engineer. Time charges will continue until SWP3 is brought into compliance and documentation of corrective action is provided. This in no way releases the contractor of liability for noncompliance.

SPECIAL PROVISION

512---002

Portable Concrete Traffic Barrier

For this project, Item 512, "Portable Concrete Traffic Barrier," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 512.2. Materials. The first paragraph is supplemented by the following:

For precast concrete traffic barrier,

- Furnish the class of concrete shown on the plans. Air-entrained concrete will not be required, unless otherwise shown on the plans.
- Use a minimum of 25% Class F fly ash with mix design Option 1 from Section 421.4.A.6, "Mix Design Options."
- Do not use mix design Options 6, 7, or 8 from Section 421.4.A.6., "Mix Design Options."

Article 512.3. Construction. The second sentence of the first paragraph is voided and replaced by the following:

Multi-project fabrication plants as defined in Item 424, "Precast Concrete Structures (Fabrication)" that produce concrete traffic barrier, except temporary barrier furnished and retained by the Contractor, must be approved in accordance with DMS-7350, "Qualification Procedure for Multi-Project Fabrication Plants of Precast Concrete Traffic Barrier."

SPECIAL PROVISION

540---023

Metal Beam Guard Fence

For this project, Item 540, "Metal Beam Guard Fence," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 540.2. Materials, Section A. Metal Beam Rail Elements. The third paragraph is replaced by the following:

Furnish metal beam rail elements from a manufacturer on the Department's approved Material Producer List, entitled "Metal Beam Guard Fence Rail Element Manufacturers."

Article 540.2. Materials, Section B. Posts, Section 2. Steel Posts is voided and replaced by the following:

2. **Steel Posts.** Provide rolled sections conforming to the material requirements of ASTM A 36. Drill or punch posts for standard rail attachment as shown on the plans. Galvanize in accordance with Item 445, "Galvanizing." Low fill culvert posts may be fabricated as galvanized "blanks" with the hole to accept the rail and the final height field fabricated. Treat all exposed post surfaces caused by the field fabrication in accordance with Section 445.3.D. "Repairs."

Article 540.2. Materials, Section B. Posts, Table 1, Rail Element Requirements. The section entitled **"Markings"** is voided and replaced by the following:

Markings	Permanently mark each metal beam rail element with the information required in AASHTO M 180. Permanently mark all curved sections of metal beam rail element, in addition, with the radius of the curved section in the format "R=xx ft." These additional markings (die-imprinted) must be on the back of the metal beam rail section away from traffic and visible after erection.

Article 540.2. Materials, Section B. Posts is supplemented by the following:

3. **Composite Posts.** Meet the requirements of DMS-7210, "Composite Material Posts and Blocks for Metal Beam Guard Fence."

Article 540.2. Materials is supplemented by the following:

H. **Terminal Anchor Posts.** Furnish new terminal anchor posts from steel conforming to the material requirements of ASTM A 36. Fabricate posts in accordance with Item 441, "Steel Structures." Galvanize terminal anchor posts after fabrication in accordance with Item 445, "Galvanizing."

I. **Driveway Terminal Anchor Posts.** Furnish new terminal anchor posts from steel conforming to the material requirements of ASTM A 36. Fabricate posts in accordance with Item 441, "Steel Structures." Galvanize terminal anchor posts after fabrication in accordance with Item 445, "Galvanizing."

Article 540.3. Construction, Section B. Rail Elements is supplemented by the following:

Short Radius. Special rail fabrication will be required at installations having a curvature of less than 150 ft. radius. The required radius shall be as shown on the plans. Short radius metal beam guard fence requires the placement of controlled release terminal (CRT) posts of the quantity shown on the plans.

Article 540.3. Construction is supplemented by the following:

G. **Driveway Terminal Anchor Posts.** Embed terminal anchor posts in concrete unless otherwise shown on the plans.

Article 540.4. Measurement is supplement by the following:

D. **Short Radius.** Measurement will be by the foot to the nearest whole foot along the face of the rail in place, from beginning of radius (and first CRT post) to the end of radius.

E. **Driveway Terminal Anchor Section.** Measurement will be by each section, complete in place, consisting of a driveway terminal anchor post and one 6 ft. section of rail element.

Article 540.5. Payment. The first paragraph is voided and replaced by the following:

540.5. Payment. The work performed and material furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Metal W-Beam Guard Fence" of the post type specified, "Metal Thrie-Beam Guard Fence" of the post type specified, "Terminal Anchor Section," "Metal Beam Guard Fence Transition" of the type specified, "Metal W-Beam Guard Fence Adjustment," "Metal Thrie-Beam Guard Fence Adjustment," "Terminal Anchor Section Adjustment," "Transition Adjustment," "Short Radius," or "Driveway Terminal Anchor Section." When weathering steel is required, Type IV will be specified.

Article 540.5. Payment, Section C. Transition is voided and replaced by the following:

C. Transition. The price bid for "Metal Beam Guard Fence Transition" is full compensation for furnishing nested sections of thrie-beam; nested sections of W-beam; thrie-beam-to-W-beam transitional rail piece, posts, concrete, curb, and connections to W-beam guard fence and bridge rails; thrie-beam terminal connectors and terminal connectors; excavation and backfilling; and equipment, labor, tools, and incidentals.

Article 540.5. Payment is supplemented by the following:

E. Short Radius. The price bid for "Short Radius" is full compensation for furnishing special rail fabricated metal beam guard fence, controlled release terminal (CRT) posts, materials, hauling, erection, blocks, driving posts, excavating, backfilling, equipment, labor, tools, and incidentals.

F. Driveway Terminal Anchor Section. The price bid for "Driveway Terminal Anchor Section " is full compensation for furnishing the rail element, driveway anchor assembly, driveway terminal anchor post, and foundations; installing the rail element anchor assembly and the driveway terminal anchor post and foundations; excavation and backfilling; and equipment, labor, tools, and incidentals.

SPECIAL PROVISION

672---034

Raised Pavement Markers

For this project, Item 672, "Raised Pavement Markers," of the Standard Specifications, is hereby amended with respect to the clauses cited below, and no other clauses or requirements of this Item are waived or changed hereby.

Article 672.2. Materials, Section B. Adhesives is supplemented by the following:

- The Contractor may propose alternate adhesive materials for consideration and approval by the Engineer.

Article 672.3. Construction. The sixth paragraph is voided and replaced by the following:

Use the following adhesive materials for placement jiggle bar tile, reflectorized pavement markers, and traffic buttons unless otherwise shown on the plans:

- standard or flexible bituminous adhesive for applications on bituminous pavements.
- epoxy adhesive or flexible bituminous adhesive for applications on hydraulic cement concrete pavements.

Use epoxy adhesive for plowable reflectorized pavement markers.

Article 672.3. Construction is supplemented by the following:

Provide a 30-day performance period that begins the day following written acceptance for each separate location. The date of written acceptance will be the last calendar day of each month for the RPMs installed that month for the completed separate project locations. This written acceptance does not constitute final acceptance.

Replace all missing, broken or non-reflective RPMs. Visual evaluations will be used for these determinations. Upon request, the Engineer will allow a Contractor representative to accompany the Engineer on these evaluations.

The Engineer may exclude RPMs from the replacement provisions of the performance, provided the Engineer determines that the failure is a result of causes other than defective material or inadequate installation procedures. Examples of outside causes are extreme wear at intersections, damage by snow or ice removal, and pavement failure.

Replace all missing or non-reflective RPMs identified during the performance period within 30 days after notification. The end of the performance period does not relieve the Contractor from the performance deficiencies requiring corrective action identified during the performance period.

Article 672.5. Payment is supplemented by the following:

No additional payment will be made for replacement of RPMs failing to meet the performance requirements.

RPMs INSTALLATION RECORD

The 30 day performance period begins the day after written acceptance for each separate location. The date of written acceptance will be the last calendar day of each month for the RPMs installed that month for the completed separate project locations.

COUNTY HIGHWAY	CONTROL PROJECT	LIMITS FROM LIMITS TO	MONTH/YR OF INSTALLATION

Contractor signature _____ _____
Date

Department signature _____ _____
Date

SPECIAL SPECIFICATION

4521

Trench Drain

1. **Description.** Construct cast in place surface drainage trench.

2. **Materials.** Provide a trench with a slope as shown on the plans. Furnish forms capable of maintaining proper alignment during the concrete placement. Ensure connections to structures do not restrict the hydraulic flow of the trench drain.

   - Use Class C Concrete conforming to Item 420, "Concrete Structures."

   Furnish trench drain rails fabricated with structural steel meeting the requirements of ASTM A 36 with a minimum cross section of 2 in. x 2 in. x 3/16 in. Furnish trench drain rails having 1/4 in. minimum diameter steel anchoring rods at a maximum spacing of 20 in. between each rod, measured in the direction of travel, and a means for securing adjoining trench rails. Furnish steel that is galvanized per ASTM A 123, after fabrication.

   Fabricate trench drain grates from ductile iron in accordance with ASTM A 536, Grade 65-45-12 and meet an AASHTO proof load rating of AASHTO M 306. Provide galvanized grates per ASTM A 123, after fabrication.

   Furnish stainless grate retainers and rails that withstand the following loads:
   a. Vertical up-1,000 lbs.
   b. Transverse-6,000 lbs
   c. Longitudinal-6,000 lbs

   Furnish trench drain grates that have a minimum of 66% open space of total top surface area and are held in place with a non-rigid, four-point locking system in the four corners of the grate. Provide approved trench drain grate retaining devices that do not obstruct the flow area of the trench. Furnish removable trench grates.

   Provide shop drawings sealed by a professional engineer stating that trench drain system meets loading requirements or if a proprietary system, submit documents showing design loadings.

   Furnish documentation in accordance with Item 471.2.C.

3. **Construction.** Perform excavation in accordance with Item 400, "Excavation and Backfill for Structures." Construct trench with a slope as shown on the plans. Submit shop drawings that provide enough detail to ensure seamless installation of the trench drain adjacent to the proposed or existing pavement structure.

If using a proprietary system, provide shop drawings that contain the manufacturer's installation guidelines and any sequential order of construction. Construct the trench drain with a maximum allowable tolerance of +/- 0.063 in. for dimensional accuracy and rail co-planarity. Provide a smooth finish on the surface of the trench that will convey runoff. Make connections to new or existing structures as shown on the plans or as directed.

Remove trench drain forms and dispose of properly. Install grates with retaining pins on each of the four corners. Remove all construction debris from the trench drain.

4. **Measurement.** This item will be measured by the foot, between the longitudinal ends of the trench drain along the pavement surface, as installed.

5. **Payment.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit bid price for "Trench Drain".

   This price is full compensation for furnishing the labor, materials (including forms, rails, anchorages, support bars, concrete, and grates), tools, equipment, and incidentals necessary to install the trench drain, complete in place, including structural excavation, reinforcement anchor, and other connecting devices as shown on the plans and as directed. Structures such as manholes, inlets, or junction boxes connected to the trench drain system will be paid for separately under their respective bid items.

SPECIAL SPECIFICATION

5049

Biodegradable Erosion Control Logs

1. **Description.** Furnish, install, maintain, and remove biodegradable erosion control logs as shown on the plans or as directed.

2. **Materials.**

   A. **Core Material.** Furnish core material that is biodegradable or recyclable. Except where specifically called out in plans, material may be compost, mulch, aspen excelsior wood fibers, chipped site vegetation, agricultural rice or wheat straw, coconut fiber, 100% recyclable fibers, or any other acceptable material. No more than 5% of the material is permitted to escape from the containment mesh. Furnish compost, meeting the requirements of Item 161, "Compost."

   B. **Containment Mesh.** Furnish containment mesh that is 100% biodegradable, photodegradable or recyclable such as burlap, twine, UV photodegradable plastic, polyester, or any other acceptable material.

      i. Furnish biodegradable or photodegradable containment mesh when log will remain in place as part of a vegetative system.

      ii. Furnish recyclable containment mesh for temporary installations.

   C. **Size.** Furnish biodegradable erosion control logs with diameters shown on the plans or as directed. Stuff containment mesh densely so logs do not deform.

3. **Construction.** Install biodegradable erosion control logs near the downstream perimeter of a disturbed area to intercept sediment from sheet flow. Incorporate the biodegradable erosion control logs into the erosion control measures used to control sediment in areas of higher flow. Install, align, and locate the biodegradable erosion control logs as specified below, as shown on the plans, or as directed.

   A. **Anchoring.** Secure biodegradable erosion control logs in a method adequate to prevent displacement as a result of normal rain events and to the satisfaction of the Engineer and such that flow is not allowed under the logs.

   B. **Maintenance.** Inspect and maintain the biodegradable erosion control logs in good condition (including staking, anchoring, etc.). Maintain the integrity of the control, including keeping the biodegradable erosion control logs free of accumulated silt, debris, etc., until permanent erosion control features are in place, or the disturbed area has been adequately stabilized. Perform in accordance with Section 506.4.C, "Installation, Maintenance and Removal Work." Stabilize the areas damaged by the removal process using appropriate methods as approved.

Repair or replace damaged biodegradable erosion control logs as required and as directed. Temporarily remove and replace biodegradable erosion control logs as required to facilitate work. Remove sediment and debris when accumulation affects the performance of the devices, after a rain, and when directed. Dispose of sediment and debris at an approved site in a manner that will not contribute to additional siltation.

C. **Removal**. Remove biodegradable erosion control logs when directed.

4. **Measurement.** This Item will be measured by the linear foot along the centerline of the top of the control logs.

5. **Payment.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Biodegradable Erosion Control Logs," of the size specified. This price is full compensation for furnishing, placing, maintaining, temporarily removing and replacing as required to facilitate construction operations, and removing of the biodegradable erosion control logs and for all other materials, labor, tools, equipment, and incidentals.

   Removing accumulated sediment deposits, as described under "Maintenance," will be measured and paid for under Item 506, "Temporary Erosion, Sedimentation, and Environmental Controls."

   Stabilization (as described under "Maintenance") will be measured and paid for under the various pertinent bid items.

SPECIAL SPECIFICATION

6834

Portable Changeable Message Sign

1. **Description.** Furnish, operate, and maintain portable trailer mounted changeable message sign (PCMS) units.

2. **Materials.** Furnish new or used material in accordance with the requirements of this Item and the details shown on the plans. Provide a self-contained PCMS unit with the following:

   - Sign controller
   - Changeable Message Sign
   - Trailer
   - Power source

   Paint the exterior surfaces of the power supply housing, supports, trailer, and sign with Federal Orange No. 22246 or Federal Yellow No. 13538 of Federal Standard 595b, except paint the sign face assembly flat black.

   A. **Minimum Luminance Requirements.** All PCMS units shall meet the following luminance requirements measured at the character level in candela as is published in Report 4940-2, "Photometric Requirements for Portable Changeable Message Signs," conducted by the Texas Transportation Institute. Luminance will be tested in accordance with Tex-880.

      - Minimum Daytime Character Luminance of 4000cd/m2 with a contrast ratio of 5.
      - Minimum Nighttime Character Luminance of 30/cd/m2.

   B. **Sign Controller.** Provide a controller with permanent storage of a minimum of 75 pre-programmed messages. Provide an external input device for random programming and storage of a minimum of 75 additional messages. Provide a controller capable of displaying up to 3 messages sequentially. Provide a controller with adjustable display rates. Enclose sign controller equipment in a lockable enclosure.

   C. **Changeable Message Sign.** Provide a sign capable of being elevated to at least 7 ft. above the roadway surface from the bottom of the sign. Provide a sign capable of being rotated 360° and secured against movement in any position.

      Provide a sign with 3 separate lines of text and 8 characters per line minimum. Provide a minimum 78 in. high x 126 in. wide sign housing. Provide a minimum 18 in. character height. Provide a 5 x 7 character pixel matrix. Provide a message visibility distance of 750 ft. Provide for manual and automatic dimming light sources.

      The following are descriptions for 3 screen types of PCMS:

- **Character Modular Matrix.** This screen type comprises of character blocks.
- **Continuous Line Matrix.** This screen type uses proportionally spaced fonts for each line of text.
- **Full Matrix.** This screen type uses proportionally spaced fonts, varies the height of characters, and displays simple graphics on the entire sign.

D. Trailer. Provide a 2 wheel trailer with square top fenders, 4 leveling jacks, and trailer lights. Do not exceed an overall trailer width of 96 in. Shock mount the electronics and sign assembly.

E. Power Source. Provide a diesel generator, solar powered power source, or both. Provide a backup power source as necessary.

F. Cellular Telephone. When shown on the plans, provide a cellular telephone connection to communicate with the PCMS unit remotely.

3. **Construction.** Place or relocate PCMS units as shown on the plans or as directed. The plans will show the number of PCMS units needed, for how many days, and for which construction phases.

   Maintain the PCMS units in good working condition. Repair damaged or malfunctioning PCMS units as soon as possible. PCMS units will remain the property of the Contractor.

4. **Measurement.** This Item will be measured by each PCMS or by the day used. All PCMS units shall be set up on a work area and operational before a calendar day can be considered measurable. When measurement by the day is specified, a day shall be measured for each PCMS set up and operational on the worksite.

5. **Payment.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Portable Changeable Message Sign." This price is full compensation for PCMS units; set up; relocating; removing; replacement parts; batteries (when required); fuel, oil, and oil filters (when required); cellular telephone charges (when required); software; and equipment, materials, tools, labor, and incidentals.

SPECIAL SPECIFICATION

6986

Longitudinal Prefabricated Pavement Markings (PPM) with Warranty

1. **Description.** Furnish and place longitudinal PPM as shown on the plans. Provide a manufacturer's warranty bond for a 6 year period. The Department will allow a Contractor provided warranty bond in lieu of the manufacturer's bond if all conditions of the manufacturer's warranty including the requirements of this Item are met. In such case, the Contractor is responsible for meeting the warranty requirements. Use the form provided by the Department. The Department will allow substitution of a contractor's bond with a manufacturer's bond after execution of the Contract prior to final acceptance.

2. **Materials.** Use pavement markings that meet the requirements of Type B in DMS-8240, "Permanent Prefabricated Pavement Markings," and that are shown on the Material Producer List (MPL) entitled "Pavement Markings (Permanent, Prefabricated)"maintained by the Department.

3. **Equipment.** Provide equipment as required or directed according to the following (The provider of the warranty bond is responsible for providing equipment during the warranty period unless otherwise shown on the plans.):

   A. **Preparation and Application.** Use equipment designed for the pavement preparation and application of the type of PPM material selected.

   B. **Colorimeter.** Provide a colorimeter using 45°/0° geometry CIE, D65 Illuminant, 2° standard observation angle meeting the requirements of ASTM E 1347, E 1348, or E 1349.

   C. **Retroreflectometer.** Unless otherwise shown on the plans, provide a portable or mobile retroreflectometer meeting the following requirements.

      1. **Portable Retroreflectometer.** Provide a portable retroreflectometer that meets the requirements of ASTM E 1710.

      2. **Mobile Retroreflectometer.** Provide a mobile retroreflectometer that:

         - is approved by the Construction Division (CST) and certified by the Texas Transportation Institute Mobile Retroreflectomter Certification Program for project evaluation of retroreflectivity

         - is calibrated daily, before measuring retroreflectivity on any pavement stripe, with a portable retroreflectometer meeting the following requirements: ASTM E 1710, entrance angle of 88.76°, observation angle of 1.05°, and an accuracy of ±15%;

- requires no traffic control when retroreflectivity measurements are taken and is capable of taking continuous readings at or near posted speeds

Furnish mobile retroreflectivity measurements in compliance with Special Specification , "Mobile Retroreflectivity Data Collection for Pavement Markings" unless otherwise approved by the Engineer. The Engineer may require an occasional field comparison check with a portable retroreflectometer meeting the requirements listed above to insure accuracy.

4. Construction.

A. General. Prepare the pavement surface using controlled techniques that minimize pavement damage and hazards to the traveling public. Apply the PPM materials, according to the manufacturer's recommendations, using widths, colors, shapes, and at locations as shown on the plans.

Obtain approval for the sequence of work and estimated daily production. Use traffic control as shown on the plans or as approved. Establish guides to mark the lateral location of pavement markings as shown on the plans or as directed, and have guide locations verified. Use material for guides that will not leave a permanent mark on the roadway. Apply markings in alignment with the guides and without deviating for the alignment more than 1 in. per 200 ft. of roadway or more than 2 in. maximum. Remove all applied markings that are not in alignment or sequence as stated in the plans or as stated in the specifications at the Contractor's expense and in accordance with Item 677, "Eliminating Existing Pavement Markings and Markers," except for measurement and payment.

B. Initial Performance Requirements. Meet Article 5, "Performance Requirements" initially, after installation.

The Engineer will conduct visual performance evaluations of PPM. For markings that do not meet the Engineer's visual performance evaluation, the Contractor may present test results for color (using a colorimeter), retroreflectivity (using a retroreflectometer in accordance with this Item), and durability (in accordance with ASTM D 913) for the Engineer's use in making acceptance or rejection decisions.

For PPM not meeting performance requirements, repair or replace until reevaluation shows the PPM meet the performance requirements as approved by the Engineer.

C. Written Acceptance. The Department will provide written acceptance after the Contractor meets the initial performance requirements. This written acceptance (see attached sample form) will include the date, location, length, and type of PPM.

5. Performance Requirements.

A. Color. Provide PPM consisting of pigments blended to provide color conforming to highway colors as shown in Table 1.

Table 1
Color Requirements

Federal 595 Color		Chromaticity Coordinates								Brightness (Y)
		1		2		3		4		
		x	y	x	y	X	y	x	y	
White	17855	.290	.315	.310	.295	.350	.340	.330	.360	60 min
Yellow	33538	.470	.455	.510	.489	.490	.432	.537	.462	30 min
Black										5 max

B. Retroreflectivity. Provide PPM for longitudinal markings meeting the minimum retroreflectivity values listed in Table 2.

Table 2
Minimum Retroreflectivity Requirements

Color	Retroreflectivity, $mcd/m^2/lx$, Min
White	120
Yellow	120

C. Durability. Provide PPM that do not lose more than 5% of the striping material in a 1,000- ft. section of continuous stripe or broken stripe (25 broken stripes). Pavement markings must remain in the proper alignment and location.

D. Performance Evaluation Procedures. Provide traffic control and conduct evaluations of color, retroreflectivity, and durability as required or directed.

1. **Color.** Measure color using 45°/0° geometry CIE, D65 Illuminant, 2° standard observation angle in accordance with ASTM E 1347, E 1348, or E 1349.

2. **Retroreflectivity.** Unless otherwise shown on the plans, conduct retroreflectivity evaluations of pavement markings with either a portable or mobile retroreflectometer. Make all measurements in the direction of traffic flow, except for broken centerline on 2-way roadways, where measurements will be made in both directions.

   If using a portable retroreflectometer, take a minimum of 1 measurement every mile on each series of markings (i.e., edgeline, center skipline, each line of a double line, etc.), at locations approved by the Engineer. If more than 1 measurement is taken, average the measurements. For all markings measured in both directions, take a minimum of 1 measurement in each direction. If the measurement taken on a specific series of markings within each mile segment falls below the minimum retroreflectivity values, take a minimum of 5 more measurements at locations determined by the Engineer within that mile segment for that series of marking. If the average of these 5 measurements falls below the minimum retroreflectivity requirements, that mile segment of the applied markings does not meet the performance requirement.

If using a mobile retroreflectometer, review the results to determine deficient sections and deficient areas of interest. These areas do not meet the performance requirements.

3. **Durability.** Measure durability in accordance with ASTM D 913 for marking material loss and visual inspection for alignment and location. Conduct evaluations at locations approved by the Engineer.

6. Warranty Requirements.

Each warranty period is for 6 yr. and starts the day after written acceptance.

The marking warrantor is responsible for meeting Article 5, "Performance Requirements" for the duration of the warranty period.

During the warranty period, the Engineer will conduct periodic visual performance evaluations of PPM. For retroreflectivity the Engineer will use Tex-828-B, "Determining Functional Characteristics of Pavement Markings." The warrantor may be present during these evaluations. For areas, which, in the opinion of the Engineer, have a questionable visual evaluation, the warrantor may replace the PPM or may conduct a performance evaluation for the performance requirement in question, according to Section 5.D, "Performance Evaluation Procedures." Conduct retroreflectivity evaluations according to Section 5.D.2, "Retroreflectivity," using either portable or mobile retroreflectometer unless otherwise shown on the plans. The warrantor is responsible for traffic control when conducting performance evaluations.

The warrantor will replace PPM that fails to meet the color, retroreflectivity, or durability performance requirements during the warranty period. Replace PPM that fails to meet the performance requirements within 30 days of notification.

All replacement PPM must meet the materials and performance requirements of this specification, under the following conditions to complete the warranty period:

If the longitudinal PPM fails to meet the performance requirements in Article 5 in Years 1 through 4, use materials meeting Type B requirements of specification DMS-8240.

If the longitudinal PPM fails to meet the performance requirements in Article 5 in Years 5 or 6, use materials that meet DMS-8240 (Type A or B) or on the MPL entitled "Pavement Markings (Multipolymer)," to meet the performance requirements of Article 5.

The end of the warranty period does not relieve the warrantor from the performance deficiencies requiring corrective action identified during the warranty period.

The Engineer may exclude PPM from the replacement provisions of the warranty period, provided the Engineer determines that the failure is a result of outside causes rather than defective material. Examples of outside causes are extreme wear at intersections, damage by snow or ice removal, and premature pavement failure.

Provide a contact person, address and telephone number for notification of needed PPM replacement.

7. **Measurement.** This Item will be measured by the foot or by any other unit shown on the plans. Each stripe will be measured separately.

   This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the proposal unless modified by Article 9.2, "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments of quantities are required.

8. **Payment.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Longitudinal Prefabricated Pavement Markings (PPM) with Warranty" of the color, shape and width, specified as applicable, at the time of project acceptance. This price is full compensation for materials, application of longitudinal PPM, testing, warranty work, equipment, labor, tools, and incidentals.

PPM INSTALLATION RECORD FOR WRITTEN ACCEPTANCE

** Warranty period begins the day after written acceptance.

COUNTY HIGHWAY	CONTROL PROJECT	LIMITS FROM LIMITS TO	LENGTH	TYPE PPM	ACCEPTANCE DATE

Contractor signature _____ _____
Date

Department signature _____ _____
Date

WARRANTY BOND		CONTRACT NO.	
		COUNTY	
		BOND NO	

KNOW ALL PERSONS BY THESE PRESENTS: That we, _ _____, manufacturer of or Contractor for prefabricated pavement markings, as Principal, and _ _____, as Surety, are held and firmly bound unto the State of Texas, as Obligee, in the penal sum of _ _____ _ Dollars $_ _____, lawful money of the United States, well and truly to be paid to the State of Texas, and we bind ourselves, our heirs, successors, executors, and administrators jointly and severally, firmly by these presents.

Whereas, the above bounden Principal has provided prefabricated pavement markings to _ _____for the foregoing contract entered into between _ _____ and the Obligee, attached hereto; and

Whereas, the Principal is required to protect the Obligee against any defects resulting from faulty prefabricated pavement markings installed under said contract for a period of 6 years beginning the day after written acceptance.

Now, therefore, the condition of this obligation is such that if the above bounden principal, its heirs, successors, executors, and administrators shall promptly and faithfully carry out and perform the warranty as provided in said contract, and shall, within thirty days of due notice, replace any installed prefabricated pavement markings that may fail to meet Obligee's performance evaluation as provided for in the Contract during the period specified above or shall pay over, make good, and reimburse to the said Obligee all loss and damage that said Obligee may sustain by reason of failure or default of said Principal so to do, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

Provided further that the end of a warranty period shall not relieve Principal from its obligation to correct deficiencies requiring corrective action, so long as those deficiencies are identified during the warranty period.

WITNESS our hand this _____ day of _____ 20 _____.

_____
(Warrantor Name)

_____ * By: _____
**SURETY (Print Firm Name and Seal) (Warrantor Officer)

By: _____ * By: _____
(Title) (Warrantor Officer)

_____ _____
**SURETY (Print Firm Name and Seal) **SURETY (Print Firm Name and Seal)

By: _____ By: _____
(Title) (Title)

* Attach a Power of Attorney showing that the officer of the warrantor has authority to sign this obligation.
** Attach a Power of Attorney showing that the surety officer or Attorney-In-Fact has authority to sign this obligation; the Power of Attorney and bond must be impressed with the corporate seal. The surety must be a US Treasury listed company and provide notification information.

SPECIAL SPECIFICATION

8094

Mobile Retroreflectivity Data Collection for Pavement Markings

1. **Description.** Furnish mobile retroreflectivity data collection (MRDC) for pavement markings on roadways as shown in the plans or as designated by the Engineer. Conduct MRDC on dry pavement only.

2. **Equipment and Personnel.**

   A. **Mobile Retroreflectometer.** Provide a self-propelled, mobile retroreflectometer certified by the Texas Transportation Institute (TTI) Mobile Retroreflectometer Certification Program.

   B. **Portable Retroreflectometer.** Provide a portable retroreflectometer that uses 30-meter geometry meeting the requirements described in ASTM E 1710. Maintain, service, and calibrate all portable retroreflectometers according to the manufacturer's instructions.

   C. **Operating Personnel for Mobile Retroreflectometer.** Provide all personnel required to operate the mobile retroreflectometer and portable retroreflectometer. Ensure MRDC system operator has a current certification from the TTI Mobile Retroreflectometer Certification Program to conduct MRDC with the certified mobile retroreflectometer provided.

   D. **Additional Personnel.** Provide any other personnel necessary to compile, evaluate, and submit MRDC.

   E. **Safety Equipment.** Supply and operate all required safety equipment to perform this service.

3. **MRDC Documentation.** Document all MRDC by county and roadway or as directed by the Engineer. Submit all data to the Department no later than three working days after the day the data is collected. Submit all raw data collected in addition to all other data submitted. Provide data files in Microsoft Excel format or a format approved by the Engineer. Provide a high-quality DVD showing the markings as they are measured. The data file and video must contain the following information:

   A. **Preliminary Documentation Sample.** Submit a sample data file, video, and map of MRDC data in the required format ten working days prior to beginning any work. The format must meet specification and be approved by the Engineer before any work may begin.

   B. **Initial Documentation Review and Approval.** The Department will review documentation submitted for the first day of MRDC, and if it does not meet specification requirements, will not allow further MRDC until deficiencies are

corrected. The Department will inform the contractor no later than three working days after submittal if the first day of MRDC does not meet specification requirements. Time charges will continue unless otherwise directed by the Engineer.

C. **Data File.** Provide data files with the following:

- date;
- district number;
- county;
- route number with reference markers or other reference information provided by the Engineer to indicate the location of beginning and end data collection points on that roadway;
- cardinal direction;
- line type (single solid, single broken, double solid, etc.);
- line color;
- file name corresponding to video;
- data for each centerline listed separately;
- average reading taken for each 0.1 mi. interval or interval designated by the Engineer;
- accurate GPS coordinates (within 20 feet) for each interval;
- color-coding for each interval indicating passing or failing, unless otherwise directed by the Engineer (Passing and failing thresholds will be provided by the Engineer);
- graphical representation of the MRDC (y-axis showing retroreflectivity and x-axis showing intervals) corresponding with each data file;
- distance in miles driven while measuring the pavement markings;
- event codes (pre-approved by the Engineer) indicating problems with measurement;
- portable retroreflectometer field check average reading and corresponding mobile average reading for that interval when applicable; and
- upper validation threshold (may be included separately with the raw data but must be clearly identified with the data collected using that threshold).

D. **Map in Electronic Format.** Provide a map in an electronic format approved by the Engineer with each MRDC submission that includes the following information:

- date;
- district number;
- county;
- color-coded one mile intervals (or interval length designated by the Engineer) for passing and failing retroreflectivity values or retroreflectivity threshold values provided by the Engineer; and
- percentage of passing and failing intervals, if required by the Engineer.

E. **Video.** Provide a high-quality DVD with the following information:

- labeled with date and corresponding data file name;
- district number;
- county;
- route number with reference markers or other designated reference information to indicate the location of beginning and end collection points on that roadway; and
- retroreflectivity values presented on the same screen with the following information:
  - date;
  - location;
  - starting and ending mileage;
  - total miles;
  - retroreflectivity readings; and
  - upper validation thresholds (may be included separately with the raw data but must be clearly identified with the data collected using that threshold).

F. **Field Comparison Checks with a Portable Retroreflectometer.** Take a set of field comparison readings with the portable retroreflectometer at least once every four hours while conducting MRDC or at the frequency designated by the Engineer. Take a minimum of twenty readings, spread out over the interval measured. List the average portable retroreflectometer reading next to the mobile average reading for that interval with the reported MRDC data. Request approval from the Engineer to take field comparison readings on a separate roadway, when measuring a roadway where portable retroreflectometer readings are difficult to take. Take the off-location field comparison readings at no additional cost. Submit the portable retroreflectometer printout of all the readings taken for the field comparison check with the corresponding MRDC data submitted. The mobile average reading must be within +/-15% of the portable average reading. The Engineer may require new MRDC for some or all of the pavement markings measured in a four hour interval prior to a field comparison check not meeting the +/-15% range. Provide the new MRDC at no extra cost to the Department. The Engineer may take readings with a Department portable retroreflectometer to ensure accuracy at any time. The Department's Construction Division will take comparison readings and serve as the referee if there is a significant difference between the Engineer's portable readings and the Contractor's mobile and handheld readings. For best results, take field comparison readings on a fairly flat and straight roadway when possible.

G. **Periodic Field Checks at Pre-Measured Locations.** When requested by the Engineer, measure with the mobile unit and report to the Engineer immediately after measurement the average retroreflectivity values for a designated pre-measured test location. The Engineer will have taken measurements at the test location within ten days of the test. The test location will not include pavement markings less than thirty days old. If the

measured averages do not fall within +/-15 % of the pre-measured averages, further calibration and comparison measurements may be required before any further MRDC. Submit the results of the field check with the MRDC report for that day.

4. **Final Report.** Submit a final report in the format specified by the Engineer to the Department's Traffic Engineering representative within one calendar week after the service is complete. The final report must contain a list of all problems encountered (pre-approved event codes) and the locations where problems occurred during MRDC.

5. **Measurement.** When mobile retroreflectivity data collection for pavement markings is specified on the plans to be a pay item, measurement will be by the mile driven while measuring pavement markings.

6. **Payment.** Unless otherwise specified on the plans, the work performed, materials furnished, equipment, labor, tools, and incidentals will not be paid for directly, but will be considered subsidiary to bid items of the Contract. When mobile retroreflectivity data collection for pavement markings is specified on the plans to be a pay item, the work performed in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Mobile Retroreflectivity Data Collection." This price is full compensation for providing summaries of readings to the Engineer, equipment calibration and prequalification, equipment, labor, tools, and incidentals.

SPECIAL SPECIFICATION

9200

Megapixel Robotic WebCamera

1. **Description.** Construct an outdoor robotic monitoring camera, including certified installation services; one year tech support, maintenance and software upgrades; one year of operation; and one year of archiving time-lapse service.

2. **Materials**

   A. Manufacturer
      1) EarthCam, Inc.
         800.EarthCam (327.8422) toll free
         201.488.1111 voice
         201.488.1119 fax
         84 Kennedy Street,
         Hackensack, NJ 07601.
         www.EarthCam.net

   B. System Requirements
      1) The indoor/outdoor camera system shall consist of a tamper and impact resistant enclosure with integrated camera and heavy-duty robotic pedestal to be mounted on a 40 foot (minimum) fixed pole (not provided by manufacturer).
      2) The camera shall take high-resolution 8 Megapixel digital images every 15 minutes and provide live video.
      3) The camera shall upload both images and video over a wireless cellular modem, a wireless point-to-point system or a RJ-45 hardwired connection to a DSL or cable modem.
      4) The content shall be sent to a secure, password protected website with an Interface and Online Software features provided by the Vendor as a Managed Service.
      5) The system will operate on 120VAC (230VAC Available) voltage and have a maximum power consumption of 35W.

   C. Equipment
      1) Camera: Integrated 8 Megapixel high-definition camera and lens assembly consisting of a charge coupled device (CCD) camera with a remotely controlled focal length lens with the following features:
         a. Imager: 1/2.5" CCD 8 Megapixel.
         b. Resolution: 3,264 x 2,488 Pixels = 8 Megapixels.
         c. Panoramic Resolution: 29,376 x 9,792 = 288 Megapixels.
         d. Lens: Zoom 6mm – 72mm capable of 12x Optical, 4x Digital.
         e. Video Compression: AVI (Motion JPEG).
         f. Auto Features: ISO, Shutter, White Balance and Focus.
      2) Camera Enclosure:

a. Built-in aluminum and epoxy powder painted weatherproof standard IP66/IP67.
b. Body constructed from extruded aluminum and die-cast aluminum end-cover plates.
c. Weatherproof feature is maintained by 2 EPDM-rubber end gaskets between cover plates and 3 cable glands.

3) Pan and Tilt Robotic Base: High-performance outdoor pan/tilt designed to provide steady images in windy environments with the following features:
a. Pan Range: 360° continuous pan.
b. Tilt Range: +30° to -90° from level.
c. Motor Type: Stepper.

4) Overall System:
a. Camera Enclosure Dimension: 6.9" (175mm) W x 6.6" (168mm) H x 19.4" (493mm) L.
b. Pan/Tilt Unit Dimensions: 7.0" (178mm) W x 10.5" (274mm) H x 6.4" (163mm) D.
c. Operational Temperature: -10°F to +120°F (-23°C to + 49°C).
d. Camera Enclosure Weight: 13lb (5.9kg).
e. Pan/Tilt Unit Weight: 12lb (5.4kg).

5) Data Connection: Provide one of the following:
a. In areas with cellular coverage, operate cameras via built-in cellular data connection provided and maintained by the system vendor.
b. In areas without cellular coverage, operate cameras via an RJ-45 Ethernet data connection over broadband or satellite Internet access provided and maintained by the Contractor.

6) Quantity of Cameras: As required by Owner.

D. Interface and Online Software

1) Remote Access: Contractor's System Vendor shall provide an internet based interface and online software as a managed service, to allow the viewing of all high-definition digital still images captured and live video stored, from any location with internet access via a secure password protected website.
a. Maintain images on the System Vendor's website for reference available at all times during the life of the project and for not less than 60 days after completion.

2) Online Interface Features:
a. Software delivered by vendor as a managed service.
b. Displays company logo and project name.
c. Capable of viewing live video.
d. Picture in Picture to control and view live video, while viewing high definition images.
e. Robotic pan, tilt and zoom control of robotic camera system.
f. Featuring high-definition panoramic images with a panoramic image comparison tool.
g. Calendar based navigation system for selecting specific images and panoramas.
h. Multifunction image browsing.
i. Pan, tilt and zoom control capability within a high-definition image.

j. Onscreen button for wiper control to allow remote cleaning of the viewing window.
k. A multiview screen to view all of the cameras on a project at the same time.
l. Graphical mark-up tools for detailing and creating overlays on images.
m. Graphical weather applet displaying ten points of local weather data and 48-hour forecast.
n. Remote solar monitoring screen displaying the DC amperage output of solar panels.
o. Remote battery monitoring screen displaying battery voltage, temperature and status.
p. Remote cellular monitoring screen displaying connectivity, network traffic and modem temperature.
q. Remote wireless radio monitoring screen displaying connectivity, network traffic and Google Map features including wireless radio locations.
r. Share image tools: save, print, email and post to message board or mobile devices.
s. Automated progress reports in Power Point, Open Office and PDF formats.
t. Map, aerial and satellite view by Google.
u. Time lapse features include – Instant time lapse play back by day, week, month or year.
v. Machine to machine self-healing technology that automates maintenance of camera up to 288 times daily.
w. Account security features include – Four levels of password protection, IP address block / permission and SSL protection of the user login password.
x. All Images are the copyright of the client and protected on secure servers owned and operated by the system vendor.

3. Construction

A. Preparation
1) Unpack camera system components and save packing materials (box and foam) for future shipment of camera system including associated appurtenances and mounting equipment to Owner or Manufacturer as required.

B. Installation
1) General:
a. Engage the manufacturer to provide Certified Installation Services. Install camera system in accordance with manufacturer's printed instructions, State and Municipality codes and requirements and approved submittals.
b. Install units plumb and level and at proper angle to provide maximum field of view of on-site operations.
c. Securely and rigidly anchor products in place.
d. Connect cameras to power.
2) Position camera so that field of view of approximately 51° horizontal and 39° vertical covers intended area of site with a clear area for the robotic unit to pan and tilt.
a. Install camera at elevation that will provide uncompromised visual coverage.

b. Install camera so that position of sun or manmade light sources will not come into direct contact with field of view of camera at any time during construction.

C. Field Quality Control
1) Pre-installation Testing: Test camera on-site at ground level prior to mounting unit in its intended elevated position.
a. Contact System Vendor not less than 24 hours in advance of installation for testing.
b. Connect unit.
c. After 30 minutes, contact System Vendor and require System Vendor to remotely confirm camera is operating properly.
d. Install cameras in approved locations.

D. Cleaning
1) Clean installed items using methods and materials recommended in writing by manufacturer.
2) Clean camera system components, including camera-housing windows, lenses, and monitor screens.

E. Instruction
1) Engage a factory-authorized service representative by phone to instruct Contractors personnel in procedures to adjust and maintain camera equipment.
a. Instruct personnel on procedures and schedules for troubleshooting and maintaining equipment.
b. Explain methods of determining optimum alignment and adjustment of components.

F. Operation, Termination, and Removal
1) Maintenance: Maintain camera equipment in good operating condition on a 24-hour basis until removal.
2) Termination and Removal: Removal of camera system when instructed by the owner.
a. Camera system including associated appurtenances and mounting equipment are property of Owner.

4. **Measurement.** All cameras satisfactorily installed and operational will be measured by the each, which includes a twelve (12) month operational period.

5. **Payment.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit bid price for "Megapixel Robotic Camera".

This price is full compensation for furnishing the labor, materials, tools, equipment, and incidentals necessary to install and operate the camera, complete in place, as required by the manufacturer. Also, this price includes 12 months of time-laspe edited DVD movie, certified installation services; one year tech support, maintenance and software upgrades; and one year of operation. New electrical services will be paid for under Item 628, "Electrical Services."