

NOTIFICATION OF ADDENDUM

ADDENDUM NO. 1

DATED 11/29/2016

Control	0521-05-118, ETC.
Project	NH 1602(247), ETC.
Highway	IH 410
County	BEXAR

Ladies/Gentlemen:

Attached please find an addendum on the above captioned project. Included in the attachment is an addendum notification which details the changes and the respective proposal pages which were added and/or changed.

Except for new bid insert pages, it is unnecessary to return any of the pages attached.

Bid insert pages must be returned with the bid proposal submitted to the Department, unless your firm is submitting a bid using a computer print out. The computer print out must be changed to reflect the new bid item information.

Contractors and material suppliers, etc. who have previously been furnished informational proposals are not being furnished a copy of the addendum. If you have a subcontractor on the above project, please advise them of this addendum. Acknowledgment of this addendum is not requested if your company has been issued a proposal stamped "This Proposal Issued for Informational Purposes."

You are required to acknowledge receipt of this addendum on the Addendum Acknowledgement form contained in your bid proposal by placing a mark in the box next to the respective addendum.

Failure to Acknowledge receipt of this addendum in your bid proposal will result in your bid not being read.

SUBJECT: PLANS AND PROPOSAL ADDENDUMS

PROJECT: NH 1602(247)

CONTROL: 0521-05-118

COUNTY: BEXAR

LETTING: 12/01/2016

REFERENCE NO: 1129

PROPOSAL ADDENDUMS

- PROPOSAL COVER
- BID INSERTS (SH. NO.: ALL)
- GENERAL NOTES (SH. NO.: A,B,& G)

- SPEC LIST (SH. NO.:)
- SPECIAL PROVISIONS:)
- ADDED:

DELETED:

- SPECIAL SPECIFICATIONS:
- ADDED:

DELETED:

OTHER: PLAN SHEETS AND OTHER CHANGES

DESCRIPTION OF ABOVE CHANGES
(INCLUDING PLANS SHEET CHANGES)

**** BID INSERTS ****

REVISED QUANTITY FOR THE FOLLOWING BID ITEMS: 110-6001, 132-6003, 247-6073, 247-6255, 310-6009, 316-6015, 316-6177, 341-6008, 341-6022, 347-6001, 347-6002, 360-6005, 416-6015, 420-6066, 420-6074, 423-6001, 450-6023, 450-6062, 514-6001, 529-6001, 740-6005, 3002-6001, 5001-6002, 6028-6002.

DELETED THE FOLLOWING BID ITEMS: 420-6015, 682-6024.

ADDED THE FOLLOWING BID ITEMS: 416-6018, 420-6049, 682-6025.

**** GENERAL NOTES ****

SHEET A: QUANTITY CHANGES.

SHEET B: QUANTITY CHANGES AND ADDED CALLOUT FOR MODIFIED STANDARD SHEET COSS & OSB-SZ (MOD) THAT WAS LEFT OUT OF PREVIOUS NOTES.

SHEET G: MODIFIED A NOTE TO ITEM 8 FOR NUMBER OF WORKING DAYS FOR DESCRIPTION OF ABOVE CHANGES (CONTINUED)
(INCLUDING PLANS SHEET CHANGES)

SUBSTANTIAL COMPLETION.

**** PLAN SHEETS ****

SHEETS 10, 12-16: PROPOSED TYPICAL SECTIONS. ADDED MEMBRANE CALLOUT UNDER THE TYPICAL SECTIONS.

SHEET 18: CHANGED CRCP 11 FROM TYPE C TO TYPE B (DETAILS D & I). CHANGED FLEX BASE 6 EDGE DETAIL B.

SHEETS 19 & 19C: GENERAL NOTES SHEETS SEE REVISION CHANGES NOTED ABOVE UNDER GENERAL NOTES.

SHEETS 20, 20A - 20G: ESTIMATE AND QUANTITY SEE REVISED QUANTITIES AS NOTED ABOVE UNDER BID INSERTS.

SHEETS 26-31, 36, 43-44, 47, 292-308, 402, 422-431, 433-435, 918, 947: REVISED QUANTITIES AS NOTED ABOVE UNDER BID INSERTS.

SHEET 318: CHANGED OR MODIFIED CROSS SLOPES.

SHEETS 321 - 327: REMOVED SUPER ELEVATION DIAGRAMS AND CHANGED OR MODIFIED CROSS SLOPES.

SHEET 337: REVISED DRIVEWAY SIDEWALK RAMP SLOPES FROM 8.3% TO 8.3% MAX AND ADDED A NOTE SPECIFYING RAMP PARAMETERS.

SHEET 432: ADDED CALLOUT NOTE FOR SSTR(MOD) RAIL TO PROFILE VIEW.

SHEET 437: MODIFIED THE NOTES FOR THE RAIL CALLOUTS IN THE ELEVATION VIEWS.

SHEET 1000: ADDED DETAIL INFORMATION FOR OSB#9, BENT 11 SOUTHBOUND.

PROJECT NH 1602(247) , ETC.
 COUNTY BEXAR

Proposal Sheet
 TxDOT
 FORM 234-B I-61-5M

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	100	6002		PREPARING ROW DOLLARS and CENTS	STA	201.000	1
	104	6009		REMOVING CONC (RIPRAP) DOLLARS and CENTS	SY	172.000	2
	105	6013		REMOVING STAB BASE & ASPH PAV (9") DOLLARS and CENTS	SY	15,671.000	3
	105	6016		REMOVING STAB BASE & ASPH PAV(16") DOLLARS and CENTS	SY	42,538.000	4
	105	6037		REMOVING STAB BASE AND ASPH PAV(0"- 16") DOLLARS and CENTS	SY	9,197.000	5
	110	6001		EXCAVATION (ROADWAY) DOLLARS and CENTS	CY	63,195.000	6
	110	6002		EXCAVATION (CHANNEL) DOLLARS and CENTS	CY	97.000	7
	132	6003		EMBANKMENT (FINAL)(ORD COMP)(TY B) DOLLARS and CENTS	CY	114,921.000	8
	161	6017		COMPOST MANUF TOPSOIL (4") DOLLARS and CENTS	SY	80,504.000	9
	164	6027		CELL FBR MLCH SEED(PERM)(URBAN)(CLAY) DOLLARS and CENTS	SY	64,392.000	10
	164	6051		DRILL SEED (TEMP)(WARM OR COOL) DOLLARS and CENTS	SY	80,504.000	11

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	168	6001		VEGETATIVE WATERING DOLLARS and CENTS	MG	1,255.300	12
	169	6001		SOIL RETENTION BLANKETS (CL 1) (TY A) DOLLARS and CENTS	SY	4,075.000	13
	247	6073		FL BS (CMP IN PLC)(TY D GR 1-2) (6") DOLLARS and CENTS	SY	54,531.000	14
	247	6255		FL BS (CMP IN PLC)(TY-D GR-1-2)(7") DOLLARS and CENTS	SY	38,928.000	15
	310	6009		PRIME COAT (MC-30) DOLLARS and CENTS	GAL	23,395.000	16
	316	6015		ASPH (AC-15P) DOLLARS and CENTS	GAL	61,256.000	17
	316	6177		AGGR(TY-B GR-5 SAC-B) DOLLARS and CENTS	CY	2,576.000	18
	341	6008		D-GR HMA TY-B PG64-22 DOLLARS and CENTS	TON	46,584.000	19
	341	6022		D-GR HMA TY-C PG64-22 DOLLARS and CENTS	TON	39,260.000	20
	347	6001		TOM (ASPHALT) PG 76-22 DOLLARS and CENTS	TON	1,210.000	21
	347	6002		TOM-C (AGGREGATE) SAC-A DOLLARS and CENTS	TON	17,124.000	22
	354	6048		PLANE ASPH CONC PAV (3") DOLLARS and CENTS	SY	198,773.000	23

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	360	6005		CONC PVMT (CONT REINF - CRCP) (11") DOLLARS and CENTS	SY	71,809.000	24
	400	6005		CEM STABIL BKFL DOLLARS and CENTS	CY	80.000	25
	400	6006		CUT & RESTORING PAV DOLLARS and CENTS	SY	2,408.000	26
	400	6008		CUT & RESTORE ASPH PAVING DOLLARS and CENTS	SY	118.000	27
	401	6001		FLOWABLE BACKFILL DOLLARS and CENTS	CY	5,531.000	28
	402	6001		TRENCH EXCAVATION PROTECTION DOLLARS and CENTS	LF	7,144.000	29
	403	6001		TEMPORARY SPL SHORING DOLLARS and CENTS	SF	54,291.000	30
	405	6003		FOUNDATON LOADTEST(D4945)(DRILLD SHAFT) DOLLARS and CENTS	EA	5.000	31
	416	6002		DRILL SHAFT (24 IN) DOLLARS and CENTS	LF	1,411.000	32
	416	6003		DRILL SHAFT (30 IN) DOLLARS and CENTS	LF	249.000	33
	416	6004		DRILL SHAFT (36 IN) DOLLARS and CENTS	LF	2,628.000	34
	416	6005		DRILL SHAFT (42 IN) DOLLARS and CENTS	LF	1,152.000	35

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	416	6008		DRILL SHAFT (60 IN) DOLLARS and CENTS	LF	1,605.000	36
	416	6015		DRILL SHAFT (NON - REINFORCED) (12 IN) DOLLARS and CENTS	LF	84.000	37
	416	6018		DRILL SHAFT (SIGN MTS) (24 IN) DOLLARS and CENTS	LF	13.000	38
	416	6020		DRILL SHAFT (SIGN MTS) (36 IN) DOLLARS and CENTS	LF	1,980.000	39
	416	6026		DRILL SHAFT (HIGH MAST POLE) (60 IN) DOLLARS and CENTS	LF	468.000	40
	416	6029		DRILL SHAFT (RDWY ILL POLE) (30 IN) DOLLARS and CENTS	LF	12.000	41
	416	6032		DRILL SHAFT (TRF SIG POLE) (36 IN) DOLLARS and CENTS	LF	65.000	42
	416	6034		DRILL SHAFT (TRF SIG POLE) (48 IN) DOLLARS and CENTS	LF	22.000	43
	416	6047		DRILL SHAFT (96 IN) DOLLARS and CENTS	LF	1,361.000	44
	416	6051		DRILL SHAFT (120 IN) DOLLARS and CENTS	LF	2,030.000	45
	420	6003		CL A CONC (MISC) DOLLARS and CENTS	SY	566.000	46
	420	6013		CL C CONC (ABUT) DOLLARS and CENTS	CY	241.000	47

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	420	6025		CL C CONC (BENT) DOLLARS and CENTS	CY	413.600	48
	420	6029		CL C CONC (CAP) DOLLARS and CENTS	CY	1,010.800	49
	420	6031		CL C CONC (CAP)(MASS) DOLLARS and CENTS	CY	3,825.800	50
	420	6037		CL C CONC (COLUMN) DOLLARS and CENTS	CY	1,464.200	51
	420	6039		CL C CONC (COLUMN)(MASS) DOLLARS and CENTS	CY	3,366.400	52
	420	6045		CL C CONC (FOOTING)(MASS) DOLLARS and CENTS	CY	62.000	53
	420	6049		CL C CONC (CRASHWALL) DOLLARS and CENTS	CY	30.000	54
	420	6051		CL C CONC (CULV) DOLLARS and CENTS	CY	18.000	55
	420	6054		CL C CONC (HEADWALL) DOLLARS and CENTS	CY	28.000	56
	420	6066		CL C CONC (RAIL FOUNDATION) DOLLARS and CENTS	CY	1,910.000	57
	420	6068		CL C CONC (SIGN COLUMN) DOLLARS and CENTS	CY	1,002.400	58
	420	6071		CL C CONC (COLLAR) DOLLARS and CENTS	EA	35.000	59

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	420	6074		CL C CONC (MISC) DOLLARS and CENTS	CY	787.000	60
	422	6001		REINF CONC SLAB DOLLARS and CENTS	SF	418,153.200	61
	422	6015		APPROACH SLAB DOLLARS and CENTS	CY	433.200	62
	423	6001		RETAINING WALL (MSE) DOLLARS and CENTS	SF	100,844.000	63
	423	6003		RETAINING WALL (TEMP WALL) DOLLARS and CENTS	SF	27,949.000	64
	425	6039		PRESTR CONC GIRDER (TX54) DOLLARS and CENTS	LF	45,959.090	65
	432	6001		RIPRAP (CONC)(4 IN) DOLLARS and CENTS	CY	1,946.000	66
	434	6045		SLIDING ELASTOMERIC BEARING (ES 8) DOLLARS and CENTS	EA	16.000	67
	434	6110		ELASTOMERIC BEARING(F10) DOLLARS and CENTS	EA	8.000	68
	434	6112		ELASTOMERIC BEARING(E10) DOLLARS and CENTS	EA	4.000	69
	442	6001		STR STEEL (PLATE GIRDER) DOLLARS and CENTS	LB	3,634,000.00	70
	450	6023		RAIL (TY SSTR) DOLLARS and CENTS	LF	53,027.400	71

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	450	6036		RAIL (TY C411) DOLLARS and CENTS	LF	227.000	72
	450	6051		RAIL (HANDRAIL)(TY E) DOLLARS and CENTS	LF	216.000	73
	450	6062		RAIL (TY SSTR)(MOD) DOLLARS and CENTS	LF	4,312.000	74
	450	6063		RAIL (TY SSTR)(MOD)(ILLUM) DOLLARS and CENTS	LF	170.000	75
	454	6001		SEALED EXPANSION JOINT (4 IN) (SEJ - A) DOLLARS and CENTS	LF	1,473.200	76
	454	6002		SEALED EXPANSION JOINT (5 IN) (SEJ - A) DOLLARS and CENTS	LF	114.000	77
	462	6001		CONC BOX CULV (3 FT X 2 FT) DOLLARS and CENTS	LF	132.000	78
	462	6003		CONC BOX CULV (4 FT X 2 FT) DOLLARS and CENTS	LF	378.000	79
	462	6006		CONC BOX CULV (5 FT X 2 FT) DOLLARS and CENTS	LF	622.000	80
	462	6007		CONC BOX CULV (5 FT X 3 FT) DOLLARS and CENTS	LF	67.000	81
	462	6010		CONC BOX CULV (6 FT X 3 FT) DOLLARS and CENTS	LF	1,367.000	82
	462	6014		CONC BOX CULV (7 FT X 3 FT) DOLLARS and CENTS	LF	957.000	83

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	462	6029		CONC BOX CULV (10 FT X 5 FT) DOLLARS and CENTS	LF	1,042.000	84
	464	6003		RC PIPE (CL III)(18 IN) DOLLARS and CENTS	LF	2,229.000	85
	464	6004		RC PIPE (CL III)(21 IN) DOLLARS and CENTS	LF	56.000	86
	464	6005		RC PIPE (CL III)(24 IN) DOLLARS and CENTS	LF	5,932.000	87
	464	6007		RC PIPE (CL III)(30 IN) DOLLARS and CENTS	LF	555.000	88
	464	6008		RC PIPE (CL III)(36 IN) DOLLARS and CENTS	LF	1,955.000	89
	464	6009		RC PIPE (CL III)(42 IN) DOLLARS and CENTS	LF	1,372.000	90
	465	6002		MANH (COMPL)(PRM)(48IN) DOLLARS and CENTS	EA	5.000	91
	465	6006		JCTBOX(COMPL)(PJB)(4FTX4FT) DOLLARS and CENTS	EA	9.000	92
	465	6009		JCTBOX(COMPL)(PJB)(5FTX5FT) DOLLARS and CENTS	EA	5.000	93
	465	6011		JCTBOX(COMPL)(PJB)(6FTX6FT) DOLLARS and CENTS	EA	1.000	94
	465	6012		JCTBOX(COMPL)(PJB)(8FTX8FT) DOLLARS and CENTS	EA	2.000	95

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	465	6013		INLET (COMPL)(PCO)(3FT)(NONE) DOLLARS and CENTS	EA	1.000	96
	465	6016		INLET (COMPL)(PCO)(3FT)(BOTH) DOLLARS and CENTS	EA	4.000	97
	465	6017		INLET (COMPL)(PCO)(4FT)(NONE) DOLLARS and CENTS	EA	3.000	98
	465	6020		INLET (COMPL)(PCO)(4FT)(BOTH) DOLLARS and CENTS	EA	8.000	99
	465	6022		INLET (COMPL)(PCO)(5FT)(LEFT) DOLLARS and CENTS	EA	1.000	100
	465	6024		INLET (COMPL)(PCO)(5FT)(BOTH) DOLLARS and CENTS	EA	5.000	101
	465	6025		INLET (COMPL)(PCO)(6FT)(NONE) DOLLARS and CENTS	EA	1.000	102
	465	6028		INLET (COMPL)(PCO)(6FT)(BOTH) DOLLARS and CENTS	EA	3.000	103
	465	6033		INLET (COMPL)(PCU)(4FT)(NONE) DOLLARS and CENTS	EA	2.000	104
	465	6035		INLET (COMPL)(PCU)(4FT)(RIGHT) DOLLARS and CENTS	EA	1.000	105
	465	6045		INLET (COMPL)(PMBD)(4FT) DOLLARS and CENTS	EA	31.000	106
	465	6049		INLET (COMPL)(POD)(FG)(4FTX4FT) DOLLARS and CENTS	EA	14.000	107

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	465	6126		INLET (COMPL)(PSL)(FG)(3FTX3FT-3FTX-3FT) DOLLARS and CENTS	EA	1.000	108
	465	6128		INLET (COMPL)(PSL)(FG)(4FTX4FT-4FTX-4FT) DOLLARS and CENTS	EA	88.000	109
	465	6135		INLET (COMPL)(PSL)(FG)(5FTX5FT-4FTX-4FT) DOLLARS and CENTS	EA	2.000	110
	465	6153		INLET (COMPL)(PAZD)(RC)(4FTX4FT) DOLLARS and CENTS	EA	10.000	111
	465	6154		INLET (COMPL)(PAZD)(RC)(5FTX5FT) DOLLARS and CENTS	EA	12.000	112
	465	6160		INLET(COMPL)(PAZD)(FG)(4FTX4FT-4FTX-4FT) DOLLARS and CENTS	EA	1.000	113
	465	6331		INLET (COMPL) (TRAFFIC) (TY W-3) DOLLARS and CENTS	EA	1.000	114
	465	6332		INLET (COMPL) (TRAFFIC) (TY W-5) DOLLARS and CENTS	EA	1.000	115
	466	6095		HEADWALL (CH - PW - 0) (DIA= 18 IN) DOLLARS and CENTS	EA	2.000	116
	466	6097		HEADWALL (CH - PW - 0) (DIA= 24 IN) DOLLARS and CENTS	EA	1.000	117
	466	6180		WINGWALL (PW - 1) (HW=5 FT) DOLLARS and CENTS	EA	3.000	118

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	466	6181		WINGWALL (PW - 1) (HW=6 FT) DOLLARS and CENTS	EA	1.000	119
	466	6210		WINGWALL (SW - 0) (HW=7 FT) DOLLARS and CENTS	EA	1.000	120
	467	6144		SET (TY I)(S= 4 FT)(HW= 4 FT)(4:1) (C) DOLLARS and CENTS	EA	2.000	121
	467	6221		SET (TY I)(S= 6 FT)(HW= 5 FT)(6:1) (P) DOLLARS and CENTS	EA	1.000	122
	467	6356		SET (TY II) (18 IN) (RCP) (3: 1) (C) DOLLARS and CENTS	EA	2.000	123
	467	6358		SET (TY II) (18 IN) (RCP) (4: 1) (C) DOLLARS and CENTS	EA	3.000	124
	467	6390		SET (TY II) (24 IN) (RCP) (4: 1) (C) DOLLARS and CENTS	EA	5.000	125
	467	6391		SET (TY II) (24 IN) (RCP) (4: 1) (P) DOLLARS and CENTS	EA	1.000	126
	467	6395		SET (TY II) (24 IN) (RCP) (6: 1) (P) DOLLARS and CENTS	EA	5.000	127
	467	6454		SET (TY II) (36 IN) (RCP) (6: 1) (P) DOLLARS and CENTS	EA	2.000	128
	471	6003		GRATE & FRAME DOLLARS and CENTS	EA	42.000	129
	474	6023		PRE-CAST TRNCH DRAIN(W/OUT CONC PVMNT) DOLLARS and CENTS	LF	476.000	130

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	479	6006		ADJUSTING INLET (CAP) DOLLARS and CENTS	EA	2.000	131
	481	6013		PIPE (PVC) (SCH 40) (6 IN) DOLLARS and CENTS	LF	2,599.000	132
	496	6006		REMOV STR (HEADWALL) DOLLARS and CENTS	EA	2.000	133
	496	6008		REMOV STR (BOX CULVERT) DOLLARS and CENTS	LF	897.000	134
	496	6010		REMOV STR (BRIDGE 100 - 499 FT LENGTH) DOLLARS and CENTS	EA	2.000	135
	496	6035		REMOV STR (DRILL SHAFT) DOLLARS and CENTS	EA	115.000	136
	496	6040		REMOV STR (RET WALL) DOLLARS and CENTS	LF	476.000	137
	500	6001		MOBILIZATION DOLLARS and CENTS	LS	1.000	138
	502	6001		BARRICADES, SIGNS AND TRAFFIC HAN- DLING DOLLARS and CENTS	MO	39.000	139
	506	6004	003	ROCK FILTER DAMS (INSTALL) (TY 4) DOLLARS and CENTS	LF	378.000	140
	506	6011	003	ROCK FILTER DAMS (REMOVE) DOLLARS and CENTS	LF	378.000	141
	506	6020	003	CONSTRUCTION EXITS (INSTALL) (TY 1) DOLLARS and CENTS	SY	936.000	142

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	506	6024	003	CONSTRUCTION EXITS (REMOVE) DOLLARS and CENTS	SY	936.000	143
	506	6038	003	TEMP SEDMT CONT FENCE (INSTALL) DOLLARS and CENTS	LF	25,300.000	144
	506	6039	003	TEMP SEDMT CONT FENCE (REMOVE) DOLLARS and CENTS	LF	25,300.000	145
	506	6040	003	BIODEG EROSN CONT LOGS (INSTL) (8") DOLLARS and CENTS	LF	6,819.000	146
	506	6043	003	BIODEG EROSN CONT LOGS (REMOVE) DOLLARS and CENTS	LF	6,819.000	147
	508	6001		CONSTRUCTING DETOURS DOLLARS and CENTS	SY	3,099.000	148
	512	6001		PORT CTB (FUR & INST)(SGL SLOPE)(TY 1) DOLLARS and CENTS	LF	26,220.000	149
	512	6002		PORT CTB (FUR & INST)(SGL SLOPE)(TY 2) DOLLARS and CENTS	LF	755.000	150
	512	6009		PORT CTB (FUR & INST)(LOW PROF)(TY 1) DOLLARS and CENTS	LF	22,860.000	151
	512	6010		PORT CTB (FUR & INST)(LOW PROF)(TY 2) DOLLARS and CENTS	LF	2,880.000	152
	512	6025		PORT CTB (MOVE)(SGL SLP)(TY 1) DOLLARS and CENTS	LF	62,930.000	153
	512	6033		PORT CTB (MOVE)(LOW PROF)(TY 1) DOLLARS and CENTS	LF	43,820.000	154

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	512	6034		PORT CTB (MOVE)(LOW PROF)(TY 2) DOLLARS and CENTS	LF	3,480.000	155
	512	6049		PORT CTB (REMOVE)(SGL SLP)(TY 1) DOLLARS and CENTS	LF	26,220.000	156
	512	6057		PORT CTB (REMOVE)(LOW PROF)(TY 1) DOLLARS and CENTS	LF	22,860.000	157
	512	6058		PORT CTB (REMOVE)(LOW PROF)(TY 2) DOLLARS and CENTS	LF	2,880.000	158
	514	6001		PERM CTB (SGL SLOPE) (TY 1) (42) DOLLARS and CENTS	LF	4,424.000	159
	514	6003		PERM CTB (SGL SLOPE) (TY 3) (42) DOLLARS and CENTS	LF	1,057.000	160
	514	6004		PERM CTB (SGL SLOPE) (TY 4) (42) DOLLARS and CENTS	LF	60.000	161
	528	6001		COLORED TEXTURED CONC (4") DOLLARS and CENTS	SY	8,075.000	162
	529	6001		CONC CURB (TY I) DOLLARS and CENTS	LF	33,661.000	163
	529	6014		CONC CURB (MOD) (TYPE I) DOLLARS and CENTS	LF	150.000	164
	529	6018		CONC CURB (TY F3) DOLLARS and CENTS	LF	216.000	165
	529	6020		CONC CURB & GUTTER (ARMOR CURB) DOLLARS and CENTS	LF	238.000	166

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	530	6005		DRIVEWAYS (ACP) DOLLARS and CENTS	SY	2,511.000	167
	530	6017		DRIVEWAYS (CONC) (HES) DOLLARS and CENTS	SY	4,008.000	168
	531	6001		CONC SIDEWALKS (4") DOLLARS and CENTS	SY	9,624.000	169
	531	6004		CURB RAMPS (TY 1) DOLLARS and CENTS	EA	4.000	170
	531	6005		CURB RAMPS (TY 2) DOLLARS and CENTS	EA	42.000	171
	531	6031		CURB RAMPS (TY 22) DOLLARS and CENTS	SY	4.000	172
	540	6001		MTL W-BEAM GD FEN (TIM POST) DOLLARS and CENTS	LF	25.000	173
	542	6001		REMOVE METAL BEAM GUARD FENCE DOLLARS and CENTS	LF	25.000	174
	545	6001		CRASH CUSH ATTEN (INSTL) DOLLARS and CENTS	EA	41.000	175
	545	6003		CRASH CUSH ATTEN (MOVE & RESET) DOLLARS and CENTS	EA	28.000	176
	545	6005		CRASH CUSH ATTEN (REMOVE) DOLLARS and CENTS	EA	20.000	177
	610	6009		REMOVE RD IL ASM (TRANS-BASE) DOLLARS and CENTS	EA	56.000	178

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	610	6050		IN RD IL AM (TY SA) 40T-8 (250W) S DOLLARS and CENTS	EA	2.000	179
	610	6104		IN RD IL (U/P) (TY 1) (150W EQ) LED DOLLARS and CENTS	EA	16.000	180
	610	6190		IN RD IL (TY SP) 38S-8 (250W EQ) LED DOLLARS and CENTS	EA	20.000	181
	610	6191		IN RD IL (TY SP) 38S-8-8 (250W EQ) LED DOLLARS and CENTS	EA	1.000	182
	610	6198		IN RD IL (TY SA) 40B-8 (250W EQ) LED DOLLARS and CENTS	EA	8.000	183
	610	6199		IN RD IL (TY SA) 40B-8-8 (250W EQ) LED DOLLARS and CENTS	EA	5.000	184
	610	6263		IN RD IL (TY SP) 48S-8-8 (400W EQ) LED DOLLARS and CENTS	EA	6.000	185
	610	6286		IN RD IL (TY SA) 50T-8 (400W EQ) LED DOLLARS and CENTS	EA	1.000	186
	610	6287		IN RD IL (TY SA) 50T-8-8 (400W EQ) LED DOLLARS and CENTS	EA	1.000	187
	613	6005		HI MST IL POLE (150 FT)(80 MPH) DOLLARS and CENTS	EA	18.000	188
	618	6016		CONDT (PVC) (SCH 40) (1") DOLLARS and CENTS	LF	555.000	189
	618	6023		CONDT (PVC) (SCH 40) (2") DOLLARS and CENTS	LF	21,087.000	190

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	618	6025		CONDT (PVC) (SCH 40) (2") (CONC ENCSE) DOLLARS and CENTS	LF	21,170.000	191
	618	6046		CONDT (PVC) (SCH 80) (2") DOLLARS and CENTS	LF	2,112.000	192
	618	6047		CONDT (PVC) (SCH 80) (2") (BORE) DOLLARS and CENTS	LF	2,809.000	193
	618	6053		CONDT (PVC) (SCH 80) (3") DOLLARS and CENTS	LF	1,068.000	194
	618	6054		CONDT (PVC) (SCH 80) (3") (BORE) DOLLARS and CENTS	LF	1,022.000	195
	618	6062		CONDT (RM) (3/4") DOLLARS and CENTS	LF	869.000	196
	618	6070		CONDT (RM) (2") DOLLARS and CENTS	LF	175.000	197
	618	6071		CONDT (RM) (2") (BORE) DOLLARS and CENTS	LF	3,745.000	198
	620	6002		ELEC CONDR (NO.14) INSULATED DOLLARS and CENTS	LF	12,355.000	199
	620	6007		ELEC CONDR (NO.8) BARE DOLLARS and CENTS	LF	21,455.000	200
	620	6008		ELEC CONDR (NO.8) INSULATED DOLLARS and CENTS	LF	44,301.000	201
	620	6009		ELEC CONDR (NO.6) BARE DOLLARS and CENTS	LF	6,479.000	202

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	620	6010		ELEC CONDR (NO.6) INSULATED DOLLARS and CENTS	LF	8,926.000	203
	620	6012		ELEC CONDR (NO.4) INSULATED DOLLARS and CENTS	LF	1,440.000	204
	624	6002		GROUND BOX TY A (122311)W/APRON DOLLARS and CENTS	EA	53.000	205
	624	6010		GROUND BOX TY D (162922)W/APRON DOLLARS and CENTS	EA	19.000	206
	624	6028		REMOVE GROUND BOX DOLLARS and CENTS	EA	3.000	207
	625	6002		ZINC-COAT STL WIRE STRAND (3/16") DOLLARS and CENTS	LF	6,705.000	208
	628	6002		REMOVE ELECTRICAL SERVICES DOLLARS and CENTS	EA	5.000	209
	628	6035		ELC SRV TY A 240/480 060(NS)AL(E)TP(O) DOLLARS and CENTS	EA	9.000	210
	628	6078		ELC SRV TY A 240/480 100(NS)SS(E)TP(O) DOLLARS and CENTS	EA	1.000	211
	628	6133		ELC SRV TY D 120/240 060(NS)GS(N)TP(O) DOLLARS and CENTS	EA	5.000	212
	628	6167		ELC SRV TY D 120/240 070(NS)AL(E)TP(O) DOLLARS and CENTS	EA	1.000	213
	636	6001		ALUMINUM SIGNS (TY A) DOLLARS and CENTS	SF	293.400	214

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	636	6002		ALUMINUM SIGNS (TY G) DOLLARS and CENTS	SF	727.000	215
	636	6003		ALUMINUM SIGNS (TY O) DOLLARS and CENTS	SF	4,330.000	216
	644	6001		IN SM RD SN SUP&AM TY10BWG(1)SA(P) DOLLARS and CENTS	EA	42.000	217
	644	6004		IN SM RD SN SUP&AM TY10BWG(1)SA(T) DOLLARS and CENTS	EA	116.000	218
	644	6007		IN SM RD SN SUP&AM TY10BWG(1)SA(U) DOLLARS and CENTS	EA	8.000	219
	644	6045		IN SM RD SN SUP&AM TYS80(1)SB(U-1EXT) DOLLARS and CENTS	EA	1.000	220
	644	6064		IN BRIDGE MNT CLEARANCE SGN ASSM(TY N) DOLLARS and CENTS	EA	2.000	221
	644	6066		IN SM RD SN SUP&AM (RAIL MOUNT) DOLLARS and CENTS	EA	10.000	222
	644	6070		RELOCATE SM RD SN SUP&AM TY S80 DOLLARS and CENTS	EA	1.000	223
	644	6076		REMOVE SM RD SN SUP&AM DOLLARS and CENTS	EA	154.000	224
	647	6001		INSTALL LRSS (STRUCT STEEL) DOLLARS and CENTS	LB	3,192.200	225
	647	6003		REMOVE LRSA DOLLARS and CENTS	EA	16.000	226

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	650	6041		INS OH SN SUP(35 FT CANT)(SPAN ONLY) DOLLARS and CENTS	EA	1.000	227
	650	6056		INS OH SN SUP(45 FT BRDG)(SPAN ONLY) DOLLARS and CENTS	EA	1.000	228
	650	6070		INS OH SN SUP(60 FT BRDG)(CIRC TUBE) DOLLARS and CENTS	EA	1.000	229
	650	6081		INS OH SN SUP(70 FT BRDG)(SPAN ONLY) DOLLARS and CENTS	EA	1.000	230
	650	6085		INS OH SN SUP(75 FT BRDG)(CIRC TUBE) DOLLARS and CENTS	EA	1.000	231
	650	6096		INS OH SN SUP(85 FT BRDG)(SPAN ONLY) DOLLARS and CENTS	EA	2.000	232
	650	6101		INS OH SN SUP(90 FT BRDG)(SPAN ONLY) DOLLARS and CENTS	EA	6.000	233
	650	6204		REMOVE OVERHD SIGN SUP DOLLARS and CENTS	EA	3.000	234
	658	6014		INSTL DEL ASSM (D-SW)SZ (BRF)CTB (BI) DOLLARS and CENTS	EA	115.000	235
	658	6027		INSTL DEL ASSM (D-SY)SZ (BRF)CTB (BI) DOLLARS and CENTS	EA	115.000	236
	658	6038		INSTL DEL ASSM (D-DW)SZ 1(FLX)SRF DOLLARS and CENTS	EA	94.000	237
	658	6050		INSTL OM ASSM (OM-2Z)(FLX)SRF DOLLARS and CENTS	EA	7.000	238

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	662	6001		WK ZN PAV MRK NON-REMOV (W)4"(BRK) DOLLARS and CENTS	LF	25,052.000	239
	662	6004		WK ZN PAV MRK NON-REMOV (W)4"(SLD) DOLLARS and CENTS	LF	81,564.000	240
	662	6010		WK ZN PAV MRK NON-REMOV (W)8"(DOT) DOLLARS and CENTS	LF	268.000	241
	662	6011		WK ZN PAV MRK NON-REMOV (W)8"(LNDP) DOLLARS and CENTS	LF	1,112.000	242
	662	6012		WK ZN PAV MRK NON-REMOV (W)8"(SLD) DOLLARS and CENTS	LF	13,974.000	243
	662	6017		WK ZN PAV MRK NON-REMOV (W)(ARROW) DOLLARS and CENTS	EA	4.000	244
	662	6034		WK ZN PAV MRK NON-REMOV (Y)4"(SLD) DOLLARS and CENTS	LF	80,465.000	245
	662	6060		WK ZN PAV MRK REMOV (W)4"(BRK) DOLLARS and CENTS	LF	8,910.000	246
	662	6063		WK ZN PAV MRK REMOV (W)4"(SLD) DOLLARS and CENTS	LF	23,323.000	247
	662	6071		WK ZN PAV MRK REMOV (W)8"(SLD) DOLLARS and CENTS	LF	5,236.000	248
	662	6095		WK ZN PAV MRK REMOV (Y)4"(SLD) DOLLARS and CENTS	LF	22,114.000	249
	666	6006		REFL PAV MRK TY I (W)4"(DOT)(100MIL) DOLLARS and CENTS	LF	236.000	250

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	666	6033		REFL PAV MRK TY I (W)8"(LNDP)(100MIL) DOLLARS and CENTS	LF	340.000	251
	666	6036		REFL PAV MRK TY I (W)8"(SLD)(100MIL) DOLLARS and CENTS	LF	19,813.000	252
	666	6039		REFL PAV MRK TY I (W)12"(LNDP)(100MIL) DOLLARS and CENTS	LF	4,530.000	253
	666	6042		REFL PAV MRK TY I (W)12"(SLD)(100MIL) DOLLARS and CENTS	LF	5,171.000	254
	666	6048		REFL PAV MRK TY I (W)24"(SLD)(100MIL) DOLLARS and CENTS	LF	2,119.000	255
	666	6054		REFL PAV MRK TY I (W)(ARROW)(100MIL) DOLLARS and CENTS	EA	45.000	256
	666	6057		REFL PAV MRK TY I(W)(DBL ARROW)(100MIL) DOLLARS and CENTS	EA	16.000	257
	666	6063		REFL PAV MRK TY I(W)(UTURN ARW)(100MIL) DOLLARS and CENTS	EA	5.000	258
	666	6078		REFL PAV MRK TY I (W)(WORD)(100MIL) DOLLARS and CENTS	EA	47.000	259
	666	6226		PAVEMENT SEALER 8" DOLLARS and CENTS	LF	19,813.000	260
	666	6230		PAVEMENT SEALER 24" DOLLARS and CENTS	LF	2,119.000	261
	666	6231		PAVEMENT SEALER (ARROW) DOLLARS and CENTS	EA	45.000	262

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	666	6232		PAVEMENT SEALER (WORD) DOLLARS and CENTS	EA	47.000	263
	666	6234		PAVEMENT SEALER (DBL ARROW) DOLLARS and CENTS	EA	16.000	264
	666	6236		PAVEMENT SEALER (UTURN ARROW) DOLLARS and CENTS	EA	5.000	265
	666	6248		PAVEMENT SEALER (NUMBER) DOLLARS and CENTS	EA	5.000	266
	666	6300		RE PM W/RET REQ TY I (W)4"(BRK)(100MIL) DOLLARS and CENTS	LF	11,040.000	267
	666	6303		RE PM W/RET REQ TY I (W)4"(SLD)(100MIL) DOLLARS and CENTS	LF	20,647.000	268
	666	6306		RE PM W/RET REQ TY I (W)6"(BRK)(100MIL) DOLLARS and CENTS	LF	2,200.000	269
	666	6315		RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL) DOLLARS and CENTS	LF	38,538.000	270
	666	6342		REF PROF PAV MRK TY I(W)4"(SLD)(100MIL) DOLLARS and CENTS	LF	19,307.000	271
	666	6345		REF PROF PAV MRK TY I(Y)4"(SLD)(100MIL) DOLLARS and CENTS	LF	26,798.000	272
	668	6010		PREFAB PAV MRK TY B (W)(6")(BRK)CNTST DOLLARS and CENTS	LF	13,680.000	273
	668	6084		PREFAB PAV MRK TY C (W) (NUMBER) DOLLARS and CENTS	EA	5.000	274

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	668	6115		PREFAB PAV MRK TY C (MULTI) (SHIELD) DOLLARS and CENTS	EA	18.000	275
	672	6008		REFL PAV MRKR TY I-R DOLLARS and CENTS	EA	28.000	276
	672	6009		REFL PAV MRKR TY II-A-A DOLLARS and CENTS	EA	48.000	277
	672	6010		REFL PAV MRKR TY II-C-R DOLLARS and CENTS	EA	3,550.000	278
	677	6001		ELIM EXT PAV MRK & MRKS (4") DOLLARS and CENTS	LF	81,495.000	279
	677	6003		ELIM EXT PAV MRK & MRKS (8") DOLLARS and CENTS	LF	1,308.000	280
	680	6002		INSTALL HWY TRF SIG (ISOLATED) DOLLARS and CENTS	EA	1.000	281
	680	6004		REMOVING TRAFFIC SIGNALS DOLLARS and CENTS	EA	1.000	282
	681	6001		TEMP TRAF SIGNALS DOLLARS and CENTS	EA	1.000	283
	682	6001		VEH SIG SEC (12")LED(GRN) DOLLARS and CENTS	EA	12.000	284
	682	6002		VEH SIG SEC (12")LED(GRN ARW) DOLLARS and CENTS	EA	2.000	285
	682	6003		VEH SIG SEC (12")LED(YEL) DOLLARS and CENTS	EA	12.000	286

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	682	6004		VEH SIG SEC (12")LED(YEL ARW) DOLLARS and CENTS	EA	2.000	287
	682	6005		VEH SIG SEC (12")LED(RED) DOLLARS and CENTS	EA	12.000	288
	682	6018		PED SIG SEC (LED)(COUNTDOWN) DOLLARS and CENTS	EA	12.000	289
	682	6023		BACK PLATE (12")(3 SEC) DOLLARS and CENTS	EA	10.000	290
	682	6025		BACK PLATE (12")(5 SEC) DOLLARS and CENTS	EA	2.000	291
	684	6014		TRF SIG CBL (TY A)(12 AWG)(9 CONDR) DOLLARS and CENTS	LF	3,724.000	292
	686	6041		INS TRF SIG PL AM(S)1 ARM(40') DOLLARS and CENTS	EA	1.000	293
	686	6045		INS TRF SIG PL AM(S)1 ARM(44') DOLLARS and CENTS	EA	1.000	294
	686	6049		INS TRF SIG PL AM(S)1 ARM(48') DOLLARS and CENTS	EA	3.000	295
	686	6057		INS TRF SIG PL AM(S)1 ARM(55') DOLLARS and CENTS	EA	1.000	296
	687	6001		PED POLE ASSEMBLY DOLLARS and CENTS	EA	4.000	297
	688	6001		PED DETECT PUSH BUTTON (APS) DOLLARS and CENTS	EA	12.000	298

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	688	6003		PED DETECTOR CONTROLLER UNIT DOLLARS and CENTS	EA	1.000	299
	740	6005		ANTI - GRAFFITI COATNG(PERMNENT-TY III) DOLLARS and CENTS	SF	141,691.000	300
	3002	6001		MEMBRANE UNDERSEAL DOLLARS and CENTS	GAL	79,527.000	301
	4021	6001		TIP TESTING(DRILL SHAFT) DOLLARS and CENTS	EA	5.000	302
	4051	6001		SOUND WALL DOLLARS and CENTS	SF	7,972.000	303
	4052	6001		FIBERGLASS SOUND WALL DOLLARS and CENTS	SF	528.000	304
	5001	6002		GEOGRID BASE REINFORCEMENT (TY II) DOLLARS and CENTS	SY	106,766.000	305
	6001	6002		PORTABLE CHANGEABLE MESSAGE SIGN DOLLARS and CENTS	EA	12.000	306
	6003	6001		ITS SYSTEM SUPPORT EQUIPMENT DOLLARS and CENTS	LS	1.000	307
	6007	6010		FIBER OPTIC CBL (SNGLE-MODE)(6 FIBER) DOLLARS and CENTS	LF	3,485.000	308
	6007	6017		FIBER OPTIC CBL (SNGLE-MODE)(144 FIBER) DOLLARS and CENTS	LF	11,720.000	309
	6007	6021		FIBER OPTIC SPLICE ENCLOSURE DOLLARS and CENTS	EA	5.000	310

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	6007	6022		FIBER OPTIC PATCH PANEL (6 POSITION) DOLLARS and CENTS	EA	5.000	311
	6007	6076		FO CBL (144 SMF)(AERIAL) DOLLARS and CENTS	LF	4,125.000	312
	6007	6094		FIBER OPTIC FUSION SPLICE DOLLARS and CENTS	EA	48.000	313
	6007	6102		RELOCATE FIBER OPTIC CABLE DOLLARS and CENTS	LF	6,550.000	314
	6007	6103		REMOVE FIBER OPTIC CABLE DOLLARS and CENTS	LF	6,560.000	315
	6010	6001		CCTV FIELD EQUIPMENT (ANALOG) DOLLARS and CENTS	EA	2.000	316
	6025	6001		RADAR PRESENCE DETECTOR DOLLARS and CENTS	EA	6.000	317
	6025	6002		RADAR PRESENCE DETECTOR COMM CABLE DOLLARS and CENTS	LF	1,304.000	318
	6027	6003		CONDUIT (PREPARE) DOLLARS and CENTS	LF	1,840.000	319
	6028	6002		INSTALL DMS (FOUNDATION MTD CABI- NET) DOLLARS and CENTS	EA	2.000	320
	6029	6001	002	RADAR VEHICLE SENSING DEVICE DOLLARS and CENTS	EA	2.000	321
	6057	6001		RADAR ADVANCED DETECTION DEVICE DOLLARS and CENTS	EA	2.000	322

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	6064	6049		ITS POLE (55 FT)(90 MPH)(W/STIFF) DOLLARS and CENTS	EA	1.000	323
	6064	6068		ITS POLE (8 FT)(COSS/OSB) DOLLARS and CENTS	EA	1.000	324
	6064	6084		ITS POLE MNT CAB (TY 2)(CONF 2) DOLLARS and CENTS	EA	3.000	325
	6093	6001		REMOVE EXISTING VIVIDS DOLLARS and CENTS	EA	1.000	326
	6093	6005		REMOVE EXISTING CCTV FIELD EQUIP- MENT DOLLARS and CENTS	EA	1.000	327
	6093	6009		REMOVE EXIST FIBER HUB DOLLARS and CENTS	EA	1.000	328
	6093	6018		REMOV EXIST WIRELESS ETHRNET RADIO LNK DOLLARS and CENTS	EA	1.000	329
	6096	6002		INS LED WW SGN W/BASIC SOL PWR KIT DOLLARS and CENTS	EA	8.000	330
	6102	6001		REMOVE HIGH MAST ILLUMINATION DOLLARS and CENTS	EA	1.000	331
	6156	6001		LED HI MST IL ASM (6 FIXT)(SYM)(TY S) DOLLARS and CENTS	EA	4.000	332
	6156	6003		LED HI MST IL ASM (6 FIXT) (ASYM)(TY B) DOLLARS and CENTS	EA	14.000	333
	6186	6002		ITS GND BOX(PCAST) TY 1 (243636)W/APRN DOLLARS and CENTS	EA	4.000	334

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	6186	6008		ITS GND BOX(PCAST) TY 2 (366036)W/APRN DOLLARS and CENTS	EA	18.000	335
	6186	6010		ITS GND BOX(PCAST) TY 2 (366048)W/APRN DOLLARS and CENTS	EA	1.000	336
	7027	6009		NGP (MAIN)(PLASTIC W/TRACER WIRE)(4") DOLLARS and CENTS	LF	197.000	337
	7027	6010		NGP (MAIN) (4" STEEL) (OPEN CUT) DOLLARS and CENTS	LF	20.000	338
	7087	6001		TRENCH EXCAVATION PROTECTION DOLLARS and CENTS	LF	499.000	339
	7087	6002		PIPE WATER MAIN (PVC)(6") DOLLARS and CENTS	LF	72.000	340
	7087	6003		PIPE WATER MAIN (PVC)(16") DOLLARS and CENTS	LF	38.000	341
	7087	6011		DUCTILE IRON FITTINGS DOLLARS and CENTS	TON	4.880	342
	7087	6012		TIE-IN (COMP)(6") DOLLARS and CENTS	EA	4.000	343
	7087	6013		TIE-IN (COMP)(16") DOLLARS and CENTS	EA	2.000	344
	7087	6014		HYDROSTATIC PRESSURE TEST DOLLARS and CENTS	EA	9.000	345
	7087	6015		TEMPORARY BLOW-OFF (COMP)(2") DOLLARS and CENTS	EA	16.000	346

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	7087	6016		AUTOMATIC AIR RELEASE VALVE (COMP)(1") DOLLARS and CENTS	EA	4.000	347
	7087	6019		CASING FOR OPEN CUT TRENCH (30") DOLLARS and CENTS	LF	22.000	348
	7087	6025		CARRIER PIPE FOR BORING (16") DOLLARS and CENTS	LF	22.000	349
	7087	6027		ADJUST EXISTING VALVE BOX DOLLARS and CENTS	EA	47.000	350
	7087	6028		CONCRETE ENCASEMENT AND SADDLES DOLLARS and CENTS	CY	1,520.000	351
	7087	6030		ADJUST FIRE HYDRANT DOLLARS and CENTS	EA	2.000	352
	7087	6046		FIRE HYDRANT WITH 6IN VALVE AND BOX DOLLARS and CENTS	EA	13.000	353
	7087	6048		TIE IN (COMP)(12") DOLLARS and CENTS	EA	8.000	354
	7087	6050		FLOWABLE BACKFILL DOLLARS and CENTS	CY	3,120.000	355
	7087	6051		SERV LINE BRK/LEAK REPAIR(ALL SIZES) DOLLARS and CENTS	EA	10.000	356
	7087	6054		RELOCATE EXIST METER AND NEW METER BOX DOLLARS and CENTS	EA	7.000	357
	7087	6055		PIPE WATER MAIN (PVC) (8") DOLLARS and CENTS	LF	42.000	358

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	7087	6056		PIPE WATER MAIN (PVC) (12") DOLLARS and CENTS	LF	187.000	359
	7087	6057		CASING FOR OPEN CUT TRENCH (24") DOLLARS and CENTS	LF	138.000	360
	7087	6058		CARRIER PIPE FOR OPEN CUT TRENCH (12") DOLLARS and CENTS	LF	138.000	361
	7087	6059		GATE VALVE AND BOX (COMP) (8") DOLLARS and CENTS	EA	2.000	362
	7087	6060		CUT - IN TEE (COMP) (12"X8") DOLLARS and CENTS	EA	2.000	363
	7087	6061		CUT - IN GATE VALVE AND BOX (COMP)(12") DOLLARS and CENTS	EA	4.000	364
	7087	6062		TIE - IN (COMP) (8") DOLLARS and CENTS	EA	2.000	365
	7087	6063		WATER MAIN BREAK/LEAK REPAIR(ALL SIZES) DOLLARS and CENTS	EA	10.000	366
	7087	6064		RELAY SHORT SERVICE (ALL SIZES) DOLLARS and CENTS	EA	2.000	367
	7088	6003		SANITARY SEWER (ADJUST MANHOLE) DOLLARS and CENTS	EA	2.000	368
	7113	6001		TEMPORARY WATER MAIN DOLLARS and CENTS	LS	1.000	369

County: BEXAR

Highway: IH-410

*****GENERAL NOTES*****
 2014 Specification Book (Revised March 3, 2016)

===== Basis of Estimate =====			
Item	Description	Rate/Area	Quant-Unit
<u>CSJ 0521-05-118 US 90</u>			
168	Vegetative Watering	15.6 Gal/29,740 SY	464 MG
<u>CSJ 0521-04-277 IH 410</u>			
168	Vegetative Watering	15.6 Gal/50,764 SY	792 MG

===== Asphalt Concrete Pavement =====				
Type	Location	Depth	Rate	Quant-Tons
<u>CSJ 0521-04-277</u>				
<u>IH 410</u>				
B (PG 64-22)	ML	7"	770lbs/41,463sy	15,969
B (PG 64-22)	FR	4"	440lbs/115,501sy	25,426
C (PG 64-22)	ML & FR	2"	220lbs/310,942sy	34,233
TOM (ASPH)(PG 76-22)	ML & FR	1"	115lbs/260,518sy@6.5%	989
TOM (AGGR)	ML & FR	1"	115lbs/260,518sy@ 93.5%	14,024
<u>CSJ 0521-05-118</u>				
<u>US 90</u>				
B (PG 64-22)	ML	7"	770lbs/8,858sy	3,412
B (PG 64-22)	DC	4"	440lbs/8,070sy	1,777
C (PG 64-22)	ML	2"	220lbs/45,670sy	5,027
TOM (ASPH)(PG 76-22)	ML & FR	1"	115lbs/57,563sy@6.5%	221
TOM (AGGR)	ML & FR	1"	115lbs/57,563sy@ 93.5%	3,100

===== Surface Treatment Data =====		
Description	Area	1st Course
IH 410	260,518 sy	
US 90	45,670 sy	

-----See Bid Item-----

	<u>CSJ 0521-04-277</u>	<u>CSJ 0521-05-118</u>
	<u>IH 410</u>	<u>US 90</u>
asphalt--rate(gal/sy)	0.2gal/1sy = 52,119 gal	0.2gal/1sy =9,137 gal
aggregate--type/grade	ty B/gr 5	ty B/gr 5
aggregate --rate(cy/sy)	1cy/120sy = 2,191 cy	1cy/120sy = 385 cy

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===== Membrane Underseal Data =====

Location	Area	1st Course
IH 410	260,518 sy	
US 90	57,563 sy	
	CSJ 0521-04-277	CSJ 0521-05-118
	<u>IH 410</u>	<u>US 90</u>
Membrane Underseal--rate(gal/sy)	0.25gal/1sy = 65,134 gal	0.25gal/1sy =14,393 gal

The following State, District, Local and/or Utility Standards have been modified: RE(TEW)-MOD, SSTR (MOD), SGEB (MOD), SGMD (MOD), SSCB (2),-10 MOD, DB-3(MOD), COSS & OSB-SZ (MOD).

Steel Wrapped or Asbestos Utility Lines:

Existing steel wrapped natural gas and/or asbestos cement (AC) water lines that will no longer be in service are usually abandoned in place (AIP). However, if any of these lines have to be removed for whatever reason (in the way of other construction, to make tie-ins, etc.) comply with all federal, state and local laws, ordinances and regulations regarding the management of these materials. At a minimum:

1. Contact the Engineer.
2. Remove the minimum amount of pipe needed to perform the proposed work.
3. Cover and secure the ends of the pipe with a double layer of 6 mil plastic. If the pipe is damaged, cover the entire pipe.
4. Move the pipe to an approved temporary site within the project.
5. The Engineer will determine the owner (utility company) of the pipe and will coordinate removal from the project. The contractor will load the pipe onto the removal vehicles but will NOT be responsible for removing the pipe from the project.
6. Removal of the pipe from the trench is subsidiary to the work that created the need for the removal (excavation for structures, roadway, a new line, tie-ins, etc.). The work performed in handling the pipe after it has been removed from the trench (covering with plastic, hauling to the temporary site and later loading on to the disposal vehicles will be paid for through the Force Account procedure.

Contact the Engineer or the City when construction operations are within 400 feet of a signalized intersection to determine/verify the location of loop detectors, conduit, ground-boxes, etc.

County: BEXAR

Highway: IH-410

Repair or replace any signal equipment damaged by construction operations. The method of repair or replacement shall be pre-approved and inspected. Depending on the type and extent of the damage, the Engineer reserves the right to perform the repair or replacement work and the Contractor will be billed for this work.

Remove existing raised pavement markings as the work progresses or as approved. This work is subsidiary to the various bid items. Properly dispose materials removed.

To better fit field conditions, the cross sections may be varied when approved.

If there are waste areas or material source areas, follow the Texas Aggregate Quarry and Pit Safety Act requirements.

Any materials removed and not reused and determined to be salvageable shall be stored within the project limits at an approved location or delivered undamaged to the storage yard as directed. Properly dispose unsalvageable materials in accordance with local, state, and federal regulations. Deface traffic signs so that they will not reappear in public as signs.

Any sign panels that are adjusted or removed and replaced, shall be done the same workday unless otherwise approved. This work shall be considered subsidiary to Item 502.

Notify the Engineer at least two weeks prior to a proposed traffic pattern change(s) that will require a revision to traffic signals.

Locate and reference all manholes and valves within the construction area with station and offset. Each manhole and valve shall be identified by its owner (SAWS, CPS, etc.). No roadwork will begin until this list has been submitted. Gas valves have to be accessible at all times, therefore; temp. CTB, material stock piles, etc. cannot be placed over these valves.

Construct all manholes and valves to final pavement elevations prior to the final mat of ACP. If, between the final elevation adjustment and the final mat of ACP, the manholes and valves are going to be exposed to traffic, place temporary asphalt around the manhole and valve to provide a +/- 50:1 taper. The cost of elevation adjustment will be part of the manhole and valve work, and asphalt tapers are part of the ACP work.

Hurricane Evacuation

Hurricane Season is from June 1 thru November 30. As the closest metropolitan city inland from the Texas Coast, the City of San Antonio is a major shelter destination during mandatory hurricane evacuations. As such, planned work zone lane or road closures may be restricted and/or suspended during mandatory hurricane evacuation operations. The District will coordinate these restrictions at a minimum H-120 from any projected impact to the Texas Coast.

County: BEXAR

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No time charges will be made if the Engineer determines that work on the project was impacted by the hurricane.

The Engineer may order changes in the Traffic Control Plan to accommodate evacuation traffic, and may suspend the work, all or in part, to ensure timely completion of this work. All work to implement changes in the Traffic Control Plan will be paid through existing bid prices or through Item 9.5, Force Account. However, the Department will not entertain any request for delay damages, loss of efficiency that may be attributed to the restriction or suspension of road or lane closures, or to changes in the Traffic Control Plan.

The Contractor should be aware that the "City Public Service" (CPS) will be consulted by the Engineer in matters concerning the execution of the work, materials and testing related to the CPS work. As such; a CPS employee may be observing the construction and related operations as they progress.

If a sanitary sewer overflow (SSO) occurs:

1. Attempt to eliminate the source of the SSO.
2. Contain sewage from the SSO to the extent possible to prevent contamination of waterways.
3. Call SAWS at (210) 233-2015.

The Contractor should be aware that the "San Antonio Water System" (SAWS) will be consulted by the Engineer in matters concerning the execution of the joint bid Water and/or Sanitary work. This may include reviewing material submittals and testing related to this work, as well as inspection and observation of the actual work. As such, a SAWS employee may be reviewing submittals and test results as well as observing the construction and related operations as they progress.

The scope of this work assigned under this contract will include traffic signal installations. This is understood to include, but is not limited to upgrade of existing traffic signals. The work may include minimal concrete work and/or curb ramps to accommodate pedestrian access routes.

The following list of some of the telephone numbers of the utility locators for various utilities that may be encountered.

City Public Service	978-3500
Southwestern Bell Telephone	1-800-828-5127
Time Warner Cable System	352-4672
San Antonio Water System	704-7297 or 227-6143
Valero Gas	349-7555
AT & T	1-800-252-1133
One Call Utility Locators	1-800-545-600

County: BEXAR

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In preparing holes for posts and/or foundations, the contractor shall exercise care to not rupture existing drainage structures, electrical conduits, public utilities, etc.

Sign types for which details are not shown in the plans shall conform to the "Texas MUTCD".

The Contractor shall use materials from pre-qualified producers as indicated on the material producers list maintained by the Construction Division (CST) of the Texas Department of Transportation (TxDOT).

--Item 5--

Reference all existing striping and other pavement markings to allow these markings to be re-established. Ensure the markings (lane lines, edge lines, ramp gores, etc.) are in line with signs, TMS arrows, etc. located on overhead sign supports.

Taper ACP placed at curb inlets, traffic inlets and slotted drains.

When a bridge deck is milled, seal coated and overlaid, remove excess material. Do not just broom to the sides of the bridge, under guardrail, etc. Cover or protect all sealed expansion joints and rails on bridges and all railroad tracks encountered as approved. Clean all of these features if they weren't properly protected. This work is subsidiary work to applicable bid items.

Prior to letting, bidders may obtain a free computer diskette or a computerized transfer of files (from the Engineer's office) that contains the earthwork information. If copies of the cross-sections in addition to, or instead of, the CD are requested, they will be available at the Engineer's office for borrowing by copying companies at the bidder's expense.

When working near aerial electrical lines or utility poles, comply with Federal, State and local regulations. For electrical lines and poles shown in the plans, if the lines need to be de-energized or if poles need to be braced, contact the electrical company. Work pertaining to de-energizing lines, bracing poles and other protective measures will not be paid by TxDOT.

Clean up and remove from the work area all loose material resulting from daily operations at the end of each day.

Do not place traffic signal poles on their respective foundations prior to 7 days following placement of concrete.

Place the grounding rods for the traffic signals poles at the nearest ground box. The ground rod will be 5/8" c 10'. A continuous bare or green insulated copper wire (no. 6) will be installed from the ground rod in the ground box of the base of the traffic signal.

County: BEXAR

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Prevention of Migratory Bird Nesting

It is anticipated that migratory birds, a protected group of species, may try to nest on bridges, culverts, vegetation, or gravel substrate, at any time of the year. The preferred nesting season for migratory birds is from February 15 through October 1. When practicable, schedule construction operations outside of the preferred nesting season. Otherwise, nests containing migratory birds must be avoided and no work will be performed in the nesting areas until the young birds have fledged.

Structures

Bridge and culvert construction operations can not begin until swallow nesting prevention is implemented, until after October 1 if it's determined that swallow nesting is actively occurring, or until it's determined swallow nests have been abandoned. If the State installed nesting deterrent on the bridges and culverts, maintain the existing nesting deterrent to prevent swallow nesting until October 1 or completion of the bridge and culvert work, whichever occurs earlier. If new nests are built and occupied after the beginning of the work, do not perform work that can interfere with or discourage swallows from returning to their nests. Prevention of swallow nesting can be performed by one of the following methods:

1. By February 15 begin the removal of any existing mud nests and all other mud placed by swallows for the construction of nests on any portion of the bridge and culverts. The Engineer will inspect the bridges and culverts for nest building activity. If swallows begin nest building, scrape or wash down all nest sites. Perform these activities daily unless the Engineer determines the need to do this work more frequently. Remove nests and mud through October 1 or until bridge and culvert construction operations are completed.
2. By February 15 place a nesting deterrent (which prevents access to the bridge and culvert by swallows) on the entire bridge (except deck and railing) and culverts.

No extension of time or compensation payment will be granted for a delay or suspension of work caused by nesting swallows. This work is subsidiary to the various bid items.

Provide a non-intrusive back-up alarm system on all heavy equipment used in close proximity to residential areas. This item is subsidiary to various bid items.

--Item 6--

Show the stockpile lot and/or sub lot numbers on all tickets for all materials.

County: BEXAR

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--Item 7--

The project's total disturbed area is 46.19 AC. The disturbed area in all project locations and Contractor project specific locations (PSL's), within 1/4 mile of the project limits, will further establish the authorization requirements for storm water discharges. The department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. Obtain any required authorization from the TCEQ for any PSL's on or off the ROW. When the total area disturbed on the project and PSL's within 1/4 mile of the project exceeds 5 acres, provide a copy of the Contractor NOI for PSL's to the Engineer (to the appropriate MS4 operator when the project is on an off-state system route).

Notify the Engineer of the disturbed acreage within one (1) mile of the project limits. Obtain authorization from the TCEQ for Contractor PSL's for construction support activities on or off ROW.

--Item 8--

Working days will be computed and charged in accordance with Article 8.3.1.2:6-Day work week.

Create and maintain a Critical Path Method schedule.

The CPM schedule shall be created and maintained using software fully compatible with version 6.1 of Primavera Project Planner or SureTrak Project Scheduler.

Lane Closure assessment fees for mainlane closures on IH 410 and US 90 and for frontage road closures on IH 410 will be assessed as outlined in SP 008-017 and as shown on the Lane Closure Fee Table in the plans.

An incentive for substantial completion will be paid in accordance with section 8.9.1.2 of special provision 008-006. A disincentive for substantial completion will be assessed in accordance with section 8.9.2 of special provision 008-006.

Substantial Completion of Work

The contractor has 1,000 working days to substantially complete this project. Working days will be computed and charged in accordance with Article 8.3.1.2:6-Day work week.

The daily road user cost for substantial completion of the project is \$10,000.00 per day.

The Road User Cost liquidated damages for substantial completion is \$10,000.00 per day.

The maximum number of working days for computing the incentive credit for the substantial completion of the project is 100 days.

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--Item 9--

When approved, provide uniformed, off-duty law enforcement officers with marked vehicles during work that requires a lane closure. The officer in marked vehicles shall be located as approved to monitor or direct traffic during the closure. The method used to direct traffic at signalized intersections shall be as approved. Additional officers and vehicles may be provided when approved or directed.

Complete the daily tracking form provided by the department and submit invoices that agree with the tracking form for payment at the end of each month approved services were provided.

Show proof of certification by the Texas Commission on Law Enforcement Standards.

All law enforcement personnel used in Work Zone Traffic Control shall be trained for performing duties in work zones and are required to take "Safe and Effective Use of Law Enforcement Personnel in Work Zones" (Course #133119) which can be found online at the following site: www.nhi.fhwa.dot.gov

Certificates of completion should be available to all who finish the course. These should be kept by the officers in order to substantiate completion when reporting to the work site.

Minimums, scheduling fees, etc. will not be paid; TxDOT will consider paying cancellation fees on a case by case basis.

--Item 100--

Begin clearing operations after trees and other areas of vegetation to be protected have been identified and approved. Install fencing around features to be protected as shown in the plans or directed. Coordinate all right of way clearing operations with the SW3P.

Trim and remove brush and trees as needed for construction operations. Obtain approval for proposed method of tree and brush trimming and removal. Vertical flailing equipment is not allowed. Treat damaged or cut branches, roots and/or stumps of all oak trees with a commercial tree wound dressing. Disinfect all pruning tools with a solution of 70% alcohol before moving from one tree to another. Unless otherwise approved remove all resulting vegetative debris from the ROW within 24 hours. The Engineer can stop all construction operations if the dressing, cut and removal requirements are not followed.

--Item 110--

Where excavation extends beyond a right of way fence, remove and replace the fence to a comparable condition. This work shall be considered subsidiary to the bid item.

County: BEXAR

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--Item 132--

At no time shall the retaining wall backfill material exceed the adjacent embankment operation by more than one embankment lift. At no time will the embankment adjacent to the retaining wall backfill exceed the wall backfill by any elevation.

--Item 164--

Drill seeding of permanent grasses requires the use of approved grass seeding equipment capable of properly storing and metering the release of small seeds (such as Bermuda grass) separately from fluffy type seeds (such as bluestems). Equipment manufactured for planting grain crops is acceptable for planting temporary cool season seeds, but not for planting the permanent seed mix.

If performing a permanent seeding in an area with established temporary grass cover and mowing is performed instead of tilling, seed and fertilizer may be distributed simultaneously during "Broadcast Seeding" operations, provided each component is applied at the specified rate.

--Item 166--

Use a fertilizer with an analysis of 13-13-13 (50% of the total N must be sulfur coated urea) to apply 60 lbs of actual N per acre. This requires 460 lbs of 13-13-13 per acre or .095 lbs per SY of area.

--Item 168--

Apply vegetative watering as needed to supplement natural rainfall during the vegetation establishment period. Plan quantity of irrigation water is based on the application of a total of 1.3 gal of water each week for each sq. yd. of area that is sodded or seeded. Establishment time is estimated to be 12 weeks for both sod and permanent seed mixes. Temporary seeding will require less time for establishment. Provide a schedule and coordinate watering cycles and rates per cycle with the Engineer. Obtain approval if the quantity of water to be applied is expected to exceed the plan quantity. Adjust the amount of water applied with each cycle and the number of cycles each wk. according to actual site conditions. Drought or other conditions, as determined by the Engineer, may require the application of supplemental irrigation during hours other than normal working hours.

--Item 247--

There is no minimum PI requirement for this project.

--Item 302--

Previously tested aggregates found to contain excessive quantities of dust (more than 0.5 percent passing the No. 40 sieve) during precoating, stockpiling or hauling operations, may be rejected. Use Test Method Tex-200-F, Part I for testing.

Precoated Aggregate Type PE shall consist of crushed slag, crushed stone or natural limestone rock asphalt.

County: BEXAR

Highway: IH-410

The Engineer will utilize the Ignition Oven Method (Tex 236-F) for aggregate gradation, with the option of utilizing belt or vacuum extraction gradation in the event the ignition oven malfunctions.

--Item 316--

Asphalt season will be year around, but meet sections 316.4.4.1 through 4.4.3.

Ensure that the asphalt for precoating the aggregate and the asphalt used for the surface treatment will not result in a reaction that may adversely affect the bonding of the aggregate and asphalt during the surface treatment operation.

Do not add bag house fines in the production of precoated material.

Clean all concrete curbs, islands, medians, etc. that get coated with asphalt.

--Item 320--

Construct all longitudinal ACP joints adjacent to a travel lane with a joint maker device that will create a 3:1 to 6:1 taper. For placement of 2 inches or more, the device shall provide a maximum ½ inch vertical edge. Taper outside edges (next to the grass) or backfill (shoulder-up) the same day.

Provide a material transfer device capable of providing a continuous flow of material to the paver. The material transfer device will consist of a windrow elevator or better.

--Item 341 & 347--

Table 10, in Item 340, Table 10 in Item 341 and Table 11 in Item 344, Hamburg Wheel Test Requirements tested in accordance with Tex-242-F are changed for PG 64-22 or lower and PG 70-22. Minimum number of passes at 1/2" Rut Depth, Tested at 122 degrees F will be 5,000 and 10,000 respectively.

Design all mixture types using a target laboratory-molded density of 96.5%, when the Texas Gyrator Compactor is utilized. Increase the target laboratory-molded density to 97.0% or 97.5% at the Contractor's discretion. When utilizing SGC, design all mixture types at 50 gyrations (N-Design) and a target laboratory-molded density of 96.0%, but may be reduced to no less than 35 gyrations at the Contractor's discretion.

The asphalt plant shall have truck scales as defined in Item 520. Give three weight tickets bearing the date, the truck number, the gross, net & tare weights to the truck driver for the State inspector at the spreading and finishing operation. Trucks may be required to weigh on public scales or portable platform scales to verify the weight of the ticket.

County: BEXAR

Highway: IH-410

Submit a copy of the Tex 233-F production charts on a weekly basis. At the end of the ACP work, provide all originals.

Crushing of aggregate for hot mix and immediate use for production of the mix is not allowed. Stockpile the aggregate until enough material is available for five days of production unless prior approval is provided. Hold a pre-placement meeting one month prior to the placement of the hot mix.

The main purpose of hot mix cores taken by the State are for payment calculations. If (for quality control purposes) the core information is needed sooner, take additional cores.

Do not use diesel or solvents as asphalt release agents in production, transportation, or construction. A list of approved asphalt release agents is available from the District Laboratory.

No more than one hot mix lot will be open for any specific type of hot mix, unless authorized. After a lot is open and the Contractor gets approval to change plants, the previous lot will be closed and a new lot will be opened. The numbering for the lots produced at the new plant will start with No. 1. If allowed to switch back to the original or previous plant, the next lot from that plant will resume numbering sequentially from the last lot produced by that plant.

Schedule lay-down placement where uneven travel lanes are minimized and eliminated weekly.

If asphalt material is obtained from other than a commercial source presently inspected by TxDOT, furnish a Type D structure for the asphalt mix control laboratory for the Engineer's use. Provide a minimum height of 8 feet and a minimum of 400 square feet of gross floor area for permanently located asphalt plants or 200 square feet for a temporary plant. The floor area will be partitioned into a minimum of two rooms, with a minimum of two windows per room. The floor shall have an impervious cover and sufficient strength to support the testing equipment. Portable structures shall be support blocked for stability and shall be tied down.

The use of Recycled Asphalt Shingles (RAS) will not be allowed on the final riding surface.

Minimum Roadway Placement Temperature

--Item 341--

Place mixture when the roadway surface temperature is equal to or higher than listed in Table 1 unless otherwise approved or shown on the plans. Measure the roadway surface temperature with a hand-held thermal camera or infrared thermometer. Placement may be allowed to begin prior to the roadway surface reaching the required temperature if conditions are such that the roadway surface will reach the required temperature within 2 hrs. of beginning placement operations. Place mixtures only when weather and moisture conditions of the roadway surface are suitable in the opinion of the Engineer. The Engineer may restrict the Contractor from paving if the ambient temperature is likely to drop below 32°F within 12 hr. of paving.

County: BEXAR

Highway: IH-410

Table 1
Minimum Pavement Surface Temperatures

Specification Item Number	High Temperature Binder Grade	Minimum Pavement Surface Temperatures in Degrees Fahrenheit *	
		Subsurface Layers or Night Paving Operations	Surface Layers Placed in Daylight Operations
341	PG 64	45	50
	PG 70	55	60
	PG 76	60	60

* Except for PG 64, may pave at temperatures 10° F lower than the values shown in Table 1 when utilizing a Material Transfer Vehicle that is capable of providing a remixing, and continuous flow of material from the haul truck to the paver, such as a Roadtec SM-2500e/ex, that eliminates thermal segregation. In these cases, use either an infrared bar attached to the paver, or a hand held thermal camera or infrared thermometer, or a hand held infrared thermometer operated in accordance with Text Method 244-F to demonstrate that the uncompacted mat has no more than 10° F of thermal segregation.

Substitute Binder

--Item 341--

The Contractor may use a substitute PG binder listed below in Table 1 instead of the PG binder originally specified in Table 5 of the Standard Specification, if the substitute PG binder and mixture made with the substitute PG binder meet the following:

- ◆ The substitute binder meets the specification requirements for the substitute binder grade in accordance with Section 300.2.10., “Performance-Graded Binders;” and
- ◆ The mixture has less than 10.0 mm of rutting on the Hamburg Wheel test (Tex-242-F) after the number of passes required for the originally specified binder. Use of substitute PG binders may only be allowed at the discretion of the Engineer if the Hamburg Wheel test results are between 10.0 mm and 12.5 mm.

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Highway: IH-410

Table 1
Allowable Substitute PG Binders and Maximum Recycled Binder Ratios

Originally Specified PG Binder	Allowable Substitute PG Binder	Maximum Ratio of Recycled Binder ¹ to Total Binder (%)		
		Surface	Intermediate	Base
HMA				
76-22 ^{2,5}	70-22	20.0	20.0	20.0
	70-28	20.0	35.0	40.0
70-22 ²	64-22	20.0	20.0	20.0
	64-28 or 58-28	20.0	35.0	40.0
64-22 ²	58-28	20.0	35.0	40.0
76-28 ^{2,5}	70-28	20.0	20.0	20.0
70-28 ²	64-28 or 58-28	20.0	20.0	20.0
	64-34 or 58-34	20.0	35.0	40.0
64-28 ²	58-28	20.0	20.0	20.0
	58-34	20.0	35.0	40.0
WMA³				
76-22 ^{2,5}	70- 22	20.0	35.0	40.0
70-22 ²	64-22 or 58-28	20.0	35.0	40.0
64-22 ⁴	58-28	20.0	35.0	40.0
76-28 ^{2,5}	70-28	20.0	35.0	40.0
70-28 ²	64-28 or 58-28	20.0	35.0	40.0
64-28 ⁴	58-28	20.0	35.0	40.0

1. Combined recycled binder from RAP and RAS.
2. Use no more than 20.0% recycled binder when using this originally specified PG binder.
3. WMA as defined in Section 341.2.6.2., "Warm Mix Asphalt (WMA)."
4. When used with WMA, this originally specified PG binder is allowed for use at the maximum recycled binder ratios shown in this table.
5. No more than 1-PG grade lower than what is show on the plans will be permitted for Surface mixtures

Required when using either 340, 341 or 344

--Item 354--

Retain planed material.

Take precaution to avoid damage to existing bridge decks and armor joints. Repair any damage to the bridge decks and/or armor joints as approved. This work will not be paid directly, but will be performed at the Contractor's expense.

--Item 401--

A shrinkage compensator is not required for when used for backfilling pipes. Strength of the Flowable Backfill will be verified by the District Laboratory. Field testing is not required, unless deemed necessary.

--Item 416--

Concrete for drilled shafts shall be Class C.

County: BEXAR

Highway: IH-410

Disposal of all surplus material required for traffic signal pole foundations will not be paid for directly but will be subsidiary to bid item 416 "Drilled Shaft Foundations."

Dispose of all surplus materials as directed.

Due to the possibility of right of way constraints, utilities, and other conflicts, field verify the actual locations of traffic signal foundations with personnel from the San Antonio District Transportation Operations Section before operations begin.

The dimensions shown on the plans for the locations of signal pole foundations may be modified to meet existing conditions, subject to approval by the Engineer.

Clean up and remove from the work area all loose material resulting from daily operations at the end of each day.

Do not place traffic signal poles on their respective foundations prior to 7 days following placement of concrete.

Place the grounding rods for the traffic signals poles at the nearest ground box. The ground rod will be 5/8" c 10'. A continuous bare or green insulated copper wire (no. 6) will be installed from the ground rod in the ground box of the base of the traffic signal.

--Item 420--

Mass concrete will be measured in place.

Restrict large aggregate size to 3/4" maximum for class "C" concrete used in aesthetic details requiring form liners.

All Columns, Rail (TY SSTR), and Perm CTB (SGL SLOPE) (TY 1,3,4) (42") shall have an aesthetics theme as shown for the Mission Region in the "San Antonio District Urban Design Themes for Bexar and Outlying Counties", which can be found at <http://www.txdot.gov/inside-txdot/district/san-antonio/urban-design.html>

--Item 421--

Use an automated ticket that contains the same information as TxDOT's ticket. Submit the ticket for approval prior to use. The concrete producer will contact the District Laboratory or the Engineer's Office (outside the San Antonio area) to inform TxDOT of scheduled structural concrete batching. Structural concrete includes bridge drill shafts, columns, caps, abutments, deck or top slabs of direct traffic culverts.

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--Item 422--

For construction of approach slabs, longitudinal joints shall be placed on lane lines. Joints may be either a saw-cut crack control joint or a construction joint. Saw cut joints shall terminate 1'-0" before reaching the edge of the slab, must be saw cut as soon as possible after placement of concrete, and will be cut within 12 hours of concrete placement. Once sawing begins, it should be a continuous operation and should only be stopped if raveling occurs. Saw cut will be to a depth of 1.5" and filled with approved joint sealant.

--Item 423--

The backfill material for pre cast retaining walls shall be approved before placement. Build stockpile(s) in lifts not to exceed 2 feet and a minimum working face of not less than 10 feet, but not more than 20 feet.

Use the approved Concrete Block Retaining wall systems listed at:

http://www.dot.state.tx.us/business/contractors_consultants/bridge/retaining_wall.htm

Use the approved Mechanically Stabilized Earth (MSE) wall systems listed at:

http://www.dot.state.tx.us/business/contractors_consultants/bridge/retaining_wall.htm

TxDOT does not allow the use of experimental systems on projects with over 50,000 square feet walls over 25 ft. tall, or walls supporting or immediately adjacent to interstate highways.

When proprietary wall systems are used, a qualified representative of the retaining wall manufacturer must be available upon request during wall construction. As requested or required the manufacturer's representative must be on site to assist with the initial stages of wall construction, provide training to the Contractor wall crew and ensure proper interpretation of MSE wall shop drawings and details. Specific attention must be given to nonstandard wall installation details. The Contractor's wall crew foreman must be on site for the duration of wall construction. Any change to the wall crew foreman may require additional training by the wall supplier. The Contractor will ensure that the retaining walls are installed per the details presented in the construction drawings and as per the proprietary wall system requirements. The Engineer reserves the right to suspend wall construction activities due to any construction issue encountered.

Type DS material will be required on MSE walls in the area of the reinforcement mats.

--Item 427--

Provide special surface finish Rub to surface area 1.

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--Item 432--

In all riprap slopes, provide 3 inch diameter weep holes at 10 foot maximum spacing and backed with loose graded gravel or crushed stone and galvanized hardware cloth.

In areas where guard fence posts are to be placed in riprap, the riprap shall have an 18 inch +/- blocked out area (round or square). Blocked out areas shall be backfilled with 2 sack flowable backfill and considered subsidiary to the various bid items.

Match the slope of the Riprap (Mow Strip) to the slope of the adjacent roadway.

--Item 449--

The pipe joint compound used to coat the threads of anchor bolts prior to installation of nuts when erecting a high mast pole shall be an electrically conducting protective thread lubricant compound (Crouse-Hinds TL-2, Oz/Gedney STL, Thomas & Betts Kopr-Shield).

--Item 454--

The list of approved Header Type Expansion Joints can be found at: http://www.txdot.gov/txdot_library/publications/producer_list.htm title is "Elastomeric Concrete".

--Item 462--

Use lean concrete or 2 sack flowable backfill for fill between pre-cast boxes. Lean concrete and 2 sack flowable backfill shall be considered subsidiary to this bid item.

The following structures shall be cast-in-place:

Structure 1.

The following structures shall be pre-cast:

Structure 2A, Structure 3, and all storm drain box culverts.

--Item 465--

Concrete Class B invert shaping is required at all inlets, manholes and junction boxes in order to insure positive flow. The material and work performed for the placement of the inverts shall be considered subsidiary to this item.

--Item 496--

The Contractor will submit a demolition plan for all structures to be replaced and/or removed in accordance with Item 496.

--Item 500--

"Materials on Hand" payments will not be considered in determining percentages for mobilization payments.

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--Item 502--

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

Place standard markings no later than 14 days after surface treatment operations are completed.

When advanced warning flashing arrow panels and/or changeable message sign is specified, have one standby unit in good condition at the job site. Standby time shall be considered subsidiary to the bid item.

Treat the pavement drop-offs as shown in the TCP.

After written notification, the time frame to provide properly maintained signs and barricades before considered in non-compliance is 48 hours from receipt of the notification. Failure to make corrections as noted may result in payment for this item being withheld.

There are traffic signals at the intersection of IH 410 and Marbach Road. Existing traffic signals shall remain in operation at all times except when necessary to be turned off for specific installation operations. When it is necessary for a signal to be turned off, the contractor shall hire off duty police officers to control the traffic until the signals are back in satisfactory condition.

Moving an existing sign to a temporary location is subsidiary to this Item. Installations with permanent supports at permanent locations will be paid for under the applicable bid item (s).

Mount temporary mailboxes on plastic drum in accordance with Compliant Work Zone Traffic Control Devices, Section K. Mounting and moving the mailbox as needed for the various construction phases is subsidiary to this Item.

Notify the Engineer in writing 10 business days in advance of any temporary or permanent lane, ramp, connector, etc. closures/detours, restrictions to lane widths, alterations to vertical clearances, or modifications to radii. Any other modifications to the roadway that may adversely affect the mobility of oversized/overweight trucks also require 10 business days advance written notice to the Engineer. Unless shown in the TCP, no lane, ramp, connector, etc. closures are allowed during special events. At least one lane has to remain open at all times. Lane closures will not be allowed if this reporting requirement is not met.

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For closures not listed in the TCP; the lane closures are limited to between the hours of **9 AM to 3PM**, and at least one lane has to remain open at all times.

Avoid placing stockpiles within the roadway's horizontal clear zone. If a stockpile is placed within the clear zone, address in accordance with the TMUTCD.

Do not place barricades, signs, or any other traffic control devices where they interfere with sight distance at driveways or side streets.

In addition to providing a Contractor's Responsible Person and a phone number for emergency contact, have an employee available to respond on the project for emergencies and for taking corrective measures within 2 hours or within a reasonable time frame as specified by the Engineer.

Temporary Rumble Strips are to be used according to WZ (RS)-14.

Use 2 rumble strip arrays.

Temporary rumble strips are to be used on:

One-lane, two-way flagging operations with a posted speed limit of 75 mph or less or
Lane closures on conventional highways with a posted speed limit of 75 mph or less.

Temporary rumble strips should not be used on horizontal curves, loose gravel (seal coats), soft or bleeding asphalt, heavily rutted pavements or unpaved surfaces.

If Portable Traffic Signals or Automated Flagger Assistance Devices are used in lieu of flaggers for lane closures, this standard sheet also applies.
See General Notes on WZ (RS)-14 before use.

If Nighttime work is required and work is not behind positive barrier then full TY 3 reflective gear is required to be worn by all workers, hard hat halos are required to be worn by the flaggers at flagging stations, TY III barricades are required to be spaced at 500 ft, and a mandatory night work meeting is required.

Logo signs may remain throughout construction on temporary mounts, when possible. Contact Lonestar Logos to pick up signs at end of construction (866) 627-5646. Permanent signing to then be placed by Lonestar Logos after coordinating with the Traffic office.

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--Item 504--

Furnish one field office type B with a working alarm system.

Enclose the field office and the parking area as shown in 504.2.1.1 and provide security lighting.

Provide wi-fi internet connectivity (minimum of 30 GB), a color printer/fax/scanner/copier, and telephone(s) as directed.

Provide laboratory equipment necessary for testing (moist cabinet, moist room or water storage tank in accordance with Tex-498-A, Table 32, and Concrete Testing Machine in accordance with Tex-498-A, Table 18) .

--Item 506--

An Inspector will perform a regularly scheduled SWP3 inspection every 7 calendar days.

Failure to address items noted on the SW3P inspection report within two report cycles may result in the Department stopping all construction operations, exclusive of time charges, or withholding that month's estimate until the SW3P deficiencies are corrected unless the Engineer determines that the area is too wet to correct SW3P deficiencies.

--Item 512--

New Single Slope or F-Shape CTB (cast in accordance with the Standard Sheets in the plans) may be furnished or the same pre-used shapes (that meet the requirements of this Item) may be furnished. New Safety Shape (New-Jersey) CTB is not allowed, but pre-used New-Jersey (that meets the requirements of this Item) may be furnished. More than one type may be furnished but do not mix the types when placed along the roadway.

--Item 514--

The Type 3 CTB taper from the Type 2 at obstructions (OSB's, bridge, columns, etc.) shall be 40:1. If gravel is used between the barriers as shown by the Standard Sheet, the top six inches shall be CL A concrete.

--Item 529--

Class "C" concrete is required for machine extruded curb.

Curb inlets and extensions are based on an exposed curb height of 7 inches. The roadway curb height and shape will be transitioned to the inlet's curb with a 40: 1 taper.

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--Item 531--

The curb ramp locations shown in the plans have taken into account the geometric features of the intersection, traffic signals, and the pavement markings. If anything changes during construction, the location of curb ramps must be adjusted to ensure they meet TAS requirements.

The curb ramp truncated domes will be terra cotta.

--Item 540--

MBGF posts shall be round with domed tops, and not painted. If 10 or less timber posts are needed, they may be purchased locally and will be accepted by visual inspection.

Guard fence posts placed in proposed and/or existing areas of riprap, sidewalks or other concrete shall have an 18 inch +/- (square or round) block out in the concrete. After the posts are installed, the blocked out area shall be topped off with 4 inches of low strength grout/mortar consisting of about 1 sack of cement per cubic yard of mix.

When connecting a Thrie-Beam to a concrete wingwall, bridge rail, CTB, etc., drill the holes for bolt placement using rotary or core type equipment. Use a core type drill when reinforcing steel is encountered. Do not use percussion or impact drilling. Repair damage to the concrete and spalls exceeding 1/2" from the edge of the hole.

--Item 542--

Salvage all undamaged/acceptable radius guardrail and deliver to the TxDOT maintenance section yard.

--Item 545--

See the Crash Cushion Summary Sheet.

--Item 585--

Use Surface Test Type B, pay adjustment schedule 1 to evaluate ride quality of travel lanes.

--Item 610--

Fabricate steel roadway illumination poles in accordance with the RIP standards. Poles fabricated according to RIP require no shop drawings. Alternate designs or the use of aluminum to fabricate poles will require the submission of shop drawings electronically.

For instructions on submitting shop drawings electronically go to:

<http://www.dot.state.tx.us/publications/bridge.htm>. File is titled: Guide to Electronic Shop Drawing Submittal.

Provide lamps from the pre-qualified Materials Producers List, Category is "Roadway Illumination and Electrical Supplies" located on the Construction Divisions (CST) web site.

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Ballast/capacitors removed from the light assembly, will remain the property of the State. Assume all ballast/capacitors contain Polychlorinated Biphenyl (PCB), unless a notation appears on the outside of the unit that specifies it does not contain PCB's. All ballast/capacitors with PCB's shall be placed in 55 gallon open top drum in accordance with Department of Transportation (DOT) specifications. Place six (6) inches of sawdust or other absorbent material in the bottom of the drum. Furnish and place a DOT approved PCB warning label on the outside of the drum. Do not fill a drum more than $\frac{3}{4}$ of capacity. Avoid rupturing the ballast/capacitor(s). If a ballast/capacitor is ruptured, use proper procedures, specialist trained staff and personal protective equipment for the clean-up operations.

The lamps in light fixtures may contain hazardous levels of mercury, halide, and sodium vapors. Observe and comply with all federal, state and local laws, ordinances and regulations regarding the management of these lamps. Prevent the breakage of the lamps. At a minimum, package all lamps removed from the light fixture(s) in a container that minimizes the breakage of the lamps. Broken lamps shall be collected in a sealed plastic bag (i.e. Ziploc). Broken lamps shall be stored in separate containers from unbroken lamps. Furnish a suitable container and attach a label stating "Universal Waste Lamps" on the container. Write the date the first lamp was placed in the container on the "Universal Waste Lamp" label. Within one (1) week after the first lamp is placed in a container, notify the Engineer. The lamps and PCB containing ballast/capacitors, placed in properly labeled containers, will remain the property of the State. Place the container in an area where it is protected from damage and the elements. The Engineer will make arrangements to collect, transport, and dispose/recycle the container. The ballast/capacitor and lamp's removal and storage is subsidiary to this item.

Stencil each illumination assembly with the circuit, light and relay numbers in black paint on the roadway side of the pole at a 45 degree angle. The numbers shall be in 3" tall and begin 6' from the top of the foundation. This work will be considered subsidiary to this item.

--Item 613--

Use an electrically conducting protective thread lubricant compound (Crouse-Hinds TL-2, 0Z/Gedney STL, Thomas & Betts Kopr-Shield) for the pipe joint compound to coat the threads of the anchor bolts, prior to installation of nuts.

--Item 614--

Fabricate high mast ring assemblies in accordance with shop drawings approved by the Department. Submit shop drawings for each project, or use pre-approved standard shop drawings.

For project specific shop drawings, furnish seven sets of drawings of the complete assembly in accordance with Item 441, "Steel Structures". Deliver shop drawings to the Director of Traffic Operations Division, Texas Department of Transportation, 125 East 11th Street, Austin, Texas 78701-2483.

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To be eligible to use pre-approved standard shop drawings, the shop drawing must be submitted and approved by the Department prior to use on the project. Deviation from the pre-approved standard shop drawing will require resubmission of the shop drawings. The Engineer may approve, in writing, the use of updated standard drawings in cases where the standard drawings have been updated and the updated version has been approved by the Department.

For pre-approval and updates to previously approved standard shop drawings, furnish seven sets of drawings of the complete assembly in accordance with Item 441, "Steel Structures" to the Director of Traffic Operations Division, Texas Department of Transportation, 125 East 11th Street, Austin, Texas 78701-2483.

Copies of the standard shop drawings are on file with Traffic Operations Division, Bridge Division, and the Materials Section of Construction Division. Additional shop drawings for high mast illumination assemblies built in accordance with these drawings are not required. Pre-approved shop drawing manufacturers and assembly model numbers can be found on the Materials Produce list of the Construction Divisions (CST) web site.

Category is roadway illumination and electrical supplies.

--Item 618--

It might be necessary to cut concrete for placement of conduit. Saw cut existing concrete, remove the concrete from the steel reinforcement (bars or fabric) and bend the steel to install the conduit. After the conduit has been placed, bend the steel back to its original position and back-fill the trench with an approved concrete. This work is subsidiary to this Item.

The conduit depth for illumination under the City of San Antonio streets is 36 inches.

Use materials from Material Producers list as shown on the Construction Division's (CST) web site. Category is "Roadway Illumination and Electrical Supplies."

All conduit elbows and rigid metal extensions required to be installed on PVC conduit systems will not be paid for separately, but will be considered subsidiary to various bid items.

--Item 620--

For both transformer and shoe-base type illumination poles, provide double-pole breakaway fuse holder as shown on the Construction Division's (CST) materials producers list Category is "Roadway Illumination and Electrical Supplies." Fuse holder is shown on list under Items 610 & 620.

Provide 10 amp time delay fuses.

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Test each wire of each cable or conductor after installation. Any incomplete circuit or damage to any wire will be cause for immediate rejection of the entire cable being tested. Remove and replace the entire cable at no additional cost to TxDOT. Test the replacement cable after installation.

Provide a sized, self-insulated, solderless terminal to ends to be attached to terminal posts. Attach these terminals to wires with a ratchet type compression crimping tool properly sized to the wire. Place pre-numbered identification tags of plastic or tape around each wire adjacent to wire ends in the controller, signal heads, and signal pole terminal blocks.

--Item 624--

Place concrete aprons around all ground boxes installed in areas that are sod. Precast aprons will not be allowed.

Ground box and covers will be manufactured from reinforced polymer concrete (RCP). Remove all abandoned ground boxes and dispose of them in an approved manner. This work will be considered subsidiary to bid item 624 "Ground Boxes."

Ensure the ground box cover is legibly imprinted by the manufacturer with the words "Danger High Voltage" as required by the "Electrical Details" State Standard Sheet(s). In addition, imprint "Traffic Signal", "TMS", "Illumination", or whatever other system will be housed in the ground box. The ground box locations shown on the plans are approximate and can be adjusted to better fit field conditions when approved.

--Item 628--

Make all arrangements for electrical service, and compliance with local standards and practices for proper installations.

--Item 644--

The wedge anchor system shown on State Standard Sheet SMD (TWT) is not allowed.

--Item 656--

The Contractor shall provide all materials needed for the installation of foundations under this item.

--Item 658--

CTB reflectors will not be paid for directly but will be considered subsidiary to the barrier.

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--Item 666--

For TY I markings the minimum thickness of spray-applied markings, as measured on a flat plate by micrometer or similar surface, will be 0.100 inches (100 mils) for new markings and 0.060 (60 mils) for retracing on thermoplastic pavement markings. Apply 0.090 inches (90 mils) of minimum thickness for all other TY I markings. The maximum thickness for TY I markings will be 0.180 inches (180 mils). These thicknesses are required for the full width of the line being placed.

Apply all markings in accordance with the plans, the latest version of the Texas MUTCD and as directed/approved by the Engineer after the surface has cured for two (2) days, been cleaned and prepared according to the specifications and as directed/approved by the Engineer. Apply thermoplastic markings directly over existing painted pavement markings only where applicable.

If TY II material is used (vs. an acrylic or epoxy) as the sealer for the TY I markings, place the TY II a minimum of 14 calendar days (to provide adequate curing) before placing the TY I markings.

Mark the locations of the standard pavement markings, as directed. Pavement markings determined to have been placed incorrectly, such as no-passing zones, fore areas, turn lanes, etc., will be removed and replaced by approved methods, at no additional cost to the State.

Establish the alignment and layout for permanent striping and pavement markers. Have layout approved prior to striping operations.

Do not open any roadway to traffic without permanent striping. Temporary striping, if necessary, will be placed only if approved.

Place all pavement markings under this item in accordance with details shown in the plans, TxDOT standards, TMUTCD, or as directed.

--Item 672--

Place all adhesive material directly from the heated dispenser to the pavement. Do not use portable or non-heated containers. Use adhesive of sufficient thickness so that when the marker is pressed into the adhesive, 1/8" or more adhesive will remain under 100% of the marker. The adhesive should extend not less than 1/2" but not more than 1 1/2" beyond the perimeter of the marker.

--Item 677--

Obtain approval before using the mechanical method for the elimination of existing thermoplastic pavement markings.

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--Item 680--

Furnish and install all required materials and equipment necessary for the complete and operating traffic signal installation at the following intersections: **IH 410 at Marbach Road**

Delivery arrangements shall be made by the contractor at least 24 hours in advance by calling Tracey Smith at (210) 207-7771. Testing will require 5 work days to complete. The 5 day time period will begin upon receipt of a complete traffic signal cabinet/controller assembly. It is the contractor's responsibility to ensure all components are delivered. Testing will not be done on traffic signal cabinet/controller assemblies that are missing any components. Incomplete traffic signal cabinet/controller assemblies will be returned to the contractor and the 5 day testing period will begin again. It is the contractor's sole responsibility to plan accordingly.

Contractor will exercise caution when excavating in the vicinity of underground utilities.

It is the contractor's responsibility to locate all utilities (public and private) prior to commencing work. The contractor is fully responsible for any damages caused by his failure to locate, preserve and protect these utilities, whether underground, above ground or overhead.

Contractor will notify the state's utilities locator at 800-344-8377 with 48 hours advance notice prior to any excavation, boring, trenching or pushing pipe in the area.

Exact location of traffic signal poles, ground boxes and electric services will be determined in the field subject to final approval by TxDOT inspector. It is the contractor's responsibility to verify the exact locations from inspecting engineer, prior to construction.

All drill shaft locations are approximate and will be field verified prior to construction. Any adjustments will be approved by the inspecting engineer.

Contractor will restore the construction area to original conditions prior to final inspection.

Any existing pavement, curbs, sidewalks, and driveways damaged or removed during construction will be replaced to TxDOT standards.

The contractor will coordinate with the City of San Antonio and the TxDOT San Antonio District Signal Shop on signal timing and phasing prior to signal turn-on with two weeks prior notice.

See table below for wireless access point for this project.

**WIRELESS ACCESS POINT TO BE FURNISHED & INSTALLED BY THE CONTRACTOR
– SUBSIDIARY TO BID ITEM 680.**

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Wireless Communication Cabinet Equipment				
	Manufacturer	Description	part #	Quantity
1	Cradlepoint	CRADLEPOINT 3G/4G LTE MULTI-BAND Router W/WiFi AT&	COR IBR1100	1
2	CradlePoint	PRIME CRADLECARE SUPPORT, CAT 2 PROD-warranty		1
3	Antenna Plus	Cellular/PCS/LTE/GPS Antenna, Threaded Bolt Mount	AP-CCG-Q-S222 _BL Bolt Mount	1
4	Phoenix Contact	10.0 A DIN Rail Mount Pluggable Thermal Circuit Breaker	TCP 10A - 0712314	1
5	Phoenix Contact	Fuse modular terminal block	UK 6-FSI/C	1
6	CISCO	Cisco IE 2000 Series Switch With 8 10/100 Base-T Ethernet Ports Fixed Configurations with compact form factor - 2x Gigabit Combo Ports, SFP (100 MB)	IE-2000-8TC-G-B	1
7	CISCO	19 IN RACK MOUNT KIT	STK-RACKMNT-2955	1
8	Mean Well	Expansion Power Module for Cisco switches/Cradlepoint DIN-Rail Mount,	DR-120-24 power supply	1

All workers installing electrical materials, including conduit in trenches, service poles and all other system electrical apparatus, will be directly supervised by persons who have completed a TXDOT approved course in electrical underground installations. Furnish evidence of satisfactory completion of the underground electrical installation for roadway illumination and signal control course for all personnel responsible for direct supervision of electrical installation work.

Unless otherwise shown on the plans, provide complete installations of highway traffic signals that consist of the following principal items for traffic signals and flashing beacons:

1. Furnish and install a complete controller cabinet, spread spectrum radio and antenna, steel strain poles, luminaires, photocells, signal cables, signal heads, LEDs, LED countdown pedestrian signal heads, and accessible pedestrian push buttons and signs that meet the "American with Disabilities Act" (ADA) standards and "Texas Accessibility Standards" (TAS), radar presence & advance detection system (RPDD) and (RADD), ground boxes, conduit runs and striping.
2. Furnish and install all other items not listed above which are needed to provide for a complete traffic signal installation as shown in the plans for the intersections of:

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The items needed, can include, but not be limited to, the following: the signs, ground rods, roadway lights, damping devices, and/or photoelectric cells.

All wiring not covered by the plans and specifications will be in accordance with the NEC, and TXDOT's standard sheets. Arrange for and coordinate with the utility company to provide power service to all signals. Meters, if required by the utility company, will be mounted at the specified height required by the respective utility company. Consider the cost of this work under bid item 628 "Electrical Services".

Provide, at no additional cost to TXDOT, and adjustment, modification or changes to the traffic signal heads, ground boxes, cable and other appurtenances associated with existing traffic signal installations, as approved that may be necessary for the safe handling of traffic in the work zone during construction at permanent signalized locations.

All conductors are to be continuous without splices from terminal point to terminal point, are as otherwise directed. No aluminum conductors will be permitted. Traffic signal cable will be rated for 600-volt operation.

All new conduits terminating in ground boxes, pole foundations, or controller foundations will be sealed with a sealant to be made of a polyurethane or equivalent material of a composition that will cure in the presence of moisture. Sealant will be suitable for use in sealing ends of PVC pipe with electrical conductor running through the pipe. The sealant will encapsulate and protect electrical conductors and seal ends of PVC pipe from moisture and dirt. The conduit will be sealed a minimum of 3 inches. A qualified uniformed police officer will be used for traffic handling as necessary, when directed. This work will be paid for under the provisions of item 9.

Ground and bond in accordance with the latest edition of the NEC. The resistance from the grounded point of any equipment to the nearest ground rod will be less than one (1) ohm.

Install a base or continuous green insulated stranded copper conductor No. 6 AWG (equipment grounding conductor) through the electrical system. Connect the equipment ground to all metal conduits, metal pedestrian push buttons, signal poles, controller housing, service pole ground, ground rods, and all other metal enclosures and raceway.

Use high pressure sodium lamps from the prequalified material producer lists as shown on the Texas Department of Transportation (TxDOT) – Construction Division's (CST) material producer list. Category is "Roadway Illumination and Electrical Supplies." under item 610. No substitutions will be allowed for materials found on this list.

For this project, complete controller assemblies and cabinets will be provided by the Contractor. The contractor will be responsible for connecting all field wiring as approved/directed by the Engineer.

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Small, traffic signal related signs shown on the plans shall be furnished and installed by the contractor. The contractor shall furnish Pelco parts or approved equal hardware for mounting signs. The cost of erecting these signs shall be considered subsidiary to various traffic signal bid items.

Removal of signs and/or signs and mounts that are in conflict with the installation of a traffic control device shall be considered subsidiary to various traffic signal bid items.

For Flashing Beacons (Item 685) and Ped poles (Item 687) within the project, provide single-pole breakaway disconnects. Use Bussman HEBW, Littlefuse LEB, Ferraz-Shawmut FEB, or equal on ungrounded conductors. For all grounded conductors use Bussman HET, Littlefuse LET, Ferraz-Shawmut FEBN, or equal. These breakaway connectors have a white colored marking and a permanently installed solid neutral.

The locations shown on the plans for signal pole foundations, controller foundations, conduit and other items may be adjusted to better fit field conditions as approved.

High pressure sodium lamps shall meet ANSI C78 requirements and shall be the type that extinguishes at the end of usable lamp life and remains extinguished without cycling. 400 watt lamps shall contain less than 4.0 MG of mercury. 250 watt lamps shall contain less than 3.0 MG of mercury. Lamps shall be lead free. Lamps shall pass the Federal Toxic Characteristic Leachate Procedure (TCLP). Lamp examples: OSRAM-Sylvania LU400/ECO Plus.

Demonstrate that the field wiring is properly installed, install the controller assembly, connect the wiring and turn on the controller.

All existing signal equipment with the exception of the signal controller and related equipment become the property of the Contractor. Deliver the controller and related equipment to the Signal shop, located at 4615 NW Loop 410 (corner of IH 410 and Callaghan Road) in San Antonio, Texas or to the Area Office as directed.

--Item 682--

Provide all signal heads from the same manufacturer. Pedestrian signals may be by a different manufacturer than the vehicle signal heads.

Cover all signal faces until placed in operation.

All pedestrian signal faces shall be single section LED Type. Die cast polycarbonate is acceptable in lieu of die cast aluminum. All mounting attachments shall be constructed of steel pipe and mounted as shown on the plans.

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For all proposed mast arm pole assemblies, use mounting bracket assembly Option "C" as shown on the State Standard Sheet(s) "Single Mast Arm Assemblies".

All traffic signal sections shall be made of polycarbonate resin and shall be by the same manufacturer.

Signal heads shall be level and plumb.

All new signal heads will be covered with burlap from the time of installation until the signal is placed in operation. Position all vehicle signal section heads and pedestrian signal heads to provide the best view for motorists and pedestrians. Signal heads shall be level and plumb.

All signal heads will meet the applicable design requirements of the latest version of the TMUTCD and will be approved before being installed. Signal heads will be assembled and mounted as shown on the plans and or approved.

Coordinate with the utility company to raise the existing power lines if there is less than 10 feet of clearance from the traffic signal span wire.

Signal heads will be located at a maximum height of 19 feet above the roadway surface. Span wire height will be such to provide proper 19 feet section head clearance.

Mast arm pole assemblies proposed under this contract shall use cable mounting bracket assembly Option "C" as shown on the State Standard Sheet(s) "Single Mast Arm Assemblies". Brackets shall be installed per manufacturer's recommendations.

--Item 684--

Each cable terminating in the controller cabinet shall include an extra 10' of length. All cables shall be continuous (without splices) from terminal point to terminal point or as directed/approved by the Engineer. All proposed signal cable shall be #12 AWG stranded copper. The number of conductors required shall be as shown on the plans.

For each traffic signal installation where signal cable is required, provide a minimum length of 5 feet for each cable run let in each ground box.

Provide a minimum length of 5 feet for each cable in each rain loop for span wire traffic signal installations including flashing beacons.

Label all traffic signal cables, vehicles detector cables, and pedestrian signal cables terminating in the controller with marker ties and permanent markers.

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--Item 686 & 687--

Provide all signal poles from the same manufacturer. Pedestrian poles may be from a different manufacturer.

Maintain a minimum clearance of 3 foot radius from neutral and 10 foot radius between proposed traffic signal equipment and existing overhead power lines.

Provide for the installation of traffic signal poles. Locate traffic signal poles as shown on the plans unless otherwise directed to secure a more desirable location or to avoid conflicts with utilities. Stake the traffic signal pole locations for verification and approval by the San Antonio District Transportation Operations Section.

The Contractor is reminded that high pressure sodium lamps, as defined in these General Notes under Item 680 are subsidiary to payment under this item.

--Item 688--

The sealant used for vehicle loop wire must be approved.

The pedestrian push button shall be raised or flush and a minimum of 2 inches in the smallest dimension. The force to activate the control shall be no greater than 5 lb/f. The button placement has to be coordinated with the concrete pad to access the button. The concrete pad (if required) shall be paid separately.

The pedestrian push button shall be wired with a 2/C#14 loop detector cable in lieu of a #12 A.W.G. XHHW wire.

At intersections where a minimum of 10 ft. spacing between adjacent audible pedestrian signal units is not possible, each audible pedestrian pushbutton must be provided with the following features: A pushbutton locator tone, a tactile arrow, a speech walk message for the walking person indication, and a speech pushbutton information message.

--Item 4051—

Overhead electric and telecommunication lines are present and located in the vicinity of Sound Wall N. Contact John Offer (210-416-4561) or Claudia Valles-Tovar (210-353-2226) for coordination details. A horizontal boom is recommended for construction to provide more vertical clearance during construction of Sound Wall N.

CPS Energy poles will require bracing during the construction of Sound Wall N. Contact CPS Energy Utility Coordination group (John Offer (jeoffer@cpsenergy.com), or Claudia Valles-Tovar (cvalles-tova@cpsenergy.com) eight (8) weeks prior to starting work on Sound Wall N to request pole bracing. This will be paid for under Contractor's Force Account "Utility Pole Bracing".

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--Item 6025 & 6057--

Furnish and install a radar presence & advance detection system (RPDD)(RADD). The radar assemblies will be mounted on the mast arms and/or pole as shown in this plan set. Radar assembly height will be in accordance with manufacturer's recommendation to obtain optimum detection. Any mounting hardware, including extension rods, needed to meet these requirements will be as recommended by the manufacturer.

Interface modules shall be installed in the signal cabinets for each RPDD & RADD. 2-channel modules for advance (RADD) & 4-channel modules for presence (RPDD) modules will not be paid for directly but shall be considered subsidiary to items 6057 and 6025.

All radar equipment will provide detection zones based on approach speeds, as directed by the Engineer. Detection zones areas shall be provided by the city of San Antonio & shall be programmed by the Contractor.

TMS General Notes

“TMS” is abbreviation for Traffic Management System.

Install proposed TMS equipment including TMS conduit, ITS Ground Boxes, Fiber Optic Cables (6 Strand and 144 Strand) and devices (DMS, CCTV, RVSD) within the project limits. Install solar flashing wrong way signs at exit ramps. Remove and relocate existing Fiber Optic Cable. Install Aerial Fiber Optic Cables.

Coordinate the installation of permanent TMS equipment, conduit, ITS ground boxes, electrical ground boxes, etc. with the roadway construction phasing so as to prohibit any open cuts across new construction.

All references to the TRANSGUIDE mainframe are references to the TRANSGUIDE computer network.

Provide a submittal compliance matrix with all TMS submittals.

Perform all TMS Prototype approval, Design approval, and Demonstration tests within the State of Texas.

Not previously used TMS equipment: Test any TMS Equipment (including but not limited to CCTV field equipment), which has not previously been proven operational and fully compatible with the existing TRANSGUIDE software and hardware in the following manner:

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Conduct tests for each type of TMS equipment, as directed by the Engineer, to determine compatibility of the equipment with the existing TRANSGUIDE software and hardware. Prior to field installation, test one complete unit with all components to ensure that it is fully compatible with the existing TRANSGUIDE system. Mount the equipment to a trailer and connect in the field to an existing network cabinet. Make all hardware connections and configuration (in the operations center and in the field) and provide all incidentals (cable, connectors, etc.) to make the unit operational. Test all aspects of the system to show full functionality of the equipment and to show full compatibility with the TRANSGUIDE software and hardware. Failure to perform to the requirements of any test will be considered as a defect, and the equipment will be subject to rejection by the Engineer. Rejected equipment may be offered again for retest provided all noncompliance's have been corrected and retested by the Contractor and evidence thereof submitted to the Engineer. Testing is considered subsidiary to the particular bid item, with no payment made.

Partial payments:

The contractor will receive partial payments for the following TMS items unless otherwise approved by the Engineer.

Radar Vehicle Sensing Device
CCTV Field Equipment
ITS Cabinet
Dynamic Message Sign System

Partial Payments Consist of The Following:

Materials On Hand: The Contractor's paid amount is based on the invoices for the material received and stored in his/her yard.

Field Installation: When the Contractor has completed the installation of the Radar Vehicle Sensing Device (RVSD), the department will pay up to 80% of the bid item.

Stand-Alone Test: When the Radar Vehicle Sensing Device (RVSD) has passed the stand-alone test, the department will pay up to 95% of the bid item.

When the Radar Vehicle Sensing Device (RVSD) has passed the test portion of the Final Acceptance Test, the Department will pay the final 5% of the bid item.

Field Installation for CCTV Field Equipment, ITS Cabinet: When the Contractor has completed the support structure, mounted the CCTV camera, installed the ITS Cabinet(s), the Department will pay up to 80% of the bid item.

Stand-Alone Test: When the CCTV Field Equipment and ITS Cabinet has passed the stand-alone test, the Department will pay up to 95% of the bid item.

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When the CCTV Field Equipment and ITS Cabinet has passed the test portion of the final acceptance test, the Department will pay the final 5% of the bid item.

Field Installation: When the Contractor has completed the installation of the Dynamic Message Sign (DMS), the department will pay up to 80% of the bid item.

Stand-Alone Test: When the Dynamic Message Sign (DMS) has passed the stand-alone test, the department will pay up to 95% of the bid item.

When the Dynamic Message Sign (DMS) has passed the test portion of the final acceptance test, the Department will pay the final 5% of the bid item.

The above percentages do not include the deduction of standard Retainage.

TMS Submittals:

Include in all TMS submittals the respective bid item (specification number and descriptive code). Indicate compliance on a paragraph-by-paragraph basis. Ensure that the statements claiming compliance reference the appropriate documentation and the referenced documentation supporting this claim is included with the submittal. Provide referenced documentation that contains the same numbering system as referenced in the submittal. For example, submittal item XXXX-XXXX, Section 2.3, Paragraph 3, Meets Requirements (See Attachment “B”). The supporting documentation for Item XXXX-XXXX, Section 2.3, Paragraph 3, would be titled as Attachment “B”. Provide submittals with the same numbering system as stated in the specification. Failure to submit accordingly will result in rejection by the Engineer.

A TMS submittal will be considered as incomplete and therefore rejected, if it contains items listed as “being furnished by others”. It is the responsibility of the Contractor to make sure the submittal addresses all items of the specification.

Provide the following TMS submittals (to be received by TxDOT San Antonio Traffic Management office) within the designated time. The time frame is in calendar days.

<u>Item Description</u>	<u>Submitted By Contractor W/I Days After Authorization To Begin Work</u>	<u>Returned By State W/I Days</u>
Equipment & Interconnect Wiring Schematic	30	30
Fiber Optic Cable (Single Mode)	30	30
CCTV Field Equipment	30	30
ITS Pole(s)	30	30
ITS Pole Mnt. Cabinet(s)	30	30
Radar Vehicle Sensing Device (RVSD)	30	30
Final Acceptance Plan	90	30

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Submit those items designated with the (*), if any, together as a Package.

Submit the Final Acceptance Plan in electronic form.

The Contractor may submit items sooner if needed for construction, but no later than the dates stated above.

Provide, to the Engineer, as-built plans in .DGN and PDF formats of the TMS portion of this project when the project is complete. TxDOT will provide the .DGN files of the TMS plan sheets. Contractor will update these files with all TMS items as ACTUALLY CONSTRUCTED in the field. Cost to provide as-built plans as described above is subsidiary to the various bid items with no direct payment.

Customize all training specifically for the TRANSGUIDE system; generic training will not be accepted on this project. Training materials and labor are subsidiary to the various Bid Items with no direct payment.

TMS equipment and conduit locations are approximate; the precise location is to be determined in the field, therefore the Contractor should not scale equipment off plan sheets. Plan sheets are to be used for visual location (vicinity). Equipment locations may have to be adjusted due to conflicts with utilities or other structures, as approved by the Engineer. Do not obstruct the natural flow of water with Traffic Management equipment. In low water areas, place Traffic Management equipment on high side of ditch.

Replace or repair any existing to remain Traffic Management Equipment, conduit, cables, etc. damaged during construction, subsidiary to the various bid items with no direct payment. Replace all pavement, sidewalk, curb, rip-rap or any item damaged during construction, subsidiary to the various bid items with no direct payment.

Stencil structure numbers on all new TMS structures for permanent identification as directed by the Engineer.

Ensure that all TMS equipment furnished and installed is completely compatible with the existing hardware and software located within the TRANSGUIDE operations center (i.e. TRANSGUIDE central software). TRANSGUIDE is unique and complicated. The Contractor should contact the Traffic Management Engineer for details on the system network architecture.

All new TMS equipment will be incorporated into the existing Network Management System, subsidiary to the various bid items.

Security against theft and vandalism of all Traffic Management equipment is the full responsibility of the Contractor until the date of final acceptance of the project by the Engineer.

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Maintenance of all Traffic Management equipment furnished and installed on this project is the full responsibility of the Contractor until date of final acceptance of the project by the Engineer. All required documentation must be turned in before TxDOT will accept project for maintenance.

Submit a layout of equipment and interconnect wiring schematic for the TRANSGUIDE Control Center and Fiber Hubs for approval by the Engineer prior to ordering materials. Consider all interconnect wiring within the TRANSGUIDE Control Center and all interconnect wiring for all equipment in the plans and described within the specifications as subsidiary to the various Bid Items with no direct payment.

Perform all TMS electrical work and provide all TMS electrical materials in accordance with the National Electrical Code.

The location of utilities (including TMS), either underground or overhead, if shown within the right of way are approximate and must be verified by the Contractor before beginning construction operations. TRANSGUIDE will provide the approximate location of TMS equipment; however, it is the responsibility of the Contractor to determine the depth of the Traffic Management conduit.

In accordance with the Underground Facility Damage Prevention Act (One Call Bill) the phone number for a utility locator is 1-800-545-6005. It is the Contractor's responsibility to make arrangements for utility locators as needed.

TxDOT (Traffic Management)	(210)731-5109
TxDOT (Sign Lighting)	(210)615-6995
TxDOT (Traffic Signal)	(210)615-5975

In preparing holes for TMS posts and/or foundations, use care so as not to rupture existing drainage structures, sprinkler systems, electrical conduits and public utilities.

Place small signs on ramps and frontage roads at a lateral clearance of 8 feet to 12 feet from the edge of pavement or as directed by the Engineer.

When installing TMS foundations where rip-rap presently exists, use care in breaking out existing rip-rap. Do not break out area greater than is required for placement of the foundations. Replace broken out rip-rap with class "B" concrete to the exact slope, pattern and thickness of the existing rip-rap in accordance with item 432, subsidiary to the various bid items with no direct payment.

Work on TMS equipment that integrates into the operational system only between the hours of 12:00 am (midnight) and 4:00 am when the work requires an interface with the TRANSGUIDE

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operational system. Notify the TransGuide maintenance manager (210-731-5109) 48 hrs prior to this work.

The contractor is fully responsible for all necessary cross connects, provisioning and cabling in the TRANSGUIDE computer room and field network cabinets, subsidiary to the various bid items.

--Item 421 & 427--

Finish all TMS concrete structures with a Grade I Class B, Type I finish or as approved by the Engineer.

--Item 465—

Install 50 feet of trunkline fiber optic cable (single mode) inside all ITS Ground Boxes/ Manholes or as shown on plans, racked to the side of manhole. Provide rack and hooks to support the cable, subsidiary to the various bid items with no direct payment. Partial construction of manholes will not be permitted unless the contractor provides adequate protection.

Protect all TMS equipment with metal beam guard fence, terminal anchor sections and single guard rail terminals. Install metal beam guard fence with terminal anchor sections and single guardrail terminal immediately after the creation of the TMS obstruction. Failure to do so will result in stoppage of all other work on the project until the installation of guard fence is complete.

Do not install metal beam guard fence for TMS equipment until the exact location of the TMS equipment to be protected has been determined. Obtain prior approval from the engineer before the metal beam guard fence is installed and prior to ordering materials. Due to field conditions the quantity may be reduced. The engineer's approval does not relieve the contractor of his/her responsibility for correctness. Any adjustments to TMS equipment or metal beam guard fence with TAS and SGT's will be at no cost to the department.

---Item 618---

Make all TMS underground conduit bends of 45 degrees or more in PVC systems, including bends into ground boxes, with rigid metal conduit, subsidiary to the various bid items with no direct payment. Ensure that grounding is in accordance with ED sheets.

Steel case all TMS PVC bores, subsidiary to the item "conduit" with no direct payment for labor or materials.

Install a permanent pull cord all new TMS conduit and innderducts which do not contain cables. Provide pull cords that have a minimum tensile strength of 1250 lbs. and are flat with footage markings for determining length installed. Provide pull cords that are water-resistant and resistant to environmental conditions within conduit. Pull cords installed will be considered incidental to the various bid items with no direct payment made for labor and materials.

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Install a single 1/C #14 AWG insulated wire (tracer wire) in TMS conduit that does not contain copper cables or contains fiber optic cable only and no copper cables, for the purpose of locating that conduit after installation.

When installing TMS conduit in areas where riprap presently exists, use care and do not break out more riprap than is necessary for placement of conduit. Replace riprap with concrete to the exact slope, pattern and thickness of existing riprap, subsidiary to the various bid items with no direct payment.

Where shown in plans, install TMS concrete encased conduit with a minimum of 2 inches of encasement. Provide a template at 10 foot intervals to ensure that the conduit remains in its original position as approved by the engineer. Templates are considered subsidiary to the item "conduit" with no direct payment.

TMS bore lengths shown on plan sheets are approximate. Length of bore is measured starting 3 feet from each edge of pavement, curb and gutter, or any unforeseen existing utility, and balance of conduit run is measured as trenched conduit.

--Item 620--

Wire nuts for TMS installation are not permitted.

In locations where TMS service conductors are routed through ground boxes with other cables, install a section of flexible PVC conduit in the ground box. Route the service conductors through this conduit to keep it separated from other cables. Isolate all other cables in the ground box in the same manner. Furnishing and installing the flexible PVC conduit is subsidiary to the various bid items with no direct payment.

To ensure immediate identification, consistently color code and permanently identify all TMS power conductors, twisted wire pair cables, shielded cables, control cables, and fiber optic cables in all manholes, ground boxes, and at all termination points and splices. Submit a chart or list identifying all cables and conductors in a logical and sequential manner.

Install all TMS conductors and cables continuous and without splices from terminal point to terminal point unless otherwise shown on the plans.

The TMS plans show the conduits numbered and specified cables in specific conduits. The purpose of these notes is to instruct the contractor on how to group the cables in the conduits and not to specify the exact conduit to carry the cables. The numbering system is arbitrary and may be set by the contractor.

Provide an electrical conductor insulated ground in accordance with the National Electrical Code for any TMS conduit containing electrical conductors (insulated).

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Test all TMS circuits to be clear of faults, grounds or open circuits.

--Item 624—

Place concrete aprons around all TMS ground boxes installed in sodded areas or as directed/approved by the Engineer.

Complete construction of TMS ground boxes within 48 hours after beginning construction for that ground box.

Provide TMS ground boxes as shown as state standard sheet ED (3)-03. Construct the cover of polymer concrete. Legibly imprint the cover with the letters “TMS” – “Danger High Voltage” in minimum 1 inch letters.

--Item 628—

Construct the TMS electrical services as shown on the TMS Electrical Service Data sheets.

--Item 6003 -- ITS SYSTEM SUPPORT EQUIPMENT

Furnish the following TMS equipment to TRANSGUIDE maintenance (210-731-5109), meeting the specifications in this contract:

- 2 ea Radar Vehicle Sensing Devices with all mounting hardware
- 4 ea Radar Vehicle Sensing Device lightning surge protectors
- 2 ea CCTV Field Equipment

--Item 6005-- FINAL ACCEPTANCE PLAN

The 60 day test will begin only when all TMS equipment installation, cabling, wiring, testing, field work, TRANSGUIDE operations center work, etc. for the entire project is completed and acceptable to TxDOT. Partial testing is not allowed.

--Item 6007—FIBER OPTIC CABLE (SINGLE MODE)

This project requires the placement of fiber optic cable. Splicing fiber optic cable of different manufacturers may result in signal degradation as measured through splice loss and DB loss per mile. The contractor must supply documentation of the compatibility of the fiber types with the fiber optic cable submittals. If testing of the new fiber optic cable after installation shows evidence of signal degradation outside of tolerable specifications due to the use of different fiber types, the contractor is responsible for replacing the newly installed fiber optic cable with material that results in signal quality with specifications. A TxDOT representative will be present while the contractor is splicing fibers from two different manufacturers.

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If any TMS fiber optic cable is damaged during construction, it will be repaired within 48 hours after detection of damage. The Contractor will be required to test the fiber and provide such tests to the Engineer for determining suitability for splicing. If no splice is permitted, the Contractor will replace the entire run (approx. 15,000 ft or actual length) at no direct cost to the Department. All fiber provided, tested and spliced will be in accordance with special specification "Fiber Optic Cable (Single Mode)".

Install 50 feet of slack of "trunkline" fiber optic cable in each manhole that fiber passes through, racked to side of manholes using support hooks. Rack and hooks are subsidiary to the item ITS Ground Box with no direct payment.

Use ST connectors where fiber optic cables terminate in TMS equipment.

--Item 6010 -- CCTV FIELD EQUIPMENT

CCTV Field Equipment standard manufacturers' warranty will not begin until the Final Acceptance Test begins. Any CCTV Field Equipment not having 100% of the standard manufacturer's warranty remaining when Final Acceptance testing begins will be rejected by TxDOT.

Ensure that all underground coaxial cable is RG-11 (double shielded) or as recommended by the manufacturer of the CCTV Field Equipment.

Furnish and install CCTV communication/power cables recommended or supplied by the manufacturer of CCTV Field Equipment.

If no recommendation for communication/power cables is made by manufacturer of CCTV Field Equipment, the following cable to conduit assignment will be followed:

Conduit #1: Install coaxial drop cable and CCTV control cable.

Conduit #2: Install CCTV power cable.

If the CCTV Field Equipment power cable carries 24 VDC, then the power cable may be installed in the same conduit with the coaxial drop cable. If the CCTV control cables carry 115 VAC, then the control cables must be installed with the 115 VAC power cable in conduit #2.

In cases where the CCTV Field Equipment and conduit are to be mounted on an existing or proposed structure, review the structure and submit the mounting details to the engineer for approval.

--Item 6064—ITS POLE

The camera pole may be twelve (12) sided.

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