SUBJECT: PLANS AND PROPOSAL ADDENDUMS

PROJECT: BR 2022(576) CONTROL: 0389-07-025

COUNTY: GALVESTON

LETTING: 04/04/2023

REFERENCE NO: 0321

PROPOSAL ADDENDUMS

_ PROPOSAL COVER

X BID INSERTS (SH. NO.: ALL)

_ GENERAL NOTES (SH. NO.:)

X SPEC LIST (SH. NO.: ALL)

X SPECIAL PROVISIONS:

ADDED: 000-1362

DELETED: 000-1362

_ SPECIAL SPECIFICATIONS:

ADDED:

DELETED:

_ OTHER:

DESCRIPTION OF ABOVE CHANGES
(INCLUDING PLANS SHEET CHANGES)

*****SPEC LIST*****
REPLACED SP000--1362 TO PROVIDE UPDATE UTILITY INFORMATION

***** BID INSERTS *****
REVISED QUANTITIES FOR THE FOLLOWING BID ITEMS:
132-6006, 403-6001, 416-6004, 416-6008, 416-6009, 416-6010
423-6012, 432-6001, 666-6048, 678-6008

ADDED THE FOLLOWING BID ITEMS:
416-6001, 481-6014

*****PLANS*****
PLAN SHEET (020 THRU 020G) - REVISED BY ADDING FORCE ACCOUNT
PLAN SHEET 027 - REVISED SUMMARY SHEET OF ROADWAY
PLAN SHEET 029 - REVISED SUMMARY SHEET OF RETAINING WALLS
PLAN SHEET 031 - REVISED SUMMARY SHEET OF BRIDGE
PLAN SHEET 037 - REVISED SUMMARY SHEET OF PAVEMENT MARKINGS
PLAN SHEET 040 - ADDED NOTE TO TCP NARRATIVE
PLAN SHEET (217 THRU 224) - REVISED RETAINING WALL P&P SHEETS
PLAN SHEET 249 - REVISED RETAINING WALL DD SHEET
DESCRIPTION OF ABOVE CHANGES (CONTINUED)
(INCLUDING PLANS SHEET CHANGES)

PLAN SHEET 389 - REVISED QUANTITIES(SH 3)
PLAN SHEET 393 - REVISED QUANTITIES(SH 3)
PLAN SHEET 480 - REVISED BRIDGE DRAIN DETAILS
PLAN SHEET 488 - REVISED RAMP 3D RENDERING (SH 146)
PLAN SHEET 491 - REVISED QUANTITIES(SH 146)
PLAN SHEET 501 - REVISED ABUTMENT 1 DETAILS
PLAN SHEET (535 & 537) - REVISED BENT 11 DETAILS
PLAN SHEET 574 - REVISED BY ADDING FORCE ACCOUNT
PLAN SHEET 621 - REVISED SIGNAL LAYOUT(SH 3)
PLAN SHEET 696 - REVISED SIGNING AND PAVEMENT MARKING LAYOUT
PLAN SHEET (745 THRU 747) - REVISED BRIDGE DEMOLITION LAYOUTS(SH 146)
PLAN SHEET (748 - 750) - REVISED BRIDGE DEMOLITION DETAILS

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0389-07-025 **DISTRICT** Houston **COUNTY** Galveston
HIGHWAY SH 146

			CONTROL SECTION JOB		**0389-07-025**		**0389-07-036**		TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00086903**		**R00003829**			
			COUNTY		**Galveston**		**Galveston**			
			HIGHWAY		**SH 146**		**SH 146**			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**	EST.	FINAL	EST.	FINAL		
	100-6002	PREPARING ROW		STA	96.000				96.000	
	104-6001	REMOVING CONC (PAV)		SY	125.000				125.000	
	104-6009	REMOVING CONC (RIPRAP)		SY	333.000				333.000	
	104-6011	REMOVING CONC (MEDIANS)		SY	1,124.000				1,124.000	
	104-6022	REMOVING CONC (CURB AND GUTTER)		LF	7,978.000				7,978.000	
	104-6036	REMOVING CONC (SIDEWALK OR RAMP)		SY	33.000				33.000	
	105-6020	REMOVING STAB BASE & ASPH PAV (12")		SY	81,460.000				81,460.000	
	110-6001	EXCAVATION (ROADWAY)		CY	94,722.000				94,722.000	
	110-6003	EXCAVATION (SPECIAL)		CY	4,435.000				4,435.000	
	132-6006	EMBANKMENT (FINAL)(DENS CONT)(TY C)		CY	90,722.000				90,722.000	
	132-6035	EMBANK(FINAL)(DC)(TY E)(CSBE)		CY	7,929.000				7,929.000	
	132-6036	EMB(FNL)(DC)(TYE)(CSBE)(RWALL FND IMPR		CY	938.000				938.000	
	132-6057	EMB(FNL)(DC)(TYC SPL)CLAY LINER		CY	785.000				785.000	
	161-6017	COMPOST MANUF TOPSOIL (4")		SY	67,878.000				67,878.000	
	162-6002	BLOCK SODDING		SY	68,696.000				68,696.000	
	162-6003	STRAW OR HAY MULCH		SY	135,756.000				135,756.000	
	164-6051	DRILL SEED (TEMP)(WARM OR COOL)		SY	67,878.000				67,878.000	
	164-6066	DRILL SEEDING (PERM)(WARM OR COOL)		SY	67,878.000				67,878.000	
	166-6001	FERTILIZER		AC	46.000				46.000	
	168-6001	VEGETATIVE WATERING		MG	4,092.000				4,092.000	
	247-6064	FL BS (CMP IN PLC)(TY A GR 4) (6")		SY	1,654.000				1,654.000	
	260-6012	LIME(HYD,COM OR QK)(SLRY)OR QK(DRY)		TON	1,472.000				1,472.000	
	260-6027	LIME TRT (EXST MATL)(8")		SY	81,802.000				81,802.000	
	276-6224	CEM TRT(PLNT MX) (CL N)(TY E)(GR 4)(6")		SY	81,802.000				81,802.000	
	292-6017	ASPHALT STAB BASE (GR 4)(PG 64)		TON	4,499.000				4,499.000	
	305-6014	SALV,HAUL& STKPL RCL APH PV(VAR DEPTH)		SY	81,460.000				81,460.000	
	310-6001	PRIME COAT (MULTI OPTION)		GAL	414.000				414.000	
	316-6001	ASPH (MULTI OPTION)		GAL	1,724.000				1,724.000	
	316-6434	AGGR (TY-PB GR-4 OR TY-PL GR-4 (SAC-B)		CY	35.000				35.000	
	360-6004	CONC PVMT (CONT REINF - CRCP) (10")		SY	75,272.000				75,272.000	
	360-6027	CURB (TYPE II)		LF	13,385.000				13,385.000	
	400-6005	CEM STABIL BKFL		CY	3,900.000				3,900.000	
	400-6009	CEMENT STAB BACKFILL (INLET OR MH)		CY	336.000				336.000	
	402-6001	TRENCH EXCAVATION PROTECTION		LF	2,987.000				2,987.000	
	403-6001	TEMPORARY SPL SHORING		SF	48,917.000				48,917.000	
	416-6001	DRILL SHAFT (18 IN)		LF	80.000				80.000	
	416-6004	DRILL SHAFT (36 IN)		LF	2,500.000				2,500.000	

1 REVISED 3/28/2023

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0389-07-025 **DISTRICT** Houston **COUNTY** Galveston
HIGHWAY SH 146

			CONTROL SECTION JOB		**0389-07-025**		**0389-07-036**		TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00086903**		**R00003829**			
			COUNTY		**Galveston**		**Galveston**			
			HIGHWAY		**SH 146**		**SH 146**			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**	EST.	FINAL	EST.	FINAL		
	416-6008	DRILL SHAFT (60 IN)		LF	8,664.000				8,664.000	
	416-6009	DRILL SHAFT (66 IN)		LF	612.000				612.000	
	416-6010	DRILL SHAFT (72 IN)		LF	4,448.000				4,448.000	
	416-6026	DRILL SHAFT (HIGH MAST POLE) (60 IN)		LF	120.000				120.000	
	416-6032	DRILL SHAFT (TRF SIG POLE) (36 IN)		LF	16.000				16.000	
	416-6034	DRILL SHAFT (TRF SIG POLE) (48 IN)		LF	66.000				66.000	
	416-6096	DRILL SHAFT (90 IN)		LF	816.000				816.000	
	420-6004	CL A CONC (MEDIAN)		CY	925.000				925.000	
	420-6013	CL C CONC (ABUT)		CY	168.000				168.000	
	420-6037	CL C CONC (COLUMN)		CY	1,978.000				1,978.000	
	420-6082	CL F CONC (CAP)		CY	3,544.000				3,544.000	
	420-6099	CL F CONC (FOOTING)(HPC)		CY	1,481.000				1,481.000	
	420-6143	CL S CONC (JUNCTION BOX)		CY	116.000				116.000	
	422-6001	REINF CONC SLAB		SF	319,156.000				319,156.000	
	423-6003	RETAINING WALL (TEMP WALL)		SF	10,832.000				10,832.000	
	423-6012	RETAINING WALL (MSE) (WAVE SCHEME)		SF	33,162.000				33,162.000	
	425-6038	PRESTR CONC GIRDER (TX46)		LF	7,589.000				7,589.000	
	425-6039	PRESTR CONC GIRDER (TX54)		LF	23,109.000				23,109.000	
	432-6001	RIPRAP (CONC)(4 IN)		CY	286.000				286.000	
	432-6002	RIPRAP (CONC)(5 IN)		CY	21.000				21.000	
	432-6003	RIPRAP (CONC)(6 IN)		CY	247.000				247.000	
	432-6009	RIPRAP (CONC) (CL B) (4")		CY	833.000				833.000	
	432-6024	RIPRAP (STONE COMMON)(DRY)(12 IN)		CY	84.000				84.000	
	434-6003	ELASTOMERIC BEARING (SPECIAL)		EA	10.000				10.000	
	434-6011	ELASTOMERIC BEARING (EE9)		EA	20.000				20.000	
	442-6001	STR STEEL (PLATE GIRDER)		LB	5,107,934.000				5,107,934.000	
	442-6009	STR STEEL (DIAPHRAGM & STIFFENER)		LB	541,797.000				541,797.000	
	442-6010	STR STEEL (SHEAR CONNECTOR)		LB	18,264.000				18,264.000	
	450-6023	RAIL (TY SSTR)		LF	9,323.000				9,323.000	
	450-6052	RAIL (HANDRAIL)(TY F)		LF	171.000				171.000	
	454-6018	SEALED EXPANSION JOINT (4 IN) (SEJ - M)		LF	1,133.000				1,133.000	
	454-6019	SEALED EXPANSION JOINT (5 IN) (SEJ - M)		LF	284.000				284.000	
	462-6001	CONC BOX CULV (3 FT X 2 FT)		LF	175.000				175.000	
	462-6003	CONC BOX CULV (4 FT X 2 FT)		LF	175.000				175.000	
	462-6006	CONC BOX CULV (5 FT X 2 FT)		LF	3,738.000				3,738.000	
	462-6024	CONC BOX CULV (9 FT X 5 FT)		LF	962.000				962.000	
	464-6003	RC PIPE (CL III)(18 IN)		LF	622.000				622.000	

1 REVISED 3/28/2023

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0389-07-025 **DISTRICT** Houston **COUNTY** Galveston
HIGHWAY SH 146

			CONTROL SECTION JOB		**0389-07-025**		**0389-07-036**		TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00086903**		**R00003829**			
			COUNTY		**Galveston**		**Galveston**			
			HIGHWAY		**SH 146**		**SH 146**			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**	EST.	FINAL	EST.	FINAL		
	464-6005	RC PIPE (CL III)(24 IN)		LF	1,662.000				1,662.000	
	464-6007	RC PIPE (CL III)(30 IN)		LF	875.000				875.000	
	465-6167	INLET (COMPL)(TY AD)		EA	8.000				8.000	
	465-6171	INLET (COMPL)(TY AZR)		EA	12.000				12.000	
	465-6259	INLET (COMPL)(EXT TY C)		EA	23.000				23.000	
	465-6269	INLET (COMPL)(TY C)		EA	17.000				17.000	
	466-6182	WINGWALL (PW - 1) (HW=7 FT)		EA	1.000				1.000	
	467-6356	SET (TY II) (18 IN) (RCP) (3: 1) (C)		EA	2.000				2.000	
	467-6358	SET (TY II) (18 IN) (RCP) (4: 1) (C)		EA	4.000				4.000	
	467-6380	SET (TY II) (24 IN) (CMP) (6: 1) (P)		EA	2.000				2.000	
	467-6388	SET (TY II) (24 IN) (RCP) (3: 1) (C)		EA	1.000				1.000	
	467-6390	SET (TY II) (24 IN) (RCP) (4: 1) (C)		EA	5.000				5.000	
	467-6395	SET (TY II) (24 IN) (RCP) (6: 1) (P)		EA	2.000				2.000	
	467-6419	SET (TY II) (30 IN) (RCP) (4: 1) (C)		EA	1.000				1.000	
	467-6420	SET (TY II) (30 IN) (RCP) (4: 1) (P)		EA	4.000				4.000	
	467-6422	SET (TY II) (30 IN) (RCP) (6: 1) (C)		EA	4.000				4.000	
	467-6423	SET (TY II) (30 IN) (RCP) (6: 1) (P)		EA	14.000				14.000	
	471-6007	GRATE AND FRAME (BRIDGE DRAIN)		EA	38.000				38.000	
	481-6014	PIPE (PVC) (SCH 40) (8 IN)		LF	1,488.000				1,488.000	
	496-6002	REMOV STR (INLET)		EA	11.000				11.000	
	496-6005	REMOV STR (WINGWALL)		EA	2.000				2.000	
	496-6006	REMOV STR (HEADWALL)		EA	4.000				4.000	
	496-6007	REMOV STR (PIPE)		LF	923.000				923.000	
	496-6008	REMOV STR (BOX CULVERT)		LF	5,888.000				5,888.000	
	496-6010	REMOV STR (BRIDGE 100 - 499 FT LENGTH)		EA	1.000				1.000	
	496-6012	REMOV STR (BRIDGE 1000 FT OR GREATER)		EA	1.000				1.000	
	496-6023	REMOVE STR (JUNCTION BOX)		EA	7.000				7.000	
	500-6001	MOBILIZATION		LS	1.000				1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING		MO	54.000				54.000	
	506-6001	ROCK FILTER DAMS (INSTALL) (TY 1)		LF	192.000				192.000	
	506-6011	ROCK FILTER DAMS (REMOVE)		LF	192.000				192.000	
	506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)		SY	624.000				624.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)		SY	624.000				624.000	
	506-6030	BACKHOE WORK (EROSION & SEDMT CONT)		HR	100.000				100.000	
	506-6033	BULLDOZER WORK (EROSION & SEDMT CONT)		HR	100.000				100.000	
	506-6034	CONSTRUCTION PERIMETER FENCE		LF	1,701.000				1,701.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)		LF	19,187.000				19,187.000	

1 REVISED 3/28/2023

TxDOTCONNECT

Report Generated By: txdotconnect_internal_ext Report Created On: Mar 28, 2023 5:00:14 PM

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0389-07-025 **DISTRICT** Houston **COUNTY** Galveston
HIGHWAY SH 146

			CONTROL SECTION JOB		**0389-07-025**		**0389-07-036**		TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00086903**		**R00003829**			
			COUNTY		**Galveston**		**Galveston**			
			HIGHWAY		**SH 146**		**SH 146**			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**	EST.	FINAL	EST.	FINAL		
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)		LF	19,187.000				19,187.000	
	506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")		LF	869.000				869.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)		LF	869.000				869.000	
	508-6003	CONSTRUCTING DETOURS (TY 1)		SY	7,065.000				7,065.000	
	508-6004	CONSTRUCTING DETOURS (TY 2)		SY	1,413.000				1,413.000	
	512-6013	PORT CTB (DES SOURCE)(SGL SLP)(TY 1)		LF	2,910.000				2,910.000	
	512-6021	PORT CTB (DES SOURCE)(LOW PROF)(TY 1)		LF	4,920.000				4,920.000	
	512-6022	PORT CTB (DES SOURCE)(LOW PROF)(TY 2)		LF	360.000				360.000	
	512-6029	PORT CTB (MOVE)(F-SHAPE)(TY 1)		LF	480.000				480.000	
	512-6033	PORT CTB (MOVE)(LOW PROF)(TY 1)		LF	11,720.000				11,720.000	
	512-6034	PORT CTB (MOVE)(LOW PROF)(TY 2)		LF	640.000				640.000	
	512-6037	PORT CTB (STKPL)(SGL SLP)(TY 1)		LF	2,910.000				2,910.000	
	512-6045	PORT CTB (STKPL)(LOW PROF)(TY 1)		LF	4,920.000				4,920.000	
	512-6046	PORT CTB (STKPL)(LOW PROF)(TY 2)		LF	360.000				360.000	
	529-6009	CONC CURB (DOWEL)(SLOTTED)		LF	1,947.000				1,947.000	
	529-6011	CONC CURB (DOWEL)		LF	6,772.000				6,772.000	
	530-6001	INTERSECTIONS (CONC)		SY	137.000				137.000	
	530-6004	DRIVEWAYS (CONC)		SY	1,020.000				1,020.000	
	531-6001	CONC SIDEWALKS (4")		SY	2,447.000				2,447.000	
	531-6010	CURB RAMPS (TY 7)		EA	2.000				2.000	
	540-6001	MTL W-BEAM GD FEN (TIM POST)		LF	200.000				200.000	
	540-6016	DOWNSTREAM ANCHOR TERMINAL SECTION		EA	2.000				2.000	
	542-6001	REMOVE METAL BEAM GUARD FENCE		LF	6,648.000				6,648.000	
	542-6002	REMOVE TERMINAL ANCHOR SECTION		EA	18.000				18.000	
	542-6004	RM MTL BM GD FENCE TRANS (THRIE-BEAM)		EA	4.000				4.000	
	544-6001	GUARDRAIL END TREATMENT (INSTALL)		EA	2.000				2.000	
	544-6003	GUARDRAIL END TREATMENT (REMOVE)		EA	24.000				24.000	
	545-6003	CRASH CUSH ATTEN (MOVE & RESET)		EA	1.000				1.000	
	545-6005	CRASH CUSH ATTEN (REMOVE)		EA	2.000				2.000	
	545-6007	CRASH CUSH ATTEN (INSTL)(L)(N)(TL3)		EA	5.000				5.000	
	552-6005	GATE (TY 1)		EA	1.000				1.000	
	560-6001	MAILBOX INSTALL-S (TWG-POST) TY 1		EA	3.000				3.000	
	610-6104	IN RD IL (U/P) (TY 1) (150W EQ) LED		EA	12.000				12.000	
	610-6106	IN RD IL (U/P) (TY 2) (150W EQ) LED		EA	4.000				4.000	
	613-6006	HI MST IL POLE (150 FT)(100 MPH)		EA	3.000				3.000	
	618-6046	CONDT (PVC) (SCH 80) (2")		LF	5,065.000				5,065.000	
	618-6047	CONDT (PVC) (SCH 80) (2") (BORE)		LF	540.000				540.000	

1 REVISED 3/28/2023

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0389-07-025 **DISTRICT** Houston **COUNTY** Galveston
HIGHWAY SH 146

			CONTROL SECTION JOB		**0389-07-025**		**0389-07-036**		TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00086903**		**R00003829**			
			COUNTY		**Galveston**		**Galveston**			
			HIGHWAY		**SH 146**		**SH 146**			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**	EST.	FINAL	EST.	FINAL		
	618-6053	CONDT (PVC) (SCH 80) (3")		LF	305.000				305.000	
	618-6054	CONDT (PVC) (SCH 80) (3") (BORE)		LF	100.000				100.000	
	618-6058	CONDT (PVC) (SCH 80) (4")		LF	35.000				35.000	
	618-6059	CONDT (PVC) (SCH 80) (4") (BORE)		LF	120.000				120.000	
	618-6062	CONDT (RM) (3/4")		LF	400.000				400.000	
	618-6070	CONDT (RM) (2")		LF	135.000				135.000	
	618-6074	CONDT (RM) (3")		LF	7,280.000				7,280.000	
	620-6005	ELEC CONDR (NO.10) BARE		LF	775.000				775.000	
	620-6006	ELEC CONDR (NO.10) INSULATED		LF	1,550.000				1,550.000	
	620-6007	ELEC CONDR (NO.8) BARE		LF	1,805.000				1,805.000	
	620-6008	ELEC CONDR (NO.8) INSULATED		LF	2,610.000				2,610.000	
	620-6009	ELEC CONDR (NO.6) BARE		LF	4,180.000				4,180.000	
	620-6010	ELEC CONDR (NO.6) INSULATED		LF	6,220.000				6,220.000	
	620-6011	ELEC CONDR (NO.4) BARE		LF	285.000				285.000	
	620-6012	ELEC CONDR (NO.4) INSULATED		LF	560.000				560.000	
	621-6005	TRAY CABLE (4 CONDR) (12 AWG)		LF	450.000				450.000	
	624-6010	GROUND BOX TY D (162922)W/APRON		EA	30.000				30.000	
	628-6051	ELC SRV TY A 240/480 060(SS)SS(E)GC(O)		EA	3.000				3.000	
	628-6145	ELC SRV TY D 120/240 060(NS)SS(E)SP(O)		EA	2.000				2.000	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)		EA	63.000				63.000	
	644-6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)		EA	2.000				2.000	
	644-6007	IN SM RD SN SUP&AM TY10BWG(1)SA(U)		EA	2.000				2.000	
	644-6030	IN SM RD SN SUP&AM TYS80(1)SA(T)		EA	1.000				1.000	
	644-6033	IN SM RD SN SUP&AM TYS80(1)SA(U)		EA	7.000				7.000	
	644-6034	IN SM RD SN SUP&AM TYS80(1)SA(U-1EXT)		EA	2.000				2.000	
	644-6064	IN BRIDGE MNT CLEARANCE SGN ASSM(TY N)		EA	4.000				4.000	
	644-6076	REMOVE SM RD SN SUP&AM		EA	63.000				63.000	
	658-6013	INSTL DEL ASSM (D-SW)SZ (BRF)CTB		EA	130.000				130.000	
	662-6004	WK ZN PAV MRK NON-REMOV (W)4"(SLD)		LF	4,429.000				4,429.000	
	662-6034	WK ZN PAV MRK NON-REMOV (Y)4"(SLD)		LF	6,461.000				6,461.000	
	662-6050	WK ZN PAV MRK REMOV (REFL) TY II-A-A		EA	1,052.000				1,052.000	
	662-6060	WK ZN PAV MRK REMOV (W)4"(BRK)		LF	7,000.000				7,000.000	
	662-6061	WK ZN PAV MRK REMOV (W)4"(DOT)		LF	194.000				194.000	
	662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)		LF	73,873.000				73,873.000	
	662-6071	WK ZN PAV MRK REMOV (W)8"(SLD)		LF	3,118.000				3,118.000	
	662-6073	WK ZN PAV MRK REMOV (W)12"(SLD)		LF	375.000				375.000	
	662-6075	WK ZN PAV MRK REMOV (W)24"(SLD)		LF	528.000				528.000	

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Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0389-07-025 **DISTRICT** Houston **COUNTY** Galveston
HIGHWAY SH 146

			CONTROL SECTION JOB		**0389-07-025**		**0389-07-036**		TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00086903**		**R00003829**			
			COUNTY		**Galveston**		**Galveston**			
			HIGHWAY		**SH 146**		**SH 146**			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**	EST.	FINAL	EST.	FINAL		
	662-6093	WK ZN PAV MRK REMOV (Y)4"(BRK)		LF	545.000				545.000	
	662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)		LF	99,155.000				99,155.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)		LF	915.000				915.000	
	666-6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)		LF	416.000				416.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)		LF	334.000				334.000	
	666-6093	REFL PAV MRK TY I (W)(RR XING)(100MIL)		EA	2.000				2.000	
	666-6102	REF PAV MRK TY I(W)36"(YLD TRI)(100MIL)		EA	9.000				9.000	
	666-6147	REFL PAV MRK TY I (Y)24"(SLD)(100MIL)		LF	105.000				105.000	
	666-6159	RE PV MRK TY I(BLACK)4"(SHADOW)(100MIL)		LF	1,150.000				1,150.000	
	666-6300	RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)		LF	1,150.000				1,150.000	
	666-6303	RE PM W/RET REQ TY I (W)4"(SLD)(100MIL)		LF	1,318.000				1,318.000	
	666-6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)		LF	700.000				700.000	
	666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)		LF	5,034.000				5,034.000	
	668-6077	PREFAB PAV MRK TY C (W) (ARROW)		EA	35.000				35.000	
	668-6085	PREFAB PAV MRK TY C (W) (WORD)		EA	23.000				23.000	
	672-6009	REFL PAV MRKR TY II-A-A		EA	408.000				408.000	
	672-6010	REFL PAV MRKR TY II-C-R		EA	676.000				676.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")		LF	29,632.000				29,632.000	
	677-6003	ELIM EXT PAV MRK & MRKS (8")		LF	1,739.000				1,739.000	
	677-6005	ELIM EXT PAV MRK & MRKS (12")		LF	433.000				433.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")		LF	476.000				476.000	
	677-6008	ELIM EXT PAV MRK & MRKS (ARROW)		EA	14.000				14.000	
	677-6012	ELIM EXT PAV MRK & MRKS (WORD)		EA	5.000				5.000	
	677-6024	ELIM EXT PAV MRK & MARKS (BIKE RR XING)		EA	2.000				2.000	
	678-6001	PAV SURF PREP FOR MRK (4")		LF	5,448.000				5,448.000	
	678-6002	PAV SURF PREP FOR MRK (6")		LF	57,376.000				57,376.000	
	678-6004	PAV SURF PREP FOR MRK (8")		LF	6,467.000				6,467.000	
	678-6006	PAV SURF PREP FOR MRK (12")		LF	882.000				882.000	
	678-6008	PAV SURF PREP FOR MRK (24")		LF	991.000				991.000	
	678-6009	PAV SURF PREP FOR MRK (ARROW)		EA	35.000				35.000	
	678-6016	PAV SURF PREP FOR MRK (WORD)		EA	23.000				23.000	
	678-6020	PAV SURF PREP FOR MRK (RR XING)		EA	2.000				2.000	
	680-6002	INSTALL HWY TRF SIG (ISOLATED)		EA	1.000				1.000	
	680-6003	INSTALL HWY TRF SIG (SYSTEM)		EA	1.000				1.000	
	681-6001	TEMP TRAF SIGNALS		EA	1.000				1.000	
	682-6001	VEH SIG SEC (12")LED(GRN)		EA	15.000				15.000	
	682-6002	VEH SIG SEC (12")LED(GRN ARW)		EA	5.000				5.000	

1 REVISED 3/28/2023

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0389-07-025 **DISTRICT** Houston **COUNTY** Galveston
HIGHWAY SH 146

			CONTROL SECTION JOB		**0389-07-025**		**0389-07-036**		TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00086903**		**R00003829**			
			COUNTY		**Galveston**		**Galveston**			
			HIGHWAY		**SH 146**		**SH 146**			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**	EST.	FINAL	EST.	FINAL		
	682-6003	VEH SIG SEC (12")LED(YEL)		EA	15.000				15.000	
	682-6004	VEH SIG SEC (12")LED(YEL ARW)		EA	4.000				4.000	
	682-6005	VEH SIG SEC (12")LED(RED)		EA	15.000				15.000	
	682-6006	VEH SIG SEC (12")LED(RED ARW)		EA	4.000				4.000	
	682-6018	PED SIG SEC (LED)(COUNTDOWN)		EA	6.000				6.000	
	682-6054	BACKPLATE W/REF BRDR(3 SEC)(VENT)ALUM		EA	14.000				14.000	
	682-6055	BACKPLATE W/REF BRDR(4 SEC)(VENT)ALUM		EA	5.000				5.000	
	684-6007	TRF SIG CBL (TY A)(12 AWG)(2 CONDR)		LF	935.000				935.000	
	684-6009	TRF SIG CBL (TY A)(12 AWG)(4 CONDR)		LF	935.000				935.000	
	684-6012	TRF SIG CBL (TY A)(12 AWG)(7 CONDR)		LF	2,760.000				2,760.000	
	684-6017	TRF SIG CBL (TY A)(12 AWG)(12 CONDR)		LF	195.000				195.000	
	686-6041	INS TRF SIG PL AM(S)1 ARM(40')		EA	1.000				1.000	
	686-6047	INS TRF SIG PL AM(S)1 ARM(44')LUM		EA	1.000				1.000	
	686-6053	INS TRF SIG PL AM(S)1 ARM(50')		EA	2.000				2.000	
	686-6055	INS TRF SIG PL AM(S)1 ARM(50')LUM		EA	1.000				1.000	
	686-6061	INS TRF SIG PL AM(S)1 ARM(60')		EA	1.000				1.000	
	686-6065	INS TRF SIG PL AM(S)1 ARM(65')		EA	1.000				1.000	
	687-6001	PED POLE ASSEMBLY		EA	4.000				4.000	
	688-6001	PED DETECT PUSH BUTTON (APS)		EA	6.000				6.000	
	730-6107	FULL - WIDTH MOWING		CYC	9.000				9.000	
	734-6002	LITTER REMOVAL		CYC	9.000				9.000	
	735-6001	DEBRIS REMOVAL (CNTR MEDIANS/MAINLANES)		CYC	9.000				9.000	
	738-6003	CLEANING / SWEEPING (OUTSIDE MAIN LANE)		CYC	9.000				9.000	
	3021-6001	WIDE FLANGE PAVEMENT TERMINALS		LF	288.000				288.000	
	4082-6003	STONE COLUMNS (36")		LF	27,830.000				27,830.000	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN		DAY	1,165.000				1,165.000	
	6038-6004	MULTIPOLYMER PAV MRK (W)(6")(SLD)		LF	19,464.000				19,464.000	
	6038-6005	MULTIPOLYMER PAV MRK (W)(6")(BRK)		LF	5,390.000				5,390.000	
	6038-6007	MULTIPOLYMER PAV MRK (W)(8")(SLD)		LF	4,640.000				4,640.000	
	6038-6011	MULTIPOLYMER PAV MRK (W)(12")(SLD)		LF	576.000				576.000	
	6038-6013	MULTIPOLYMER PAV MRK (W)(24")(SLD)		LF	80.000				80.000	
	6038-6017	MULTIPOLYMER PAV MRK (Y)(6")(SLD)		LF	27,132.000				27,132.000	
	6038-6018	MULTIPOLYMER PAV MRK (Y)(6")(BRK)		LF	720.000				720.000	
	6038-6020	MULTIPOLYMER PAV MRK (Y)(8")(SLD)		LF	954.000				954.000	
	6038-6022	MULTIPOLYMER PAV MRK (Y)(24")(SLD)		LF	472.000				472.000	
	6038-6024	MULTIPOLYMER PAV MRK (BLK)(6")(BRK)		LF	5,390.000				5,390.000	
	6058-6001	BBU SYSTEM (EXTERNAL BATT CABINET)		EA	2.000				2.000	

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Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0389-07-025 **DISTRICT** Houston **COUNTY** Galveston
HIGHWAY SH 146

			CONTROL SECTION JOB		**0389-07-025**		**0389-07-036**		TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00086903**		**R00003829**			
			COUNTY		**Galveston**		**Galveston**			
			HIGHWAY		**SH 146**		**SH 146**			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**	EST.	FINAL	EST.	FINAL		
	6156-6002	LED HI MST IL ASM (6 FIXT)(ASYM)(TY A)		EA	2.000				2.000	
	6156-6003	LED HI MST IL ASM (6 FIXT) (ASYM)(TY B)		EA	1.000				1.000	
	6156-6005	REPLC LED HI MST IL(6 FIXT)(SYM)(TY S)		EA	2.000				2.000	
	6156-6006	REPLC LED HI MST IL(6 FIXT)(ASYM)(TY A)		EA	3.000				3.000	
	6163-6002	REMOVE EXISTING CABLES (POWER)		LF	504.000				504.000	
	6185-6002	TMA (STATIONARY)		DAY	1,165.000				1,165.000	
	6185-6003	TMA (MOBILE OPERATION)		HR	130.000				130.000	
	6186-6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN		EA	3.000				3.000	
	6292-6001	RVDS(PRESENCE DETECTION ONLY)		EA	7.000				7.000	
	6292-6002	RVDS(ADVANCE DETECTION ONLY)		EA	6.000				6.000	
	6476-6001	Remove High Mast Lighting Assembly		EA	1.000				1.000	
	7049-6376	CUT AND PLUG EXIST WATER LINE (42IN)		EA			8.000		8.000	
	7049-6377	REMOVE & DISPOSE EXIST WATERLINE (42IN)		LF			2,260.000		2,260.000	
	7049-6378	REMOVE EXISTING AIR VALVE ASSEMBLY		EA			5.000		5.000	
	7049-6379	REMOVE EXISTING MANHOLE		EA			5.000		5.000	
	7049-6380	REMOVE EXIST FLUSHING HYDRANT & VALVE		EA			4.000		4.000	
	7049-6381	REMOVE EXISTING BUTTERFLY VALVE (42IN)		EA			1.000		1.000	
	02	SIGNALS WORK, LABOR AND MATERIAL: RAILROAD FORCE ACCOUNT WORK (NON PARTICIPATING		LS	1.000				1.000	
	08	CONTRACTOR FORCE ACCOUNT SAFETY CONTINGENCY (NON-PARTICIPATING)		LS	1.000				1.000	
		CONTRACTOR FORCE ACCOUNT LAW ENFORCEMENT (NON-PARTICIPATING)		LS	1.000				1.000	
	18	RAILROAD FLAGGING: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)		LS	1.000				1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)		LS	1.000				1.000	
		CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)		LS	1.000				1.000	

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SUMMARY OF ROADWAY

		ITEM	100	110	132	247	260	260	276	292	310	316	316	360	360
		CODE	6002	6001	6006	6064	6012	6027	6224	6017	6001	6001	6434	6004	6027
			PREPARING ROW	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DENS CONT) (TY C)	FL BS (CMP IN PLC) (TY A GR 4) (6")	LIME (HYD, COM OR QK) (SLRY) OR QK (DRY)	LIME TRT (EXST MATL) (8")	CEM TRT (PLNT MX) (CL N) (TY E) (GR 4) (6")	ASPHALT STAB BASE (GR 4) (PG 64)	PRIME COAT (MULTI OPTION)	ASPH (MULTI OPTION)	AGGR (TY-PB GR-4 OR TY-PL GR-4 (SAC-B)	CONC PVMT (CONT REINF - CRCP) (10")	CURB (TYPE II)
			STA	CY	CY	SY	TON	SY	SY	TON	GAL	GAL	CY	SY	LF
SH 3															
SHEET 1 OF 7	102+81.64	111+00.00	8	985	1019		113	6275	6275	345				5911	1637
SHEET 2 OF 7	111+00.00	122+00.00	11	9043	2067		207	11478	11478	631				10700	2182
SHEET 3 OF 7	122+00.00	133+00.00	11	7686	15789		138	7688	7688	423				7336	816
SHEET 4 OF 7	133+00.00	144+00.00	11	15979	1991										
SHEET 5 OF 7	144+00.00	155+00.00	11	6541	38414 ⚠1		98	5459	5459	300				5058	
SHEET 6 OF 7	155+00.00	164+00.00	9	35514	4556		153	8500	8500	468				7700	
SHEET 7 OF 7	164+00.00	173+33.67	9	14245	4261		175	9698	9698	533				8956	
SB FRONTAGE RD SH 3															
SHEET 1 OF 2	408+47.29	419+00.00					67	3745	3745	206				3277	1997
SHEET 2 OF 2	419+00.00	430+09.93					71	3947	3947	217				3454	2030
NB FRONTAGE RD SH 3															
SHEET 1 OF 2	408+38.41	419+00.00					68	3798	3798	209				3323	2133
SHEET 2 OF 2	419+00.00	429+95.77					70	3896	3896	214				3409	2192
U TURN SH 3															
SHEET 1 OF 1	00+00.00	02+32.40					13	708	708	39				619	398
ACCESS RD															
SHEET 1 OF 3	300+00.00	302+00.00					12	667	667	37				578	
SHEET 2 OF 3	302+00.00	312+00.00					44	2459	2459	135		304	6	2164	
SHEET 3 OF 3	312+00.00	321+61.25					20	1101	1101	61		757	15	982	
SH 146															
SHEET 1 OF 3	200+00.00	211+00.00	11	1203	15072		200	11105	11105	611				10590	
SHEET 2 OF 3	211+00.00	222+00.00	11	3526	4852		23	1278	1278	70				1215	
SHEET 3 OF 3	222+00.00	225+98.95	4	**0**	**0**										
ACCESS RD ENTERPRISE															
SHEET 1 OF 2	BEGIN	STA 10+00				1118					280	448	9		
SHEET 2 OF 2	STA 10+00	END				536					134	215	5		
PROJECT TOTAL			**96**	**94722**	**88021** ⚠1	**1654**	**1472**	**81802**	**81802**	**4499**	**414**	**1724**	**35**	**75272**	**13385**

⚠1 REVISED QUANTITY 3/24/2023

NO.	DATE	REVISION	APPROV.
1	3/24/2023	REVISED EMABANKMENT QTY	

 Texas Department of Transportation

ENTECH CIVIL ENGINEERS, INC

F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

SH 146
FM 519 TO LP 197

SUMMARY OF ROADWAY

SHEET 1 OF 2

DN:	HG	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	RC	6	TEXAS					SH 146
DW:	HG	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	TL	HOU	GALVESTON		0389	07	025	27

SUMMARY OF RETAINING WALLS

SHEET NO.	WALL ID	110	132	132	132	132	400	403	423	423	432	450	* ⚠1 556	**	4082
		6003	6006	6035	6036	6057	6001	6001	6003	6012	6001	6023	6006		6003
		EXCAVATION (SPECIAL)	EMBANKMENT (FINAL) (DENS CONT) (TY C)	EMBANK (FINAL) (DC) (TY E) (CSBE)	EMB (FNL) (DC) (TY E) (CSBE) (RWALL FND IMPR	EMB (FNL) (DC) (TYC SPL) CLAY LINER	STRUCT EXCAV	TEMPORARY SPL SHORING	RETAINING WALL (TEMP WALL)	RETAINING WALL (MSE) (WAVE SCHEME)	RIPRAP (CONC) (4 IN)	RAIL (TY SSTR)	PIPE UNDERDRAINS (TY 6) (6")	GRAVEL LOAD TRANSFER PLATFORM	STONE COLUMNS (36")
		CY	CY	CY	CY	CY	CY	SF	SF	SF	CY	LF	LF	CY	LF
1 OF 8	RTWL1				384		384	1026		4235	10	398	300		
2 OF 8	RTWL2				375		375	1283		4777	10	398	300		
3 OF 8	RTWL3		725	2029	179		179	472		974	3		95		
4 OF 8	RTWL4	1780	975	3803		785		2007		3063	10		122	1780	11506
5 OF 8	RTWL5							2068		8228	13	511	500		
6 OF 8	RTWL6	2655								5340	12	480	300	2655	16324
7 OF 8	RTWL7							3129		6158	12	464	300		
8 OF 8	RTWL8		1001	2097				458		387	7		95		
1 OF 1	RTWLTEMP1								10832						
1 OF 2	TSHOR1							1990							
1 OF 2	TSHOR2							3636							
CSJ 0389-07-025 TOTAL		**4435**	**2701**	**7929**	**938**	**785**	**938**	16069 ⚠1	**10832**	33162 ⚠1	77	**2252**	**2012**	**4435**	**27830**

*FOR CONTRACTOR INFORMATION ONLY. SUBSIDIARY TO ITEM 423
**SUBSIDIARY TO BID ITEM 4064

⚠1 REVISED QUANTITY 3/24/2023

NO.	DATE	REVISION	APPROV.
⚠1	3/24/2023	REVISED BID ITEM 556	

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

SH 146
FM 519 TO LP 197

SUMMARY OF RETAINING WALLS

SHEET 1 OF 1

		FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	HG	6	TEXAS				SH 146
CK DN:	RC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DW:	HG	HOU	GALVESTON	0389	07	025	29
CK DW:	TL						

SH146_GNST00_01.dgn

SUMMARY OF BRIDGE ITEMS

NBI		400	400	400	403	416	416	416	416	416	416	420	420	420	420	420	420	422
		6001	6005	6009	6001	6001	6004	6008	6009	6010	6096	6004	6013	6037	6099	6082	6143	6001
		STRUCT EXCAV	CEM STABIL BKFL	CEMENT STAB BACKFILL (INLET OR MH)	TEMPORARY SPL SHORING	DRILL SHAFT (18 IN)	DRILL SHAFT (36 IN)	DRILL SHAFT (60 IN)	DRILL SHAFT (66 IN)	DRILL SHAFT (72 IN)	DRILL SHAFT (90 IN)	CL A CONC (MEDIAN)	CL C CONC (ABUT)	CL C CONC (COLUMN)	CL F CONC (FOOTING) (HPC)	CL F CONC (CAP)	CL S CONC (JUNCTION BOX)	REINF CONC SLAB
		CY	CY	CY	SF	LF	LF	LF	LF	LF	LF	CY	CY	CY	CY	CY	CY	SF
12-085-0-0389-07-374	SH 3 BRIDGE				21,462	80	1,740	7,500	612	522		619	116	1,164	915	2,010		185,248
12-085-0-0389-07-375	SH 146 BRIDGE				11,286		760	1,164		3,926	816	306	52	814	566	1,534		133,908
12-085-0-0389-07-376	CULVERT 01	764	845	38													32	
PROJECT TOTAL		**764**	**845**	**38**	**32,748**	**80**	**2,500**	**8,664**	**612**	**4,448**	**816**	**925**	**168**	**1,978**	**1,481**	**3,544**	**32**	**319,156**

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SUMMARY OF BRIDGE ITEMS

NBI		425	425	432	432	432	434	434	442	442	442	450	454	454	462	466	481
		6038	6039	6001	6002	6024	6003	6011	6001	6009	6010	6023	6018	6019	6024	6182	6014
		PRESTR CONC GIRDER (TX46)	PRESTR CONC GIRDER (TX54)	RIPRAP (CONC) (4 IN)	RIPRAP (CONC) (5 IN)	RIPRAP (STONE COMMON) (DRY) (12 IN)	ELASTOMER IC BEARING (SPECIAL)	ELASTOMER IC BEARING (EE9)	STR STEEL (PLATE GIRDER)	STR STEEL (DIAPHRA GM & STIFFENER)	STR STEEL (SHEAR CONNECTOR)	RAIL (TY SSTR)	SEALED EXPANSION JOINT (4 IN) (SEJ-M)	SEALED EXPANSION JOINT (5 IN) (SEJ-M)	CONC BOX CULV (9 FT X 5 FT)	WINGWALL (PW - 1) (HW=7 FT)	PIPE (PVC) (SCH 40) (8 IN)
		LF	LF	CY	CY	CY	EA	EA	LB	LB	LB	LF	LF	LF	LF	EA	LF
12-085-0-0389-07-374	SH 3 BRIDGE	7,589	14,012	128								3,611	490	189			821
12-085-0-0389-07-375	SH 146 BRIDGE		9,097	69			10	20	5,107,934	541,797	18,264	2,888	643	95			667
12-085-0-0389-07-376	CULVERT 01				16	40									962	1	
PROJECT TOTAL		**7,589**	**23,109**	**197**	**16**	**40**	**10**	**20**	**5,107,934**	**541,797**	**18,264**	**6,499**	**1,133**	**284**	**962**	**1**	**1,488**

1 REVISED QUANTITY 3/24/2023

NO.	DATE	REVISION	APPROV.
1	3/24/2023	REVISED BID ITEMS	

Texas Department of Transportation

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

SH 146
FM 519 TO LP 197

SUMMARY OF BRIDGES

SHEET 1 OF 1

		FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	HG	6	TEXAS				SH 146
CK DN:	RC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DW:	HG	HOU	GALVESTON	0389	07	025	31
CK DW:	TL						

RChapa
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SH146_SMBR_01.dgn

SUMMARY OF PAVEMENT MARKING ITEMS

SHEET NO.	ITEM	658	666	666	666	666	666	666	666	666	666	668	668
	DESC. CODE	6013	6036	6042	6048	6093	6147	6159	6300	6303	6312	6315	6077	6085
	CENTERLINE STATION LIMITS	INSTL DEL ASSM (D-SW)SZ (BRF)CTB	REFL PAV MRK TY I (W)8"(SLD)(100 MIL)	REFL PAV MRK TY I (W)12"(SLD)(100 MIL)	REFL PAV MRK TY I (W)24"(SLD)(100 MIL)	REFL PAV MRK TY I (W)(RR XING)(100MIL)	REFL PAV MRK TY I (Y)24"(SLD)(100 MIL)	RE PV MRK TY I (BLACK)4" (SHADOW)(100MIL)	RE PM W/RET REQ TY I (W)4"(BRK)(100 MIL)	RE PM W/RET REQ TY I (W)4"(SLD)(100 MIL)	RE PM W/RET REQ TY I (Y)4"(BRK)(100 MIL)	RE PM W/RET REQ TY I (Y)4"(SLD)(100 MIL)	PREFAB PAV MRK TY C (W) (ARROW)	PREFAB PAV MRK TY C (W) (WORD)
		EA	LF	LF	LF	EA	LF	LF	LF	LF	LF	LF	EA	EA
CSJ 0389-07-025 SH3														
1 OF 11	BEGIN PROJECT TO STA 100+00		54				61	710	710		460	2750	7	1
2 OF 11	STA 100+00 TO STA 122+00		120	272	100			60	60			572	8	6
3 OF 11	STA 122+00 TO STA 133+00	14												
4 OF 11	STA 133+00 TO STA 144+00	41											4	2
5 OF 11	STA 144+00 TO STA 155+00	20											2	4
6 OF 11	STA 155+00 TO STA 166+00												1	
7 OF 11	STA 166+00 TO END PROJECT												2	3
CSJ 0389-07-025 SH146														
8 OF 11	BEGIN PROJECT TO STA 200+00		388		39		44	350	350	1318	240	1646	5	4
9 OF 11	STA 200+00 TO STA 222+00	38											4	1
10 OF 11	STA 222+00 TO END PROJECT	17												
11 OF 11	MAIN STREET - FM 519 (INTERSECTION)		353	144	195	2		30	30			66	2	2
CSJ 0389-07-025 TOTAL		**130**	**915**	**416**	**334**	**2**	**105**	**1150**	**1150**	**1318**	**700**	**5034**	**35**	**23**

(1)

SUMMARY OF PAVEMENT MARKING ITEMS

SHEET NO.	ITEM	672	672	678	678	678	678	678	678	678	678	6038	6038	6038	6038
	DESC. CODE	6009	6010	6001	6002	6004	6006	6008	6009	6016	6020	6004	6005	6007	6011
	CENTERLINE STATION LIMITS	REFL PAV MRKR TY II-A-A	REFL PAV MRKR TY II-C-R	PAV SURF PREP FOR MRK (4")	PAV SURF PREP FOR MRK (6")	PAV SURF PREP FOR MRK (8")	PAV SURF PREP FOR MRK (12")	PAV SURF PREP FOR MRK (24")	PAV SURF PREP FOR MRK (ARROW)	PAV SURF PREP FOR MRK (WORD)	PAV SURF PREP FOR MRK (RR XING)	MULTIPOLYMER PAV MRK (W)(6")(SLD)	MULTIPOLYMER PAV MRK (W)(6")(BRK)	MULTIPOLYMER PAV MRK (W)(8")(SLD)	MULTIPOLYMER PAV MRK (W)(12")(SLD)
		EA	EA	LF	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	LF
CSJ 0389-07-025 SH3															
1 OF 11	BEGIN PROJECT TO STA 100+00	70	39	4630		54		61	7	1					
2 OF 11	STA 100+00 TO STA 122+00	96	139	692	6416	1514	738	186	8	6			970	1394	466
3 OF 11	STA 122+00 TO STA 133+00	48	44		6978	1274		386				2040	810	320	110
4 OF 11	STA 133+00 TO STA 144+00		74		8116	710		48	4	2		2048	990	710	
5 OF 11	STA 144+00 TO STA 155+00	50	88		9586	696			2	4		4152	520	696	
6 OF 11	STA 155+00 TO STA 166+00	58	54		9790			14	1			4534	490	42	
7 OF 11	STA 166+00 TO END PROJECT		66		3642	580			2	3		1454	360	580	
CSJ 0389-07-025 SH146															
8 OF 11	BEGIN PROJECT TO STA 200+00	42	38			388		83	5	4					
9 OF 11	STA 200+00 TO STA 222+00	30	70		10620	310			4	1		4312	1050	310	
10 OF 11	STA 222+00 TO END PROJECT	4	40		2176	588		18				872	200	588	
11 OF 11	MAIN STREET - FM 519 (INTERSECTION)	10	24	126	52	353	144	195	2	2	2	52			
CSJ 0389-07-025 TOTAL		**408**	**676**	**5448**	**57376**	**6467**	**882**	**991**	**35**	**23**	**2**	**19464**	**5390**	**4640**	**576**

(1)

SUMMARY OF PAVEMENT MARKING ITEMS

SHEET NO.	ITEM	6038	6038	6038	6038	6038	6038
	DESC. CODE	6013	6017	6018	6020	6022	6024
	CENTERLINE STATION LIMITS	MULTIPOLYMER PAV MRK (W)(24")(SLD)	MULTIPOLYMER PAV MRK (Y)(6")(SLD)	MULTIPOLYMER PAV MRK (Y)(6")(BRK)	MULTIPOLYMER PAV MRK (Y)(8")(SLD)	MULTIPOLYMER PAV MRK (Y)(24")(SLD)	MULTIPOLYMER PAV MRK (BLK)(6")(BRK)
		LF	LF	LF	LF	LF	LF
CSJ 0389-07-025 SH3							
1 OF 11	BEGIN PROJECT TO STA 100+00						
2 OF 11	STA 100+00 TO STA 122+00	18	4476	420		68	970
3 OF 11	STA 122+00 TO STA 133+00		3318		954	386	810
4 OF 11	STA 133+00 TO STA 144+00	48	4088				990
5 OF 11	STA 144+00 TO STA 155+00		4394				520
6 OF 11	STA 155+00 TO STA 166+00	14	4276				490
7 OF 11	STA 166+00 TO END PROJECT		1468				360
CSJ 0389-07-025 SH146							
8 OF 11	BEGIN PROJECT TO STA 200+00						
9 OF 11	STA 200+00 TO STA 222+00		4208	300			1050
10 OF 11	STA 222+00 TO END PROJECT		904			18	200
11 OF 11	MAIN STREET - FM 519 (INTERSECTION)						
CSJ 0389-07-025 TOTAL		**80**	**27132**	**720**	**954**	**472**	**5390**

(1) REVISED QUANTITY 3/24/2023

NO.	DATE	REVISION	APPROV.
1	3/23/23	REVISED 24" PM AND SURF PREP QTY	

Texas Department of Transportation

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

SH 146
FM 519 TO LP 197

SUMMARY OF PAVEMENT MARKINGS

SHEET 1 OF 1

		FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	AL	6	TEXAS				SH 146
CK DN:	RC						
DW:	FA	STATE DIST.	COUNTY	CONTROL	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	TL	HOU	GALVESTON	0389	07	025	37

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3/24/2023
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TRAFFIC CONTROL PLAN NARRATIVE

PHASE 1 STEP 1

PHASE 1 STEP 1 IS SUBDIVIDED INTO STEP 1A AND STEP 1B. TRAFFIC CONTROL PLAN SHOWN ON SHEETS APPLIES TO BOTH STEP 1A AND STEP 1B. STEP 1A CONSISTS OF WORK TO BE PERFORMED WHILE GCWA 42" WATERLINE IS IN PLACE. STEP 1B IS REMAINING WORK SHOWN ON PHASE 1 STEP 1 SHEETS. OBTAIN APPROVAL FROM ENGINEER AND PRIOR TO BEGINNING STEP 1B. THE WATERLINE REPLACEMENT BY GCWA CONTRACTOR IS TO BE COMPLETED BY DECEMBER 14, 2023.

OBJECTIVE: CONSTRUCT STORM SEWER, SOUTHBOUND HALF OF SH 3, SB FRONTAGE ROAD, DRIVEWAYS, TEMPORARY PAVEMENT, WATERLINE REMOVAL AND 5' SIDEWALK.

1. SET ADVANCE WARNING SIGNS AND PLACE SWP3 PROTECTION.
2. PLACE WZPM AND LPCB AS SHOW ON TCP PHASE 1 STEP 1 SHEETS
3. SHIFT TRAFFIC TO NEWLY STRIPED LANES.

STEP 1A:

4. CONSTRUCT STORM SEWER FROM ℄ SH 3 STA 119+00 TO STA 130+00 INCLUDING OUTFALL AND LATERAL WITHIN WORKZONE.
5. CONSTRUCT SB FRONTAGE ROAD AND DRIVEWAYS FROM ℄ FRRT 405+00 TO STA 429+11.40 AND MAINTAIN LOCAL DRIVEWAY ACCESS AT ALL TIMES.
6. CONSTRUCT SIDEWALK ADJACENT TO PAVEMENT SECTION BUILT DURING STEP1A.

STEP 1B

7. REMOVE 42" GCWA WATERLINE. REFER TO WATER LINE REMOVAL SHEET FOR REMOVAL LIMITS.
8. CONSTRUCT STORM SEWER FROM ℄ SH 3 STA 103+50 TO STA 119+00/
9. CONSTRUCT SH 3 SBML AND SB RAMP TO WIDTHS SHOWN ON PROPOSED TYPICAL SECTIONS AND ON PHASE 1 STEP 1 TCP SHEETS FROM ℄ SH 3 STA 102+81.60 TO STA 116+00.
10. CONSTRUCT SB FRONTAGE ROAD AND DRIVEWAYS FROM ℄ FRRT 401+61.60 TO STA 405+00.00 AND MAINTAIN LOCAL DRIVEWAY ACCESS AT ALL TIMES.
11. CONSTRUCT TEMPORARY PAVEMENT SECTIONS FROM ℄ SH3 STA 113+19.00 TO STA 116+00, STA 115+04.10 TO STA 116+59.35, STA 120+80.00 TO STA 121+05.10 AND ON BL FRRT STA 429+11.40 TO BLTCP TEMP STA 431+96.41 AS SHOWN ON PHASE 1 STEP 1.
12. CONSTRUCT TEMPORARY DRIVEWAYS FROM ℄ SH3 STA 123+48.85 TO STA 123+76.92, STA 131+41.25 TO STA 131+63.25, STA 132+83.80 TO STA 133+05.82, STA 137+40.88 TO STA 137+62.88, STA 138+24.80 TO STA 138+46.80, STA 138+91.60 TO STA 139+13.60, STA 143+19.20 TO STA 143+42.20.
13. CONSTRUCT SIDEWALK ADJACENT TO PAVEMENT SECTION BUILT DURING STEP1B.

PHASE 1 STEP 2

OBJECTIVE: CONSTRUCT NB HALF OF SH3, TEMPORARY PAVEMENT.

1. SET ADVANCE WARNING SIGNS AND PLACE SWP3 PROTECTION.
2. PLACE WZPM AND LPCB AS SHOW ON TCP PHASE 1 STEP 2 SHEETS
3. SHIFT TRAFFIC TO NEWLY STRIPED LANES.
4. CONSTRUCT PROPOSED DRAINAGE AS SHOWN ON DRAINAGE PLANS AND ON PHASE 1 STEP 2 TCP SHEETS.
5. CONSTRUCT SH 3 NBML TO WIDTHS SHOWN ON PROPOSED TYPICAL SECTIONS AND ON PHASE 1 STEP 2 TCP SHEETS FROM ℄ SH 3 STA 102+81.64 TO STA 113+18.93
6. CONSTRUCT TEMPORARY PAVEMENT FROM ℄ SH 3 STA 147+78.00 TO STA 155+17.50 & STA 155+61.95 TO STA 156+43.80 AS SHOWN ON PHASE 1 STEP 2 TCP SHEETS.

PHASE 2 STEP 1

OBJECTIVE: CONSTRUCT SH 3 ROADWAY, SH 146 ROADWAY, NB FRONTAGE ROAD, TEMPORARY PAVEMENT, PARTIALLY BUILD SH3 & SH 146 BRIDGES.

1. SET ADVANCE WARNING SIGNS AND PLACE SWP3 PROTECTION.

TRAFFIC CONTROL PLAN NARRATIVE (CONT)

2. PLACE WZPM AND LPCB AS SHOW ON TCP PHASE 2 STEP 1 SHEETS
3. SHIFT TRAFFIC TO NEWLY STRIPED LANES.
4. CONSTRUCT PROPOSED DRAINAGE PHASE 2 STEP 1, INCLUDING SH 3 DETENTION PONDS TO LIMIT SHOWN ON TCP PHASE 2 STEP 1 SHEETS.
5. CONSTRUCT SH 3 NBML AND NB RAMP TO WIDTHS SHOWN ON PHASE 2 STEP 1 TCP SHEETS FROM ℄ SH 3 STA 113+18.93 TO 129+92.27.
6. CONSTRUCT NB FRONTAGE ROAD FROM BL FRRT 408+31.18 TO STA 429+95.77.
7. CONSTRUCT SH 3 SBML TO WIDTHS SHOWN ON PHASE 2 STEP 1 TCP SHEETS FROM ℄ SH 3 STA 117+49.53 TO 129+92.27.
8. CONSTRUCT SH 146 SBML, DRIVEWAYS AND CORRESPONDING CULVERTS TO LIMITS SHOWN ON PHASE 2 STEP 1 TCP SHEETS FROM ℄ SH 146 STA 200+00 TO 207+50.00 AND MAINTAIN LOCAL DRIVEWAY ACCESS AT ALL TIMES.
9. CONSTRUCT TEMPORARY PAVEMENT ℄ SH 3 STA 120+77.30 TO STA 121+08.30 AND ℄ SH 3 STA 144+42.60 TO STA 146+42.60 AS SHOWN ON PHASE 2 STEP 1.
10. CONSTRUCT SH 3 BRIDGE RETAINING WALLS 1-3.
11. COMPLETE FULL WIDTH BRIDGE SUBSTRUCTURE AND SUPER STRUCTURE FROM ABUT 1 TO BENTS 14 AND PARTIAL FOUNDATION AND COLUMN CONSTRUCTION FOR BENTS 15-17 SHOWN ON PHASE 2 STEP 1 TCP SHEETS FOR SH 3 BRIDGE.
12. COMPLETE FULL WIDTH BRIDGE SUBSTRUCTURE AND SUPER STRUCTURE FROM SH 146 BENTS 12-13 .

PHASE 2 STEP 2

OBJECTIVE: CONSTRUCT SH 3 BRIDGE, SH 3 & SH 146 MEDIAN

1. SET CHANNELIZING DEVICES.
2. PLACE WZPM AND LPCB AS SHOW ON TCP PHASE 2 STEP 2 SHEETS.
3. SHIFT TRAFFIC.
4. CONSTRUCT PROPOSED DRAINAGE PHASE 2 STEP 2, INCLUDING DETENTION POND 1 AND OUTFALLS TO LIMITS SHOWN ON TCP, THIS PHASE 2 STEP 2.
5. COMPLETE FULL WIDTH BRIDGE SUBSTRUCTURE AND SUPER STRUCTURE FROM BENT 14 TO BENT 16. ALSO, PARTIAL FOUNDATION AND CONSTRUCTION FOR BENT 17 SHOWN ON PHASE 2 STEP 2 TCP SHEETS FOR SH 3 BRIDGE.
6. CONSTRUCT SH 3 MEDIAN TO WIDTHS SHOWN ON PHASE 2 STEP 2 TCP SHEETS FROM ℄ SH 3 STA 115+04.10 TO STA 120+00.00.
7. CONSTRUCT TEMPORARY PAVEMENT AND TEMPORARY DRAINAGE ℄ SH 3 STA 172+96.90 TO STA 179+40.45 AS SHOWN ON PHASE 2 STEP 2 TCP SHEETS.

PHASE 3 STEP 1

OBJECTIVE: CONSTRUCT SH 3 ROADWAY, SH 146 ROADWAY, TEMPORARY RETAINING WALL, TEMPORARY PAVEMENT, SH 146 & SH3 BRIDGES, SB FRONTAGE ROAD, PARTIAL TURNAROUND AND PARTIAL ACCESS ROAD.

1. SET ADVANCE WARNING SIGNS AND PLACE SWP3 PROTECTION.
2. PLACE WZPM AND LPCB AS SHOW ON TCP PHASE 3 STEP 1 SHEETS.
3. SHIFT TRAFFIC TO NEWLY STRIPED LANES.
4. DEMOLISH REMAINING SH 146, SH 146 NB RAMP AND SH 146 BRIDGE UPON CLOSURE OF SH 146 AS SHOWN ON PHASE 3 STEP 1 TCP SHEETS.
5. CONSTRUCT PROPOSED NB DITCH FROM ℄ SH 146 STA 200+34.71 TO STA 217+38.74 AND PROP SB DITCHES FROM ℄ SH 146 STA 206+67.73 TO STA 221+50.87
6. CONSTRUCT SH 3 BRIDGE FROM BENT 16-18 AS SHOWN ON PHASE 3 STEP 1. FULL WIDTH FROM ℄ STA 146+74.53 TO STA 147+89.03 AND PARTIAL WIDTH FROM STA 147+89.03 TO STA 149+54.36.
7. CONSTRUCT TEMPORARY RETAINING WALL AS SHOWN ON TCP PHASE 3 STEP 1 TEMP RETAINING WALL SHEET.
8. CONSTRUCT SH 3 SBML FROM ℄ SH 3 STA 149+54.36 TO STA 173+33.67 AS SHOWN ON PHASE 3 STEP 1 SHEETS.
9. CONSTRUCT TEMPORARY PAVEMENT ℄ SH 3 STA 149+54.36 TO STA 173+33.67 & STA 173+33.67 TO STA 175+50.00 AS SHOWN ON PHASE 3 STEP 1 TCP SHEETS.
10. CONSTRUCT SB FRONTAGE ROAD AND DRIVEWAY FROM ℄ FRRT STA 429+11.40 TO STA 430+09.93. ALSO CONSTRUCT ADJOINING TURNAROUND FROM BL FRUT STA 2+27.15 TO STA 1+05.85.

TRAFFIC CONTROL PLAN NARRATIVE (CONT)

11. CONSTRUCT ACCESS ROAD FROM ℄ ACCR STA 300+47.00 TO SH 3 WORKZONE CONSTRUCTION.
12. CONSTRUCT SH 146 TO WIDTHS SHOWN ON PHASE 3 STEP 1 TCP AND MAINTAIN LOCAL DRIVEWAY ACCESS AT ALL TIMES.
13. COMPLETE FULL WIDTH BRIDGE SUBSTRUCTURE AND SUPER STRUCTURE FROM SH 146 BRIDGE ABUT 1 TO BENT 12.
14. CONSTRUCT SH 146 MEDIAN TO WIDTHS ON PREVIOUSLY BUILT SH 146 BRIDGE AS SHOWN ON PHASE 3 STEP 1 TCP SHEETS FROM ℄ SH 146 STA 223+19.24 TO STA 226+03.90.
15. ALTERNATE HURRICANE ROUTE IS PROVIDED BUT SHOULD ONLY BE USED IF A MANDATORY EVACUATION IS ISSUED DURING THIS PHASE OF CONSTRUCTION. SEE TRAFFIC CONTROL PLAN DETOUR LAYOUT FOR DETAILS.

PHASE 3 STEP 2

OBJECTIVE: CONSTRUCT SH 3 ROADWAY, SH 3 BRIDGE, PARTIAL TURNAROUND, ACCESS ROAD AND ISLAND

1. SET ADVANCE WARNING SIGNS AND PLACE SWP3 PROTECTION.
2. PLACE WZPM AND LPCB AS SHOWN ON TCP PHASE 3 STEP 2 SHEETS
3. SHIFT TRAFFIC TO NEWLY STRIPED LANES.
4. CONSTRUCT PROPOSED DRAINAGE AS SHOWN ON PHASE 3 STEP 1 TCP SHEETS.
5. CONSTRUCT SH 3 NBML BRIDGE FROM BENT 16-18 AS SHOWN ON PHASE 3 STEP 2 TCP SHEETS.
6. CONSTRUCT SH 3 NBML TO WIDTH AS SHOWN ON PHASE 3 STEP 2 TCP SHEETS FROM ℄ SH 3 STA 147+89.03 TO STA 173+33.67.
7. CONSTRUCT TURN AROUND FROM ℄ FRUT STA 0+00.00 TO STA 1+05.85.
8. CONSTRUCT REMAINING ACCESS ROAD FROM ℄ STA 300+00.00 TO STA 300+47.00.

PHASE 4 STEP 1

OBJECTIVE: CONSTRUCT MEDIAN

1. SET ADVANCE WARNING SIGNS AND PLACE SWP3 PROTECTION.
2. PLACE PERMENANT PAVEMENT MARKINGS AS SHOWN ON TCP PHASE 4 STEP 1 SHEETS
3. SHIFT TRAFFIC TO NEWLY STRIPED LANES.
4. COMPLETE SH 3 AND FM 519 INTERSECTION SIGNAL WORK.
5. CONSTRUCT SH 3 MEDIAN TO WIDTHS SHOWN ON PHASE 4 STEP 1 TCP SHEETS FROM ℄ SH 3 STA 120+00.00 TO STA 141+11.35.
6. CONSTRUCT SH 3 MEDIAN AND LEFT-HAND TURN LANE TO WIDTHS SHOWN ON PHASE 4 STEP 1 TCP SHEETS FROM ℄ SH 3 STA 142+30.41 TO STA 173+33.66.
7. COMPLETE PERMENANT MARKING.
8. CLEAN UP.

NOTE:
1. CONTRACTOR SHALL NOT WORK IN THE AREAS WITH UNCLEAR UTILITY CONFLICTS UNLESS DIRECTED BY THE ENGINEER. (1)

SCALE: N.T.S.

NO.	DATE	REVISION	APPROV.
1	3/22/2023	ADDED NOTE 1.	

Texas Department of Transportation

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

STATE OF TEXAS
RODOLFO CHAPA
105922
LICENSED PROFESSIONAL ENGINEER

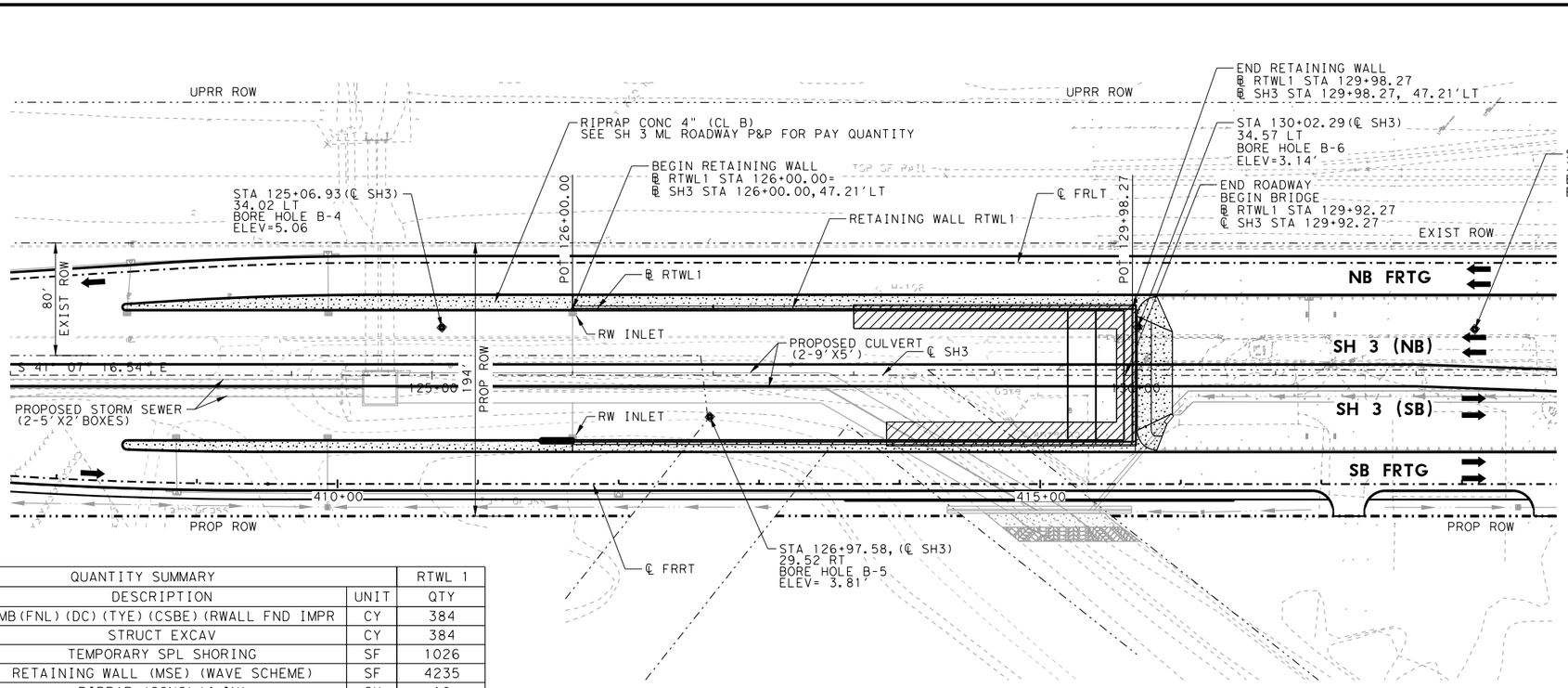
3/22/2023

SH 146
FM 519 TO LP 197

TRAFFIC CONTROL PLAN NARRATIVE

SHEET 1 OF 1

		FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	RC	6	TEXAS				SH 146
CK DN:	RC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DW:	FA	HOU	GALVESTON	0389	07	025	40
CK DW:	TL						



QUANTITY SUMMARY			RTWL 1
ITEM	DESCRIPTION	UNIT	QTY
132 6036	EMB(FNL)(DC)(TYE)(CSBE)(RWALL FND IMPR	CY	384
400 6001	STRUCT EXCAV	CY	384
403 6001	TEMPORARY SPL SHORING	SF	1026
423 6012	RETAINING WALL (MSE) (WAVE SCHEME)	SF	4235
432 6001	RIPRAP (CONC)(4 IN)	CY	10
450 6023	RAIL (TY SSTR)	LF	398
*556 6006	PIPE UNDERDRAINS (TY 6) (6")	LF	300

*FOR CONTRACTOR INFORMATION ONLY. SUBSIDIARY TO ITEM 423.

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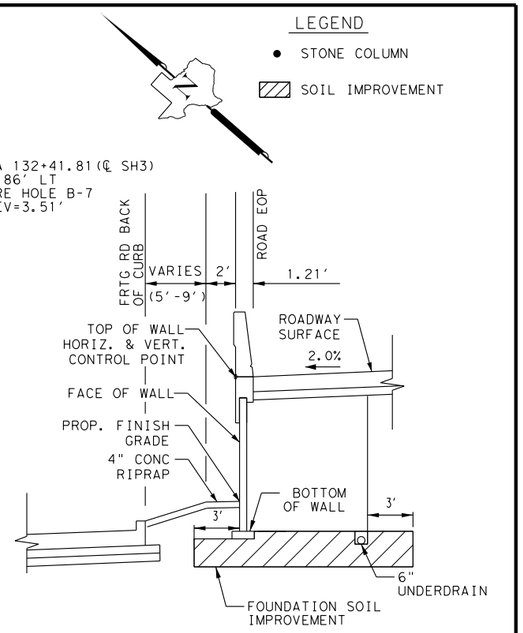
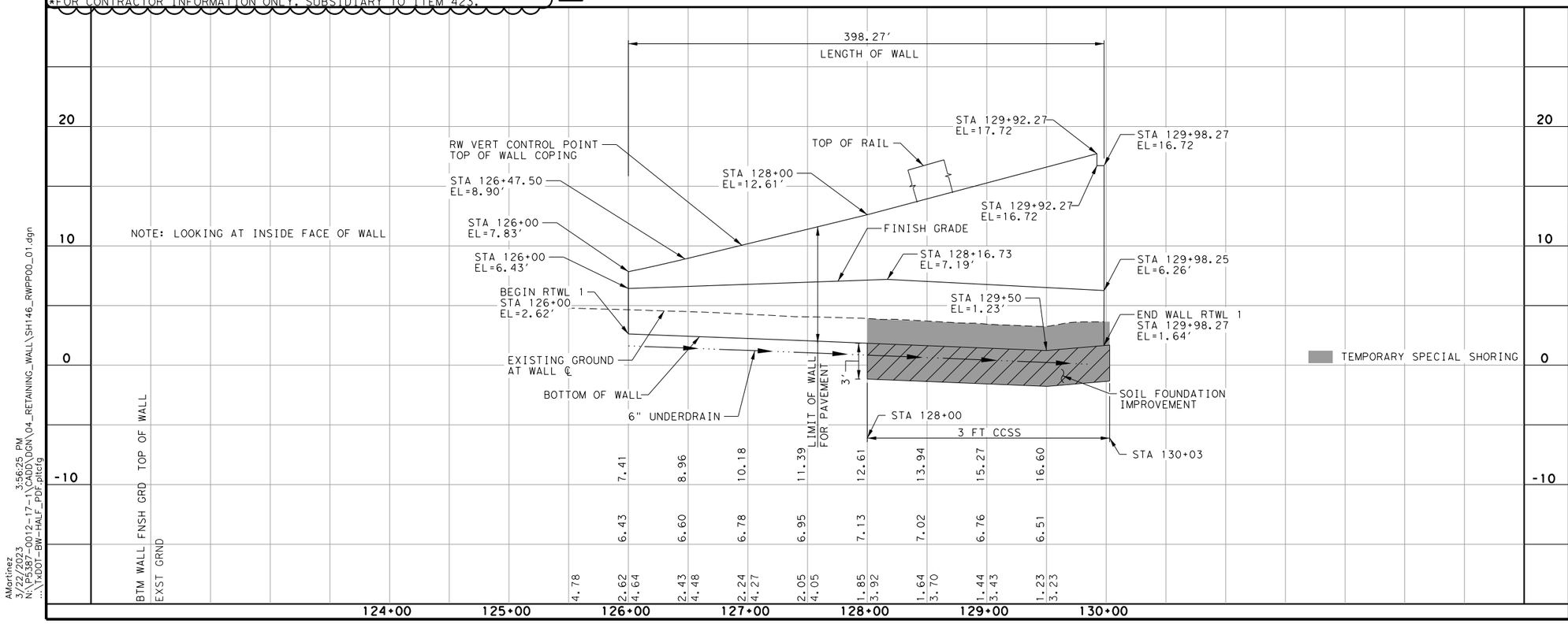


TYPICAL SECTION

N. T. S.



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STATE OF TEXAS
RODOLFO CHAPA
105922
LICENSED PROFESSIONAL ENGINEER
3/22/2023

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VERT. 0 5 10

NO.	DATE	REVISION	APPROV.
1	3/22/2023	REVISED TABLE	

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

SH 146
FM 519 TO LP 197

RETAINING WALL PLAN AND PROFILE RTWL 1

SHEET 1 OF 8

DN:	RM	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	RC	6	TEXAS				SH 146
DW:	RC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	TL	HOU	GALVESTON	0389	07	025	217

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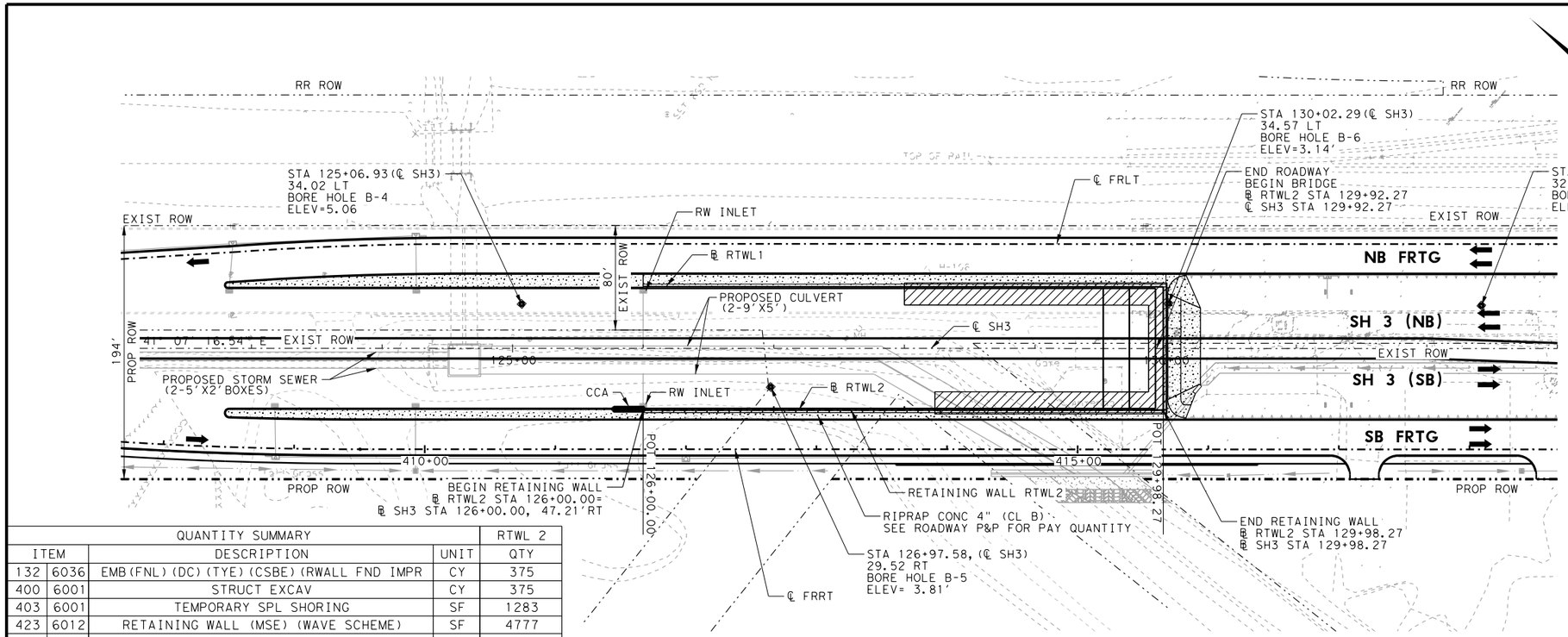
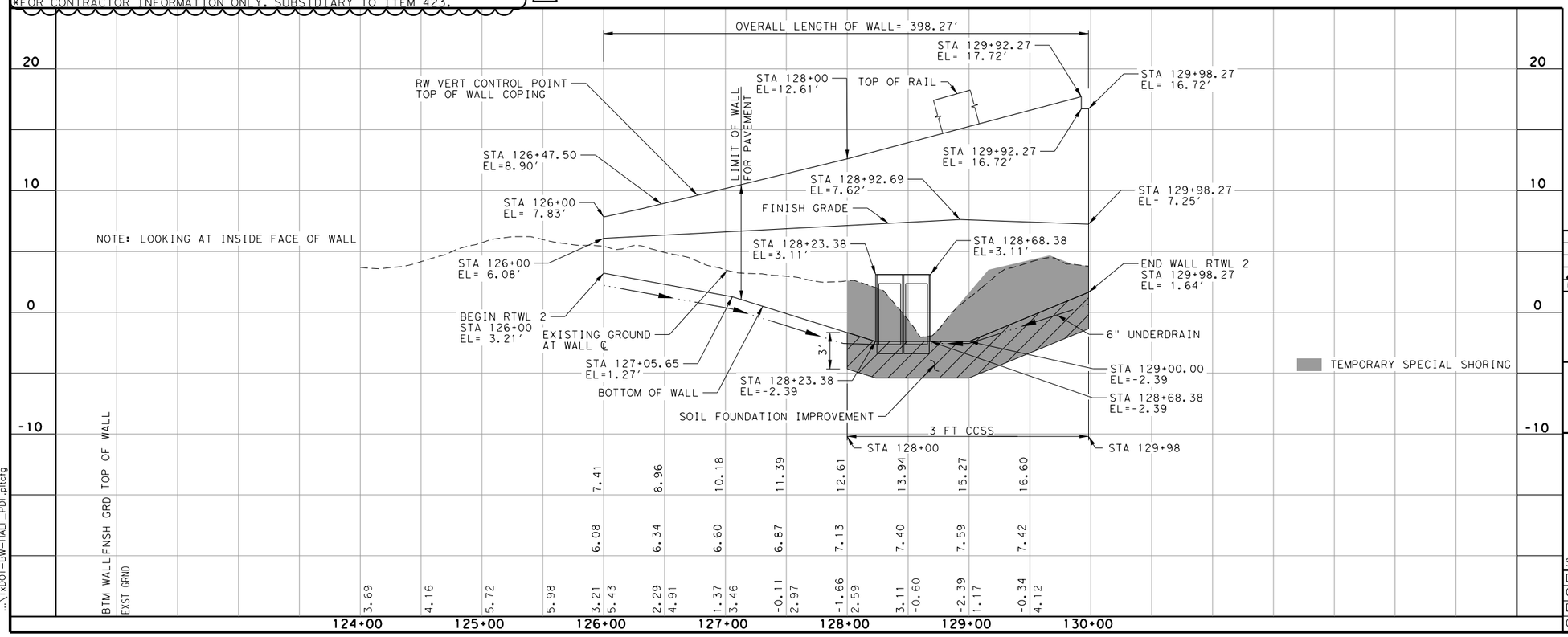


TYPICAL SECTION

N. T. S.

QUANTITY SUMMARY			RTWL 2
ITEM	DESCRIPTION	UNIT	QTY
132 6036	EMB(FNL)(DC)(TYE)(CSBE)(RWALL FND IMPR	CY	375
400 6001	STRUCT EXCAV	CY	375
403 6001	TEMPORARY SPL SHORING	SF	1283
423 6012	RETAINING WALL (MSE) (WAVE SCHEME)	SF	4777
432 6001	RIPRAP (CONC)(4 IN)	CY	10
450 6023	RAIL (TY SSTR)	LF	398
*556 6006	PIPE UNDERDRAINS (TY 6) (6")	LF	300

*FOR CONTRACTOR INFORMATION ONLY. SUBSIDIARY TO ITEM 423.



STATE OF TEXAS
RODOLFO CHAPA
105922
LICENSED
PROFESSIONAL ENGINEER
3/22/2023

HORIZ. 0 25 50 100
VERT. 0 5 10

NO.	DATE	REVISION	APPROV.
1	3/22/2023	REVISED TABLE	

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

SH 146
FM 519 TO LP 197

RETAINING WALL PLAN AND PROFILE RTWL 2

SHEET 2 OF 8

DN:	RM	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	RC	6	TEXAS				SH 146
DW:	RC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	TL	HOU	GALVESTON	0389	07	025	218

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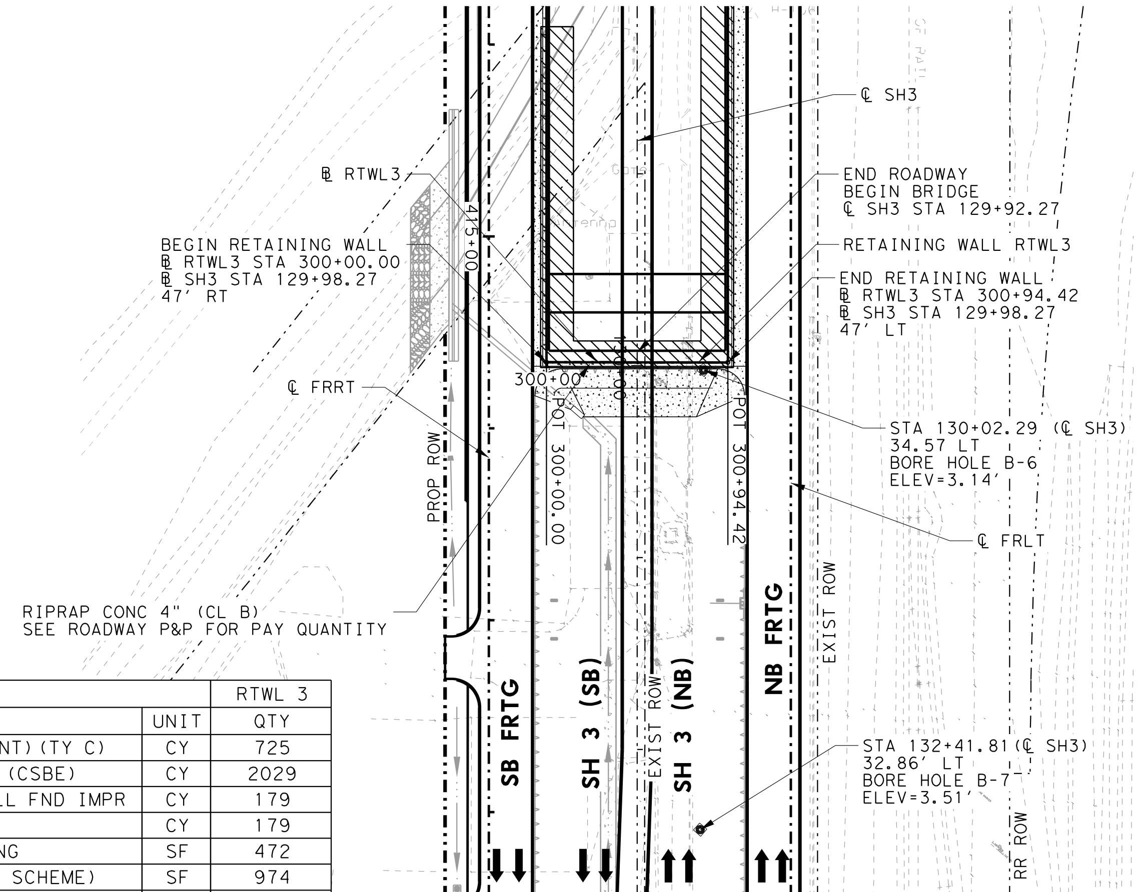
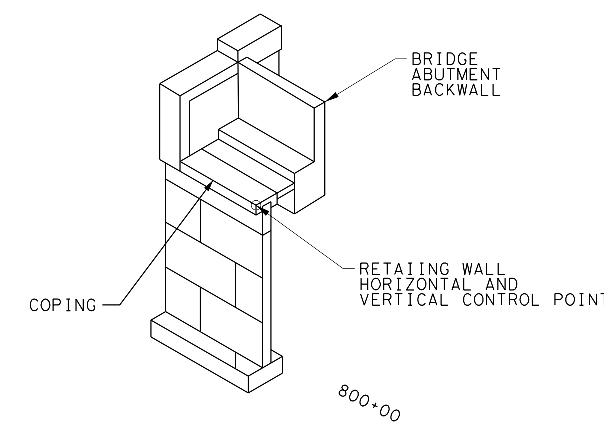
LEGEND

● STONE COLUMN

SOIL IMPROVEMENT





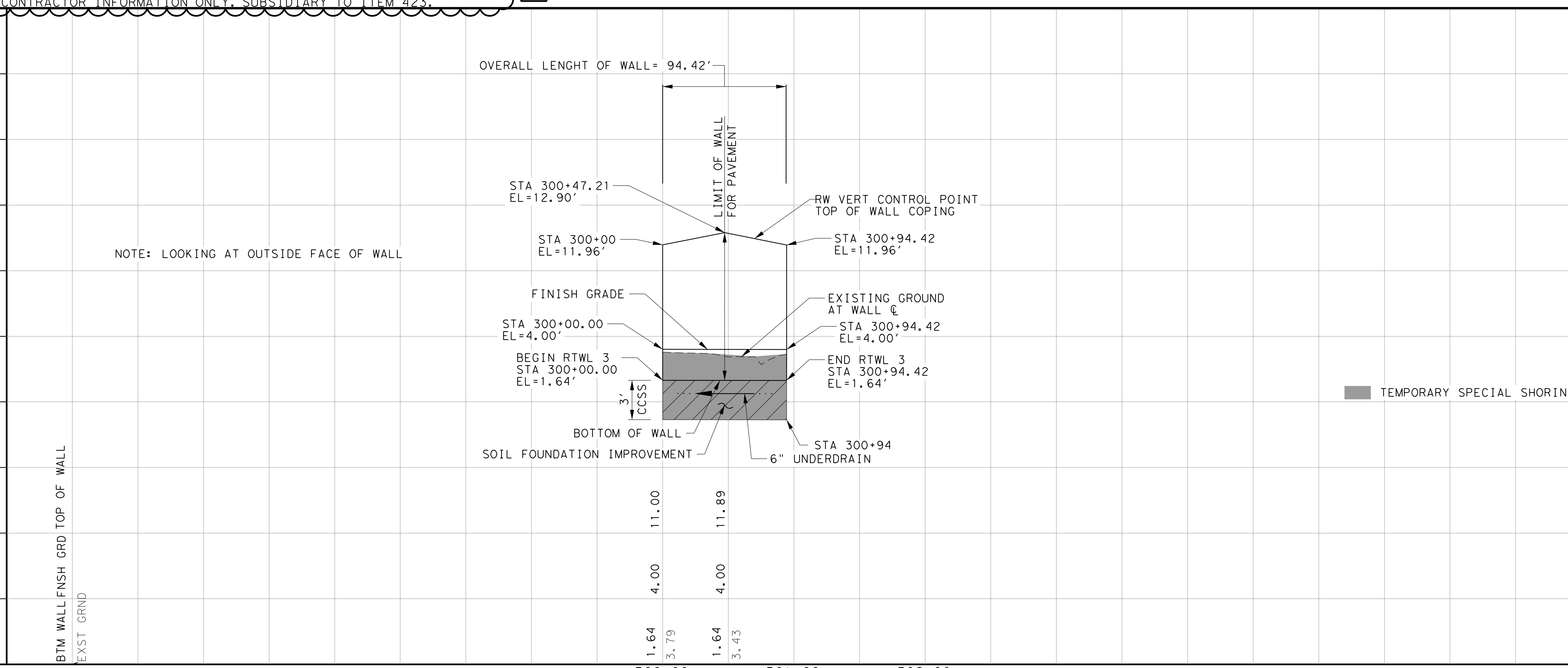
ISOMETRIC VIEW

N.T.S.

ITEM		DESCRIPTION	UNIT	RTWL 3 QTY
132	6006	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	725
132	6035	EMBANK(FINAL)(DC)(TY E)(CSBE)	CY	2029
132	6036	EMB(FNL)(DC)(TYE)(CSBE)(RWALL FND IMPR	CY	179
400	6001	STRUCT EXCAV	CY	179
403	6001	TEMPORARY SPL SHORING	SF	472
423	6012	RETAINING WALL (MSE) (WAVE SCHEME)	SF	974
432	6001	RIPRAP (CONC)(4 IN)	CY	3
*556	6006	PIPE UNDERDRAINS (TY 6) (6")	LF	95

QUANTITY SUMMARY

*FOR CONTRACTOR INFORMATION ONLY. SUBSIDIARY TO ITEM 423.



STATE OF TEXAS
RODOLFO CHAPA
105922
LICENSED
PROFESSIONAL ENGINEER
3/22/2023

HORIZ. 0 25 50 100
VERT. 0 5 10

NO.	DATE	REVISION	APPROV.
1	3/22/2023	REVISED TABLE	

 Texas Department of Transportation

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F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

SH 146
FM 519 TO LP 197

RETAINING WALL PLAN AND PROFILE RTWL 3

SHEET 3 OF 8

DN:	RM	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	RC	6	TEXAS					SH 146
DW:	RC	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	TL	HOU	GALVESTON		0389	07	025	219

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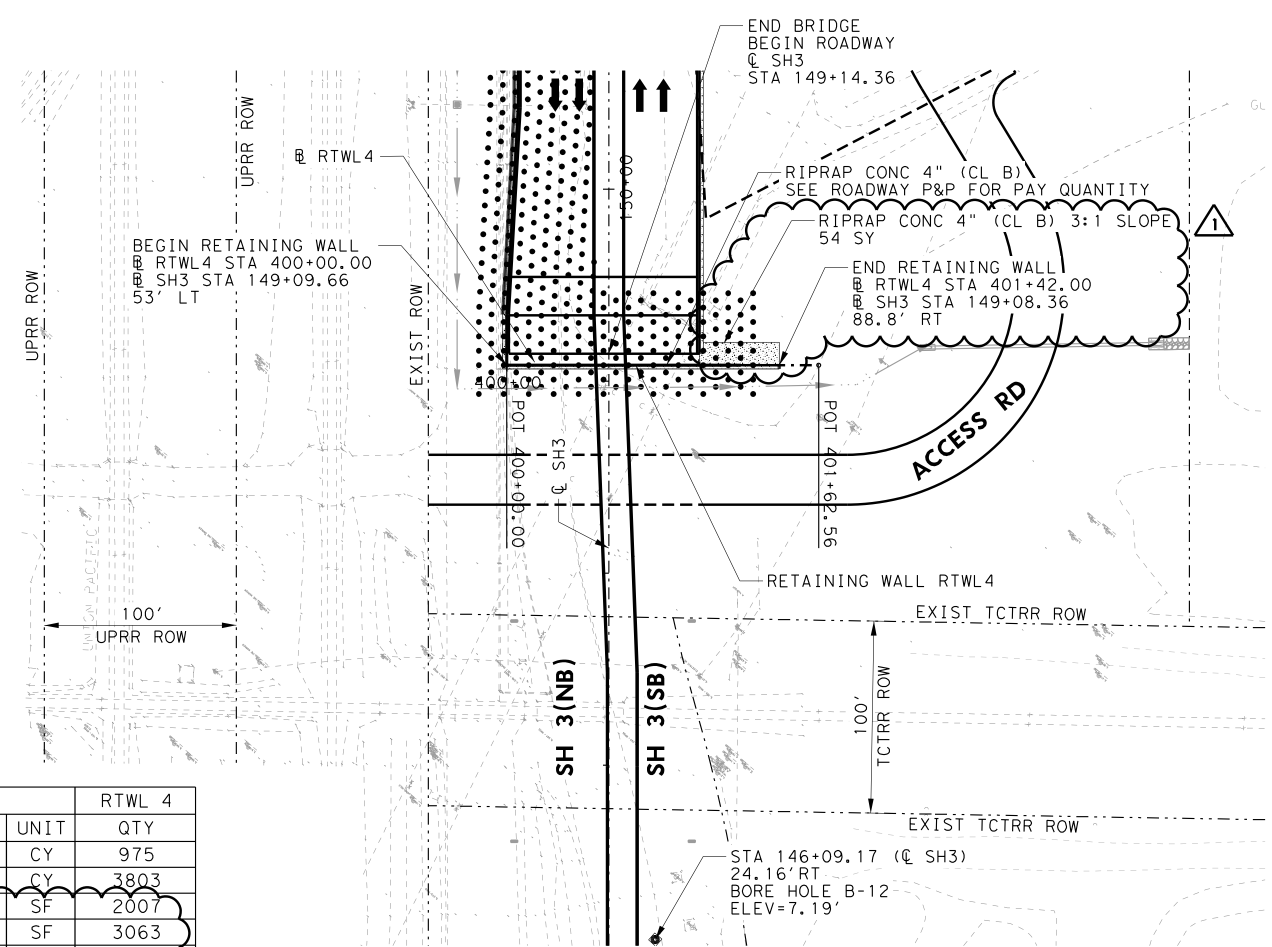
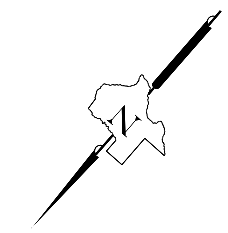
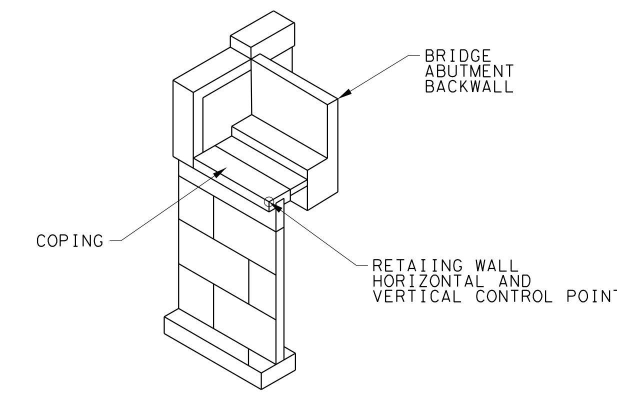


LEGEND

- ● STONE COLUMN
- SOIL IMPROVEMENT

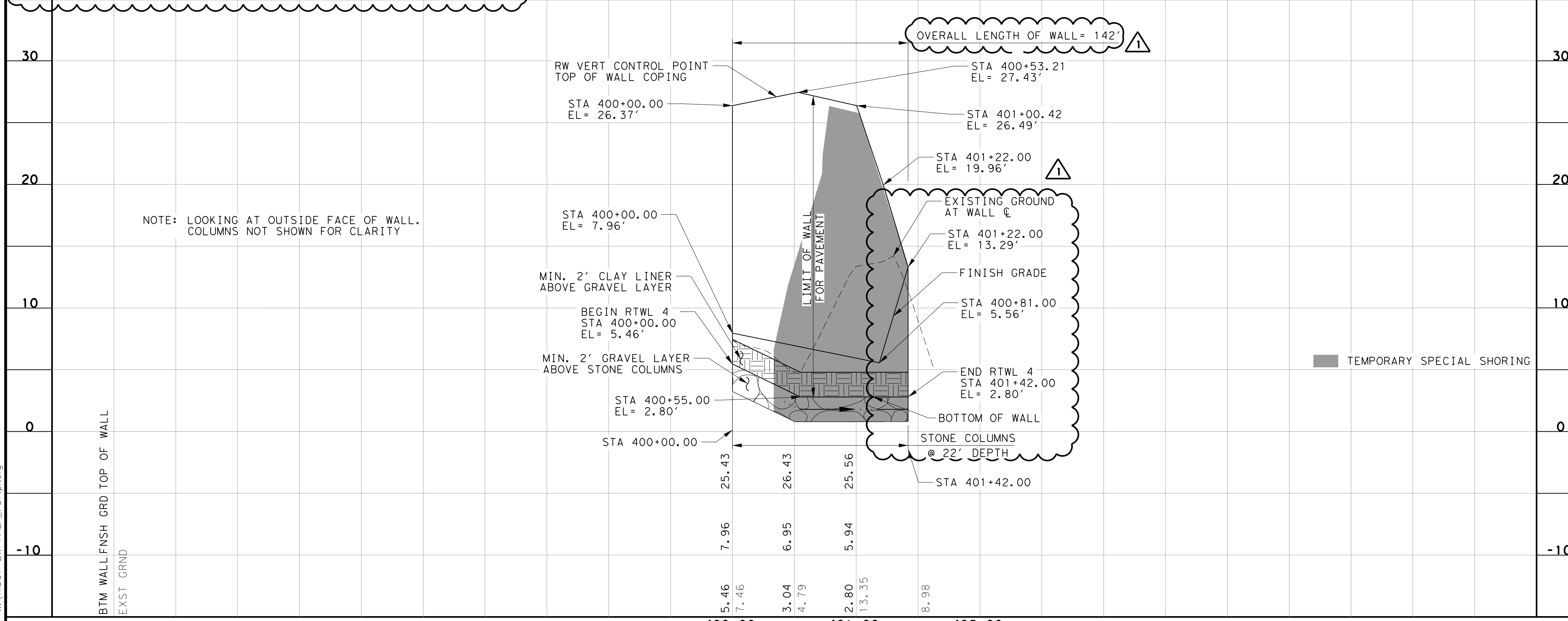




ISOMETRIC VIEW
N.T.S.

QUANTITY SUMMARY				RTWL 4
ITEM		DESCRIPTION	UNIT	QTY
132	6006	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	975
132	6035	EMBANK(FINAL) (DC)(TY E) (CSBE)	CY	3803
403	6001	TEMPORARY SPL SHORING	SF	2007
423	6012	RETAINING WALL (MSE) (WAVE SCHEME)	SF	3063
432	6001	RIPRAP (CONC)(4 IN)	CY	10
*556	6006	PIPE UNDERDRAINS (TY 6) (6")	LF	122

*FOR CONTRACTOR INFORMATION ONLY. SUBSIDIARY TO ITEM 423.



RODOLFO CHAPA
105922
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STATE OF TEXAS
3/23/2023

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VERT. 0 5 10

NO.	DATE	REVISION	APPROV.
1	3/23/2023	REVISED TABLE, PROFILE, AND PLAN	

 Texas Department of Transportation

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281-945-0081 FX

SH 146
FM 519 TO LP 197

RETAINING WALL PLAN AND PROFILE RTWL 4

SHEET 4 OF 8

DN:	RM	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	RC	6	TEXAS				SH 146
DW:	RC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	TL	HOU	GALVESTON	0389	07	025	220

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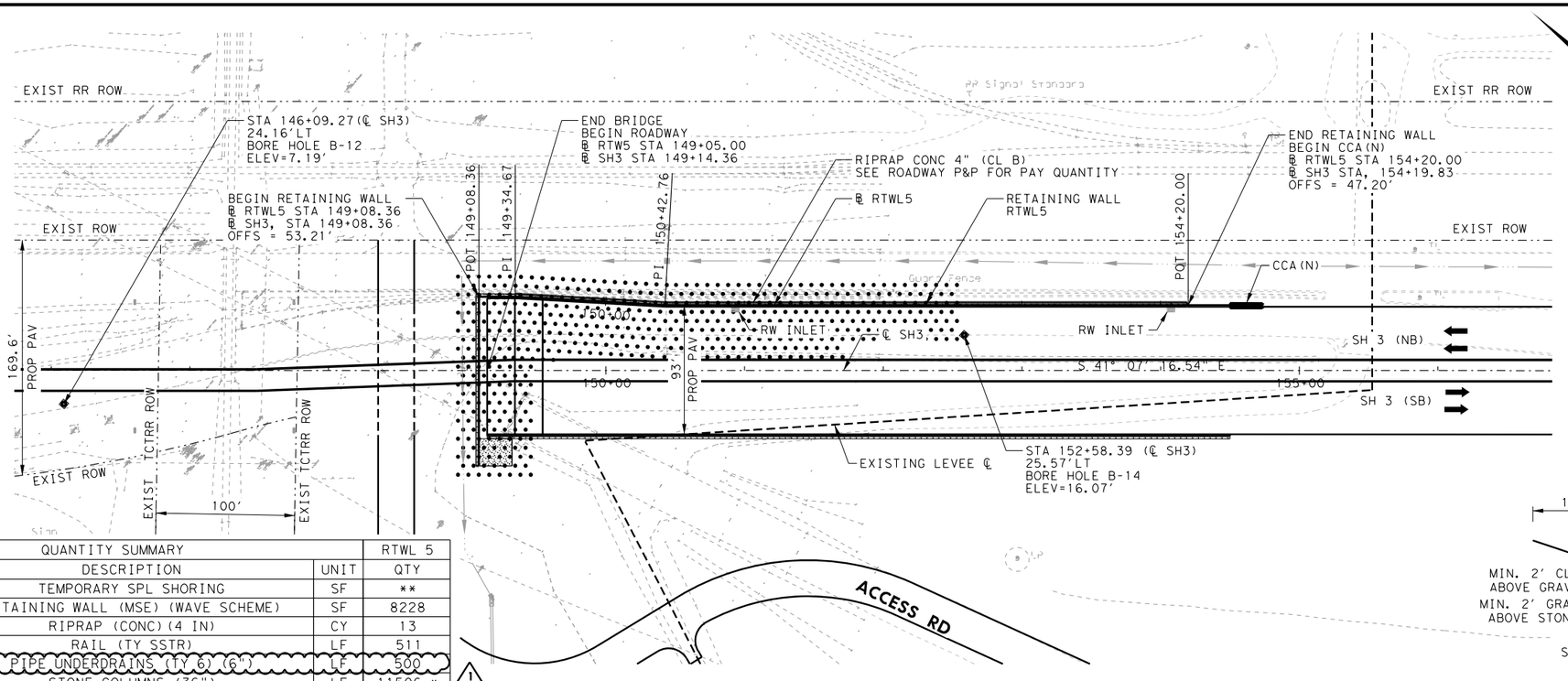
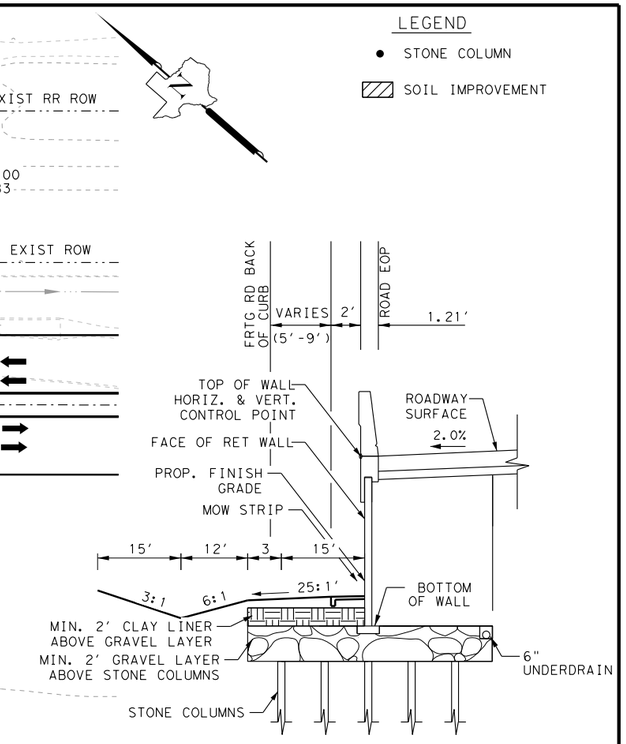




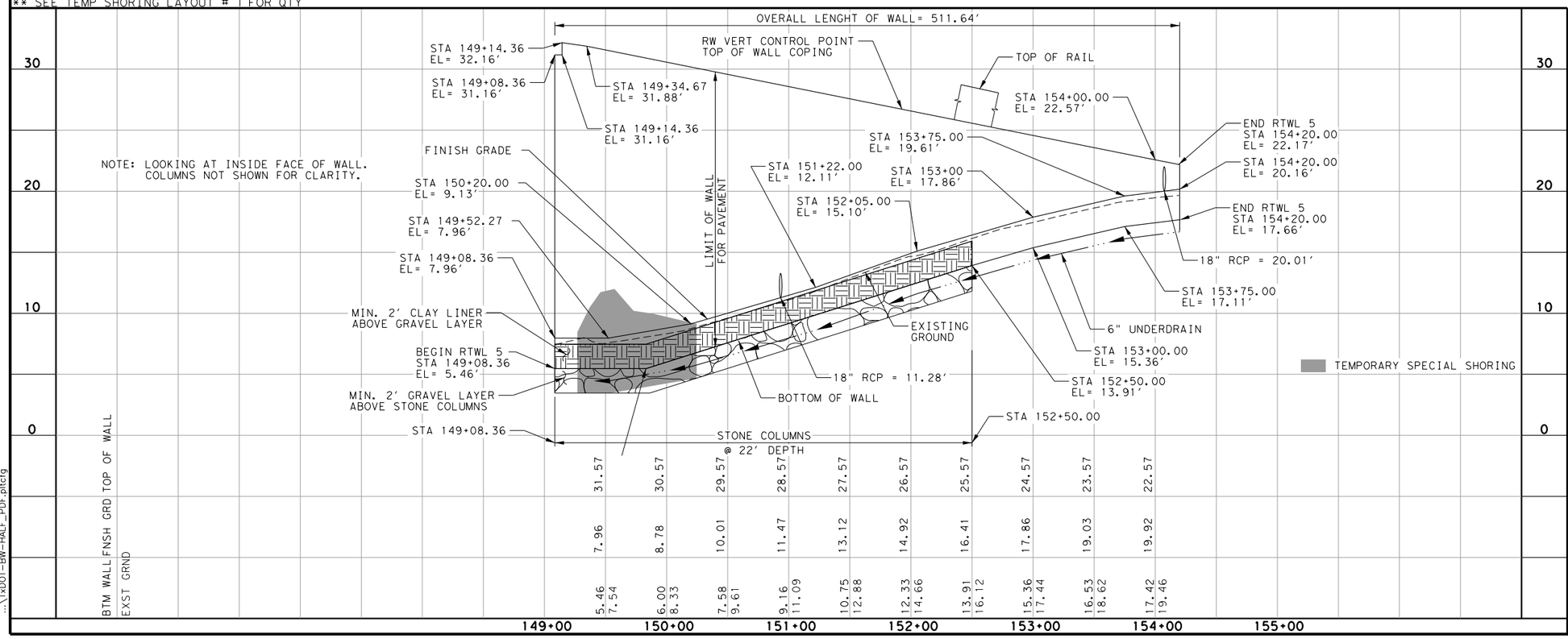
TYPICAL SECTION
N. T. S.

QUANTITY SUMMARY				RTWL 5
ITEM		DESCRIPTION	UNIT	QTY
403	6001	TEMPORARY SPL SHORING	SF	**
423	6012	RETAINING WALL (MSE) (WAVE SCHEME)	SF	8228
432	6001	RIPRAP (CONC)(4 IN)	CY	13
450	6023	RAIL (TY SSTR)	LF	511
(556)	6006	PIPE UNDERDRAINS (TY 6) (6")	LF	500
4082	6003	STONE COLUMNS (36")	LF	11506 *

(556) FOR CONTRACTOR INFORMATION ONLY. SUBSIDIARY TO ITEM 423. ⚠1

*INCLUDES STONE COLUMNS FOR RTWL 4 & RTWL 5

** SEE TEMP SHORING LAYOUT # 1 FOR QTY



RODOLFO CHAPA
105922
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
3/22/2023

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NO.	DATE	REVISION	APPROV.
⚠1	3/22/2023	REVISED TABLE	

ENTECH CIVIL ENGINEERS, INC
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SH 146
FM 519 TO LP 197

RETAINING WALL PLAN AND PROFILE RTWL 5

SHEET 5 OF 8

DN:	RM	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	RC	6	TEXAS					SH 146
DW:	RC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	TL	HOU	GALVESTON	0389	07	025		221

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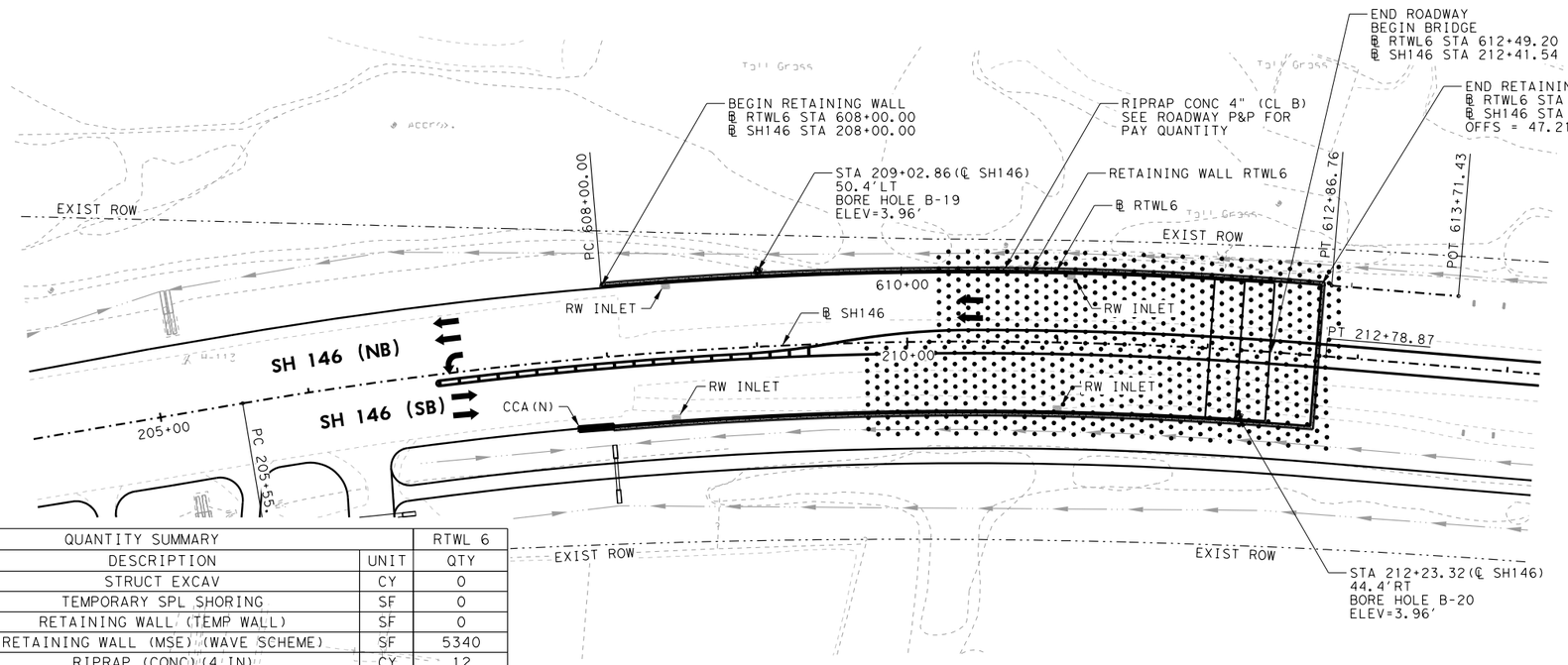


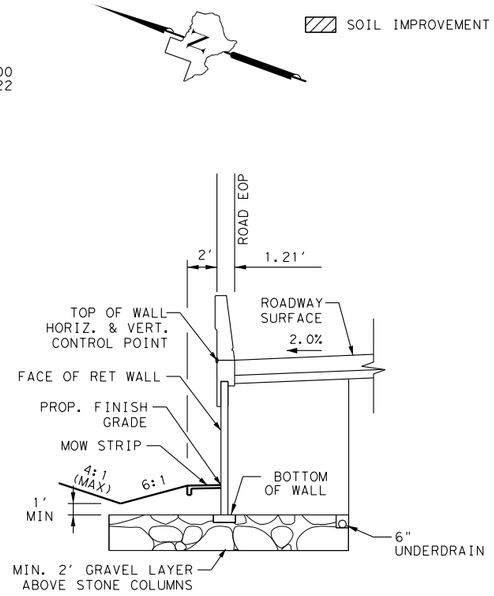
QUANTITY SUMMARY				RTWL 6
ITEM		DESCRIPTION	UNIT	QTY
400	6001	STRUCT EXCAV	CY	0
403	6001	TEMPORARY SPL SHORING	SF	0
423	6003	RETAINING WALL (TEMP WALL)	SF	0
423	6012	RETAINING WALL (MSE) (WAVE SCHEME)	SF	5340
432	6001	RIPRAP (CONC) (4 IN)	CY	12
450	6023	RAIL (TY SSTR)	LF	480
+556	6006	PIPE UNDERDRAINS (TY 6) (6")	LF	300
4082	6003	STONE COLUMNS (36")	LF	16324*

+FOR CONTRACTOR INFORMATION ONLY. SUBSIDIARY TO ITEM 423. 1

*INCLUDES STONE COLUMNS FOR RTWL 6, 7, AND 8. 1

LEGEND

- STONE COLUMN
- SOIL IMPROVEMENT



TYPICAL SECTION

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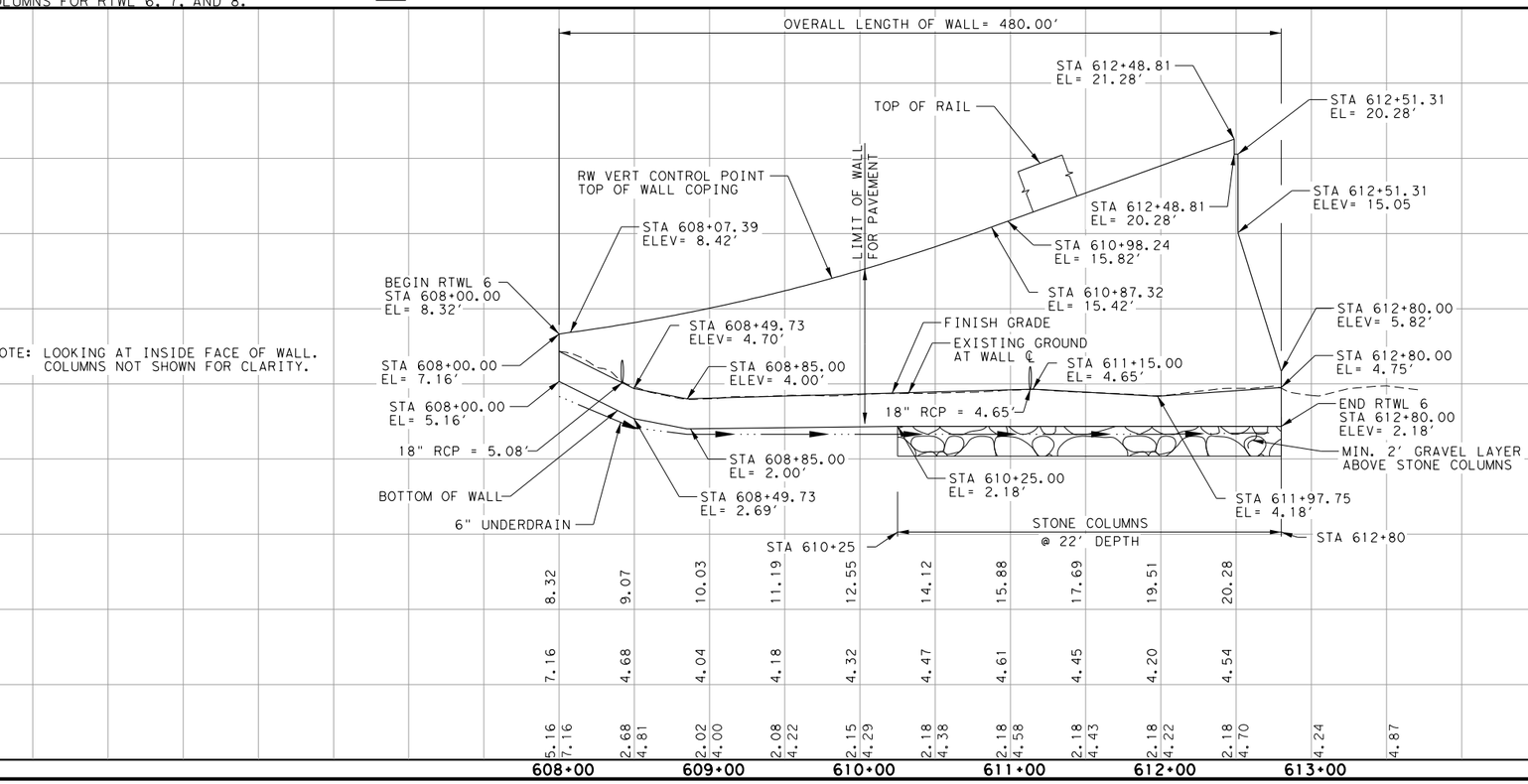

STATE OF TEXAS
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3/22/2023

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NO.	DATE	REVISION	APPROV.
1	3/22/2023	REVISED TABLE	

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SH 146
FM 519 TO LP 197

RETAINING WALL PLAN AND PROFILE RTWL 6

SHEET 6 OF 8

DN: RM	FED.RD. DIV.NO.	STATE	PROJECT NO.	HIGHWAY NO.
CK DN: RC	6	TEXAS		SH 146
DW: RC	STATE DIST.	COUNTY	CONTROL NO. / SECTION NO. / JOB NO.	SHEET NO.
CK DW: TL	HOU	GALVESTON	0389 / 07 / 025	222

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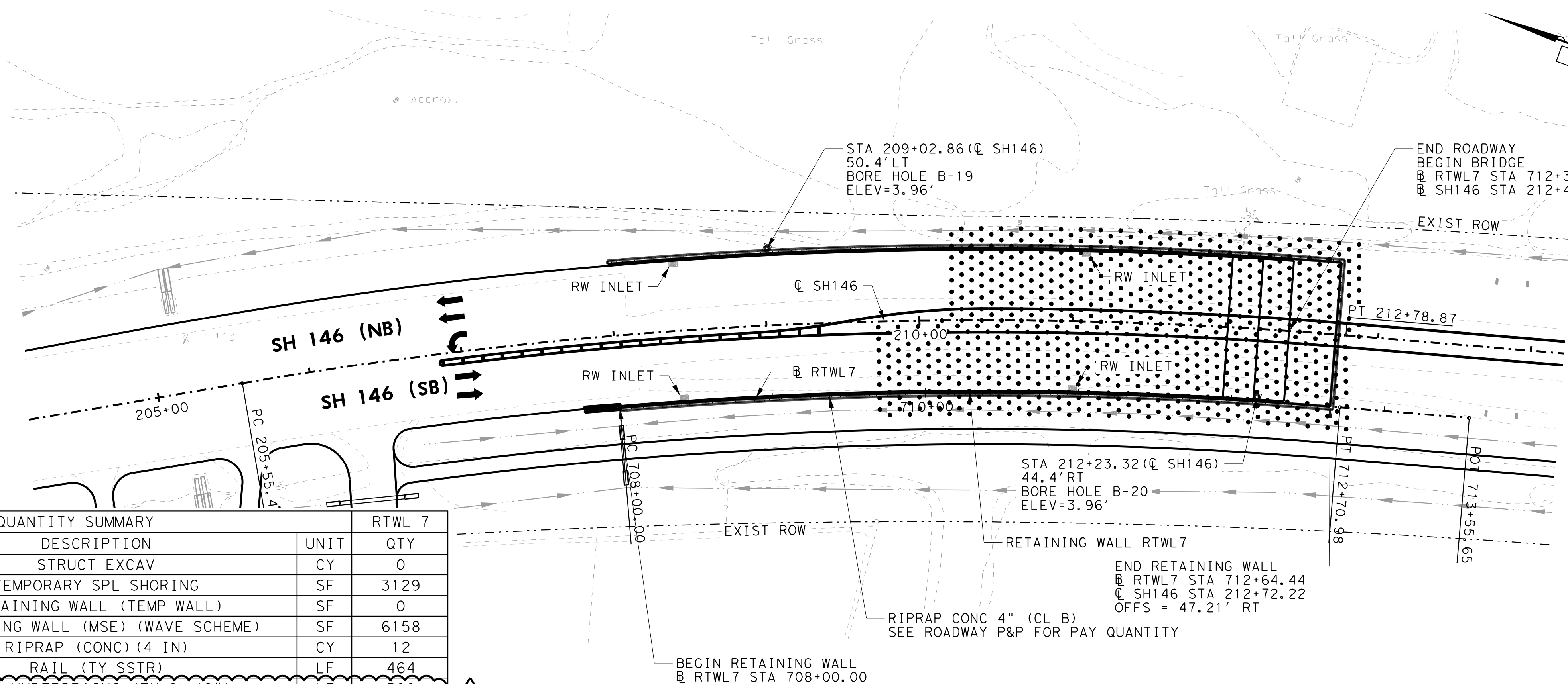


LEGEND

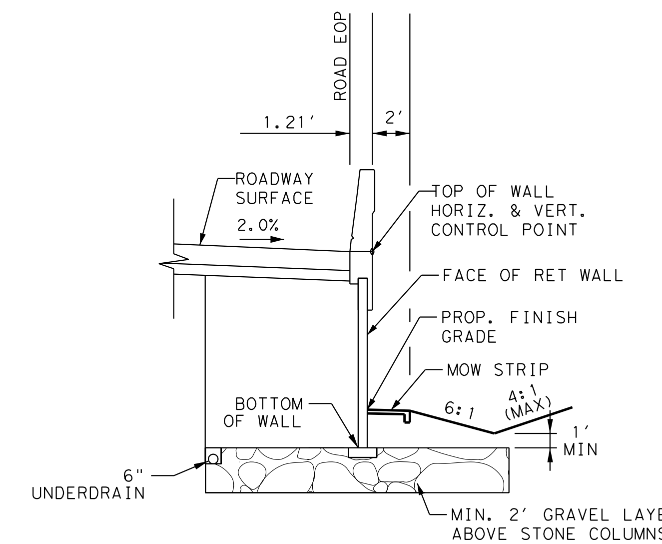
● STONE COLUMN

SOIL IMPROVEMENT

QUANTITY SUMMARY				RTWL 7
ITEM		DESCRIPTION	UNIT	QTY
400	6001	* STRUCT EXCAV	CY	0
403	6001	TEMPORARY SPL SHORING	SF	3129
423	6003	RETAINING WALL (TEMP WALL)	SF	0
423	6012	RETAINING WALL (MSE) (WAVE SCHEME)	SF	6158
432	6001	RIPRAP (CONC)(4 IN)	CY	12
450	6023	RAIL (TY SSTR)	LF	464
+556	6006	PIPE UNDERDRAINS (TY 6) (6")	LF	300
4082	6003	STONE COLUMNS (36")	LF	*

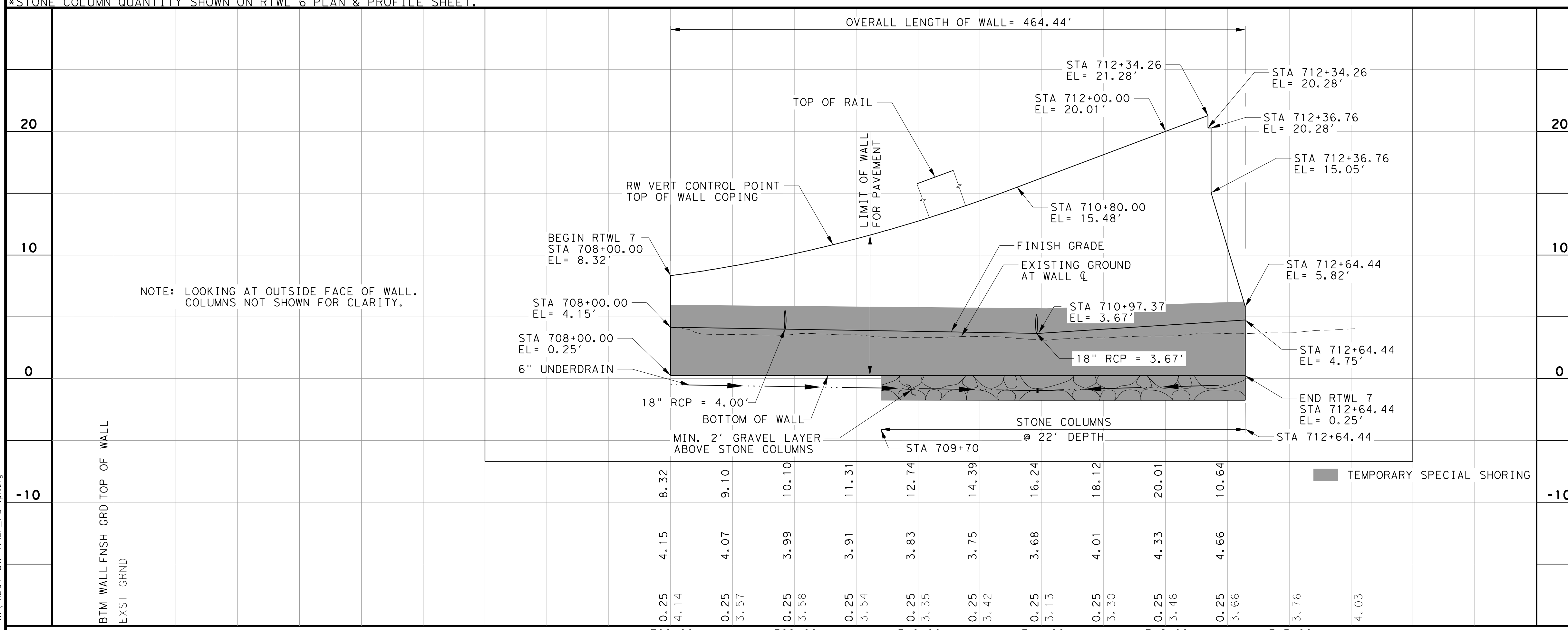
+FOR CONTRACTOR INFORMATION ONLY. SUBSIDIARY TO ITEM 423. (1)

*STONE COLUMN QUANTITY SHOWN ON RTWL 6 PLAN & PROFILE SHEET.



TYPICAL SECTION

N.T.S.



STATE OF TEXAS
RODOLFO CHAPA
105922
LICENSED
PROFESSIONAL ENGINEER
3/22/2023

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VERT. 0 5 10

NO.	DATE	REVISION	APPROV.
1	3/22/2023	REVISED TABLE	

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SH 146
FM 519 TO LP 197

RETAINING WALL PLAN AND PROFILE RTWL 7

SHEET 7 OF 8

		FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	RM	6	TEXAS				SH 146
CK DN:	RC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DW:	RC	HOU	GALVESTON	0389	07	025	223
CK DW:	TL						

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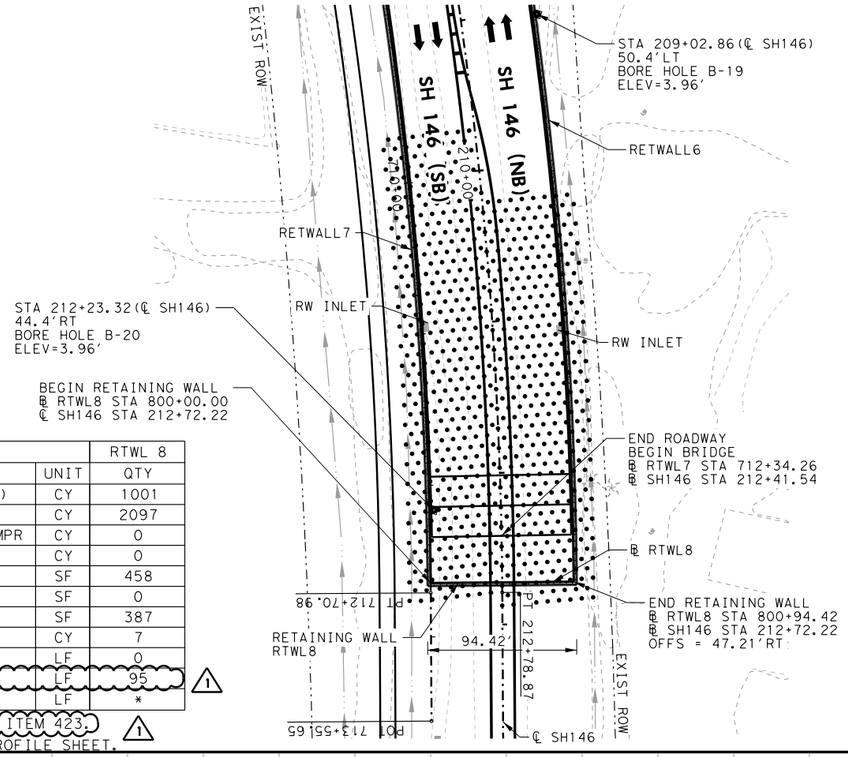
LEGEND

- STONE COLUMN
- SOIL IMPROVEMENT

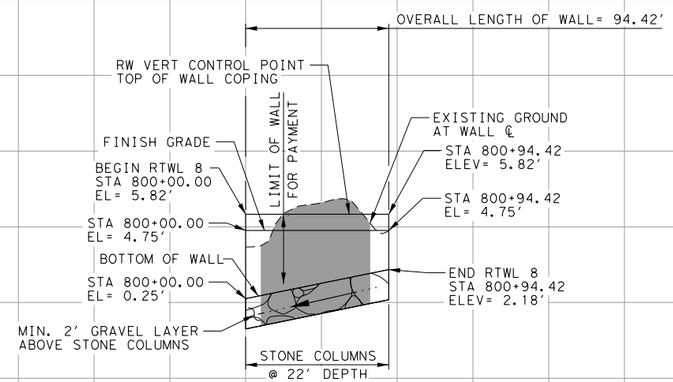


QUANTITY SUMMARY				RTWL 8
ITEM		DESCRIPTION	UNIT	QTY
132	6006	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	1001
132	6035	EMBANK(FINAL) (DC)(TY E) (CSBE)	CY	2097
132	6036	EMB(FNL)(DC)(TYE)(CSBE)(RWALL FND IMPR	CY	0
400	6001	STRUCT EXCAV	CY	0
403	6001	TEMPORARY SPL SHORING	SF	458
423	6003	RETAINING WALL (TEMP WALL)	SF	0
423	6012	RETAINING WALL (MSE) (WAVE SCHEME)	SF	387
432	6001	RIPRAP (CONC)(4 IN)	CY	7
450	6023	RAIL (TY SSTR)	LF	0
†556	6006	PIPE UNDERDRAINS (TY 6) (6")	LF	95
4064	6001	STONE COLUMNS (36")	LF	*

†FOR CONTRACTOR INFORMATION ONLY. SUBSIDIARY TO ITEM 423. ⚠1

*STONE COLUMN QUANTITY SHOWN ON RTWL 6 PLAN & PROFILE SHEET.

NOTE: LOOKING AT OUTSIDE FACE OF WALL.
COLUMNS NOT SHOWN FOR CLARITY.



TEMPORARY SPECIAL SHORING

STATE OF TEXAS
RODOLFO CHAPA
105922
LICENSED PROFESSIONAL ENGINEER
3/22/2023

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NO.	DATE	REVISION	APPROV.
⚠1	3/22/2023	REVISED TABLE	

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FM 519 TO LP 197

RETAINING WALL PLAN AND PROFILE RTWL 8

SHEET 8 OF 8

DN:	RM	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	RC	6	TEXAS				SH 146
DW:	RC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	TL	HOU	GALVESTON	0389	07	025	224

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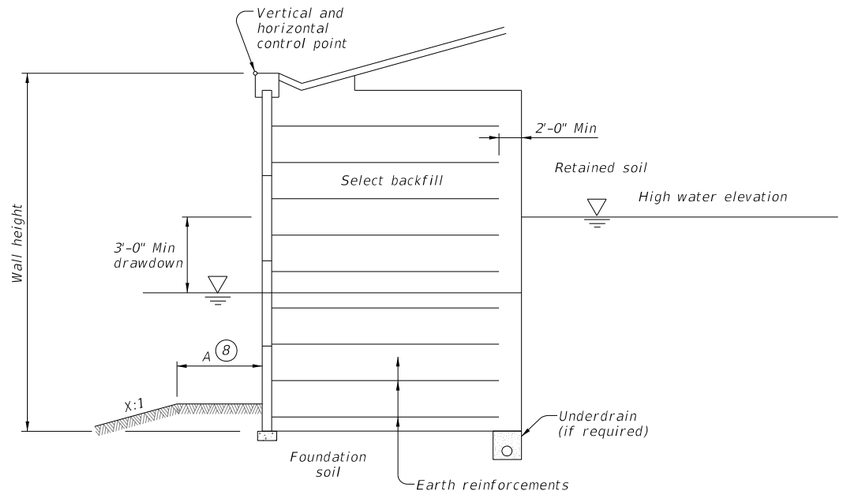
WALL SUMMARY

MSE Retaining Wall	Begin Station (1)	End Station (1)	Retained Soil Friction Angle (2)	Foundation Soil Friction Angle (2)	Ground Improvement (3)	Min Earth Reinf. Length (4)	Min Wall Embedment (5)	Underdrain Required (6)	Drawdown Analysis (7)	Bench Width (8)
RTWL1	126+00.00	128+00.00	30 DEG	30 DEG	NO	8' OR 0.7H	2'	REQUIRED		2' MIN
RTWL1	128+00.00	130+03.00	30 DEG	30 DEG	YES, REPLACE TOP 3FT W/ CCSS	8' OR 0.7H	2'	REQUIRED		2' MIN
RTWL2	126+00.00	128+00.00	30 DEG	30 DEG	NO	8' OR 0.7H	2'	REQUIRED		2' MIN
RTWL2	128+00.00	129+98.27	30 DEG	30 DEG	YES, REPLACE TOP 3FT W/ CCSS	8' OR 0.7H	2'	REQUIRED	REQUIRED	2' MIN
RTWL3	300+00.00	300+94.42	30 DEG	30 DEG	YES, REPLACE TOP 3FT W/ CCSS	8' OR 0.7H	2'	REQUIRED		2' MIN
RTWL4	400+00.00	401+22.00	30 DEG	30 DEG	YES, 36"DIA STONE COLUMNS. 7.5' C-C W/TRIANGULAR PATTERN. BEARING AT DEPTH OF 22'. STONE COLUMNS SHOULD EXTEND OUT TO 15' IN FRONT OF WALL TOE. MINIMUM 2' CLAY LINER ON TOP OF MINIMUM 2' THICK GRAVEL LOAD TRANSFER PLATFORM ON TOP OF STONE COLUMNS.	8' OR 1.3H	2'	REQUIRED	(1)	2' MIN
RTWL5	149+08.36	152+50.00	30 DEG	30 DEG	YES, 36"DIA STONE COLUMNS. 7.5' C-C W/TRIANGULAR PATTERN. BEARING AT DEPTH OF 22'. STONE COLUMNS SHOULD EXTEND OUT TO 15' IN FRONT OF WALL TOE. MINIMUM 2' CLAY LINER ON TOP OF MINIMUM 2' THICK GRAVEL LOAD TRANSFER PLATFORM ON TOP OF STONE COLUMNS.	8' OR 1.6H	2'	REQUIRED	REQUIRED (1)	2' MIN
RTWL5	152+50.00	154+20.00	30 DEG	30 DEG	NO	8' OR 0.7H	2'	REQUIRED		2' MIN
RTWL6	608+00.00	610+25.00	30 DEG	30 DEG	NO	8' OR 1.2H	2'	REQUIRED		2' MIN
RTWL6	610+25.00	612+80.00	30 DEG	30 DEG	YES, 36"DIA STONE COLUMNS. 7.5' C-C W/TRIANGULAR PATTERN. BEARING AT DEPTH OF 22'. STONE COLUMNS SHOULD EXTEND OUT TO 15' IN FRONT OF WALL TOE. MINIMUM 2' THICK GRAVEL LOAD TRANSFER PLATFORM ON TOP OF STONE COLUMNS.	8' OR 1.6H	2'	REQUIRED		2' MIN
RTWL7	708+00.00	709+70.00	30 DEG	30 DEG	NO	8' OR 1.2H	2'	REQUIRED		2' MIN
RTWL7	709+70.00	712+64.44	30 DEG	30 DEG	YES, 36"DIA STONE COLUMNS. 7.5' C-C W/TRIANGULAR PATTERN. BEARING AT DEPTH OF 22'. STONE COLUMNS SHOULD EXTEND OUT TO 15' IN FRONT OF WALL TOE. MINIMUM 2' THICK GRAVEL LOAD TRANSFER PLATFORM ON TOP OF STONE COLUMNS.	8' OR 1.6H	2'	REQUIRED	REQUIRED (1)	2' MIN
RTWL8	800+00.00	800+94.42	30 DEG	30 DEG	YES, 36"DIA STONE COLUMNS. 7.5' C-C W/TRIANGULAR PATTERN. BEARING AT DEPTH OF 22'. STONE COLUMNS SHOULD EXTEND OUT TO 15' IN FRONT OF WALL TOE. MINIMUM 2' THICK GRAVEL LOAD TRANSFER PLATFORM ON TOP OF STONE COLUMNS.	8' OR 1.6H	2'	REQUIRED		2' MIN

(1)



TYPICAL SECTION

(Rapid drawdown condition.)

(1) Indicate limits for which the stated soil design requirements and assumptions are applicable.

(2) Base the listed retained and foundation friction angle on local experience or measured/correlated long term strength values.

(3) Indicate if ground improvement is required or not required. If shown as required, refer to ground improvement detail(s) shown elsewhere in the plans for additional information.

(4) Indicate on table both the minimum length and length ratio required. The minimum default length of earth reinforcements is either 8 feet or 70% of the wall height, whichever is greater. Wall height and design wall height may differ depending on project geometry and loading conditions. Note: Wall height at bridge abutments is equal to the distance between the top of leveling pad and finished grade at the bridge abutment backwall.

(5) Guidance to wall designer of record for determination of minimum wall embedment. Unless noted elsewhere in the plans, provide a minimum embedment from the top of leveling pad to finish grade of
- 1 foot for level ground where there is no potential for erosion or future excavation, or
- 2 feet for sloping ground (4.0H:1.0V or steeper) or where there is potential for removal of soil in front of the wall.

(6) Indicate if underdrain is required or not required.

(7) Indicate if rapid drawdown analysis is required.

(8) Horizontal bench width at base of wall varies. Use the following criteria to establish base width:
A = 2-foot Min for X > 4 or
A = 4-foot Min for X ≤ 4
Applicable to both drawdown and dry condition.

STATE OF TEXAS
RODOLFO CHAPA
105922
LICENSED PROFESSIONAL ENGINEER
3/22/2023

The data shown on this table is referenced from the approved Geotechnical study and report prepared for this project by Wilber Wang, P.E. of Aviles Engineering.

NO.	DATE	REVISION	APPROV.
1	3/22/2023	REVISED DESIGN DATA TABLE	

Texas Department of Transportation

Bridge Division Standard

MECHANICALLY STABILIZED EARTH RETAINING WALL DESIGN DATA

RW(MSE)DD

FILE: RW-MSEDD-22.dgn	DN: TxDOT	CK: RLE	DW: JER	CK: RLE
©TxDOT June 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0389	07	025	SH 146
	DIST	COUNTY		SHEET NO.
	HOU	GALVESTON		249

DATE: DATE_TIME
FILE: DOCUMENT_NAME

Item No.	0403 6001	0416 6004	0416 6008	0416 6009	0416 6010	0420 6004	0420 6013	0420 6037	0420 6099	0420 6082	0422 6001	0425 6038	0425 6039	0432 6001	0450 6023	0454 6018	0454 6019
Item	TEMPORARY SPL SHORING	DRILL SHAFT (36 IN)	DRILL SHAFT (60 IN)	DRILL SHAFT (66 IN)	DRILL SHAFT (72 IN)	CLA A CONC MEDIAN	CL C CONC (ABUT)	CL C CONC (COLUMN)	CL F CONC (FOOTING)(HPC)	CL F CONC (CAP)	REINF CONC SLAB	PRESTR CONC GIRDER (TX46)	PRESTR CONC GIRDER (TX54)	RIPRAP (CONC) (4 IN)	RAIL (TY SSTR)	SEALED EXPANSION JOINT (4 IN)(SEJ-M)	SEALED EXPANSION JOINT (5 IN)(SEJ-M)
Unit	SF	LF	LF	LF	LF	CY	CY	CY	CY	CY	SF	LF	LF	CY	LF	LF	LF
Quantity	21,462.0	1,740 ⚠1	7,500 ⚠1	612.0 ⚠1	522.0 ⚠1	618.5	115.9	1,163.4	914.3	2,009.5	185,248.0	7,589.00	14,012.00	127.2	3,610.1	490	189

Item No.	0481 6014	0416 6001
Item	PIPE (PVC) (SCH 40) (8 IN)	DRILL SHAFT (18 IN)
Unit	LF	LF
Quantity	821.0	80.0

⚠1

BEARING SEAT ELEVATIONS

Bent		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5	BEAM 6	BEAM 7	BEAM 8	BEAM 9	BEAM 10	BEAM 11	BEAM 12	BEAM 13
BENT 1	(FWD)	12.058	12.235	12.411	12.588	12.765	12.942	12.765	12.588	12.411	12.235	12.058		
BENT 2	(BK)	15.152	15.329	15.506	15.683	15.860	16.037	15.860	15.683	15.506	15.329	15.152		
	(FWD)	15.299	15.476	15.652	15.829	16.006	16.183	16.006	15.829	15.652	15.476	15.299		
BENT 3	(BK)	18.371	18.548	18.725	18.902	19.078	19.255	19.078	18.902	18.725	18.548	18.371		
	(FWD)	18.517	18.694	18.871	19.048	19.225	19.402	19.225	19.048	18.871	18.694	18.517		
BENT 4	(BK)	21.590	21.767	21.943	22.120	22.297	22.474	22.297	22.120	21.943	21.767	21.590		
	(FWD)	21.778	21.938	22.099	22.260	22.421	22.582	22.582	22.421	22.260	22.099	21.938	21.778	
BENT 5	(BK)	24.956	25.117	25.278	25.439	25.600	25.760	25.760	25.600	25.439	25.278	25.117	24.956	
	(FWD)	25.103	25.264	25.424	25.585	25.746	25.907	25.907	25.746	25.585	25.424	25.264	25.103	
BENT 6	(BK)	28.282	28.442	28.603	28.764	28.925	29.085	29.085	28.925	28.764	28.603	28.442	28.282	
	(FWD)	28.428	28.589	28.749	28.910	29.071	29.232	29.232	29.071	28.910	28.749	28.589	28.428	
BENT 7	(BK)	31.607	31.767	31.928	32.089	32.250	32.410	32.410	32.250	32.089	31.928	31.767	31.607	
	(FWD)	31.795	31.955	32.116	32.277	32.438	32.598	32.598	32.438	32.277	32.116	31.955	31.795	
BENT 8	(BK)	34.887	35.048	35.209	35.370	35.530	35.691	35.691	35.530	35.370	35.209	35.048	34.887	
	(FWD)	35.681	35.857	36.034	36.211	36.388	36.565	36.388	36.211	36.034	35.857	35.681		
BENT 9	(BK)	37.538	37.715	37.892	38.069	38.246	38.422	38.246	38.069	37.892	37.715	37.538		
	(FWD)	37.628	37.805	37.981	38.158	38.335	38.512	38.335	38.158	37.981	37.805	37.628		
BENT 10	(BK)	38.851	39.027	39.204	39.381	39.558	39.735	39.558	39.381	39.204	39.027	38.851		
	(FWD)	38.944	39.117	39.290	39.463	39.635	39.808	39.635	39.463	39.290	39.117	38.944		
BENT 11	(BK)	40.175	40.220	40.264	40.308	40.352	40.396	40.352	40.308	40.264	40.220	40.175		
	(FWD)	40.191	40.235	40.279	40.324	40.368	40.412	40.368	40.324	40.279	40.235	40.191		
BENT 12	(BK)	40.144	40.188	40.233	40.277	40.321	40.365	40.321	40.277	40.233	40.188	40.144		
	(FWD)	40.123	40.167	40.211	40.256	40.300	40.344	40.300	40.256	40.211	40.167	40.123		
BENT 13	(BK)	39.329	39.396	39.462	39.529	39.596	39.662	39.596	39.529	39.462	39.396	39.329		
	(FWD)	38.988	39.062	39.135	39.208	39.281	39.354	39.406	39.332	39.259	39.186	39.113	39.039	
BENT 14	(BK)	37.096	37.268	37.439	37.611	37.783	37.954	38.074	37.903	37.731	37.559	37.388	37.216	
	(FWD)	37.001	37.173	37.344	37.516	37.688	37.859	37.979	37.808	37.636	37.464	37.293	37.121	
BENT 15	(BK)	35.072	35.243	35.415	35.587	35.758	35.930	36.050	35.878	35.707	35.535	35.363	35.192	
	(FWD)	34.283	34.455	34.627	34.798	34.970	35.142	35.262	35.090	34.918	34.747	34.575	34.403	
BENT 16	(BK)	31.835	32.007	32.179	32.350	32.522	32.694	32.814	32.642	32.470	32.299	32.127	31.955	
	(FWD)	31.816	31.988	32.159	32.331	32.503	32.674	32.794	32.623	32.451	32.279	32.108	31.936	
BENT 17	(BK)	29.407	29.579	29.750	29.922	30.094	30.265	30.385	30.214	30.042	29.871	26.699	29.527	
	(FWD)	29.204	29.374	29.544	29.714	29.884	30.054	30.203	30.065	29.917	29.768	29.620	29.472	29.324
BENT 18	(BK)	26.430	26.600	26.770	26.940	27.110	27.280	27.429	27.291	27.142	26.994	26.846	26.698	26.550

STATE OF TEXAS
FULVIO JARAMILLO
101560
LICENSED PROFESSIONAL ENGINEER
3/23/2023

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 Texas Department of Transportation

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+1+832 917 0912
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TBPE FIRM No 16156

SH 146 AT SH 3
SH 3
ESTIMATED QUANTITIES &
BEARING SEAT ELEVATIONS

SHEET 1 OF 1

DN:	GD	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	FJ	6	TEXAS	BR 2022(576)			SH 146
DW:	FJR	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	FJ	HOU	GALVESTON	0389	07	025	389

⚠1 3/23/2023 REVISED SHEET

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$PLOTTER$

TABLE OF FOUNDATION QUANTITIES

							DRILLED SHAFTS								
							0416-6001	0416-6004	0416-6007	0416-6008	0416-6009	0416-6010	0420-6099	0432-6001	0403-6001
ABUT/BENT	COLUMN NO.	NO.DRILLED SHAFTS	TOP OF DRILLED SHAFT ELEV	FOOTING TYPE	COLUMN TYPE	LOAD (TONS)	18" DIA DRILLED SHAFTS	36" DIA DRILLED SHAFTS	54" DIA DRILLED SHAFTS	60" DIA DRILLED SHAFTS	66" DIA DRILLED SHAFTS	72" DIA DRILLED SHAFTS	CL F CONC (FOOTING)(HPC)	RIPRAP (CONC) (4 IN)	TEMP SPL SHORING
							(LF)	(LF)	(LF)	(LF)	(LF)	(LF)	(CY)	(CY)	(SF)
ABUT 1		10				161		86							
BENT 2	1	2	-8.42	DSF-3	W1M	461						87	25.88	3.31	504
	2	2	-8.42	DSF-3	W1M	394						87	25.88	3.31	504
	3	2	-8.42	DSF-3	W1M	460						87	25.88	3.31	504
BENT 3	1	2	-8.31	DSF-1	W1	453				92			18.33	2.58	441
	2	2	-8.31	DSF-1	W1	376				92			18.33	2.58	441
	3	2	-8.31	DSF-1	W1	452				92			18.33	2.58	441
BENT 4	1	2	-8.19	DSF-1	W1	464				91			18.33	2.58	441
	2	2	-8.19	DSF-1	W1	385				91			18.33	2.58	441
	3	2	-8.19	DSF-1	W1	463				91			18.33	2.58	441
BENT 5	1	2	-8.06	DSF-1	W1	474				90			18.33	2.58	441
	2	2	-8.06	DSF-1	W1	396				90			18.33	2.58	441
	3	2	-8.06	DSF-1	W1	475				90			18.33	2.58	441
BENT 6	1	2	-7.94	DSF-1	W1	475				90			18.33	2.58	441
	2	2	-7.94	DSF-1	W1	397				90			18.33	2.58	441
	3	2	-7.94	DSF-1	W1	478				90			18.33	2.58	441
BENT 7	1	2	-7.81	DSF-1	W1	473				90			18.33	2.58	441
	2	2	-7.81	DSF-1	W1	395				90			18.33	2.58	441
	3	2	-7.81	DSF-1	W1	476				90			18.33	2.58	441
BENT 8	1	2	-7.69	DSF-1	W1	435				89			18.33	2.58	441
	2	2	-7.69	DSF-1	W1	363				89			18.33	2.58	441
	3	2	-7.69	DSF-1	W1	437				89			18.33	2.58	441
BENT 9	1	2	-7.58	DSF-1	W1	393				76			18.33	2.58	441
	2	2	-7.58	DSF-1	W1	328				76			18.33	2.58	441
	3	2	-7.58	DSF-1	W1	396				76			18.33	2.58	441
BENT 10	1	2	-7.48	DSF-1	W1	415				80			18.33	2.58	441
	2	2	-7.48	DSF-1	W1	322				80			18.33	2.58	441
	3	2	-7.48	DSF-1	W1	396				80			18.33	2.58	441
BENT 11	1	2	-7.40	DSF-1	W1	396				80			18.33	2.58	441
	2	2	-7.40	DSF-1	W1	323				80			18.33	2.58	441
	3	2	-7.40	DSF-1	W1	422				80			18.33	2.58	441
BENT 12	1	2	-7.38	DSF-1	W1	395				90			18.33	2.58	441
	2	2	-7.38	DSF-1	W1	327				90			18.33	2.58	441
	3	2	-7.38	DSF-1	W1	419				90			18.33	2.58	441
BENT 13	1	2	-7.21	DSF-1	W1	373				88			18.33	2.58	441
	2	2	-7.21	DSF-1	W1	374				88			18.33	2.58	441
	3	2	-7.21	DSF-1	W1	404				88			18.33	2.58	441
BENT 14	1	2	-7.13	DSF-1	W1	409				93			18.33	2.58	441
	2	2	-7.13	DSF-1	W1	378				93			18.33	2.58	441
	3	2	-7.13	DSF-1	W1	410				93			18.33	2.58	441
BENT 15	1	2	-3.27	DSF-1	W1	430				99			18.33	2.58	441
	2	2	-3.27	DSF-1	W1	417				99			18.33	2.58	441
	3	2	-3.27	DSF-1	W1	402				99			18.33	2.58	441
BENT 16	1	2	-2.21	DSF-1	W1	436				102			18.33	2.58	441
	2	2	-2.21	DSF-1	W1	406				102			18.33	2.58	441
	3	2	-2.21	DSF-1	W1	445				102			18.33	2.58	441
BENT 17	1	2	-2.85	DSF-2	W1	481					102		22.22	2.96	476
	2	2	-2.85	DSF-2	W1	428					102		22.22	2.96	476
	3	2	-2.85	DSF-2	W1	475					102		22.22	2.96	476
ABUT 18		11				160	80	80							

⚠

GENERAL NOTES:

Designed According to Current AASHTO LRFD Bridge Design Specifications 9th Ed. (2020)

Drilled Shaft / Pile Lengths and Loads provided are per Drilled Shaft / Pile.

Drilled Shaft lengths shown on the Bridge Layout are for information only. The "Table of Foundation Quantities" supersedes any foundation discrepancy on the Bridge Layout.

Bentonite slurry with slurry head at least 5 feet above groundwater table should be introduced at the beginning of each shaft excavation. Temporary steel casing (at least 10 feet long) should be available as a contingency to support excavation of the upper shaft walls.

Excavation spoils should be monitored by an enviromental specialist. If contaminated, the excavation spoils should be properly stored in 50-gallon drums and should be deposited off site by others in accordance with all applicable state and local enviromental regulations.

⚠ 3/23/2023 REVISED SHEET

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SH 146 AT SH 3

SH 3

FOUNDATION QUANTITIES

SHEET 1 OF 1

DN:	RG	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JD	6	TEXAS	BR 2022(576)			SH 146
DW:	SA	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	FJ	HOU	GALVESTON	0389	07	025	393

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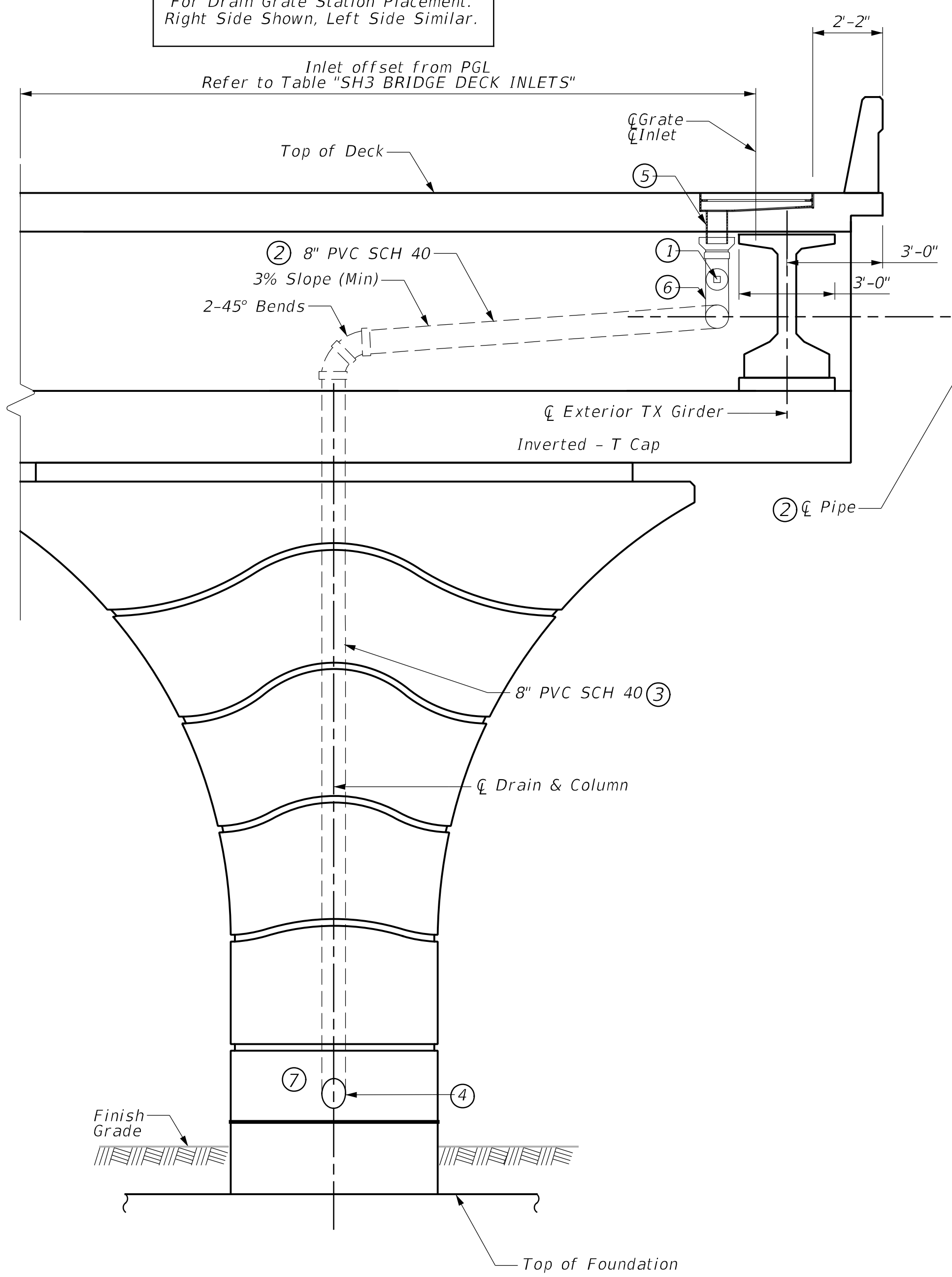
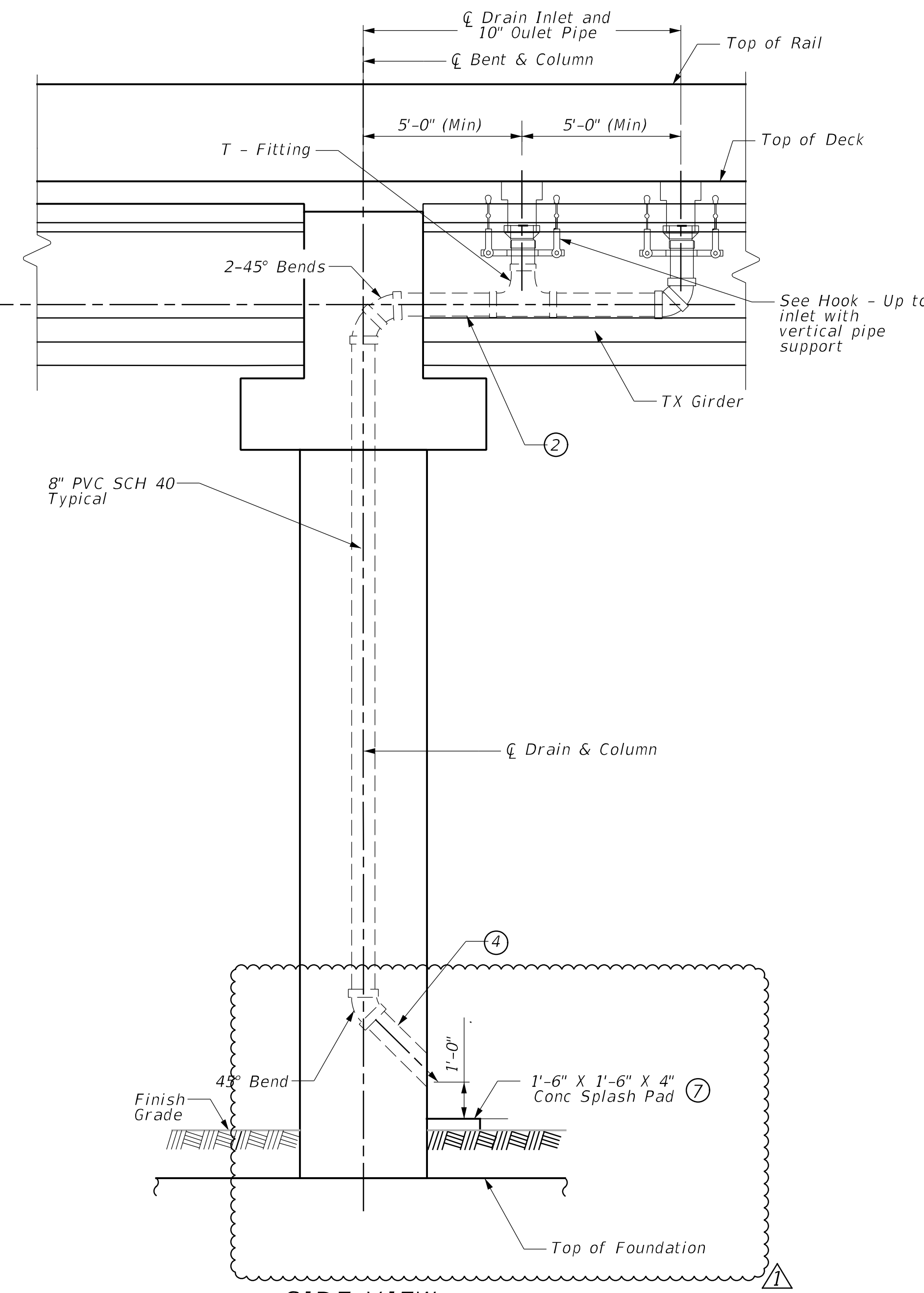
Refer to Drainage Details
For Drain Grate Station Placement.
Right Side Shown, Left Side Similar.



ELEVATION



SIDE VIEW

1. Provide Cleanout
2. Adjust bent cap reinforcing steel spacing to clear drain pipe. A maximum of one cap skin reinforcement bar (Bar T) may be cut to eliminate interference with drain pipe penetration. No main bent cap reinforcing steel (Bar A or B) shall be cut.
3. Refer to Column Details to adjust column vertical bars to fit drain pipe in column.
4. See Table for Orientation of outlet, forward or back of column.
5. Drain outlet pipe maybe trimmed as needed.
6. Provide PVC Flexible Expansion Joint at bents with expansions joints. Use EBAA Iron Inc. Flex - Tend Joint or equivalent. Payment is subsidiary to PVC pipe.
7. Omit Splash Pad Over Water. End Drain 1ft Above foundation Over Water.

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SH 146 AT SH 3
SH 3
BRIDGE DRAIN
DETAILS

SHEET 1 OF 3

		FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	FJ	6	TEXAS	BR 2022(576)			SH 146
CK DN:	AT	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DW:	FJR	HOU	GALVESTON	0389	07	025	480
CK DW:	FJ						

3/23/2023 REVISED SHEET

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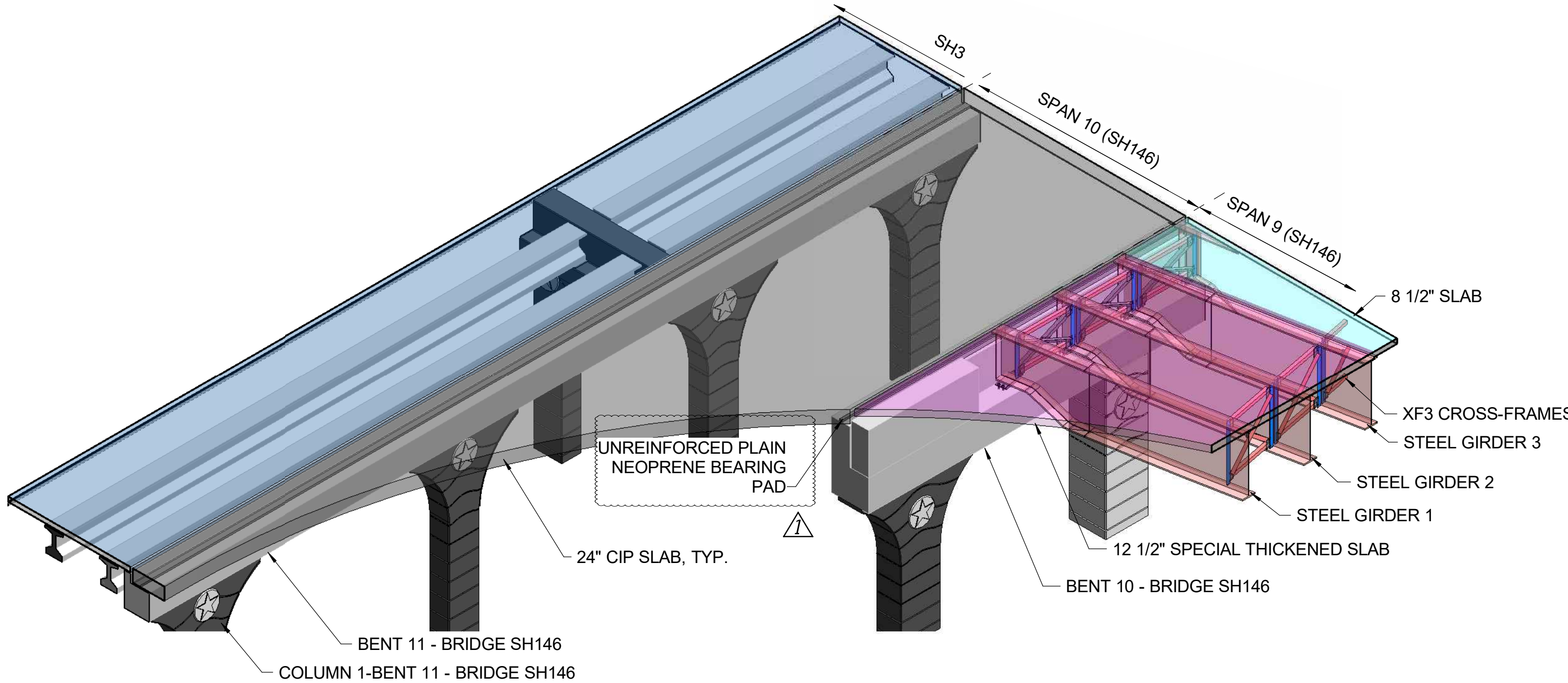
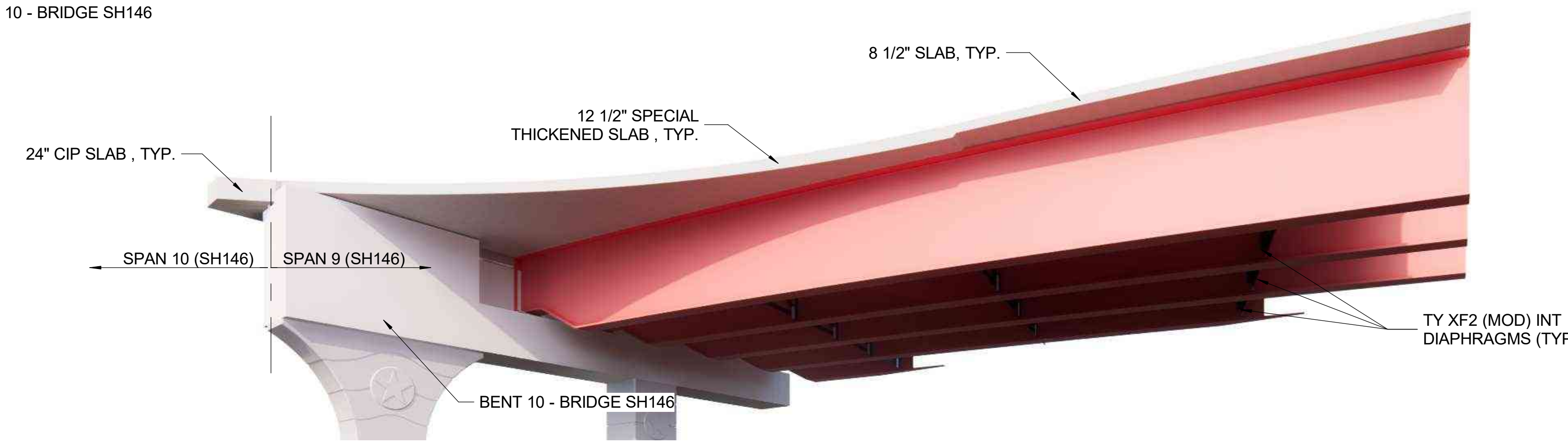


CIP SLAB SPAN 10 ISOMETRIC VIEW



SPAN 9 - BENT 10 ENDING STEEL PLATE GIRDER ISOMETRIC VIEW

STATE OF TEXAS
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3/23/2023

3D PEDESTRIAN VIEW

12 1/2" CIP SLAB , TYP.
8 1/2" CIP SLAB , TYP.
24" CIP SLAB , TYP.

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SH 146 AT SH 3
SH 146
T RAMP
3D RENDERING

SHEET 2 OF 2

DN:	JD	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	FJ	6	TEXAS	BR 2022(576)			SH 146
DW:	ND	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JD	HOU	GALVESTON	0389	07	025	488

⚠ 3/23/2023 REVISED SHEET

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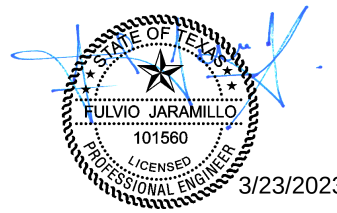
Item No.	0403 6001	0416 6004	0416 6008	0416 6010	0416 6096	0420 6004	0420 6013	0420 6037	0420 6099	0420 6082	0481 6014
Item	TEMPORARY SPL SHORING	DRILL SHAFT (36 IN)	DRILL SHAFT (60 IN)	DRILL SHAFT (72 IN)	DRILL SHAFT (90 IN)	CLA A CONC (MEDIAN)	CL C CONC (ABUT)	CL C CONC (COLUMN)	CL F CONC (FOOTING)(HPC)	CL F CONC (CAP)	PIPE (PVC) (SCH 40) (8 IN)
Unit	SF	LF	LF	LF	LF	CY	CY	CY	CY	CY	LF
Quantity	11,286.0	760.0 ⚠	1,164.0 ⚠	3,926 ⚠	816.0 ⚠	306.0	52.1	813.4	565.5	1533.5	667.0 ⚠

Item No.	0422 6001	0425 6039	0432 6001	0434 6003	0434 6011	0442 6001	0442 6009	0442 6010	0450 6023	0454 6018	0454 6019
Item	REINF CONC SLAB	PRESTR CONC GIRDER (TX54)	RIPRAP (CONC)(4 IN)	ELASTOMERIC BEARING (SPECIAL)	BEARING (EE9)	STR STEEL (PLATE GIRDER)	STR STEEL (DIAPHRAGM & STIFFENER)	STR STEEL (SHEAR CONNECTOR)	RAIL (TY SSTR)	SEALED EXPANSION JOINT (4 IN)(SEJ-M)	SEALED EXPANSION JOINT (5 IN)(SEJ-M)
Unit	SF	LF	CY	EA	EA	LB	LB	LB	LF	LF	LF
Quantity	133,908.0	9,097.00	68.4	10	20	5,107,934	541,797	18,264	2,887.7	643	95

BEARING SEAT ELEVATIONS

		BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5	BEAM 6	BEAM 7	BEAM 8	BEAM 9	BEAM 10	BEAM 11
BENT 1	(FWD)	16.029	16.206	16.383	16.560	16.737	16.914	16.737	16.560	16.384	16.207	16.030
BENT 2	(BK)	20.083	20.260	20.436	20.613	20.790	20.967	20.790	20.613	20.436	20.259	20.083
	(FWD)	20.261	20.437	20.614	20.791	20.968	21.145	20.968	20.791	20.614	20.437	20.261
BENT 3	(BK)	23.810	23.987	24.164	24.341	24.518	24.694	24.518	24.341	24.164	23.987	23.810
	(FWD)	23.967	24.144	24.321	24.498	24.675	24.852	24.675	24.498	24.321	24.144	23.967
BENT 4	(BK)	27.077	27.254	27.431	27.607	27.784	27.961	27.784	27.607	27.431	27.254	27.077
	(FWD)	27.213	27.390	27.567	27.744	27.921	28.097	27.921	27.744	27.567	27.390	27.213
BENT 5	(BK)	29.883	30.059	30.236	30.413	30.590	30.767	30.590	30.413	30.236	30.059	29.883
	(FWD)	29.998	30.175	30.352	30.529	30.705	30.882	30.705	30.529	30.352	30.175	29.998
BENT 6	(BK)	32.227	32.404	32.581	32.758	32.935	33.111	32.935	32.758	32.581	32.404	32.227
	(FWD)	32.322	32.499	32.676	32.853	33.029	33.206	33.029	32.853	32.676	32.499	32.322
BENT 7	(BK)	34.111	34.288	34.465	34.642	34.818	34.995	34.818	34.642	34.465	34.288	34.111
	(FWD)	34.185	34.362	34.539	34.716	34.892	35.069	34.892	34.716	34.539	34.362	34.185
BENT 8	(BK)	35.521	35.698	35.874	36.051	36.228	36.405	36.228	36.051	35.874	35.698	35.521
	(FWD)	32.647	32.842	33.036	33.231	33.426	33.427	33.233	33.039	32.846	32.653	
BENT 9	(B0)	30.912	31.036	31.176	31.311	31.459	31.422	31.187	30.949	30.709	30.477	
BENT 10	(BK)	36.315	36.320	36.326	36.343	36.346	36.339	36.315	36.288	36.262	36.236	



3/23/2023

HL93 LOADING

SCALE: N.T.S.

 Texas Department of Transportation

DECON Structural Engineering

2180 NORTH LOOP WEST
SUITE 221, HOUSTON TX
1+832 917 0912
WWW.DECONENG.COM
TBPE FIRM No 16156

SH 146 AT SH 3

SH 146

ESTIMATED QUANTITIES & BEARING SEAT ELEVATIONS

SHEET 1 OF 1

		FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	AT	6	TEXAS	BR 2022(576)			SH 146
DW:	FJR	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DN:	FJ						
CK DW:	FJ	HOU	GALVESTON	0389	07	025	491

⚠ 3/23/2023 REVISED SHEET

SHTW*E
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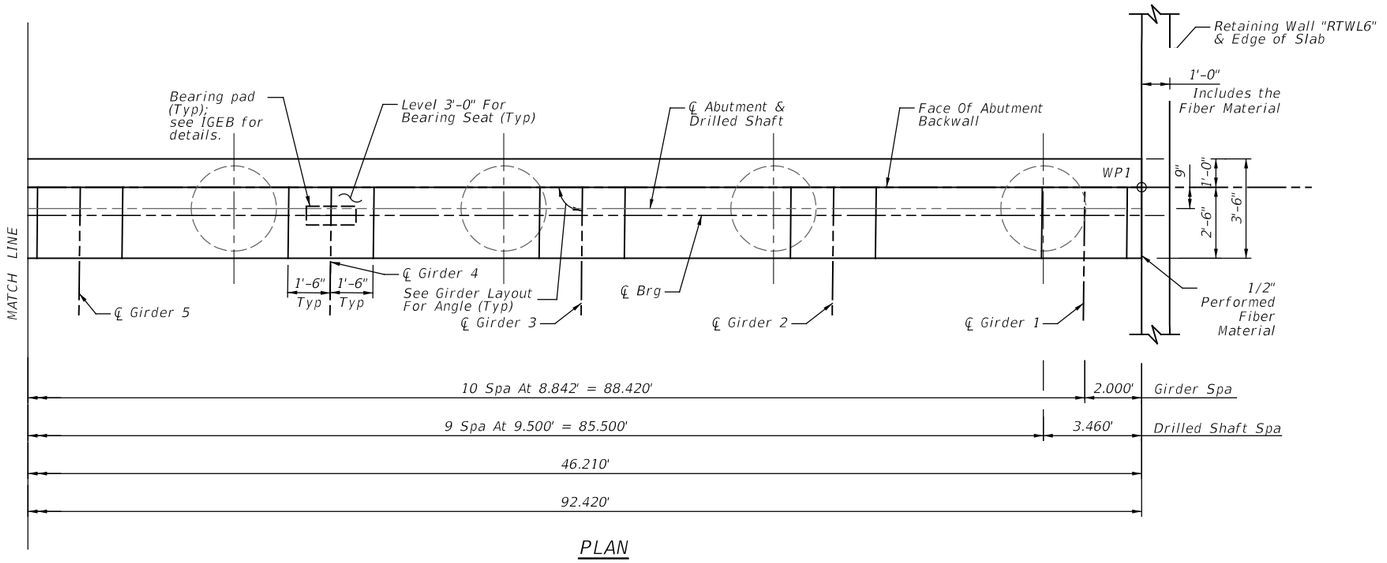
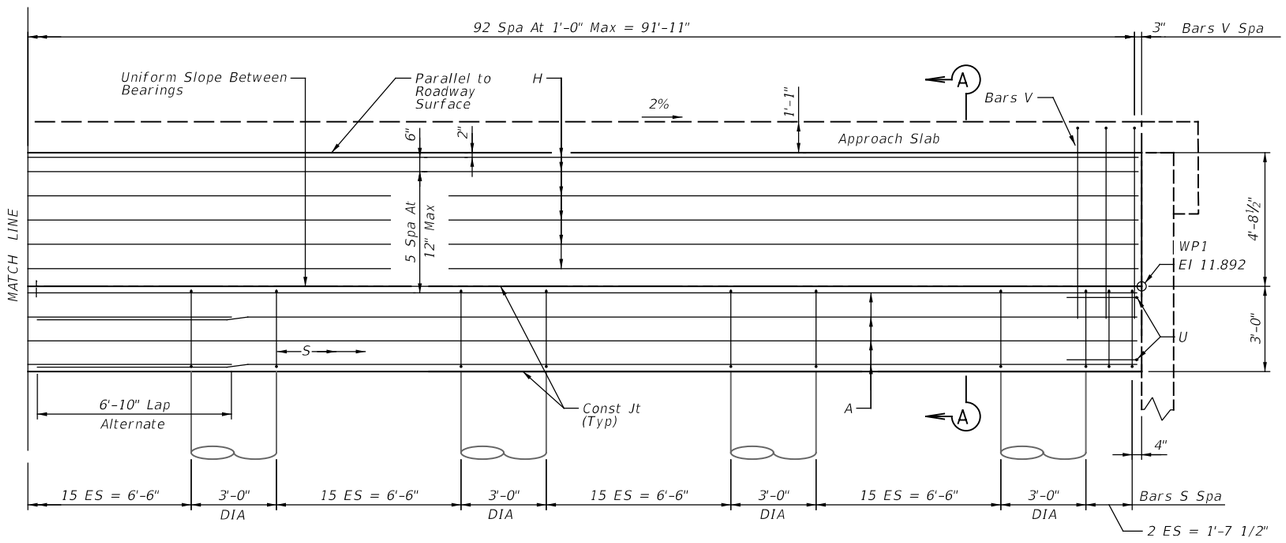
$PLOTTER$



PLAN



ELEVATION

TABLE OF ESTIMATED QUANTITIES

BAR	NO.	SIZE	LENGTH	WEIGHT
A1	18	#11	60'-0"	5,738
A2	18	#11	38'-11"	3,722
H1	12	#6	60'-0"	1,081
H2	12	#6	34'-11"	629
S	150	#6	12'-6"	2,816
U	4	#6	8'-0 1/2"	48
V	93	#5	15'-6"	1,503
ITEM			UNIT	QUANTITY
Total Steel			LB	15,539
CLASS "C" CONC (ABUT)			CY	52.1

1

STATE OF TEXAS
FULVIO JARAMILLO
101560
LICENSED PROFESSIONAL ENGINEER
3/23/2023

HL93 LOADING

SCALE: 3/16" = 1'

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1+832 917 0912
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TBPE FIRM No 16156

SH 146 AT SH 3
SH 146

ABUTMENT 1 DETAILS

SHEET 2 OF 3

DN:	JD	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	FJ	6	TEXAS	BR 2022(576)				SH 146
DW:	SA	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	FJ	HOU	GALVESTON	0389	07	025		501

1 3/23/2023 REVISED SHEET

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3/23/2023 11:52:33 AM
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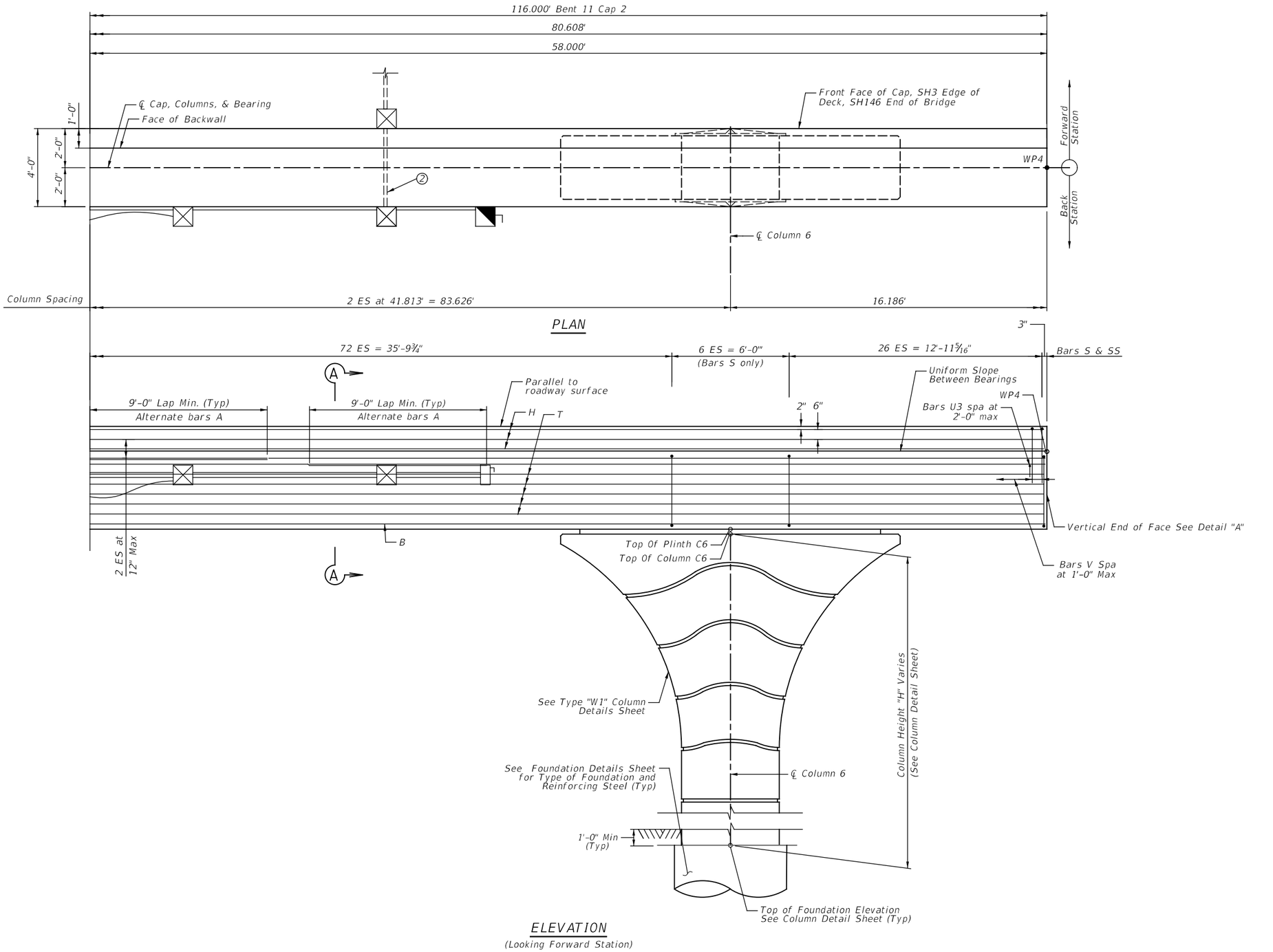
$PLOTTER$

Bent	WP1	WP2	WP3	WP4	WP5	Top of Plinth						Top of Column					
						C1	C2	C3	C4	C5	C6	C1	C2	C3	C4	C5	C6
11	42.352	43.092	43.093	42.908	43.135	37.847	38.570	39.034	39.113	39.106	38.879	37.528	38.276	38.770	38.854	38.865	38.658



Legend

- Proposed Junction Box
- Proposed Fused Disconnect
- Proposed U/P (Typ 1) (150W Q) LED
- Proposed Conduit (RM)
- Proposed Conduit (Trench/Embed)
- Proposed Conduit (LTFM)
- (1) See Framing Plan sheets for Girder angles
- (2) See Proposed Illumination Layout sheets for connection details
- (3) Adjust Reinforcing as necessary to accommodate 8" PVC pipe. See "Bridge Deck Drain Details" for Additional Information.

STATE OF TEXAS
FULVIO JARAMILLO
101560
LICENSED
PROFESSIONAL ENGINEER
3/23/2023

HL93 LOADING

SCALE: 3/16" = 1'

 Texas Department of Transportation

DECON Structural Engineering
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SH 146 AT SH 3
SH 146
BENT 11 DETAILS

SHEET 4 OF 6

DN:	JD	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	FJ	6	TEXAS	BR 2022(576)			SH 146
DW:	AV	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	FJ	HOU	GALVESTON	0389	07	025	535

⚠ 3/23/2023 REVISED SHEET

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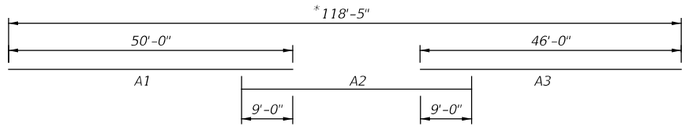
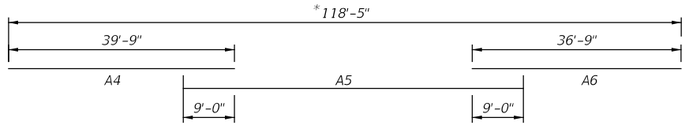
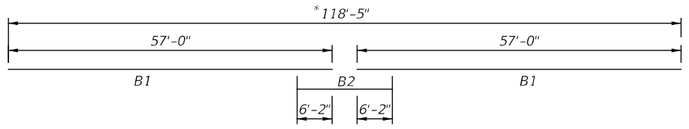
$PLOTTER$

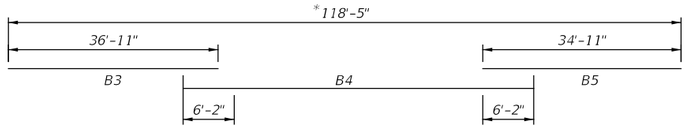




BARS A - CAP 1

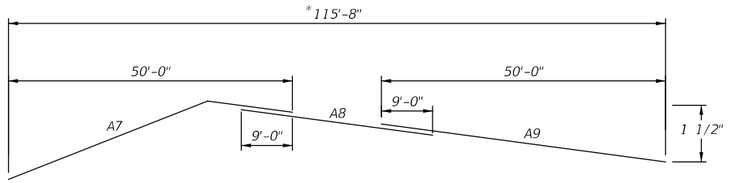
* Dimension does not include lap lengths

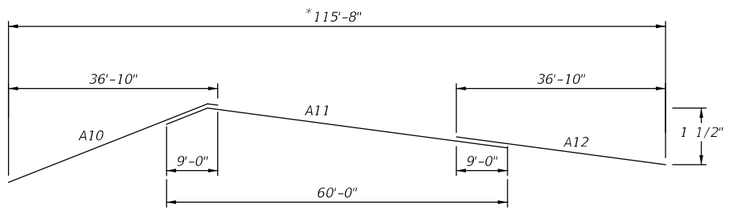




BARS B - CAP 1

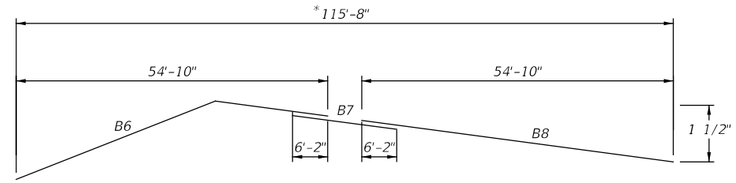
* Dimension does not include lap lengths

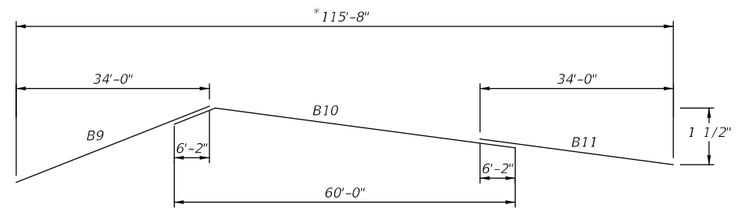




BARS A - CAP 2

* Dimension does not include lap lengths





BARS B - CAP 2

* Dimension does not include lap lengths

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications, 9th Edition (2020) and TxDOT Bridge Design Manual (Nov 2021).

Chamfer all exposed edges 3/4" unless otherwise noted.

Cover dimensions are clear dimensions, unless noted otherwise.

Reinforcing bar dimensions shown are out to out of bar.

For foundation type see "Foundation Layout" sheet.

MATERIAL NOTES:

All Reinforcing steel shall be Grade 60.

Concrete Strength, f'c = 5,000 psi.

TABLE OF ESTIMATED QUANTITIES

BAR	NO.	SIZE	LENGTH	WEIGHT
A1	7	#11	50'-0"	1,860
A2	7	#11	40'-5"	1,503
A3	7	#11	46'-0"	1,711
A4	7	#11	39'-9"	1,478
A5	7	#11	59'-11"	2,228
A6	7	#11	36'-9"	1,367
A7	7	#11	50'-0"	1,860
A8	7	#11	33'-8"	1,252
A9	7	#11	50'-0"	1,860
A10	7	#11	36'-10"	1,370
A11	7	#11	60'-0"	2,231
A12	7	#11	36'-10"	1,370
B1	8	#11	57'-0"	2,423
B2	4	#11	16'-9"	356
B3	3	#11	36'-11"	588
B4	3	#11	58'-11"	939
B5	3	#11	34'-11"	557
B6	4	#11	54'-10"	1,165
B7	4	#11	18'-4"	390
B8	4	#11	54'-10"	1,165
B9	3	#11	34'-0"	542
B10	3	#11	60'-0"	956
B11	3	#11	34'-0"	542
D	10	#6	1'-6"	23
H1-1	6	#6	60'-0"	541
H2-1	12	#6	31'-4.5"	566
H1-2	6	#6	60'-0"	541
H2-2	6	#6	57'-10"	521
S	436	#6	16'-8"	10,915
SS	406	#6	13'-2"	8,029
T1-1	10	#6	60'-0"	901
T2-1	20	#6	31'-0 1/2"	932
T1-2	10	#6	60'-0"	901
T2-2	10	#6	57'-6"	864
U1	12	#6	10'-0"	180
U2	16	#6	10'-0"	240
U3	120	#4	4'-8"	374
V	237	#5	6'-7"	1,627
ITEM			UNIT	QUANTITY
Total Steel			LB	56,867
CLASS "F" CONC (CAP)			CY	150.3

Reinforcing steel quantity is for contractor information only.

1 3/23/2023 REVISED SHEET

HL93 LOADING

3/23/2023

SCALE: N.T.S.

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TBPE FIRM No 16156

SH 146 AT SH 3

SH 146

BENTS 11 DETAILS

SHEET 6 OF 6

DN:	JD	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	FJ	6	TEXAS	BR 2022(576)				SH 146
DW:	AV	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	FJ	HOU	GALVESTON	0389	07	025		537

SHTW=E
3/23/2023 12:00:50 PM
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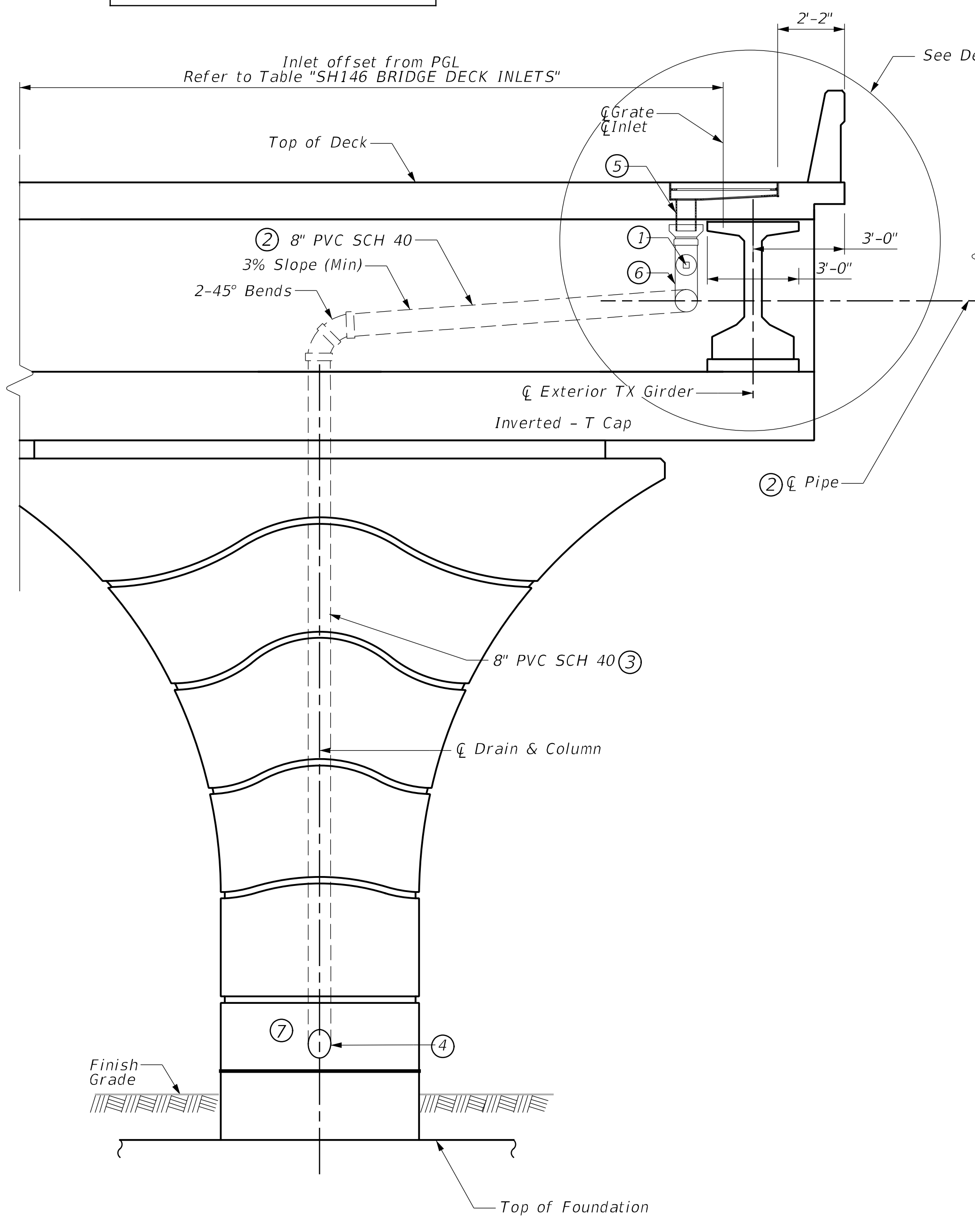
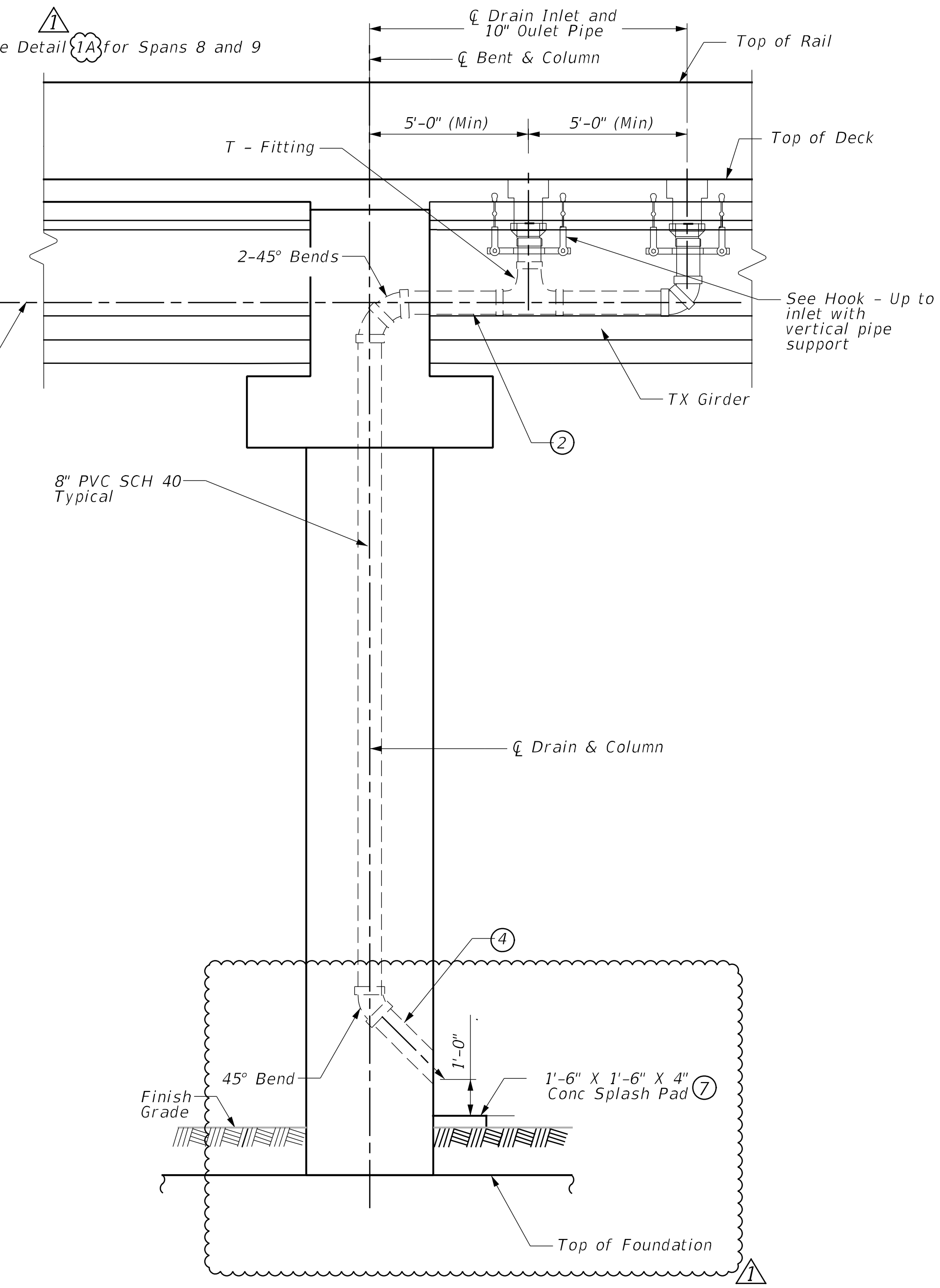
$PLOTTER$

Refer to Drainage Details
For Drain Grate Station Placement.
Right Side Shown, Left Side Similar.

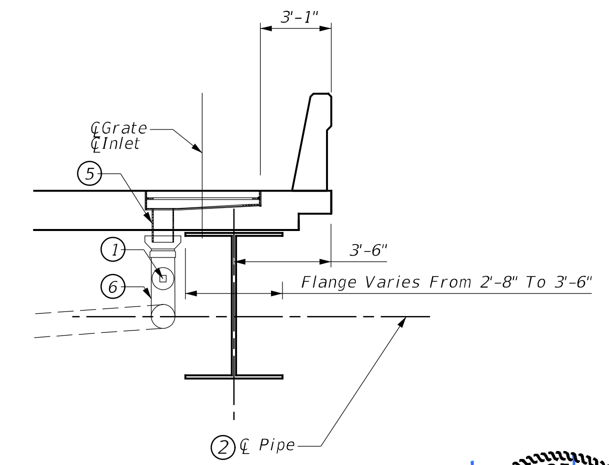


ELEVATION



SIDE VIEW

1. Provide Cleanout
2. Adjust bent cap reinforcing steel spacing to clear drain pipe. A maximum of one cap skin reinforcement bar (Bar T) may be cut to eliminate interference with drain pipe penetration. No main bent cap reinforcing steel (Bar A or B) shall be cut.
3. Refer to Column Details to adjust column vertical bars to fit drain pipe in column.
4. See Table for Orientation of outlet, forward or back of column.
5. Drain outlet pipe maybe trimmed as needed.
6. Provide PVC Flexible Expansion Joint at bents with expansions joints. Use EBAA Iron Inc. Flex - Tend Joint or equivalent. Payment is subsidiary to PVC pipe.
7. Omit Splash Pad Over Water. End Drain 1ft Above foundation Over Water.



DETAIL 1A

STATE OF TEXAS
FULVIO JARAMILLO
101560
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PROFESSIONAL ENGINEER
3/23/2023

HL93 LOADING

SCALE: N.T.S.

 Texas Department of Transportation

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TBPE FIRM No 16156

SH 146 AT SH 3
SH 146
BRIDGE DRAIN
DETAILS

SHEET 1 OF 3

DN:	FJ	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	AT	6	TEXAS	BR 2022(576)			SH 146
DW:	FJR	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	FJ	HOU	GALVESTON	0389	07	025	574

3/23/2023 REVISED SHEET

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3/23/2023 12:08:30 PM
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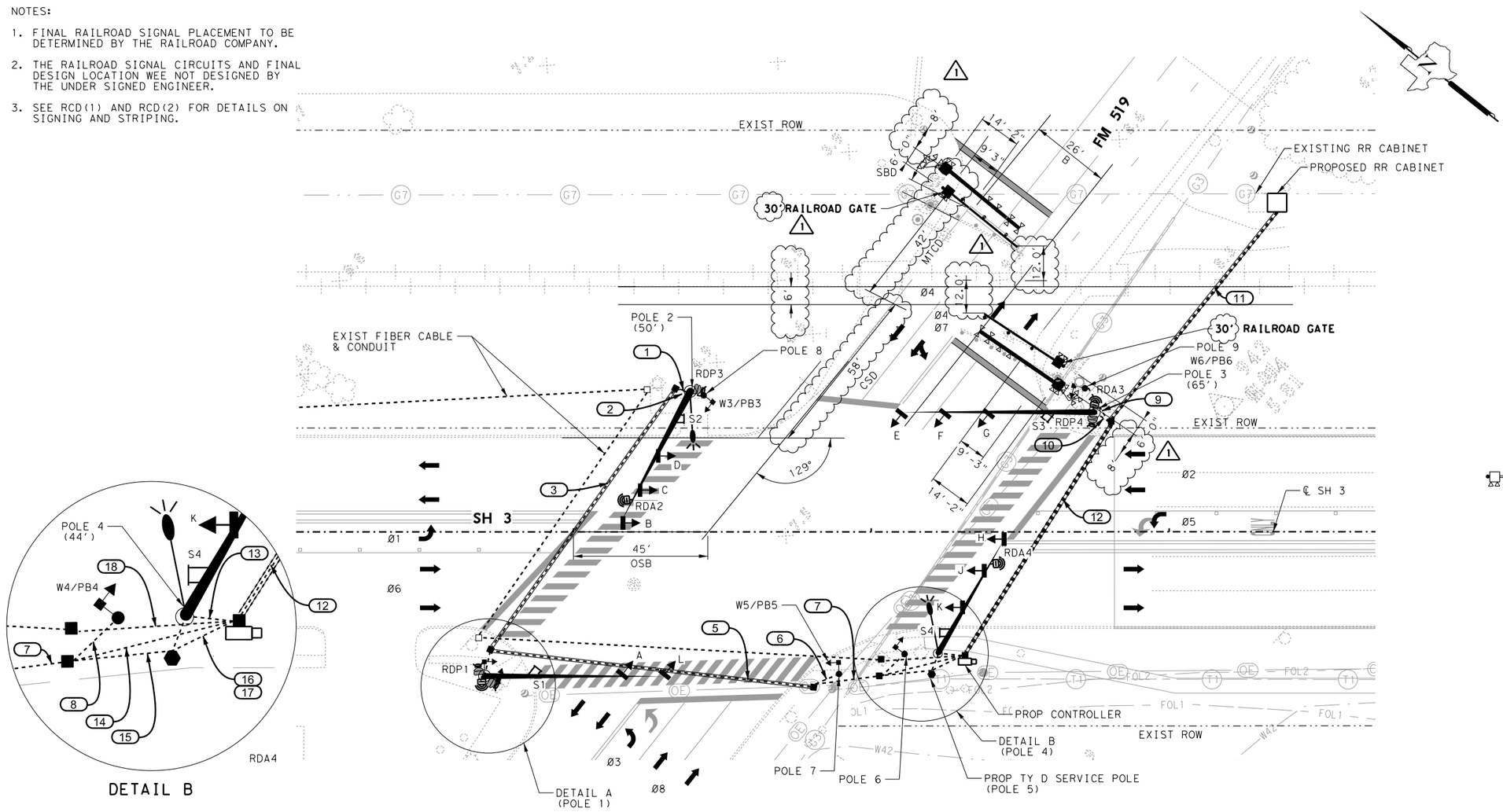
$PLOTTER$

NOTES:

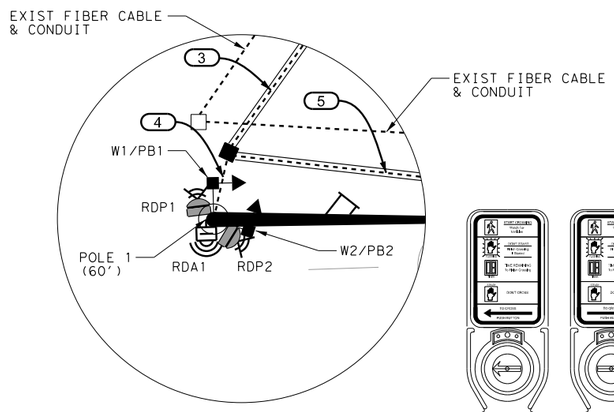
1. FINAL RAILROAD SIGNAL PLACEMENT TO BE DETERMINED BY THE RAILROAD COMPANY.
2. THE RAILROAD SIGNAL CIRCUITS AND FINAL DESIGN LOCATION WEE NOT DESIGNED BY THE UNDER SIGNED ENGINEER.
3. SEE RCD(1) AND RCD(2) FOR DETAILS ON SIGNING AND STRIPING.

LEGEND (PROPOSED)

- SIGNAL POLE AND MAST ARM
- SERVICE POLE ASSEMBLY
- TRAFFIC SIGNAL HEAD
- RADAR DETECTOR PRESENCE (RDP)
- RADAR DETECTOR ADVANCE (RDA)
- JUNCTION BOX
- GROUND BOX
- FULL-ACTUATED CONTROLLER CABINET W/BATTERY BACKUP UNIT
- LUMINAIRE, 8′ ARM ONLY
- CONDUIT (TRENCH)
- CONDUIT (BORE)
- CONDUIT (RMC)
- CONDUIT (PVC)
- OVERHEAD STREET NAME SIGN
- (X) WIRE RUN DESIGNATION
- DIRECTION OF TRAFFIC FLOW
- MAST FLASHER (BY OTHERS) PAIR
- CANTILEVER (BY OTHERS)
- GATE ASSEMBLY (BY OTHERS)



DETAIL B



DETAIL A

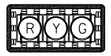
Pb1, Pb3 Pb4, Pb6 — Pb2, Pb5

PROPOSED SIGNAL HEAD AND SIGN SCHEDULE

PEDESTRIAN SIGNAL HEAD

W1-W6

3-SECTION SIGNAL HEAD



A, C, D, F G, J, K

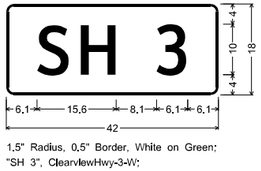
4-SECTION SIGNAL HEAD

B, E, H

4-SECTION SIGNAL HEAD

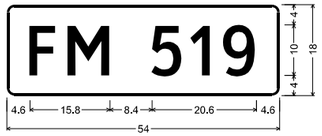
L

S1, S3



1.5" Radius, 0.5" Border, White on Green; "SH 3", ClearviewHwy-3-W;

S2, S4



1.5" Radius, 0.5" Border, White on Green; "FM 519", ClearviewHwy-3-W;

STATE OF TEXAS
VICTOR M. IRACHETA
84689
LICENSED
PROFESSIONAL ENGINEER

3/23/2023

0 20 40

SCALE: 1"=40′

NO.	DATE	REVISION	APPROV.
1	3/23/2023	REVISED PLAN LABELS	

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

SH 146
FM 519 TO LP 197

PROPOSED SIGNAL LAYOUT SH 3 AT FM 519

SHEET 1 OF 1

DN:	VI	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	RC	6	TEXAS					SH 146
DW:	MM	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	TL	HOU	GALVESTON	0389	07	025		621

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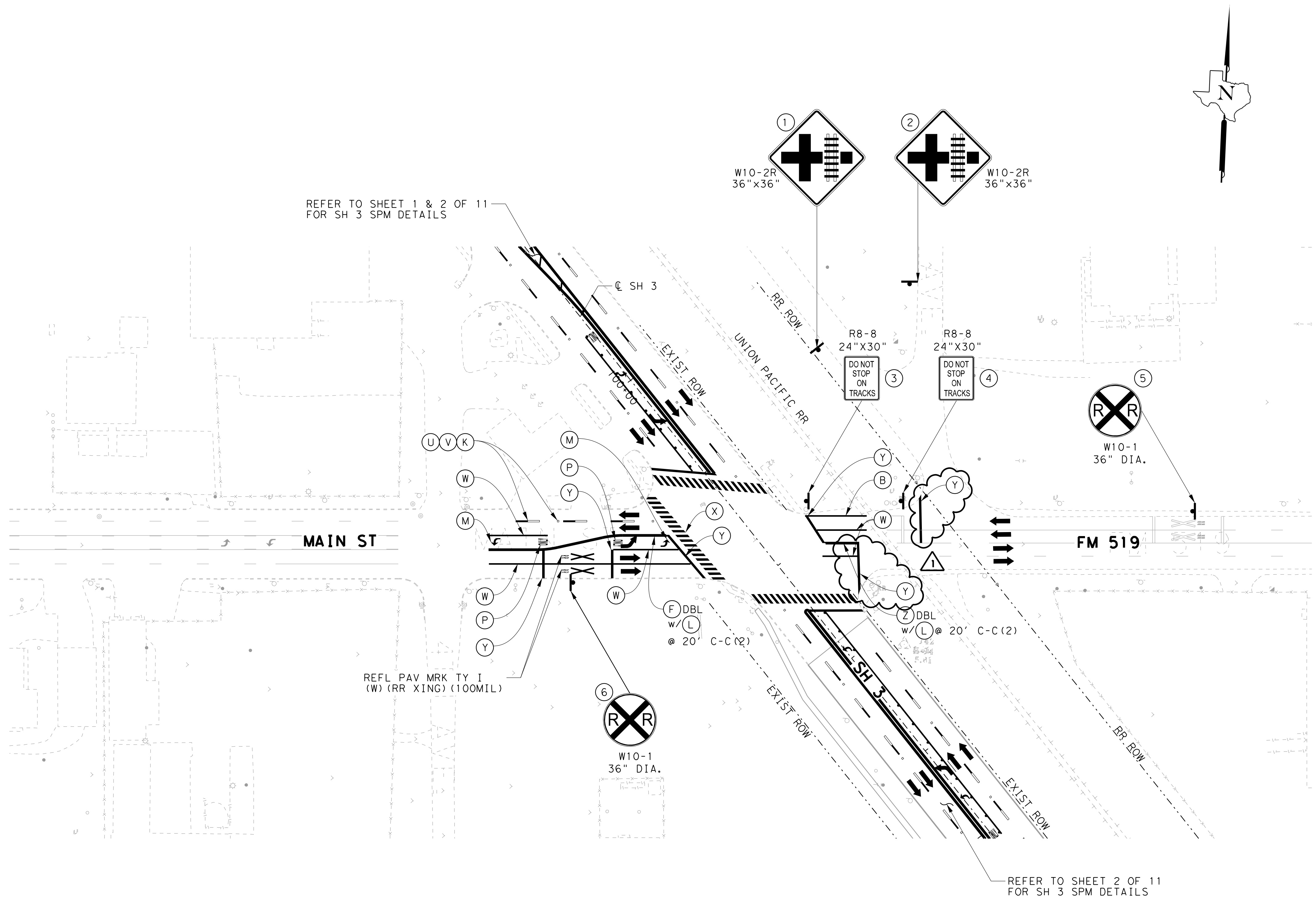

LEGEND:

- (A) MULTIPOLYMER PAV MRK(W)(6")(BRK)
- (B) MULTIPOLYMER PAV MRK(W)(6")(SLD)
- (C) MULTIPOLYMER PAV MRK(W)(8")(SLD)
- (D) MULTIPOLYMER PAV MRK(W)(12")(SLD)
- (E) MULTIPOLYMER PAV MRK(W)(24")(SLD)
- (F) MULTIPOLYMER PAV MRK(Y)(6")(SLD)
- (G) MULTIPOLYMER PAV MRK(Y)(8")(SLD)
- (H) MULTIPOLYMER PAV MRK(Y)(24")(SLD)
- (K) REFL PAV MRKR TY II-C-R
- (L) REFL PAV MRKR TY II-A-A
- (M) PREFAB PAV MRK TY C (W) (ARROW)
- (P) PREFAB PAV MRK TY C (W) (WORD)
- (S) MULTIPOLYMER PAV MRK (W)(6")(DOT)
- + (T) MULTIPOLYMER PAV MRK (BLK)(6")(BRK)
- (U) RE PM W/RET REQ TY I (W)4"(BRK)(100MIL)
- (V) REFL PAV MRKR TY I (BLK) 4" (SHDW) (100MIL)
- (W) REFL PAV MRKR TY I (W) 8" (SLD) (100MIL)
- (X) REFL PAV MRKR TY I (W) 12" (SLD) (100MIL)
- (Y) REFL PAV MRKR TY I (W) 24" (SLD) (100MIL)
- (Z) RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)
- (AA) RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)
- (AB) REFL PAV MRKR TY I (Y) 24" (SLD) (100MIL)
- (AC) PREFAB PAV MRK TY B (W) (36") (YLD TRI)
- (AD) MULTIPOLYMER PAV MRK(Y)(6")(BRK)
- (AE) RE PM W/RET REQ TY I (W)4"(SLD)(100MIL)
- PROP SMALL SIGN
- PROP LARGE SIGN
- (D-SW)SZ(BR)CTB
- (RL) RELOCATED SMALL SIGN
- (RM) REMOVE SMALL SIGN
- (ER) SMALL SIGN TO REMAIN
- (#) PROPOSED SMALL SIGN
- [RL] RELOCATED LARGE SIGN
- [RM] REMOVE LARGE SIGN
- [ER] LARGE SIGN TO REMAIN
- [#] PROPOSED LARGE SIGN
- TRAFFIC FLOW DIRECTION
- + REFER TO STANDARD (PM(CLL)-14) FOR STRIPING DETAILS.

0 25 50 100
SCALE: 1"=100'

NO.	DATE	REVISION	APPROV.
1	3/23/2023	REVISED LAYOUT	

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Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

SH 146
FM 519 TO LP 197

SIGNING AND PAVEMENT MARKING LAYOUT
MAIN ST-FM 519 (INTERSECT)

SHEET 11 OF 11

		FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	VI	6	TEXAS				SH 146
CK DN:	RC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DW:	MM	HOU	GALVESTON	0389	07	025	696
CK DW:	TL						

STATE OF TEXAS
VICTOR M. IRACHETA
84689
LICENSED PROFESSIONAL ENGINEER

3/23/2023

⚹ SEE NOTE ON SHEET 1 OF 11

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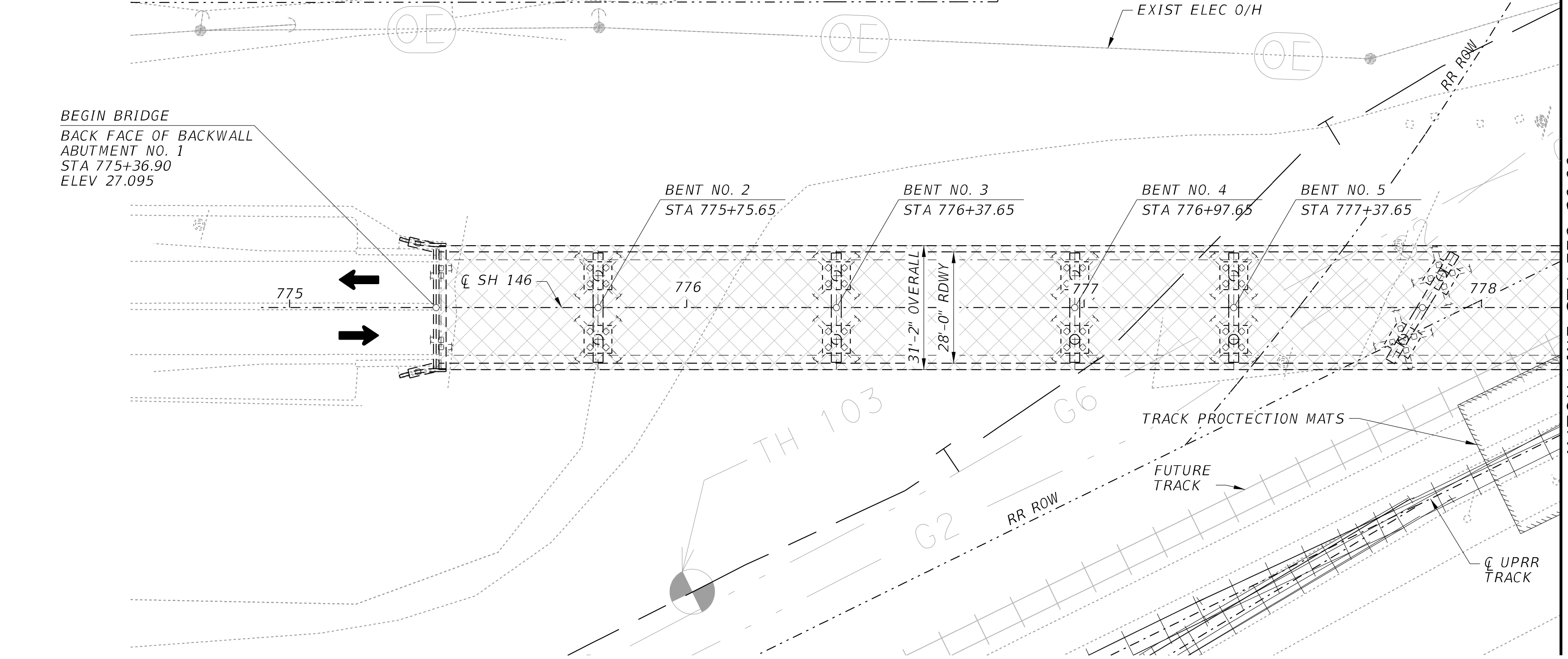
*CONTRACTOR TO PROVIDE TEMPORARY ILLUMINATION DURING BRIDGE DEMOLITION PROCESS.

*TRACK MONITORING WILL BE REQUIRED THROUGHOUT THE BRIDGE DEMOLITION PROCESS TO ENSURE EXISTING RAILROAD TRACKS ARE NOT ADVERSELY IMPACTED.

*FOLLOW THE LATEST RAILROAD GUIDELINES FOR WORKING AND DEMOLISHING STRUCTURES WITHIN RAILROAD ROW.



NOTE: STATIONING SHOWN IS FROM EXISTING AS-BUILT. (CSJ: 0389-07-006).

PLAN

0 20 40
SCALE: 1"=40'

LEGEND:

BRIDGE STRUCTURE TO BE REMOVED.

(1) REMOVE INTERIOR BENTS FOR EXISTING STRUCTURE TO TOP OF EXISTING FOOTING.

(2) REMOVE ABUTMENTS FOR EXISTING STRUCTURE TO 2'-0" BELOW FINISHED GRADE.

(3) REMOVAL WITHIN RAILROAD ROW. SEE SHEET 2 OF 3 FOR ADDITIONAL REMOVAL REQUIREMENTS.

GENERAL NOTES:

FOR EXISTING BRIDGE AS-BUILT PLANS SEE CSJ 0389-07-006. REMOVE EXISTING BRIDGE IN ACCORDANCE WITH ITEM 496, "REMOVING STRUCTURES"EXCEPT AS NOTED. MAINTAIN THE STABILITY OF THE PARTIALLY DEMOLISHED STRUCTURE THROUGHOUT THE DEMOLITION PROCESS. THE ENTIRE REMOVED STRUCTURE WILL BECOME THE PROPERTY OF THE CONTRACTOR.

REMOVE SUPERSTRUCTURE INCLUDING BEAMS, BEARINGS, DECK AND RAIL. REMOVE EXISTING BRIDGE SUBSTRUCTURE AS FOLLOWS:

1.REMOVE EXISTING INTERIOR BENT CAPS AND COLUMNS TO TOP OF EXISTING FOOTING. PROVIDE 1'-0"MINIMUM EARTH COVER TO FINISHED GRADE.

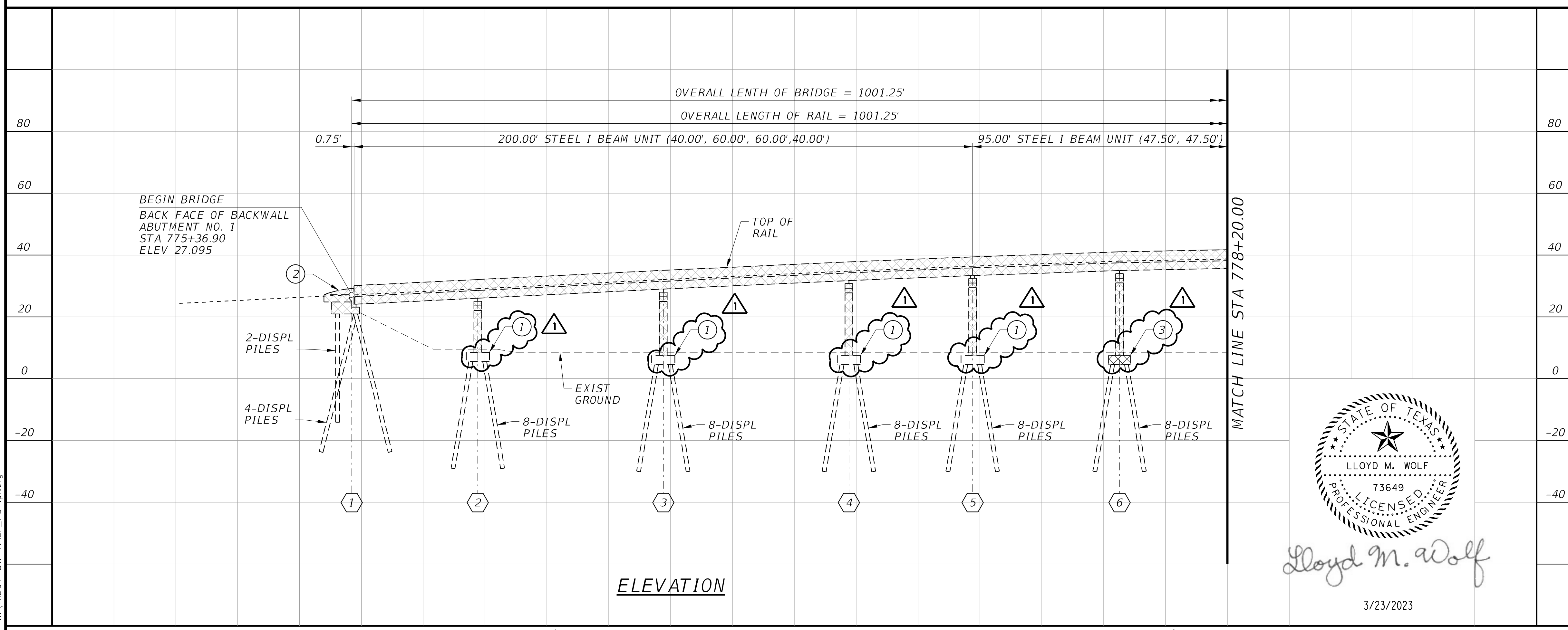
2.REMOVE EXISTING ABUTMENT CAPS AND PILING TO 2'-0" BELOW FINISHED GRADE.

REGARDLESS OF THE METHOD ELECTED, THE CONTRACTOR MUST SUBMIT DEMOLITION PLANS TO TXDOT WITHIN 6 MONTHS OFAWARD OF CONTRACT. AN ALTERNATE METHOD OF DEMOLITION MAY BE UTILIZED.

EXISTING STEEL BRIDGE MEMBERS ARE COATED WITH LEAD PAINT. THE LEAD PAINT WILL BE REMOVED BY THE TEXAS DEPARTMENT OF TRANSPORTATION UNDER A SEPARATE CONTRACT AT ALL CUT LOCATIONS WHILE THE DECK IS IN PLACE. THE CONTRACTOR MUST IDENTIFY CUT LINES IN THE DEMOLITION PLAN FOR PAINT REMOVAL. CUTS MAY ONLY BE MADE WHERE PAINT HAS BEEN REMOVED. BOLTED CONNECTIONS MAY BE DISASSEMBLED WITHOUT REMOVING LEAD PAINT.

THE CONTRACTOR MUST COORDINATE WITH TXDOT AND THE UNION PACIFIC RAILROAD FOR WORK WINDOWS, TRACK PROTECTION, RR FLAGGING, EQUIPMENT PLACEMENT AND DEBRIS REMOVAL ON RR ROW. DEMOLITION OPERATIONS MUST NOT DAMAGE RR PROPERTY OR IMPEDE RR OPERATIONS.

NO.	DATE	REVISION	APPROV.
1	3/23/2023	ADDED NOTE AND LABELS	



ELEVATION

STATE OF TEXAS
LLOYD M. WOLF
73649
LICENSED PROFESSIONAL ENGINEER

Lloyd M. Wolf

3/23/2023

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ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

SH 146
FM 519 TO LP 197
NEW HIGHWAY OVERPASS
TCT DOT 980 293J RRMP 4.102
EXISTING HIGHWAY OVERPASS
TO BE CLOSED 943 616D RRMP 4.090
SYSTEM SUBDIVISION
EXISTING AT-GRADE CROSSING
TO BE CLOSED 846 152K RRMP 4.090
SYSTEM SUBDIVISION
NEW HIGHWAY OVERPASS
UPRR DOT 975 282L RRMP 3.997
UPRR DOT 975 282L RRMP 37.099
EXISTING HIGHWAY OVERPASS
TO BE CLOSED 758 783U RRMP 3.930
TEXAS CITY IND LD SUBDIVISION
TO BE CLOSED 859 512T RRMP 37.205
GALVESTON SUBDIVISION

BRIDGE DEMOLITION LAYOUT SH 146 AT UPRR OVERPASS

SHEET 1 OF 3

DN:	LWM	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	LWM	6	TEXAS					SH 146
DW:	GWS	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	LWM	HOU	GALVESTON		0389	07	025	745

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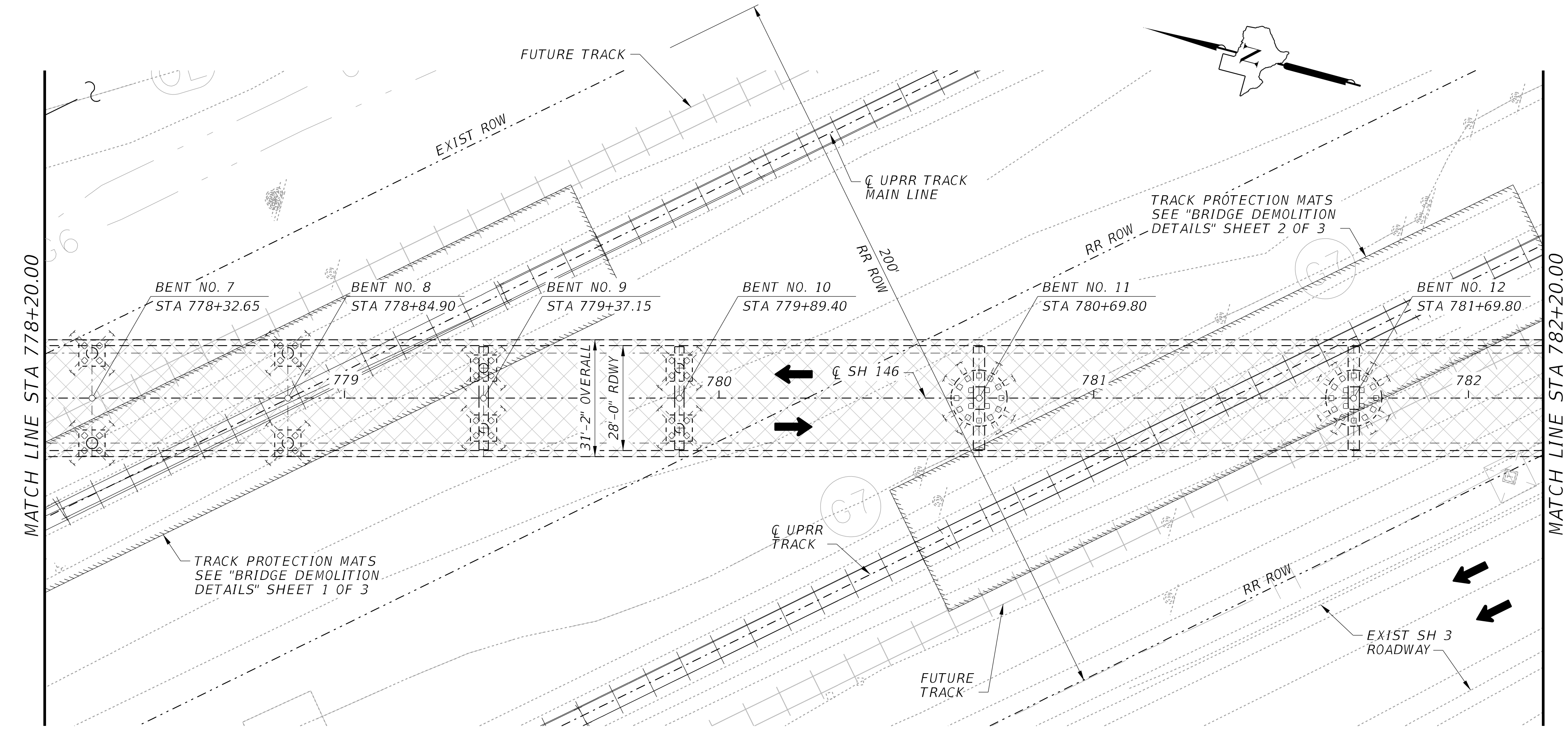
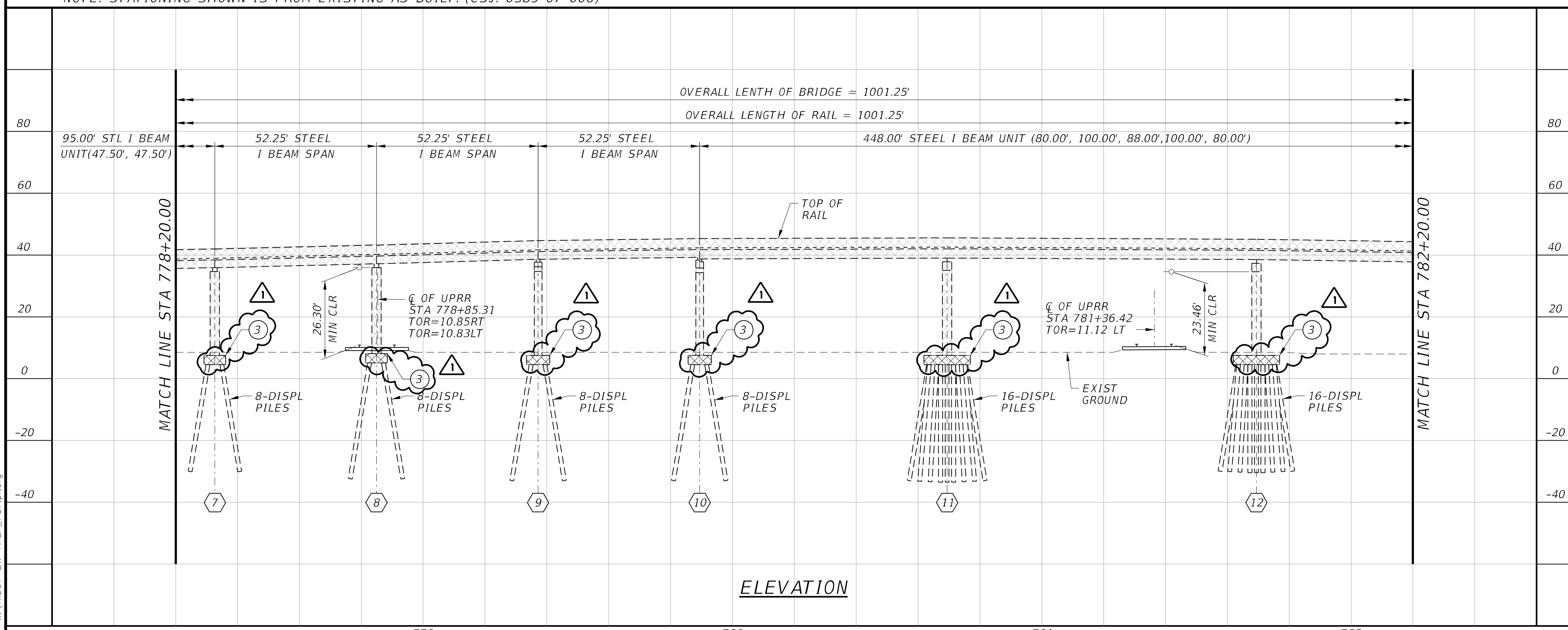
SH146_BR_LY_DEMO_01.dgn



PLAN

NOTE: STATIONING SHOWN IS FROM EXISTING AS-BUILT. (CSJ: 0389-07-006)

0 20 40
SCALE: 1"=40'



ELEVATION

LEGEND:

BRIDGE STRUCTURE TO BE REMOVED.

1. REMOVE INTERIOR BENTS FOR EXISTING STRUCTURE TO TOP OF EXISTING FOOTING.
2. REMOVE ABUTMENTS FOR EXISTING STRUCTURE TO 2'-0" BELOW FINISHED GRADE.
3. REMOVAL WITHIN RAILROAD ROW.

REMOVAL REQUIREMENTS WITHIN UPRR & TCTRR ROW

1. FOOTINGS SHALL BE REMOVED A MINIMUM OF 3 FEET BELOW EXISTING GROUND LINE. WHEN EXCAVATING NEAR THE TRACKS, TRACK SHIELDING AND PROTECTION SHALL BE REQUIRED AS DIRECT BY UPRR.
2. FILL MATERIAL MUST MEET UPRR REUIREMENTS.
3. ALTERNATIVELY THE CONTRACTOR CAN PULVERIZE THE FOOTING IN PLACE WITHOUT EXCAVATION.
4. THE PULVERIZED CONCRETE RUBBLE SHALL BE A MAXIMUM SIZE OF 4-INCH DIAMETER, THE APPROXIMATE SIZE OF A SOFTBALL.
5. TRACK MONITORING SHALL BE REUIRED DURING THE PULERIZATION PROCESS.
6. TEMPORARY ILLUMINATION SHALL BE REQUIRED FOR THE DURATION OF DEMOLITION PROCESS.

STATE OF TEXAS
LLOYD M. WOLF
73649
LICENSED
PROFESSIONAL ENGINEER

Lloyd M. Wolf
3/23/2023

NO.	DATE	REVISION	APPROV.
1	3/23/2023	ADDED NOTES AND LABELS	

 Texas Department of Transportation

ENTECH CIVIL ENGINEERS, INC
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281-945-0081 FX

SH 146
FM 519 TO LP 197
NEW HIGHWAY OVERPASS
TCT DOT 980 293J RRMP 4.102
EXISTING HIGHWAY OVERPASS
TO BE CLOSED 943 616D RRMP 4.090
SYSTEM SUBDIVISION
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TO BE CLOSED 758 783U RRMP 3.930
TEXAS CITY IND LD SUBDIVISION
TO BE CLOSED 859 512T RRMP 37.205
GALVESTON SUBDIVISION

BRIDGE DEMOLITION LAYOUT SH 146 AT UPRR OVERPASS

SHEET 2 OF 3

		FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	LWM	6	TEXAS				SH 146
CK DN:	LWM	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DW:	GWS	HOU	GALVESTON	0389	07	025	746
CK DW:	LWM						

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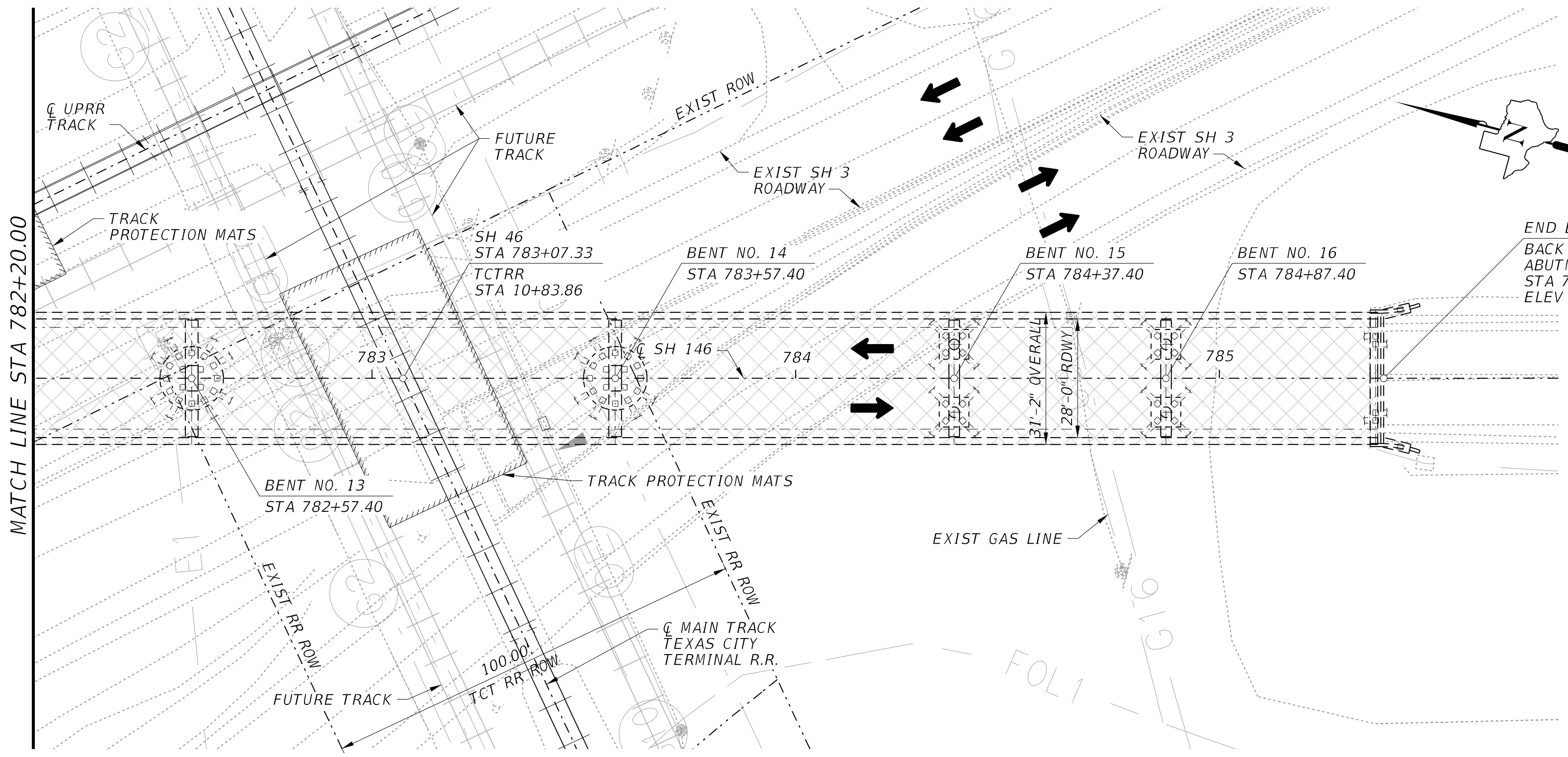
LEGEND:

BRIDGE STRUCTURE TO BE REMOVED.

(1) REMOVE INTERIOR BENTS FOR EXISTING STRUCTURE TO TOP OF EXISTING FOOTING.

(2) REMOVE ABUTMENTS FOR EXISTING STRUCTURE TO 2'-0" BELOW FINISHED GRADE.

(3) REMOVAL WITHIN RAILROAD ROW. SEE SHEET 2 OF 3 FOR ADDITIONAL REMOVAL REQUIREMENTS.



PLAN

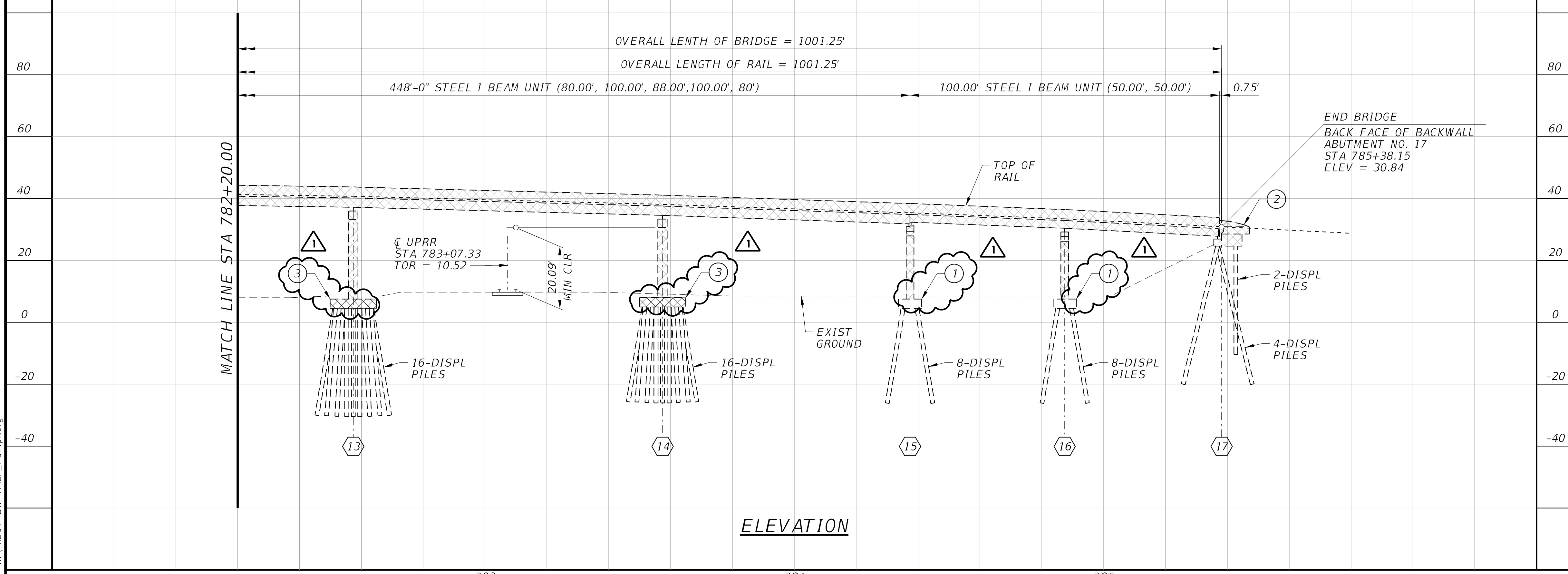
NOTE: STATIONING SHOWN IS FROM EXISTING AS-BUILT. (CSJ: 0389-07-006)

0 20 40
SCALE: 1"=40'

Lloyd M. Wolf
3/23/2023

STATE OF TEXAS
LLOYD M. WOLF
73649
LICENSED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	APPROV.
1	3/23/2023	ADDED NOTES AND LABELS	



ELEVATION

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15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

SH 146
FM 519 TO LP 197
NEW HIGHWAY OVERPASS
TCT DOT 980 293J RRMP 4.102
EXISTING HIGHWAY OVERPASS
TO BE CLOSED 943 616D RRMP 4.090
SYSTEM SUBDIVISION
EXISTING AT-GRADE CROSSING
TO BE CLOSED 846 152K RRMP 4.090
SYSTEM SUBDIVISION
NEW HIGHWAY OVERPASS
UPRR DOT 975 282L RRMP 3.997
UPRR DOT 975 282L RRMP 37.099
EXISTING HIGHWAY OVERPASS
TO BE CLOSED 758 783U RRMP 3.930
TEXAS CITY IND LD SUBDIVISION
TO BE CLOSED 859 512T RRMP 37.205
GALVESTON SUBDIVISION

BRIDGE DEMOLITION LAYOUT
SH 146 AT UPRR OVERPASS

SHEET 3 OF 3

		FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	LWM	6	TEXAS				SH 146
CK DN:	LWM	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DW:	GWS	HOU	GALVESTON	0389	07	025	747
CK DW:	LWM						

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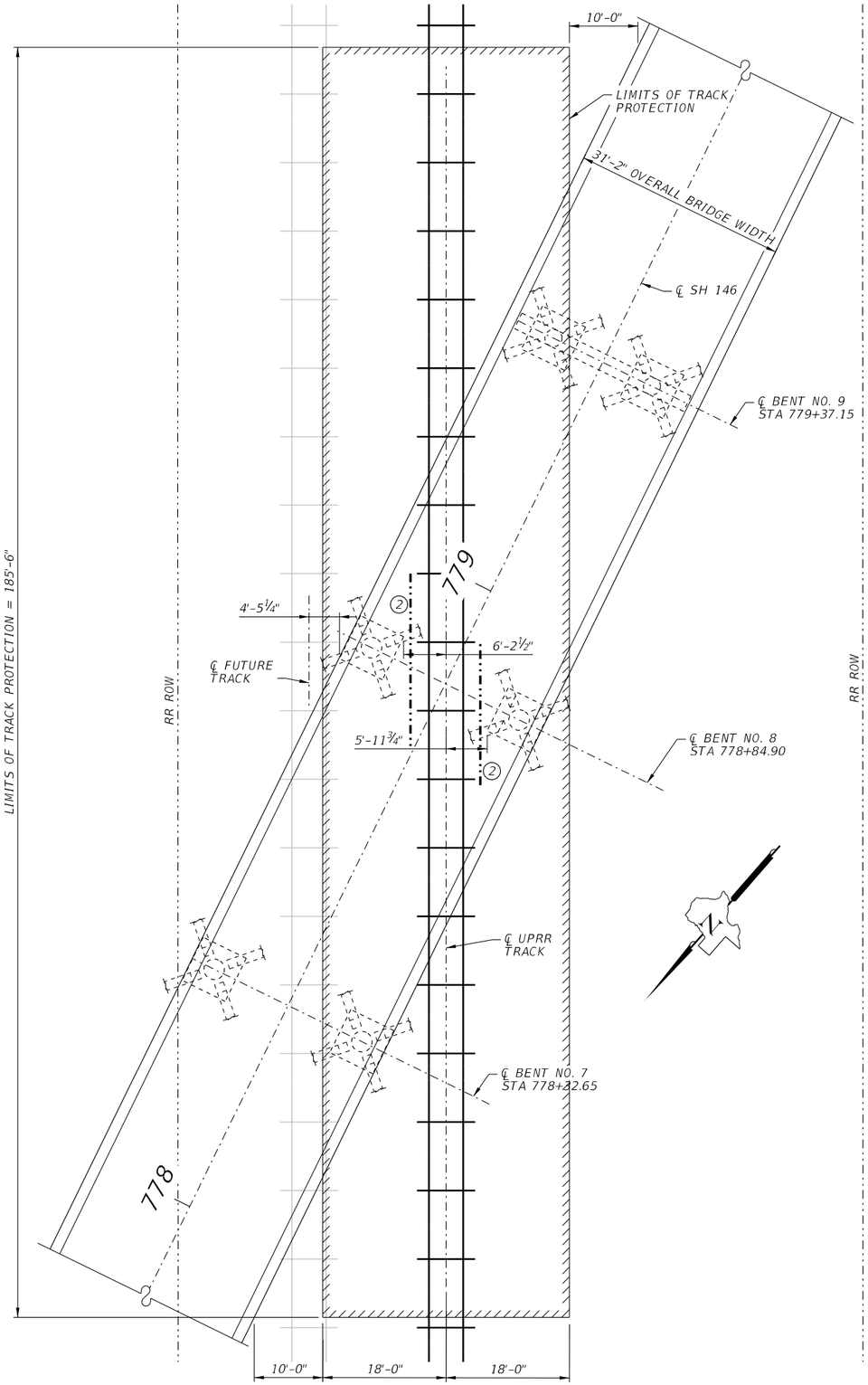


PLAN AT BENT NO. 8

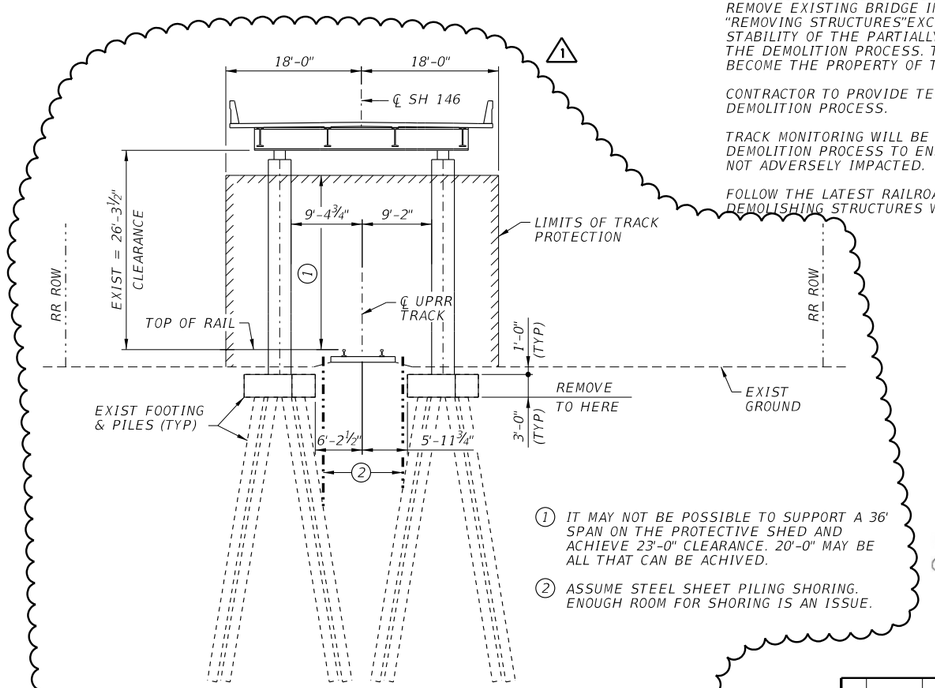
GENERAL NOTES:

FOR EXISTING BRIDGE AS-BUILT PLANS SEE CSJ 0389-07-006. REMOVE EXISTING BRIDGE IN ACCORDANCE WITH ITEM 496, "REMOVING STRUCTURES"EXCEPT AS NOTED. MAINTAIN THE STABILITY OF THE PARTIALLY DEMOLISHED STRUCTURE THROUGHOUT THE DEMOLITION PROCESS. THE ENTIRE REMOVED STRUCTURE WILL BECOME THE PROPERTY OF THE CONTRACTOR.

CONTRACTOR TO PROVIDE TEMPORARY ILLUMINATION DURING BRIDGE DEMOLITION PROCESS.

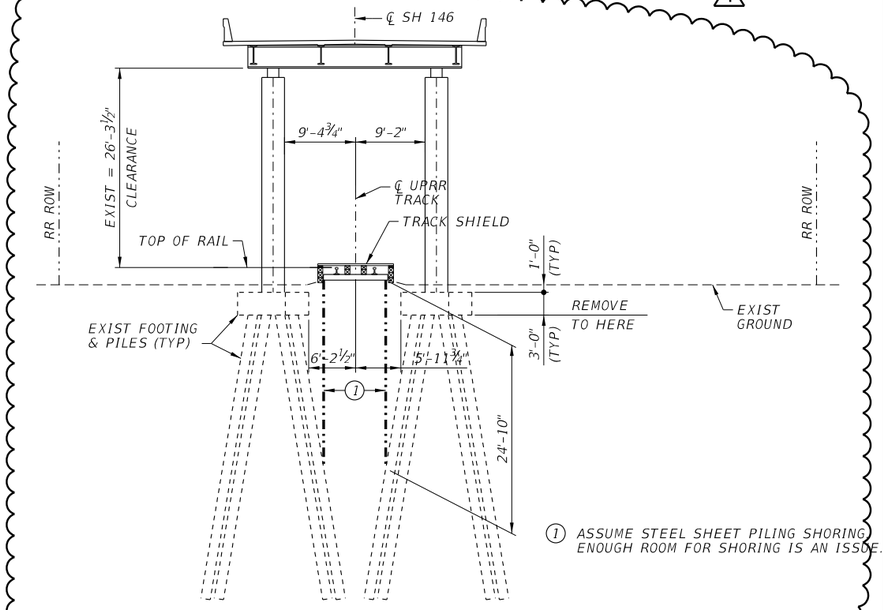
TRACK MONITORING WILL BE REQUIRED THROUGHOUT THE BRIDGE DEMOLITION PROCESS TO ENSURE EXISTING RAILROAD TRACKS ARE NOT ADVERSELY IMPACTED.

FOLLOW THE LATEST RAILROAD GUIDELINES FOR WORKING AND DEMOLISHING STRUCTURES WITHIN RAILROAD ROW.



ELEVATION AT BENT NO. 8 w/ FRAME PROTECTION

1. IT MAY NOT BE POSSIBLE TO SUPPORT A 36' SPAN ON THE PROTECTIVE SHED AND ACHIEVE 23'-0" CLEARANCE. 20'-0" MAY BE ALL THAT CAN BE ACHIVED.
2. ASSUME STEEL SHEET PILING SHORING. ENOUGH ROOM FOR SHORING IS AN ISSUE.



1. ASSUME STEEL SHEET PILING SHORING ENOUGH ROOM FOR SHORING IS AN ISSUE.

ELEVATION AT BENT NO. 8 w/ TRACK SHIELDING

STATE OF TEXAS
LLOYD M. WOLF
73649
LICENSED PROFESSIONAL ENGINEER

3/23/2023

0 10 20
SCALE: 1"=20'

NO.	DATE	REVISION	APPROV.
1	3/23/2023	REVISED ELEVATIONS	

Texas Department of Transportation

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

SH 146
FM 519 TO LP 197

NEW HIGHWAY OVERPASS
TCT DOT 980 293J RRMP 4.102
EXISTING HIGHWAY OVERPASS
TO BE CLOSED 943 616D RRMP 4.090
SYSTEM SUBDIVISION
EXISTING AT-GRADE CROSSING
TO BE CLOSED 846 152K RRMP 4.090
SYSTEM SUBDIVISION
NEW HIGHWAY OVERPASS
UPRR DOT 975 282L RRMP 3.997
UPRR DOT 975 282L RRMP 37.099
EXISTING HIGHWAY OVERPASS
TO BE CLOSED 758 783U RRMP 3.930
TEXAS CITY IND LD SUBDIVISION
TO BE CLOSED 859 512T RRMP 37.205
GALVESTON SUBDIVISION

BRIDGE DEMOLITION DETAILS SH 146 AT UPRR OVERPASS FRAME PROTECTION

SHEET 1 OF 3

DN: LWM	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN: LWM	6	TEXAS				SH 146
DW: GWS	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW: LWM	HOU	GALVESTON	0389	07	025	748

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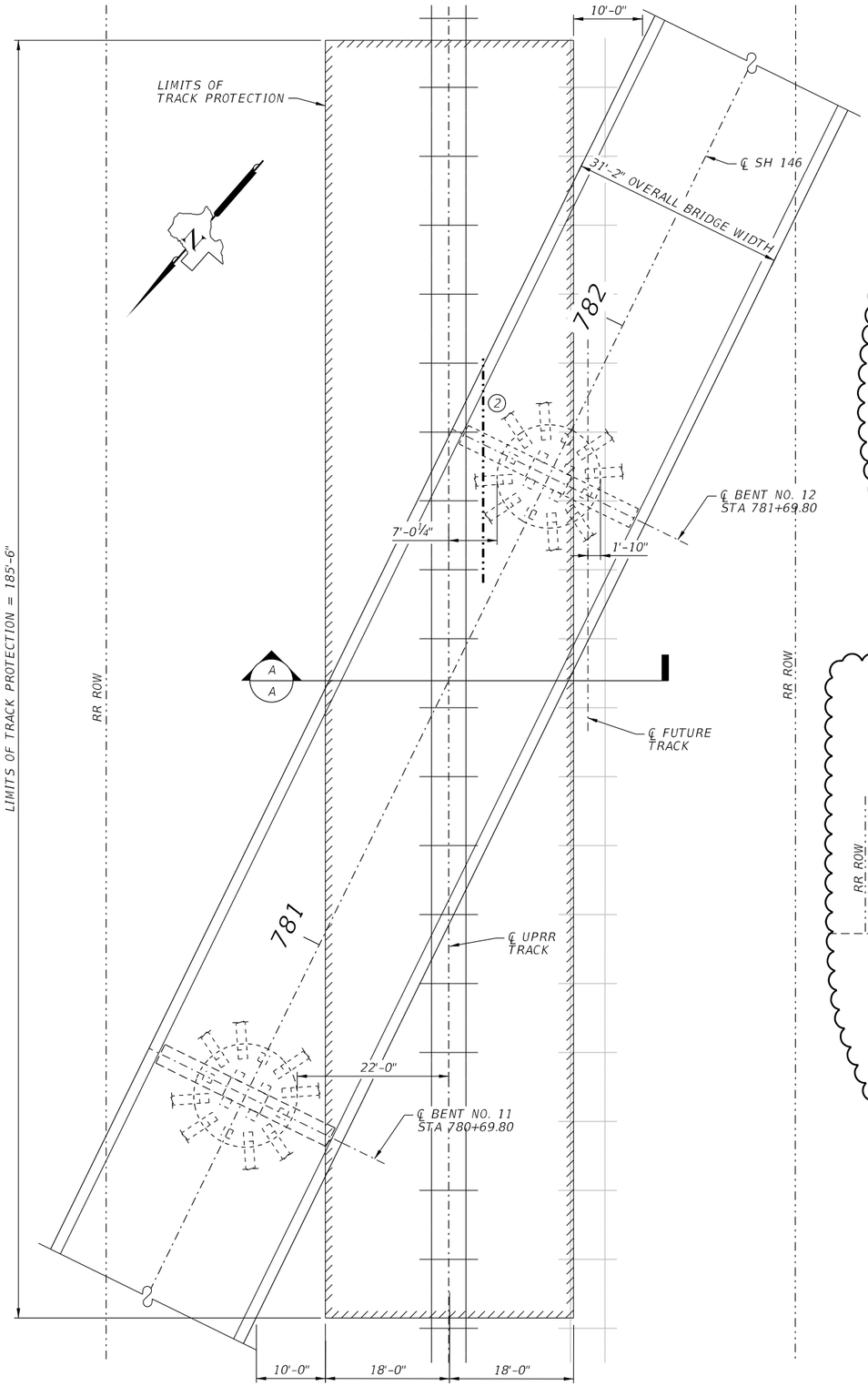
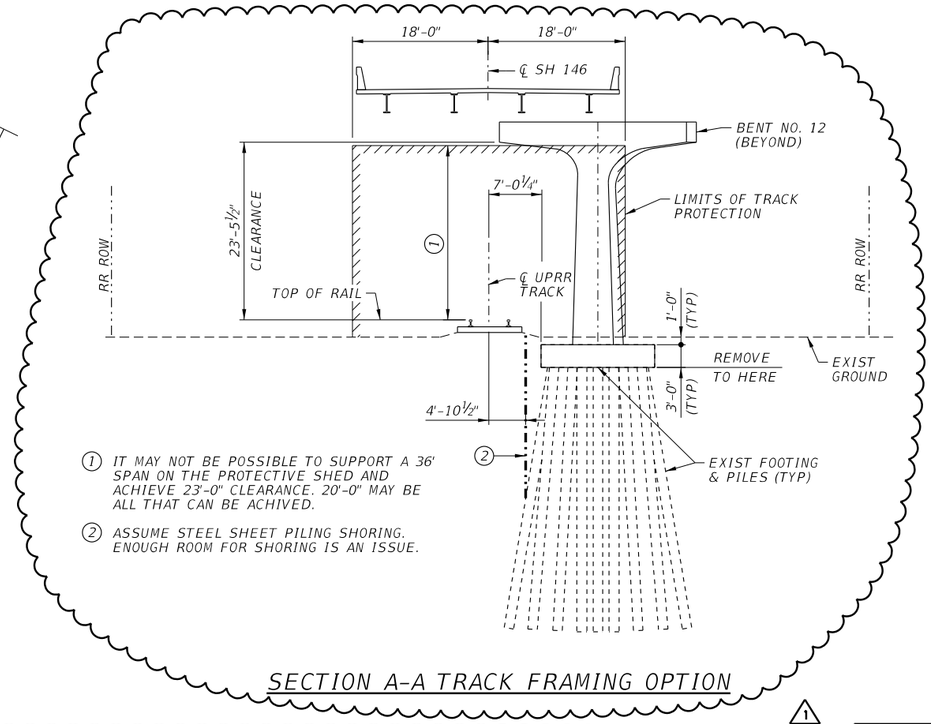
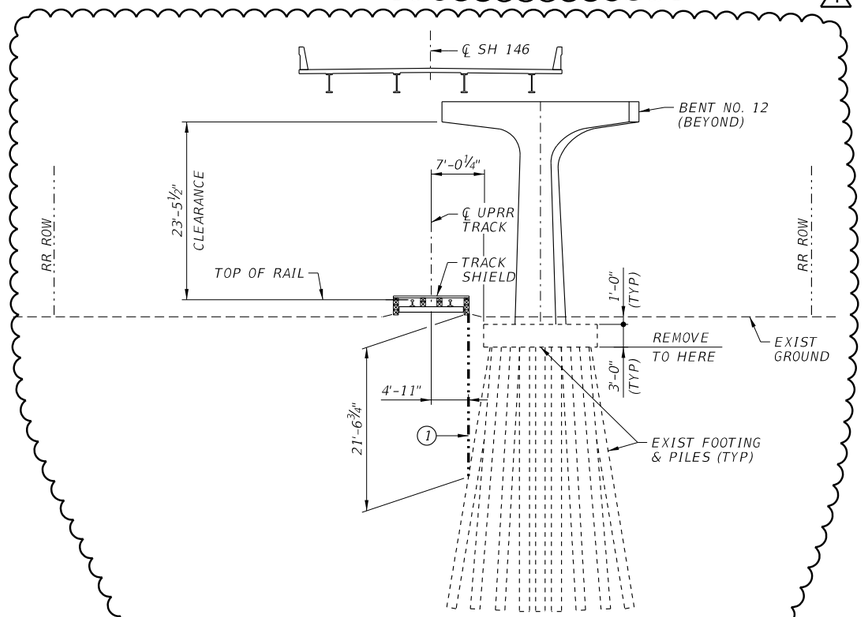


PLAN AT BENT NO. 12



SECTION A-A TRACK FRAMING OPTION



SECTION A-A TRACK SHIELDING OPTION

STATE OF TEXAS
LLOYD M. WOLF
73649
LICENSED PROFESSIONAL ENGINEER

3/23/2023

0 10 20
SCALE: 1"=20'

NO.	DATE	REVISION	APPROV.
1	3/23/2023	REVISED ELEVATIONS	

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CIVIL ENGINEERS, INC
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Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

SH 146
FM 519 TO LP 197
NEW HIGHWAY OVERPASS
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TEXAS CITY IND LD SUBDIVISION
TO BE CLOSED 859 512T RRMP 37.205
GALVESTON SUBDIVISION

BRIDGE DEMOLITION DETAILS SH 146 AT UPRR OVERPASS FRAME PROTECTION

SHEET 2 OF 3

DN: LWM	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN: LWM	6	TEXAS				SH 146
DW: GWS	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW: LWM	HOU	GALVESTON	0389	07	025	749

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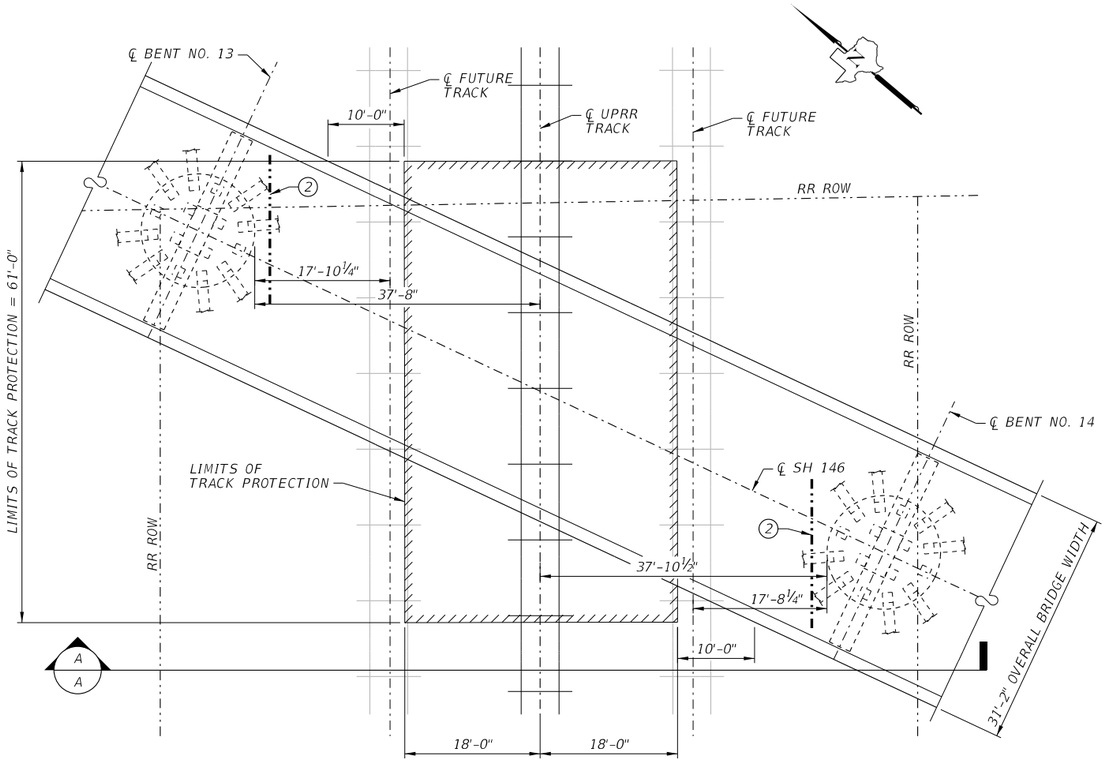
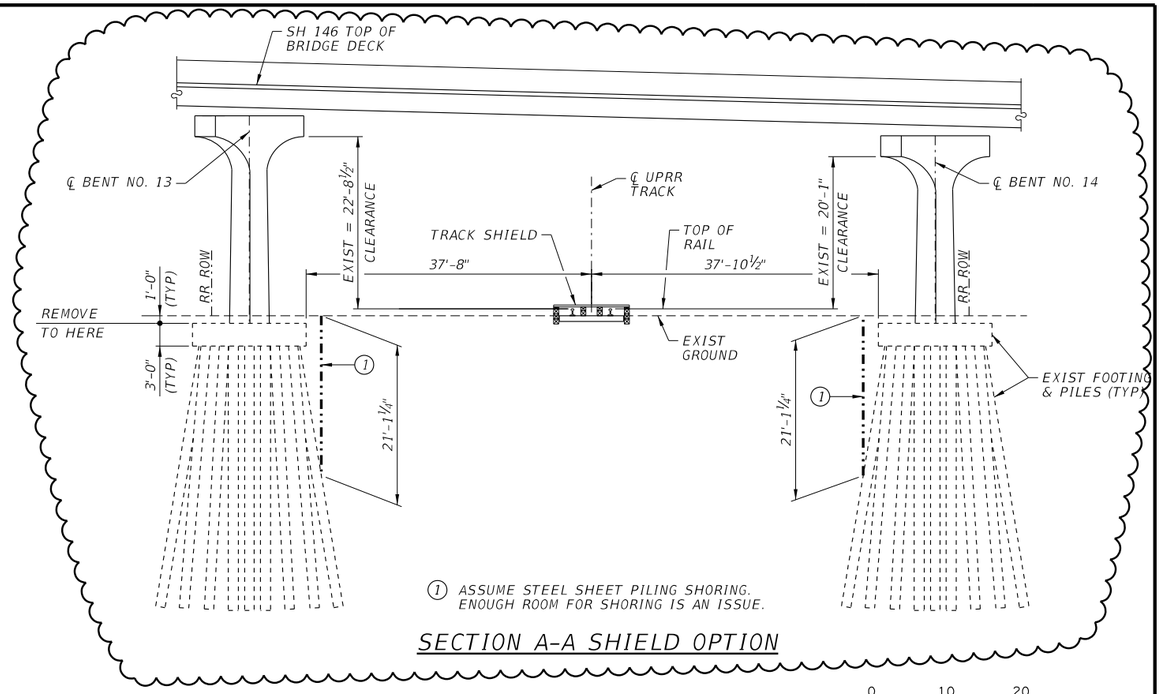


PLAN AT BENT NO. 13 & 14

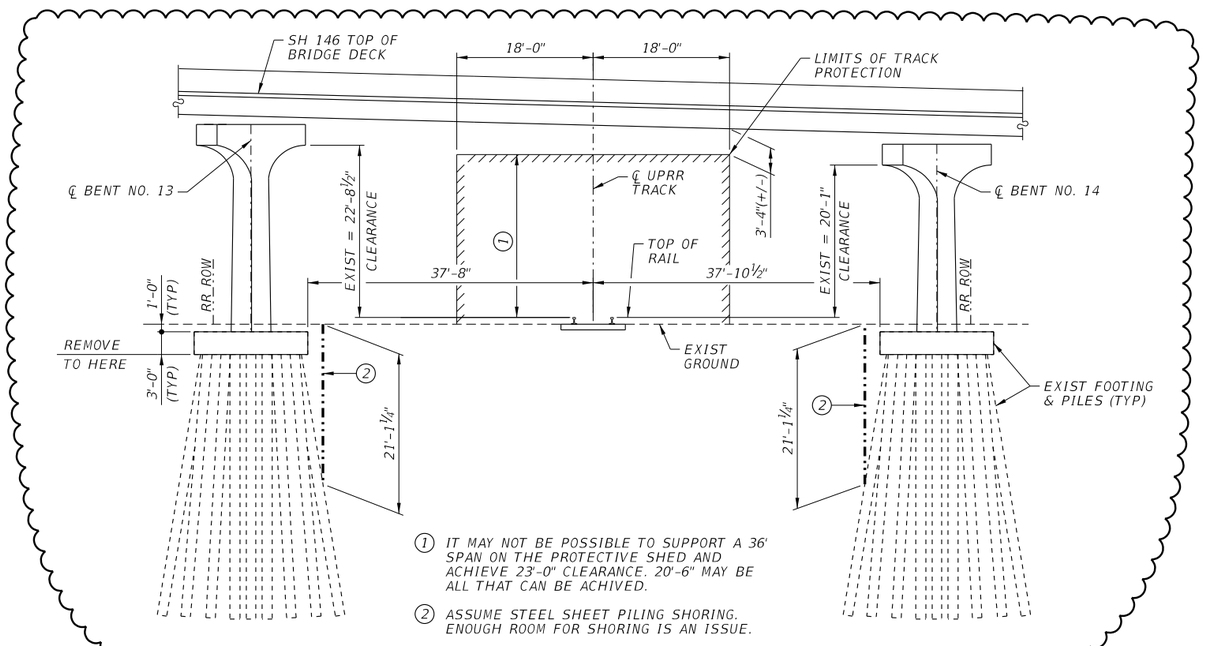


SECTION A-A SHIELD OPTION

1

0 10 20

SCALE: 1"=20'



SECTION A-A FRAMING OPTION

1

STATE OF TEXAS
LLOYD M. WOLF
73649
LICENSED PROFESSIONAL ENGINEER

Lloyd M. Wolf

3/23/2023

NO.	DATE	REVISION	APPROV.
1	3/23/2023	REVISED ELEVATIONS	

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Houston, Texas, 77094
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281-945-0081 FX

SH 146
FM 519 TO LP 197

NEW HIGHWAY OVERPASS
TCT DOT 980 293J RRMP 4.102
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TEXAS CITY IND LD SUBDIVISION
TO BE CLOSED 859 512T RRMP 37.205
GALVESTON SUBDIVISION

BRIDGE DEMOLITION DETAILS
SH 146 AT UPRR OVERPASS
FRAME PROTECTION

SHEET 3 OF 3

DN:	LWM	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	LWM	6	TEXAS					SH 146
DW:	GWS	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	LWM	HOU	GALVESTON	0389	07	025		750

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