FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	STP 1702 (818) MM		314
STATE	STATE DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT

PROJECT NO. STP 1702 (818) MM

CSJ NO. 0912-72-360

CSJ:	ROADWAY		TOTAL	
	FT	MILES	FT	MILES
0912-72-360	7,656	1.450	7,656	1.450

HARRIS COUNTY

BUFFALO SPEEDWAY

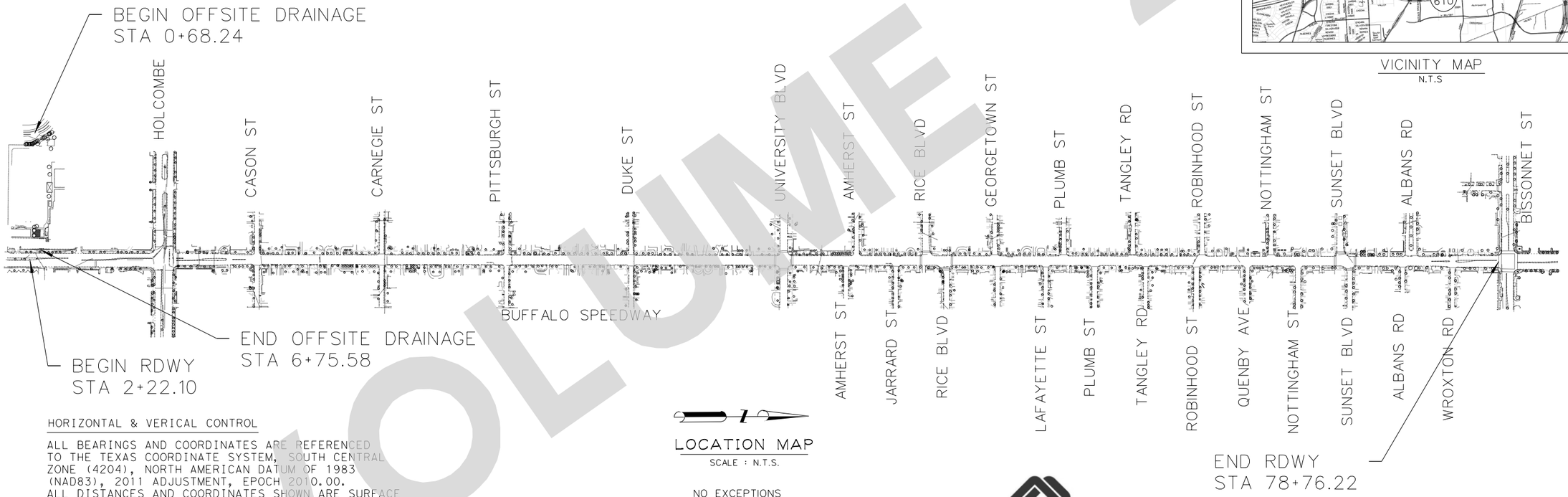
FOR THE CONSTRUCTION OF: LIMITS: BUFFALO SPEEDWAY: BISSONNET TO HOLCOMBE
RECONSTRUCT EXISTING ROAD CONSISTING OF PAVING, DRAINAGE, SIGNAL & STRIPING

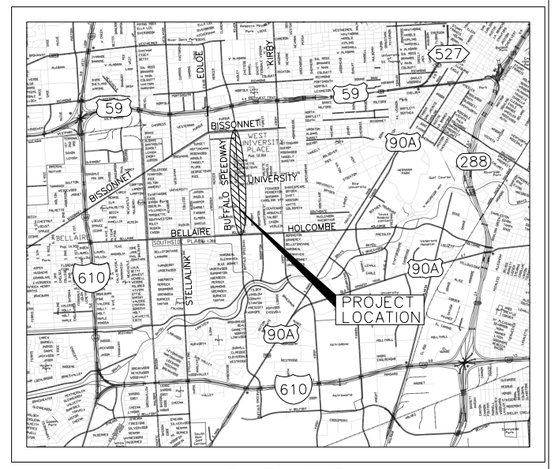
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REGISTERED ACCESSIBILITY SPECIALIST (RAS) INSPECTION REQUIRED TDLR PROJECT NUMBER TABS2020021433

DESIGN SPEED	= 40 MPH
FUNCTIONAL CLASSIFICATION (BUFFALO SPEEDWAY)	= URBAN MINOR ARTERIAL
ADT (YR 2021)	= 22,500
ADT (YR 2041)	= 30,900





VICINITY MAP
N.T.S

LOCATION MAP
SCALE : N.T.S.

NO EXCEPTIONS
NO EQUATIONS
NO RAILROAD CROSSING

HORIZONTAL & VERICAL CONTROL

ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (NAD83), 2011 ADJUSTMENT, EPOCH 2010.00. ALL DISTANCES AND COORDINATES SHOWN ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE SURFACE ADJUSTMENT FACTOR OF 1.00013.

ALL ELEVATIONS SHOWN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). HORIZONTAL CONTROL IS BASED ON TxDOT VRS GPS OBSERVATIONS, VERTICAL CONTROL IS BASED ON DIGITAL LEVELING.

MONUMENT NO.040135 WAS HELD FOR HORIZONTAL AND VERTICAL CONTROL.

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS, FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, MAY 2012)

COUNTY: HARRIS PROJ. NO. CSJ: 0912-72-360
HWY. NO. BUFFALO SPEEDWAY LETTING DATE 11/2020
DATE ACCEPTED

City of West University Place

CONCURRENCE
DIRECTOR OF PUBLIC WORKS
CITY OF WEST UNIVERSITY PLACE

SUBMITTED FOR LETTING:
PROJECT MANAGER

CONCURRENCE
DIRECTOR OF PUBLIC WORKS
CITY OF HOUSTON

APPROVED FOR LETTING:
DISTRICT ENGINEER

Texas Department of Transportation

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> THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

, PE 8/25/2020
DATE

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

FREESE AND NICHOLS
11200 Broadway Street, Suite 2320
Pearland, Texas 77584
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Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

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0912	72	360	BUFFALO SPEEDWAY

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DATE

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
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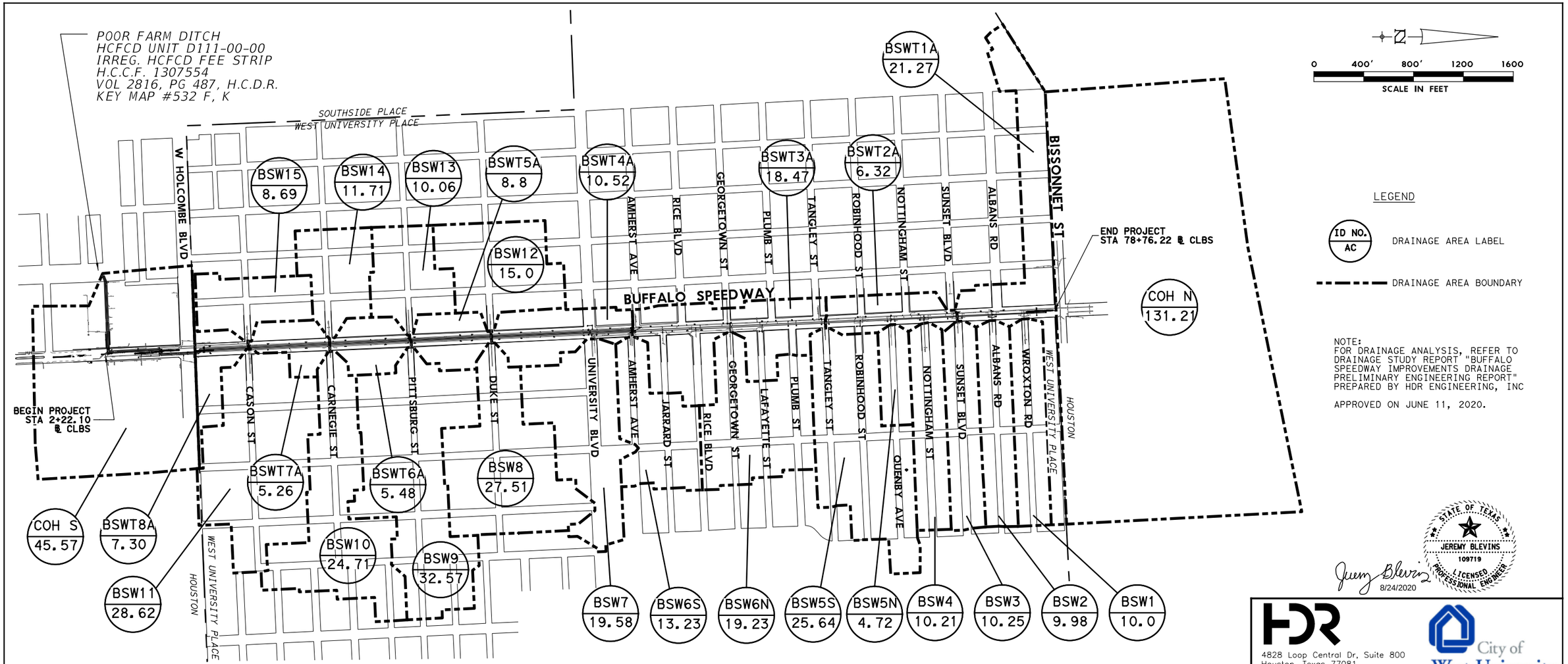
BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

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CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

100% SUBMITTAL



LEGEND

ID NO. / AC — DRAINAGE AREA LABEL

DRAINAGE AREA BOUNDARY

NOTE:
FOR DRAINAGE ANALYSIS, REFER TO DRAINAGE STUDY REPORT "BUFFALO SPEEDWAY IMPROVEMENTS DRAINAGE PRELIMINARY ENGINEERING REPORT" PREPARED BY HDR ENGINEERING, INC

APPROVED ON JUNE 11, 2020.

Area ID	Area (acres)	Intensity (in./hr)			Runoff Coefficient (C)	Peak Discharge (cfs)		
		$I_{2\text{-YR}}$	$I_{10\text{-YR}}$	$I_{100\text{-YR}}$		2-Year	10-Year	100-Year
COH N	131.21	2.69	4.06	5.79	0.80	282	426	608
BSWT 1A	21.27	2.98	4.45	6.30	0.55	35	52	74
BSW 01	10.00	3.10	4.60	6.49	0.55	17	25	36
BSW 02	9.98	3.10	4.60	6.50	0.55	17	25	36
BSW 03	10.25	3.09	4.60	6.49	0.55	17	26	37
BSWT 2A	6.32	3.16	4.69	6.61	0.55	11	16	23
BSW 04	10.21	3.09	4.60	6.49	0.55	17	26	36
BSW 05 N	4.72	3.20	4.74	6.67	0.55	8	12	17
BSW 05 S	25.64	2.95	4.42	6.25	0.55	42	62	88
BSWT 3A	18.47	3.00	4.48	6.34	0.55	31	46	64
BSW 06 N	19.23	3.00	4.47	6.33	0.55	32	47	67
BSW 06 S	13.23	3.06	4.55	6.42	0.55	22	33	47
BSW 12	15.00	3.04	4.52	6.39	0.55	25	37	53
BSWT 4A	10.52	3.09	4.59	6.48	0.55	18	27	37
BSW 07	19.58	3.00	4.47	6.32	0.55	32	48	68
BSW 13	10.06	3.10	4.60	6.49	0.55	17	25	36
BSWT 5A	8.80	3.12	4.63	6.53	0.55	15	22	32
BSW 08	27.51	2.94	4.40	6.23	0.55	45	67	94
BSW 14	11.71	3.07	4.57	6.46	0.55	20	29	42
BSWT 6A	5.48	3.18	4.72	6.64	0.55	10	14	20
BSW 09	32.57	2.92	4.37	6.19	0.55	52	78	111
BSW 15	8.69	3.12	4.63	6.53	0.55	15	22	31
BSWT 7A	5.26	3.19	4.72	6.65	0.55	9	14	19
BSW 10	24.71	2.96	4.42	6.26	0.55	40	60	85
BSWT 8A	7.30	3.14	4.66	6.57	0.55	13	19	26
BSW 11	28.62	2.94	4.39	6.22	0.55	46	69	98
COH S	45.57	2.86	4.29	6.09	0.69	90	135	191

Construction in Harris County Flood Control District Right-of-Way requires:

Site plans must be approved prior to obtaining the required HCFCD Right-of-Way Notification. Be advised that the HCFCD Right-of-Way Notification is separate from the site development permit package

1.) HCFCD Right-of-Way Notification (permit)
2.) HCFCD 48-hr Pre-Construction Notice

Both are required prior to entering or working within Harris County Flood Control District right-of-way. The HCFCD Right-of-Way Notification and 48-hour notice must be provided to HCFCD at dcid@hcfcd.org. To apply for the HCFCD Right-of-Way Notification please go to http://apps.harriscountytx.gov/EPermits and apply for the HCFCD ROW under ROW Notification.

Failure to provide both items could result in project delay.

STATE OF TEXAS
JEREMY BLEVINS
109719
LICENSED PROFESSIONAL ENGINEER
8/24/2020

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Houston, Texas 77081
713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

OVERALL DRAINAGE AREA MAP

1" = 800'

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			317
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	

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100% SUBMITTAL

2-YEAR HGL ELEVATIONS		
Location	Station (feet)	HGL (feet)
Bissonnet	0	50.44
Wroxton	290	49.96
Albans	548	49.76
Nottingham	1093	49.46
Quenby	1361	49.33
Tangley	1889	48.94
Georgetown	2662	48.46
Amherst	3382	48.11
University	3749	47.78
Duke	4537	47.40
Duke (Restricted)	4537	47.03
Pittsburgh	5182	46.86
Pittsburgh (Restricted)	5182	46.65
Carnegie	5832	47.02
Carnegie (Restricted)	5832	46.60
Cason	6482	46.04
Cason (Restricted)	6482	45.78
Bellaire	6979	45.66
Turn	7638	45.45
Turn (Restricted)	7638	42.86
Outfall	8257	42.62

Note: 2-Year HGL Elevations obtained from XP-SWMM results.

100-YEAR HGL ELEVATIONS		
Location	Station (feet)	HGL (feet)
Bissonnet	0	51.42
Wroxton	290	50.75
Albans	548	50.60
Nottingham	1093	50.23
Quenby	1361	49.97
Tangley	1889	49.51
Georgetown	2662	49.06
Amherst	3382	48.48
University	3749	47.88
Duke	4537	47.54
Duke (Restricted)	4537	47.24
Pittsburgh	5182	46.86
Pittsburgh (Restricted)	5182	46.89
Carnegie	5832	47.02
Carnegie (Restricted)	5832	46.51
Cason	6482	46.04
Cason (Restricted)	6482	46.20
Bellaire	6979	45.97
Turn	7638	45.72
Turn (Restricted)	7638	42.88
Outfall	8257	42.62

Note: 100-Year HGL Elevations obtained from XP-SWMM results.

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109719
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Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

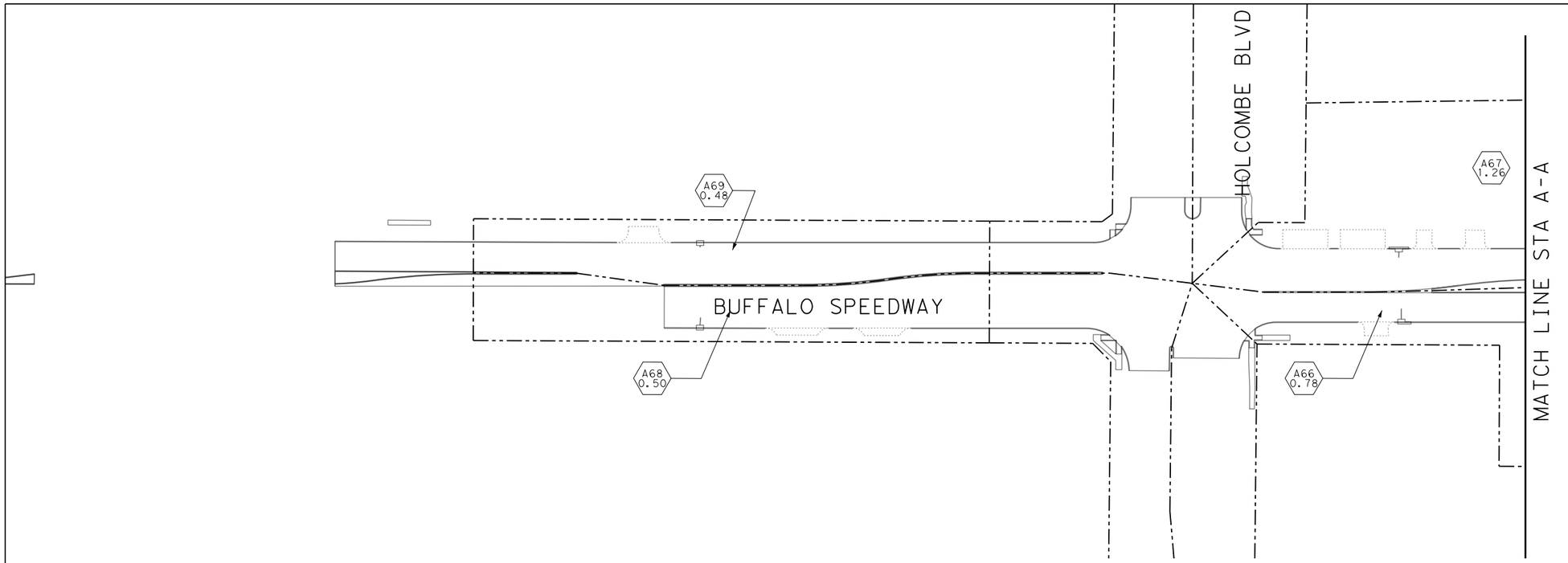
2-YR AND 100-YR HGL ELEVATION TABLES

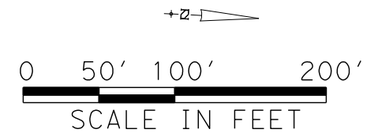
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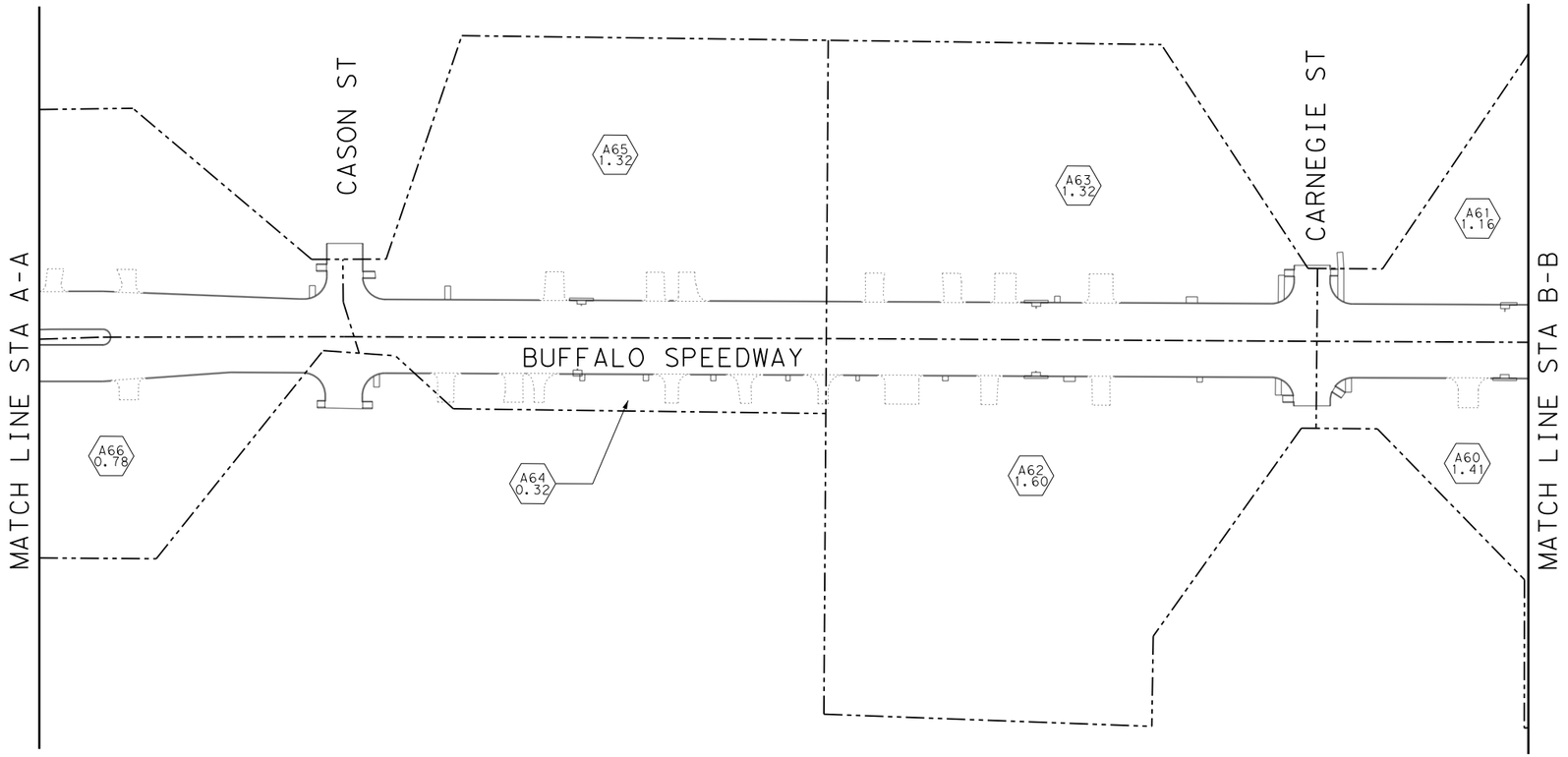
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		318
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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PENTABLE: TXDOT.tbl







STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

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Texas Registered Engineering Firm F-2144

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

INLET AREA MAP

BUFFALO SPEEDWAY

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		319
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



N

0 50′ 100′ 200′

SCALE IN FEET

LEGEND

- (A) PROP 10" REINF CONC PVMT W/ 8" LTS
- (B) PROP SIDEWALK
- (C) PROP SIDEWALK RAMP
- (D) PROP BRICK PAVERS
- (E) EXTEND EXIST PVC DRAIN THROUGH CURB
- (F) SAWCUT FULL DEPTH & TIE-IN TO EXIST PVMT
- PROP FAST TRACK PAVEMENT
- PROP CONCRETE RIP RAP (REFER TO ITEM 432 FOR MORE INFORMATION)

GENERAL NOTES

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
2. FOR DRIVEWAY STATION AND OFFSET DATA SEE DRIVEWAY DETAIL SHEETS.
3. ALL STATIONS ARE FOR ℄ BUFFALO SPEEDWAY UNLESS NOTED OTHERWISE.
4. SEE CROSSWALK PAVING LAYOUT PLANS FOR ADDITIONAL DETAILS.
5. ANY NECESSARY ADJUSTMENTS AND REPAIRS TO EXISITNG IRRIGATION LINES WILL BE PAID FOR UNDER ITEM 170-6002 IRRIGATION SYSTEM (TY I).
6. CONTRACTOR TO VERIFY DEPTH OF COVER TO EXISTING STORM SEWER TO REMAIN AND HAND MIX SUBGRADE IF NECESSARY.
7. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.
8. SEE INTERSECTION LAYOUT FOR ADDITIONAL INTERSECTION GRADING INFORMATION.
9. SEE DRAINAGE PLAN & PROFILE SHEETS FOR LOCATION OF EXISTING DRAINAGE STRUCTURES.
10. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

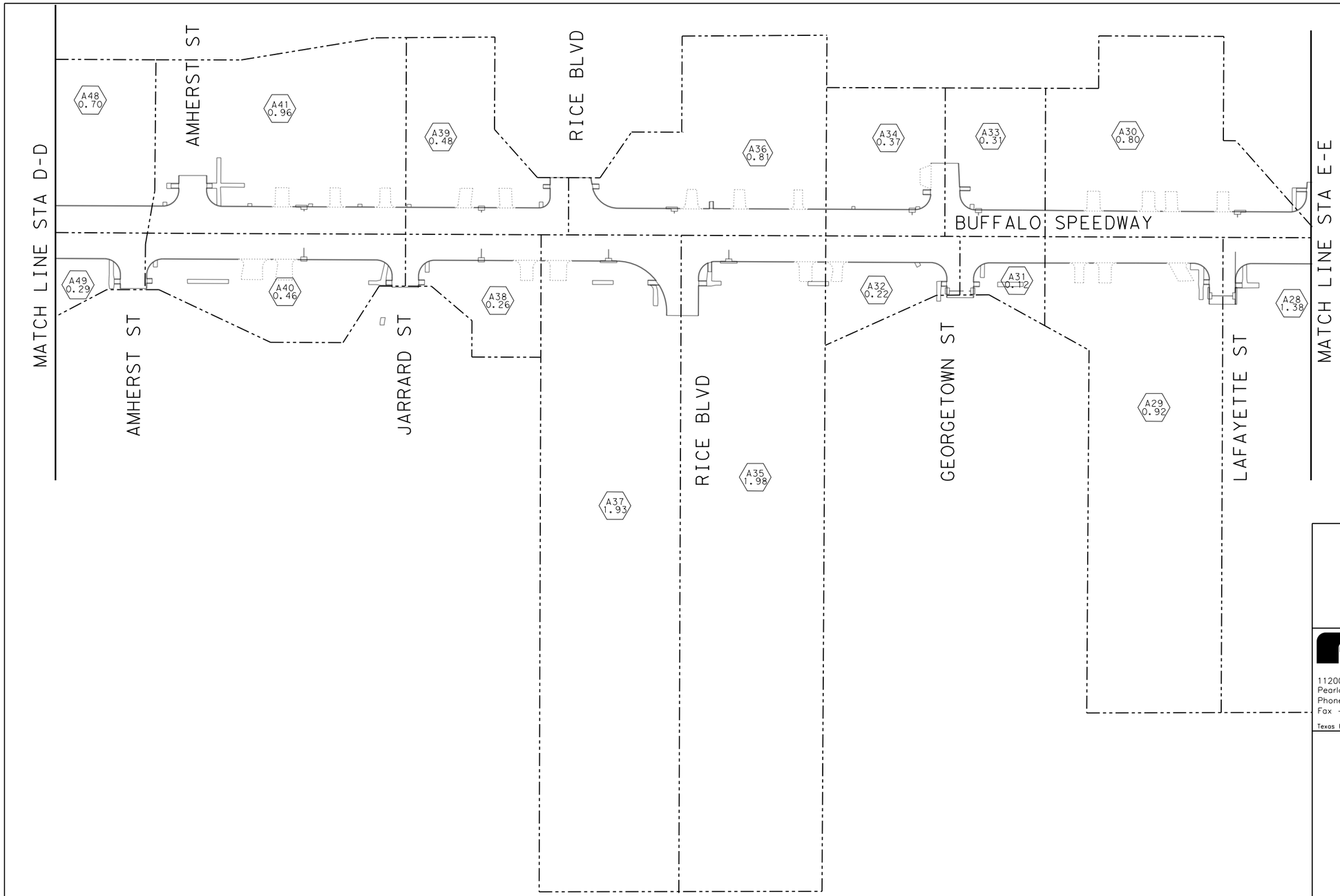
INLET AREA MAP

BUFFALO SPEEDWAY

SHEET 2 OF 5

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		320
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



N

0 50′ 100′ 200′

SCALE IN FEET

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

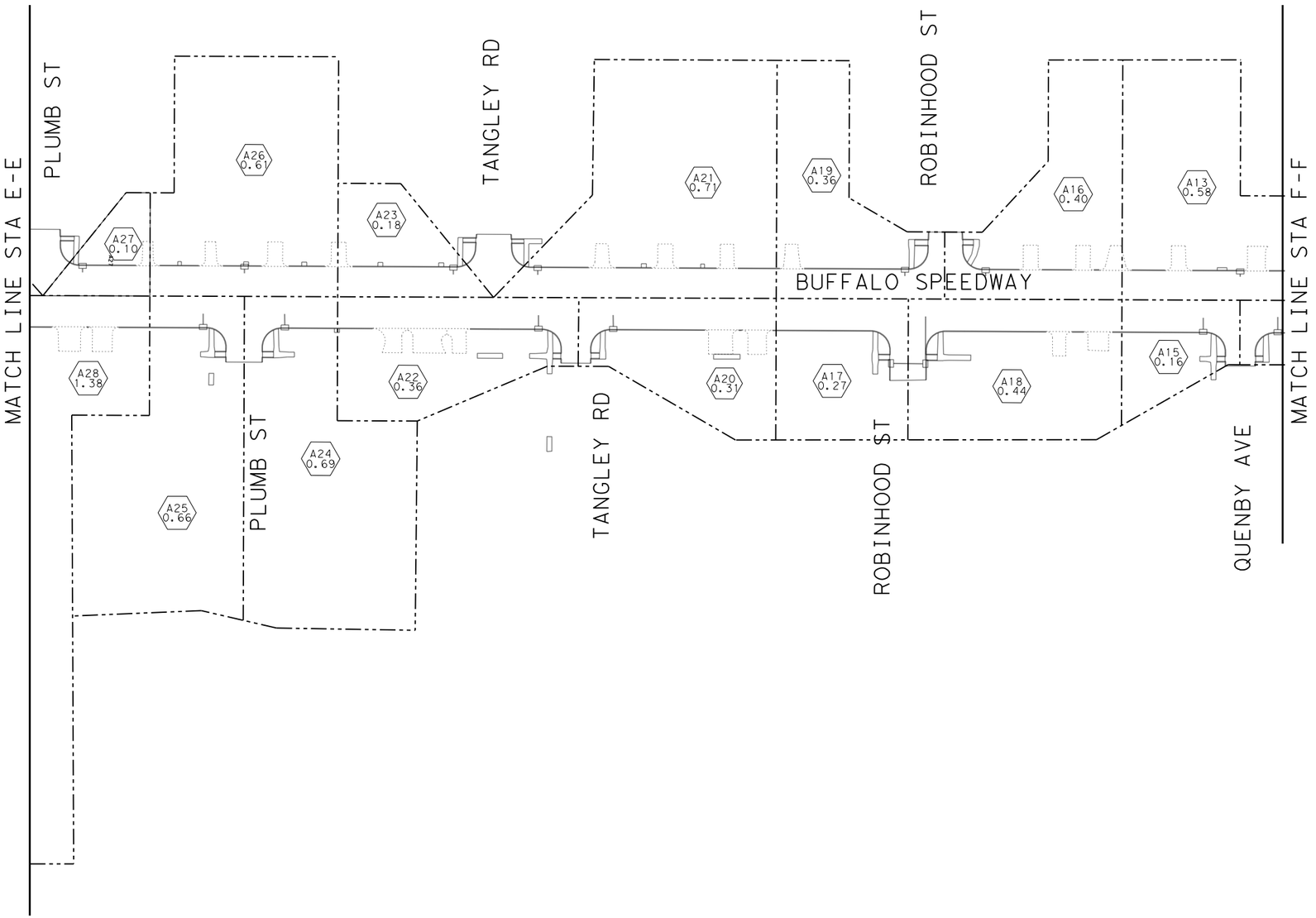
INLET AREA MAP

BUFFALO SPEEDWAY

SHEET 3 OF 5

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		321
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100' 200'

SCALE IN FEET

MEHRAN BAVARIAN
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STATE OF TEXAS
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

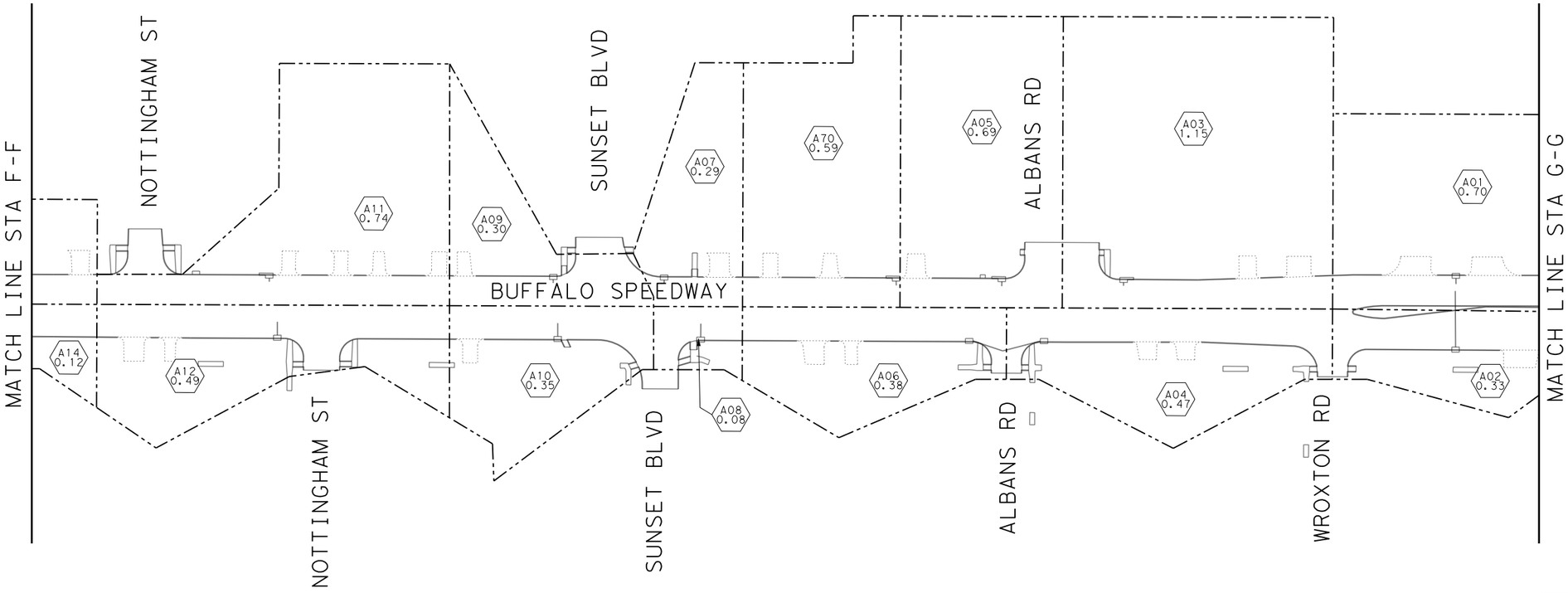
INLET AREA MAP

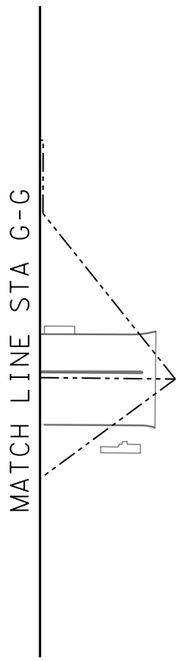
BUFFALO SPEEDWAY

SHEET 4 OF 5

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			322
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	





DRAINAGE AREA ID	DRAINAGE AREA AC	RUNOFF COEFF	DRAINAGE AREA AC	RUNOFF COEFF	TOTAL DRAINAGE AREA AC	WEIGHTED RUNOFF COEFF	Tc	I2	Q2
A01	0.14	0.9	0.56	0.5	0.70	0.58	15	5.55	2.3
A02	0.16	0.9	0.17	0.5	0.33	0.7	15	5.55	1.3
A03	0.14	0.9	1.01	0.5	1.15	0.55	15	5.55	3.5
A04	0.18	0.9	0.29	0.5	0.47	0.65	15	5.55	1.7
A05	0.09	0.9	0.60	0.5	0.69	0.55	15	5.55	2.1
A06	0.14	0.9	0.24	0.5	0.38	0.65	15	5.55	1.4
A07	0.04	0.9	0.25	0.5	0.29	0.55	15	5.55	0.9
A08	0.06	0.9	0.02	0.5	0.08	0.79	15	5.55	0.4
A09	0.11	0.9	0.19	0.5	0.30	0.65	15	5.55	1.1
A10	0.11	0.9	0.24	0.5	0.35	0.63	15	5.55	1.2
A11	0.15	0.9	0.59	0.5	0.74	0.58	15	5.55	2.4
A12	0.19	0.9	0.30	0.5	0.49	0.65	15	5.55	1.8
A13	0.10	0.9	0.48	0.5	0.58	0.57	15	5.55	1.8
A14	0.06	0.9	0.06	0.5	0.12	0.7	15	5.55	0.5
A15	0.06	0.9	0.10	0.5	0.16	0.65	15	5.55	0.6
A16	0.09	0.9	0.31	0.5	0.40	0.59	15	5.55	1.3
A17	0.08	0.9	0.19	0.5	0.27	0.62	15	5.55	0.9
A18	0.11	0.9	0.33	0.5	0.44	0.6	15	5.55	1.5
A19	0.08	0.9	0.28	0.5	0.36	0.59	15	5.55	1.2
A20	0.10	0.9	0.21	0.5	0.31	0.63	15	5.55	1.1
A21	0.12	0.9	0.59	0.5	0.71	0.57	15	5.55	2.3
A22	0.12	0.9	0.24	0.5	0.36	0.63	15	5.55	1.3
A23	0.06	0.9	0.12	0.5	0.18	0.63	15	5.55	0.6
A24	0.12	0.9	0.57	0.5	0.69	0.57	15	5.55	2.2
A25	0.12	0.9	0.54	0.5	0.66	0.57	15	5.55	2.1
A26	0.08	0.9	0.53	0.5	0.61	0.55	15	5.55	1.9
A27	0.04	0.9	0.06	0.5	0.10	0.66	15	5.55	0.4
A28	0.24	0.9	1.14	0.5	1.38	0.57	15	5.55	4.4
A29	0.23	0.9	0.69	0.5	0.92	0.6	15	5.55	3.1
A30	0.14	0.9	0.66	0.5	0.80	0.57	15	5.55	2.6
A31	0.06	0.9	0.06	0.5	0.12	0.7	15	5.55	0.5
A32	0.08	0.9	0.14	0.5	0.22	0.64	15	5.55	0.8
A33	0.07	0.9	0.24	0.5	0.31	0.59	15	5.55	1.0
A34	0.08	0.9	0.29	0.5	0.37	0.59	15	5.55	1.2
A35	0.31	0.9	1.67	0.5	1.98	0.56	15	5.55	6.2
A36	0.16	0.9	0.65	0.5	0.81	0.58	15	5.55	2.6
A37	0.28	0.9	1.65	0.5	1.93	0.56	15	5.55	6.0
A38	0.08	0.9	0.18	0.5	0.26	0.62	15	5.55	0.9

DRAINAGE AREA ID	DRAINAGE AREA AC	RUNOFF COEFF	DRAINAGE AREA AC	RUNOFF COEFF	TOTAL DRAINAGE AREA AC	WEIGHTED RUNOFF COEFF	Tc	I2	Q2
A39	0.10	0.9	0.38	0.5	0.48	0.58	15	5.55	1.5
A40	0.15	0.9	0.31	0.5	0.46	0.63	15	5.55	1.6
A41	0.16	0.9	0.80	0.5	0.96	0.57	15	5.55	3.0
A42	0.11	0.9	0.64	0.5	0.75	0.56	15	5.55	2.3
A43	0.13	0.9	0.23	0.5	0.36	0.65	15	5.55	1.3
A44	0.10	0.9	0.11	0.5	0.21	0.69	15	5.55	0.8
A45	0.11	0.9	0.63	0.5	0.74	0.56	15	5.55	2.3
A46	0.11	0.9	0.57	0.5	0.68	0.56	15	5.55	2.1
A47	0.11	0.9	0.31	0.5	0.42	0.61	15	5.55	1.4
A48	0.14	0.9	1.08	0.5	1.22	0.55	15	5.55	3.7
A49	0.14	0.9	0.96	0.5	1.10	0.55	15	5.55	3.4
A50	0.08	0.9	0.78	0.5	0.86	0.54	15	5.55	2.6
A51	0.08	0.9	0.59	0.5	0.67	0.55	15	5.55	2.0
A52	0.14	0.9	0.77	0.5	0.91	0.56	15	5.55	2.9
A53	0.14	0.9	0.74	0.5	0.88	0.56	15	5.55	2.8
A54	0.14	0.9	0.86	0.5	1.00	0.56	15	5.55	3.1
A55	0.14	0.9	0.79	0.5	0.93	0.56	15	5.55	2.9
A56	0.15	0.9	0.89	0.5	1.04	0.56	15	5.55	3.2
A57	0.16	0.9	0.92	0.5	1.08	0.56	15	5.55	3.4
A58	0.20	0.9	1.28	0.5	1.48	0.55	15	5.55	4.6
A59	0.19	0.9	1.00	0.5	1.19	0.56	15	5.55	3.7
A60	0.19	0.9	1.22	0.5	1.41	0.55	15	5.55	4.3
A61	0.19	0.9	0.97	0.5	1.16	0.57	15	5.55	3.7
A62	0.19	0.9	1.41	0.5	1.60	0.55	15	5.55	4.9
A63	0.20	0.9	1.12	0.5	1.32	0.56	15	5.55	4.1
A64	0.17	0.9	0.15	0.5	0.32	0.71	15	5.55	1.3
A65	0.19	0.9	1.13	0.5	1.32	0.56	15	5.55	4.1
A66	0.27	0.9	0.51	0.5	0.78	0.64	15	5.55	2.8
A67	0.34	0.9	0.92	0.5	1.26	0.61	15	5.55	4.3
A68	0.24	0.9	0.26	0.5	0.50	0.69	15	5.55	1.9
A69	0.29	0.9	0.19	0.5	0.48	0.74	15	5.55	2.0
A70	0.07	0.9	0.52	0.5	0.59	0.55	10	6.76	2.2
A71	0.08	0.9	0.55	0.5	0.63	0.55	15	5.55	1.9
A72	0.08	0.9	0.71	0.5	0.79	0.54	15	5.55	2.4
A73	0.05	0.9	0.12	0.5	0.17	0.62	15	5.55	0.6
A74	0.04	0.9	0.14	0.5	0.18	0.59	15	5.55	0.6
A75	0.06	0.9	0.39	0.5	0.45	0.55	15	5.55	1.4
A76	0.05	0.9	0.37	0.5	0.42	0.55	15	5.55	1.3

0 50' 100' 200'
SCALE IN FEET

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

INLET AREA MAP

BUFFALO SPEEDWAY

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		323
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

SAG INLET CALCULATIONS

INLET ID	INLET TYPE	Q2 (CFS)	Q LEFT (CFS)	Q RIGHT (CFS)	PONDED WIDTH LEFT (FT)	PONDED WIDTH RIGHT (FT)	PONDED WIDTH ALLOWABLE (FT)	LEFT SLOPE %	RIGHT SLOPE %	INLET LENGTH (FT)	GUTTER DEPRESSION (FT)	INLET CAPACITY (CFS)	DEPTH (FT)
A01	Curb	2.27	1.13	1.13	9.3	9.3	12.5	0.30	0.30	5	0.25	2.21	0.25
A02	Curb	1.27	0.63	0.63	7.4	7.4	12.5	0.30	0.30	5	0.25	2.21	0.17
A03	Curb	3.50	1.75	1.75	10.9	10.9	12.5	0.30	0.30	9.5	0.25	3.51	0.25
A04	Curb	1.70	0.17	1.53	4.6	10.4	12.5	0.30	0.30	5	0.25	2.21	0.21
A05	Curb	2.11	1.06	1.06	9.0	9.0	12.5	0.30	0.30	9.5	0.25	3.51	0.18
A06	Curb	1.36	1.22	0.14	9.5	4.2	12.5	0.30	0.30	5	0.25	2.21	0.18
A07	Curb	0.91	0.36	0.54	6.0	7.0	12.5	0.30	0.30	5	0.25	2.21	0.14
A08	Curb	0.36	0.15	0.22	4.3	5.0	12.5	0.30	0.30	5	0.25	2.21	0.08
A09	Curb	1.07	0.64	0.43	7.5	6.4	12.5	0.30	0.30	5	0.25	2.21	0.15
A10	Curb	1.21	0.61	0.61	7.3	7.3	12.5	0.30	0.30	5	0.25	2.21	0.17
A11	Curb	2.39	0.72	1.67	7.8	10.7	12.5	0.30	0.30	9.5	0.25	3.51	0.19
A12	Curb	1.80	1.62	0.18	10.6	4.6	12.5	0.30	0.30	5	0.25	2.21	0.22
A13	Curb	1.83	1.65	0.18	10.7	4.7	12.5	0.30	0.30	5	0.25	2.21	0.22
A14	Curb	0.46	0.41	0.05	6.3	2.8	12.5	0.30	0.30	5	0.25	2.21	0.09
A15	Curb	0.57	0.29	0.29	5.5	5.5	12.5	0.30	0.30	5	0.25	2.21	0.10
A16	Curb	1.30	0.39	0.91	6.2	8.5	12.5	0.30	0.30	5	0.25	2.21	0.18
A17	Curb	0.94	0.28	0.66	5.5	7.5	12.5	0.30	0.30	5	0.25	2.21	0.14
A18	Curb	1.46	0.58	0.87	7.2	8.4	12.5	0.30	0.30	5	0.25	2.21	0.19
A19	Curb	1.18	0.71	0.47	7.8	6.7	12.5	0.30	0.30	5	0.25	2.21	0.16
A20	Curb	1.08	0.76	0.32	8.0	5.8	12.5	0.30	0.30	5	0.25	2.21	0.16
A21	Curb	2.25	0.23	2.02	5.1	11.5	12.5	0.30	0.30	5	0.25	2.21	0.25
A22	Curb	1.26	0.13	1.14	4.1	9.3	12.5	0.30	0.30	5	0.25	2.21	0.17
A23	Curb	0.64	0.06	0.57	3.2	7.2	12.5	0.30	0.30	5	0.25	2.21	0.11
A24	Curb	2.19	0.22	1.97	5.0	11.4	12.5	0.30	0.30	5	0.25	2.21	0.25
A25	Curb	2.11	0.21	1.90	4.9	11.2	12.5	0.30	0.30	5	0.25	2.21	0.24
A26	Curb	1.88	0.94	0.94	8.6	8.6	12.5	0.30	0.30	5	0.25	2.21	0.22
A27	Curb	0.36	0.04	0.33	2.6	5.8	12.5	0.30	0.30	5	0.25	2.21	0.08
A28	Curb	4.35	1.74	2.61	10.9	12.7	12.5	0.30	0.30	14	0.25	4.80	0.23
A29	Curb	3.06	1.23	1.84	9.5	11.1	12.5	0.30	0.30	9.5	0.25	3.51	0.23
A30	Curb	2.55	2.29	0.26	12.1	5.3	12.5	0.30	0.30	9.5	0.25	3.51	0.20
A31	Curb	0.47	0.05	0.43	2.8	6.4	12.5	0.30	0.30	5	0.25	2.21	0.09
A32	Curb	0.80	0.08	0.72	3.4	7.8	12.5	0.30	0.30	5	0.25	2.21	0.13
A33	Curb	1.02	0.51	0.51	6.9	6.9	12.5	0.30	0.30	5	0.25	2.21	0.15
A34	Curb	1.21	1.09	0.12	9.1	4.0	12.5	0.30	0.30	5	0.25	2.21	0.17
A35	Curb	6.19	5.57	0.62	16.8	7.4	12.5	0.30	0.30	14	0.25	4.80	0.30

STATE OF TEXAS
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8/25/2020

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Texas Registered Engineering Firm F–2144

City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

INLET
CALCULATIONS

SHEET 1 OF 3

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		324
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

SAG INLET CALCULATIONS

INLET ID	INLET TYPE	Q2 (CFS)	Q LEFT (CFS)	Q RIGHT (CFS)	PONDED WIDTH LEFT (FT)	PONDED WIDTH RIGHT (FT)	PONDED WIDTH ALLOWABLE (FT)	LEFT SLOPE %	RIGHT SLOPE %	INLET LENGTH (FT)	GUTTER DEPRESSION (FT)	INLET CAPACITY (CFS)	DEPTH (FT)
A36	Curb	2.60	0.26	2.34	5.3	12.1	12.5	0.30	0.30	9.5	0.25	3.51	0.21
A37	Curb	5.98	0.60	5.38	7.3	16.6	12.5	0.30	0.30	14	0.25	4.80	0.29
A38	Curb	0.91	0.09	0.82	3.6	8.2	12.5	0.30	0.30	5	0.25	2.21	0.14
A39	Curb	1.54	1.39	0.15	10.0	4.4	12.5	0.30	0.30	5	0.25	2.21	0.20
A40	Curb	1.62	1.30	0.32	9.7	5.8	12.5	0.30	0.30	5	0.25	2.21	0.20
A41	Curb	3.03	1.51	1.51	10.3	10.3	12.5	0.30	0.30	9.5	0.25	3.51	0.23
A44	Curb	0.91	0.09	0.82	3.6	8.2	12.5	0.30	0.30	5	0.25	2.21	0.14
A45	Curb	2.29	1.15	1.15	9.3	9.3	12.5	0.30	0.30	5	0.25	2.21	0.26
A46	Curb	2.14	1.07	1.07	9.1	9.1	12.5	0.30	0.30	5	0.25	2.21	0.24
A47	Curb	1.40	1.12	0.28	9.2	5.5	12.5	0.30	0.30	5	0.25	2.21	0.18
A48	Curb	3.69	1.85	1.85	11.1	11.1	12.5	0.30	0.30	9.5	0.25	3.51	0.26
A49	Curb	3.38	1.69	1.69	10.8	10.8	12.5	0.30	0.30	9.5	0.25	3.51	0.24
A52	Curb	2.85	0.29	2.57	5.5	12.6	12.5	0.30	0.30	9.5	0.25	3.51	0.22
A53	Curb	2.77	0.28	2.49	5.5	12.4	12.5	0.30	0.30	9.5	0.25	3.51	0.21
A54	Curb	3.08	2.46	0.62	12.4	7.4	12.5	0.30	0.30	9.5	0.25	3.51	0.23
A55	Curb	2.91	2.18	0.73	11.8	7.8	12.5	0.30	0.30	9.5	0.25	3.51	0.22
A58	Curb	4.56	2.28	2.28	12.0	12.0	12.5	0.30	0.30	14	0.25	4.80	0.24
A59	Curb	3.73	1.87	1.87	11.2	11.2	12.5	0.30	0.30	9.5	0.25	3.51	0.26
A60	Curb	4.33	0.87	3.46	8.4	14.1	12.5	0.30	0.30	14	0.25	4.80	0.23
A61	Curb	3.65	0.73	2.92	7.9	13.2	12.5	0.30	0.30	9.5	0.25	3.51	0.26
A62	Curb	4.87	2.43	2.43	12.3	12.3	12.5	0.30	0.30	14	0.25	4.80	0.25
A63	Curb	4.10	2.05	2.05	11.6	11.6	12.5	0.30	0.30	14	0.25	4.80	0.23
A64	Curb	1.26	0.50	0.76	6.8	8.0	12.5	0.30	0.30	5	0.25	2.21	0.17
A65	Curb	4.08	1.63	2.45	10.6	12.4	12.5	0.30	0.30	14	0.25	4.80	0.22
A66	Curb	2.75	0.83	1.93	8.2	11.3	12.5	0.30	0.30	9.5	0.25	3.51	0.21
A67	Curb	4.26	1.28	2.98	9.7	13.3	12.5	0.30	0.30	14	0.25	4.80	0.23
A68	Curb	1.92	0.96	0.96	8.7	8.7	12.5	0.30	0.30	5	0.25	2.21	0.23
A69	Curb	1.97	0.98	0.98	8.8	8.8	12.5	0.30	0.30	5	0.25	2.21	0.23
A73	Curb	0.59	0.59	0.00	7.2	0.0	12.5	0.30	0.30	5	0.25	2.21	0.10
A74	Curb	0.60	0.00	0.60	0.0	7.3	12.5	0.30	0.30	5	0.25	2.21	0.11
A75	Curb	1.39	0.00	1.39	0.0	10.0	12.5	0.30	0.30	5	0.25	2.21	0.18
A76	Curb	1.27	1.27	0.00	9.7	0.0	12.5	0.30	0.30	5	0.25	2.21	0.17

STATE OF TEXAS
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City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

INLET
CALCULATIONS

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		325
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

ON GRADE INLET CALCULATIONS

INLET ID	INLET TYPE	Q2 (CFS)	PONDED WIDTH (FT)	PONDED WIDTH ALLOWABLE (FT)	DEPTH (FT)	SLOPE %	INLET LENGTH (FT)	GUTTER DEPRESSION (FT)	INLET CAPACITY (CFS)	BY PASS (CFS)	TO NODE
A42	Curb	2.32	12.1	12.5	0.2	0.30	9.5	0.25	2.32		A46
A43	Curb	1.28	9.7	12.5	0.2	0.30	5	0.25	1.18	0.10	A44
A50	Curb	2.56	12.6	12.5	0.3	0.30	9.5	0.25	2.56	0.00	A52
A51	Curb	2.04	11.6	12.5	0.2	0.30	9.5	0.25	2.04		A53
A56	Curb	3.22	13.7	12.5	0.3	0.30	14	0.25	3.22		
A57	Curb	3.37	13.9	12.5	0.3	0.30	14	0.25	3.37		
A70	Curb	2.19	11.86	12.5	0.24	0.30	9.5	0.25	2.19		A05
A71	Curb	1.92	11.28	12.5	0.23	0.30	9.5	0.25	1.92		A55
A72	Curb	2.38	12.23	12.5	0.25	0.30	9.5	0.25	2.38		A54

STATE OF TEXAS
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BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

INLET
CALCULATIONS

SHEET 3 OF 3

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		326
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

100% SUBMITTAL

CUT AND PLUG IRRIG LINES (NFV) DURING CONSTRUCTION. REPLACE TO ORIG CONDITION AFTER INSTALLATION OF 8'X8' RCB'S.

REMOVE, SALVAGE, AND REPLACE SPRINKLER CONTROL VALVES AND IRRIG METER AS REQ. THE COST OF THESE ITEMS ARE PART OF THE LUMP SUM ITEM "IRRIGATION SYSTEM"

REMOVE AND SALVAGE TABLE AS REQUIRED. SALVAGE INCLUDES PLACING TABLE BACK AT SAME LOCATION UPON COMPLETION OF WORK.

REMOVE AND SALVAGE WOOD STRUCTURES AS REQUIRED. SALVAGE INCLUDES PLACING STRUCTURES BACK AT SAME LOCATION UPON COMPLETION OF WORK.

REMOVE CONC PAVEMENT UNDER STORAGE UNITS. REPLACE W/CONC PAV. (JOINTED REINF)(6"). W/#4 BARS @ 10" O.C.E.W.

REMOVE 65' CHAIN LINK FENCE
INSTALL 6' - 65' CHAIN LINK FENCE

NOTE:
INSTALL TEMP FENCE DURING TIMES OF NO CONSTRUCTION ACTIVITY (INCIDENTAL TO COST OF PROJECT). TEMP AND PERMANENT FENCING SHALL HAVE FABRIC SCREEN.

PROP OUTFALL STRUCTURE
REFER TO STRUCTURAL PLANS

PROP TY C MH

PROP 24" RCP

PROP 6" PVC

PROP CO

PROP 8'X8' RCB

66" MC TO BE REMOVED

REMOVE STR (SMALL) METAL SCOREBOARD W/FOUNDATION AND ELECTRICAL SERVICE.

REMOVE AND SALVAGE STR(LARGE) STORAGE UNITS. SALVAGE INCLUDES PLACING STRUCTURES BACK AT SAME LOCATION UPON COMPLETION OF WORK. CONTRACTOR TO COORDINATE W/CHURCH TO HAVE THE CHURCH REMOVE CONTENTS FROM INSIDE STORAGE UNITS PRIOR TO MOVING.

FOR CONTINUATION, SEE OFFSITE REMOVAL & REPLACEMENT PLAN, AND PLAN & PROFILE SHEETS.

45' REQD ACQUISITION ESMT

15' TEMP CONST ESMT

HCFCD ROW

POOR FARM DITCH

POOR FARM DITCH
HCFCD UNIT D111-00-00
IRREG. HCFCD FEE STRIP
H.C.C.F. 1307554
VOL 2816, PG 487, H.C.D.R.
KEY MAP #532 F, K

NOTES:

1. CONTRACTOR TO COORDINATE ALL WORK ON CHURCH PROPERTY WITH CHURCH REPRESENTATIVE CHRISTOPHER BOLAN AT (713) 667-9111 AND (832) 719-3112.
2. CONTRACTOR SHALL PROVIDE ADEQUATE SECURITY REQUIRED TO PROTECT CHURCH SCHOOL STAFF AND CHILDREN FROM CONSTRUCTION AREA.
3. CONTRACTOR TO VERIFY, DOCUMENT, AND PHOTOGRAPH ALL FEATURES WHICH ARE TO BE REPLACED TO ORIGINAL LOCATIONS.
4. CONTRACTOR SHALL REPLACE CONCRETE SLABS WITH 6" THK W/#4 ON 10" EW.
5. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR DRAINAGE IMPROVEMENT.
6. ALL GRASS AREAS DISTURBED BY CONSTRUCTION SHALL BE RESODDED WITH TIFWAY 419 BERMUDA.
7. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.

0 5 10 15 20
SCALE IN FEET

Construction in Harris County Flood Control District Right-of-Way requires:

Site plans must be approved prior to obtaining the required HCFCD Right-of-Way Notification. Be advised that the HCFCD Right-of-Way Notification is separate from the site development permit package

1.) HCFCD Right-of-Way Notification (permit)
2.) HCFCD 48-hr Pre-Construction Notice

Both are required prior to entering or working within Harris County Flood Control District right-of-way. The HCFCD Right-of-Way Notification and 48-hour notice must be provided to HCFCD at dcid@hcfcd.org. To apply for the HCFCD Right-of-Way Notification please go to http://apps.harriscountytx.gov/EPermits and apply for the HCFCD ROW under ROW Notification.

Failure to provide both items could result in project delay.

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JOHN PETERSON
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PROFESSIONAL ENGINEER
8/24/2020

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HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

OFFSITE REMOVAL AND REPLACEMENT PLAN

SCALE: 1"=10'

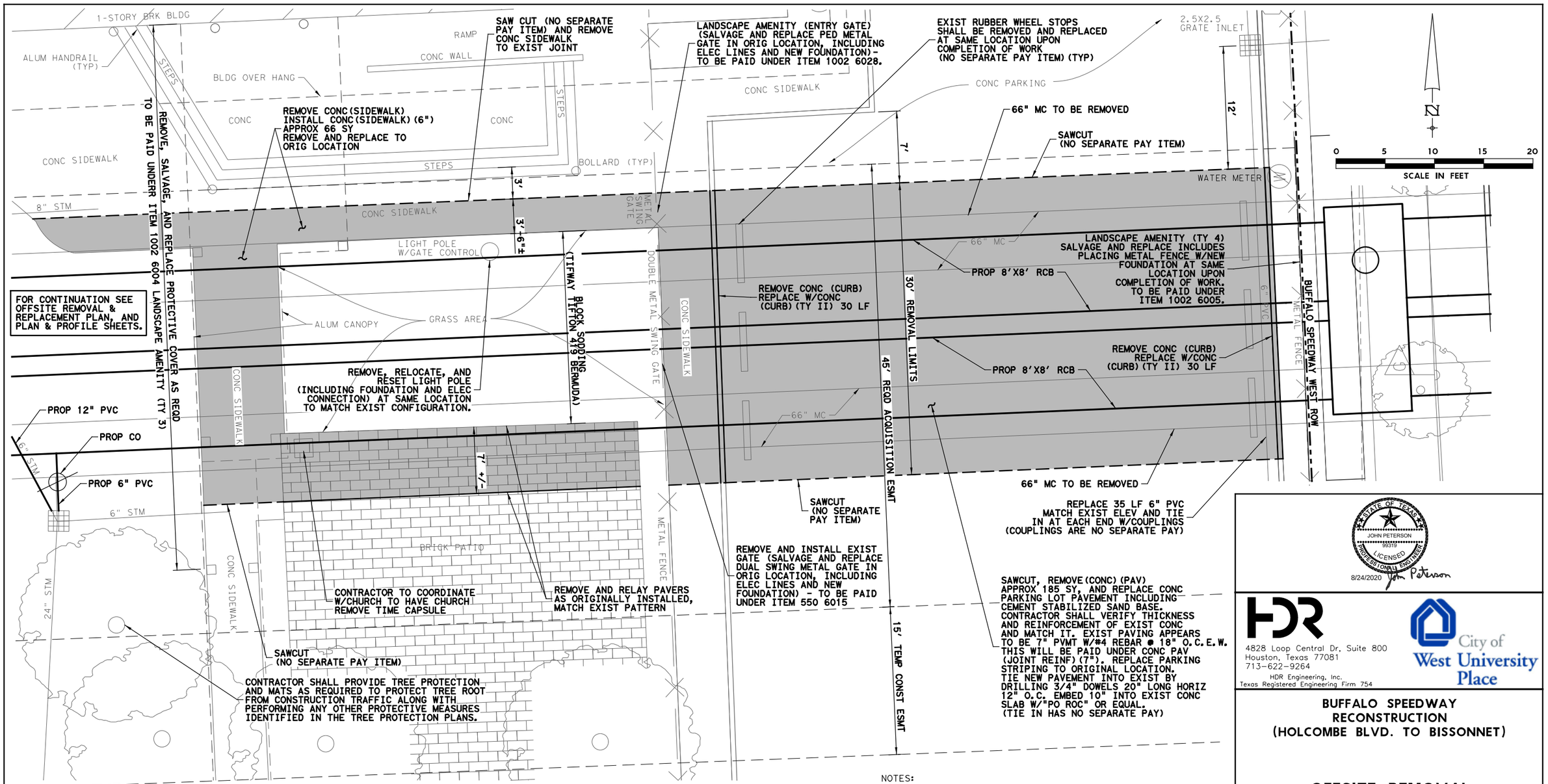
SHEET 1 OF 2

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		327
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
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100% SUBMITTAL



LEGEND:

HARDSCAPE REMOVAL AREA (EXCEPT FOR CANOPY REMOVAL)

NOTES:

1. CONTRACTOR TO COORDINATE ALL WORK ON CHURCH PROPERTY WITH CHURCH REPRESENTATIVE CHRISTOPHER BOLAN AT (713) 667-9111 AND (832) 719-3112.
2. CONTRACTOR SHALL PROVIDE ADEQUATE SECURITY REQUIRED TO PROTECT CHURCH SCHOOL STAFF AND CHILDREN FROM CONSTRUCTION AREA.
3. CONTRACTOR TO VERIFY, DOCUMENT, AND PHOTOGRAPH ALL FEATURES WHICH ARE TO BE REPLACED TO ORIGINAL LOCATIONS.
4. CONTRACTOR SHALL REPLACE CONCRETE SLABS WITH 6" THK W/#4 ON 10" EW.
5. SEE DRAINAGE PLAN AND PROFILE SHEETS FOR DRAINAGE IMPROVEMENT.
6. ALL GRASS AREAS DISTURBED BY CONSTRUCTION SHALL BE RESODDED WITH TIFWAY 419 BERMUDA.
7. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.

STATE OF TEXAS
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8/24/2020

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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

OFFSITE REMOVAL AND REPLACEMENT PLAN

SCALE: 1"=10'

SHEET 2 OF 2

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		328
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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100% SUBMITTAL

ST. VINCENT DE PAUL CHURCH SITE NOTES:

1. CONTRACTOR SHALL PROVIDE SECURITY FENCING CONSISTING OF 6 FOOT METAL CHAINLINK FENCING WITH SCREENING AND FIXED/DRIVEN POST SUCH THAT IT WILL NOT BE BLOWN OVER OR MOVED BY THE WIND. FENCING WITH FOOTINGS WEIGHTED DOWN WITH SAND BAGS WILL NOT BE ALLOWED. THE COST FOR THE SECURITY FENCING IS INCIDENTAL TO THE PERTINENT BID ITEMS.

2. CONTRACTOR SHALL COORDINATE WITH CHURCH REPRESENTATIVE CHRISTOPER BOLAN AT (713) 667-9111 AND (832) 719-3112 IN REGARDS TO ROUTING PEDESTRIAN TRAFFIC TO VARIOUS SCHOOL BUILDINGS. THE CONTRACTOR SHALL LIMIT HIS WORK TO THE AREA WITHIN THE TEMPORARY CONSTRUCTION EASEMENT AGREED UPON BY THE CITY OF WEST UNIVERSITY PLACE AND ST. VINCENT DE PAUL CATHOLIC CHURCH.

3. THE CONTRACTOR SHALL PROVIDE EACH OF HIS EMPLOYEES UNIQUE EASILY VISIBLE IDENTIFICATION (SHIRTS, SAFETY VEST AND HARD HATS, ETC.). THEY SHALL BE EDUCATED OF THE CHURCH'S STRINGENT POLICIES FOR WORKING ON CHURCH PROPERTY.

4. CONTRACTOR EMPLOYEES SHALL NOT PARK ON CHURCH PROPERTY.

5. THE CHURCH WILL HAVE A CONTRACTOR ON THE CHURCH PROPERTY PERFORMING WORK FOR THEM. TXDOT CONTRACTOR SHALL COORDINATE ANY ACTIVITIES ON OR ADJACENT TO ST. VINCENT DE PAUL CATHOLIC CHURCH PROPERTY WITH CHURCH REPRESENTATIVES.

6. PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL DOCUMENT ALL EXISTING CONDITIONS AND SUBMIT PRE-CONSTRUCTION PHOTOGRAPHS. IF A DISPUTE OF DAMAGE TO CHURCH PROPERTY IS MADE THE PRE-CONSTRUCTION PHOTOGRAPHS WILL BE UTILIZE TO VERIFY IF THE DISPUTED ITEM WAS A PREEXISTING CONDITION. IF NO DOCUMENTATION IS AVAILABLE IT WILL BE ASSUMED THAT THE ITEM WAS DAMAGED BY THE CONTRACTOR DURING CONSTRUCTION AND WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

7. CONTRACTOR SHALL COORDINATE WITH THE CHURCH FOR THE LOCATION OF TEMPORARY STORAGE OF SALVAGED ITEMS TO BE MOVED AND/OR REPLACED FOR CONSTRUCTION INCLUDING BUT NOT LIMITED TO BRICK PAVERS, CANOPY MATERIALS, STORAGE SHEDS, WOOD FOR PLANTERS, CHAIN LINK FENCING, METAL CONTAINERS, IRRIGATION SYSTEM MATERIALS, CONCRETE WHEELSTOPS, DECORATIVE METAL FENCING AND ELECTRICAL COMPONENTS. THE CHURCH WILL REMOVE ALL ITEMS WITHIN THE STORAGE SHED AND METAL CONTAINERS PRIOR TO THE CONTRACTOR REMOVING THEM.

8. CONTRACTOR SHALL USE CAUTION WHEN WORKING IN VICINITY OF THE CHURCH DRAINAGE FACILITIES. ANY DAMAGE TO EXISTING INLETS OR PIPE NOT CALLED FOR REMOVAL/REPLACEMENT SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR S EXPENSE.

9. CONTRACTOR SHALL VERIFY THE EXISTING METHOD OF BRICK PAVER INSTALLTION, FOUNDATION, AND MATCH IN KIND WHEN REPLACING THE PAVERS.

10. CONTRACTOR SHALL PROVIDE MEANS FOR PROTECTING SOUTHERN END OF PARKING LOT UTILIZED FOR CONSTRUCTION ACCESS. IN THE EVENT THE DRIVEWAY AND/OR PARKING LOT IS DAMAGED BEYOND WHAT IS CALLED TO BE REMOVED/REPLACED ON THE PLANS, CONTRACTOR SHALL REPLACE AT HIS EXPENSE.

11. THE EXISTING ALUMINUM CANOPY THAT IS IDENTIFIED TO BE REMOVED, SALVAGED, AND REASSEMBLED WAS ENGINEERED BY AVADEK WALKWAY COVERS & CANOPIES. PRIOR TO ITS REMOVAL, THE CONTRACTOR SHALL SUBMIT, AS PART OF THE SUBMITTAL PROCESS, FIELD DRAWINGS (WITH MEASUREMENTS) OF THE EXISTING CANOPY CONFIGURATION. IF THE CONTRACTOR CHANGES/ MODIFIES ANY PORTION OF THE ALUMINUM CANOPY CONFIGURATION INCLUDING ITS FOUNDATIONS, SUPPORTS, BRACKETS, HARDWARE, AND ANY ELECTRICAL COMPONENTS THAT IS INTEGRAL TO THE STRUCTURE, THE CONTRACTOR SHALL COORDINATE WITH AVADEK WALKWAY COVER & CANOPIES. CONTRACTOR SHALL SUBMIT MANUFACTURER AND/OR INSTALLER INFORMATION IF ALTERNATE COMPANIES ARE CONSIDERED FOR THIS EFFORT. THE CONTACT FOR AVADEK IS WILL SIMS (713) 944-0988.

12. CONTRACTOR SHALL COORDINATE WITH CITY OF WEST UNIVERSITY PLACE AND CHURCH REPRESENTATIVE, AND REMOVE EXISTING SOD FROM CHURCH FOOTBALL FIELD TO AGREED LIMITS. THE AREA SHALL BE REGRADED TO ACHIEVE POSITIVE DRAINAGE AFTER THE USE OF THE TEMPORARY EASEMENT IS COMPLETED. ALL THE DISTURBED AREA ON THE CHURCH PROPERTY SHALL THEN BE SODDED WITH TIFWAY 419 BERMUDA GRASS.

13. THE CONTRACTOR SHALL COORDINATE SPECIAL PROTECTION OF THE PATIO TREE, WHICH WILL INCLUDE PROVIDING MATS OVER THE ROOT SYSTEM WITH THE CHURCH REPRESENTATIVE.

14. THE CONTRACTOR SHALL LOCATE AND DOCUMENT THE LOCATIONS OF SPRINKLER SYSTEM VALVES, SPRAY HEADS AND PIPING, AND REPLACE THEM TO THEIR ORIGINAL LOCATION. ANY DAMAGE TO THESE ITEMS SHALL BE REPLACED WITH NEW EQUIPMENT AT THE CONTRACTOR S EXPENSE.

15. CONTRACTOR SHALL COORDINATE WITH THE CHURCH FOR THE DISPOSAL OF THE OLD SCOREBOARD.

16. THE CONTRACTOR SHALL TAKE PRECAUTION AROUND THE EXISTING TREES AT THE HCFCD RIGHT OF WAY.

17. THERE IS TO BE A LINEAR DETENTION SYSTEM INSTALLED BY OTHERS ON THE WEST AND SOUTH SIDES OF THE ATHLETIC FIELD PRIOR TO THE INSTALLATION OF THE NEW BOX CULVERTS. THE GRASS OVER THIS SYSTEM IS TO BE REMOVED AND REPLACED BY OTHERS WITH THAT PROJECT. AS IT IS LOCATED BEYOND THE ATHLETIC FIELD, TXDOT'S CONTRACTOR SHALL NOT BE RESPONSIBLE FOR GRADING OR SODDING THIS AREA.

18. CONTRACTOR SHALL PROVIDE A SAFETY PLAN FOR WORK BEING PERFORMED ON ST. VINCENT DE PAUL PROPERTY FOR SPECIFICATION SECTION SUBMITTALS PRIOR TO MOBILIZATION.

19. THE FIRE SERVICE WATER LINE TO ST. VINCENT DE PAUL CHURCH SHALL BE PROTECTED AND ACTIVE AT ALL TIMES.

20. EACH METAL FENCE/GATE ITEM INCLUDES FULL COMPENSATION FOR CUTTING, REMOVING, SALVAGING, WELDING, FASTENERS, AND OTHER COMPONENTS; FOR CONCRETE FOOTINGS OF FENCE POSTS; FOR REPAIRS TO REPAINTED SURFACES TO MATCH EXISTING; AND FOR FURNISHING LABOR, TOOLS, EQUIPMENT AND INCIDENTALS.

STATE OF TEXAS
JOHN PETERSON
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LICENSED
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8/24/2020

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

ST VINCENT DE PAUL CHURCH NOTES

SCALE: N/A

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		329
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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FILE: $FILE$

100% SUBMITTAL

GENERAL NOTES:

1. ALL EXISTING MANHOLES AND OTHER UTILITY STRUCTURES IN THE CONSTRUCTION AREA SHALL BE ADJUSTED TO FINISHED GRADE OR TOP OF PAVEMENT AS NOTED OR DETAILED IN PLANS.
2. TEMPORARY RELOCATION OF EXISTING UTILITIES SHALL BE COORDINATED WITH THE OWNER 24 HOURS PRIOR TO RELOCATION. THIS INCLUDES BUT IS NOT LIMITED TO WATER LINE AND SANITARY SEWER RELOCATIONS AND OPERATION OF WATER LINE VALVES. RELOCATION SHALL BE AT THE CONTRACTOR'S EXPENSE UNLESS OTHERWISE NOTED ON PLANS.
3. RIM ELEVATIONS FOR MANHOLES SHALL BE SET FLUSH WITH THE FINISHED GRADE FOR ALL MANHOLES LOCATED IN PAVEMENT. RIM ELEVATIONS SHALL BE 3 INCHES ABOVE NATURAL GROUND FOR ALL MANHOLES LOCATED IN OTHER AREAS, UNLESS OTHERWISE SHOWN. FOR MANHOLES OUTSIDE OF PAVEMENT, SLOPED FILL SHALL BE ADDED FOR STORM WATER DRAINAGE AWAY FORM MANHOLE RIM.
4. NO EXCAVATIONS SHALL BE LEFT OPEN OVERNIGHT. ALL EXCAVATIONS WHICH CANNOT BE BACKFILLED OVERNIGHT FOR THE INSTALLATION OF MANHOLES, SANITARY SEWER LINES, AND OTHER UTILITIES SHALL BE COVERED WITH STEEL SHEETING WHEN IN PAVED AREAS; 3/4" PLYWOOD, WOOD PLANKING OR SOME OTHER MATERIAL APPROVED BY THE OWNER IN OTHER AREAS. THE EXCAVATION AREA MUST BE WELL PROTECTED WITH TRAFFIC BARRICADES EQUIPPED WITH FLASHING YELLOW LIGHTS. THE EXCAVATION AREAS MUST BE COMPLETELY CORDONED OFF WITH ORANGE PLASTIC CONSTRUCTION FENCING.
5. ALL EXCAVATION AREAS MUST BE COMPLETELY CORDONED OFF WITH A MINIMUM OF ORANGE PLASTIC CONSTRUCTION FENCING ACCEPTABLE TO THE OWNER. THE FENCE SHALL BE SUPPORTED WITH ENOUGH INTERMEDIATE SUPPORTS TO AVOID EXCESSIVE SAGGING. THE FENCE MAY BE TIED TO TRAFFIC BARRICADES WITH FLASHING YELLOW LIGHTS AND WOODEN LATHE FOR SUPPORT. WHERE EXCAVATIONS EXTEND BEYOND THE EXISTING BACK OF CURB OR EDGE OF PAVEMENT, ADEQUATE BARRICADES WITH FLASHING YELLOW LIGHTS SHALL BE INSTALLED TO PROTECT PEDESTRIAN TRAFFIC.
6. CONTRACTOR SHALL NOT USE RESIDENT'S OR COMMERCIAL ESTABLISHMENTS WATER. THE CONTRACTOR SHALL OBTAIN A METER FROM THE OWNER AND USE FIRE HYDRANTS AS THE OWNER DIRECTS.
7. CONTRACTOR SHALL LOCATE EXISTING SANITARY SEWER AND WATER LINES PRIOR TO ANY CONSTRUCTION AND SHALL NOTIFY ENGINEER IMMEDIATELY IF OTHER THAN SHOWN ON THE DRAWINGS.

DRAINAGE NOTES:

1. RELOCATE ALL EXISTING UTILITIES AS SHOWN ON PLANS OR DEEMED NECESSARY BY FIELD INVESTIGATIONS FOR STORM SEWER INSTALLATION. LOCATION AND ELEVATIONS OF EXISTING UTILITIES SHOWN ON DRAWINGS ARE APPROXIMATE AND SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. RELOCATION OF EXISTING UTILITIES SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. RELOCATION OF EXISTING UTILITIES SHALL BE AT THE CONTRACTOR'S EXPENSE UNLESS DESIGNATED ON PLANS.
2. CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS AND STATE OF TEXAS LAW CONCERNING EXCAVATION, TRENCHING, AND SHORING.
3. CONTRACTOR SHALL COORDINATE W/ENGINEER'S URBAN FORESTER TO MAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS, AND TREES ALONG THE AREA OF EXCAVATION PRIOR TO ANY WORK BEING PERFORMED.
4. CONTRACTOR SHALL MAINTAIN ADEQUATE DRAINAGE AT ALL TIMES DURING CONSTRUCTION.
5. CONTRACTOR SHALL COVER OPEN EXCAVATIONS WITH STEEL PLATES ANCHORED PROPERLY DURING NON-WORKING HOURS.
6. ALL RCP STORM SEWER PIPE SHALL CONFORM TO ASTM C-76, CLASS III WITH CEMENT STABILIZED SAND BEDDING. ALL RCP UNDER PAVEMENT SHALL BE RUBBER GASKET PIPE.
7. ALL STORM SEWER UNDER OR WITHIN TWO FEET OF PAVEMENT SHALL BE BACKFILLED WITH 1-1/2 SACK CEMENT STABILIZED SAND.
8. CONTRACTOR SHALL SET ALL PROPOSED MANHOLE RIMS TO MATCH PROPOSED PAVEMENT ELEVATION. (NO SEPARATE PAY).
9. ALL RCB (PRECAST REINFORCED CONCRETE BOX) SHALL CONFORM TO ASTM C-1577, CLASS III, WITH CEMENT STABILIZED BEDDING AND RAMNECK GASKETS.
10. ALL BOX MANHOLE AND JUNCTION BOX SIZES ON PLANS REFLECT INSIDE WALL DIMENSIONS. ALL STORM BOX MANHOLES SHALL BE 4'X4' UNLESS OTHERWISE NOTED ON PLANS.
11. ANY 4' TO 6' SQUARE BOX MANHOLES WHICH CANNOT BE INSTALLED PRE-CAST, SHALL BE CONSTRUCTED PER POUR-IN-PLACE JUNCTION BOX DETAILS.
12. PAYMENT FOR PRECAST REINFORCED CONCRETE BOX (RCB) STORM SEWER TRANSITION PIECES WIL BE BY THE LINEAR FOOT, WITH THE UNIT PRICE OF THE LARGER BOX AT THE TRANSITION, REGARDLESS OF THE LENGTH OF THE TRANSITION PIECE.

PROJECT CONTROL NOTES:

BASELINES, STATIONS, AND ELEVATIONS ON THESE PLANS HAVE BEEN ESTABLISHED BASED ON INFORMATION PROVIDED BY OTHERS (SEE SURVEY CONTROL MAPS INCLUDED). CONTRACTOR SHALL ESTABLISH BASELINES PRIOR TO COMMENCING WITH CONSTRUCTION ACTIVITIES AND NOTIFY THE ENGINEER AS SOON AS POSSIBLE, OF ANY DISCREPANCIES OR PROBLEMS ASSOCIATED WITH DOING SO. THE CONTROL BASELINES DO NOT NECESSARILY REPRESENT THE CENTERLINE OR CROWN OF THE EXISTING OR PROPOSED PAVING SECTION NOR THE CENTERLINE OF THE EXISTING RIGHT-OF-WAY.

STATE OF TEXAS
JOHN PETERSON
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LICENSED
PROFESSIONAL ENGINEER
8/24/2020

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Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE NOTES

SCALE: N/A

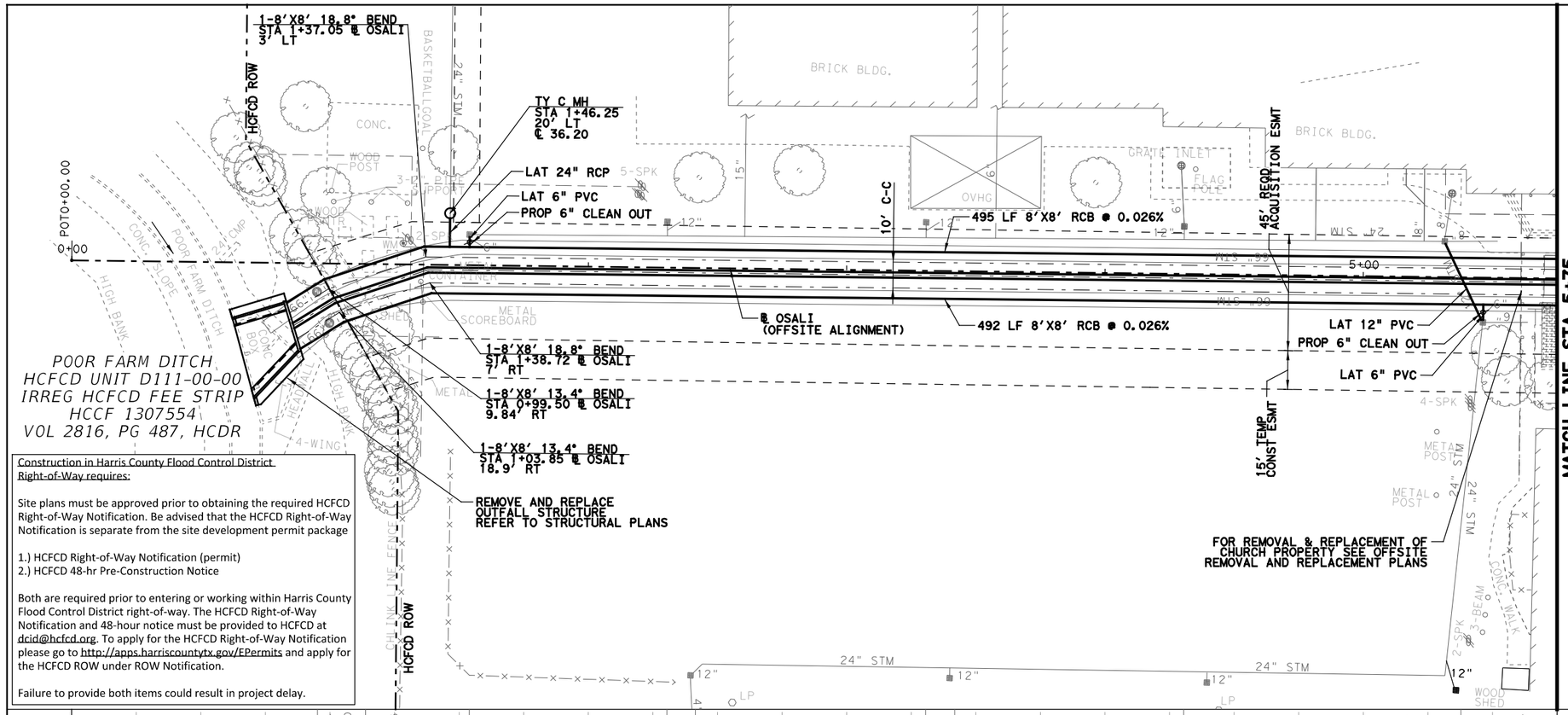
SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		330
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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100% SUBMITTAL



Construction in Harris County Flood Control District Right-of-Way requires:

Site plans must be approved prior to obtaining the required HCFCD Right-of-Way Notification. Be advised that the HCFCD Right-of-Way Notification is separate from the site development permit package

1.) HCFCD Right-of-Way Notification (permit)
2.) HCFCD 48-hr Pre-Construction Notice

Both are required prior to entering or working within Harris County Flood Control District right-of-way. The HCFCD Right-of-Way Notification and 48-hour notice must be provided to HCFCD at dcid@hcfcd.org. To apply for the HCFCD Right-of-Way Notification please go to http://apps.harriscountytx.gov/EPermits and apply for the HCFCD ROW under ROW Notification.

Failure to provide both items could result in project delay.

LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- ① PLUG STM SWR
- ② PROP PIPE COLLAR

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS FROM CENTER TO CENTER OF MANHOLE/INLETS. LENGTH ON SUMMARY SHEETS IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
2. SEE HYDRAULIC DATA SHEETS FOR DRAINAGE AREAS AND RUNOFF CALCULATIONS.
3. HORIZONTAL CONTROL FOR ALL GRATE INLETS IS AT THE CENTER OF GRATE AND BACK OF CURB FOR CURB INLETS.
4. SEE REMOVAL PLANS FOR DETAILS OF STORM SEWER DEMOLITION.
5. SEE DRAINAGE LATERAL PLANS FOR DETAILS OF STORM SEWER LATERALS.
6. ALL STATIONS AND OFFSETS ON THIS SHEET ARE FROM ℄ OFFSITE DRAINAGE UNLESS OTHERWISE NOTED.
7. FOR PROPOSED WATERLINE ADJUSTMENT, SEE WATERLINE PLAN AND PROFILE SHEET.
8. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.

0 25 50 75 100
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS
JOHN PETERSON
95319
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PROFESSIONAL ENGINEER
8/24/2020

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

OFFSITE DRAINAGE
BEGIN TO STA 5+75

SCALE: 1"=50'-H
1"=5'-V

SHEET 1 OF 2

Texas Department of Transportation

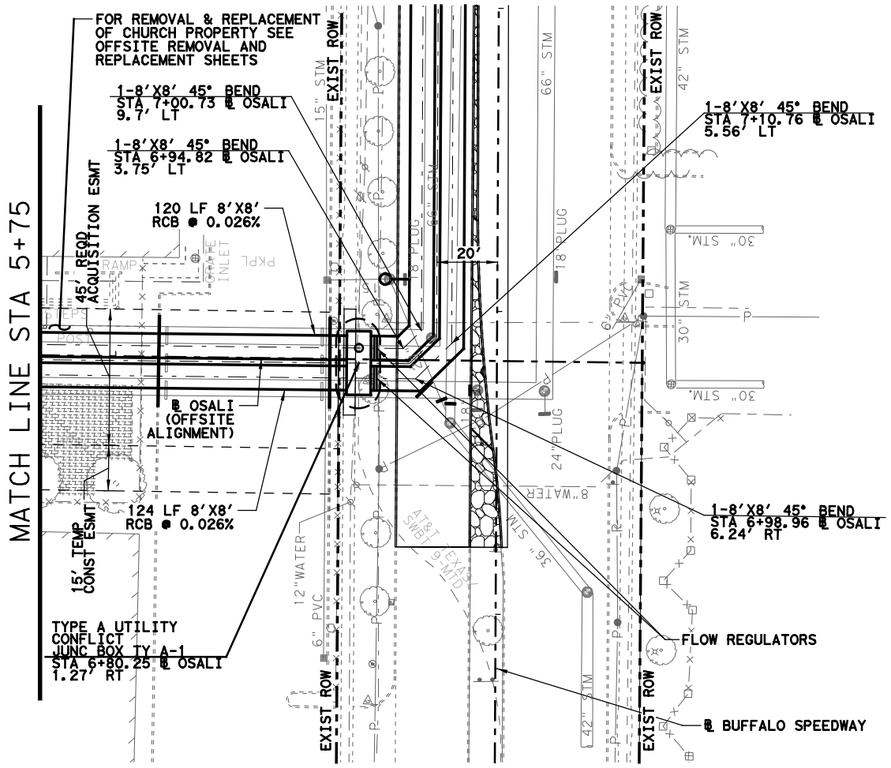
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6	(SEE THE TITLE SHEET)		331
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

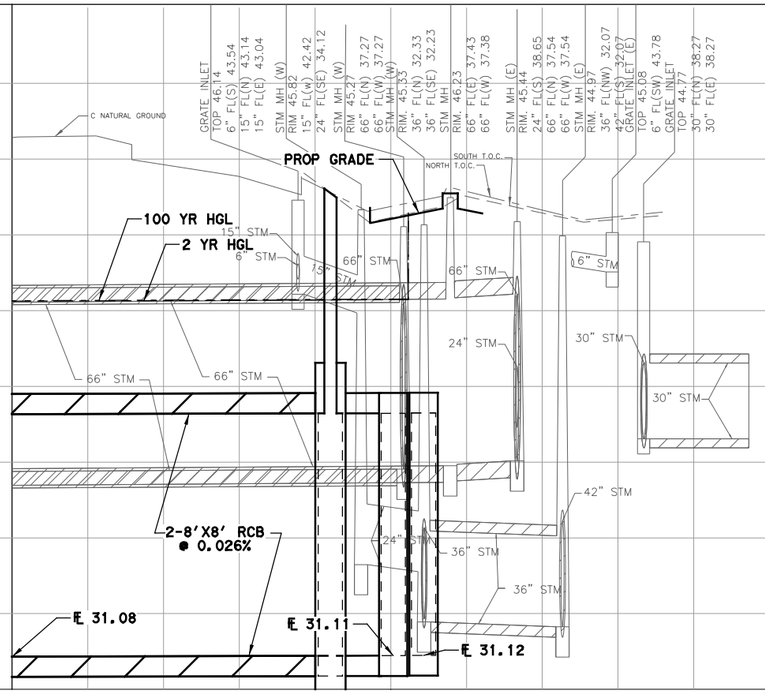
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100% SUBMITTAL

BUFFALO SPEEDWAY

(SEE BUFFALO SPEEDWAY PLAN & PROFILE BEGIN TO STA 4+00)







LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS FROM CENTER TO CENTER OF MANHOLE/INLETS. LENGTH ON SUMMARY SHEETS IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
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8. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.

0 25 50 75 100
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

OFFSITE DRAINAGE STA 5+75 TO END

SCALE: 1"=50'-H
1"=5'-V

SHEET 2 OF 2

Texas Department of Transportation

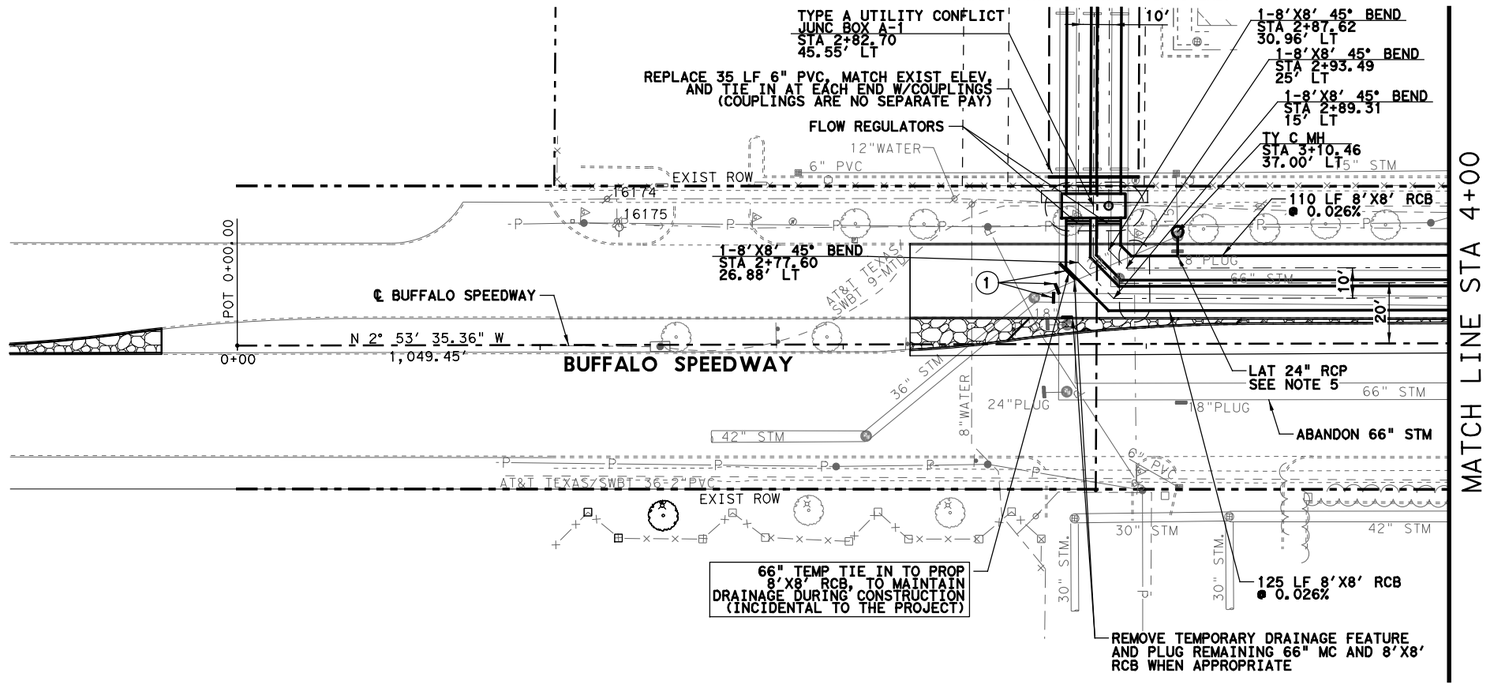
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6	(SEE THE TITLE SHEET)			332
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	

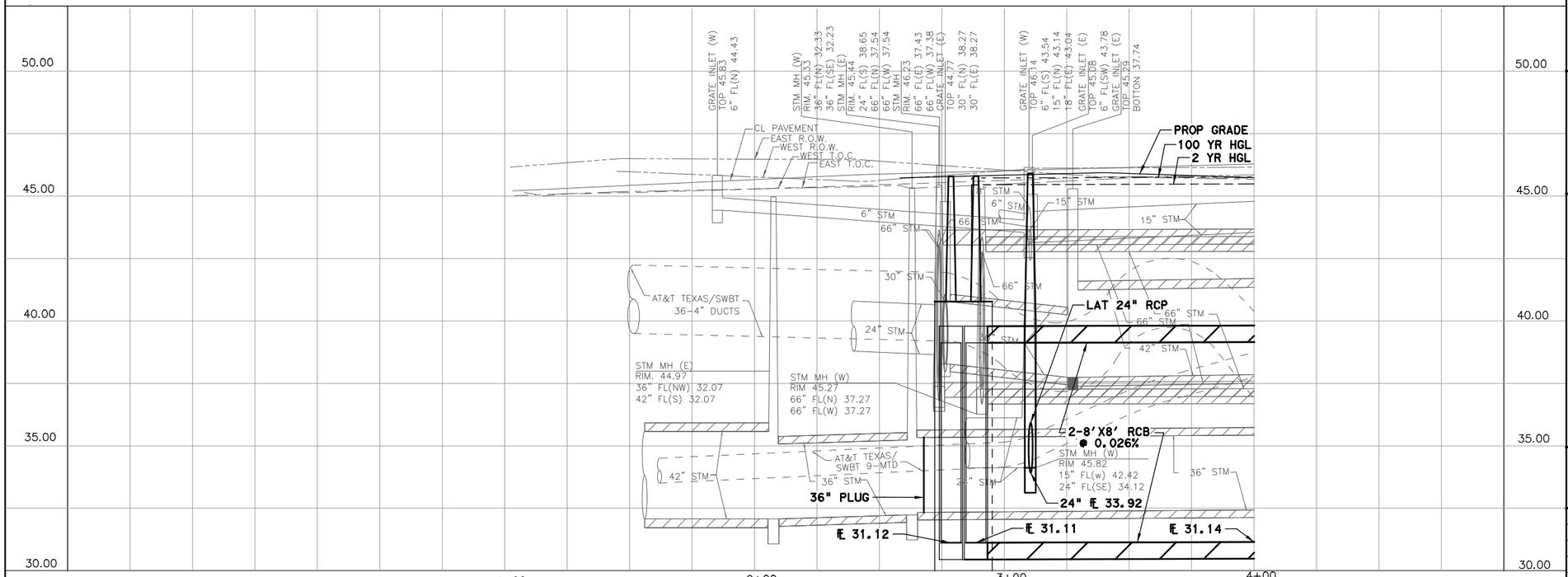
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100% SUBMITTAL

OFFSITE DRAINAGE

(SEE OFFSITE DRAINAGE PLAN & PROFILE STA 5+75 TO END)





LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

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9. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS
JOHN PETERSON
95319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
BEGIN TO STA 4+00

SCALE: 1"=50'-H
1"=5'-V

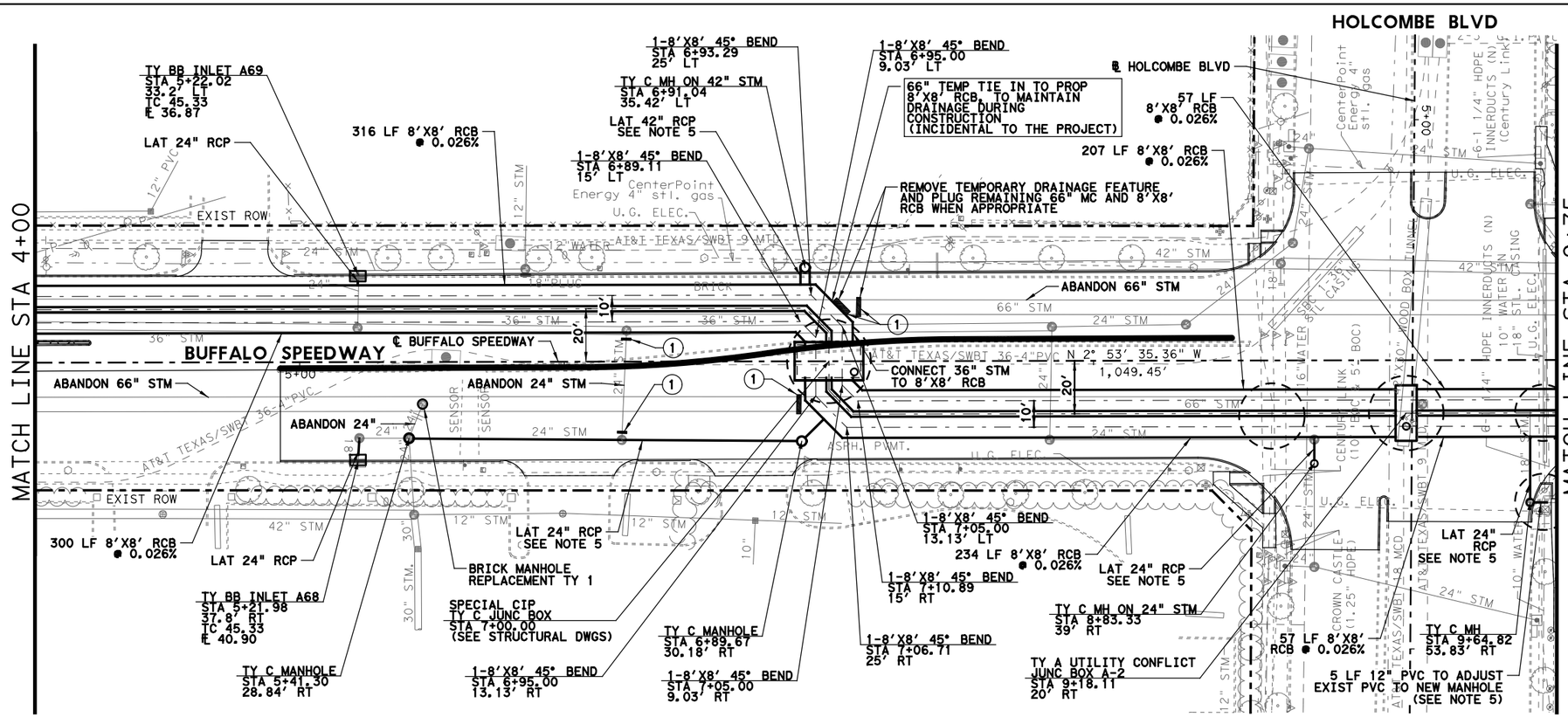
SHEET 1 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		333
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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100% SUBMITTAL



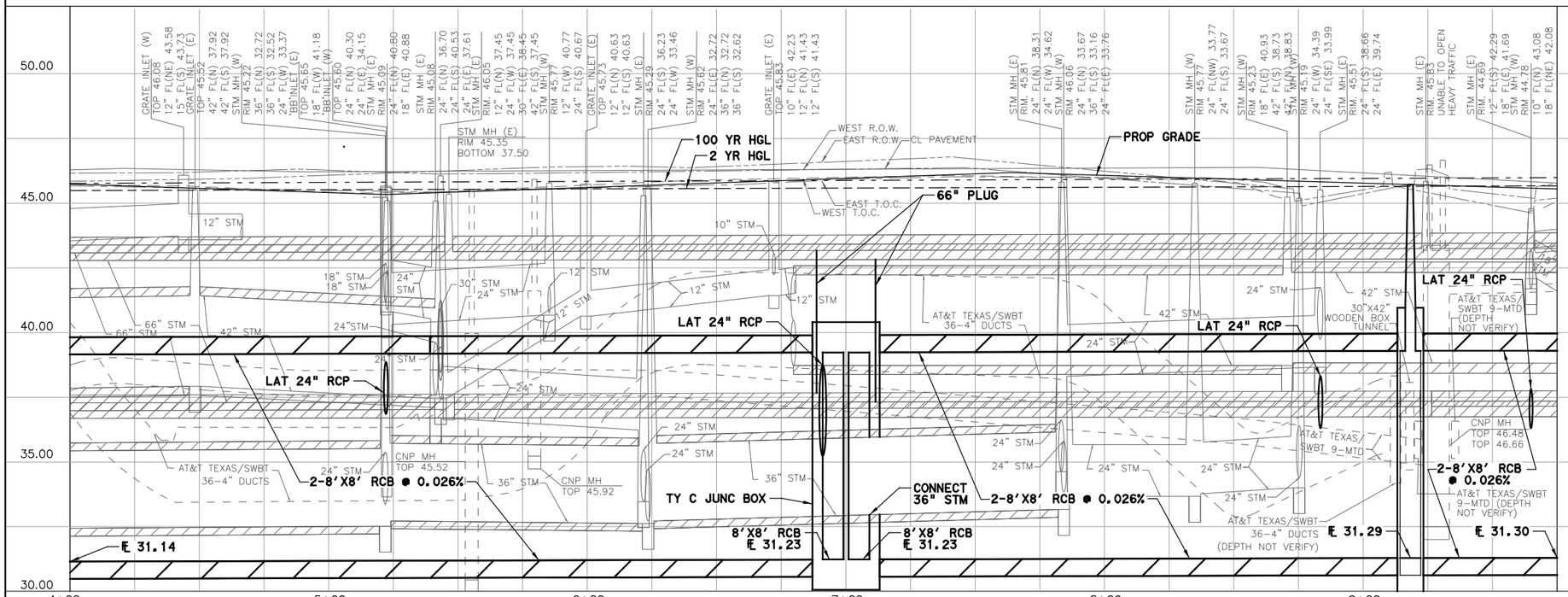
LEGEND

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0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET



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TIME: 3:55:58 PM
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JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

MEHRAN BAVARIAN
48811
REGISTERED
PROFESSIONAL ENGINEER
8/25/2020

Seal pertains to street inlets and laterals

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Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 4+00 TO STA 9+75

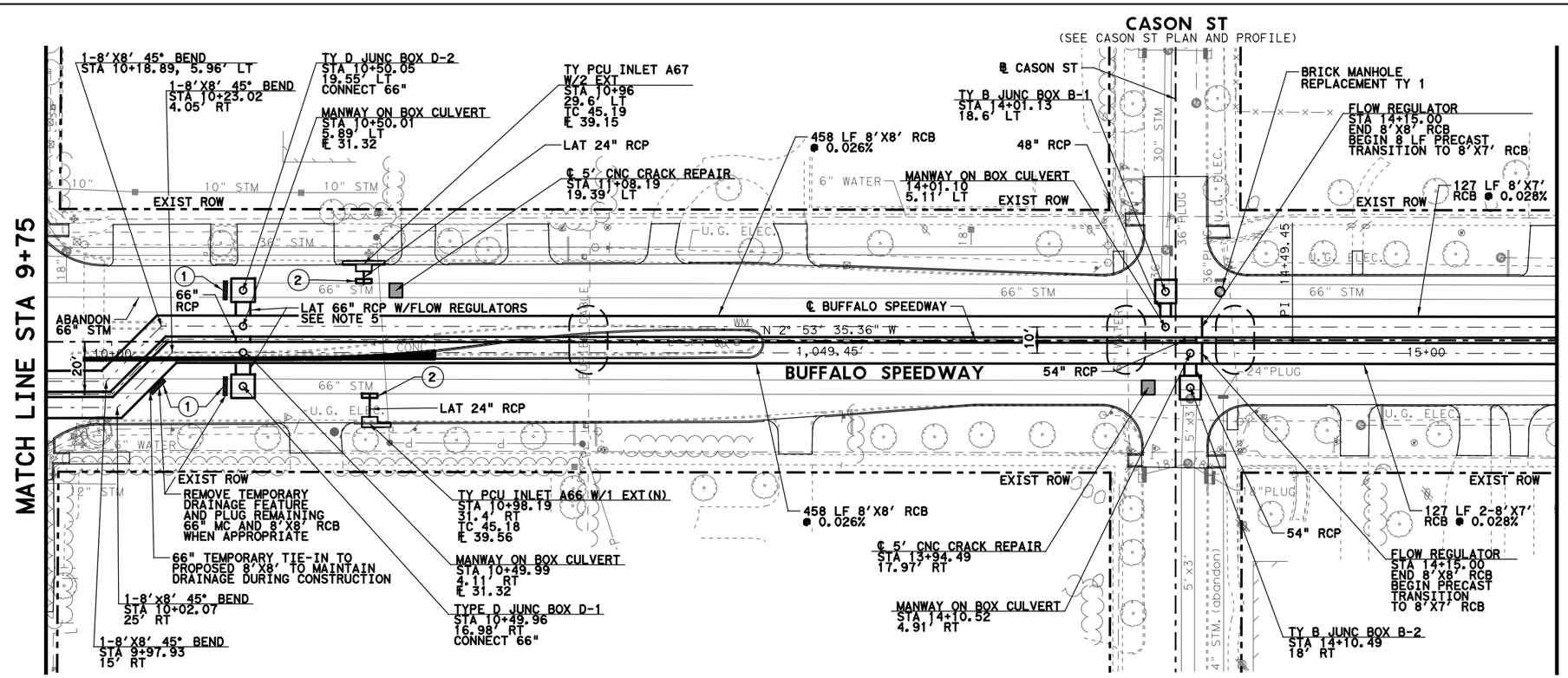
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1"=5'-V

SHEET 2 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		334
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

100% SUBMITTAL



LEGEND

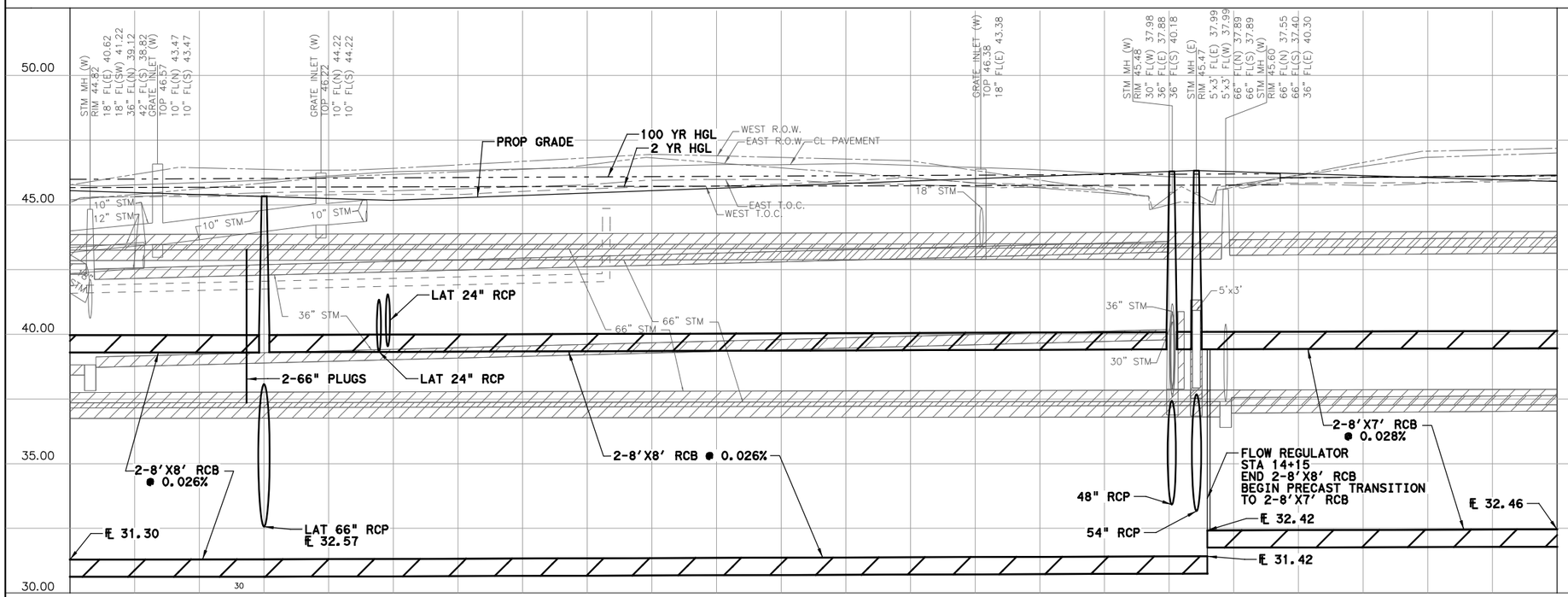
- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS FROM CENTER TO CENTER OF MANHOLE/INLETS. LENGTH ON SUMMARY SHEETS IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
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9. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET



STATE OF TEXAS — JOHN PETERSON — 95319 — LICENSED PROFESSIONAL ENGINEER — 8/24/2020

STATE OF TEXAS — MEHRAN BAVARIAN — 48811 — REGISTERED PROFESSIONAL ENGINEER — 8/25/2020

Seal pertains to street inlets and laterals

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 9+75 TO STA 15+50

SCALE: 1"=50'-H
1"=5'-V

SHEET 3 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		335
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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FILE: $FILE$
DATE: 8/18/2020
TIME: 3:16:02 PM
PENTABLE: TXDOT.tbl

100% SUBMITTAL

MATCH LINE STA 15+50

MATCH LINE STA 21+25

CARNEGIE ST
(SEE CARNEGIE ST PLAN & PROFILE)

BUFFALO SPEEDWAY

℄ BUFFALO SPEEDWAY
N 2° 37' 20.07" W
4,525.72'

TY PCU INLET A65
W/2 EXI
STA 15+64
25.1' LT
TC 45.88
E 39.41

LAT 24" RCP

EXIST ROW

6" WATER

8" SAN.

575 LF 8'X7' RCB @ 0.028%

TY PCU INLET A63
W/2 EXI
STA 18+69.41
25' LT
TC 46.02
E 39.60

LAT 24" RCP

TY B JUNC BOX B-3
STA 20+58.48
17.34' LT

48" RCP

MANWAY ON BOX CULVERT
STA 20+58.49
5' LT

EXIST ROW

8" SAN.

U.G. ELEC.

℄ CARNEGIE ST

FLOW REGULATOR
STA 20+65.00

EXIST ROW

20+00

66" STM

8" SAN.

15"PLUG

6" WATER

EXIST ROW

LAT 24" RCP

TY BB INLET A64
STA 15+61.55
25' RT
TC 45.87
E 39.65

℄ 5' CNC CRACK REPAIR
STA 16+02.14
18.21' RT

575 LF 8'X7' RCB @ 0.028%

LAT 24" RCP

TY PCU INLET A62
W/2 EXI
STA 18+69.46
25' RT
TC 46.02
E 39.60

℄ 6' CNC CRACK REPAIR
STA 19+37.76
18.43' RT

EXIST ROW

BRICK MANHOLE
REPLACEMENT TY 1

MANWAY ON BOX CULVERT
STA 20+59.36
5' RT

48" RCP

TY B JUNC BOX B-4
STA 20+59.36
19.8' RT

EXIST ROW

FLOW REGULATOR
STA 20+65.00

48" RCP

8" SAN.

48" STM

LEGEND

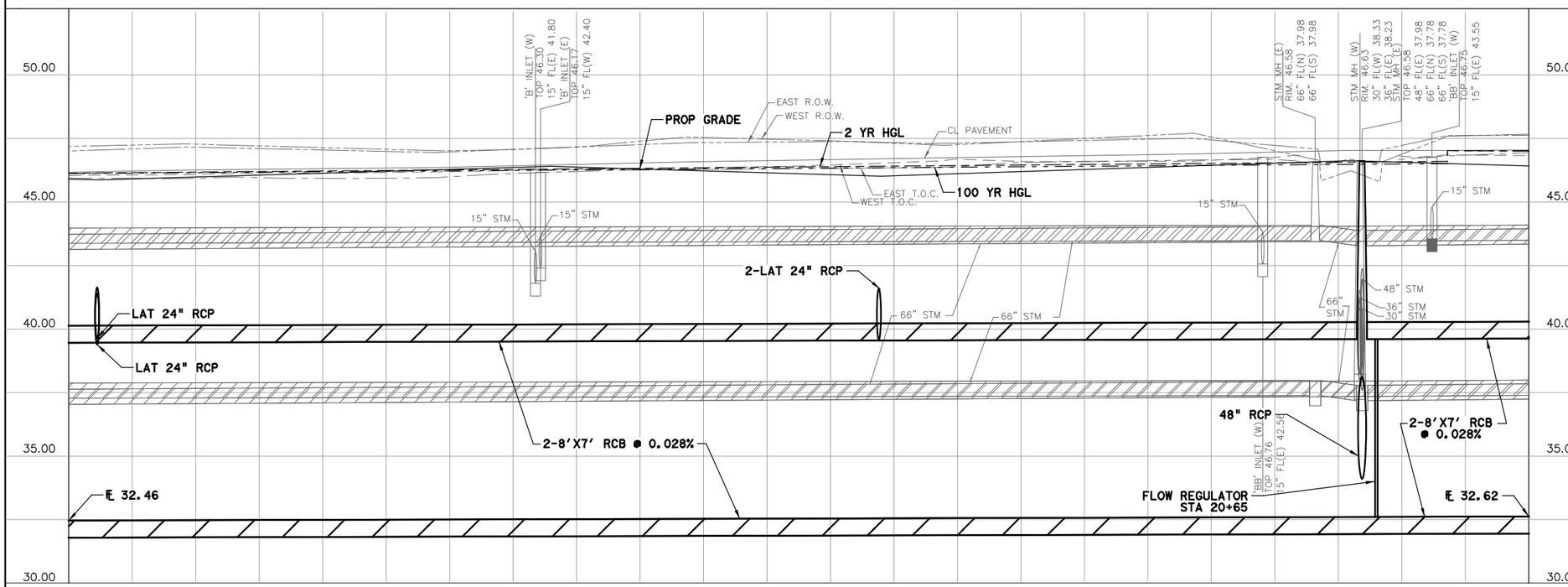
- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS FROM CENTER TO CENTER OF MANHOLE/INLETS. LENGTH ON SUMMARY SHEETS IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
2. SEE HYDRAULIC DATA SHEETS FOR DRAINAGE AREAS AND RUNOFF CALCULATIONS.
3. HORIZONTAL CONTROL FOR ALL GRATE INLETS IS AT THE CENTER OF GRATE AND BACK OF CURB FOR CURB INLETS.
4. SEE REMOVAL PLANS FOR DETAILS OF STORM SEWER DEMOLITION.
5. SEE DRAINAGE LATERAL PLANS FOR DETAILS OF STORM SEWER LATERALS.
6. ALL STATIONS AND OFFSETS ON THIS SHEET ARE FROM ℄ BUFFALO SPEEDWAY UNLESS OTHERWISE NOTED.
7. FOR PROPOSED WATERLINE ADJUSTMENT, SEE WATERLINE PLAN AND PROFILE SHEET.
8. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.
9. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET



STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED
PROFESSIONAL ENGINEER
8/25/2020

Seal pertains to street inlets and laterals

HDR
4828 Loop Central Dr, Suite 800
Houston, Texas 77081
713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 15+50 TO STA 21+25

SCALE: 1"=50'-H
1"=5'-V

SHEET 4 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		336
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg
USER: DMAHER
FILE: $FILE$
DATE: 8/18/2020
TIME: 3:16:07 PM
PENTABLE: TXDOT.tbl

100% SUBMITTAL

MATCH LINE STA 21+25

MATCH LINE STA 27+00

TY PCU INLET A61
W/1 EXT(N)
STA 21+84.23
25' LT
TC 46.24
℄ 39.80

LAT 24" RCP

575 LF 8'X7' RCB @ 0.028%

TY PCU INLET A59
W/1 EXT(N)
STA 25+06.42
25' LT
TC 46.44
℄ 40.00

LAT 24" RCP

BRICK MANHOLE
REPLACEMENT TY 2

EXIST ROW

8" WATER

8" SAN.

℄ BUFFALO SPEEDWAY

66" STM

N 2° 37' 20.07" W
4,525.72'

25+00

BUFFALO SPEEDWAY

6" WATER

U.G. ELEC.

8" SAN.

24" STM

EXIST ROW

LAT 24" RCP

TY PCU INLET A60
W/2 EXT
STA 21+84.21
25' RT
TC 46.24
℄ 39.80

575 LF 8'X7' RCB @ 0.028%

℄ 5' CNC CRACK REPAIR
STA 23+39.24
19.20' RT

LAT 24" RCP

TY PCU INLET A58
W/2 EXT
STA 25+05.81
25' RT
TC 46.45
℄ 40.00

BRICK MANHOLE
REPLACEMENT TY 2

EXIST ROW

LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

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HORZ. SCALE IN FEET: 0 25 50 75 100

VERT. SCALE IN FEET: 0 5 10

50.00
45.00
40.00
35.00
30.00

100 YR HGL
2 YR HGL
PROP GRADE
WEST R.O.W.
EAST R.O.W.
CL PAVEMENT
EAST T.O.C.
WEST T.O.C.

STM MH (W) RIM 46.39
66" F(L(N) 38.39
66" F(L(S) 38.34
24" F(L(E) 41.49
STM MH (E) RIM 46.39
66" F(L(N) 38.44
66" F(L(S) 38.39
24" F(L(E) 41.29
24" STM MH (W) RIM 46.33
48" F(L(E) 39.03
48" F(L(W) 39.03

48" STM
24" STM
24" STM

2-LAT 24" RCP
66" STM
66" STM
2-LAT 24" RCP

2-8'X7' RCB @ 0.028%

48" RCP

℄ 32.62

℄ 32.78

22+00 23+00 24+00 25+00 26+00 27+00

STATE OF TEXAS
JOHN PETERSON
95319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED
PROFESSIONAL ENGINEER
8/25/2020

Seal pertains to street inlets and laterals

HDR
4828 Loop Central Dr, Suite 800
Houston, Texas 77081
713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 21+25 TO STA 27+00

SCALE: 1"=50'-H
1"=5'-V

SHEET 5 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		337
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg
USER: DMAHER
FILE: $FILE$
DATE: 8/18/2020
TIME: 3:56:11 PM
PENTABLE: TXDOT.tbl

100% SUBMITTAL

PITTSBURGH ST
(SEE PITTSBURGH ST PLAN & PROFILE)

MATCH LINE STA 27+00

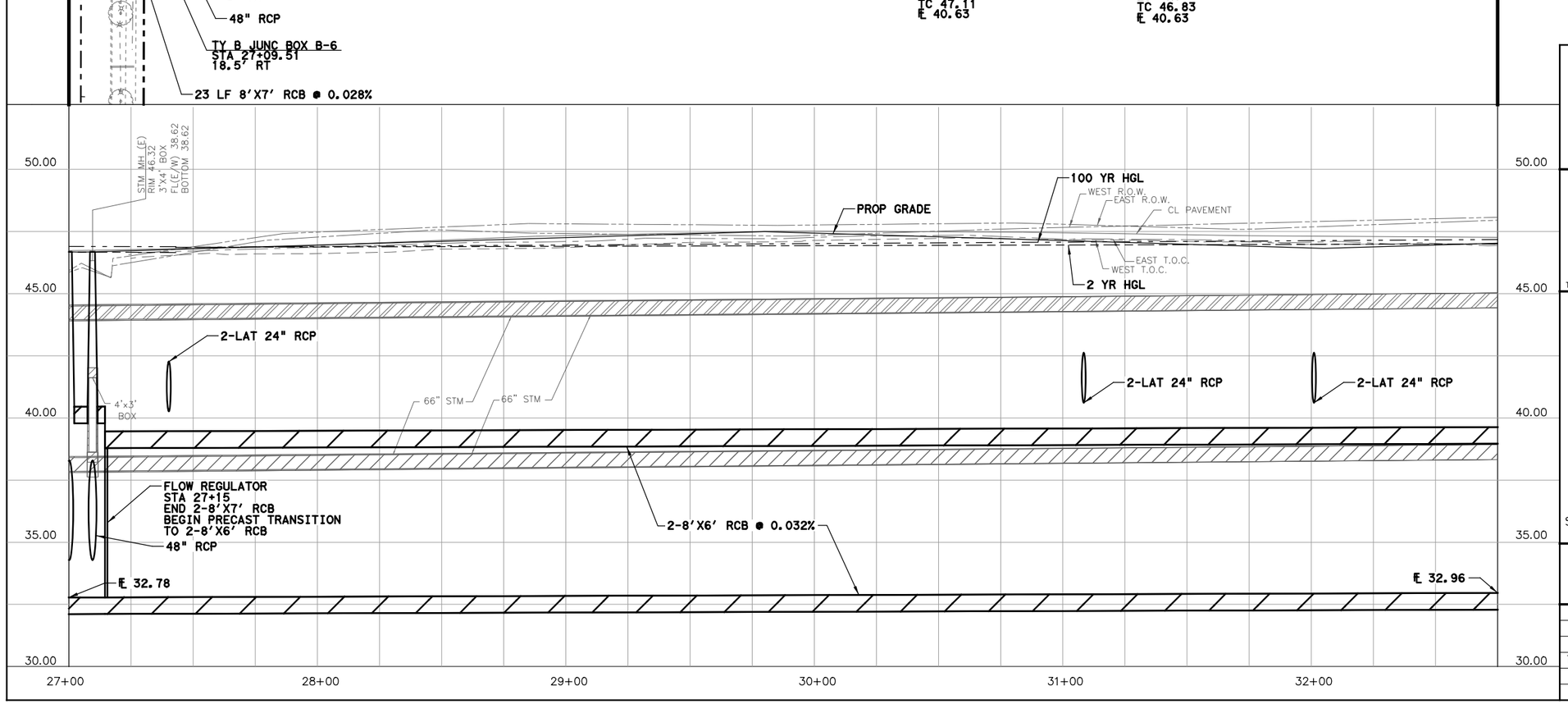
℄ PITTSBURGH ST
℄ 10' CNC CRACK REPAIR
STA 27+08.53
16.27' LT
MANWAY ON BOX CULVERT
STA 27+00.21
5' LT
23 LF 8'X7' RCB @ 0.028%
48" RCP
TY B JUNC BOX B-5
STA 27+00.21
16.25' LT
FLOW REGULATOR
STA 27+15.00
END 8'X7' RCB
BEGIN PRECAST TRANSITION
TO 8'X6' RCB
TY PCU INLET A57
W/2 EXT
STA 27+40.43
25' LT
TC 46.77
℄ 40.28
552 LF 8'X6' RCB @ 0.032%
TY PCU INLET A71
W/1 EXT(S)
STA 31+08.17
25' LT
TC 47.11
℄ 40.63
TY PCU INLET A55
W/1 EXT(N)
STA 32+01.50
25' LT
TC 46.83
℄ 40.63
LAT 24" RCP
EXIST ROW
8" SAN.
6" WATER
U.G. ELEC.
BUFFALO SPEEDWAY
℄ BUFFALO SPEEDWAY
66" STM
10'
30+00
N 2° 37' 20.07" W
4,525.72
4'X3' BOX
24"
FLOW REGULATOR
STA 27+15.00
END 8'X7' RCB
BEGIN 8 LF PRECAST TRANSITION
TO 8'X6' RCB
TY PCU INLET A56
W/2 EXT
STA 27+40.65
25' RT
TC 46.78
℄ 40.28
MANWAY ON BOX CULVERT
STA 27+09.51
5' RT
TY B JUNC BOX B-6
STA 27+09.51
18.5' RT
TY PCU INLET A72
W/1 EXT(N)
STA 31+08.30
25' RT
TC 47.11
℄ 40.63
TY PCU INLET A54
W/1 EXT(S)
STA 32+01.42
25' RT
TC 46.83
℄ 40.63
WM

MATCH LINE STA 32+75

LEGEND
- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES
1. LENGTH OF PIPE SHOWN IS FROM CENTER TO CENTER OF MANHOLE/INLETS. LENGTH ON SUMMARY SHEETS IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
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9. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET
0 5 10
VERT. SCALE IN FEET



STATE OF TEXAS — JOHN PETERSON — 95019 — LICENSED — PROFESSIONAL ENGINEER
8/24/2020

STATE OF TEXAS — MEHRAN BAVARIAN — 48811 — REGISTERED — PROFESSIONAL ENGINEER
8/25/2020

Seal pertains to street inlets and laterals

HDR
4828 Loop Central Dr, Suite 800
Houston, Texas 77081
713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 27+00 TO STA 32+75

SCALE: 1"=50'-H
1"=5'-V

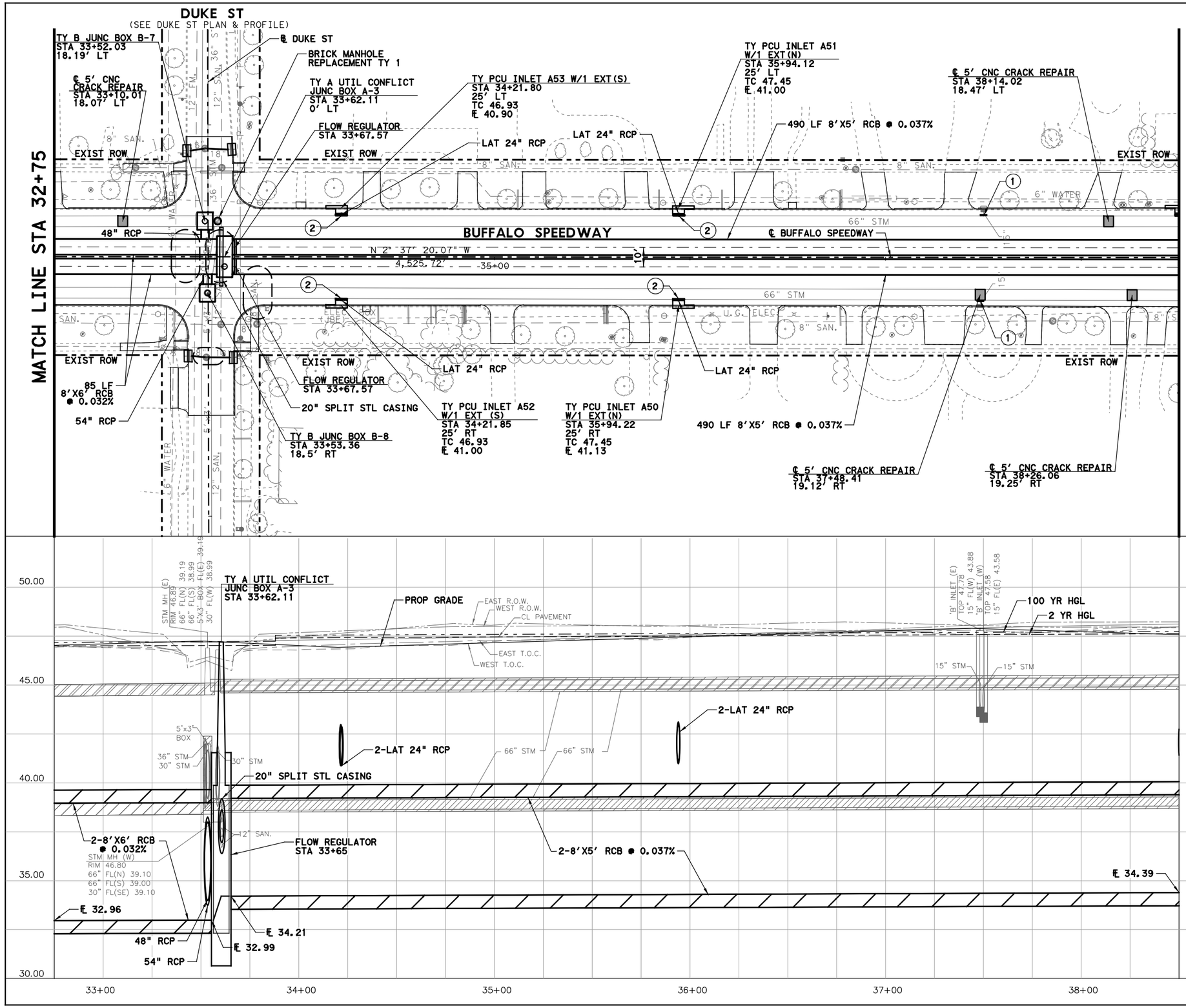
SHEET 6 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		338
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg
USER: DMAHER
FILE: $FILE$
DATE: 8/18/2020
TIME: 3:16:14 PM
PENTABLE: TXDOT.tbl

100% SUBMITTAL



LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

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9. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS — JOHN PETERSON — 99315 — LICENSED PROFESSIONAL ENGINEER
8/24/2020

STATE OF TEXAS — MEHRAN BAVARIAN — 48811 — REGISTERED PROFESSIONAL ENGINEER
8/25/2020

Seal pertains to street inlets and laterals

HDR
4828 Loop Central Dr, Suite 800
Houston, Texas 77081
713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 32+75 TO STA 38+50

SCALE: 1"=50'-H
1"=5'-V

SHEET 7 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		339
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg
USER: DMAHER
FILE: $FILE$
DATE: 8/18/2020
TIME: 3:16:18 PM
PENTABLE: TXDOT.tbl

100% SUBMITTAL

MATCH LINE STA 38+50

MATCH LINE STA 44+25

UNIVERSITY BLVD
(SEE UNIVERSITY BLVD PLAN & PROFILE)

℄ UNIVERSITY BLVD

TY PCU INLET A49
W/1 EXT(S)
STA 38+50.94
25.5' LT
TC 47.58
℄ 41.10

575 LF 8'X5' RCB @ 0.037%

14" CI. FM FROM STM. MH WITHOUT DISTURBING WALLS. ABABDON REMAINING 14" PIPE BY FILLING W/ GROUT

TY B JUNC BOX B-9
STA 41+35.08
18.65' LT

TY A UTIL CONFLICT
JUNC BOX A-4
STA 41+48.70

TY PCU INLET A42
W/1 EXT(N)
STA 43+10.00
25.5' LT
TC 47.95
℄ 41.16

LAT 24" RCP

EXIST ROW

24" RCP

6" WATER

U.G. ELEC.

BUFFALO SPEEDWAY

℄ BUFFALO SPEEDWAY

66" STM

N 2° 37' 20.07" W
4,525.72'

40+00

15" PLUG

12" PLUG

54" RCP

66" STM

30" STM (abandon)

10" WATER

SAN. MH (abandon)

HOLDING WATER

CenterPoint Energy 2" gas

BRICK

SPOIL

2-TSB

XWALK

℄ 5' CNC CRACK REPAIR
STA 38+84.06
19.34' RT

TY PCU INLET A48
W/1 EXT(N)
STA 38+56.98
25.5' RT
TC 47.57
℄ 41.25

TY BB INLET A47
STA 40+98.85
25.5' RT
TC 47.61
℄ 41.25

TY B JUNC BOX B-10
STA 41+36.34
19.71' RT

TY BB INLET A44
STA 42+00.34
25.5' RT
TC 47.61
℄ 41.37

TYPE B JUNC BOX B-11
STA 41+60.03
19.58' RT

5'X3' RCB

TY BB INLET A43
STA 42+94.95
25.5' RT
TC 47.91
℄ 41.50

℄ 5' CNC CRACK REPAIR
STA 42+59.17
19' RT

8" SAN.

14" FM

24" STM.

5' x3'

PH

TY E JUNC BOX B-9
STA 41+35.08

TY E JUNC BOX B-10
STA 41+36.34

STM MH (W)
RIM. 47.72
UNABLE TO OPEN
HEAVY TRAFFIC

STM MH (E)
RIM. 47.82
6" FL(SE) 45.62
24" FL(W) 42.52

EAST R.O.W.
WEST R.O.W.
CL PAVEMENT
EAST T.O.C.
WEST T.O.C.

PROP GRADE

100 YR HGL
2 YR HGL

15" STM
6" STM
24" STM
5'x3' BOX
66" STM

LAT 24" RCP

JUNC BOX B-9
CONNECT EXIST 66" STM
MATCH APPROX ℄ 39.61

JUNC BOX B-10
CONNECT EXIST 66" STM
MATCH APPROX ℄ 39.54

24" RCP

54" RCP
℄ 37.00

2-8'X5' RCB @ 0.037%

℄ 37.10

℄ 34.39

14" PVC FORCE MAIN

℄ 34.50

24" STEEL CASING

'BB' INLET (E)
TOP 47.64
15" FL(W) 43.44
'BB' INLET (W)
TOP 47.61
15" FL(E) 43.21

STM MH (E)
RIM 47.65
BOTTOM 39.54
UNABLE TO SEE PIPE

STM MH
RIM 47.51
BOTTOM 35.67
UNABLE TO SEE PIPES

'BB' INLET (E)
TOP 47.62
15" FL(W) 43.32
'BB' INLET (W)
TOP 47.49
15" FL(E) 43.69

50.00
45.00
40.00
35.00
30.00

39+00 40+00 41+00 42+00 43+00 44+00

LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

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0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS
JOHN PETERSON
95319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED
PROFESSIONAL ENGINEER
8/25/2020

Seal pertains to street inlets and laterals

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Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 38+50 TO STA 44+25

SCALE: 1"=50'-H
1"=5'-V

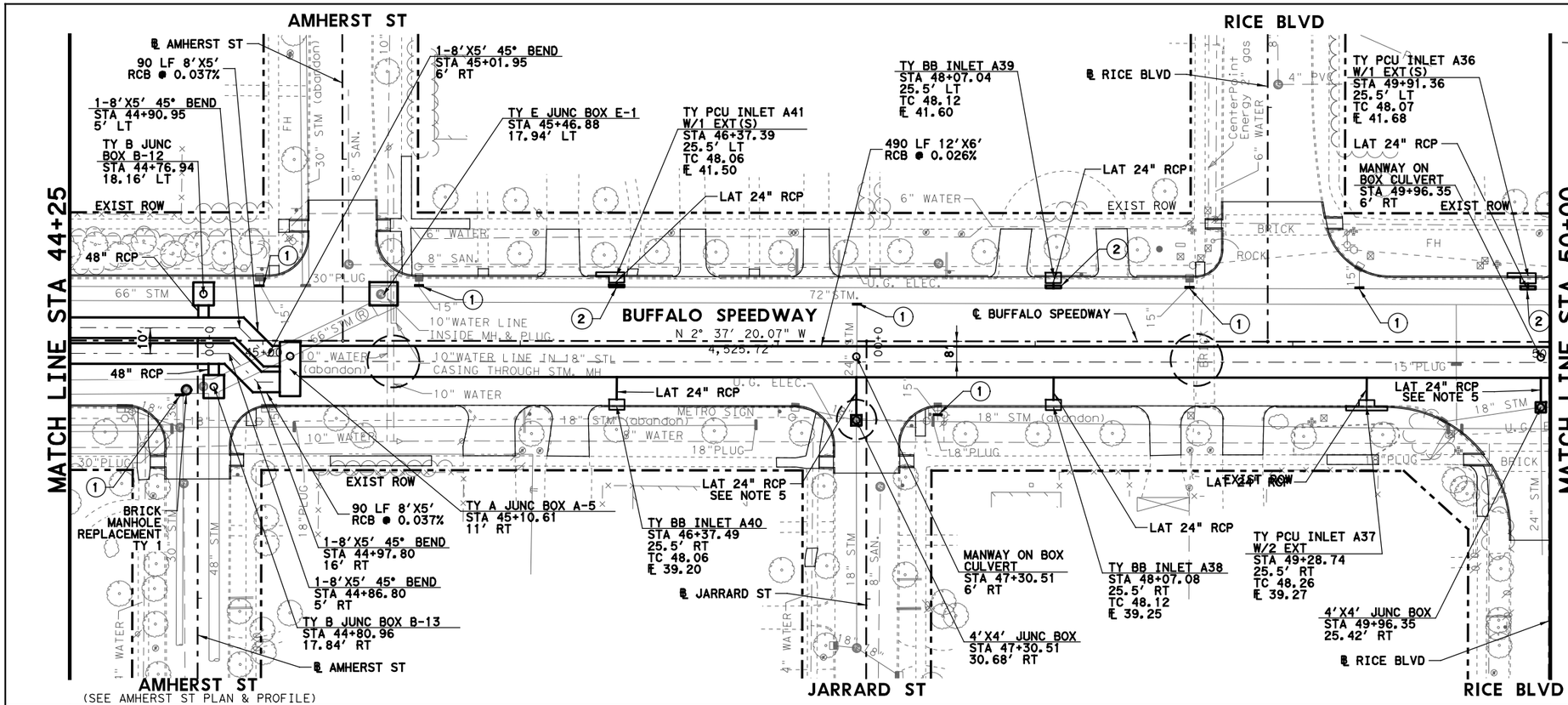
SHEET 8 OF 15

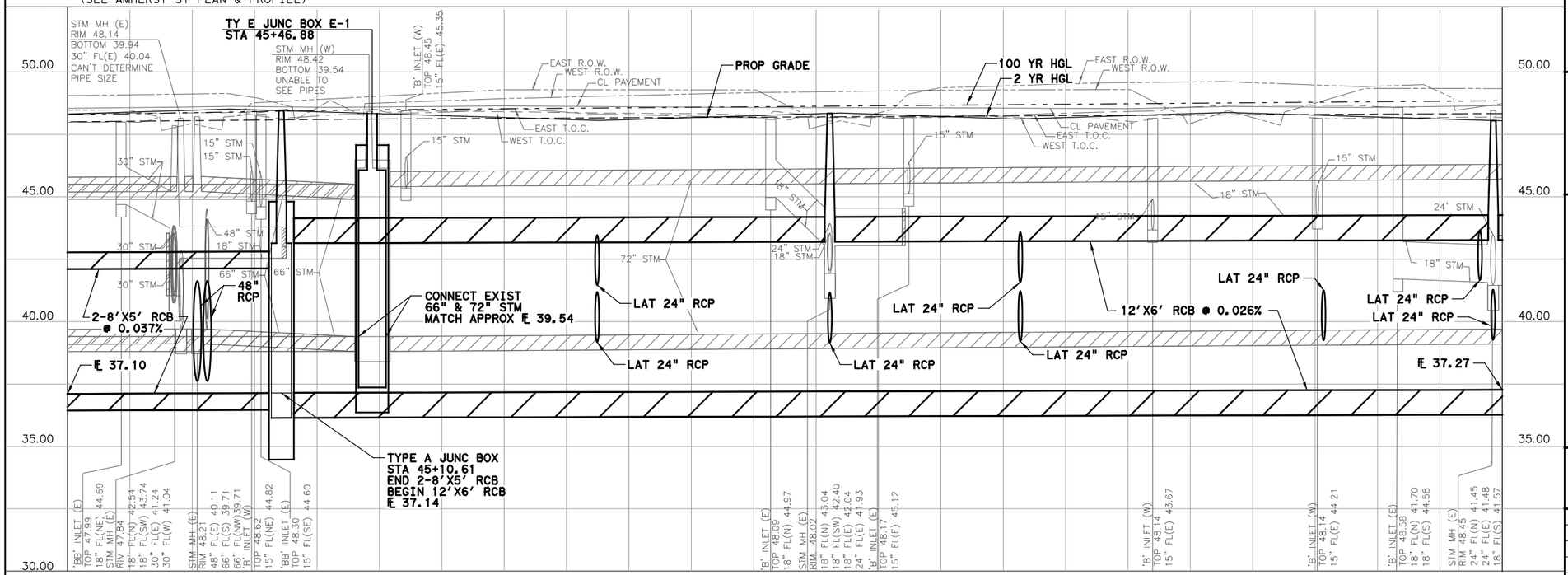
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		340
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg
USER: DMAHER
FILE: $FILE$
DATE: 8/18/2020
TIME: 3:16:22 PM
PENTABLE: TXDOT.tbl

100% SUBMITTAL





LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

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9. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS — JOHN PETERSON — 99319 — LICENSED PROFESSIONAL ENGINEER — 8/24/2020

STATE OF TEXAS — MEHRAN BAVARIAN — 48811 — REGISTERED PROFESSIONAL ENGINEER — 8/25/2020

Seal pertains to street inlets and laterals

HDR
4828 Loop Central Dr, Suite 800
Houston, Texas 77081
713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 44+25 TO STA 50+00

SCALE: 1"=50'-H
1"=5'-V

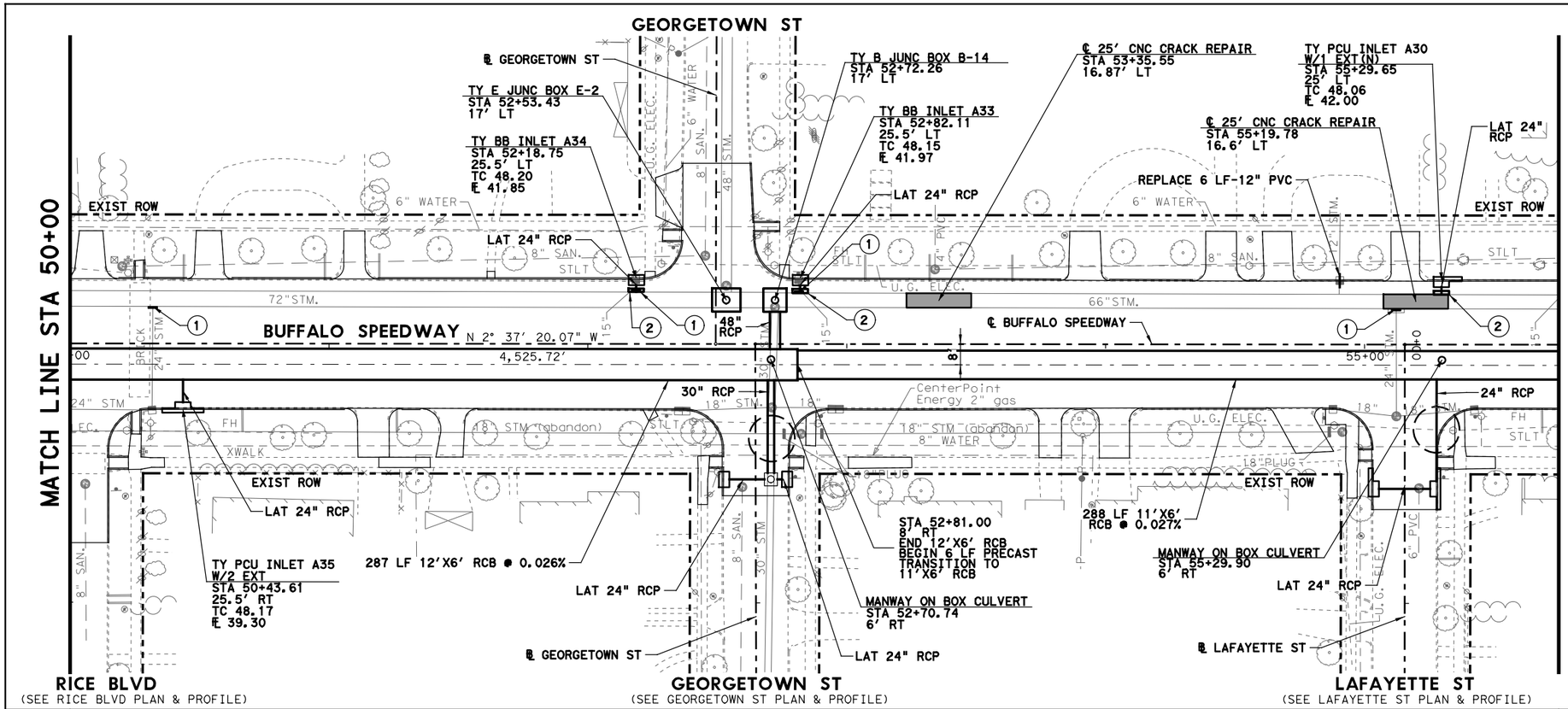
SHEET 9 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		341
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
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FILE: $FILE$

100% SUBMITTAL



LEGEND

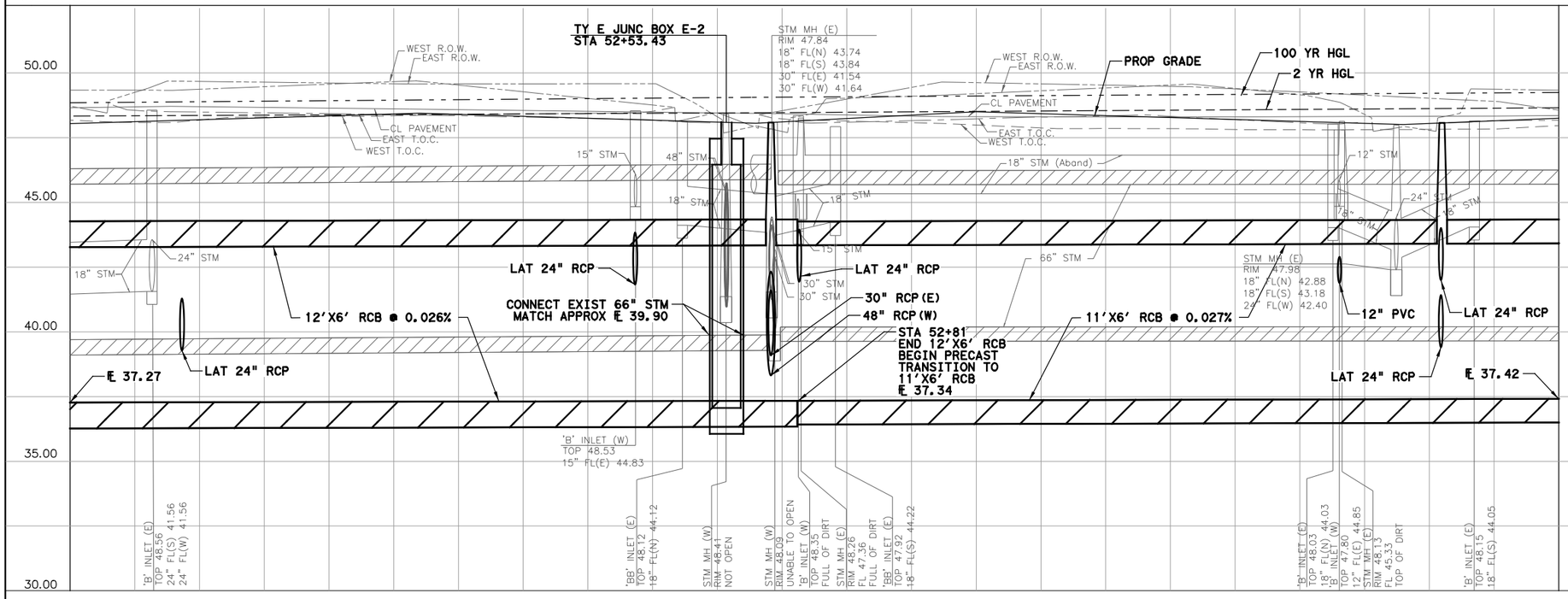
- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS FROM CENTER TO CENTER OF MANHOLE/INLETS. LENGTH ON SUMMARY SHEETS IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
2. SEE HYDRAULIC DATA SHEETS FOR DRAINAGE AREAS AND RUNOFF CALCULATIONS.
3. HORIZONTAL CONTROL FOR ALL GRATE INLETS IS AT THE CENTER OF GRATE AND BACK OF CURB FOR CURB INLETS.
4. SEE REMOVAL PLANS FOR DETAILS OF STORM SEWER DEMOLITION.
5. SEE DRAINAGE LATERAL PLANS FOR DETAILS OF STORM SEWER LATERALS.
6. ALL STATIONS AND OFFSETS ON THIS SHEET ARE FROM ℄ BUFFALO SPEEDWAY UNLESS OTHERWISE NOTED.
7. FOR PROPOSED WATERLINE ADJUSTMENT, SEE WATERLINE PLAN AND PROFILE SHEET.
8. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.
9. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

HORZ. SCALE IN FEET: 0 25 50 75 100

VERT. SCALE IN FEET: 0 5 10



JOHN PETERSON
99319
LICENSED PROFESSIONAL ENGINEER
8/24/2020

MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

Seal pertains to street inlets and laterals

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Houston, Texas 77081
713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 50+00 TO STA 55+75

SCALE: 1"=50'-H
1"=5'-V

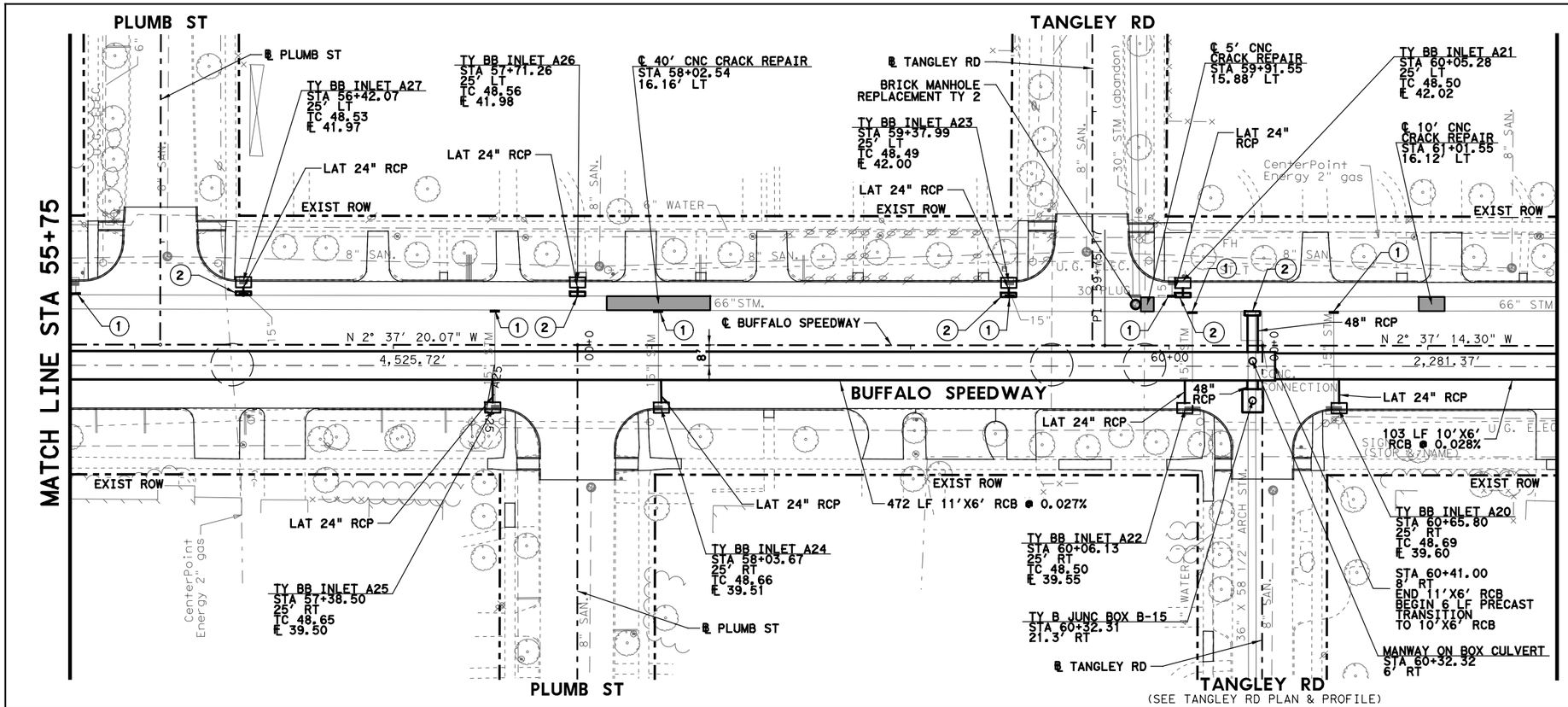
SHEET 10 OF 15

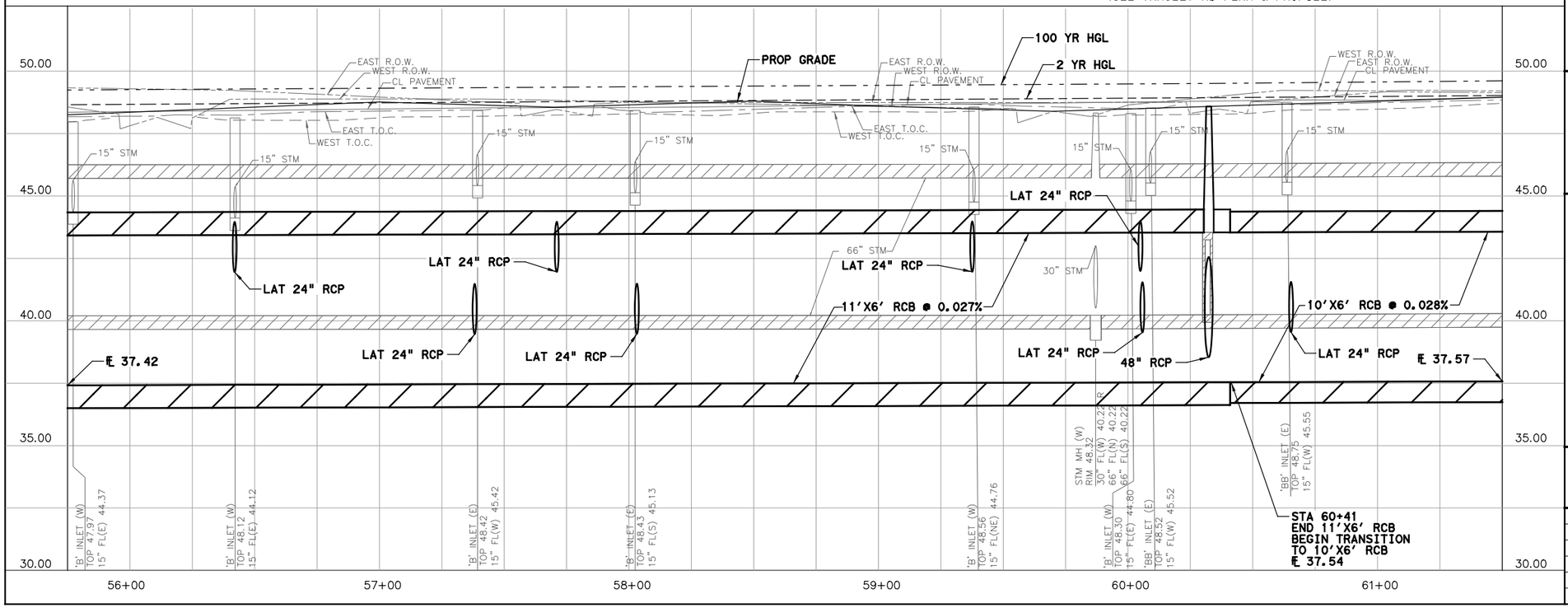
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		342
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg
USER: DMAHER
FILE: $FILE$
PENTABLE: TXDOT.tbl
TIME: 3:16:30 PM
DATE: 8/18/2020

100% SUBMITTAL





LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS FROM CENTER TO CENTER OF MANHOLE/INLETS. LENGTH ON SUMMARY SHEETS IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
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4. SEE REMOVAL PLANS FOR DETAILS OF STORM SEWER DEMOLITION.
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6. ALL STATIONS AND OFFSETS ON THIS SHEET ARE FROM ℄ BUFFALO SPEEDWAY UNLESS OTHERWISE NOTED.
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8. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.
9. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS — JOHN PETERSON — 99319 — LICENSED PROFESSIONAL ENGINEER — 8/24/2020

STATE OF TEXAS — MEHRAN BAVARIAN — 48811 — REGISTERED PROFESSIONAL ENGINEER — 8/25/2020

Seal pertains to street inlets and laterals

HDR
4828 Loop Central Dr, Suite 800
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HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 55+75 TO STA 61+50

SCALE: 1"=50'-H
1"=5'-V

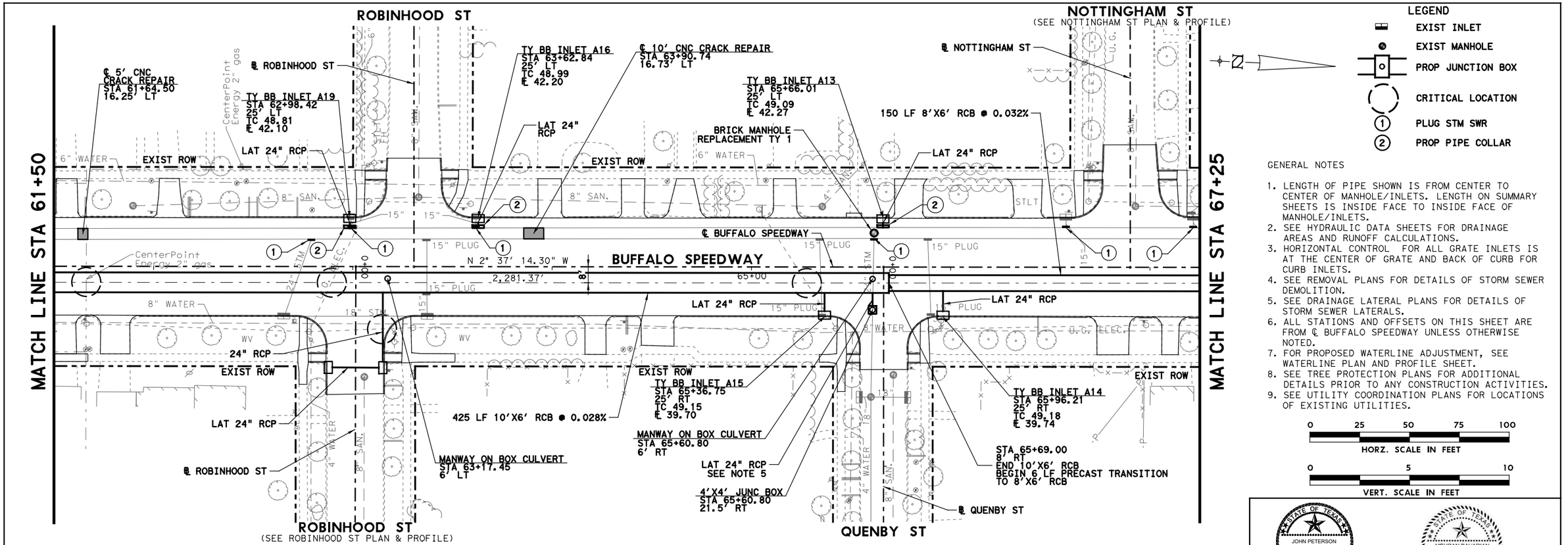
SHEET 11 OF 15

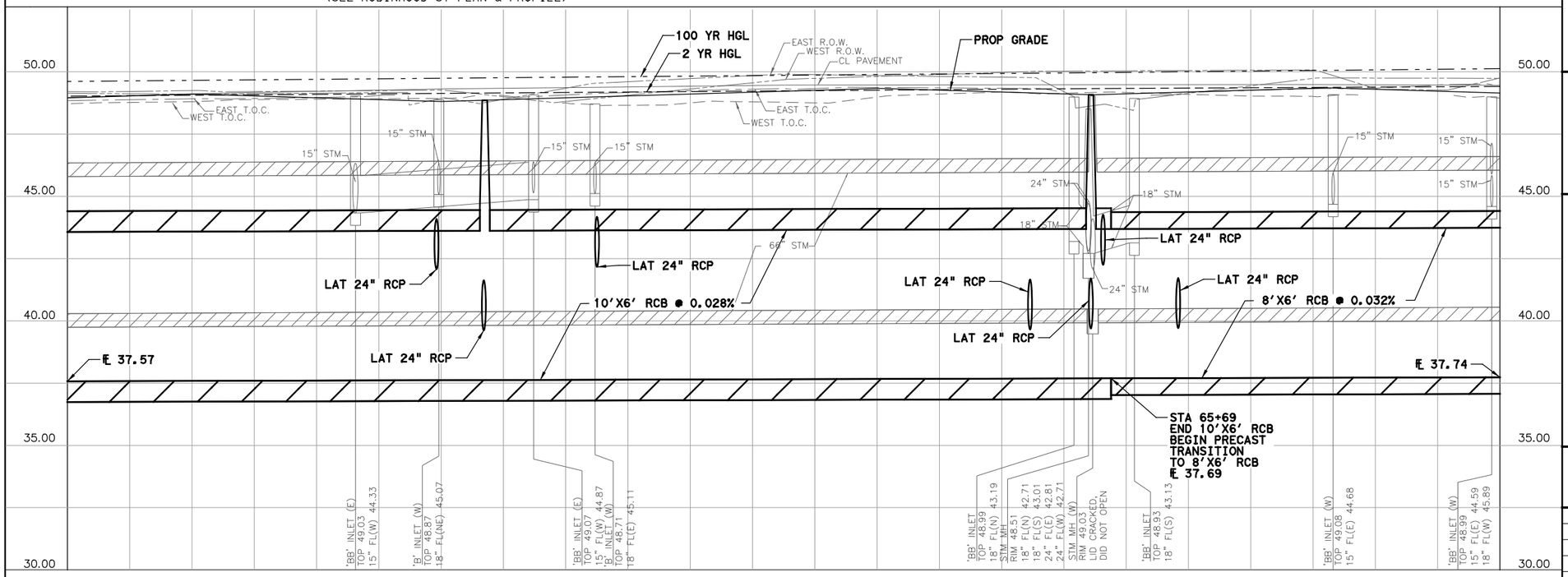
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		343
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg
USER: DMAHER
FILE: $FILE$
DATE: 8/18/2020
TIME: 3:6:34 PM
PENTABLE: TXDOT.tbl

100% SUBMITTAL





LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

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9. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS — JOHN PETERSON — 99319 — LICENSED PROFESSIONAL ENGINEER — 8/24/2020

STATE OF TEXAS — MEHRAN BAVARIAN — 48811 — REGISTERED PROFESSIONAL ENGINEER — 8/25/2020

Seal pertains to street inlets and laterals

4828 Loop Central Dr, Suite 800
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HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 61+50 TO STA 67+25

SCALE: 1"=50'-H
1"=5'-V

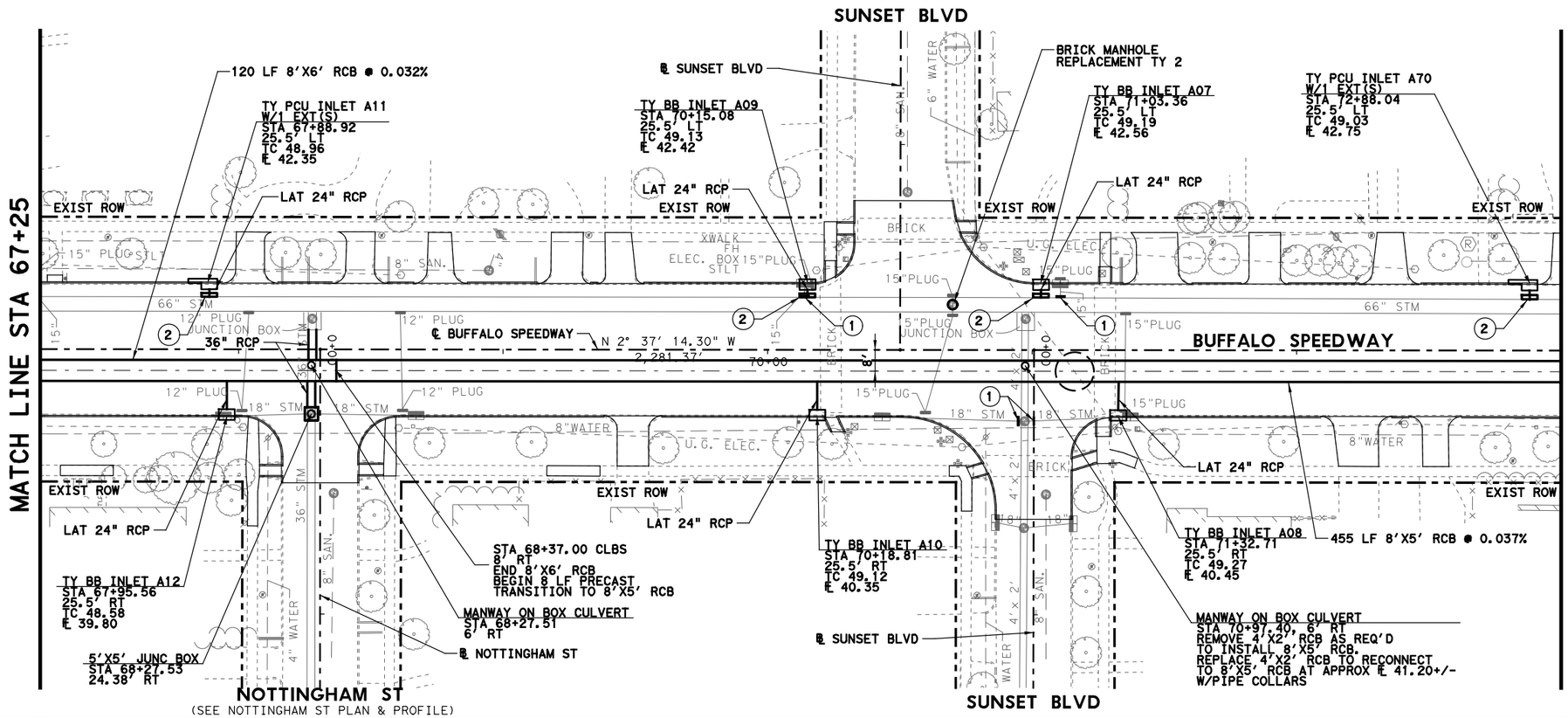
SHEET 12 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		344
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
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FILE: $FILE$

100% SUBMITTAL



LEGEND

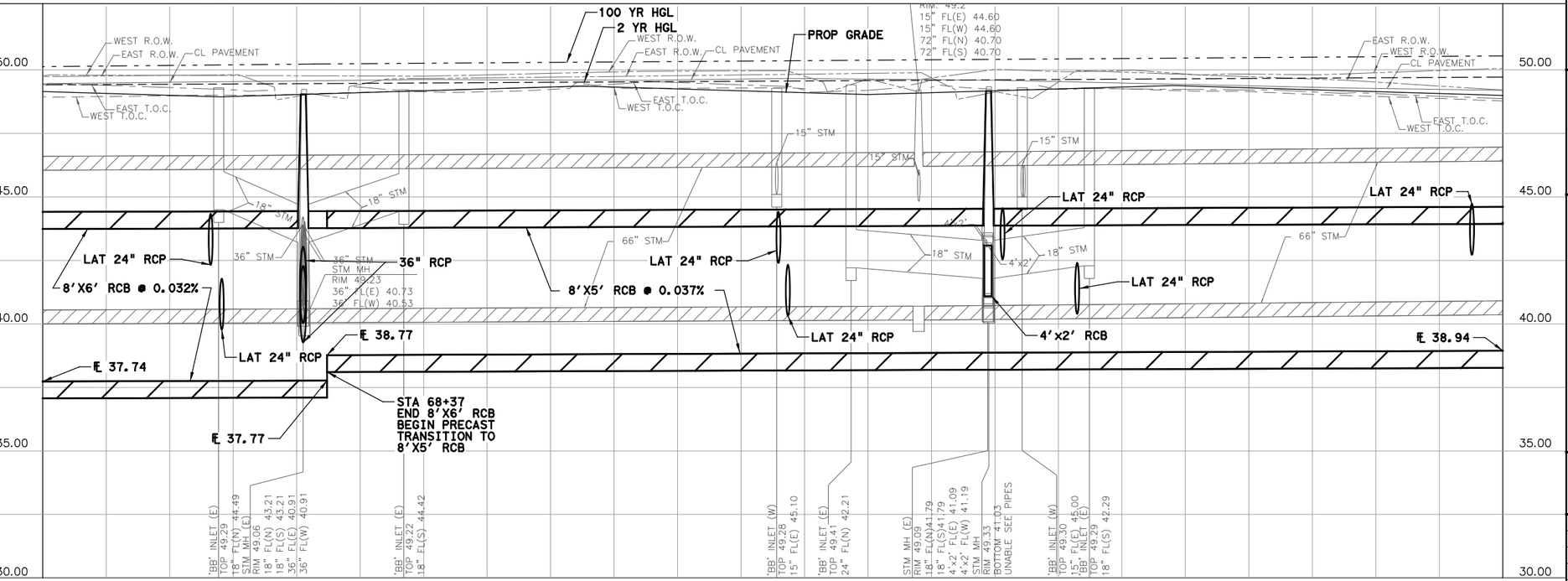
- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

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9. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET



JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

MEHRAN BAVARIAN
48811
REGISTERED
PROFESSIONAL ENGINEER
8/25/2020

Seal pertains to street inlets and laterals

4828 Loop Central Dr, Suite 800
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713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 67+25 TO STA 73+00

SCALE: 1"=50'-H
1"=5'-V

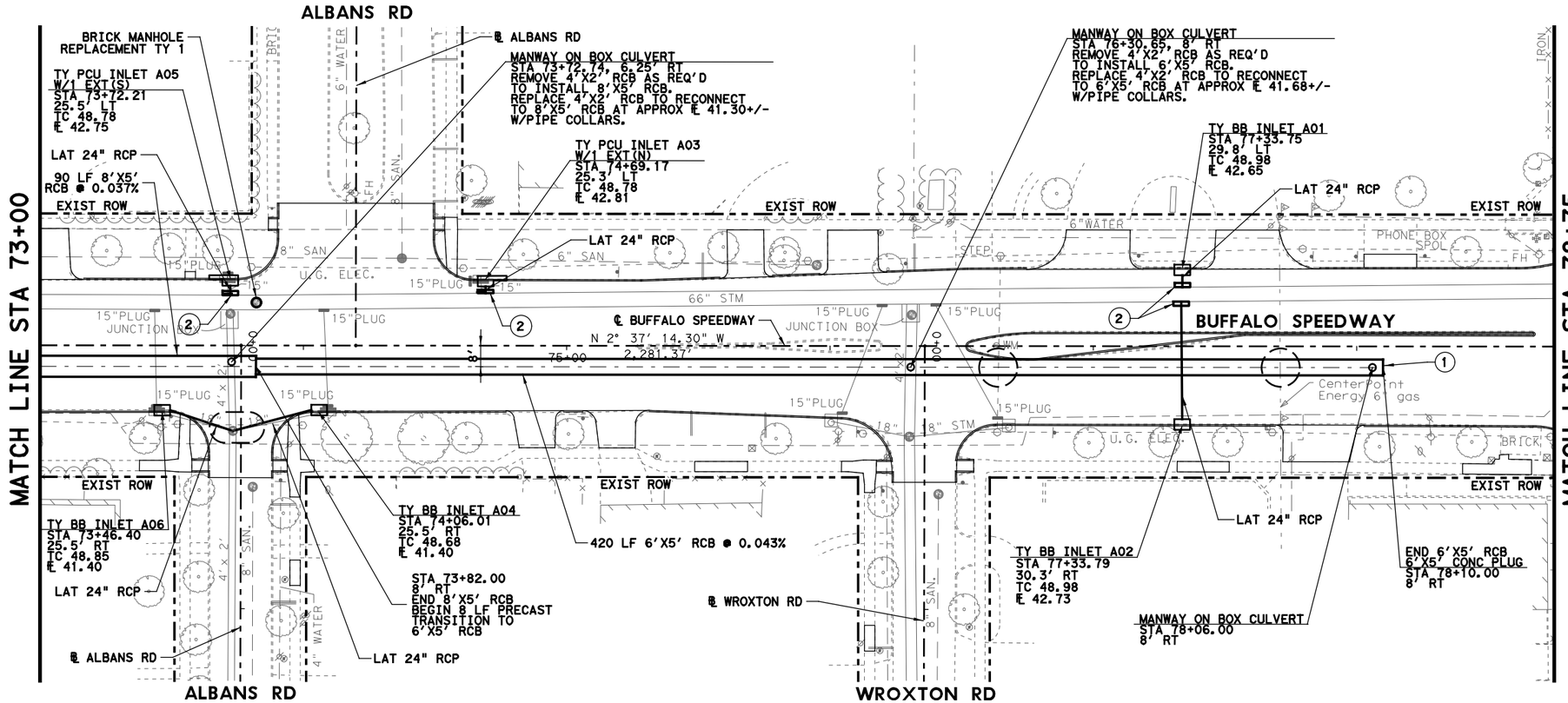
SHEET 13 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		345
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
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FILE: $FILE$

100% SUBMITTAL



LEGEND

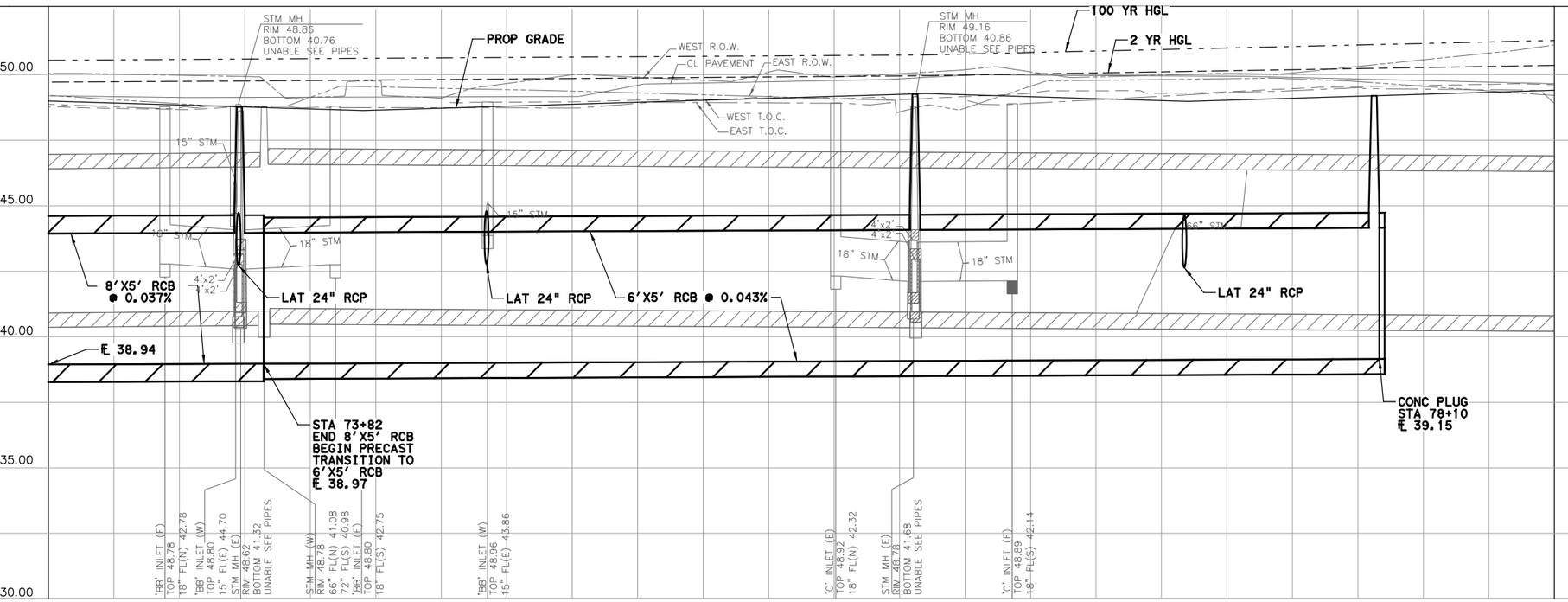
- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

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9. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET



JOHN PETERSON
98319
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
8/24/2020

MEHRAN BAVARIAN
48811
REGISTERED
PROFESSIONAL ENGINEER
STATE OF TEXAS
8/25/2020

Seal pertains to street inlets and laterals

4828 Loop Central Dr, Suite 800
Houston, Texas 77081
713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 73+00 TO STA 78+75

SCALE: 1"=50'-H
1"=5'-V

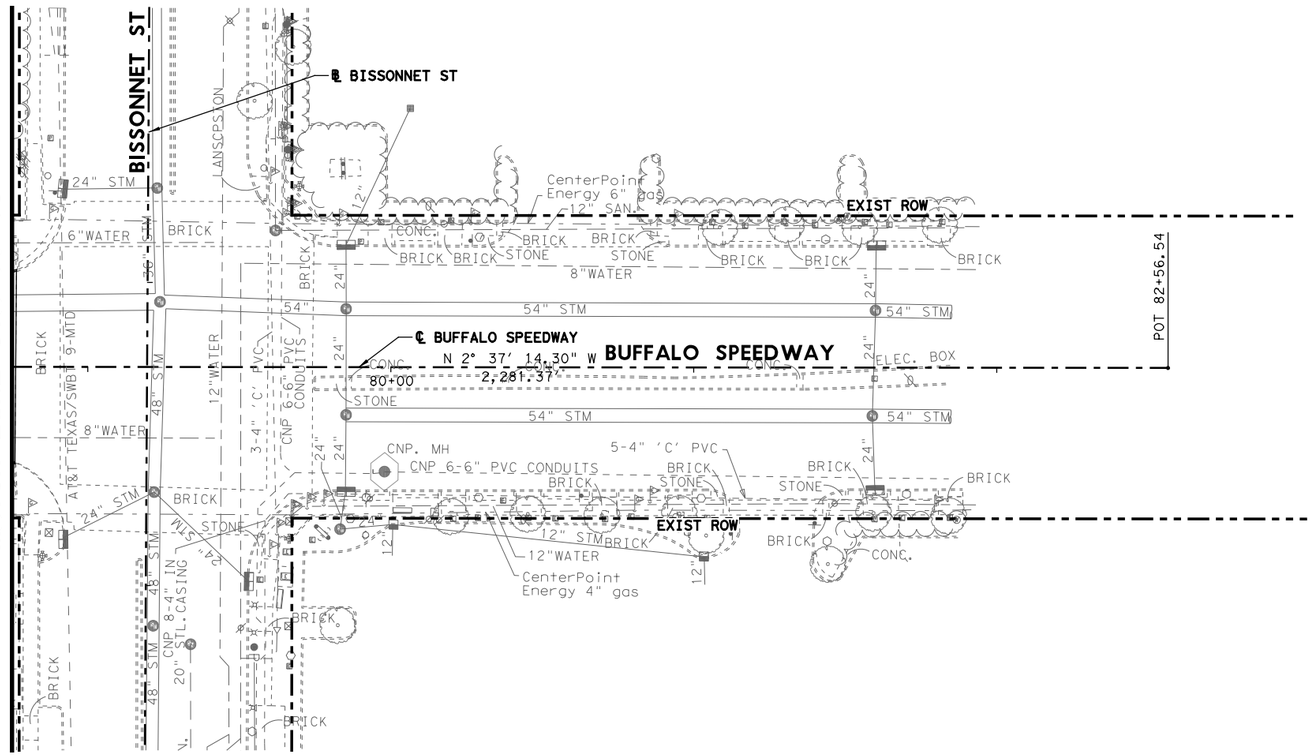
SHEET 14 OF 15

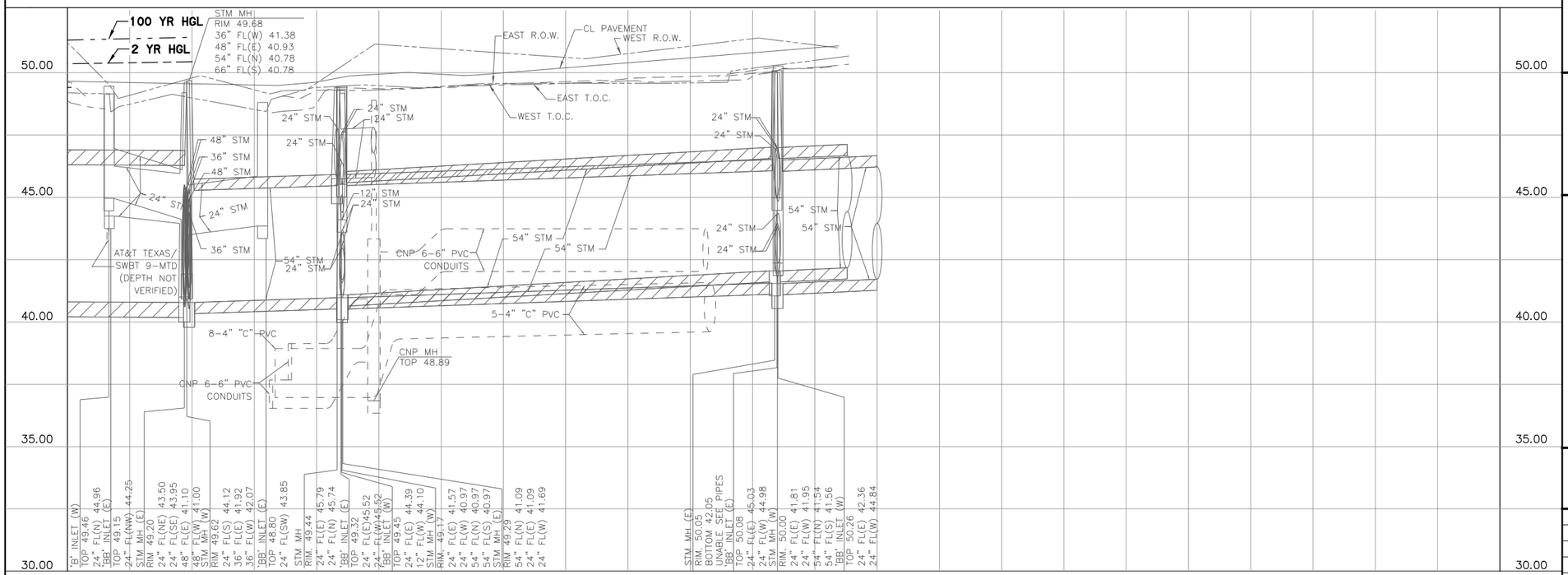
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		346
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg
USER: DMAHER
FILE: $FILE$
DATE: 8/18/2020
TIME: 4:25:38 PM
PENTABLE: TXDOT.tbl

100% SUBMITTAL





LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS FROM CENTER TO CENTER OF MANHOLE/INLETS. LENGTH ON SUMMARY SHEETS IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
2. SEE HYDRAULIC DATA SHEETS FOR DRAINAGE AREAS AND RUNOFF CALCULATIONS.
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4. SEE REMOVAL PLANS FOR DETAILS OF STORM SEWER DEMOLITION.
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6. ALL STATIONS AND OFFSETS ON THIS SHEET ARE FROM ℄ BUFFALO SPEEDWAY UNLESS OTHERWISE NOTED.
7. FOR PROPOSED WATERLINE ADJUSTMENT, SEE WATERLINE PLAN AND PROFILE SHEET.
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9. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS
JOHN PETERSON
98319
LICENSED PROFESSIONAL ENGINEER
8/24/2020

HDR
4828 Loop Central Dr, Suite 800
Houston, Texas 77081
713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 78+75 TO END

SCALE: 1"=50'-H
1"=5'-V

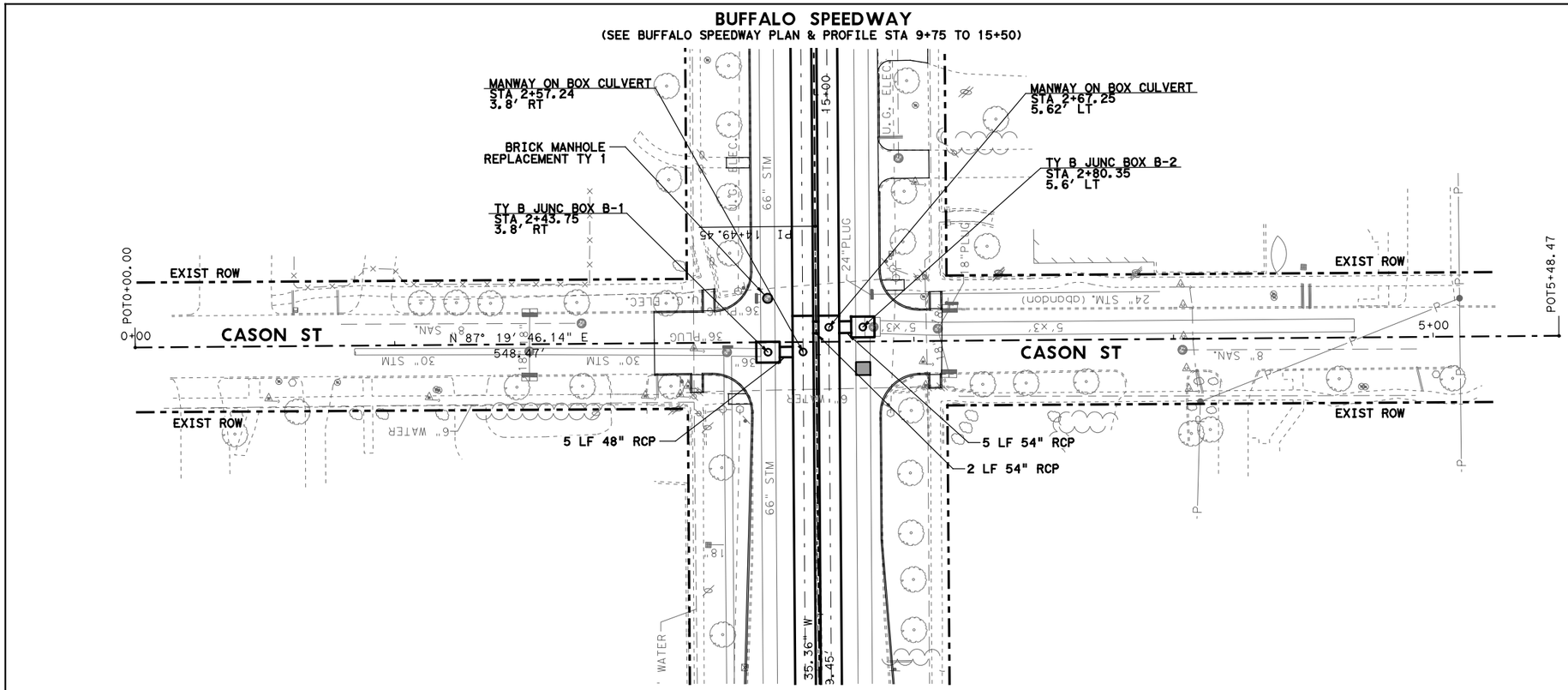
SHEET 15 OF 15

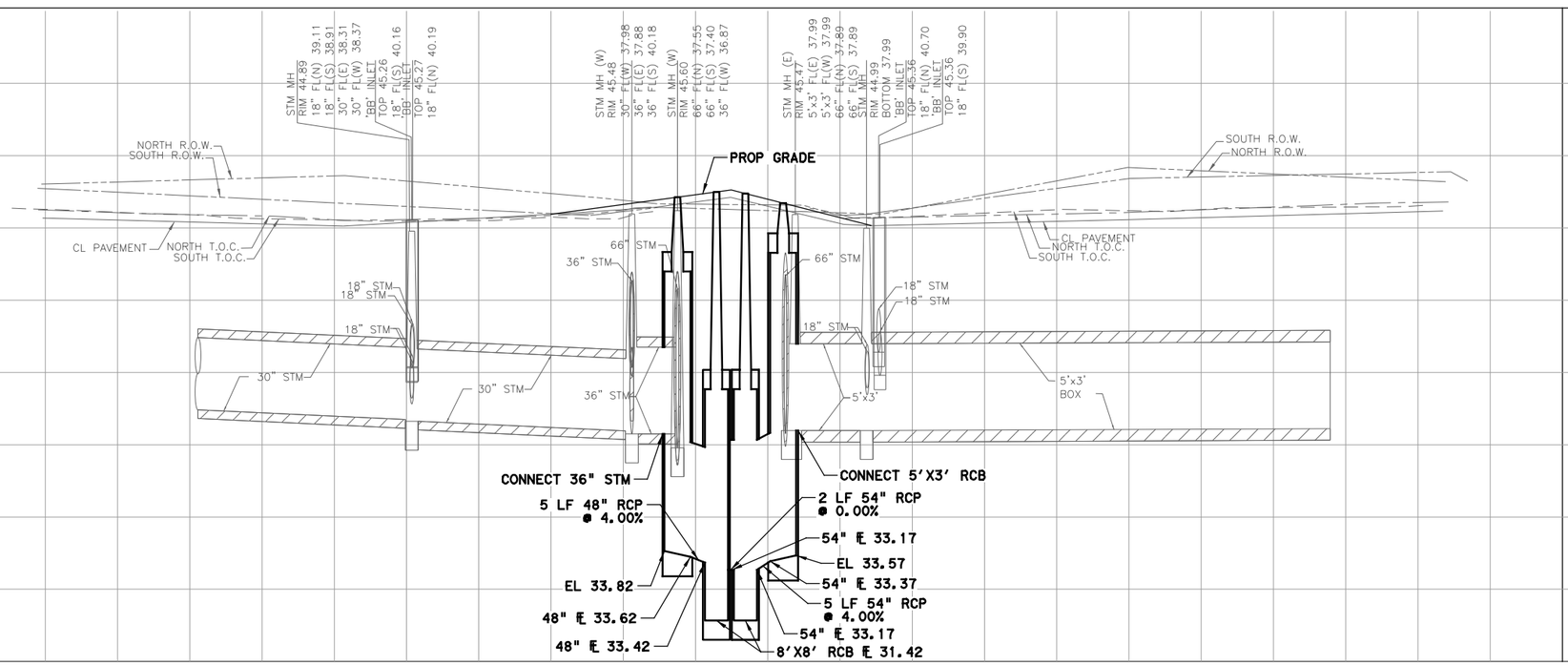
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		347
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg
USER: DMAHER
FILE: $FILE$
DATE: 8/18/2020
TIME: 3:16:54 PM
PENTABLE: TXDOT.tbl

100% SUBMITTAL





LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
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6. ALL STATIONS AND OFFSETS ON THIS SHEET ARE FROM ℄ CASON ST UNLESS OTHERWISE NOTED.
7. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVIITES.
8. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

4828 Loop Central Dr, Suite 800
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Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

CASON STREET

SCALE: 1"=50'-H
1"=5'-V

SHEET 1 OF 1

Texas Department of Transportation

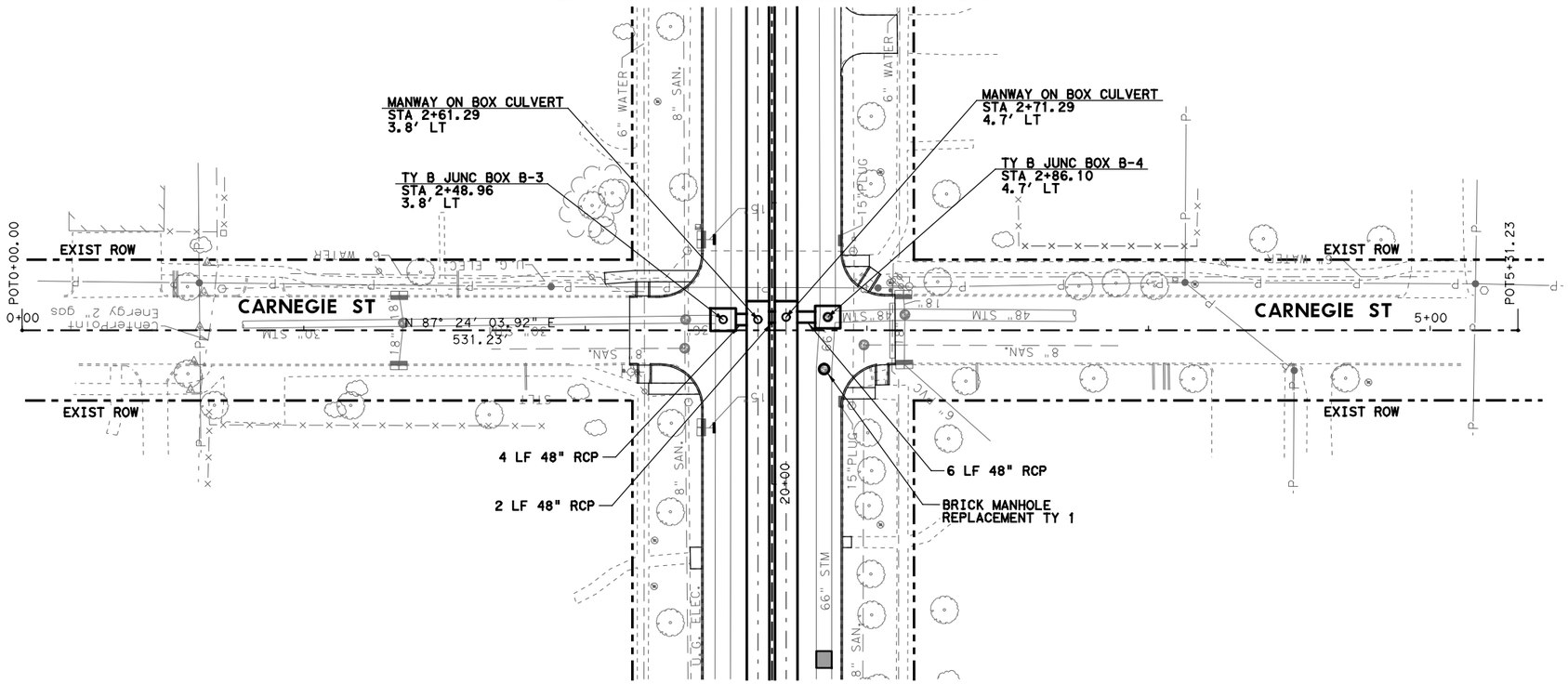
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		348
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

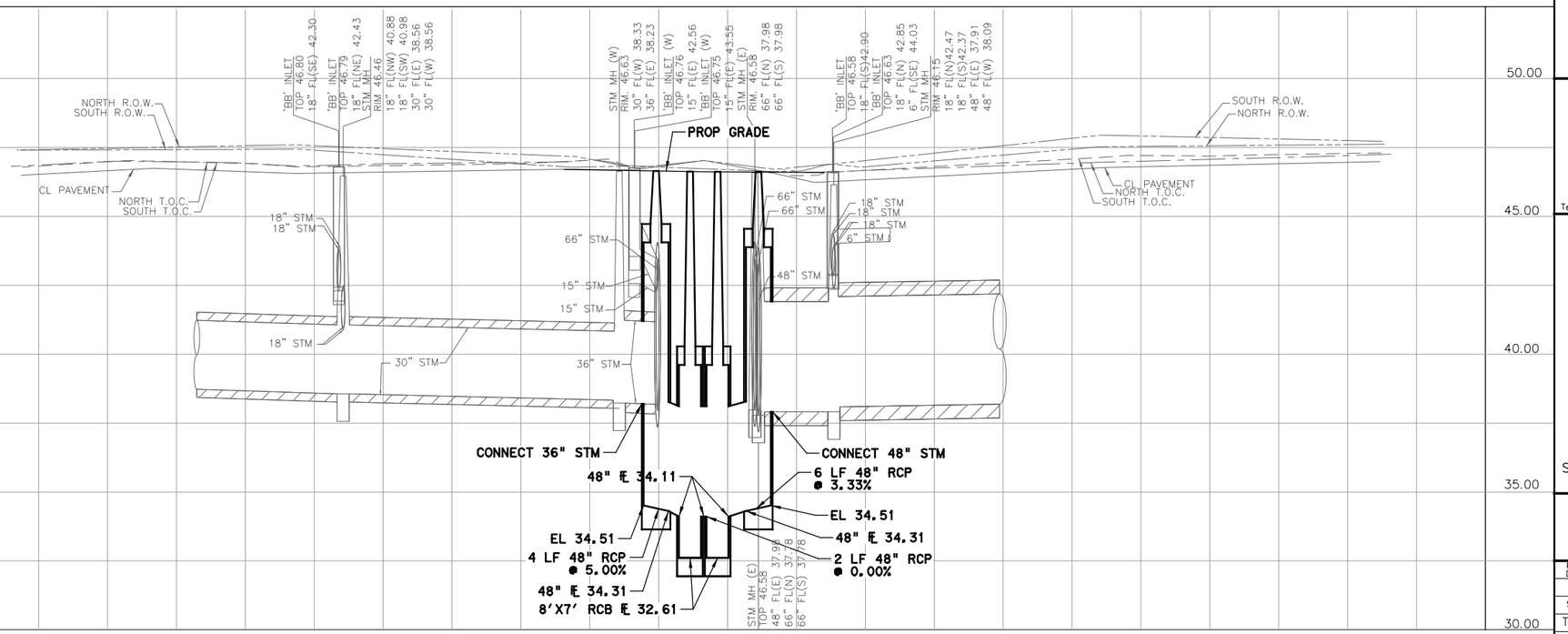
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DATE: 8/18/2020
TIME: 6:28:35 PM
PENTABLE: TXDOT.tbl

100% SUBMITTAL

BUFFALO SPEEDWAY

(SEE BUFFALO SPEEDWAY PLAN & PROFILE STA 15+50 TO 21+25)





LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

N

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
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6. ALL STATIONS AND OFFSETS ON THIS SHEET ARE FROM ℄ CASON ST UNLESS OTHERWISE NOTED.
7. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVIITES.
8. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

HDR
4828 Loop Central Dr, Suite 800
Houston, Texas 77081
713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

CARNEGIE STREET

SCALE: 1"=50'-H
1"=5'-V

SHEET 1 OF 1

Texas Department of Transportation

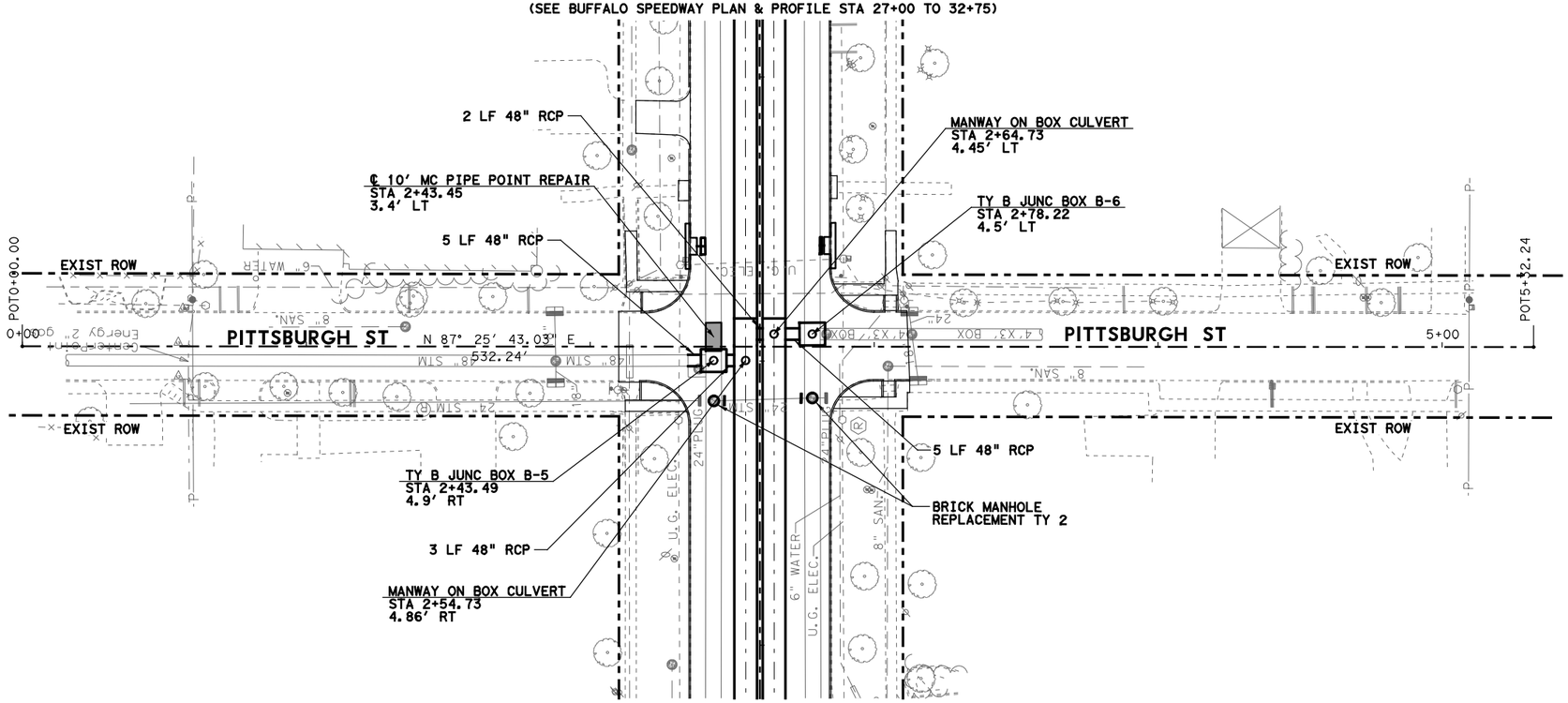
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		349
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
USER: DMAHER DATE: 8/18/2020 TIME: 6:28:38 PM
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100% SUBMITTAL

BUFFALO SPEEDWAY

(SEE BUFFALO SPEEDWAY PLAN & PROFILE STA 27+00 TO 32+75)



LEGEND

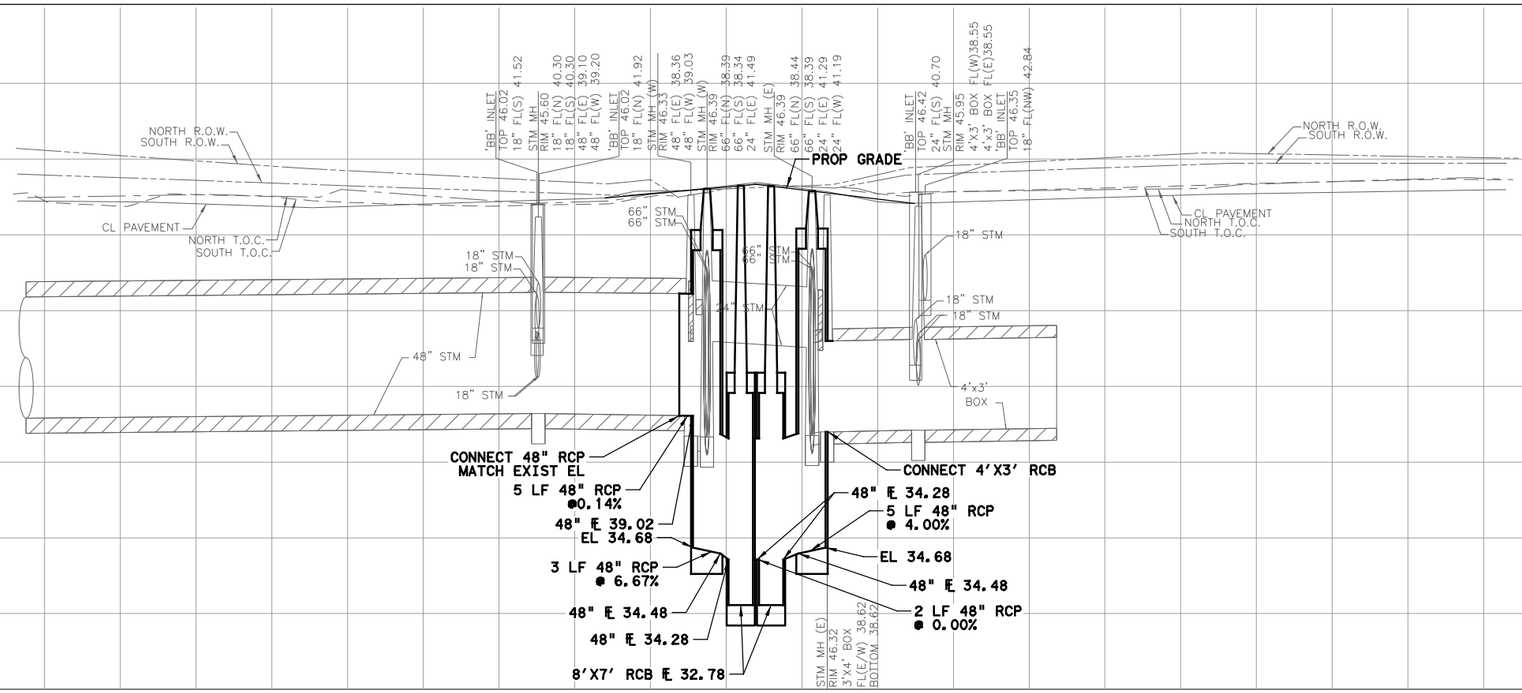
- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
2. SEE HYDRAULIC DATA SHEETS FOR DRAINAGE AREAS AND RUNOFF CALCULATIONS.
3. HORIZONTAL CONTROL FOR ALL GRATE INLETS IS AT THE CENTER OF GRATE AND BACK OF CURB FOR CURB INLETS.
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8. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET



STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

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Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

PITTSBURGH STREET

SCALE: 1"=50'-H
1"=5'-V

SHEET 1 OF 1

Texas Department of Transportation

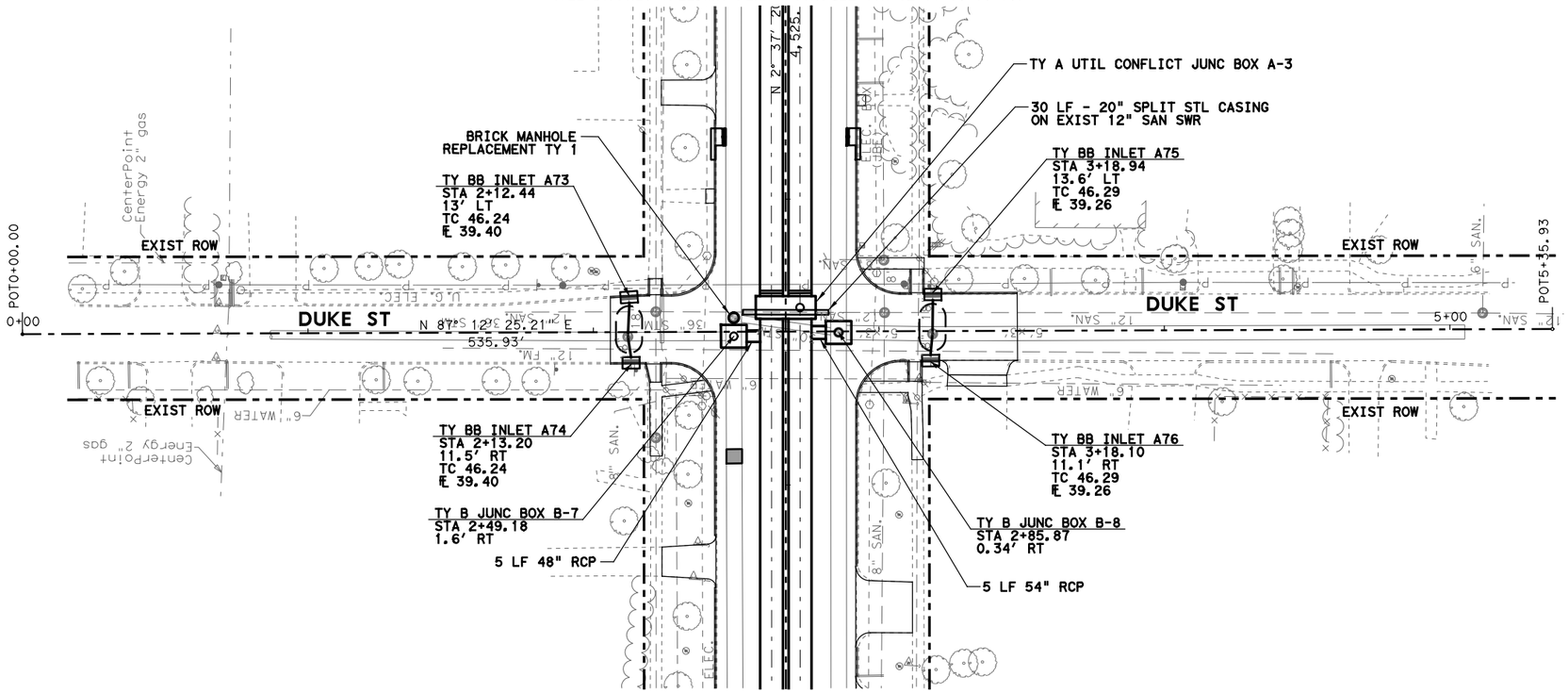
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		350
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

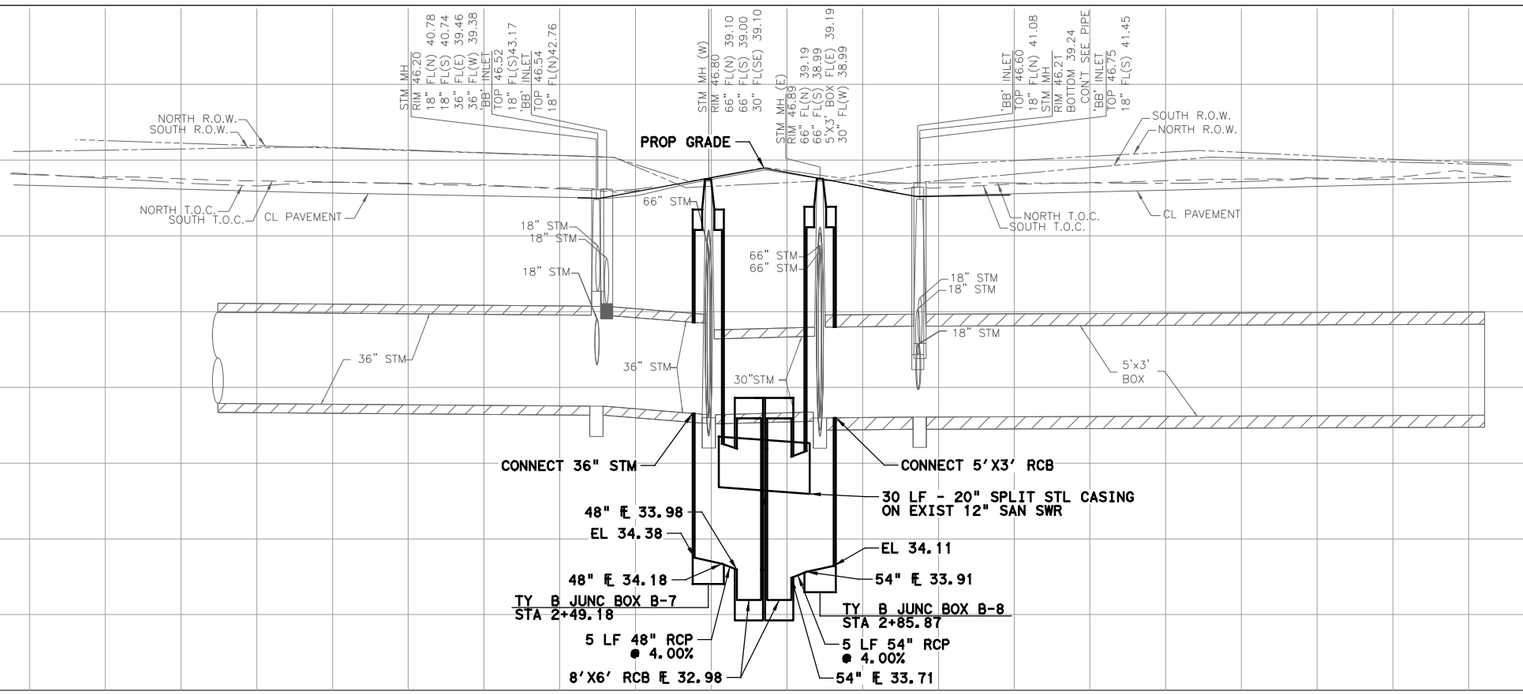
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DATE: 8/18/2020
TIME: 6:28:41 PM
PENTABLE: TXDOT.tbl

100% SUBMITTAL

BUFFALO SPEEDWAY

(SEE BUFFALO SPEEDWAY PLAN & PROFILE STA 32+75 TO 38+50)





LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

N

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
2. SEE HYDRAULIC DATA SHEETS FOR DRAINAGE AREAS AND RUNOFF CALCULATIONS.
3. HORIZONTAL CONTROL FOR ALL GRATE INLETS IS AT THE CENTER OF GRATE AND BACK OF CURB FOR CURB INLETS.
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8. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED
PROFESSIONAL ENGINEER
8/25/2020

Seal pertains to street inlets and laterals

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

DUKE STREET

SCALE: 1"=50'-H
1"=5'-V

SHEET 1 OF 1

Texas Department of Transportation

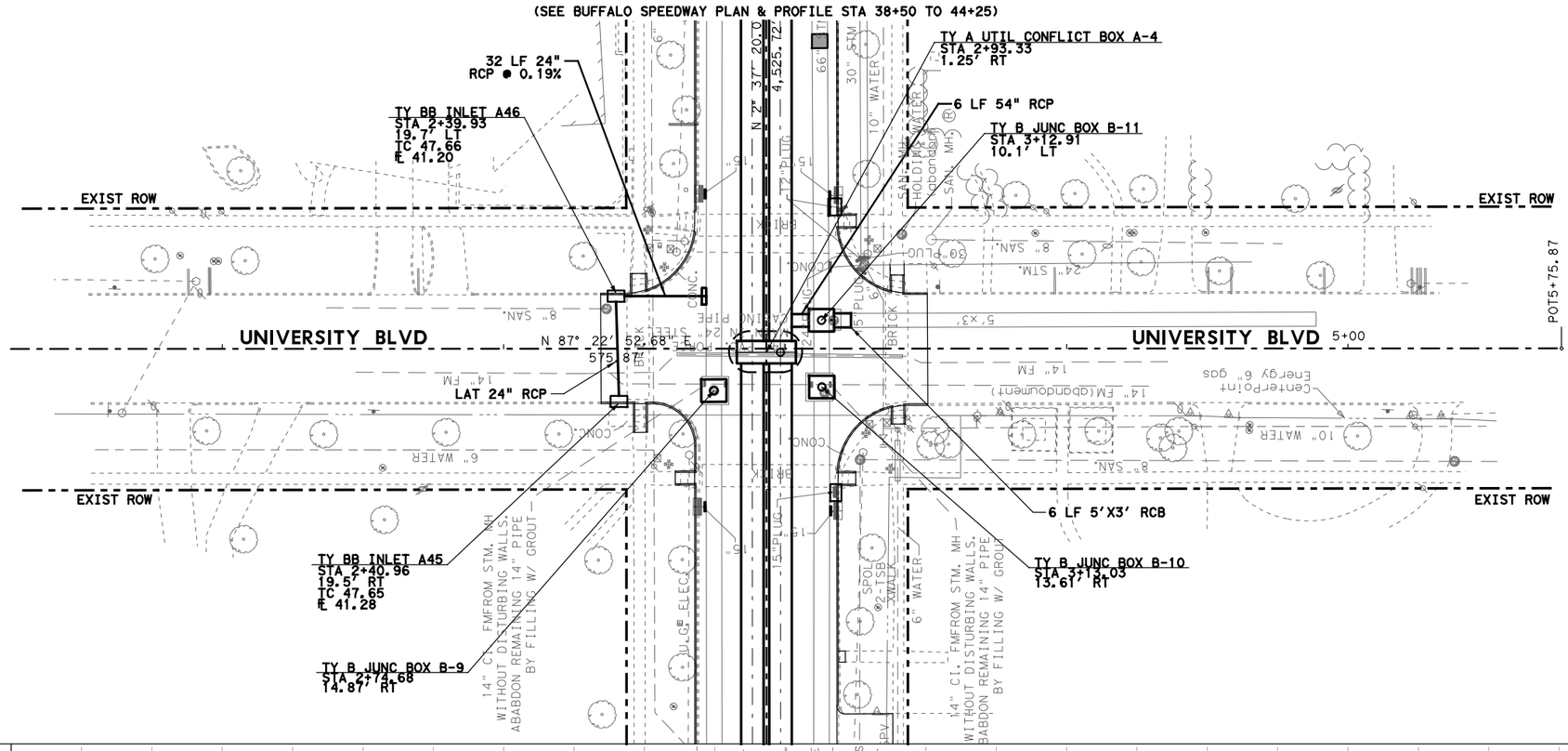
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		351
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
USER: DMAHER DATE: 8/18/2020 TIME: 6:28:44 PM
FILE: $FILE$

100% SUBMITTAL

BUFFALO SPEEDWAY

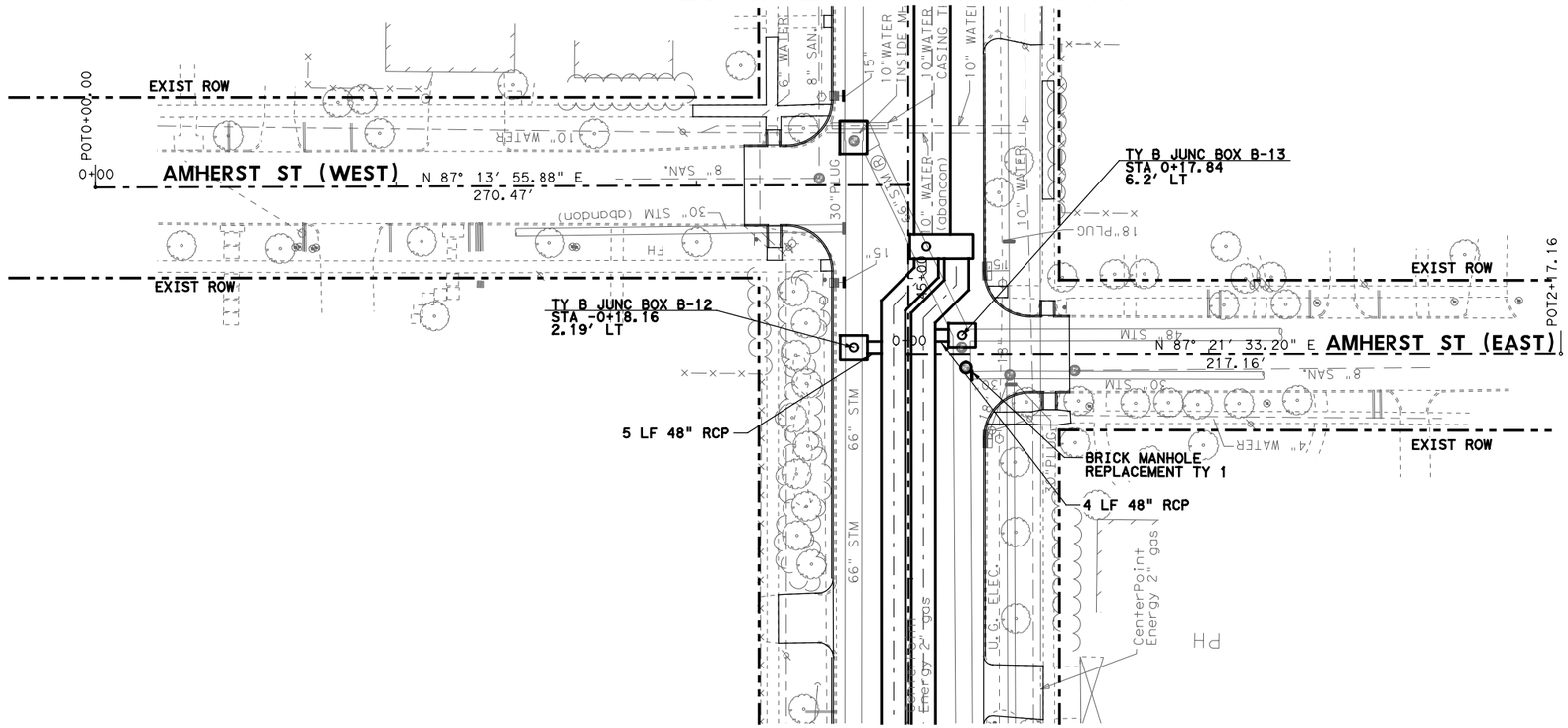
(SEE BUFFALO SPEEDWAY PLAN & PROFILE STA 38+50 TO 44+25)


32 LF 24" RCP @ 0.19%
TY BB INLET A46
STA 2+39.93
19.7' LT
TC 47.66
E 41.20
TY A UTIL CONFLICT BOX A-4
STA 2+93.33
1.25' RT
6 LF 54" RCP
TY B JUNC BOX B-11
STA 3+12.91
10.1' LT
EXIST ROW
EXIST ROW
UNIVERSITY BLVD
N 87° 22' 52.68" E
575.87'
UNIVERSITY BLVD
5+00
POT 5+75.87
LAT 24" RCP
6 LF 5'X3' RCB
TY BB INLET A45
STA 2+40.96
19.5' RT
TC 47.65
E 41.28
TY B JUNC BOX B-10
STA 3+13.03
13.61' RT
TY B JUNC BOX B-9
STA 2+74.68
14.87' RT
EXIST ROW
EXIST ROW
14" CI. FM FROM STM. MH WITHOUT DISTURBING WALLS. ABABDON REMAINING 14" PIPE BY FILLING W/ GROUT
14" CI. FM FROM STM. MH WITHOUT DISTURBING WALLS. ABABDON REMAINING 14" PIPE BY FILLING W/ GROUT
N 2° 31' 20.0" E
4,525.72'
66" STM
30" STM
10" WATER
SAN. MH (R)
SAN. MH (E)
BRICK
CONC.
15" PLUG
30" PLUG
8" SAN.
24" STM.
14" FM
14" FM(abandoument)
CenterPoint Energy 6" gas
10" WATER
6" WATER
8" SAN.
5'x3'
SPOIL
2-TSB
XWALK
6" WATER
15" PLUG
8" SAN.
6" WATER
CONC.
CONC.
CONC.

100% SUBMITTAL

BUFFALO SPEEDWAY

(SEE BUFFALO SPEEDWAY PLAN & PROFILE STA 44+25 TO 50+00)



LEGEND

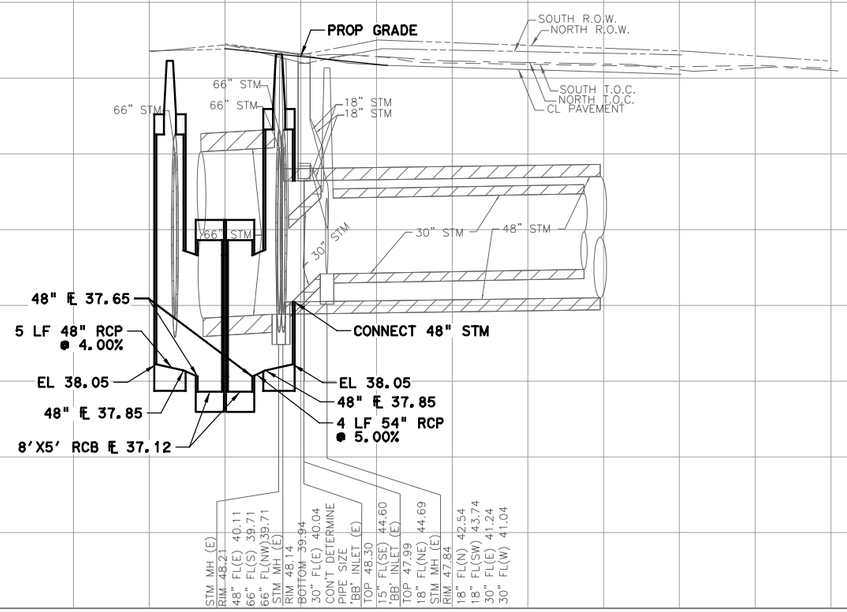
- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
2. SEE HYDRAULIC DATA SHEETS FOR DRAINAGE AREAS AND RUNOFF CALCULATIONS.
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8. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET



STATE OF TEXAS
JOHN PETERSON
95319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020 John Peterson

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HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

AMHERST STREET (EAST)

SCALE: 1"=50'-H
1"=5'-V

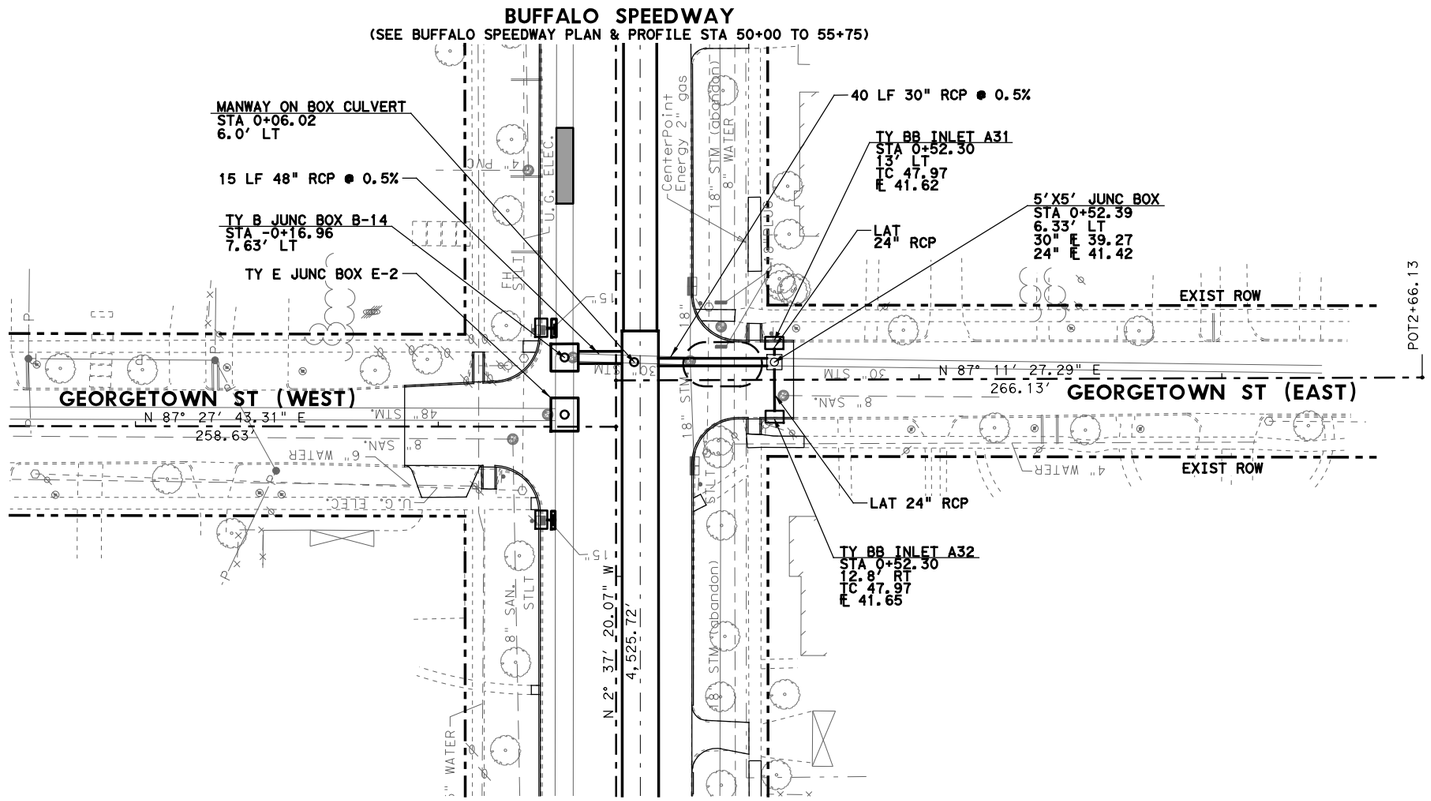
SHEET 1 OF 1

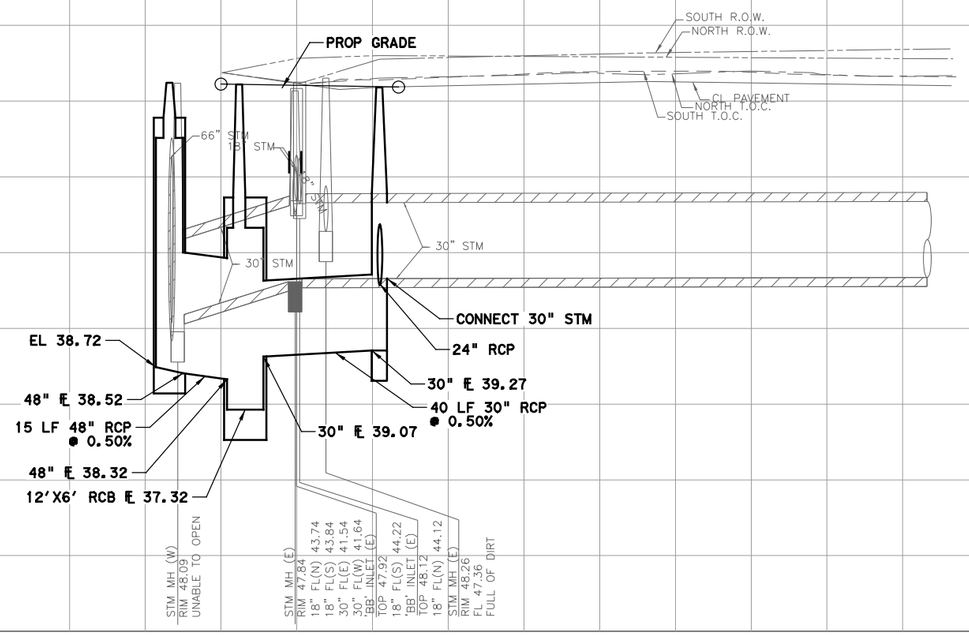
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			353
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
USER: DMAHER DATE: 8/18/2020 TIME: 6:28:50 PM
FILE: $FILE$

100% SUBMITTAL







LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
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8. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS
JOHN PETERSON
98319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED
PROFESSIONAL ENGINEER
8/25/2020

Seal pertains to street inlets and laterals

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4828 Loop Central Dr, Suite 800
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HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

GEORGETOWN STREET (EAST)

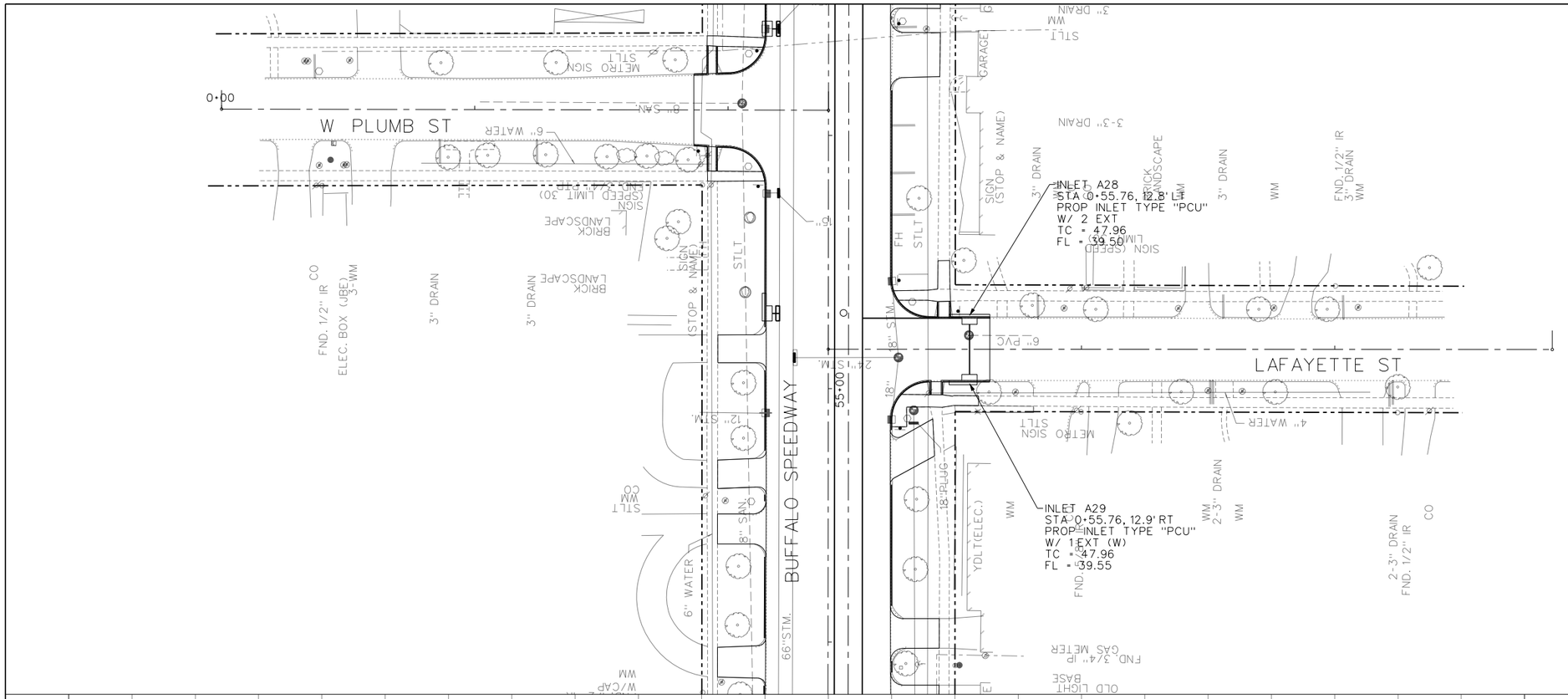
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1"=5'-V

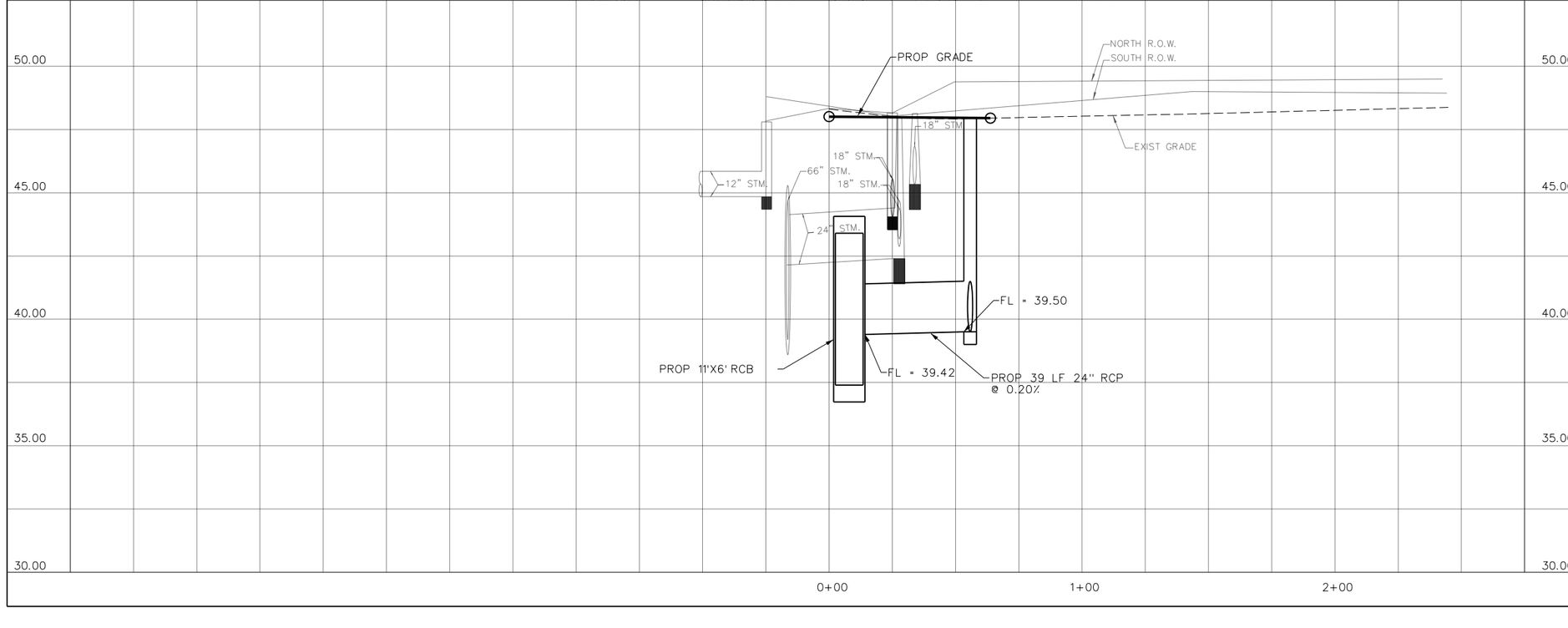
SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		354
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
USER: DMAHER DATE: 8/18/2020 TIME: 6:28:54 PM
FILE: $FILE$





GENERAL NOTES
1. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

FREESE AND NICHOLS
11200 Broadway Street, Suite 2320
Pearland, Texas 77584
Phone – (832) 456-4700
Fax – (832) 456-4701
Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

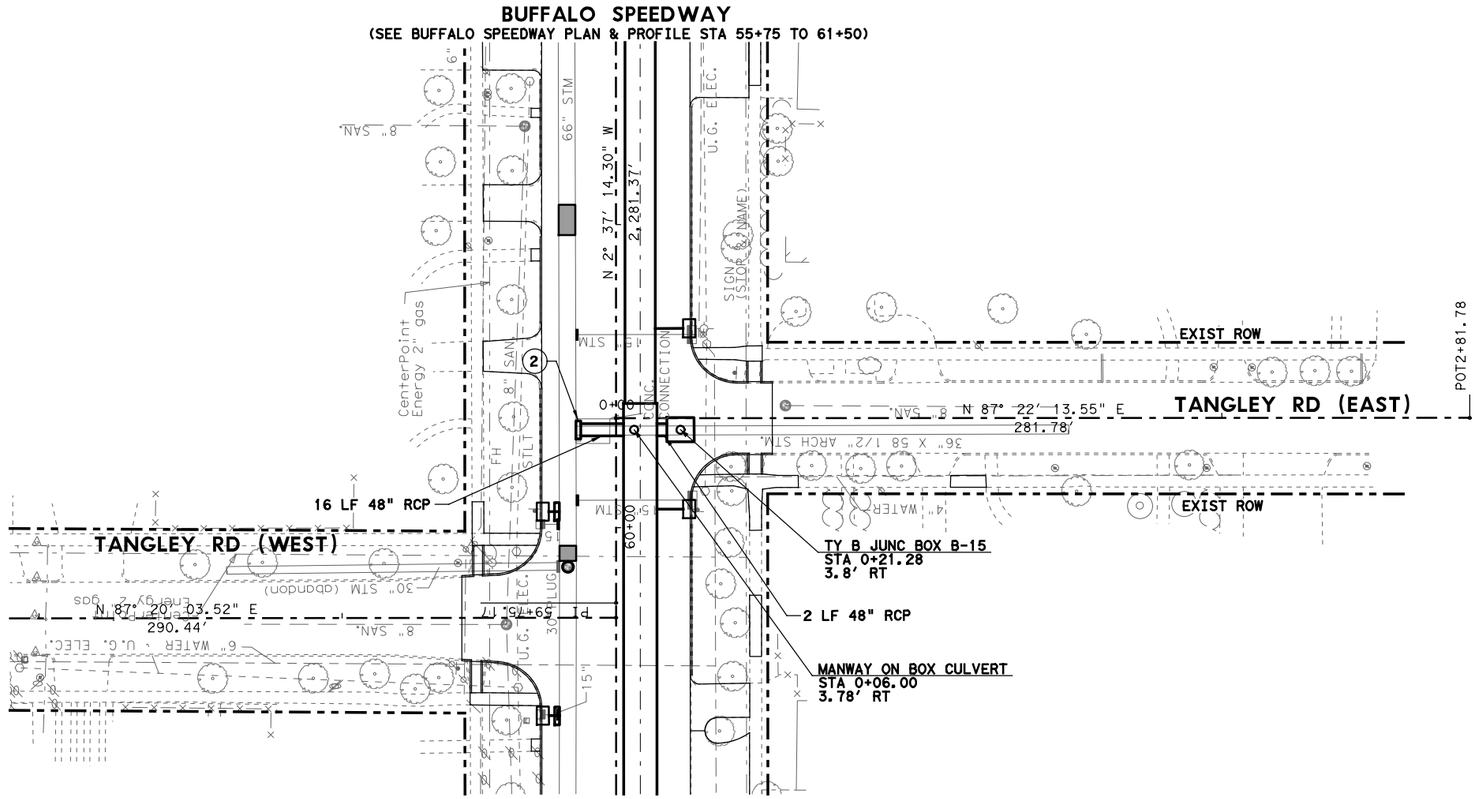
LAFAYETTE ST

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		355
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

100% SUBMITTAL



LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
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0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

HDR
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713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

TANGLEY ROAD (EAST)

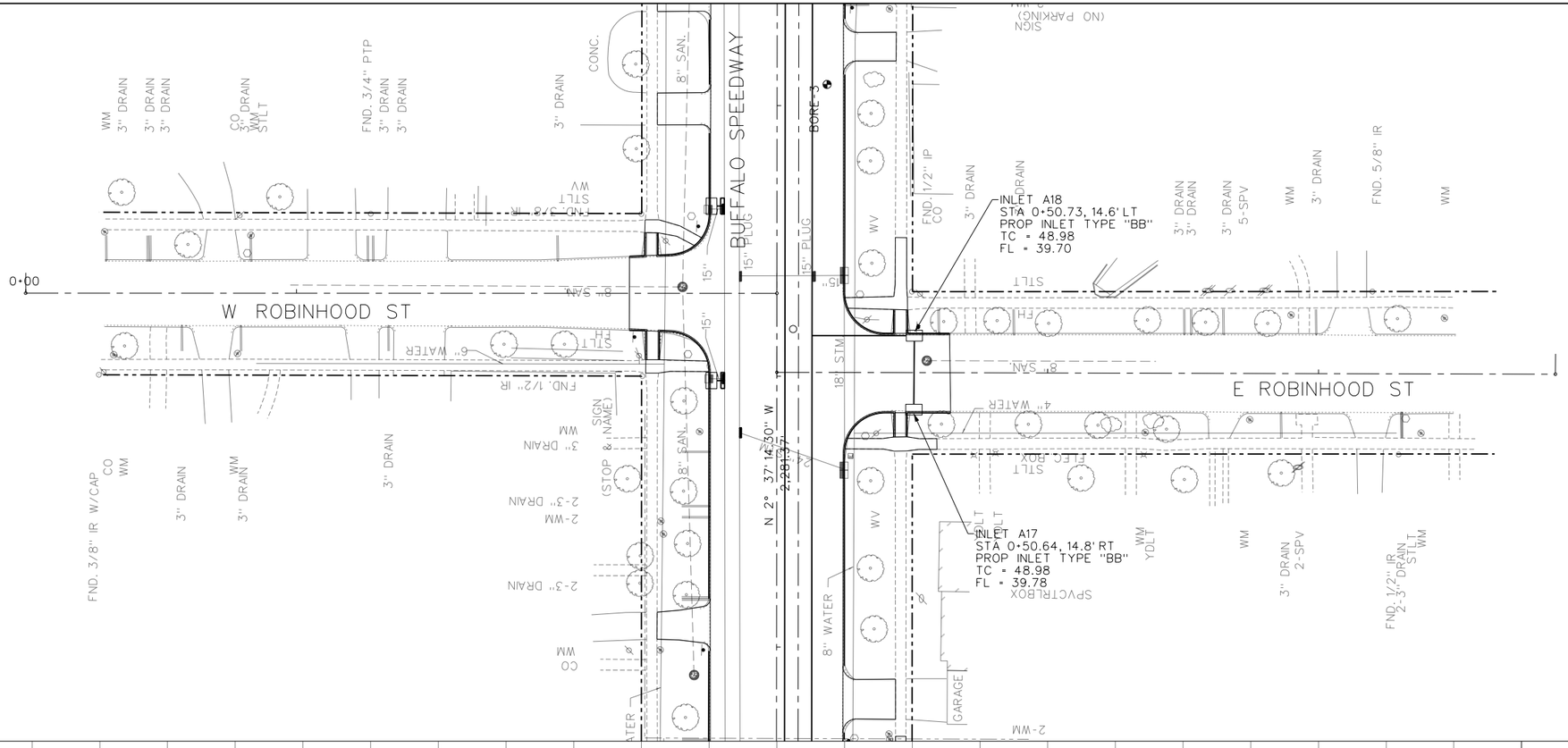
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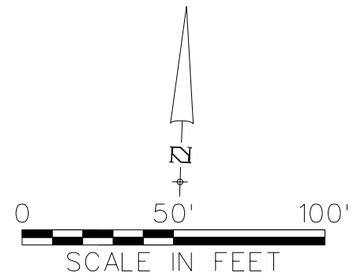
SHEET 1 OF 1

Texas Department of Transportation

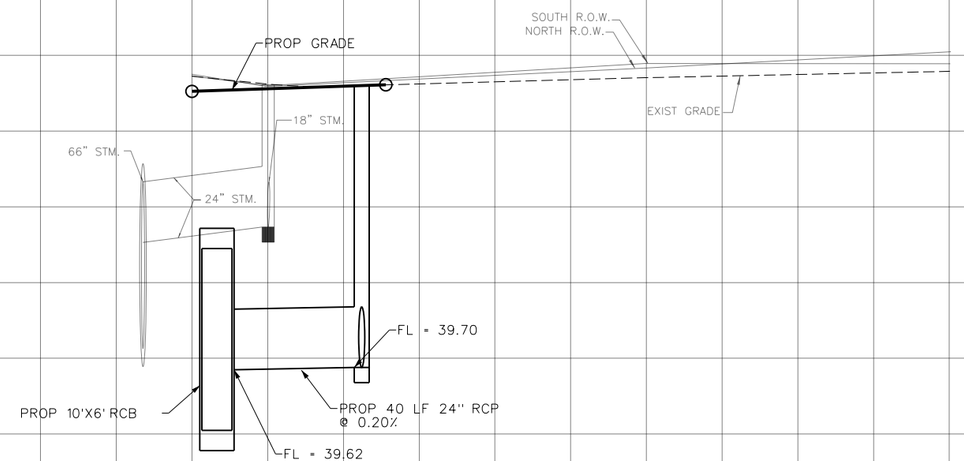
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		356
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg DATE: 8/18/2020 TIME: 6:28:56 PM PENTABLE: TXDOT.tbl
USER: DMAHER
FILE: $FILE$





GENERAL NOTES
1. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.



MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
STATE OF TEXAS
8/25/2020

FREESE AND NICHOLS
11200 Broadway Street, Suite 2320
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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

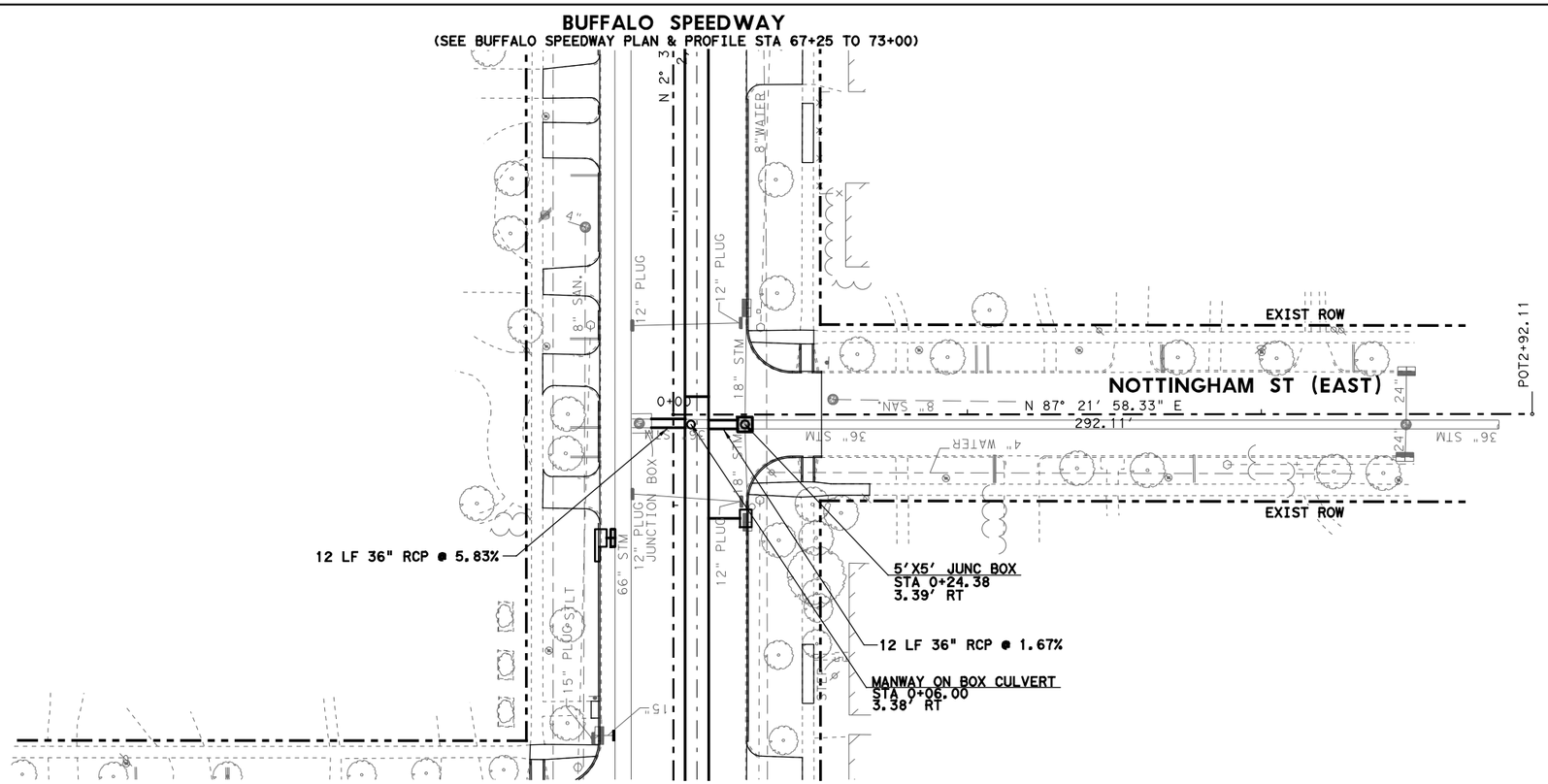
E ROBINHOOD ST

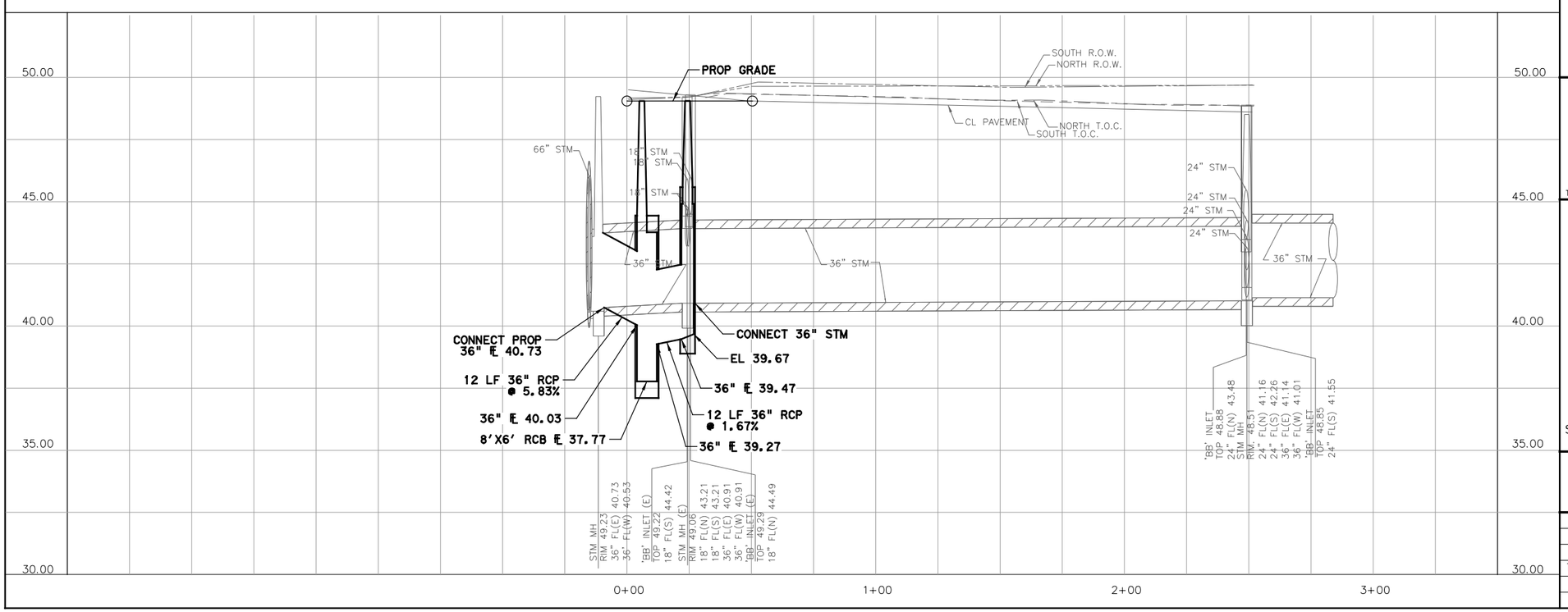
SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		357
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

100% SUBMITTAL





LEGEND

- EXIST INLET
- EXIST MANHOLE
- PROP JUNCTION BOX
- CRITICAL LOCATION
- (1) PLUG STM SWR
- (2) PROP PIPE COLLAR

GENERAL NOTES

1. LENGTH OF PIPE SHOWN IS INSIDE FACE TO INSIDE FACE OF MANHOLE/INLETS.
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0 25 50 75 100
HORZ. SCALE IN FEET

0 5 10
VERT. SCALE IN FEET

STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

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Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

NOTTINGHAM STREET (EAST)

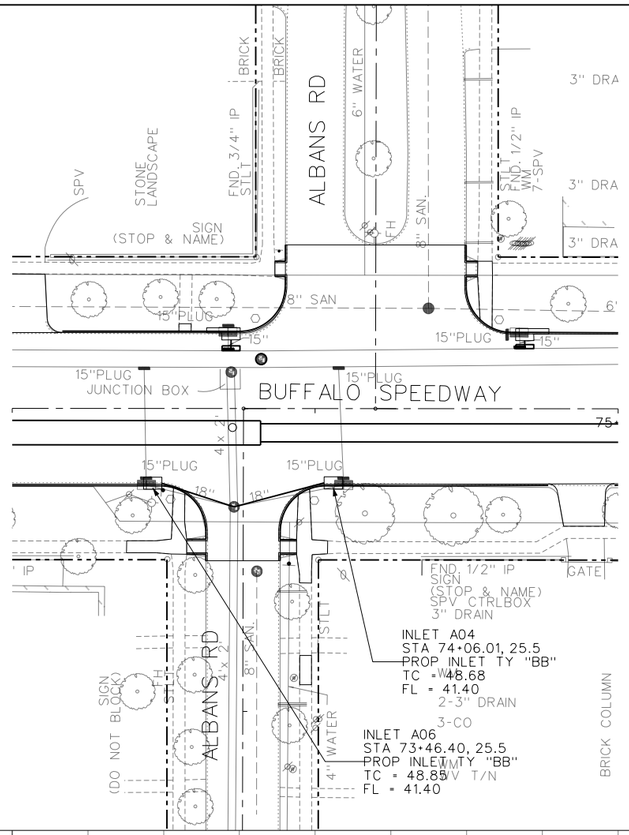
SCALE: 1"=50'-H
1"=5'-V

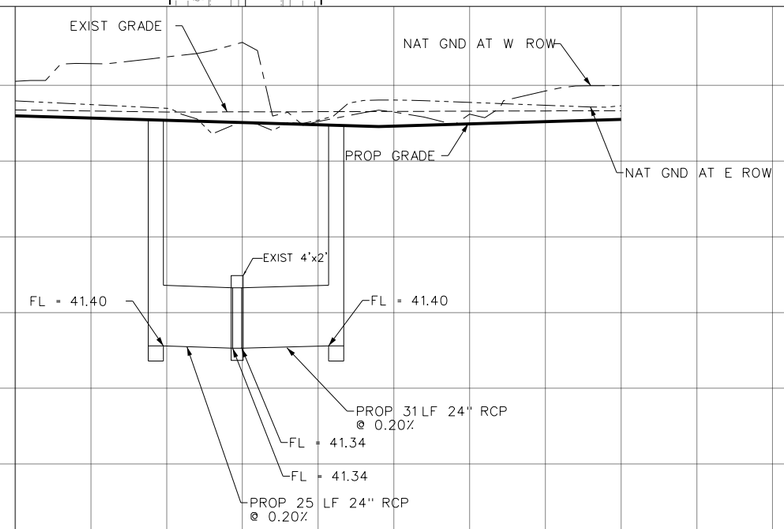
SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		358
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
USER: DMAHER DATE: 8/18/2020 TIME: 6:28:59 PM
FILE: $FILE$





0 50' 100'

SCALE IN FEET

GENERAL NOTES
1. SEE UTILITY COORDINATION PLANS FOR LOCATIONS OF EXISTING UTILITIES.

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

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Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE PLAN AND PROFILE

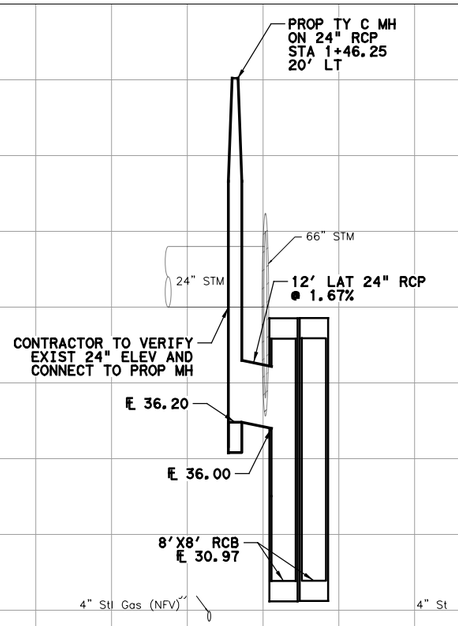
E ALBANS
LATERAL A04 & A06

SHEET 1 OF 1

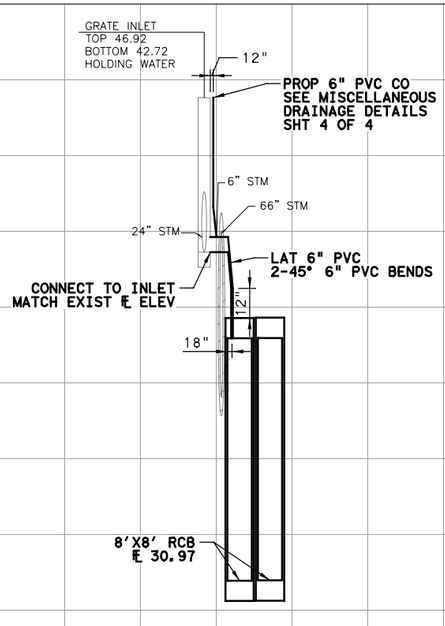
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			359
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	

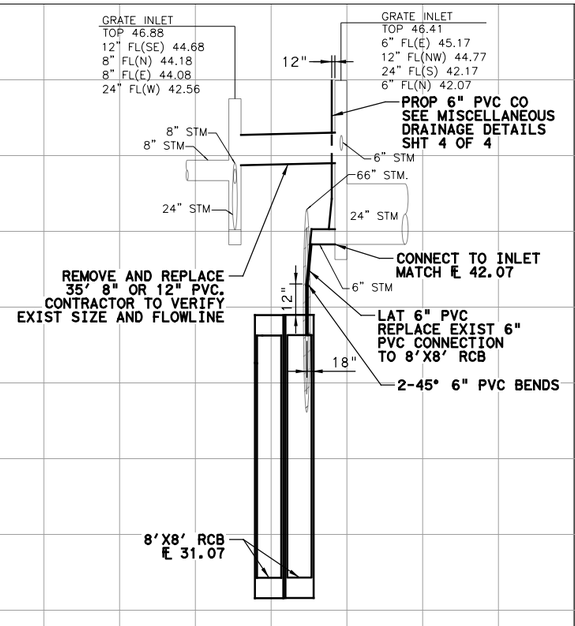
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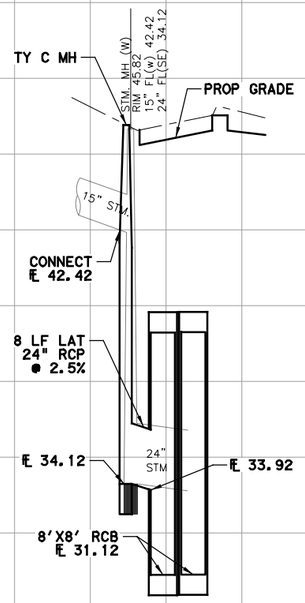
STA 1+46.25
@ OFFSITE DRAINAGE



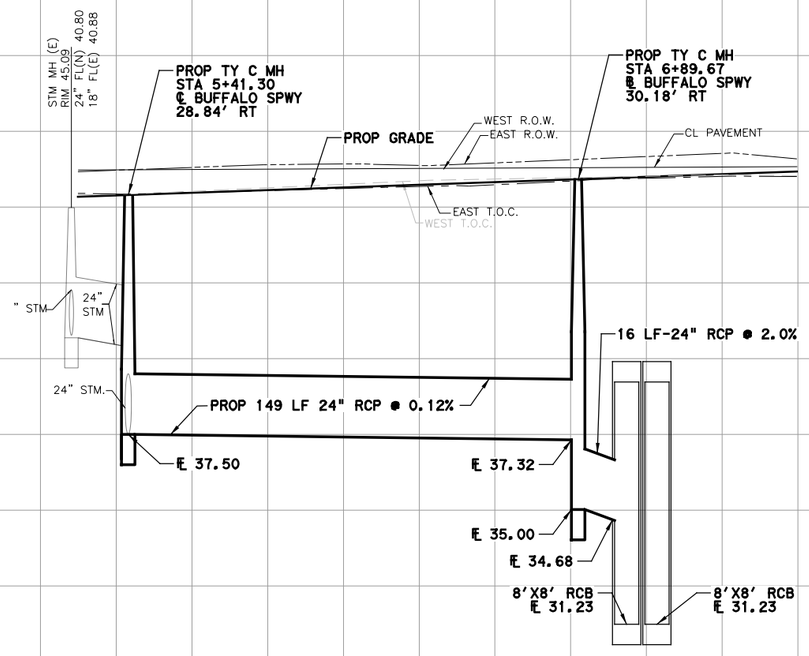
STA 1+53.91
@ OFFSITE DRAINAGE



STA 5+31.37 TO STA 5+46.59
@ OFFSITE DRAINAGE



STA 3+10.34



STA 5+41.30 TO STA 7+00

0 25 50 75 100
HORIZ. SCALE IN FEET

0 5 10 15 20
VERT. SCALE IN FEET

STATE OF TEXAS
JOHN PETERSON
98319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

4828 Loop Central Dr, Suite 800
Houston, Texas 77081
713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE LATERAL PROFILES

SCALE: 1"=50'-H
1"=5'-V

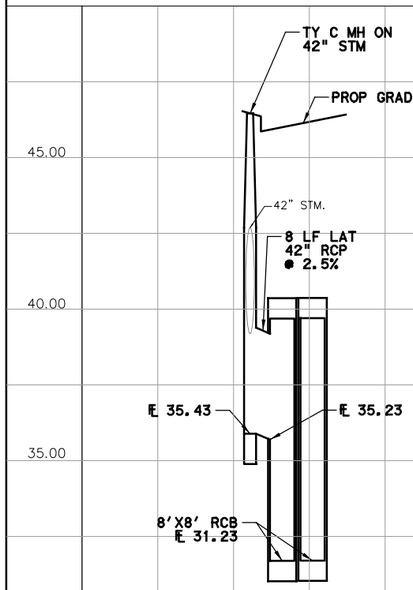
SHEET 1 OF 2

Texas Department of Transportation

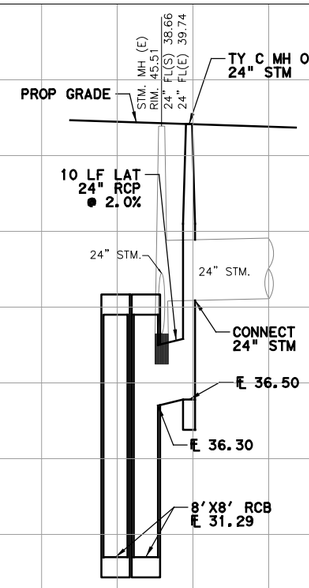
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		360
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
USER: DMAHER DATE: 8/18/2020 TIME: 3:17:33 PM
FILE: $FILE$

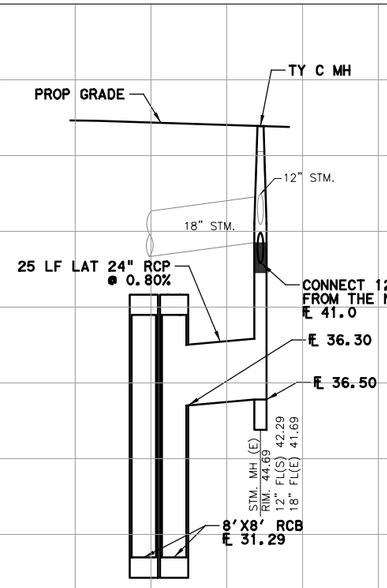
100% SUBMITTAL



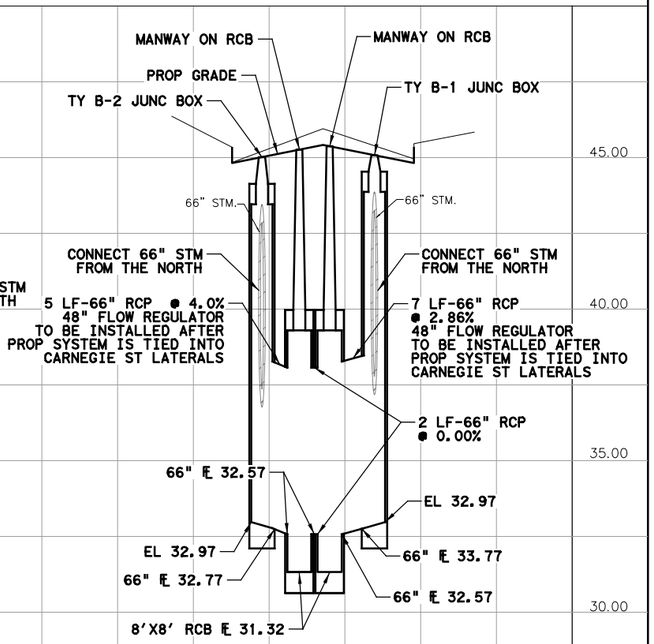
STA 6+91.04



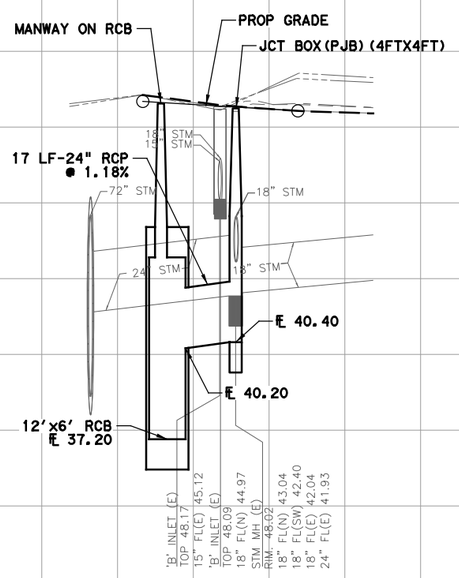
STA 8+83.33
@ HOLCOMBE BLVD



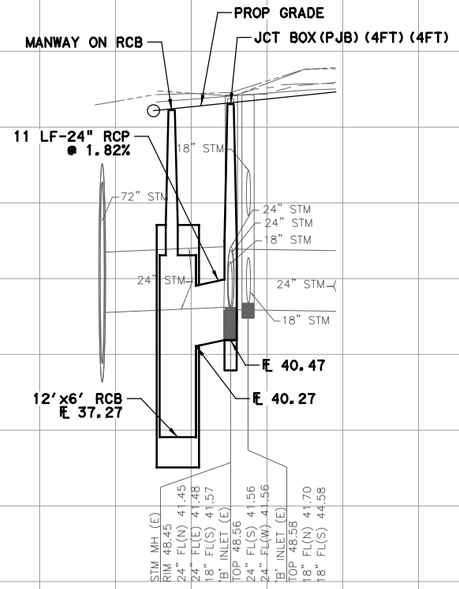
STA 9+64.82
@ HOLCOMBE BLVD



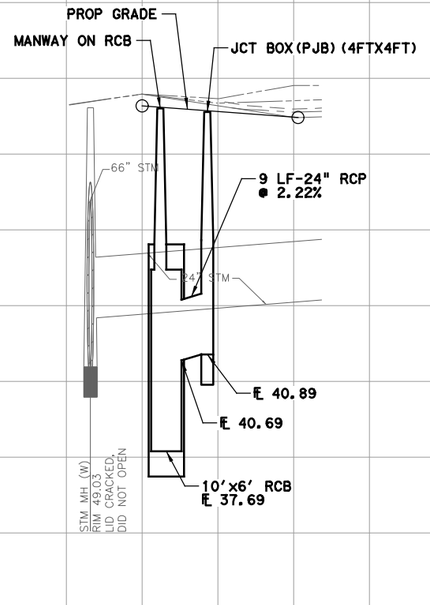
APPROX STA 10+50.00



STA 47+30.51
@ JARRARD ST



STA 49+96.35
@ RICE BLVD



STA 65+60.80
@ QUENBY ST

45.00
40.00
35.00
30.00

0 25 50 75 100
HORIZ. SCALE IN FEET

0 5 10 15 20
VERT. SCALE IN FEET

STATE OF TEXAS
JOHN PETERSON
95319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

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Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE LATERAL PROFILES

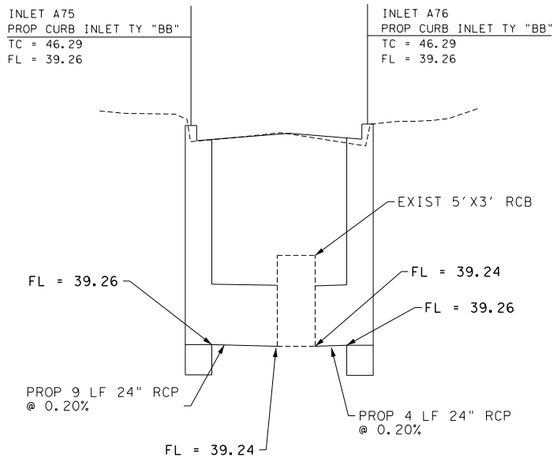
SCALE: 1"=50'-H
1"=5'-V

SHEET 2 OF 2

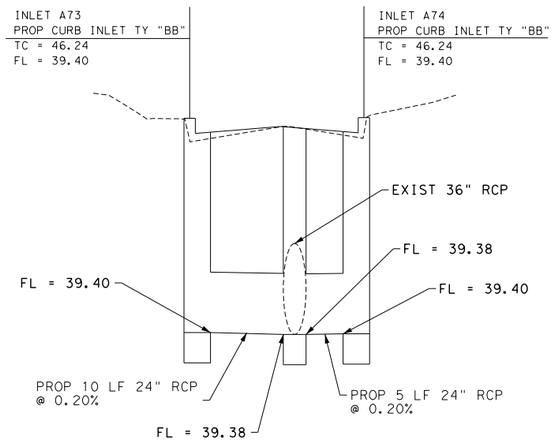
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		361
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
USER: DWAHER DATE: 8/18/2020 TIME: 3:17:37 PM
FILE: $FILE$



LATERAL A75 & A76
STA 3+18 (DUKE ST)



LATERAL A73 & A74
STA 2+12 (DUKE ST)

0 10' 20' 40'
HORIZONTAL SCALE

0 5' 10'
VERTICAL SCALE

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

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Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE LATERALS

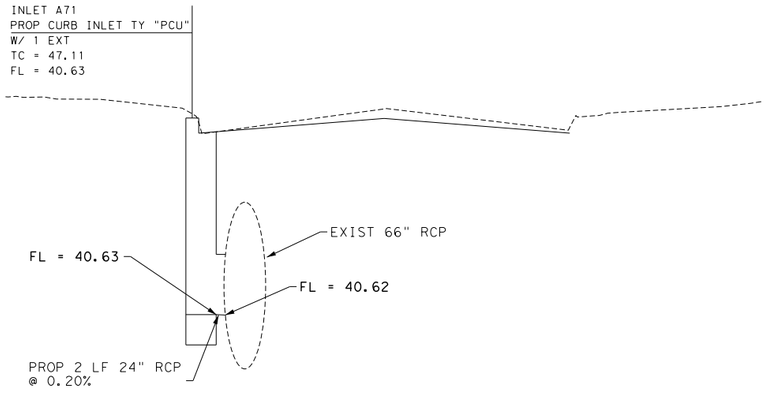
SHEET 1 OF 16

Texas Department of Transportation

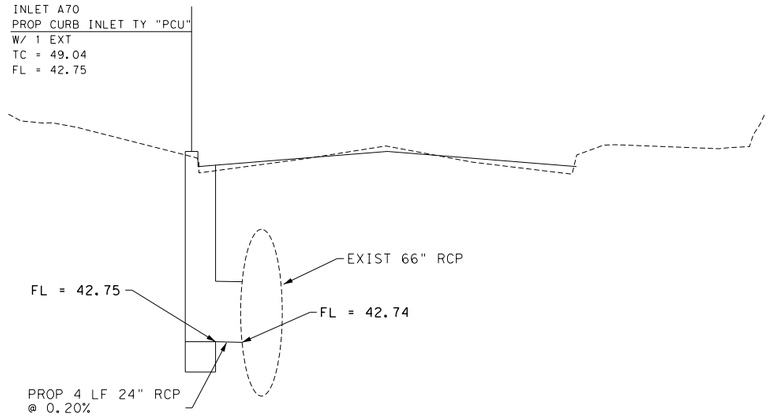
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		362
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

0 10' 20' 40'
HORIZONTAL SCALE

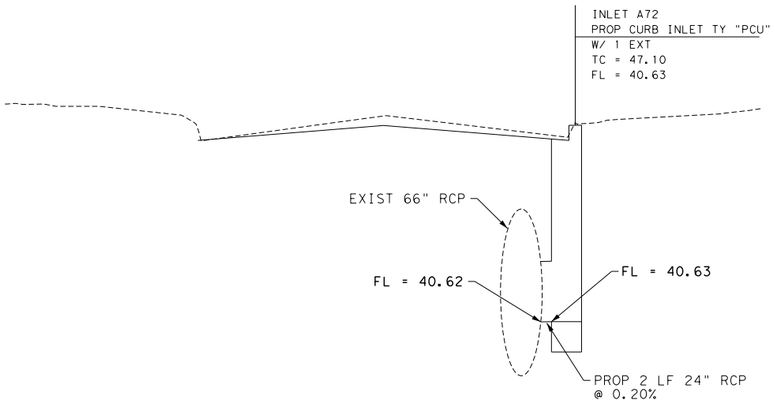
0 5' 10'
VERTICAL SCALE



LATERAL A71
STA 31+06



LATERAL A70
STA 72+86



LATERAL A72
STA 31+11

STATE OF TEXAS
MEHRAN BAVARIAN
48811
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City of West University Place

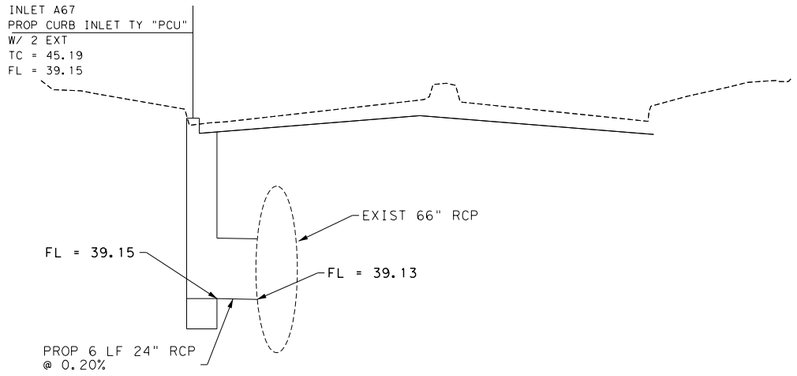
BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE
LATERALS

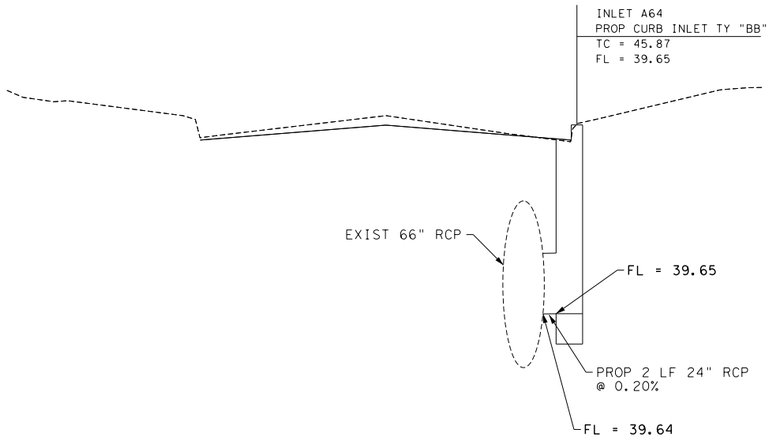
SHEET 2 OF 16

Texas Department of Transportation

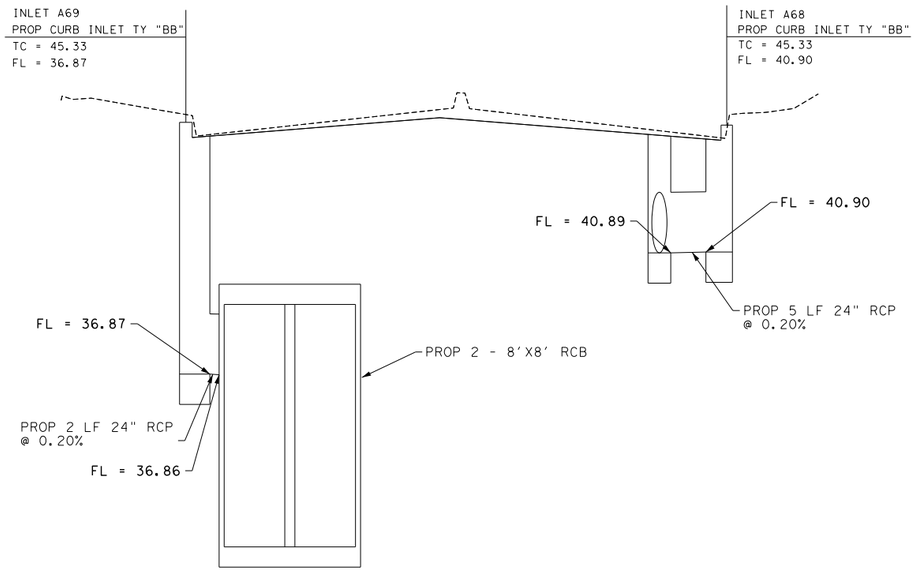
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		363
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



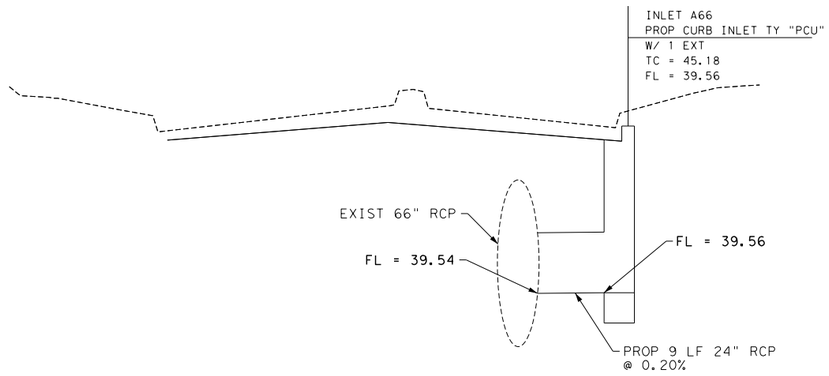
LATERAL A67
STA 10+95



LATERAL A64
STA 15+62



LATERAL A68 & A69
STA 5+22



LATERAL A66
STA 10+98

0 10' 20' 40'
HORIZONTAL SCALE

0 5' 10'
VERTICAL SCALE

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

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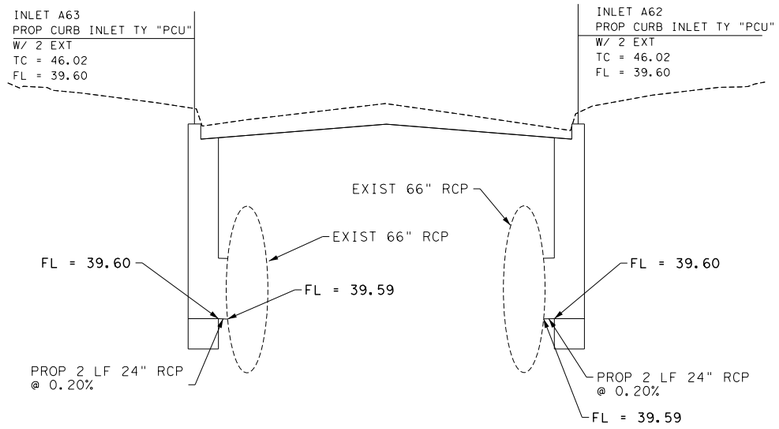
City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

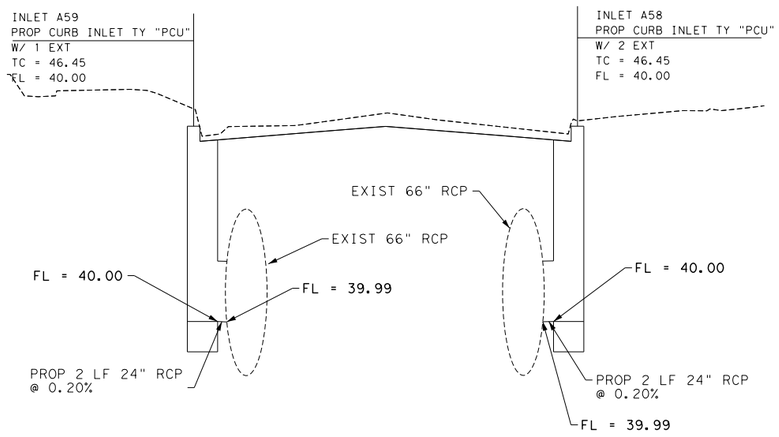
DRAINAGE LATERALS

Texas Department of Transportation

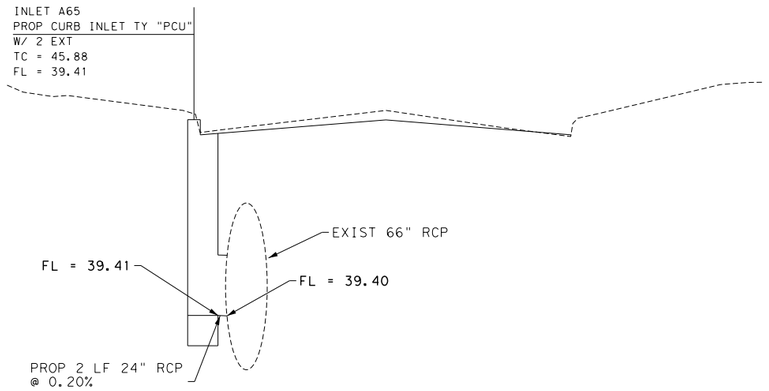
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		364
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



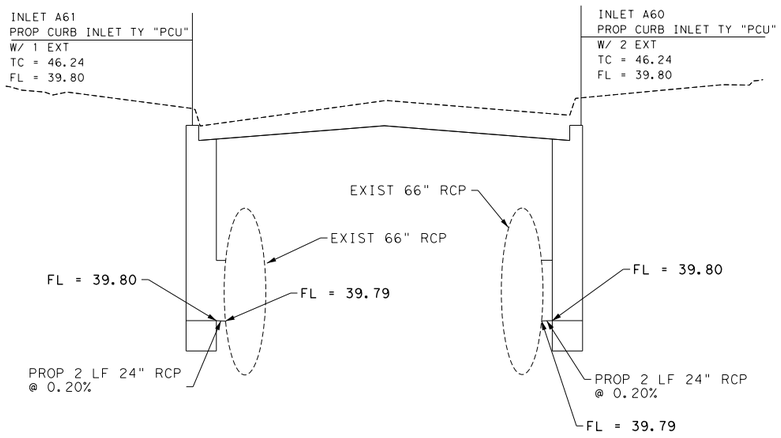
LATERAL A62 & A63
STA 18+69



LATERAL A58 & A59
STA 25+06



LATERAL A65
STA 15+64



LATERAL A60 & A61
STA 21+84



8/25/2020

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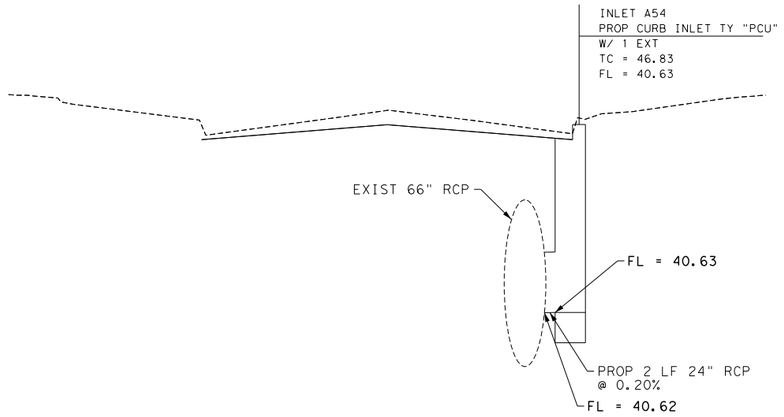
City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

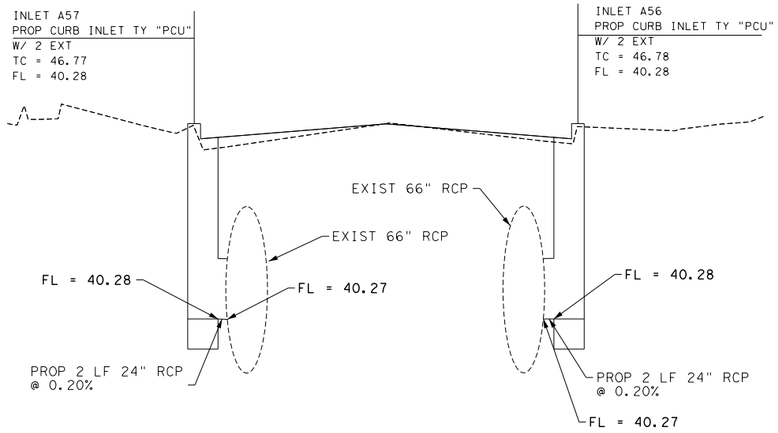
DRAINAGE
LATERALS

Texas Department of Transportation

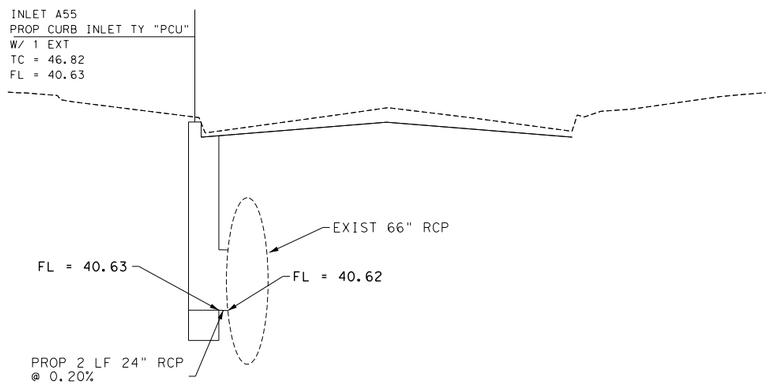
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		365
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



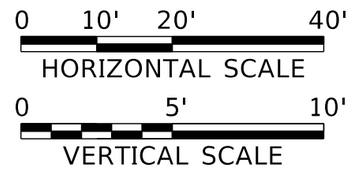
LATERAL A54
STA 32+01



LATERAL A56 & A57
STA 27+41



LATERAL A55
STA 32+07



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City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE
LATERALS

Texas Department of Transportation

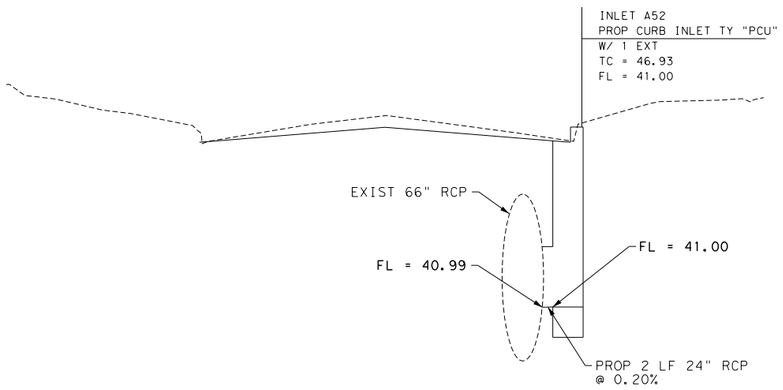
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		366
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

0 10' 20' 40'

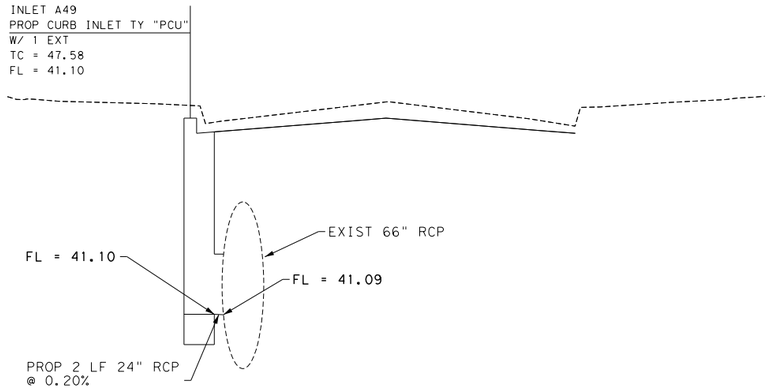
HORIZONTAL SCALE

0 5' 10'

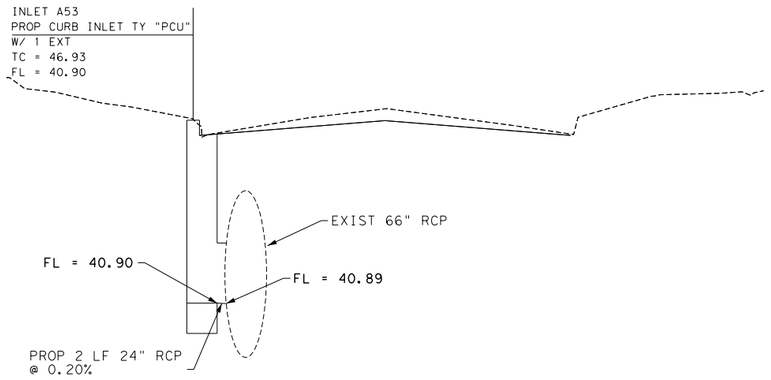
VERTICAL SCALE



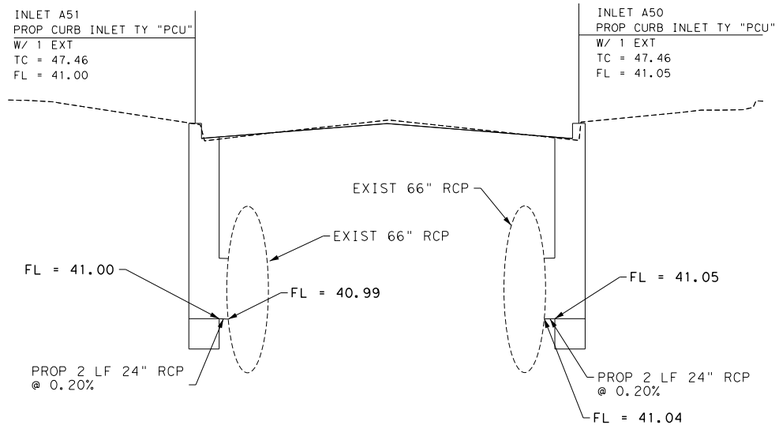
LATERAL A52
STA 34+22



LATERAL A49
STA 38+51



LATERAL A53
STA 34+19



LATERAL A50 & A51
STA 35+99

STATE OF TEXAS
MEHRAN BAVARIAN
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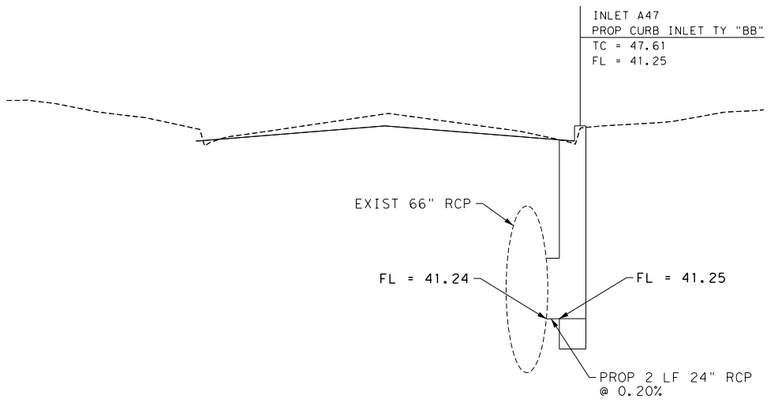
City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

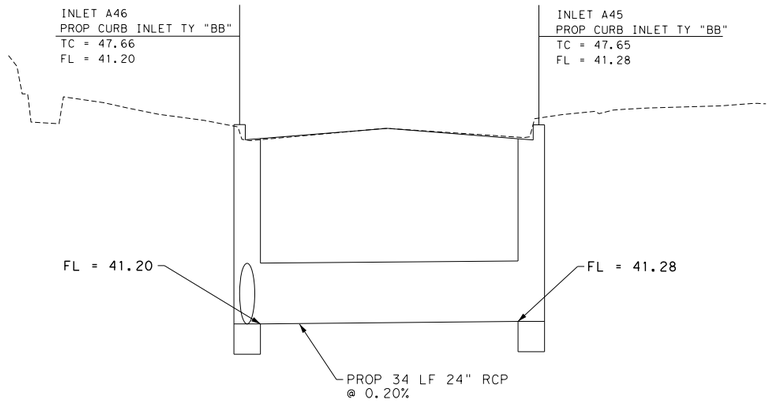
DRAINAGE
LATERALS

Texas Department of Transportation

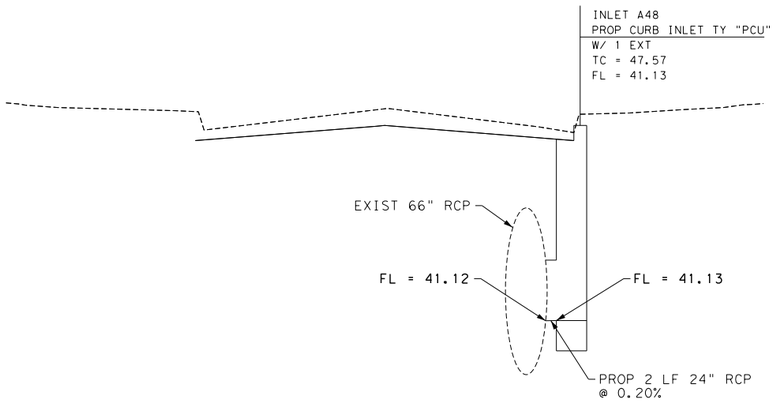
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		367
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



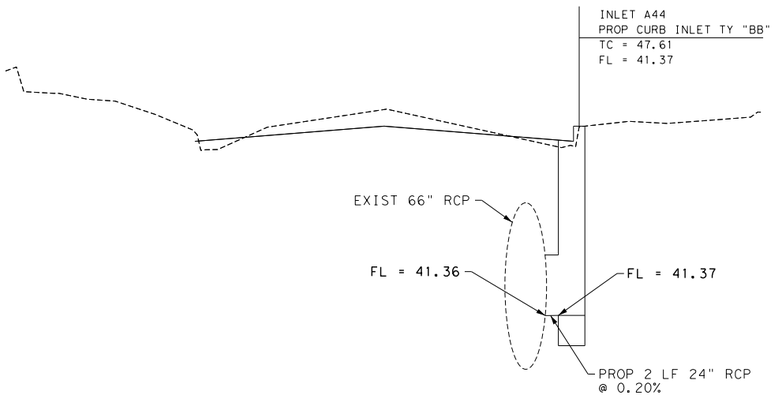
LATERAL A47
STA 40+99



LATERAL A45
STA 2+40 (UNIVERSITY BLVD)



LATERAL A48
STA 38+57



LATERAL A44
STA 42+00

0 10' 20' 40'
HORIZONTAL SCALE

0 5' 10'
VERTICAL SCALE

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

FREESE AND NICHOLS
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Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

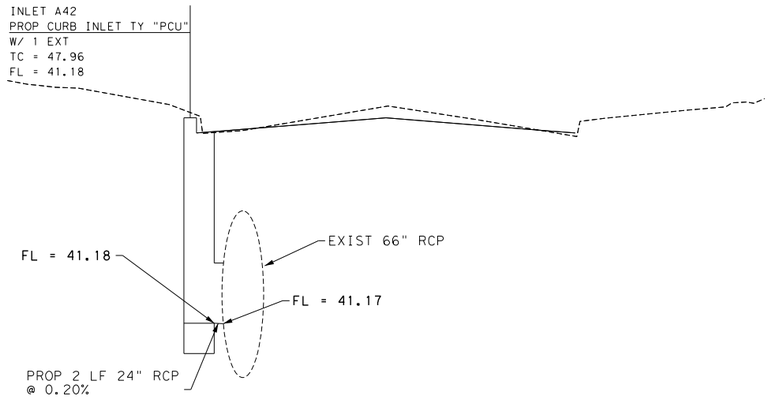
City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

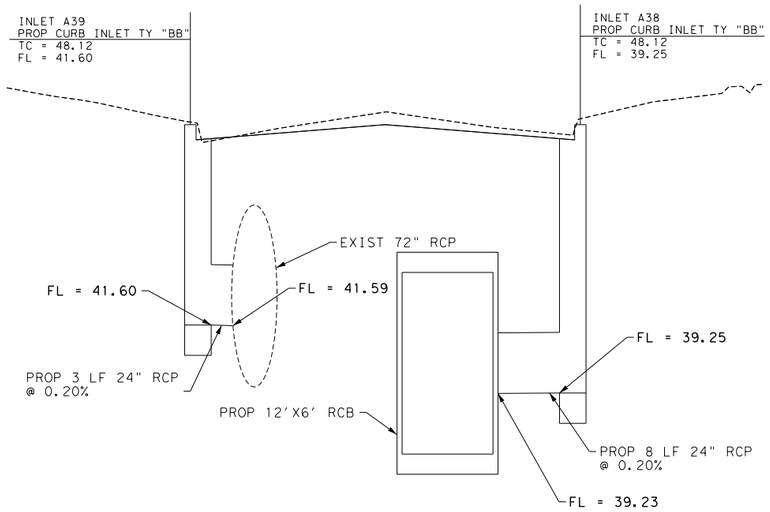
DRAINAGE
LATERALS

Texas Department of Transportation

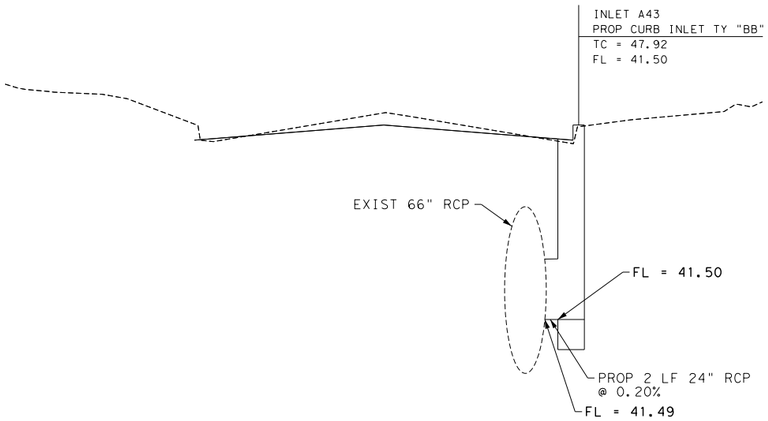
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		368
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



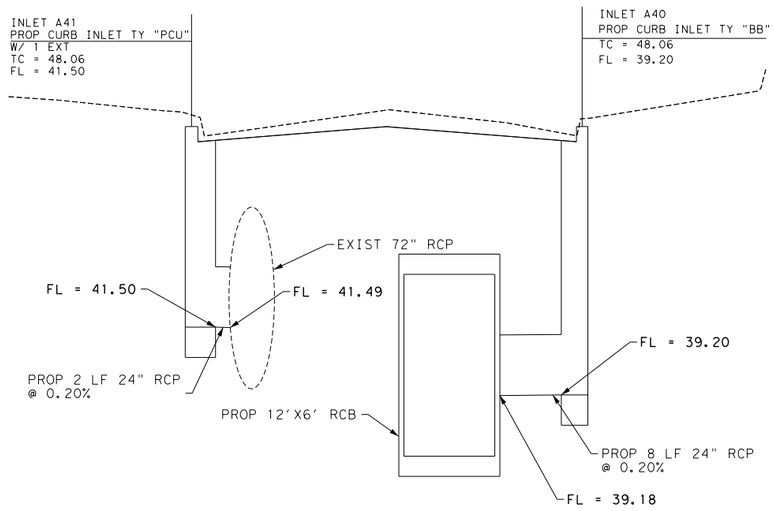
LATERAL A42
STA 43+12



LATERAL A38 & A39
STA 48+07



LATERAL A43
STA 42+98



LATERAL A40 & A41
STA 46+37

0 10' 20' 40'
HORIZONTAL SCALE

0 5' 10'
VERTICAL SCALE

STATE OF TEXAS
MEHRAN BAVARIAN
48811
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8/25/2020

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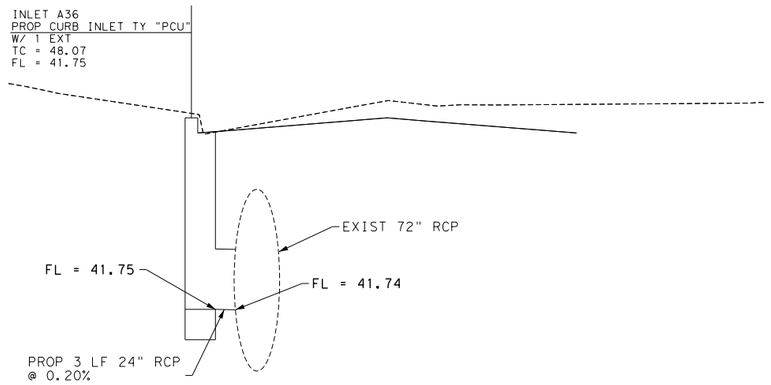
City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

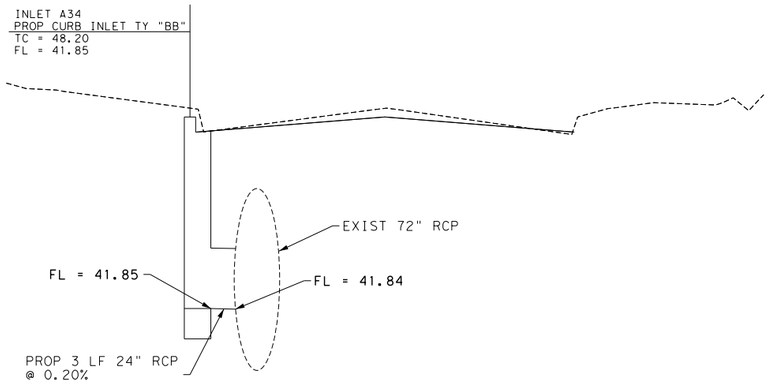
DRAINAGE
LATERALS

Texas Department of Transportation

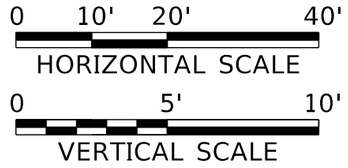
FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			369
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	

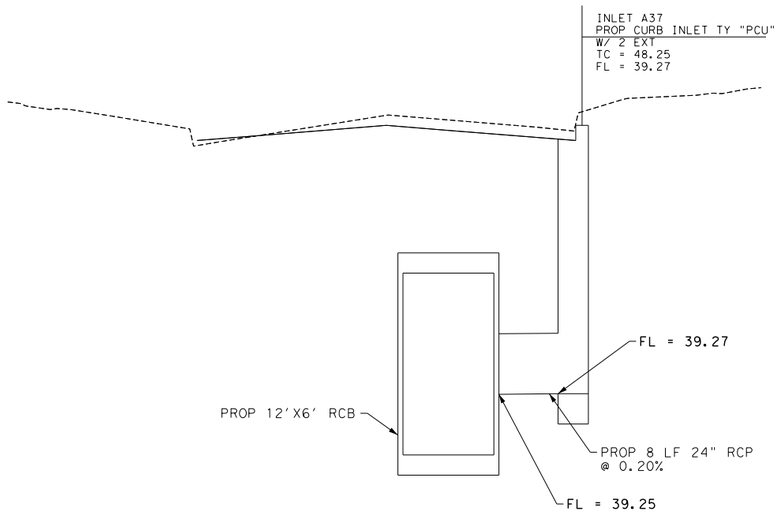


LATERAL A36
STA 49+91

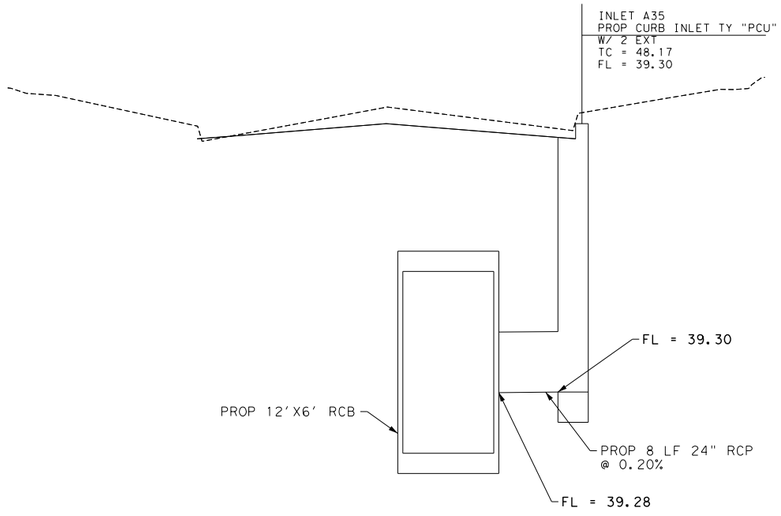


LATERAL A34
STA 52+19





LATERAL A37
STA 49+31



LATERAL A35
STA 50+41

8/25/2020

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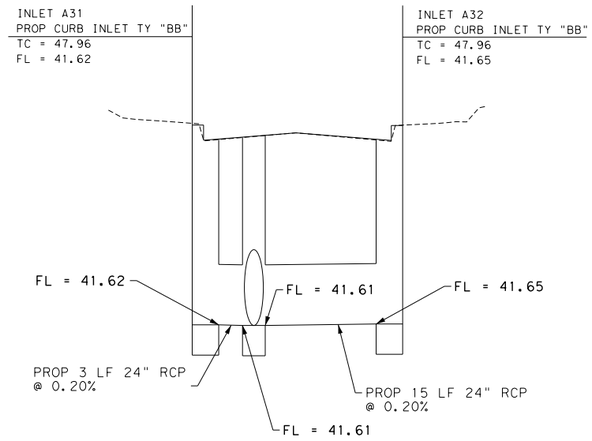
City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

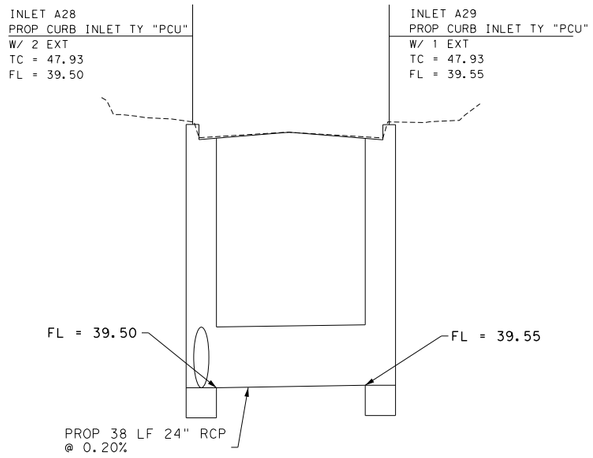
DRAINAGE
LATERALS

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		370
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

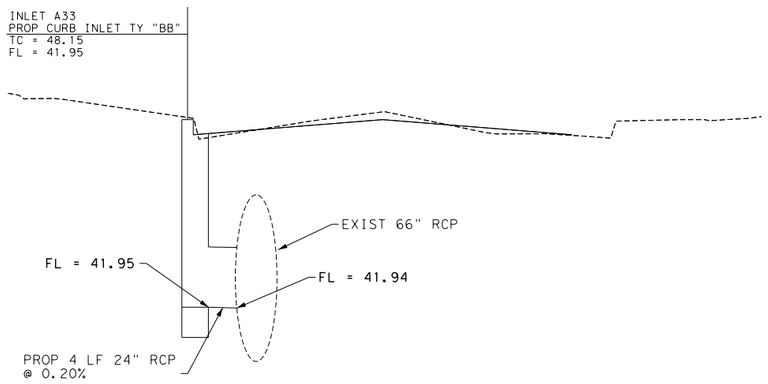


LATERAL A31 & A32
STA 0+53 (E GEORGETOWN)

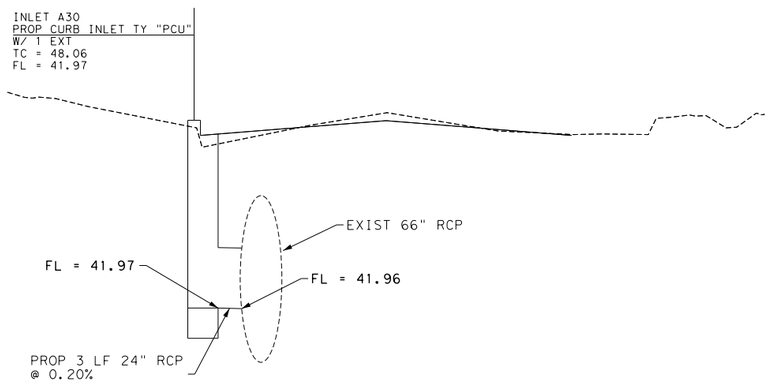


LATERAL A29
STA 0+53 (LAFAYETTE)





LATERAL A33
STA 52+82



LATERAL A30
STA 55+30



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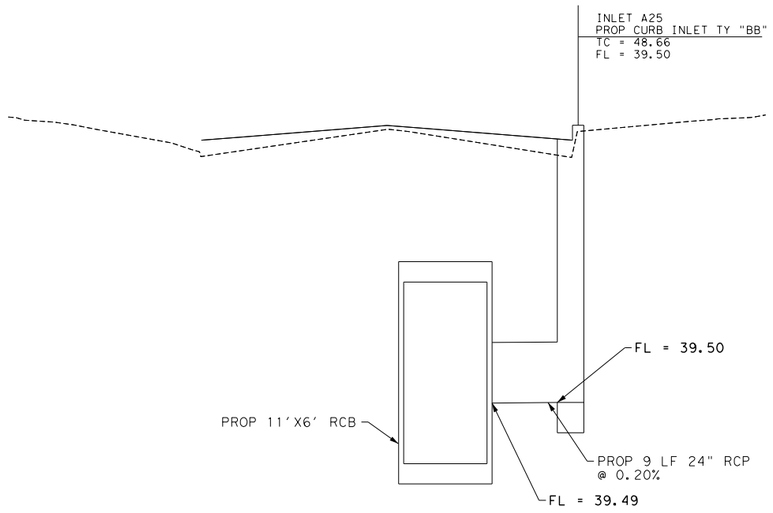
City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

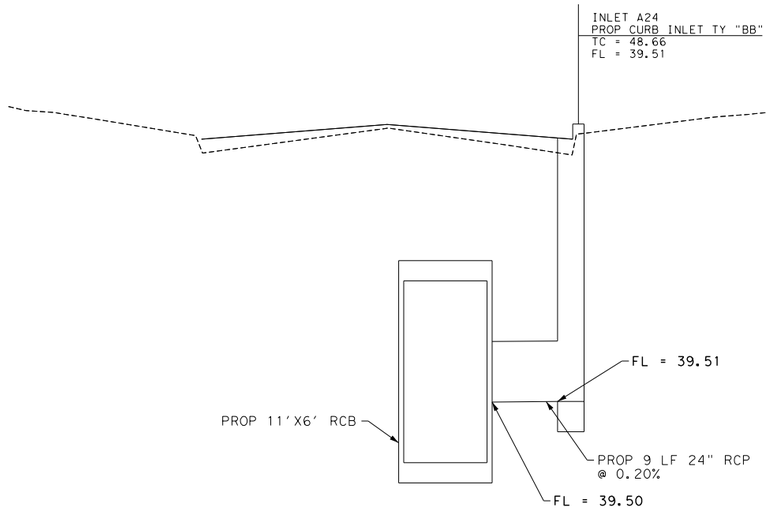
DRAINAGE
LATERALS

Texas Department of Transportation

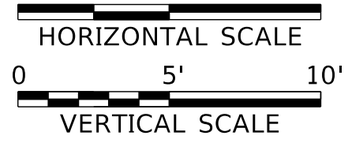
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		371
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

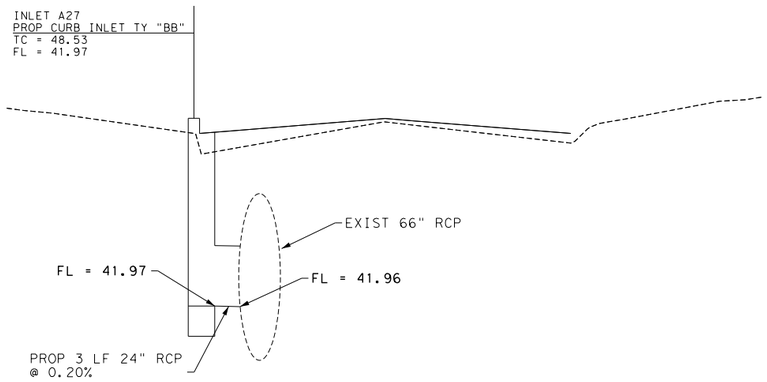


LATERAL A25
STA 57+36

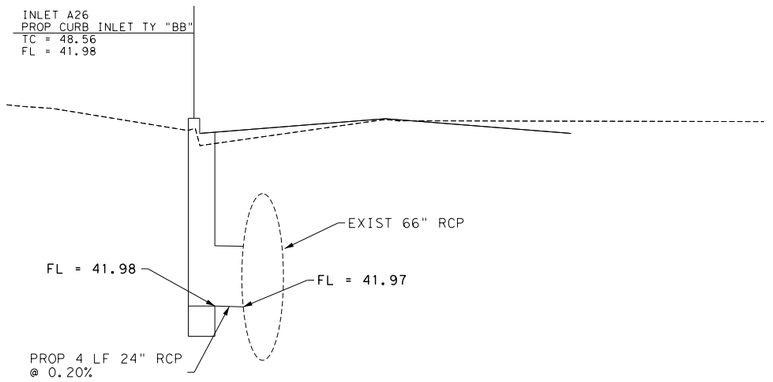


LATERAL A24
STA 58+06

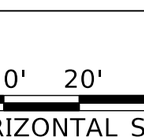




LATERAL A27
STA 56+42



LATERAL A26
STA 57+71



8/25/2020

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City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE
LATERALS

Texas Department of Transportation

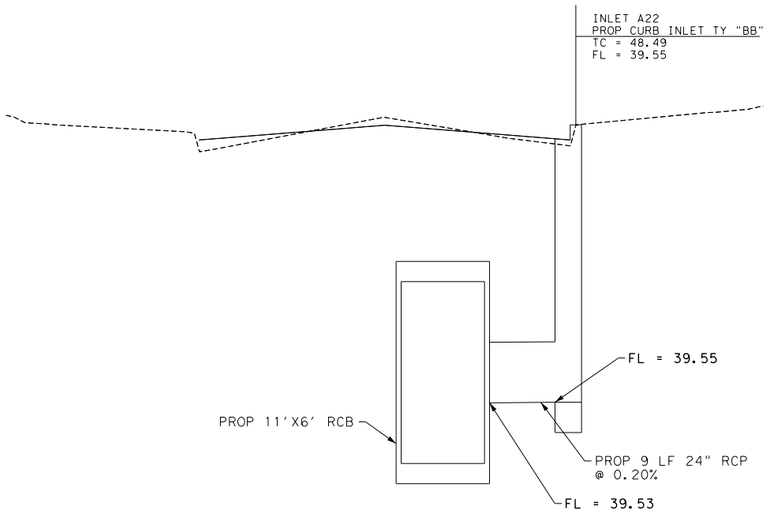
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		372
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

0 10' 20' 40'

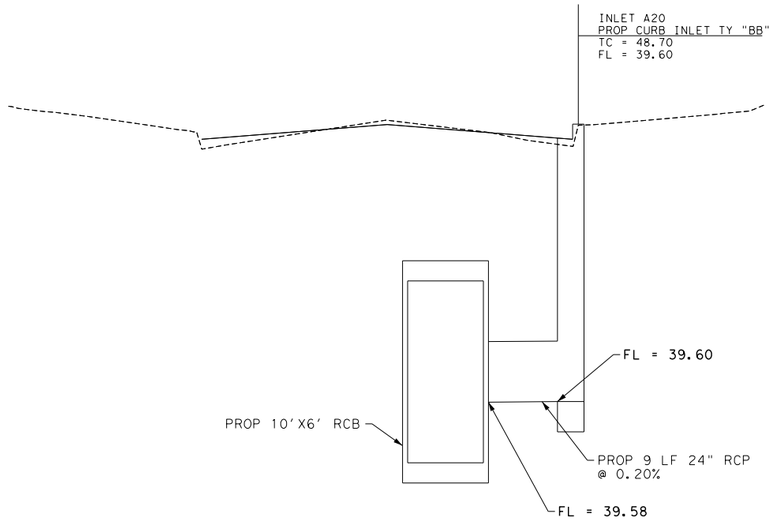
HORIZONTAL SCALE

0 5' 10'

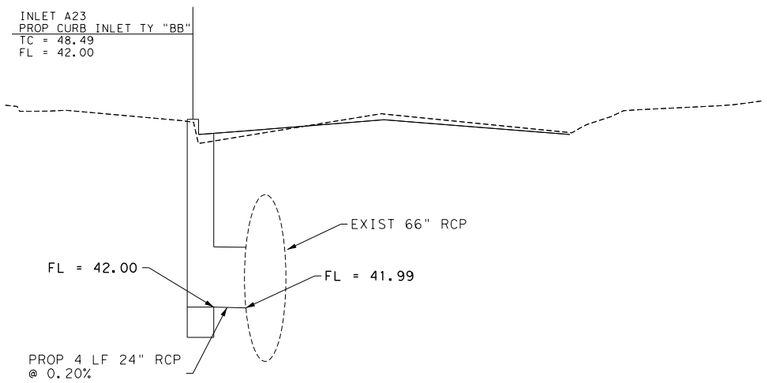
VERTICAL SCALE



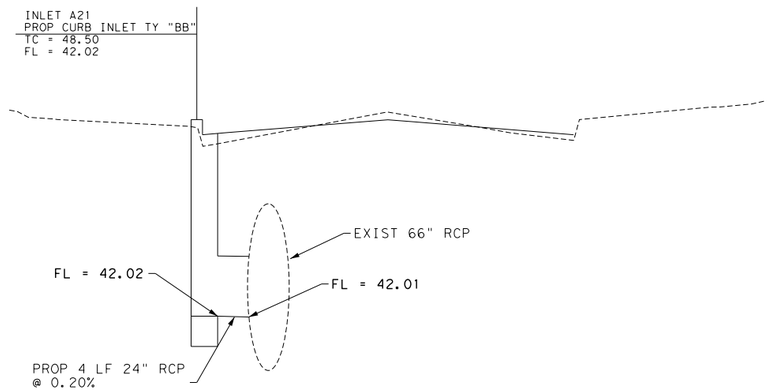
LATERAL A22
STA 60+01



LATERAL A20
STA 60+71



LATERAL A23
STA 59+38



LATERAL A21
STA 60+05

STATE OF TEXAS
MEHRAN BAVARIAN
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City of West University Place

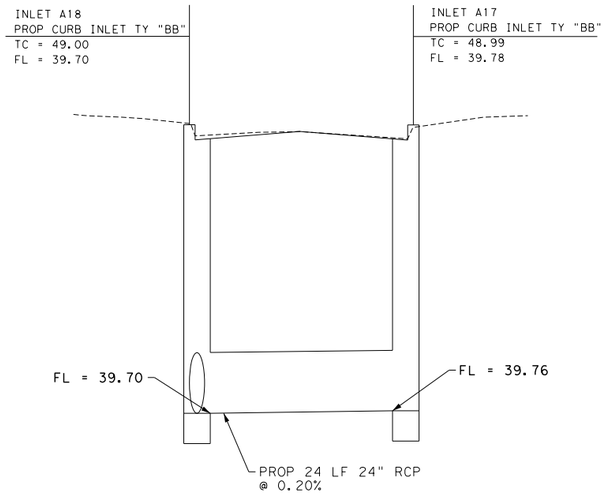
BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE LATERALS

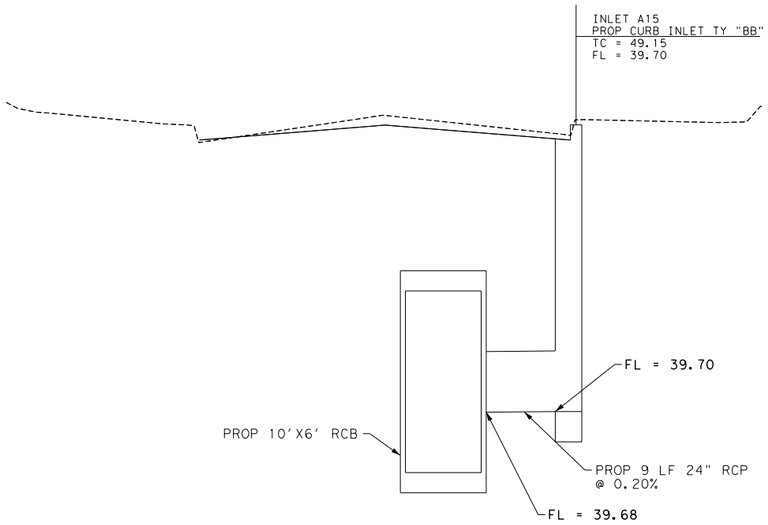
SHEET 12 OF 16

Texas Department of Transportation

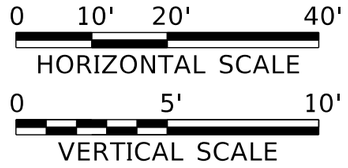
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		373
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

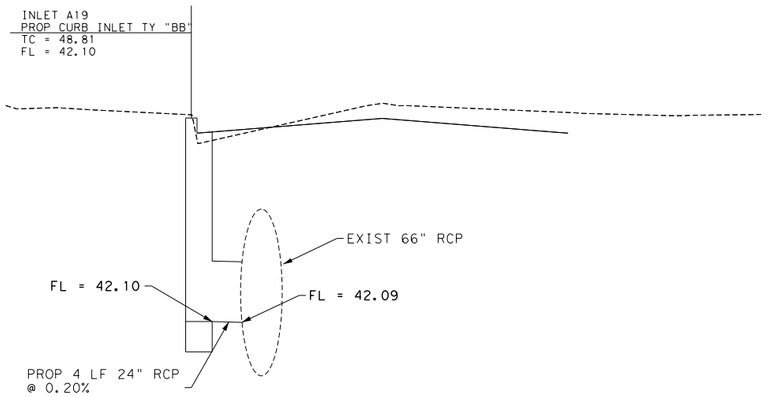


LATERAL A17
STA 0+54 (E ROBINHOOD)

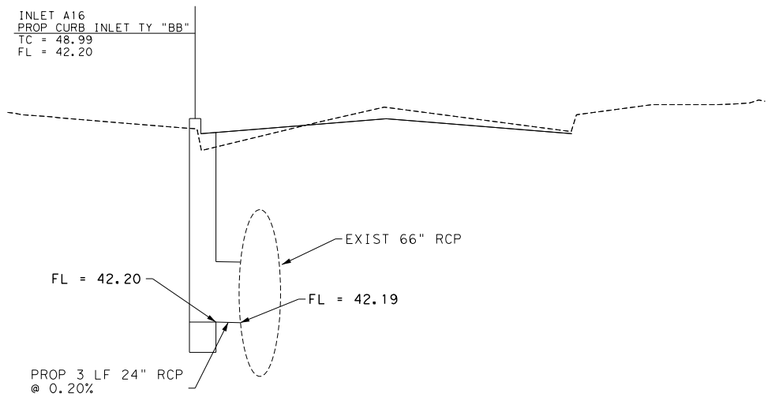


LATERAL A15
STA 65+37





LATERAL A19
STA 62+98



LATERAL A16
STA 63+63

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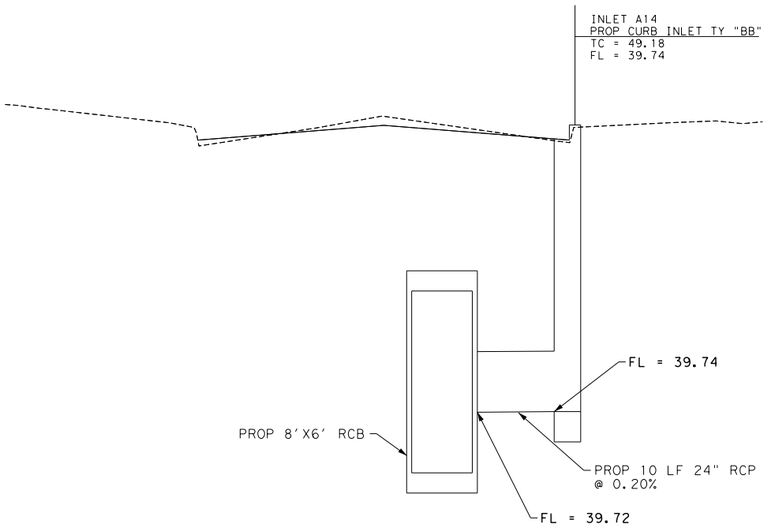
City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

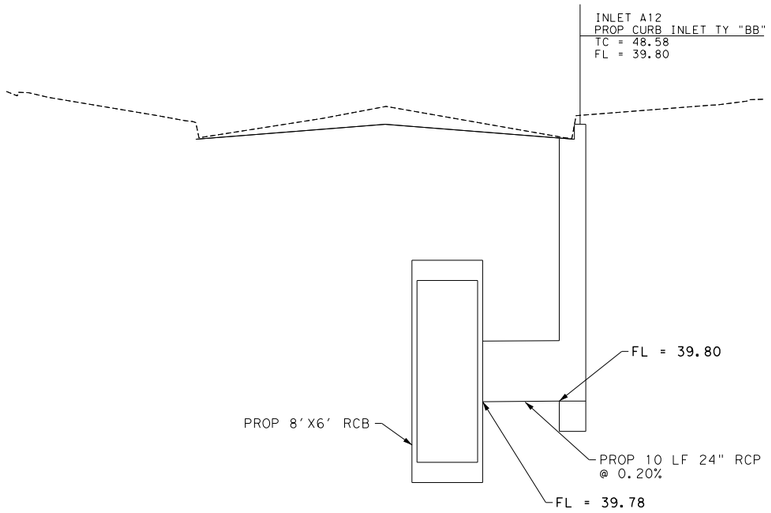
DRAINAGE
LATERALS

Texas Department of Transportation

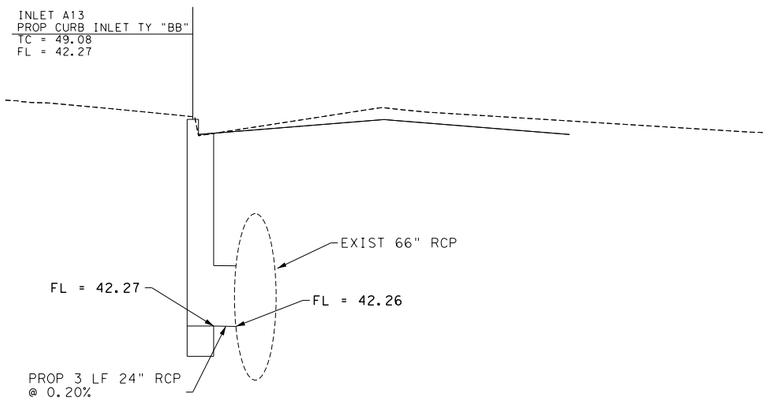
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		374
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



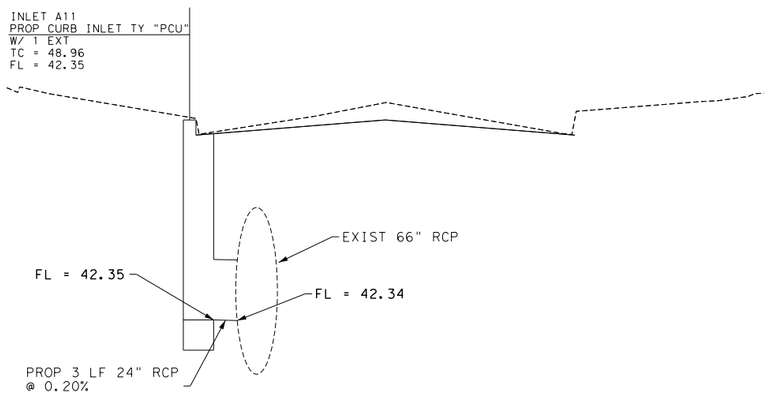
LATERAL A14
STA 65+96



LATERAL A12
STA 67+96



LATERAL A13
STA 65+64



LATERAL A11
STA 67+89

0 10' 20' 40'
HORIZONTAL SCALE

0 5' 10'
VERTICAL SCALE

STATE OF TEXAS
MEHRAN BAVARIAN
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REGISTERED PROFESSIONAL ENGINEER
8/25/2020

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City of West University Place

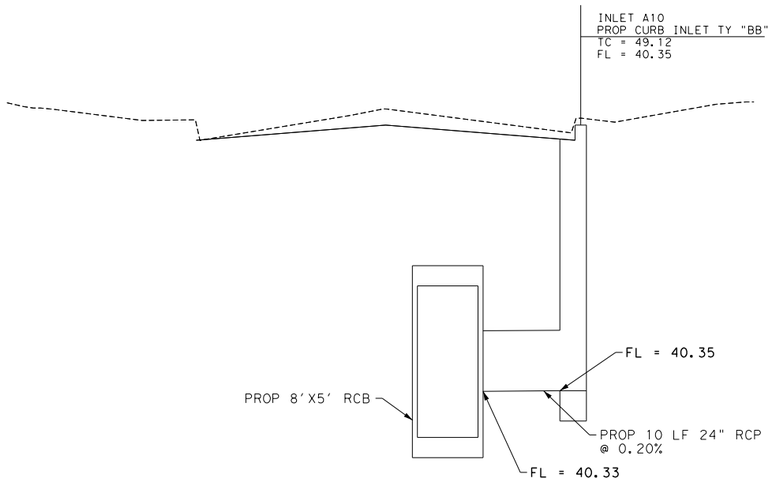
BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

DRAINAGE
LATERALS

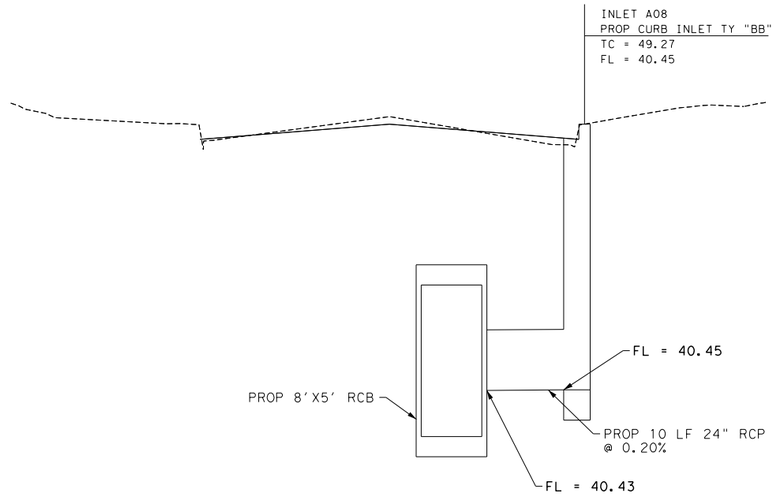
SHEET 14 OF 16

Texas Department of Transportation

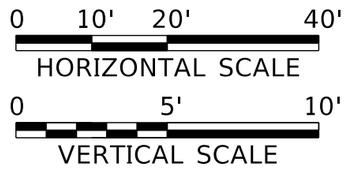
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		375
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

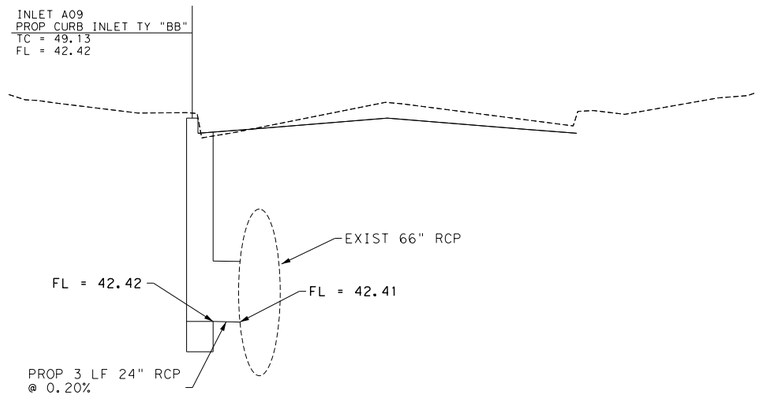


LATERAL A10
STA 70+19

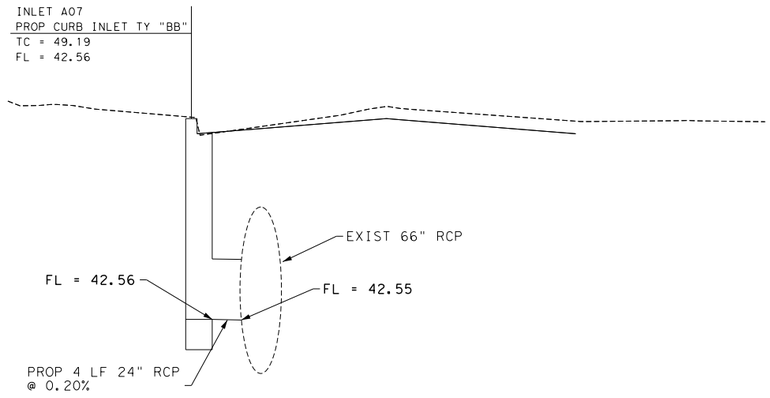


LATERAL A08
STA 71+33





LATERAL A09
STA 70+15



LATERAL A07
STA 71+03

FREESE AND NICHOLS
11200 Broadway Street, Suite 2320
Pearland, Texas 77584
Phone – (832) 456-4700
Fax – (832) 456-4701
Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

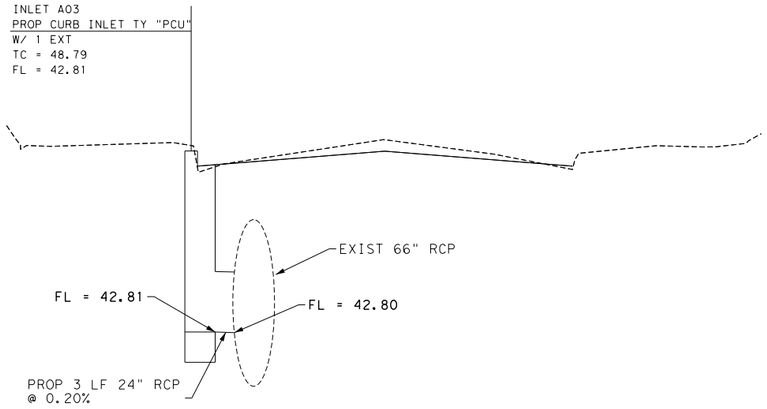
City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

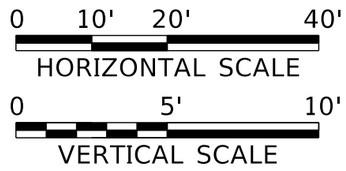
DRAINAGE
LATERALS

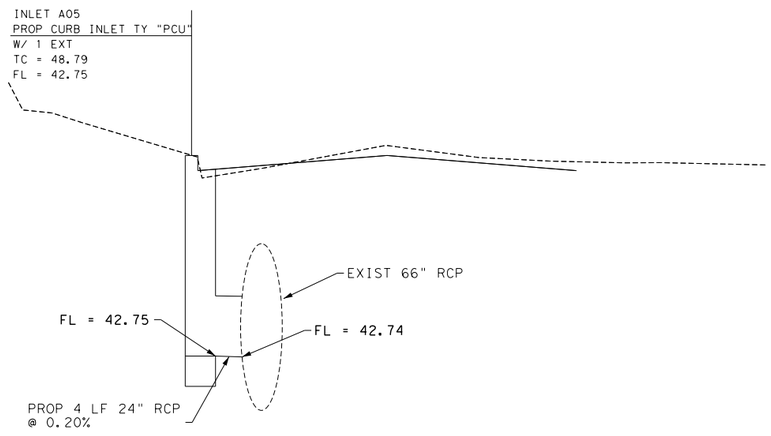
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		376
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

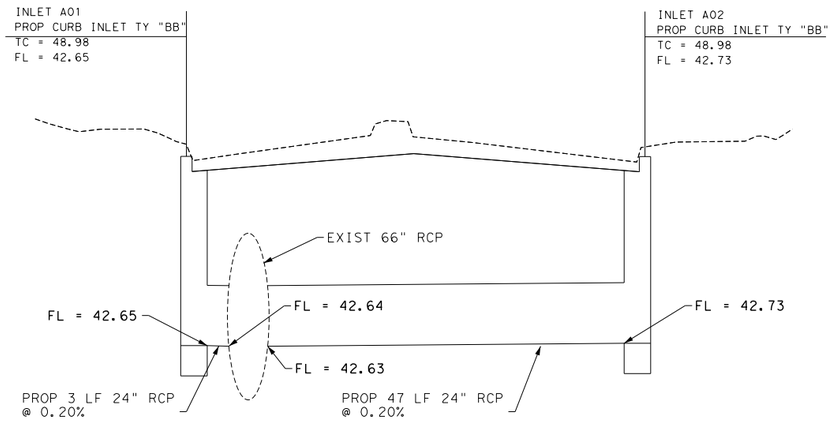


LATERAL A03
STA 74+72





LATERAL A05
STA 73+67



LATERAL A01 & A02
STA 77+34

8/25/2020

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City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

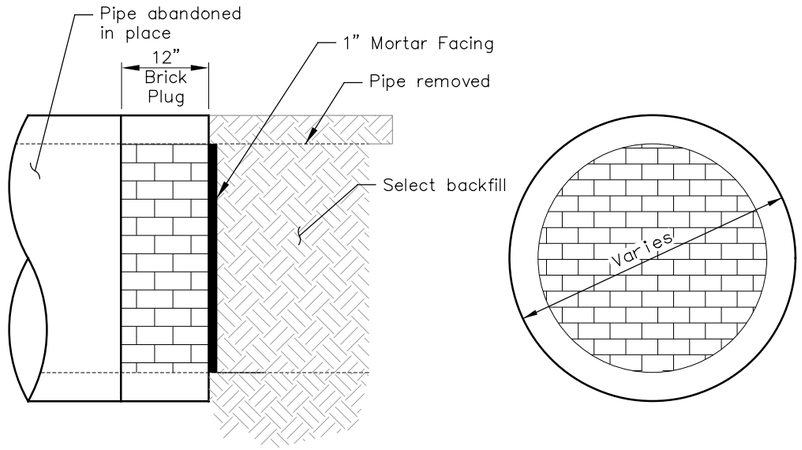
DRAINAGE
LATERALS

SHEET 16 OF 16

Texas Department of Transportation

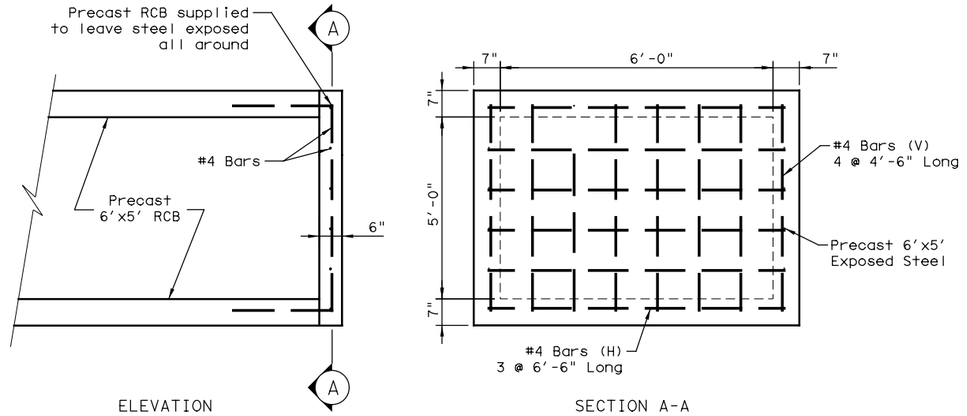
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6	(SEE THE TITLE SHEET)		377
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

100% SUBMITTAL

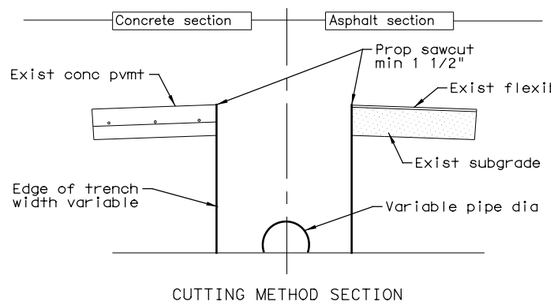


STORM SEWER PLUG

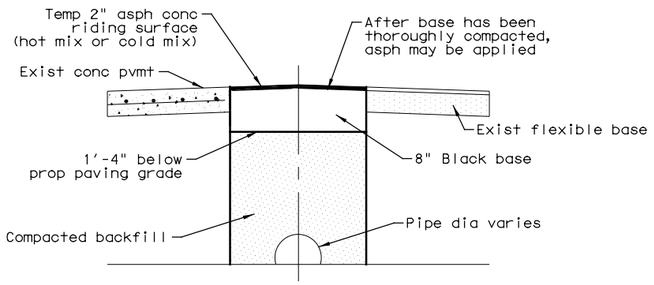
For Use When Abandoned Pipe Not Called To Be Grout Filled. 2" Square Opening To Be Omitted For Plugs On Proposed Storm Sewer Stubouts.



CONCRETE PLUG FOR 6'X5' RCB



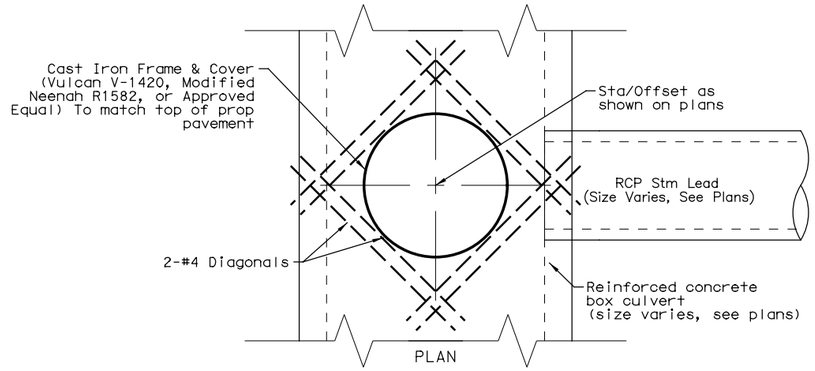
CUTTING METHOD SECTION

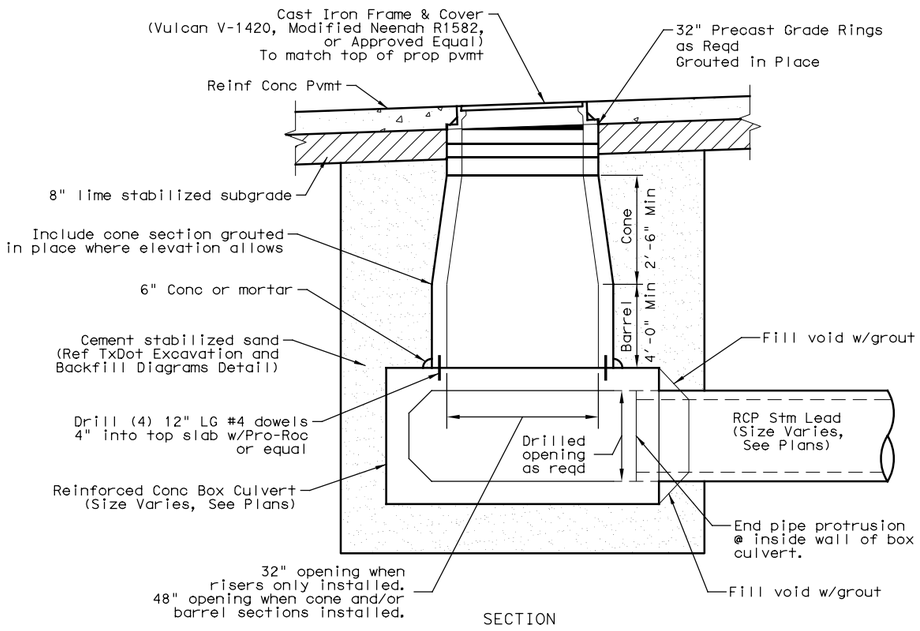


REPAIR METHOD SECTION

Note:
This detail shall only be used in the project where the existing street pavement is to be totally replaced. Scheduling of replacement is not timely as determined by the city. Typical for all proposed utility construction.
(No separate pay)

CUT AND REPAIR CONCRETE AND ASPHALT PAVEMENT





MANWAY ON BOX CULVERT

JOHN PETERSON
99319
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
8/24/2020

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4828 Loop Central Dr, Suite 800
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HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

MISCELLANEOUS DRAINAGE DETAILS

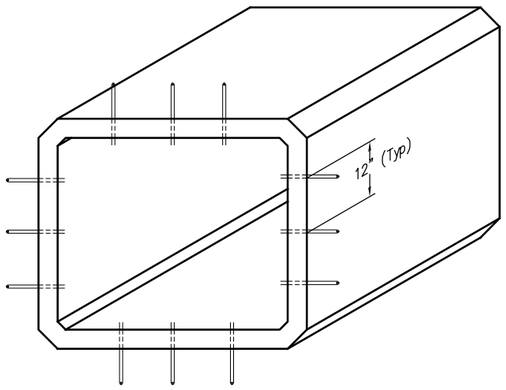
NOT TO SCALE

Texas Department of Transportation

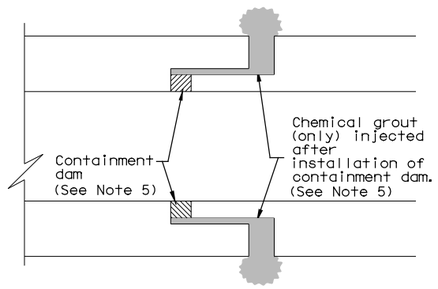
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6	(SEE THE TITLE SHEET)			378
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	

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100% SUBMITTAL



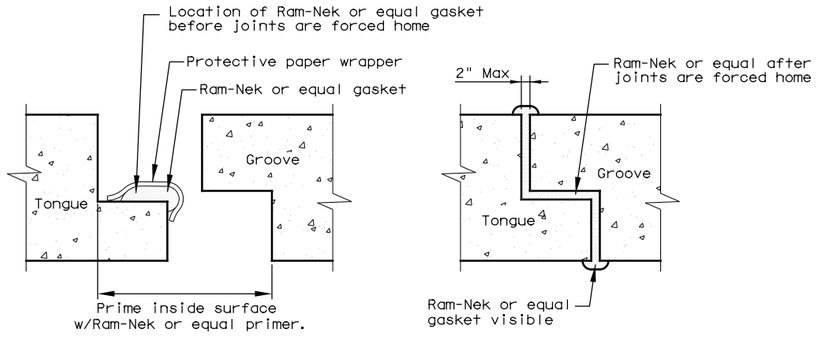
JOINT REPAIR SPACING



JOINT REPAIR

JOINT REPAIR NOTES:

1. Joint repair shall be performed from the inside of the storm sewer system and shall be performed in strict accordance to all local, state, and federal laws. the contractor shall provide a safety plan that shall include but not limited to, gas detector, tripod and wrench, harness, ventilation devices, etc.
2. Contractor shall remove all existing fill and debris from all areas around the joints to a width of 12" from centerline of joint. the fill and debris can be temporarily placed adjacent to the joint and be replaced in the same location at the same height after repair of joint. fill will not be allowed to remain in a file after repair of the joint.
3. Cofferdams, sandbags, pumps and other means of dewatering shall be used to maintain the water at a low level. it is not necessary for the joint to be dry, but water level shall be maintained at as low a level as is practical. flow in box culverts must be controlled to an extent that joint beginning repaired is not inundated by water.
4. All existing bituminous joint sealant material, shall be removed from joints prior to work. the joints shall be cleaned by pressurized water blasters to remove loose debris.
5. The joints shall have a "containment dam" used to provide containment for the grout that is injected behind the box culvert. The "containment dam" shall be an approved cementitious grout or saturated jute oakum with an approved chemical grout, as indicated in specifications. Cementitious grout may only be used in sections of non-submerged joints only. Saturated jute oakum shall be used in submerged areas and may be used in non-submerged areas as well. Non-submerged areas are defined as sections in the joint that are a minimum of one (1) foot above the standing water level of the box culvert, at either pre-construction or construction phase, whichever is higher. All other areas of the joint are considered submerged.
6. After the installation of the containment dam, chemical grout shall be pumped behind culvert @ 12" spacing starting at the middle of the bottom joint until outcropping is seen or grout achieves a pressure of 125 psi or as per manufacturers suggested pressure criteria.
7. Outcropped chemical grout material shall be removed, flushed to joint, and disposed of properly.
8. Cleanup must be done without inordinate use of flammable or hazardous chemicals.
9. The contractor is responsible for removing any impedance to flow, such as temporary cofferdams, sandbags, and equipment from the box culverts in the event of rain.

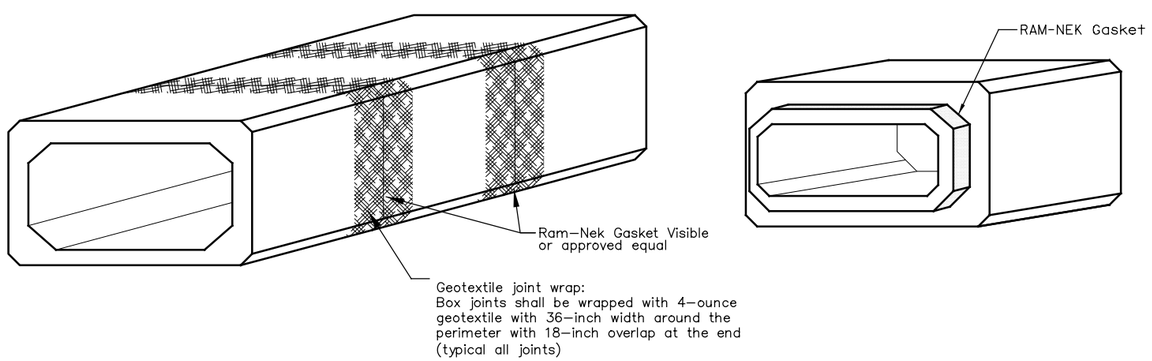


HORIZONTAL APPLICATION

RAM-NEK GASKET INSTALLATION

HORIZONTAL NOTES:

1. Trench conditions shall be such that pipe jointing can be accomplished without getting mud, silt, gravel or other foreign materials into the joint. Generally the trench should be dewatered and have a firm bottom free of muck.
2. Prime joint as per manufacturer's recommendation. Remove protective wrapper on one side of preformed ram-neck strip or coil and press firmly to dry. Clean joint surface. Before laying the pipe in the trench, attach the gaskets end-to-end to the leading edge of the tongue or groove of each pipe joint, forming a continuous gasket around the circumference. Remove protective wrapper before joining pipe sections.
3. After the gasket is applied, the pipe or box should be handled carefully to avoid displacing or soiling of gasket. Any gasket so disturbed should be replaced.
4. The pipe should be properly aligned before joints are forced home. For tongue and groove pipe, the pipe should be partially supported to maintain concentricity until the gasket is properly compressed in the joint space and sufficient pressure applied to make sure that the joint is properly made.
5. Lift hole plug shall be grouted in place prior to backfilling.
6. Backfilling and compaction can begin when jointing and grouting are completed.
7. Contractor shall follow application instructions provided by the manufacturer. The gap between the face of the tongue and groove shall not exceed 2" after joints are forced home. If joint gap exceeds 2" then joint shall be repaired as per joint repair detail and specification. This is not considered a 2" average. Joint repair shall be performed on sections of the joint that exceed 2". If more than half the joint exceeds 2", then the whole joint shall be repaired (no separate pay shall be made for joint repair).



RAM-NEK GASKET

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8/24/2020

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HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

MISCELLANEOUS DRAINAGE DETAILS

NOT TO SCALE

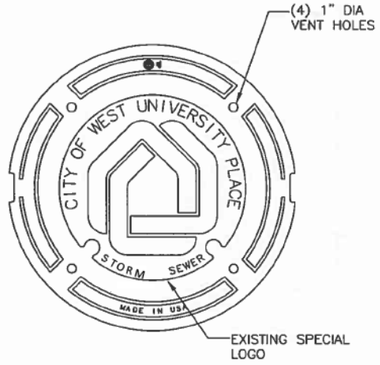
Texas Department of Transportation

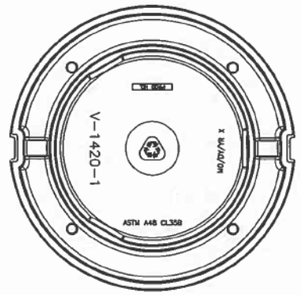
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6	(SEE THE TITLE SHEET)		379
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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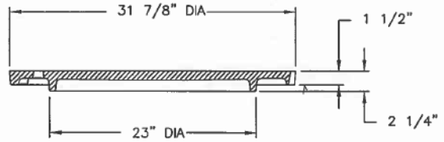
100% SUBMITTAL

V1420-1 Cover





BOTTOM VIEW



COVER SECTION

ej

Product Number
41420055

Design Features
-Materials
Gray Iron (CL35B)
-Design Load
Heavy Duty
-Open Area
n/a
-Coating
Undipped
- Designates Machined Surface

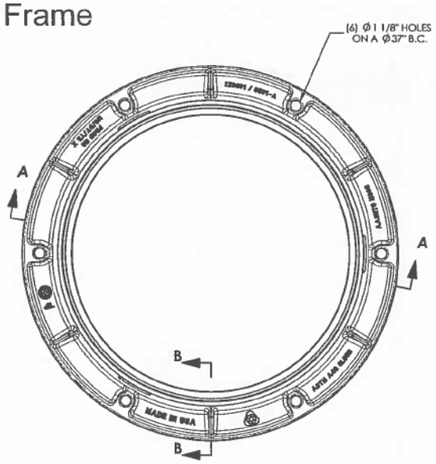
Certification
- ASTM A48
-
-
-Country of Origin: USA

Drawing Revision
10/07/2004 Designer: SBB
11/1/2016 Revised By: MAH

Disclaimer
Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

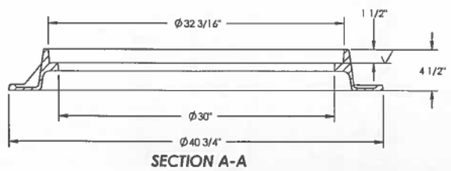
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V1420 Frame





GUSSET SECTION
B-B



SECTION A-A

ej

Product Number
41420012

Design Features
-Materials
Gray Iron (CL35B)
-Design Load
Heavy Duty
-Open Area
n/a
-Coating
Undipped
-√ Designates Machined Surface

Certification
-ASTM A48
-AASHTO M306
-
-Country of Origin: USA

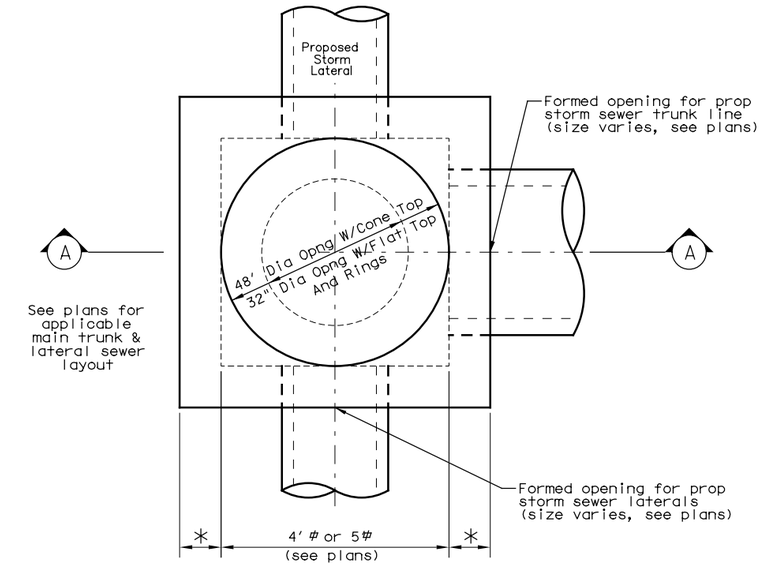
Drawing Revision
8/5/2014 Designer: DJH
3/7/2019 Revised By: MAH

Disclaimer
Weights (lbs/kg), dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

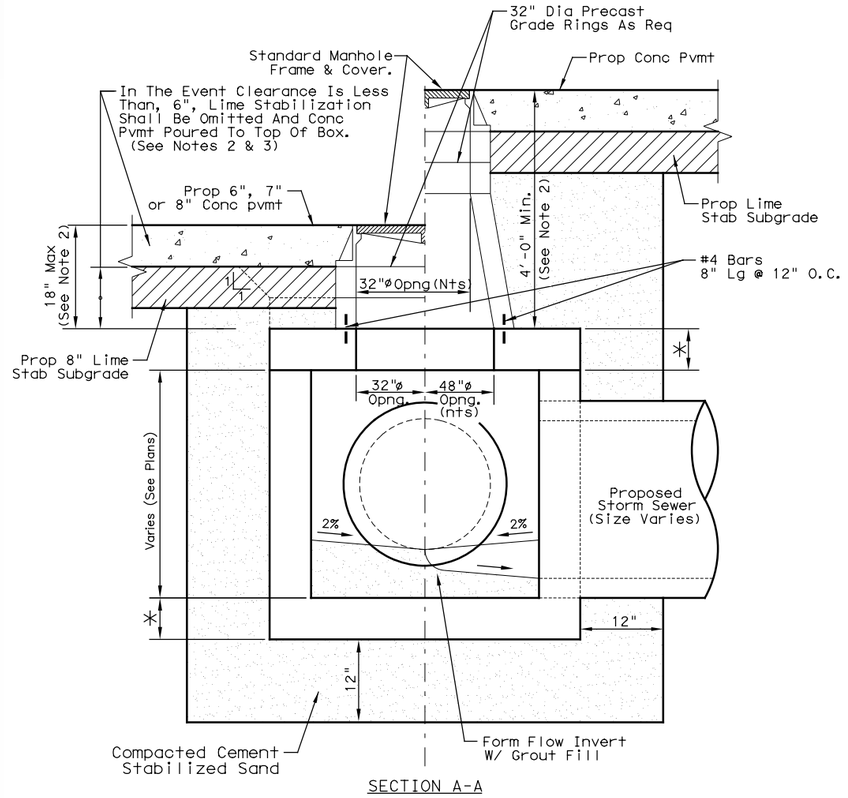
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Contact
800 526 4653
ejco.com

STORM SEWER MANHOLE COVER AND FRAME



PLAN



SECTION A-A

PRECAST STORM SEWER JUNCTION BOX (JCTBOX(COMPL)(PJB)(4FTX4FT) AND (5FTX5FT))

PRECAST STORM SEWER JUNCTION BOX NOTES:

1. All Precast Storm Box Manholes Shall Be Constructed Of 4000 Psi Concrete, Reinforced 60000 Psi Hs 20 Loading.
2. Where Storm Sewer Lead & Trunkmain Depths Allow The Top Of The Box To Be At Or Greater Than A Min. 4'–0" Depth, Cone Sections May Be Used. Where Leads & Main Depths Require The Box Manhole Top To Be Less Than 4'–0", The Top Elevation Shall Be Set Such That The Top Of The Manhole Cover Is No Greater Than 18" Above The Top Of The Box Manhole.
3. In Cases Where The Top Slabs May Encroach Into Proposed Pavement Subgrade, The Subgrade Over The Box Shall Be Eliminated And The Proposed Concrete Pavement Shall Be Poured In Required Extra Thickness To The Top Of The Box As Noted On This Sheet.

* Top And Bottom Slabs Along With Wall Thickness And Related Structural Steel, Shall Be Per Manufacturer.

STATE OF TEXAS
JOHN PETERSON
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8/24/2020

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HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

MISCELLANEOUS DRAINAGE DETAILS

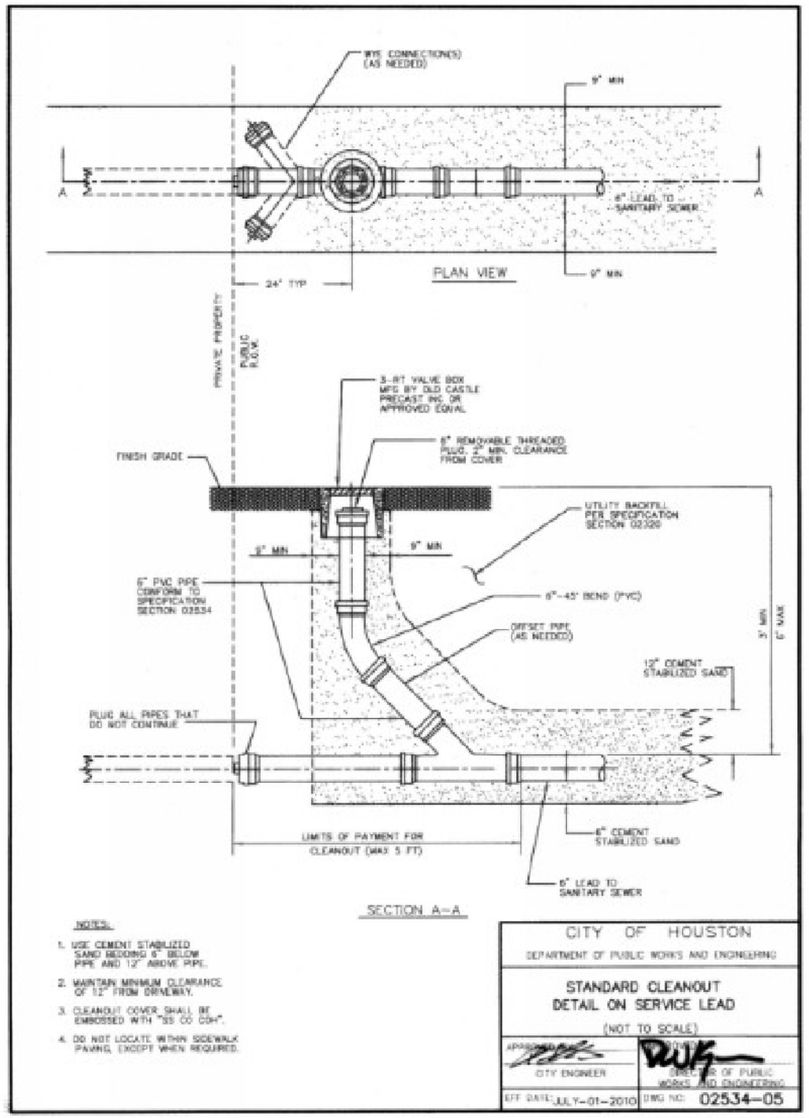
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Texas Department of Transportation

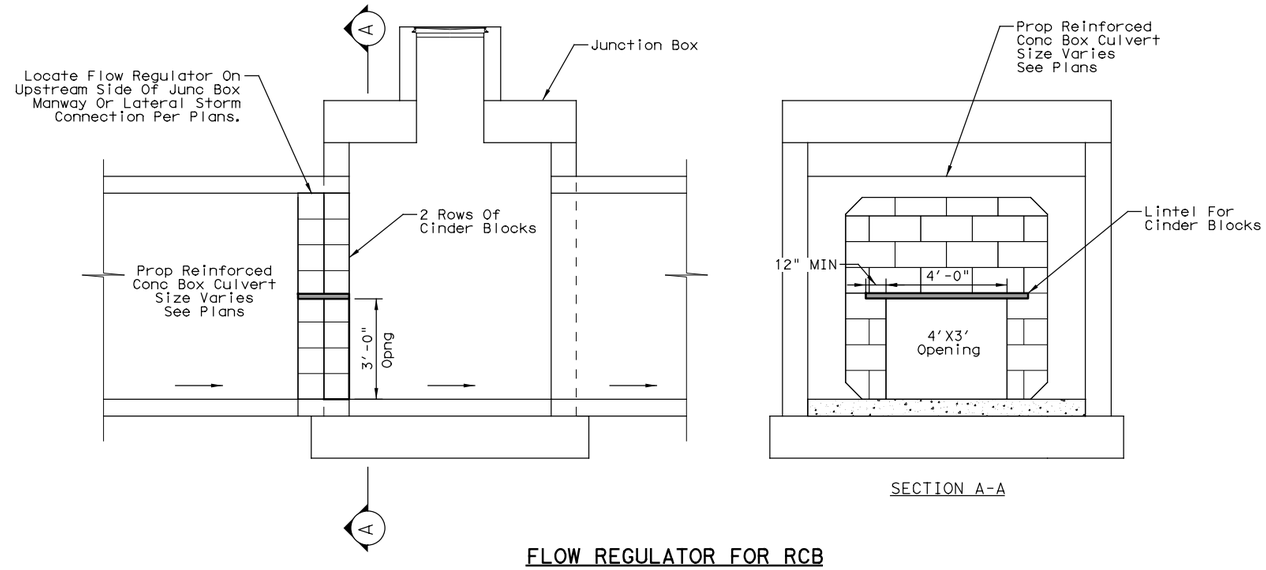
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6	(SEE THE TITLE SHEET)		380
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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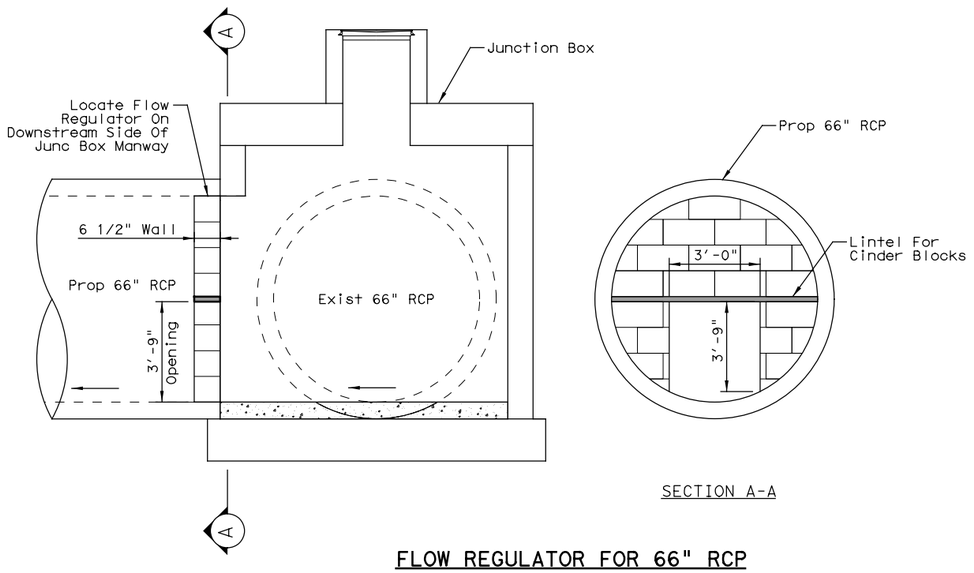
100% SUBMITTAL



STANDARD CLEANOUT TO BE USED FOR STORM SEWER LATERALS ON ST VINCENT DE PAUL SITE.



FLOW REGULATOR FOR RCB



FLOW REGULATOR FOR 66" RCP

STATE OF TEXAS
JOHN PETERSON
95319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

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City of West University Place

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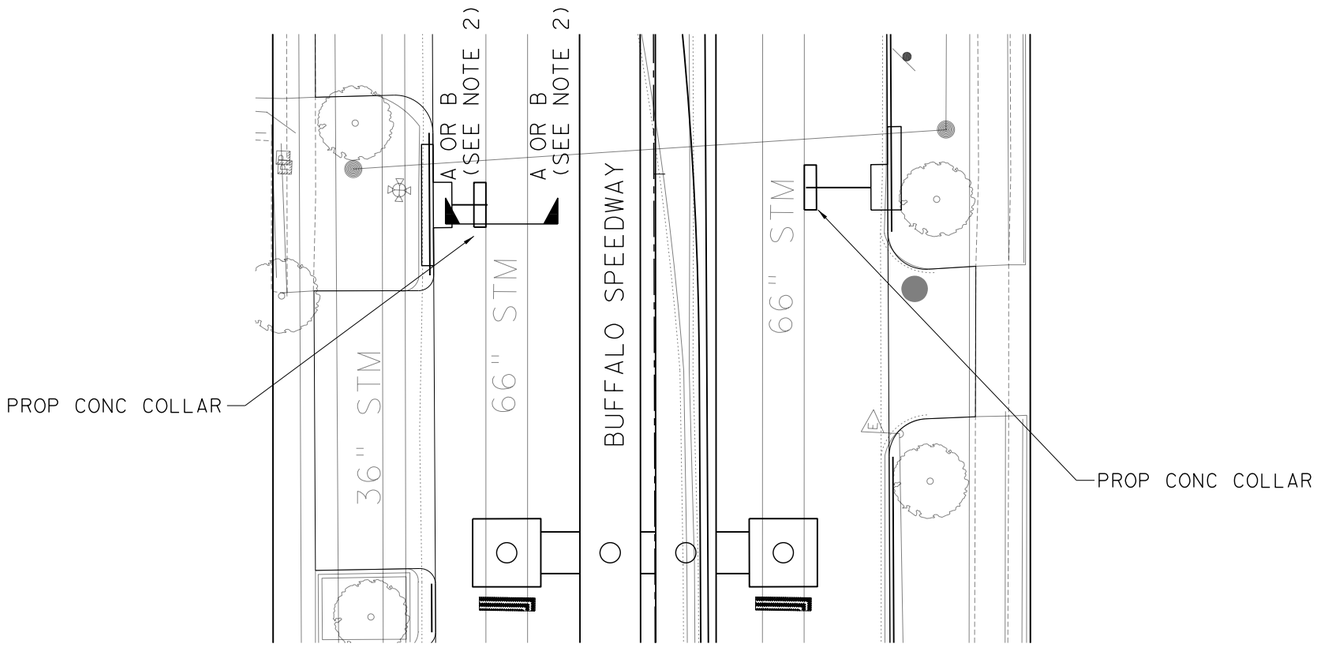
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SHEET 4 OF 7

Texas Department of Transportation

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CONT.	SECT.	JOB	HIGHWAY NO.
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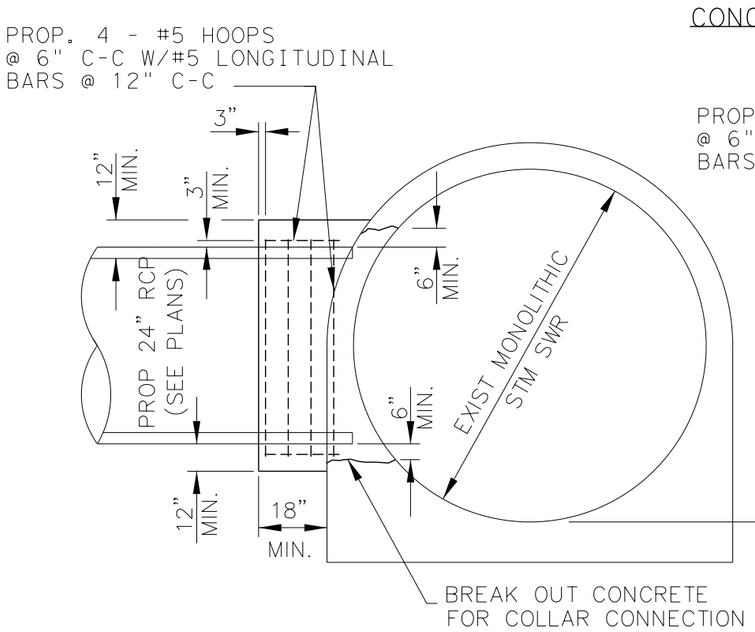


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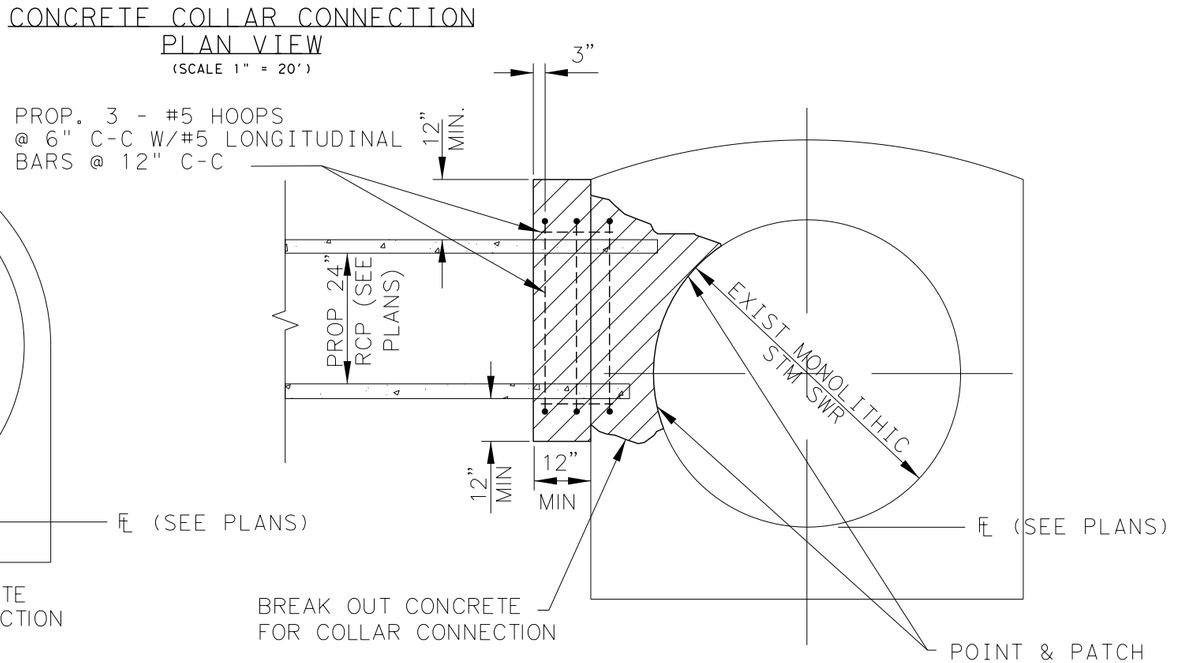
1. HOLE CUT IN WALL OF 66" STM. SWR. TO BE NEAT AND DONE IN WORKMAN LIKE MANNER.
2. CONTRACTOR TO VERIFY EXISTING 66" STORM SEWER SECTION AND BUILD CONCRETE COLLAR CONNECTION PER APPLICABLE SECTION.
3. DETAIL SHOWN SHALL BE USED WHEN ADEQUATE CLEARANCE IS AVAILABLE.
4. CONCRETE COLLAR CONNECTION SHALL BE SEALED WITH A NON-SHRINK GROUT. GROUT SHALL BE CONSIDERED SUBSIDARY TO ITEM 420-6071 CL C CONC (COLLAR).

CONCRETE COLLAR CONNECTION PLAN VIEW

(SCALE 1" = 20')



SECTION A



SECTION B

CONCRETE COLLAR CONNECTION SECTION VIEW

(NTS)

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

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Pearland, Texas 77584
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Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

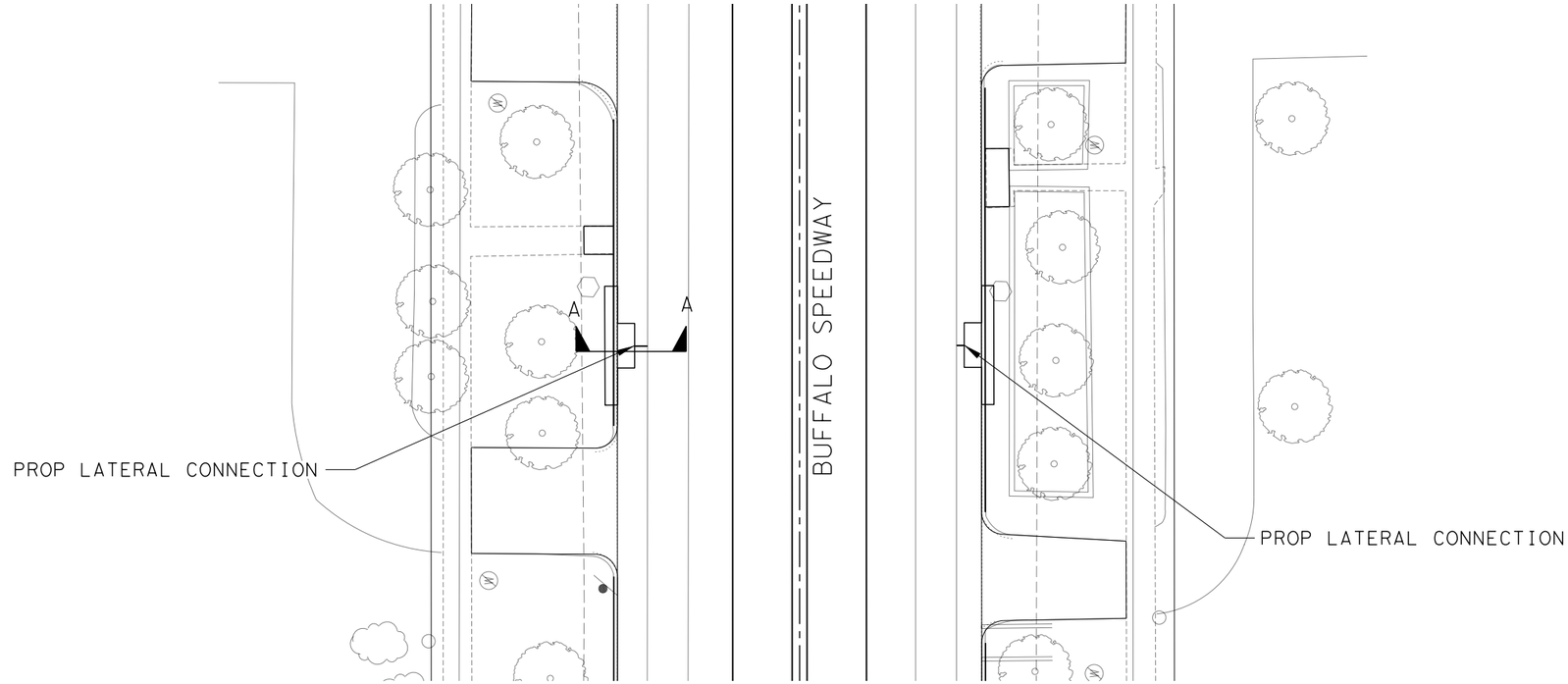
City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

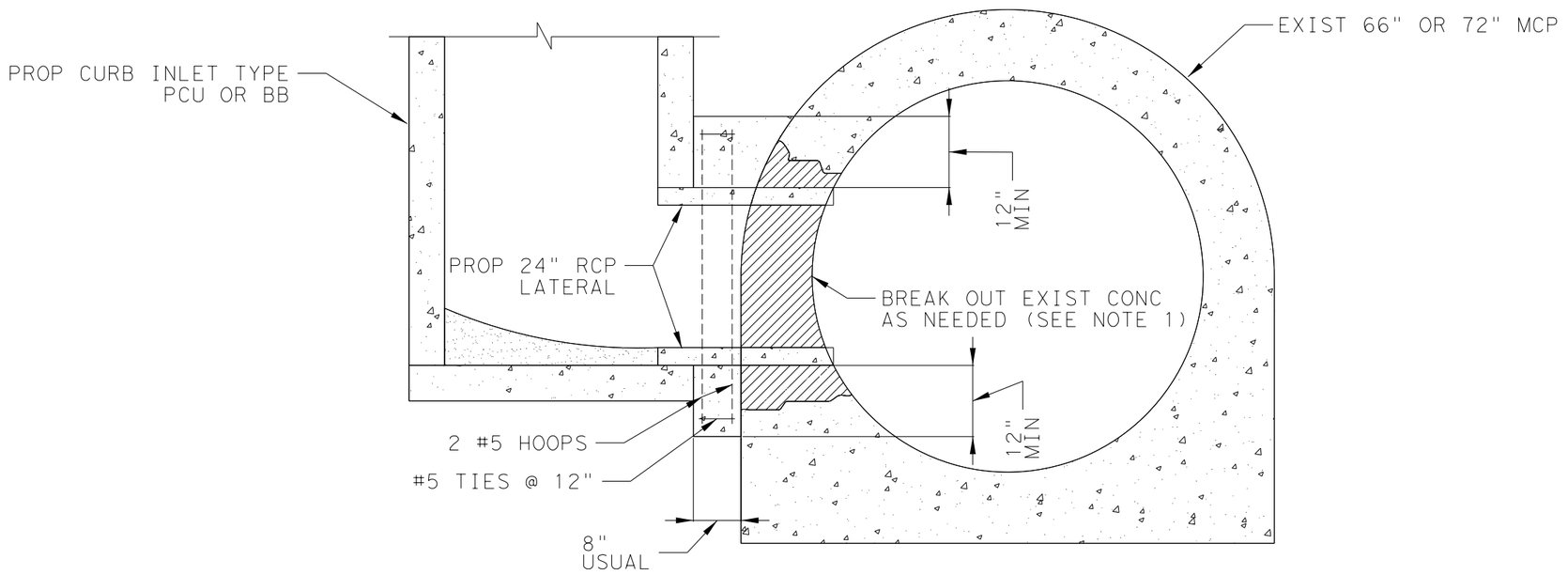
MISCELLANEOUS
DRAINAGE DETAILS

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		382
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



LATERAL CONNECTION
PLAN VIEW
(SCALE 1" = 20')



LATERAL CONNECTION
SECTION VIEW A-A
(NTS)

NOTES:

1. HOLE CUT IN WALL OF MCP STM. SWR. TO BE NEAT AND DONE IN WORKMAN LIKE MANNER.
2. DETAIL SHOWN SHALL BE USED WHEN CLEARANCE IS 48" FROM FACE OF CURB TO INSIDE FACE OF MCP.
3. WORK SHALL BE ITEMIZED AND PAID FOR AS CONCRETE COLLAR.
4. CONCRETE COLLAR CONNECTION SHALL BE SEALED WITH A NON-SHRINK GROUT. GROUT SHALL BE CONSIDERED SUBSIDARY TO ITEM 420-6071 CL C CONC (COLLAR).

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

FREESE AND NICHOLS
11200 Broadway Street, Suite 2320
Pearland, Texas 77584
Phone – (832) 456-4700
Fax – (832) 456-4701
Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

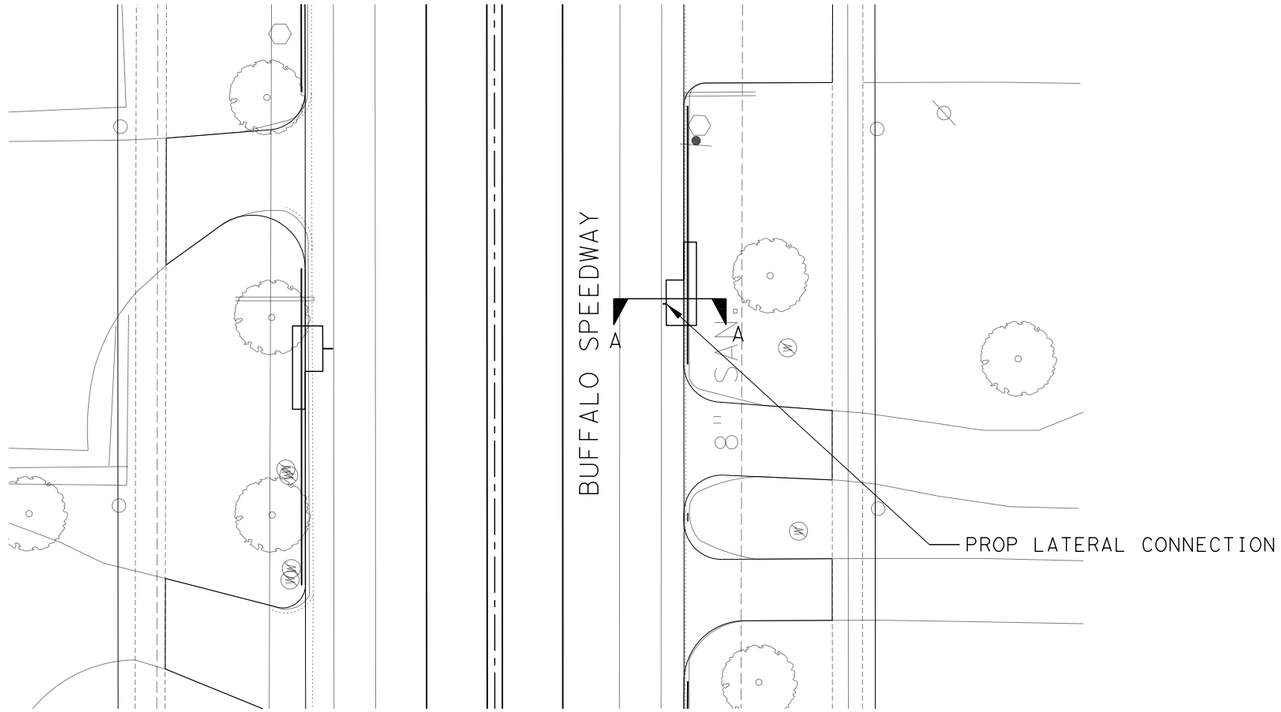
BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

MISCELLANEOUS
DRAINAGE DETAILS

SHEET 6 OF 7

Texas Department of Transportation

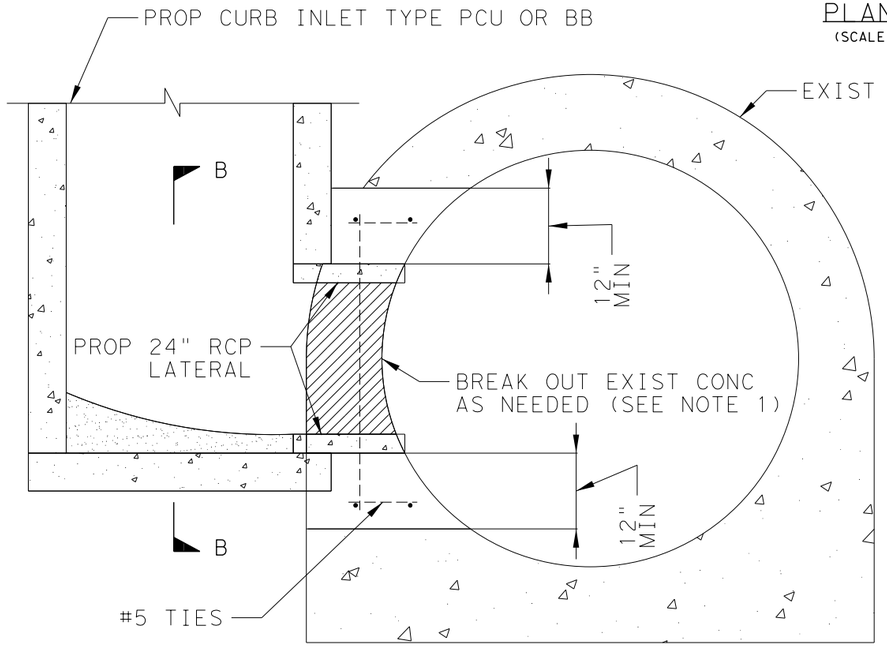
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		383
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



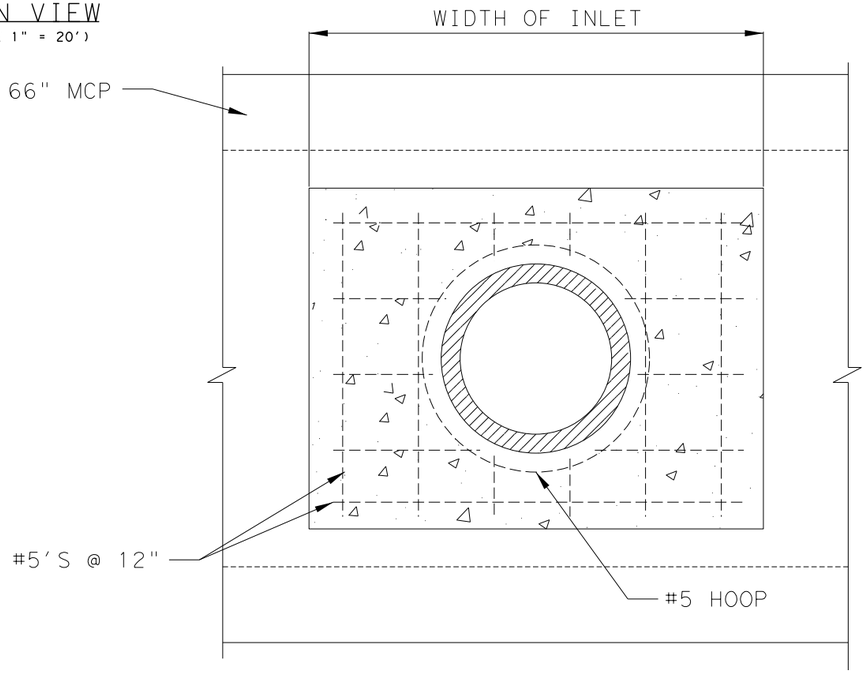
LATERAL CONNECTION
PLAN VIEW
(SCALE 1" = 20')

NOTES:

1. HOLE CUT IN WALL OF MCP STM. SWR. TO BE NEAT AND DONE IN WORKMAN LIKE MANNER.
2. DETAIL SHOWN SHALL BE USED WHEN CLEARANCE IS 36" FROM FACE OF CURB TO INSIDE FACE OF MCP.
3. WORK SHALL BE ITEMIZED AND PAID FOR AS CONCRETE COLLAR.
4. CONCRETE COLLAR CONNECTION SHALL BE SEALED WITH A NON-SHRINK GROUT. GROUT SHALL BE CONSIDERED SUBSIDARY TO ITEM 420-6071 CL C CONC (COLLAR).



LATERAL CONNECTION
SECTION VIEW A-A
(NTS)



LATERAL CONNECTION
SECTION VIEW B-B
(NTS)

STATE OF TEXAS
MEHRAN BAVARIAN
48811
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8/25/2020

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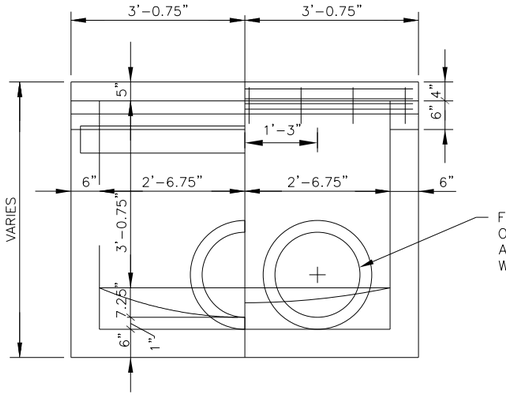
City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

MISCELLANEOUS
DRAINAGE DETAILS

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		384
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



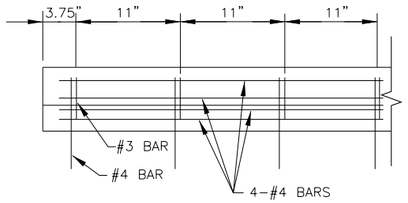
FOR SHALLOW INLETS, OFFSET LEAD PIPE TO AVOID CONFLICT WITH I-BEAM

HALF FRONT ELEV. - HALF SECTION 2-2

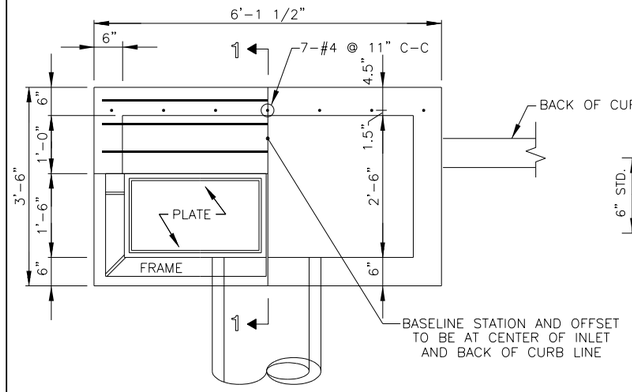
NOTES:

USE CAST IRON FRAME AND PLATE (PER SPECIFICATIONS). LEAD SHALL LEAVE INLET AT LOCATION AND GRADE REQUIRED. BRICK INLETS ARE NOT PERMITTED.

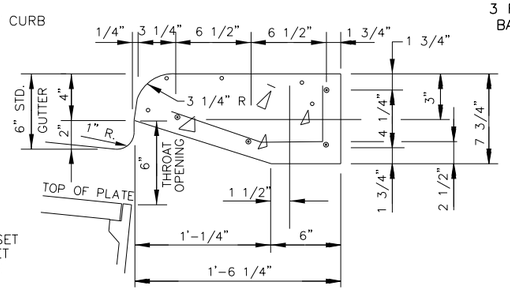
BAR LIST				
No.	Size	Length	Shp.	Loc.
4	#4	5'-10"	St.	Horiz.
7	#4	0'-10"	St.	Vert.
7	#3	1'-6"	Bt.	



HALF FRONT ELEVATION



HALF PLAN - HALF HORIZ. SECTION



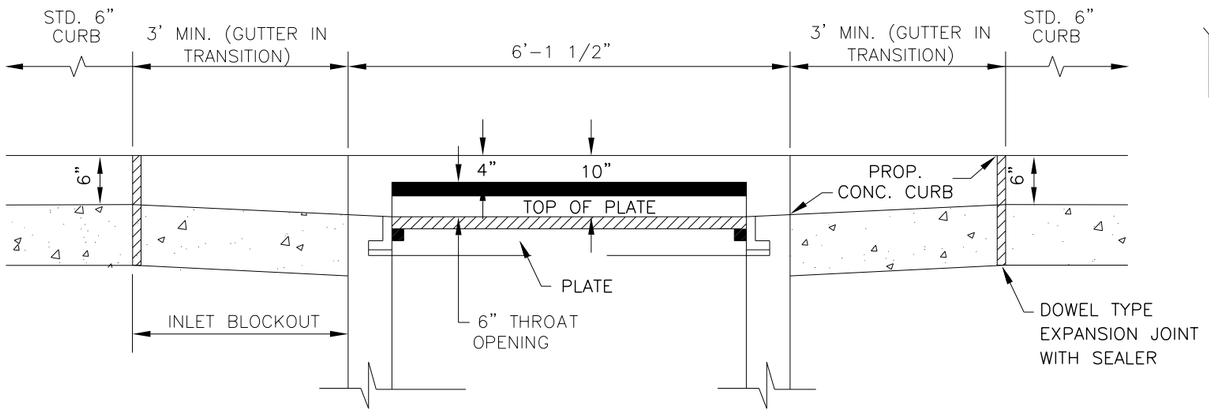
TRANS SECTION

PRECAST CURB BEAM

NOTE:
TYPE B-B INLETS SHALL INCLUDE SOLID PLATE, NO GRATES (TYP.)

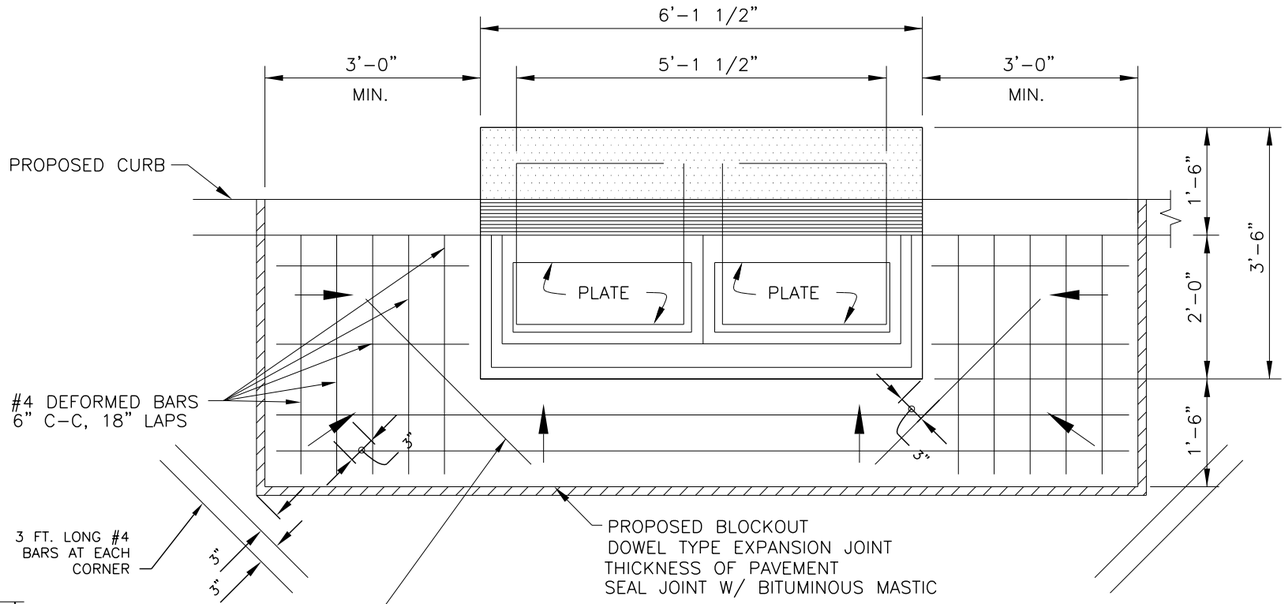
TYPE B-B INLET

SCALE: NTS

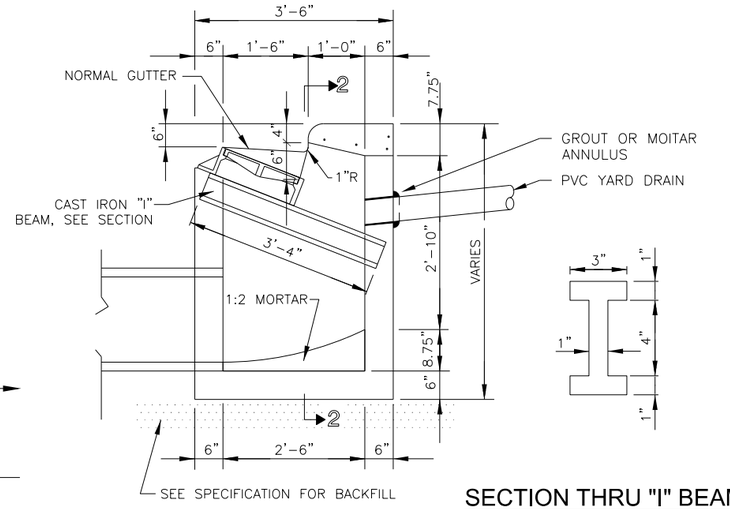


GUTTER DEPRESSIONS FOR TYPE B-B INLET

SCALE: NTS



PLAN



SECTION 1-1

SECTION THRU "I" BEAM

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

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City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

TY BB INLET DETAILS

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		385
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

100% SUBMITTAL

JUNCTION BOX SUMMARY

JUNCTION BOX	STA	OFFSET (FT)	CROSS STREET	INNER DIMENSIONS IN PLAN	INNER HEIGHT "H" (1)	RISER HEIGHT "HR" (FT) (2)	LEDGE HEIGHT "HL" (FT)	BOTTOM OF BOX ELEVATION (FT)	DOWNSTATION ENTRY	DOWNSTATION FLOW ELEVATION	UPSTATION ENTRY	UPSTATION FLOW ELEVATION	LEFT ENTRY (LOOKING UPSTATION)	LEFT ENTRY FLOW ELEVATION	RIGHT ENTRY (LOOKING UPSTATION)	RIGHT ENTRY FLOW ELEVATION
TYPE A-1	2+77.98	45.58 L	NONE	21.00' X 8.00'	8.67'	4.54	0.00	28.78	2-8X8 RCB	31.11	2-8X8 RCB	31.11	20" STEEL CASING	37.95	20" STEEL CASING	37.95
TYPE A-2	9+18.11	20.00 R	HOLCOME BLVD	21.00' X 8.00'	9.67'	3.36	0.00	28.96	2-8X8 RCB	31.29	2-8X8 RCB	31.29	30" STEEL CASING	34.69	30" STEEL CASING	34.69
TYPE A-3	33+62.11	0	DUKE ST	21.00' X 8.00'	8.55'	4.66	1.22	30.66	2-8X6 RCB	32.99	2-8X5 RCB	34.21	20" STEEL CASING	36.31	20" STEEL CASING	36.31
TYPE A-4	41+48.70	0	UNIVERSITY BLVD	21.00' X 8.00'	8.17'	3.80	2.50	32.17	2-8X5 RCB	34.50	2-8X5 RCB	37.00	24" STEEL CASING	34.15	24" STEEL CASING	34.15
TYPE A-5	45+10.61	11.00 R	AMHERST ST	21.00' X 8.00'	7'	3.42	0.00	34.47	2-8X5 RCB	37.14	12X6 RCB	37.14	-	-	-	-
TYPE B-1	14+01.13	18.60 L	CASON ST	9.00' X 8.00'	10.79'	1.60	N/A	31.87	66" STM	37.39	66" STM	37.39	36" STM	37.87	48" RCP	33.62
TYPE B-2	14+10.49	18.00 R	CASON ST	9.00' X 8.00'	12.58'	0.00	N/A	31.72	66" STM	37.89	66" STM	37.89	48" RCP	33.47	5X3 RCB	37.99
TYPE B-3	20+58.48	17.34 L	CARNEGIE ST	9.00' X 8.00'	12.04'	0.00	N/A	32.56	66" STM	37.95	66" STM	37.95	36" STM	38.20	48" RCP	34.31
TYPE B-4	20+59.36	19.81 R	CARNEGIE ST	9.00' X 8.00'	10.49'	1.50	N/A	32.56	66" STM	37.78	66" STM	37.78	48" RCP	37.91	48" STM	34.31
TYPE B-5	27+00.21	16.25 L	PITTSBURGH ST	9.00' X 8.00'	11.96'	0.00	N/A	32.73	66" STM	38.34	66" STM	38.39	48" STM	39.02	48" RCP	34.48
TYPE B-6	27+09.51	18.50 R	PITTSBURGH ST	9.00' X 8.00'	11.92'	0.00	N/A	32.73	66" STM	38.39	66" STM	38.44	48" RCP	34.48	4X3 RCB	38.50
TYPE B-7	33+52.03	18.19 L	DUKE ST	9.00' X 8.00'	12.78'	0.00	N/A	32.43	66" STM	39.00	66" STM	39.10	36" STM	39.13	48" RCP	34.18
TYPE B-8	33+53.36	18.50 R	DUKE ST	9.00' X 8.00'	13.08'	0.00	N/A	32.12	66" STM	38.99	66" STM	39.19	54" RCP	33.91	5X3 RCB	39.00
TYPE B-9	41+35.08	18.65 L	UNIVERSITY BLVD	9.00' X 8.00'	8.53'	0.00	N/A	37.38	66" STM	39.38	66" STM	39.38	-	-	-	-
TYPE B-10	41+36.34	19.71 R	UNIVERSITY BLVD	9.00' X 8.00'	8.44'	0.00	N/A	37.53	66" STM	39.53	66" STM	39.53	-	-	-	-
TYPE B-11	41+59.97	21.66 R	UNIVERSITY BLVD	9.00' X 8.00'	10.01'	0.00	N/A	35.42	66" STM	39.55	66" STM	39.55	54" RCP	37.21	5X3 RCB	39.61
TYPE B-12	44+76.94	18.16 L	AMHERST ST	9.00' X 8.00'	8.21'	1.64	N/A	36.60	66" STM	39.54	66" STM	39.54	-	-	48" RCP	38.35
TYPE B-13	44+80.96	17.84 R	AMHERST ST	9.00' X 8.00'	10.36'	0.00	N/A	36.10	66" STM	39.71	66" STM	39.71	48" RCP	37.85	48" STM	40.11
TYPE B-14	52+72.26	16.96 L	GEORGETOWN ST	9.00' X 8.00'	8.57'	0.00	N/A	37.52	72" STM	39.88	66" STM	40.18	-	-	48" RCP	39.27
TYPE B-15	60+32.31	21.30 R	TANGLEY RD	9.00' X 8.00'	7.57'	1.93	N/A	36.99	-	-	-	-	48" RCP	38.74	36X58.5 ARCH STM	40.22
TYPE C	7+00.00	0	NONE	24.00' X 12.42'	8.67'	5.56	N/A	29.40	-	-	-	-	2-8X8 RCB	31.23	2-8X8 RCB	31.23
TYPE D-1	10+49.96	16.98 R	NONE	9.00' X 9.00'	11.75'	0.00	N/A	31.57	66" STM	37.36	66" STM	37.77	66" RCP	33.50	-	-
TYPE D-2	10+50.05	19.55 L	NONE	9.00' X 9.00'	11.7'	0.00	N/A	31.57	66" STM	37.36	66" STM	37.36	-	-	66" RCP	33.50
TYPE E-1	45+46.88	17.94 L	AMHERST ST	9.00' X 11.00'	8.71'	0.00	N/A	37.36	66" STM	39.57	72" STM	39.57	-	-	-	-
TYPE E-2	52+53.42	18.99 L	GEORGETOWN ST	9.00' X 11.00'	9.4'	0.00	N/A	37.06	72" STM	39.27	72" STM	39.27	48" STM	SEE NOTES	-	-

(1) HEIGHT "H" FOR BOX TYPE C VARIES; THE VALUE PROVIDED HERE IS THE MAXIMUM VALUE. REFER TO BOX C DETAILS FOR MORE INFORMATION.

(2) RISER HEIGHTS ARE APPROXIMATE; ADJUST HEIGHTS AS NEEDED TO AVOID DISCONTINUITY WITH CONCRETE PAVEMENT. SLOPE TOP OF RISER TO MATCH ROADWAY. AT LOCATIONS WHERE TYPE B BOXES ARE SUBJECT TO DIRECT TRAFFIC, SLOPE TOP SLAB OF BOXES TO MATCH ROADWAY. IN BOTH CASES, FORM SLOPES WITH ADDITIONAL CONCRETE AND KEEP BARS HORIZONTAL.

JUNCTION BOX \ BID ITEM	465 6225
	JCT BOX (COMPL) (SPL)
TYPE A	5
TYPE B	15
TYPE C	1
TYPE D	2
TYPE E	2
TOTAL	25

STRUCTURAL GENERAL NOTES

GENERAL:

1. DESIGNED IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION (2002). HS20 LOADING USED.
2. ALL ELEVATIONS PROVIDED ARE APPROXIMATE. THE CONTRACTOR SHALL FIELD-VERIFY ALL ELEVATIONS OF EXISTING DRAINAGE ELEMENTS PRIOR TO POURING CONCRETE. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN THE EVENT ACTUAL ELEVATIONS RESULT IN CONFLICT OF JUNCTION BOX TOP SLABS AND DRAINAGE ELEMENTS.
3. THE CONTRACTOR SHALL VERIFY IN THE FIELD THE LOCATIONS OF ALL EXISTING UTILITIES, CABLES, PIPES, DRAINAGE FEATURES, OR CONDUITS WHICH MUST BE REMOVED, RELOCATED, OR PROTECTED FROM DAMAGE BEFORE PROCEEDING WITH NEW WORK. THE CONTRACTOR SHALL TAKE THE UTMOST CARE TO AVOID DAMAGE TO EXISTING ELEMENTS DURING ALL STAGES OF INVESTIGATION AND WORK.
4. THE CONTRACTOR SHALL COORDINATE A MINIMUM OF 30 DAYS OUT WITH OWNERS OF EXISTING ELEMENTS DURING ALL OPERATIONS. FOR AT&T OWNED UTILITIES, THE CONTRACTOR SHALL COORDINATE WITH:

   JAMES M. MANAHL
   T: (713)-918-0043
   E: JM3107@ATT.COM

5. ALL NON-ZERO RISER HEIGHTS ARE APPROXIMATE VALUES. THE CONTRACTOR SHALL ADJUST RISER HEIGHTS IN FIELD AS NEEDED TO PREVENT DISCONTINUITY WITH PAVING.
6. BOXES WITH RISER HEIGHTS OF 0FT ARE SUBJECT TO DIRECT TRAFFIC LOADING.
7. THE 48" STM ENTERING JUNCTION BOX E-2 HAS AN UNKNOWN FLOWLINE ELEVATION. CONTRACTOR SHALL NOTIFY ENGINEER IF FIELD CONDITIONS REQUIRE A TALLER JUNCTION BOX.

CONCRETE:

1. THE FOLLOWING CONCRETES SHALL BE USED FOR CAST-IN-PLACE JUNCTION BOXES:

CLASS	STRENGTH	USAGE
S	4000 PSI	TOP SLABS SUBJECT TO DIRECT TRAFFIC
C	3600 PSI	ALL OTHER CONCRETE

2. PROVIDE MINIMUM CLEAR COVER OF 3" TO CONCRETE SURFACES CAST AGAINST EARTH. PROVIDE MINIMUM CLEAR COVER OF 2" IN ALL OTHER CASES.
3. ALL REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60.
4. CUT SLAB AND WALL REINFORCING AS NEEDED TO CLEAR OPENINGS FOR ENTRIES INTO JUNCTION BOXES.
5. PROVIDE ADDITIONAL REINFORCEMENT THE SAME SIZE AS DISCONTINUOUS REINFORCEMENT AT OPENING AS SHOWN SCHEMATICALLY IN THE FOLLOWING SHEETS. THE QUANTITY OF ADDITIONAL BARS IN EACH DIRECTION SHALL BE EQUAL OR ONE GREATER THAN THE NUMBER OF DISCONTINUOUS BARS IN PLACE.
6. PRECAST BOX REINFORCING SHALL BE EXTENDED 10" FROM END OF BOX AND CAST INTO JUNCTION BOX TYPE A AND TYPE C WALLS.
7. RING AND COVER SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M306, "STANDARD SPECIFICATION FOR DRAINAGE STRUCTURE CASTINGS". MATERIALS SHALL CONFORM TO ASTM A48, CLASS 35B FOR GRAY IRON CASTINGS OR ASTM A536, GRADE 65-45-12 FOR DUCTILE IRON CASTINGS. ALUMINUM ALLOY CASTINGS SHALL NOT BE PERMITTED.
8. CONCRETE AT CONSTRUCTION JOINTS SHALL BE ROUGHENED TO AN AMPLITUDE OF 1/4" PRIOR FURTHER POURING OPERATIONS. JOINTS SHALL BE CLEANED PRIOR TO SUBSEQUENT POURS.

STATE OF TEXAS
K. L. OZUNA
65754
REGISTERED
PROFESSIONAL ENGINEER
K. L. Ozuna PE
8/24/2020

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HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

JUNCTION BOX SUMMARY AND STRUCTURAL GENERAL NOTES

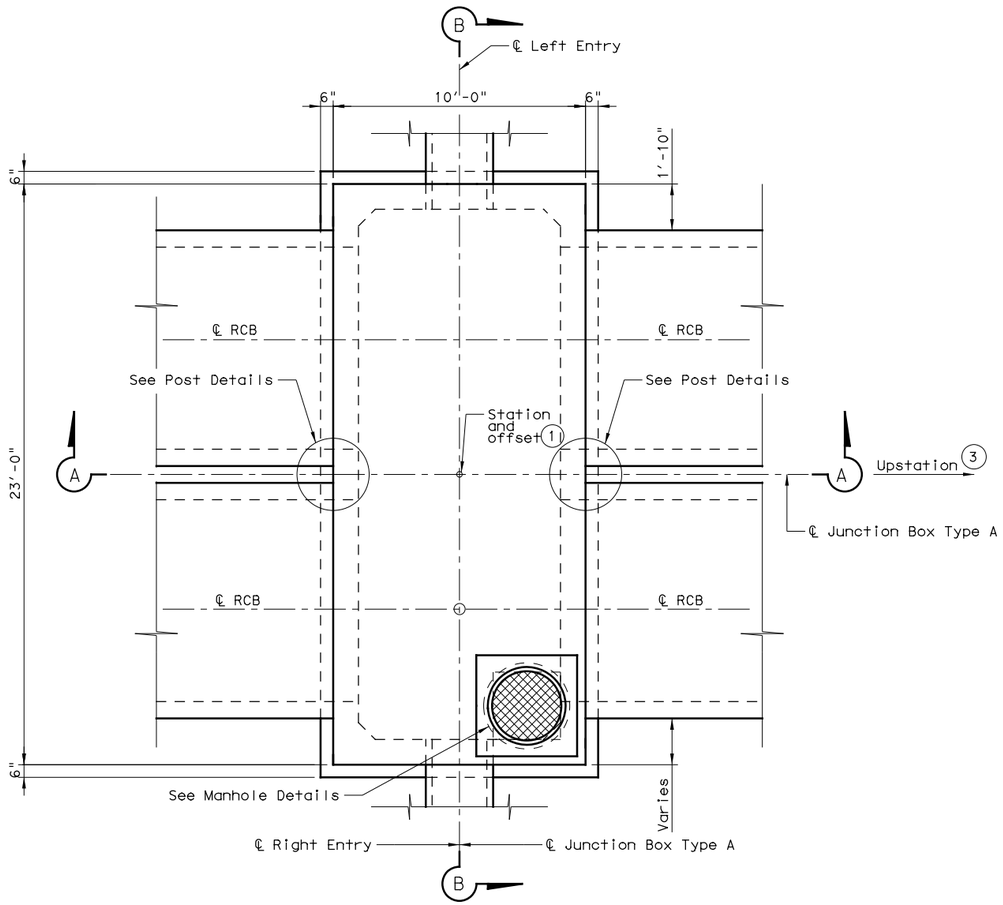
SHEET 1 OF 1

Texas Department of Transportation

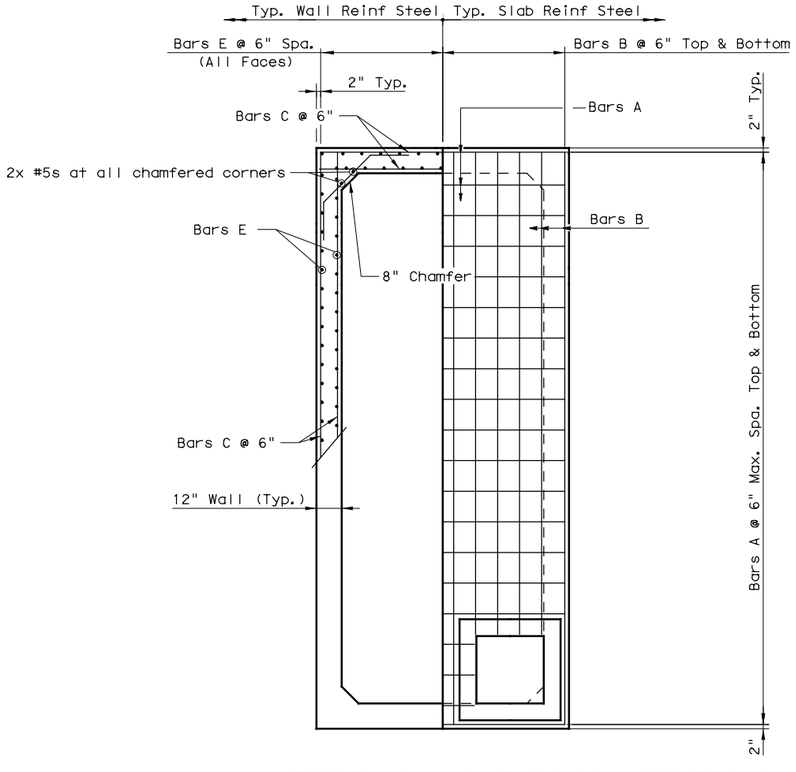
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6	(SEE THE TITLE SHEET)		386
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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FILE: $FILE$

100% SUBMITTAL



PLAN



TYPICAL SLAB/WALL SECTION

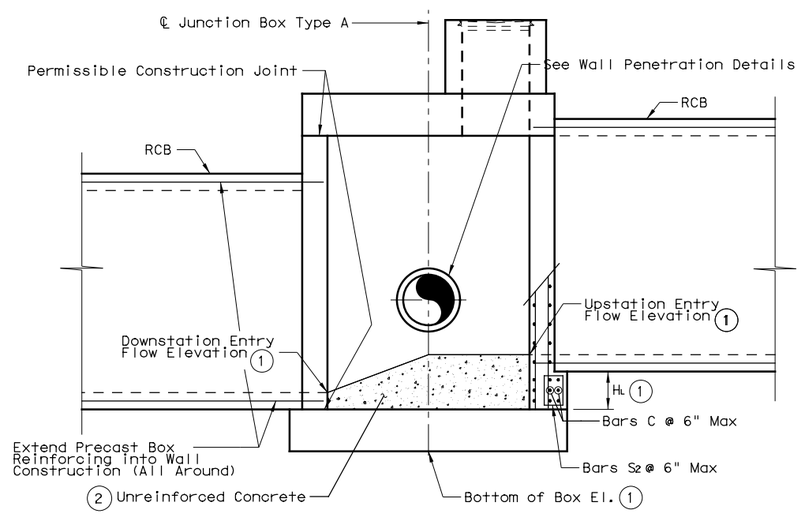
Refer to Corner Details for additional reinforcing information.

NOTES:
1. Entries shown in these details are schematic. Refer to Junction Box Summary for dimensions of entries and Flowline Elevations.
2. Junction box with two 8' wide RCBs entering sides shown. At Box A-5, locate 12x6 RCB so that opening does not conflict with 8" chamfer.
3. Contractor shall position manways so that inner walls of manways align with inner corners of junction box.

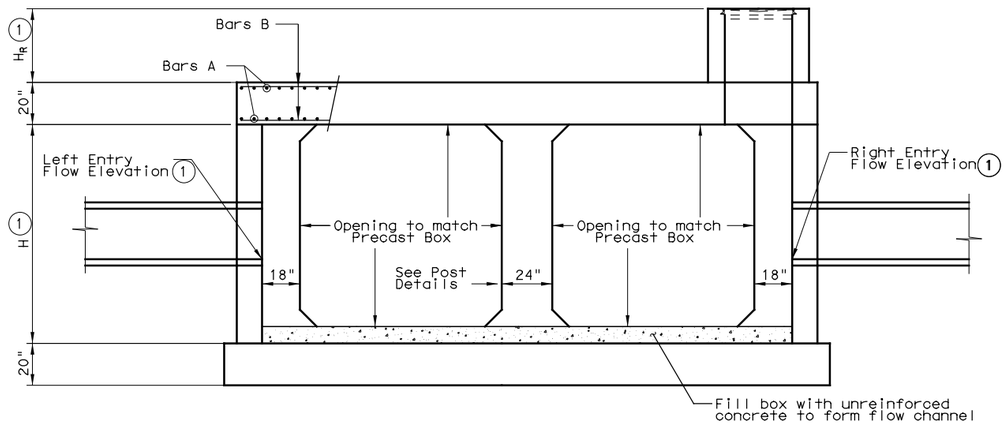
(1) See Junction Box Summary Sheet.

(2) Provide a minimum of 2" of cover to utility at Box A-4 where the conflicting utility is covered by unreinforced concrete. Ensure flowlines are maintained.

(3) Box A-1 is rotated 90 degrees clockwise from the orientation shown here.



SECTION A-A



SECTION B-B

NOTE: Section with HL = 0 Shown for Clarity

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LICENSED PROFESSIONAL ENGINEER
8/24/2020

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Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

JUNCTION BOX DETAILS TYPE A

NTS

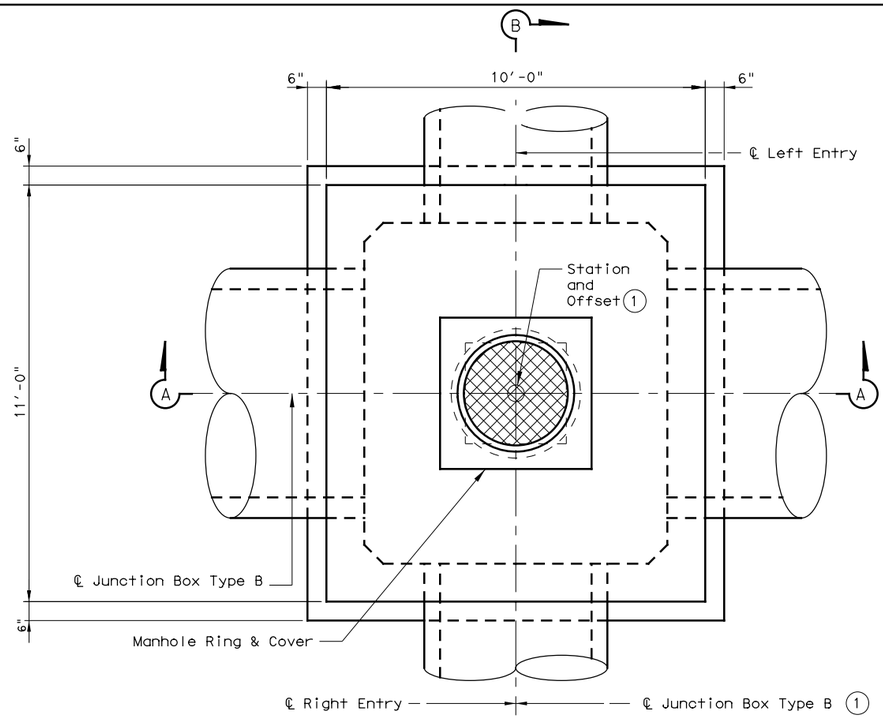
SHEET 1 OF 1

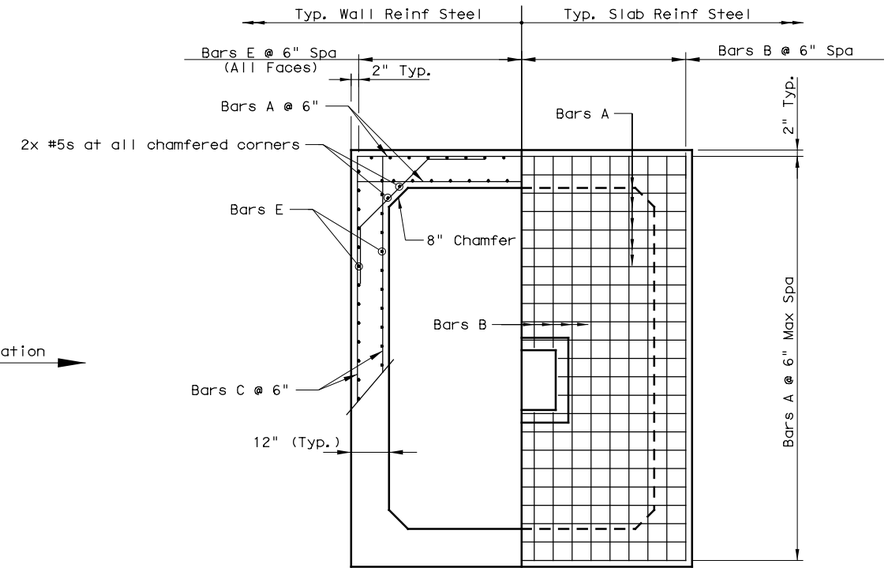
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		387
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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100% SUBMITTAL



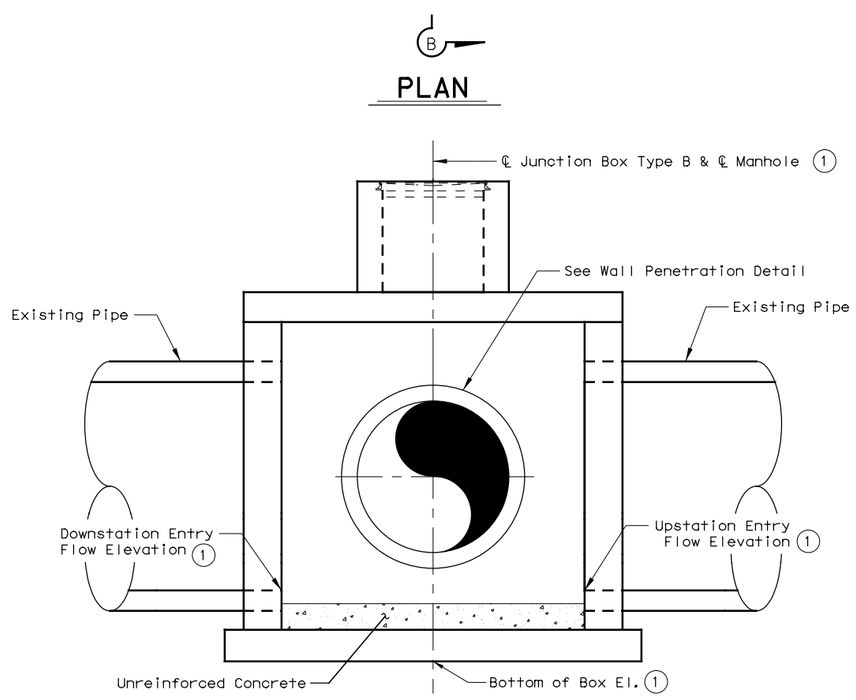


TYPICAL SLAB/WALL SECTION

NOTES:

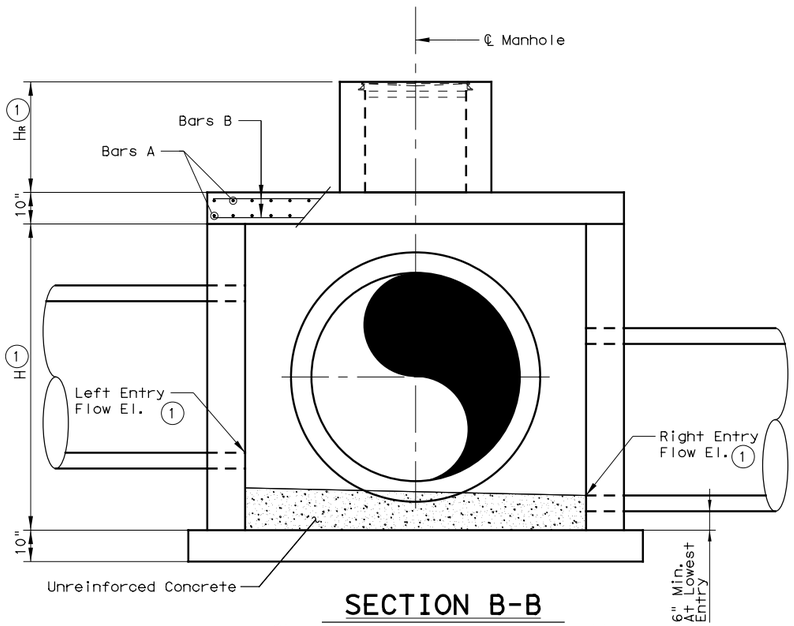
1. Entries shown in these details are schematic. Refer to Junction Box Summary for dimensions of entries and Flowline Elevations.
2. Omit riser when Junction Box subject to direct traffic as identified in Junction Box Summary.
3. Fill in bottom of box with unreinforced concrete to provide Flowline Elevations as shown in Drainage Plan and Profile sheets and Drainage Lateral Profile sheets. Notice that Section B-B shows Right Entry lower than Left Entry, however the reverse is applicable at certain boxes.

(1) See Junction Box Summary Sheet



SECTION A-A

Unreinforced Concrete shown schematically. Refer to Section B-B and Drainage Plan and Profile Sheets for further information.



SECTION B-B

Slope unreinforced concrete to provide elevations given in drainage profile sheets.

K. L. OZUNA 65754 REGISTERED PROFESSIONAL ENGINEER
8/24/2020

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Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

JUNCTION BOX DETAILS TYPE B

NTS

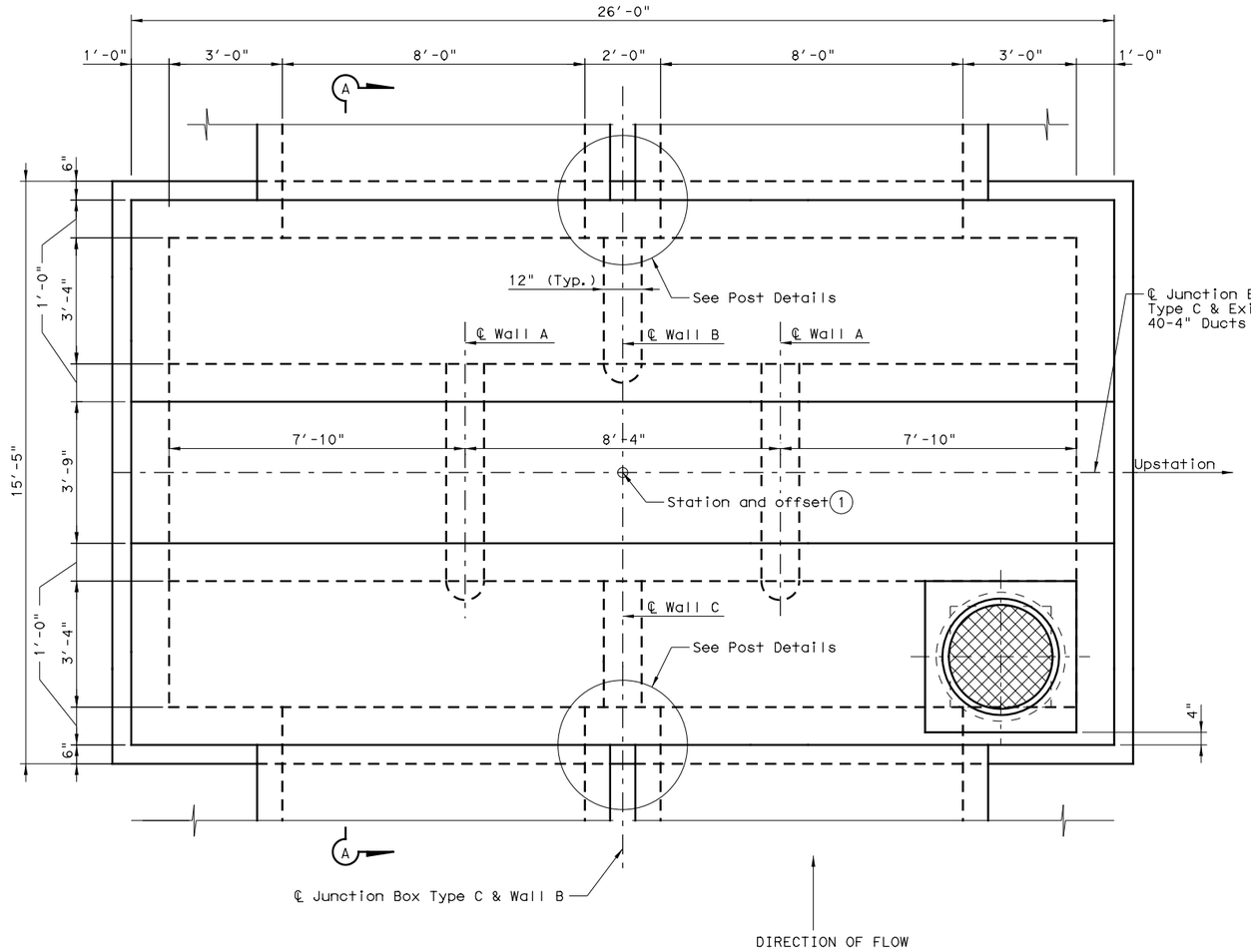
SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		388
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

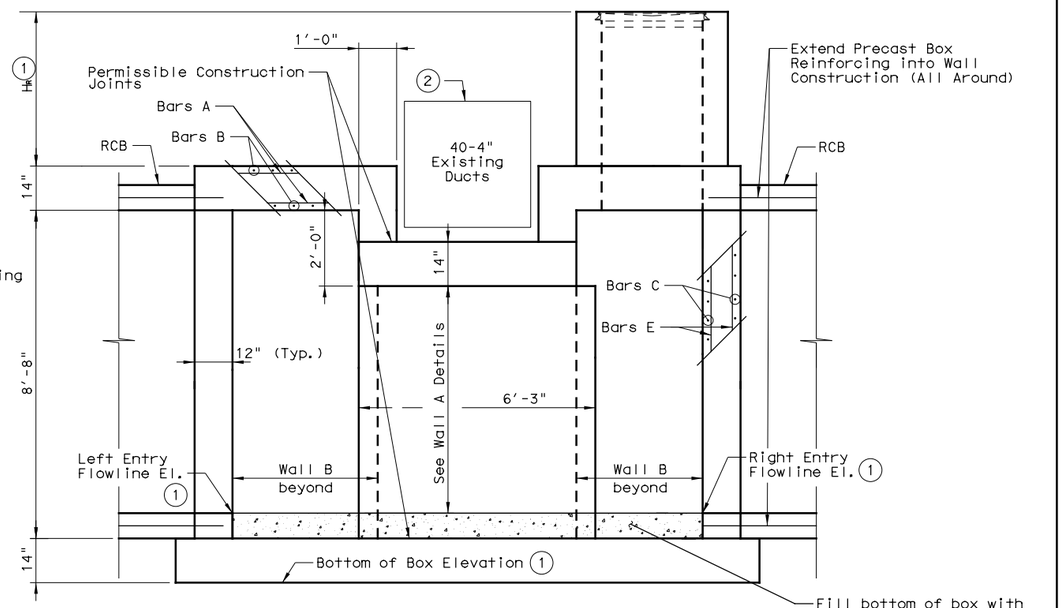
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100% SUBMITTAL



PLAN VIEW

Existing Ducts omitted for clarity



SECTION A-A

Manhole omitted in section is positioned similar to that shown.
Refer to Manhole Details for Riser Dimensions.

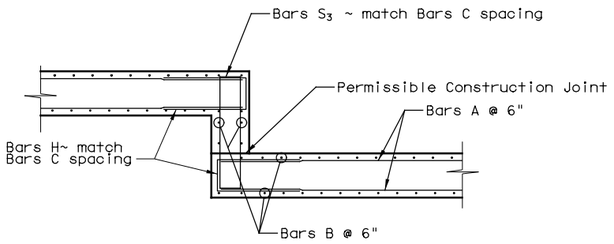
(1) See Junction Box Summary Sheet

(2) Preliminary surveying indicates:

Top of existing ducts EL = 42.18
Bottom of existing ducts EL = 38.78

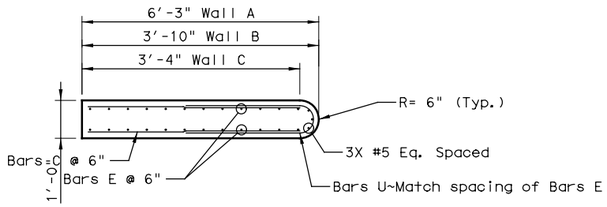
Representation of Existing 40 MTD is schematic. Contractor shall field verify top and bottom elevation of Existing 40 MTD and exact physical dimensions in field prior to starting construction.

Contractor shall take the utmost care to avoid damage to existing utility.



SLAB REINFORCING - ELEVATION

Top Slabs Shown, Bottom Slab Similar.



WALL REINFORCING - PLAN

Omit Bars U and additional #5s in exterior walls and Wall C.
Extend Bars E into Floor and Roof Slabs as shown in Corner Details.

REINFORCING DETAILS

Refer to Corner Details for Interfaces between interior walls and slabs and exterior walls and slabs.



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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

JUNCTION BOX DETAILS TYPE C

NTS

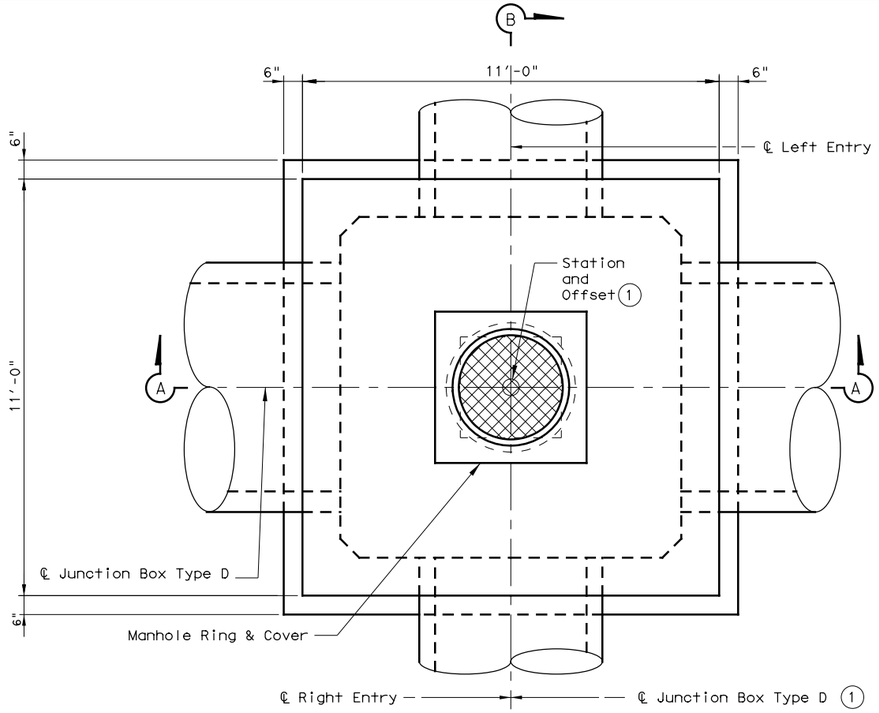
SHEET 1 OF 1

Texas Department of Transportation

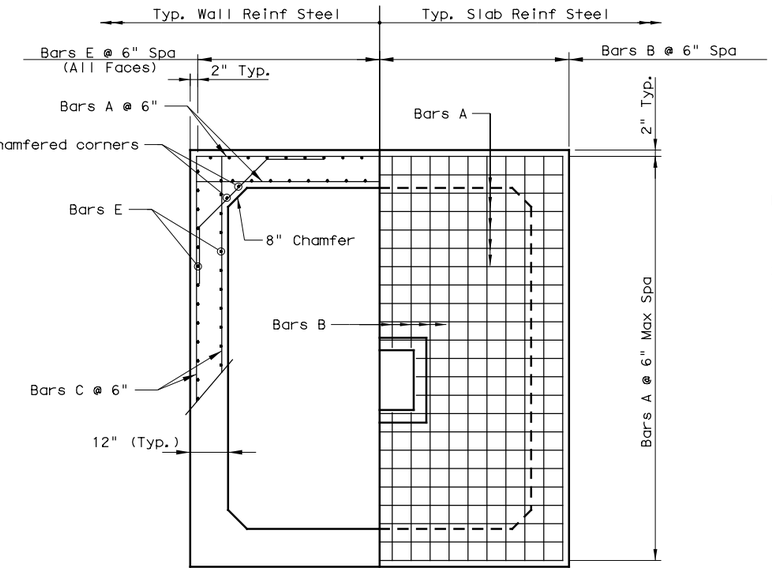
FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			389
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	

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100% SUBMITTAL



Upstation

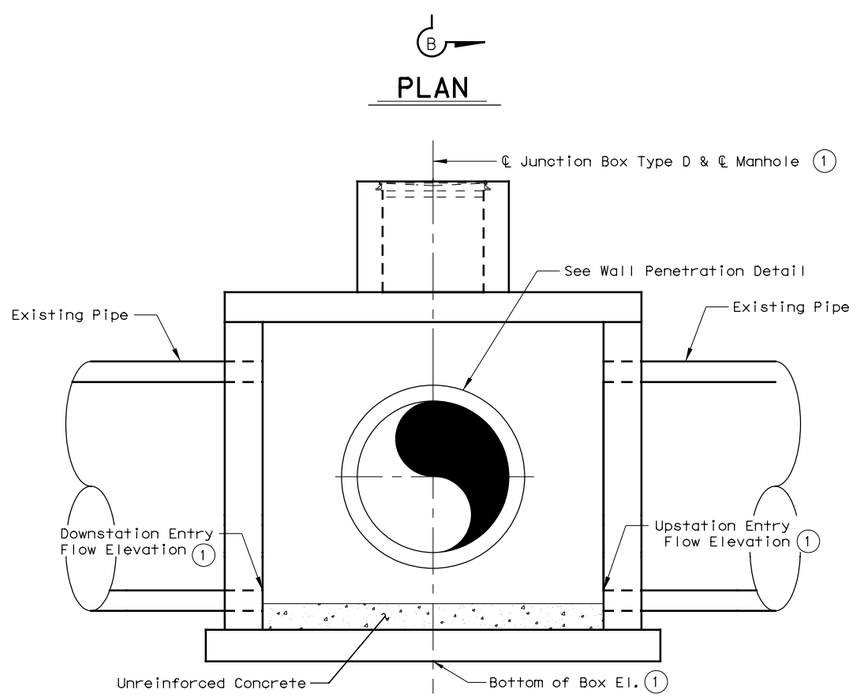


TYPICAL SLAB/WALL SECTION

NOTES:

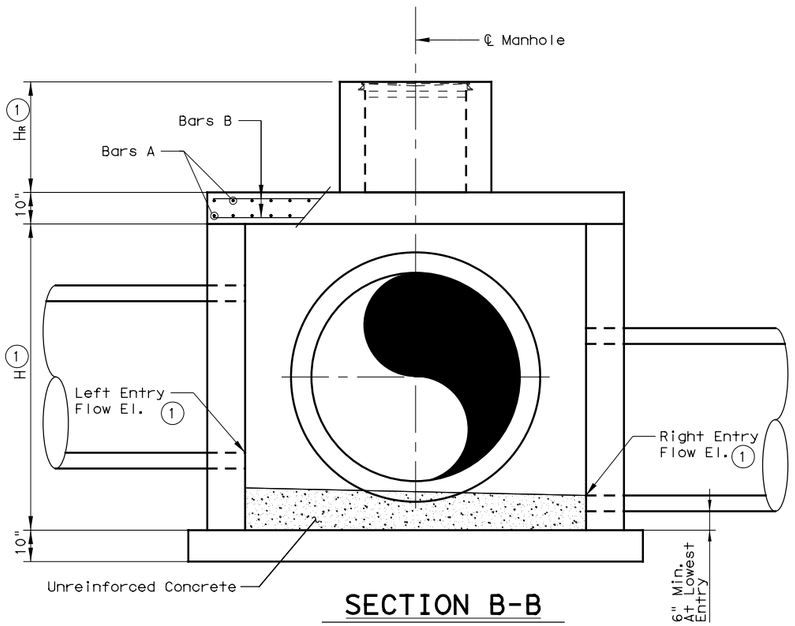
1. Entries shown in these details are schematic. Refer to Junction Box Summary for dimensions of entries and Flowline Elevations.
2. Omit riser when Junction Box subject to direct traffic as identified in Junction Box Summary.
3. Fill in bottom of box with unreinforced concrete to provide Flowline Elevations as shown in Drainage Plan and Profile sheets and Drainage Lateral Profile sheets. Notice that Section B-B shows Right Entry lower than Left Entry, however the reverse is applicable at certain boxes.

(1) See Junction Box Summary Sheet



SECTION A-A

Unreinforced Concrete shown schematically. Refer to Section B-B and Drainage Plan and Profile Sheets for further information.



SECTION B-B

Slope unreinforced concrete to provide elevations given in drainage profile sheets.



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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

JUNCTION BOX DETAILS TYPE D

NTS

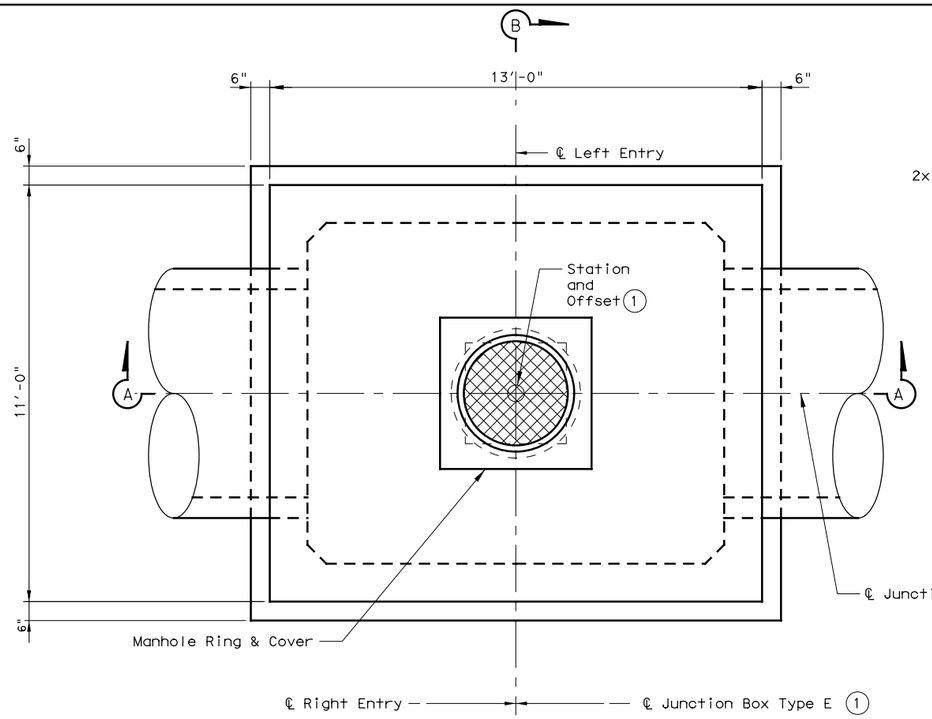
SHEET 1 OF 1

Texas Department of Transportation

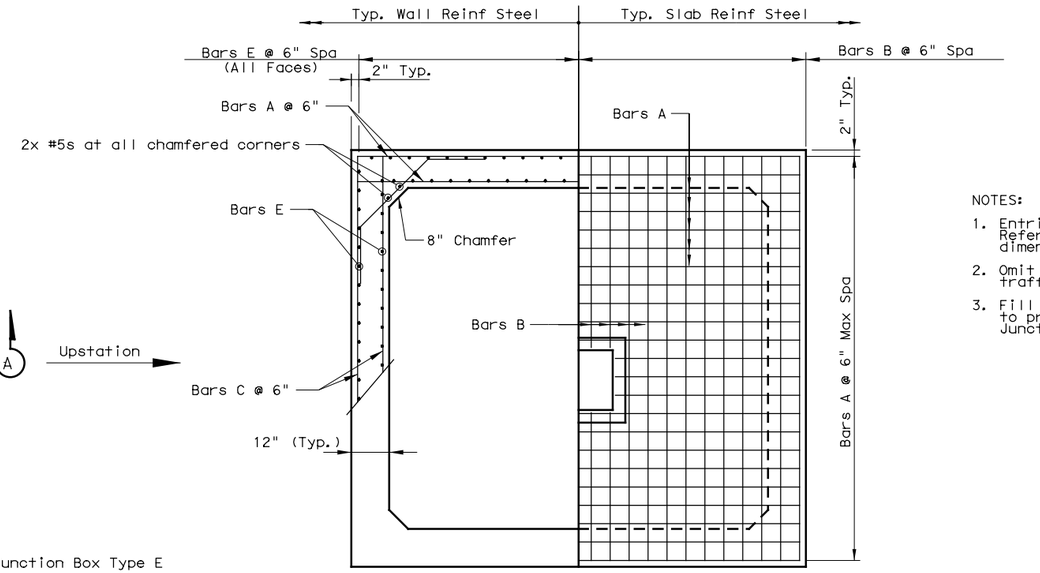
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		390
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
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100% SUBMITTAL



Upstation

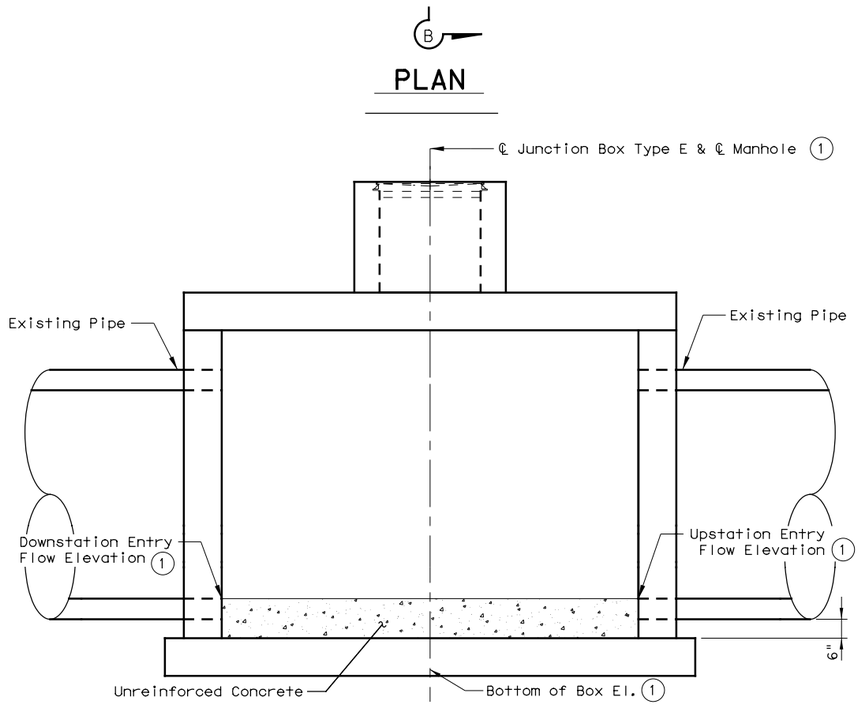


TYPICAL SLAB/WALL SECTION

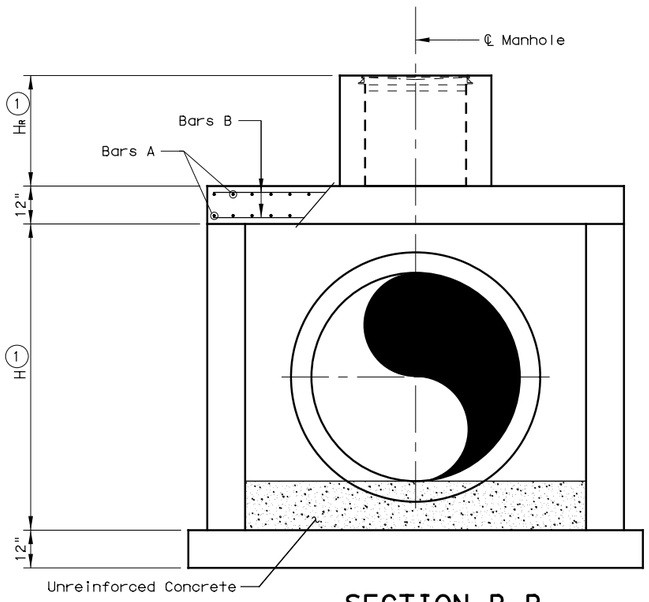
NOTES:

1. Entries shown in these details are schematic. Refer to Junction Box Summary for dimensions of entries and Flowline Elevations.
2. Omit riser when Junction Box subject to direct traffic as identified in Junction Box Summary.
3. Fill in bottom of box with unreinforced concrete to provide level surface between pipes entering Junction Box.

(1) See Junction Box Summary Sheet



SECTION A-A



SECTION B-B

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PROFESSIONAL ENGINEER
STATE OF TEXAS
8/24/2020

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

JUNCTION BOX DETAILS TYPE E

NTS

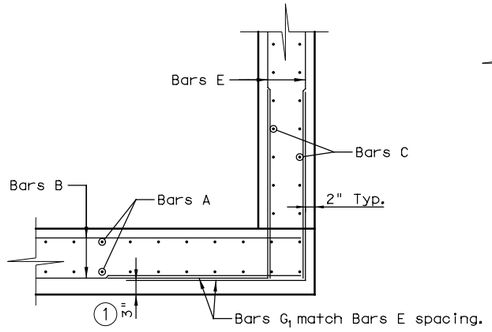
SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		391
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

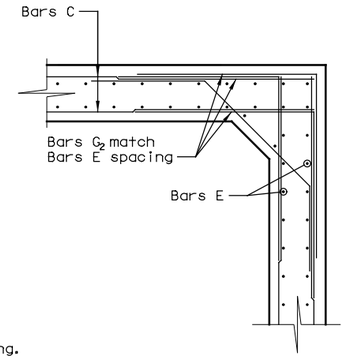
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100% SUBMITTAL



ELEVATION

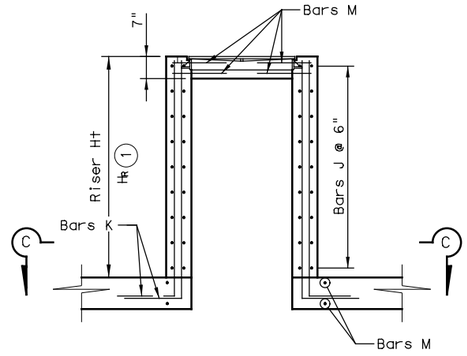
Showing Bottom slab, Top slab similar



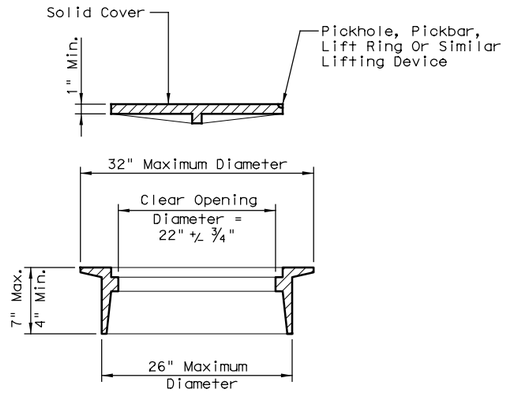
PLAN

Showing Wall corner

CORNER DETAILS

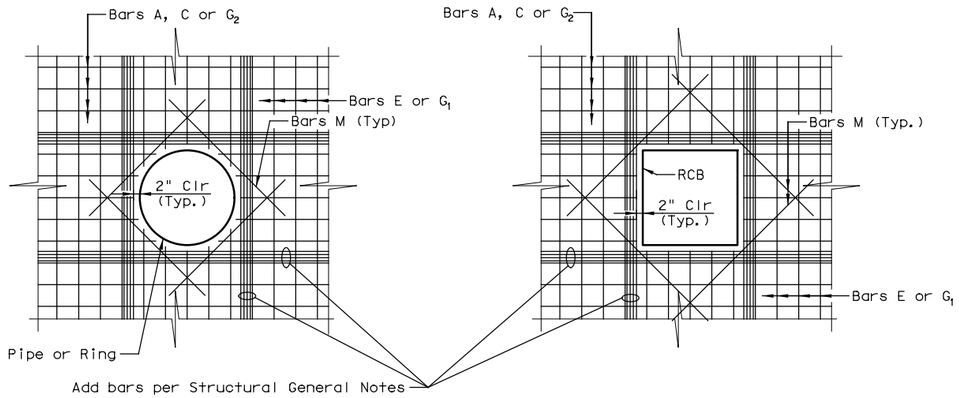


RISER ELEVATION



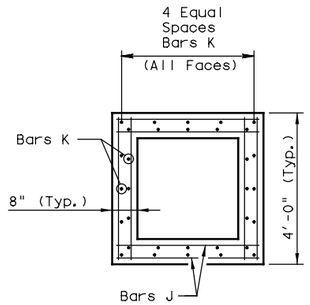
RING AND COVER DETAILS

Approximate Weight = 245 lbs.

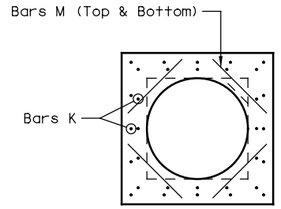


WALL AND SLAB PENETRATION DETAILS

NOTE: Add 4 bars M at each opening, each face.



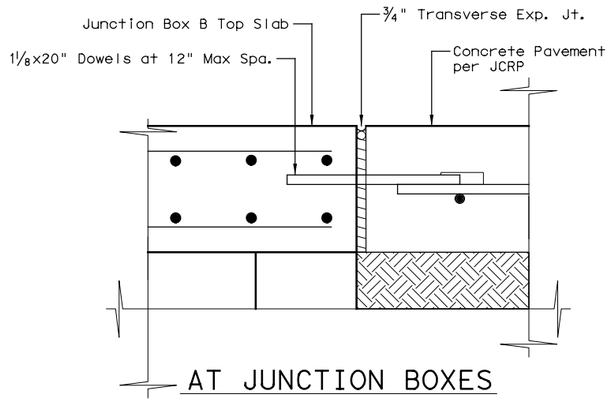
SECTION C-C



TOP OF MANHOLE

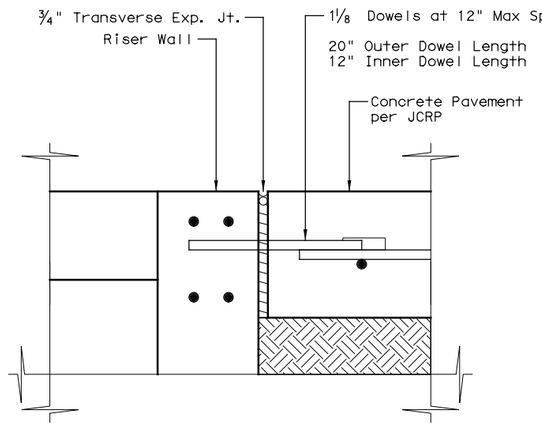
MANHOLE DETAILS

(1) PER GENERAL NOTES, PROVIDE 3" CLEAR COVER TO CONCRETE SURFACES CAST AGAINST EARTH; PROVIDE 2" ELSEWHERE.



AT JUNCTION BOXES

Only applicable Type B Junction Boxes subject to Direct Traffic.



AT RISERS

CONNECTION TO JRCP

Refer to TXDOT HOU District Standard JRCP for more information.

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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

JUNCTION BOX DETAILS MISCELLANEOUS DETAILS

SCALE: NTS

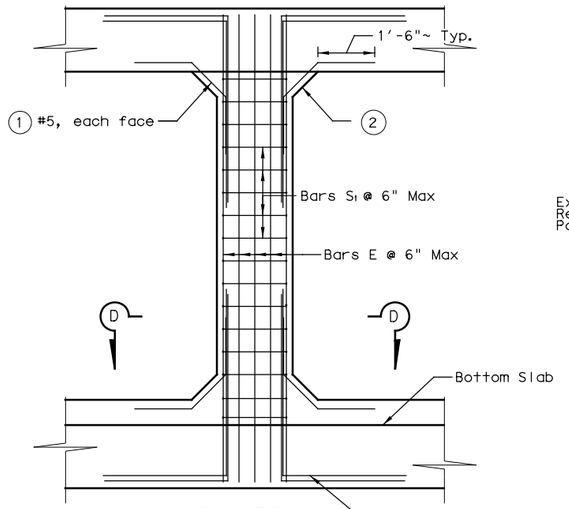
SHEET 1 OF 2

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		392
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

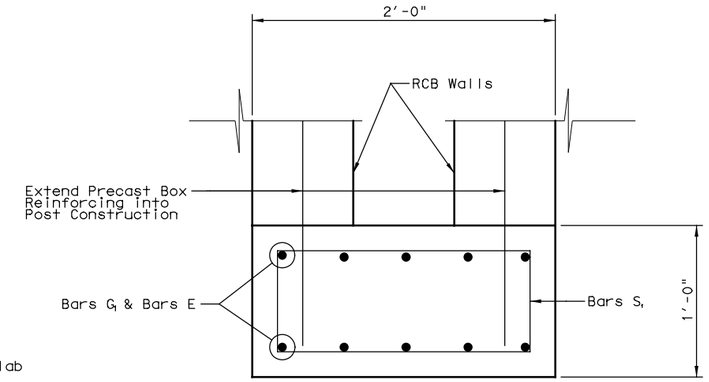
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ELEVATION

Provide Bars G as shown in Corner Details.



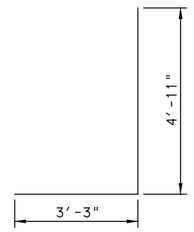
SECTION D-D

POST DETAILS

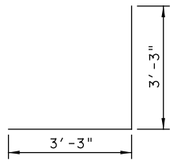
BAR TABLE					
BARS	SIZE				
	TYPE A	TYPE B	TYPE C	TYPE D	TYPE E
A	#7	#6	#6	#6	#6
B	#7	#6	#6	#6	#6
C	#5	#4	#4	#4	#4
E	#6	#6	#6	#6	#6
G1	#6	#6	#6	#6	#6
G2	#6	#6	#6	#6	#6
H	---	---	#4	---	---
J	#5	#5	#5	#5	#5
K	#5	#5	#5	#5	#5
M	#5	#5	#5	#5	#5
S1	#5	---	#4	---	---
S2	#5	---	---	---	---
S3	---	---	#4	---	---
U	---	---	#4	---	---

(1) Provide at all chamfered corners of wall openings.

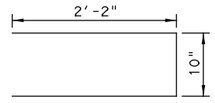
(2) Chamfer size in wall equal to chamfer size of culverts.



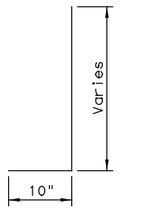
BARS G_1



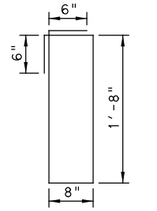
BARS G_2



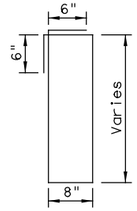
BARS H



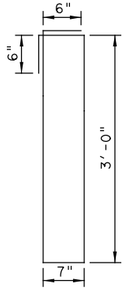
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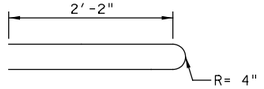
BARS S_1



BARS S_2



BARS S_3



BARS U



8/24/2020

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

JUNCTION BOX DETAILS
MISCELLANEOUS DETAILS

SCALE: NTS

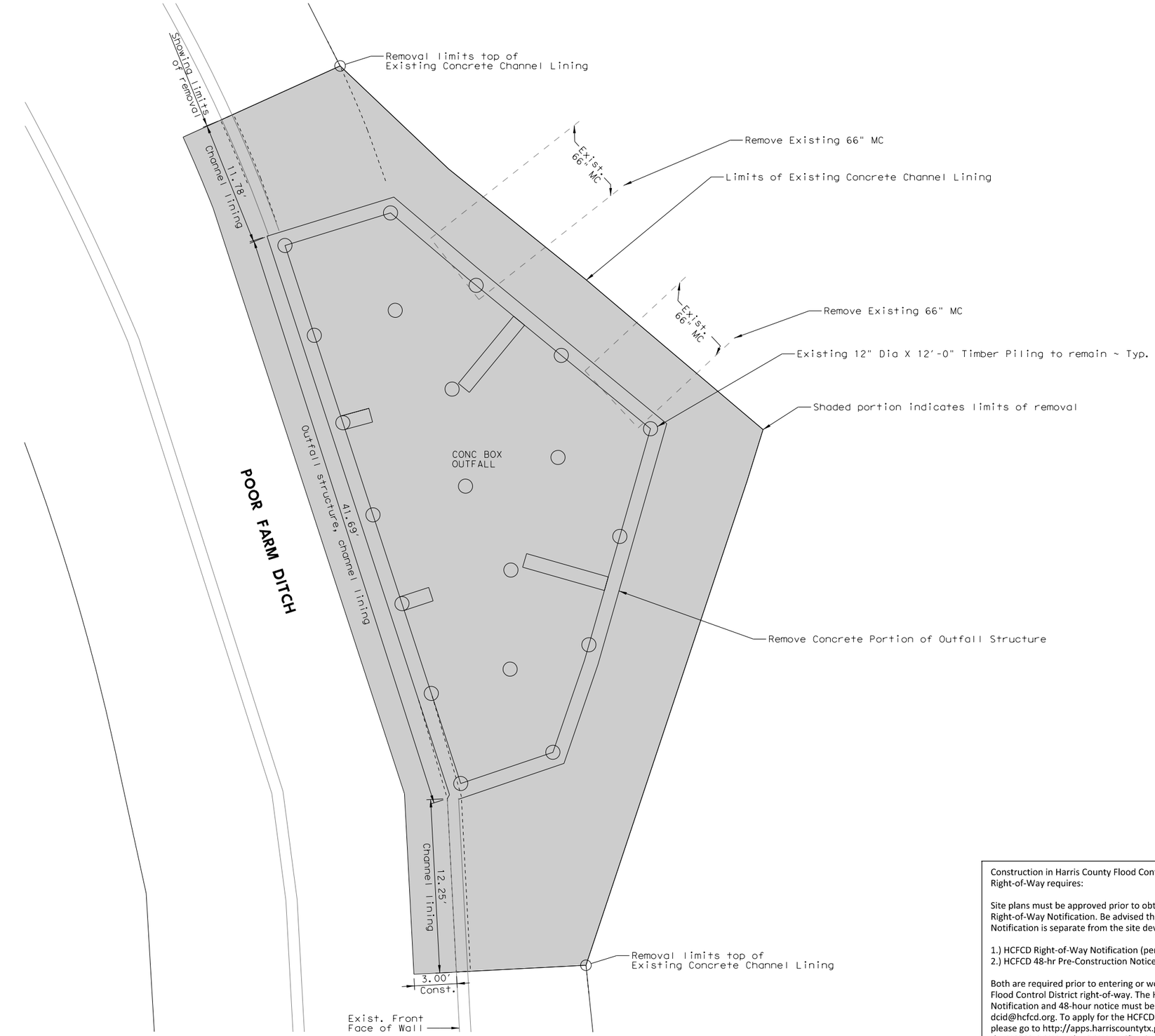
SHEET 2 OF 2

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		393
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
USER: DMAHER DATE: 8/18/2020 TIME: 3:18:23 PM
FILE: $FILE$

100% SUBMITTAL



PLAN

N

Notes:

1. Contractor shall refer to Offsite Removal and Replacement Plan Notes in addition to those provided herein.
2. Contractor shall remove existing concrete outfall structure, concrete channel lining and fill inside the shaded region. Additional excavation required to construct proposed outfall structure to be determined by contractor.
3. Timber Piling to remain. Contractor shall adjust height of timber piles to correct elevations to be determined in field. Timber Piling shall embed 2" into concrete.

Construction in Harris County Flood Control District Right-of-Way requires:

Site plans must be approved prior to obtaining the required HCFCD Right-of-Way Notification. Be advised that the HCFCD Right-of-Way Notification is separate from the site development permit package

1.) HCFCD Right-of-Way Notification (permit)
2.) HCFCD 48-hr Pre-Construction Notice

Both are required prior to entering or working within Harris County Flood Control District right-of-way. The HCFCD Right-of-Way Notification and 48-hour notice must be provided to HCFCD at dcid@hcfcd.org. To apply for the HCFCD Right-of-Way Notification please go to http://apps.harriscountytx.gov/EPermits and apply for the HCFCD ROW under ROW Notification.

Failure to provide both items could result in project delay.

STATE OF TEXAS
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65754
REGISTERED
PROFESSIONAL
ENGINEER
PE
8/24/2020

4828 Loop Central Dr, Suite 800
Houston, Texas 77081
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HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

OUTFALL EXISTING STRUCTURE REMOVAL PLAN

SCALE: NTS

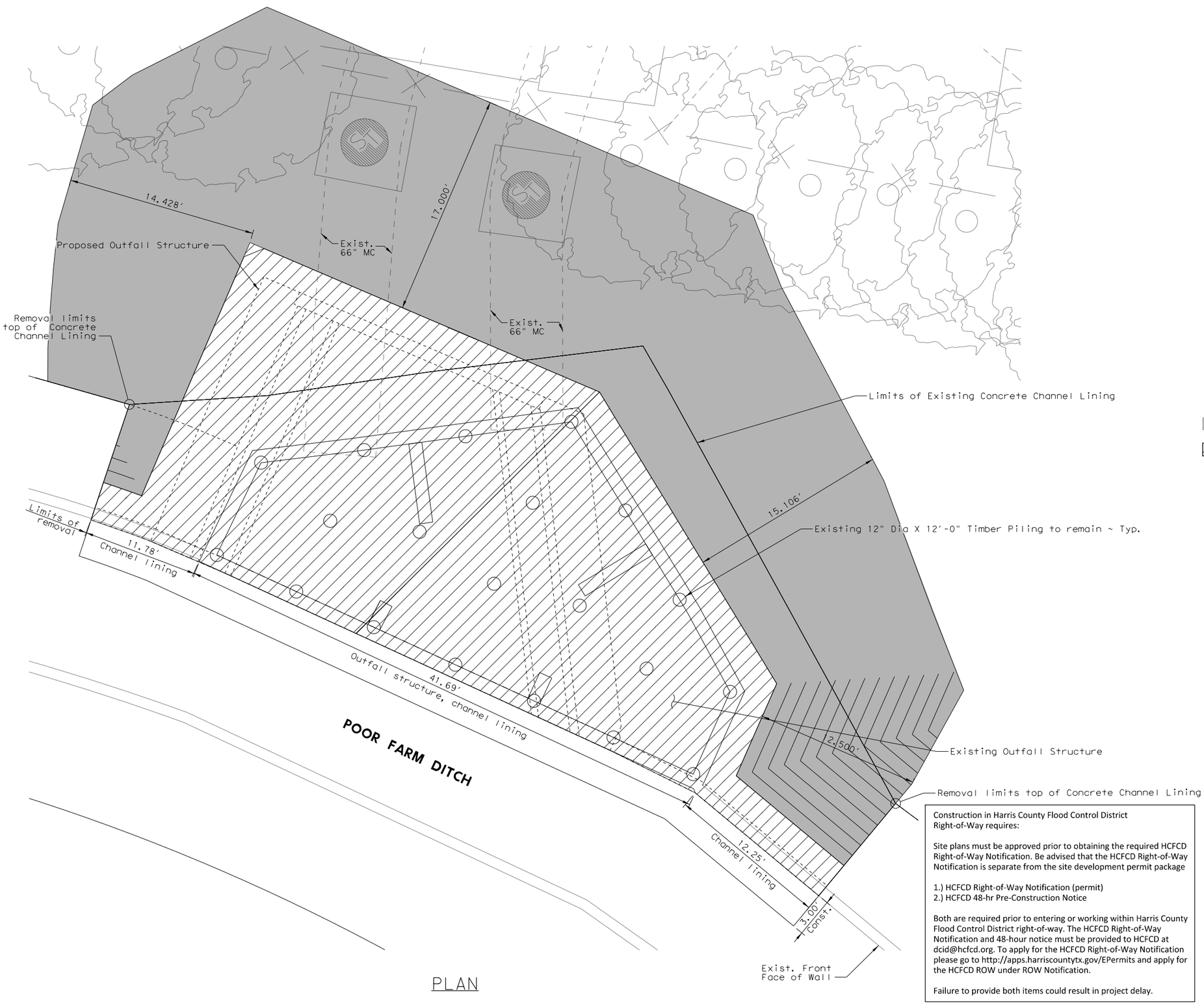
SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		394
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
USER: DMAHER DATE: 8/18/2020 TIME: 3:16:26 PM
FILE: $FILE$

100% SUBMITTAL



PLAN

Notes:

1. Contractor shall excavate within limits.
2. Contractor shall provide a 2'-0" minimum width flat bench around all existing and proposed structural elements prior to sloping fill to meet grade.
3. Contractor shall backfill excavated region with material corresponding to TxDOT Item 401. Refer to the Outfall Grading Plan for additional information.
4. Contractor shall provide temporary shoring at sawcut existing channel lining during construction.
5. See Tree Protection Plans for additional details prior to any construction activities.

Legend

In-situ soil, sloped at 1:1, maximum to meet Existing Grade.

Flat Area EL 30.03

Construction in Harris County Flood Control District Right-of-Way requires:

Site plans must be approved prior to obtaining the required HCFCD Right-of-Way Notification. Be advised that the HCFCD Right-of-Way Notification is separate from the site development permit package

1.) HCFCD Right-of-Way Notification (permit)
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8/24/2020

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

OUTFALL EXCAVATION AND BACKFILL PLAN

SCALE: NTS

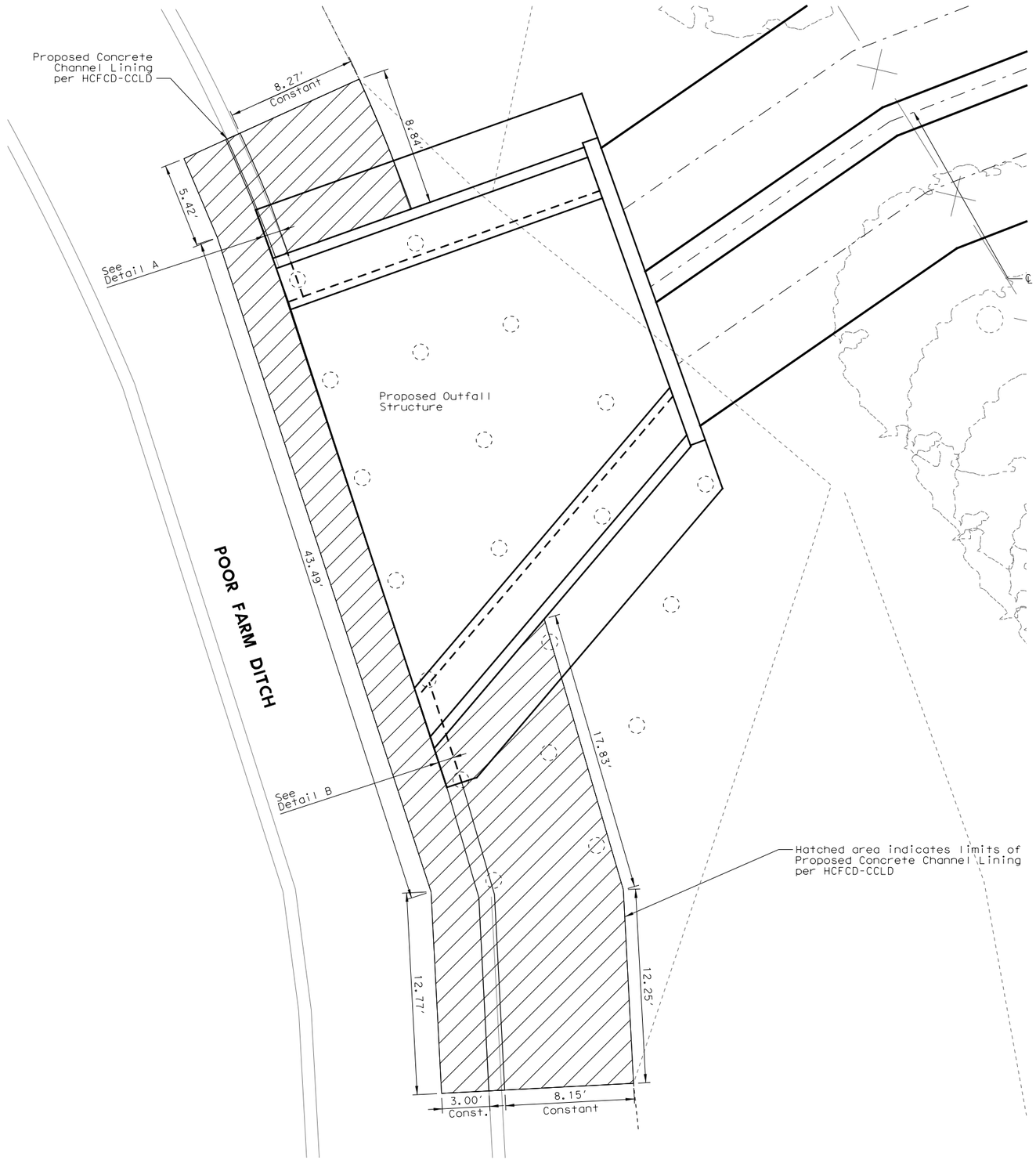
SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		395
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
USER: DMAHER DATE: 8/18/2020 TIME: 3:18:30 PM
FILE: $FILE$

100% SUBMITTAL



PLAN

N

Notes:

1. Contractor shall fill void left from existing outfall structure with cement-stabilized backfill.
2. Contractor shall install concrete channel lining in the hatched regions per HCFCD-CCLD. Slope of HCFCD-CCLD shall not exceed 2:1. Grass slope beyond concrete channel lining shall not exceed 4:1.
3. Limits of concrete channel lining shown are based on survey data. Contractor shall verify dimensions in the field.

Construction in Harris County Flood Control District Right-of-Way requires:

Site plans must be approved prior to obtaining the required HCFCD Right-of-Way Notification. Be advised that the HCFCD Right-of-Way Notification is separate from the site development permit package

1.) HCFCD Right-of-Way Notification (permit)
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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

OUTFALL PROPOSED STRUCTURE PLAN

SCALE: NTS

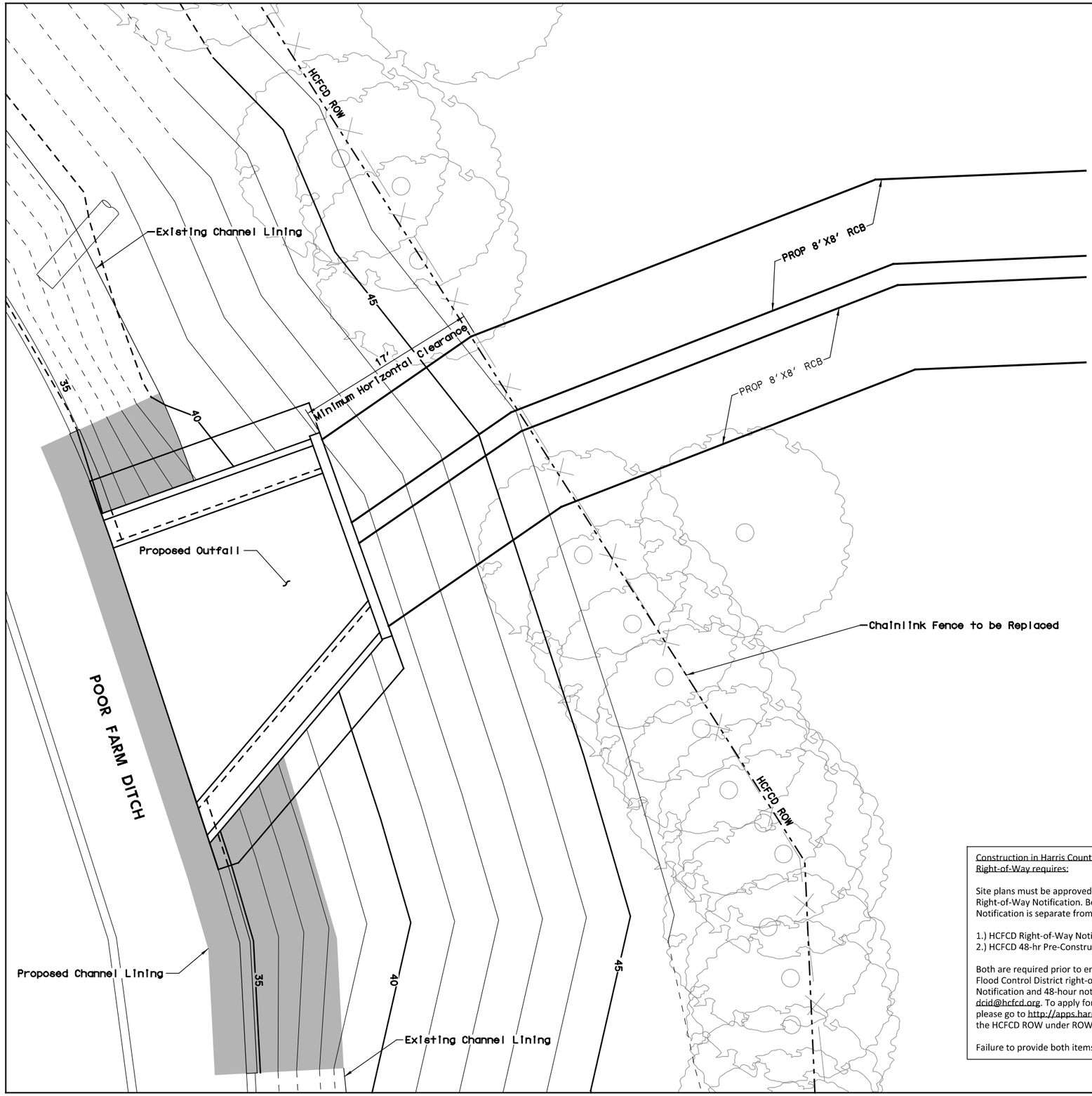
SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			396
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	

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USER: CMONOPOLI$DATE: 8/24/2020 TIME: 11:55:09 AM
FILE: $FILE$

100% SUBMITTAL



Notes:

1. Proposed Grading to match existing channel grading upstream and downstream of proposed location.
2. Shaded Region indicates region of replacement channel lining.
3. Concrete Lining to be graded at 2:1 slope towards channel. Grass Lining to be graded at 4:1 to tie into existing contours.

0 5 10 15 20

SCALE IN FEET

Construction in Harris County Flood Control District Right-of-Way requires:

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

OUTFALL GRADING PLAN

SCALE: 1"=10'

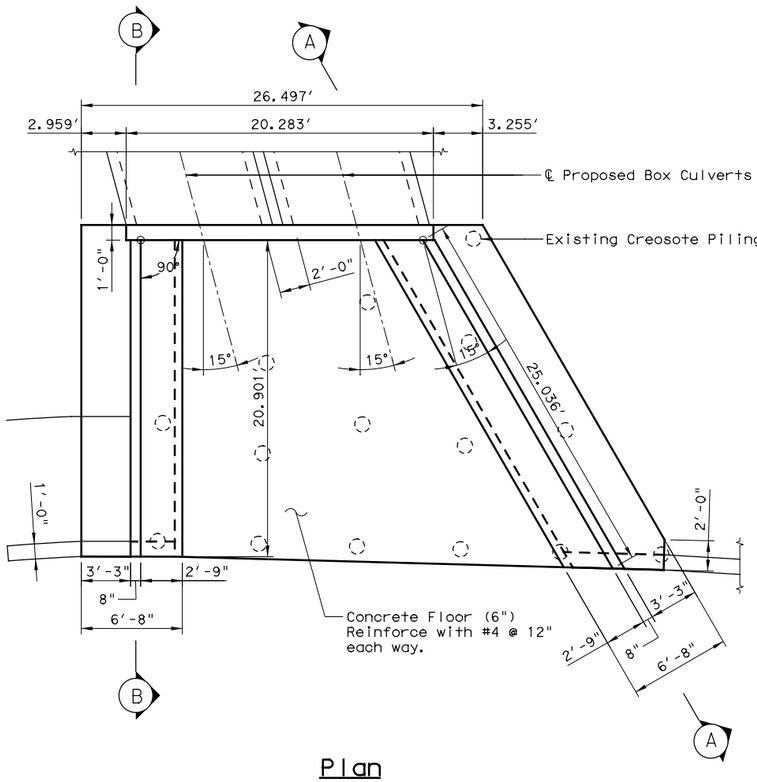
SHEET 1 OF 1

Texas Department of Transportation

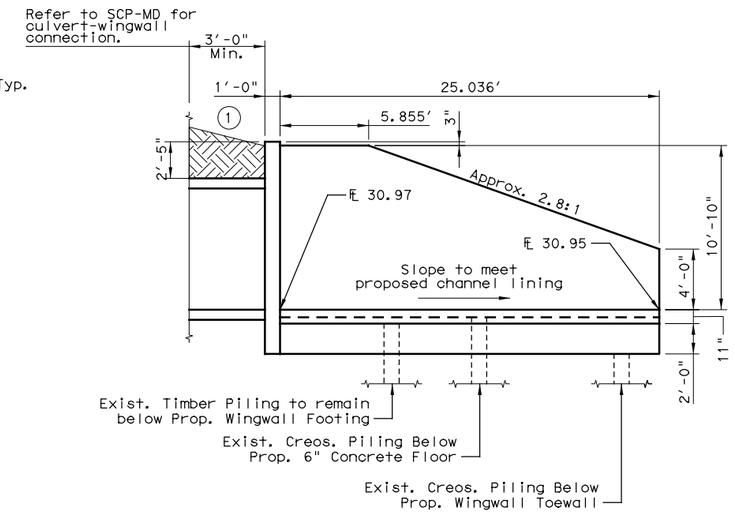
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		397
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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100% SUBMITTAL



Plan



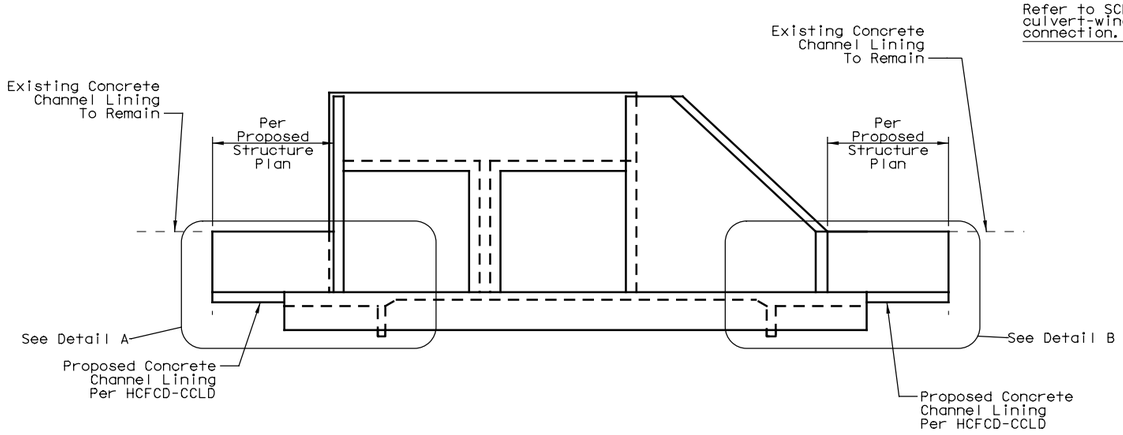
Section A-A

TABLE OF VALUES FOR USE WITH FW-S(MOD), ECD, SCP-MD	
H	8'-0"
T	8"
C	4'-6"
Hw	10'-10"
A	20.901'
Lw	25.036'
L+w	20.015'
θ	15°

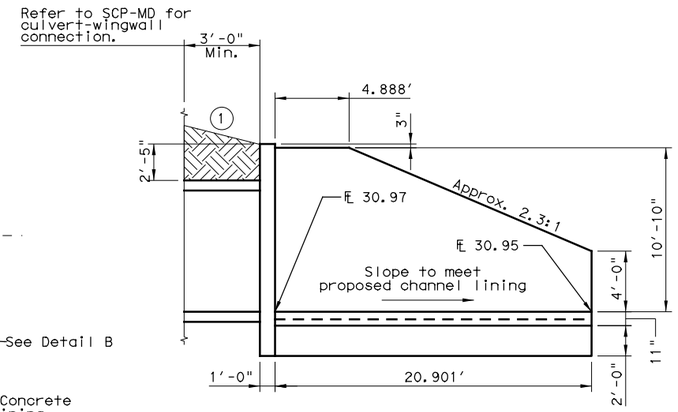
Notes:

1. Timber Piling shall embed 2" into concrete.

(1) Slope fill above culvert per proposed grading, see Drainage Plan and Profile. Slope not to exceed 4:1 per Harris County Flood Control District.



Elevation



Section B-B

8/24/2020

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

OUTFALL DETAILS

NTS

SHEET 1 OF 2

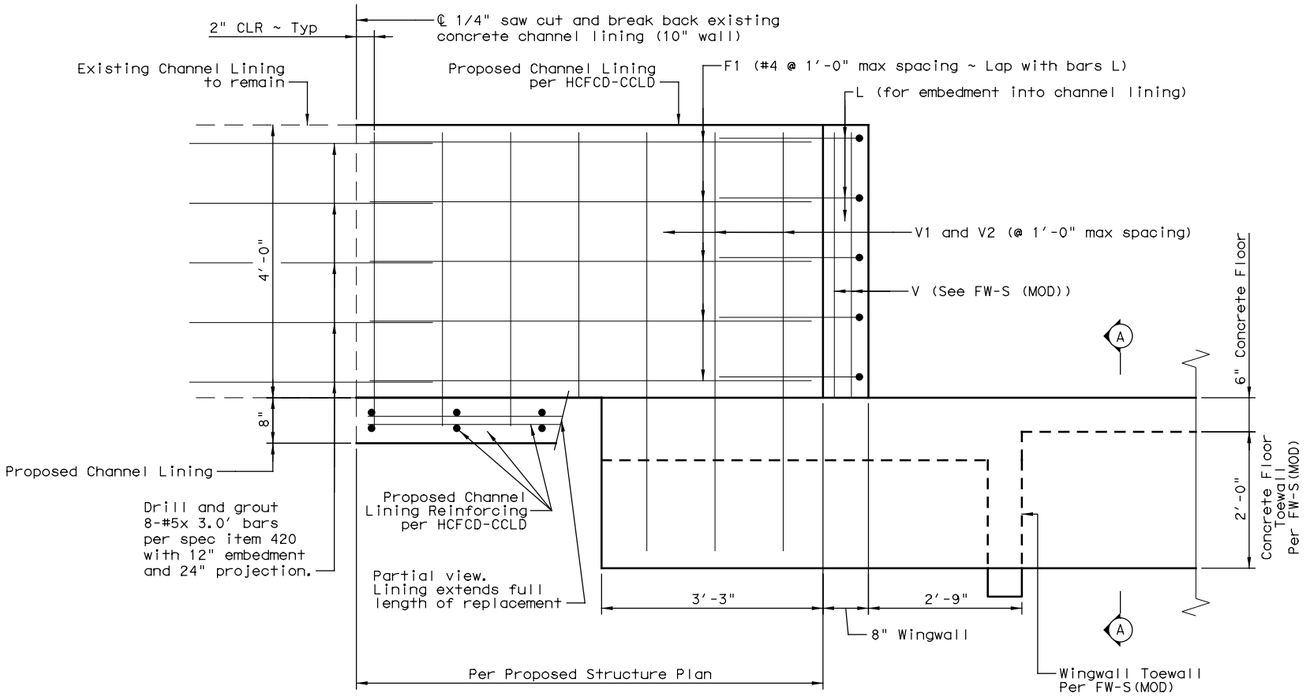
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		398
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

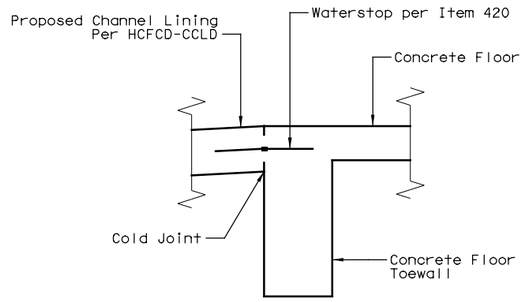
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100% SUBMITTAL

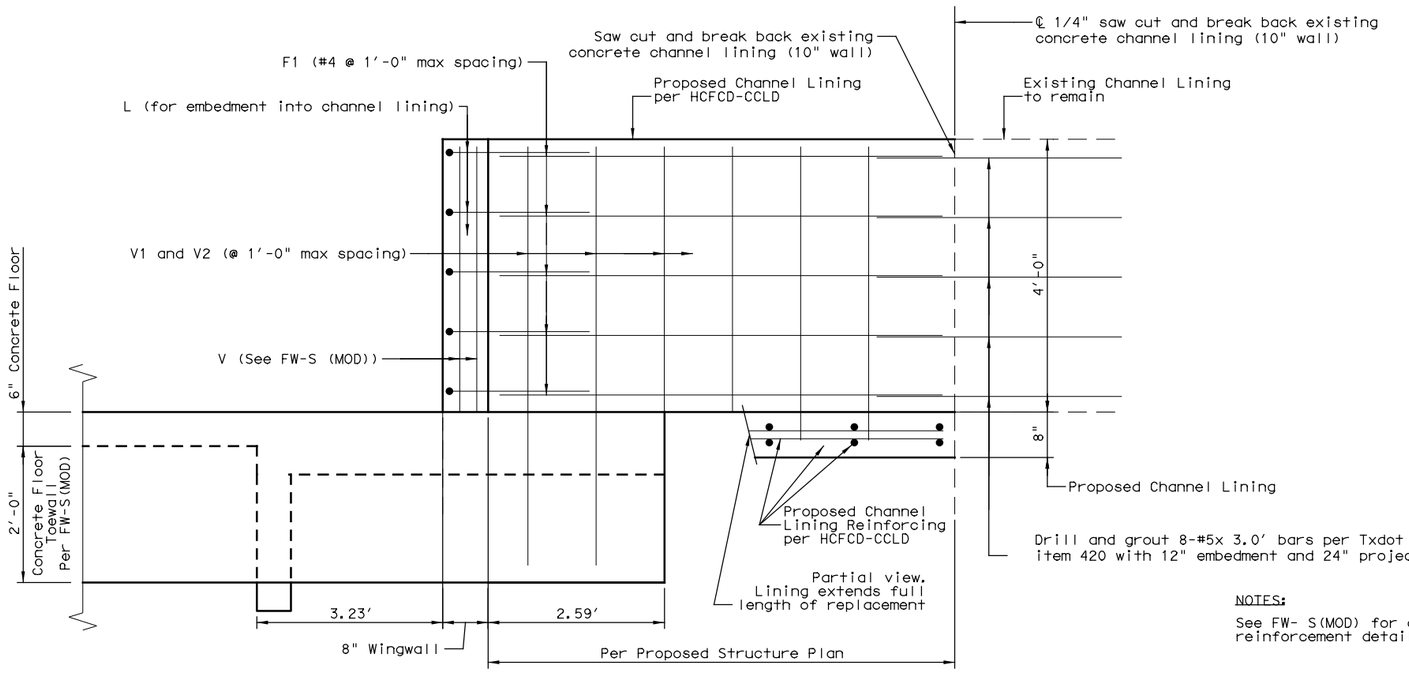
TABLE OF ESTIMATED OUTFALL QUANTITIES			
ITEM	DESCRIPTION	UNIT	QUANTITY
104 6009	REMOVING CONC (RIPRAP)	SY	870
110 6002	EXCAVATION (CHANNEL)	CY	654
400 6005	CEM STABIL BKFL	CY	491
420 6133	CL A CONC (CHANNEL LINING)	CY	11
432 6005	RIPRAP (CONC) (CL A)	CY	8
466 6232	WINGWALL (SPL)	EA	1
496 6005	REMOV STR (WINGWALL)	EA	1



Detail A



Section A-A



Detail B

NOTES:

See FW- S(MOD) for additional information including reinforcement details of wingwalls



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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

OUTFALL DETAILS

SCALE: NTS

SHEET 2 OF 2

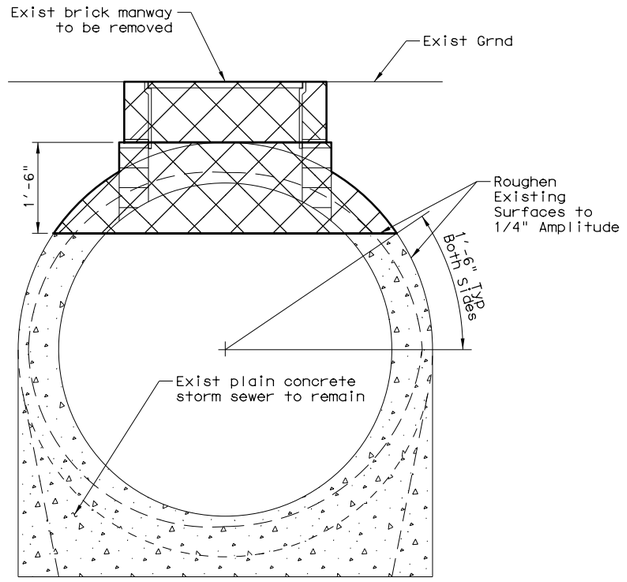
SCALE: NTS

Texas Department of Transportation

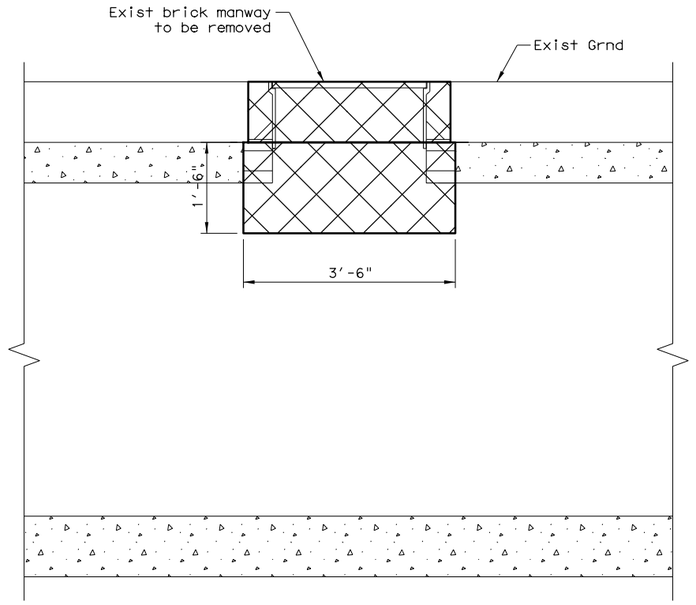
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6	(SEE THE TITLE SHEET)		399
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
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FILE: $FILE$

100% SUBMITTAL



BRK MANHOLE REMOVAL SECTION



BRK MANHOLE REMOVAL ELEVATION

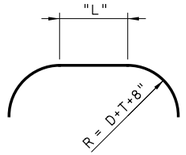
EXISTING PLAIN CONCRETE SEWER DIMENSIONS	
INSIDE DIAMETER, D	WALL THICKNESS, T
66"	8"
72"	8.5"

BARS AX "L"		
D	A1	A2
66"	5'-9.5"	4'-11"
72"	6'-1"	5'-1.5"

BAR TABLE	
BARS	SIZE
A1	#5
A2	#5
S1	#4
S2	#4

NOTES:

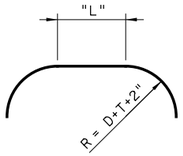
1. Concrete shall have a minimum compression strength of Class C, fc = 3600 PSI.
2. 66" pipe shown, 72" pipe similar.
3. Remove all brick and mortar components from existing concrete, roughen surface to 1/4" amplitude and drill/grout bars as shown prior to placing new concrete. This work shall be subsidiary to Item 420 6074 and not a separate pay item.
4. Apply waterstops along all construction joints.
5. Section for 30.5" wide manhole ring shown. If condition in field differs, inform engineer.
6. Brick Manhole Replacement shall be payable under TxDOT item 420 6074 CL C CONC (MISC).



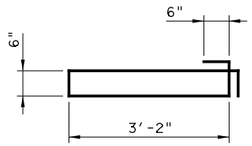
BARS A1

ESTIMATED UNIT CONCRETE VOLUME				
ITEM	DESCRIPTION	UNIT	TOTAL	
420 6074	66" PIPE TYPE 1 REPAIR	CY	10.2	(1)
420 6074	72" PIPE TYPE 1 REPAIR	CY	1.7	

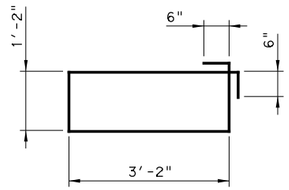
(1) 7x 66" Pipe Type 1 Repair Locations at 1.7 CY Each.
1x 72" Pipe Type 1 Repair Locations at 1.7 CY Each.



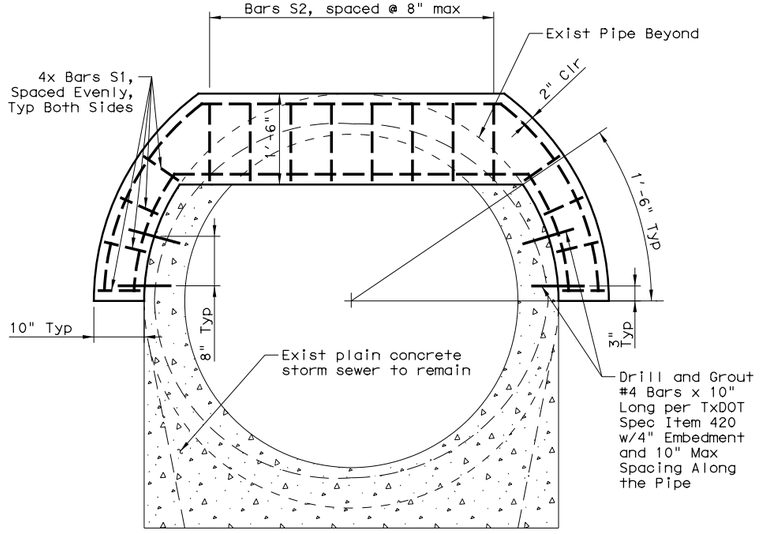
BARS A2



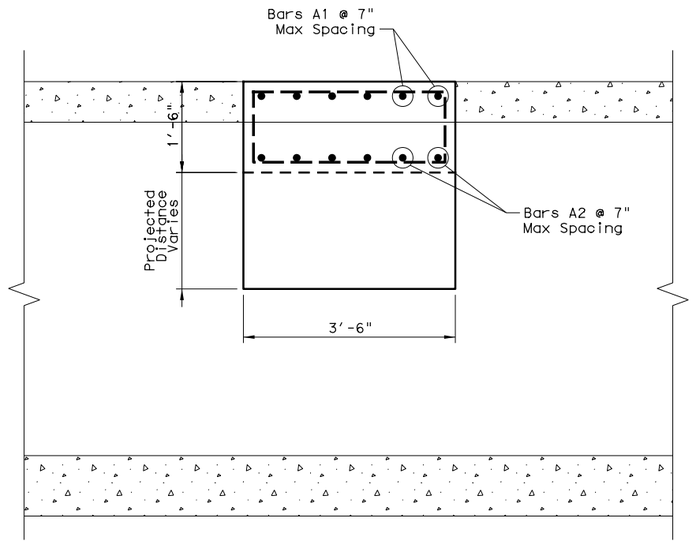
BARS S1



BARS S2



BRK MANHOLE REPAIR SECTION



BRK MANHOLE REPAIR ELEVATION



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Texas Registered Engineering Firm 754

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

BRICK MANHOLE REPLACEMENT TYPE 1 DETAILS

SCALE: NTS

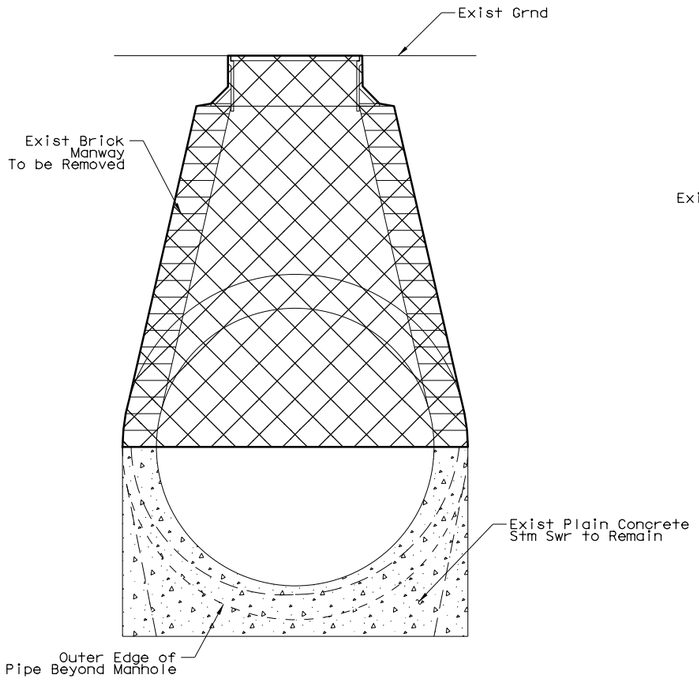
SHEET 1 OF 1

Texas Department of Transportation

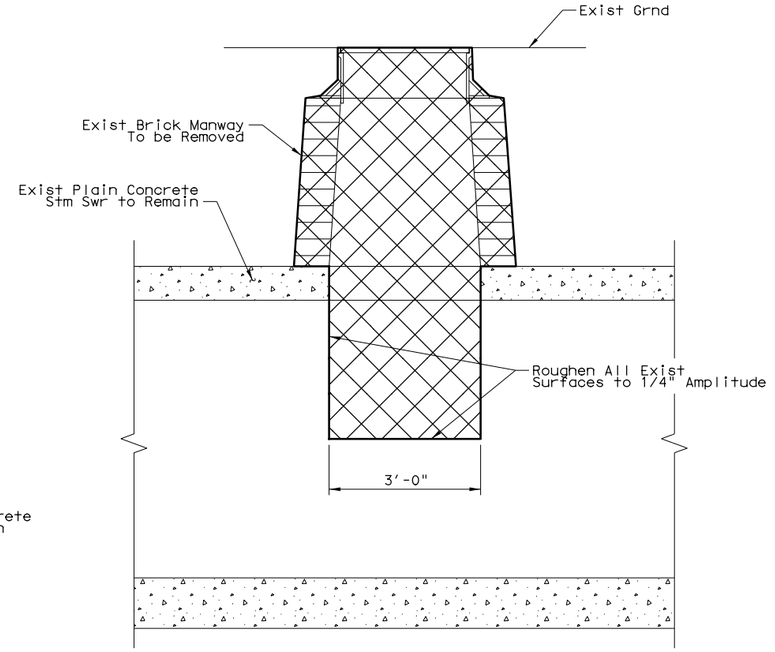
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6	(SEE THE TITLE SHEET)		400
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLOT DRIVER: TXDOT_PDF_BW.pltcfg PENTABLE: TXDOT.tbl
USER: DMAHER DATE: 8/18/2020 TIME: 3:18:52 PM
FILE: $FILE$

100% SUBMITTAL



BRK MANHOLE REMOVAL SECTION



BRK MANHOLE REMOVAL ELEVATION

EXISTING PLAIN CONCRETE SEWER DIMENSIONS	
INSIDE DIAMETER, D	WALL THICKNESS, T
66"	8"
72"	8.5"

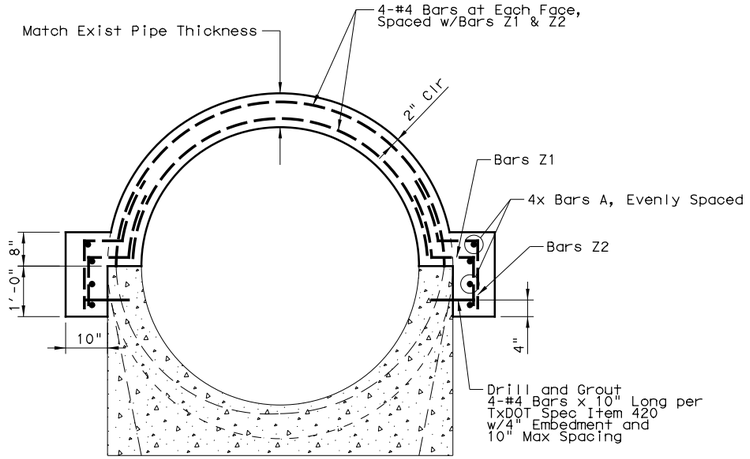
BAR TABLE	
BARS	SIZE
A	#5
Z1	#4
Z2	#4

Notes:

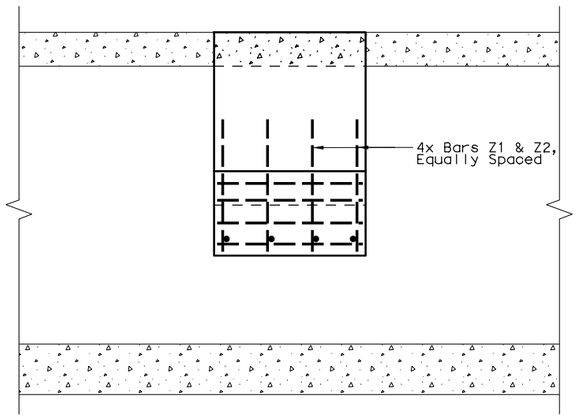
1. Concrete Shall Have A Minimum Compression Strength Of Class C, Fc = 3600 Psi.
2. 66" Pipe Shown 72" Pipe Similar.
3. Remove all brick and mortar components from existing concrete, roughen surface to 1/4" amplitude and drill/grout bars as shown prior to placing new concrete. This work shall be subsidiary to Item 420 6074 and not a separate pay item.
4. Apply Waterstops Along All Construction Joints.
5. Proposed Concrete Shall Not Project Above Existing Top Of Concrete Pipe.
6. Brick Manhole Replacement Shall Be Payable Under Txdot Item 420 6074 Cl C Conc (Misc).

ESTIMATED UNIT CONCRETE VOLUME				
ITEM	DESCRIPTION	UNIT	TOTAL	
420 6074	66" PIPE TYPE 2 REPAIR	CY	2	(1)
420 6074	72" PIPE TYPE 2 REPAIR	CY	2.2	

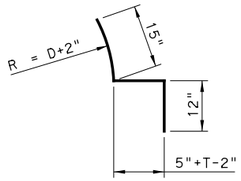
(1) 2x 66" Pipe Type 2 Repair Locations at 1.0 CY Each.
2x 72" Pipe Type 2 Repair Locations at 1.1 CY Each.



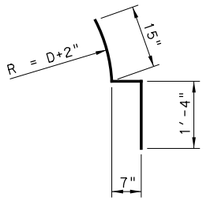
BRK MANHOLE REPAIR SECTION



BRK MANHOLE REPAIR ELEVATION



BARS Z1



BARS Z2

STATE OF TEXAS
K. L. OZUNA
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PROFESSIONAL ENGINEER
8/24/2020

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BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

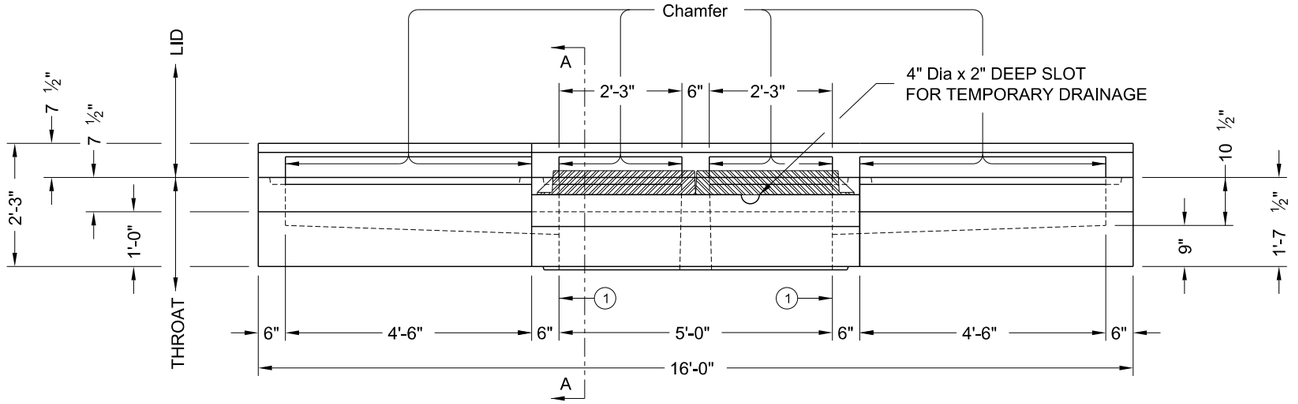
BRICK MANHOLE REPLACEMENT TYPE 2 DETAILS

SCALE: NTS SHEET 1 OF 1

Texas Department of Transportation

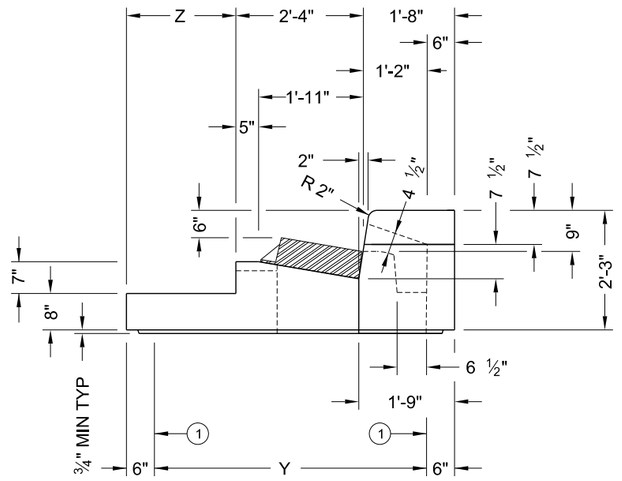
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6	(SEE THE TITLE SHEET)		401
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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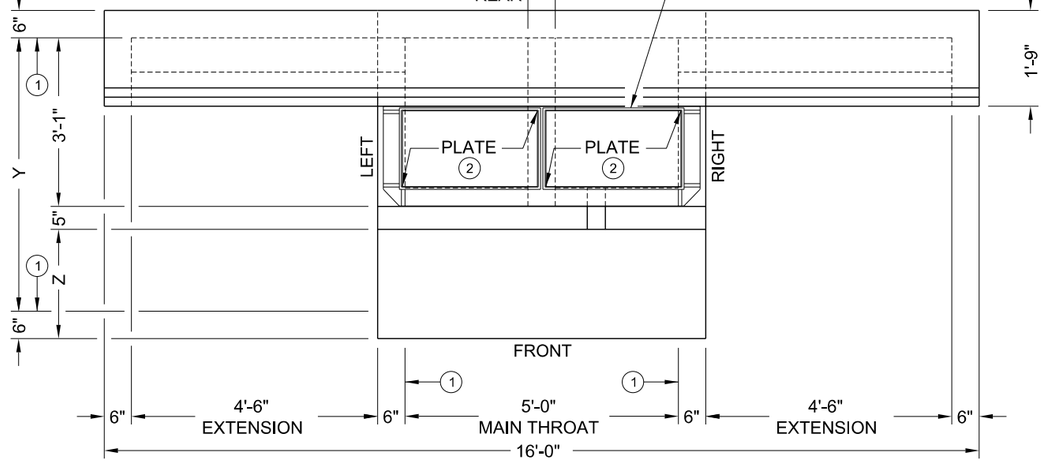


FRONT VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)



SECTION A-A



PLAN VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)

(1) Matches inside face of wall of precast base or riser below inlet.

(2) TY PCU Inlets shall include solid plate, no grates.

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED
PROFESSIONAL ENGINEER
8/25/2020

HS20 LOADING SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

PRECAST CURB INLET UNDER ROADWAY

PCU(MOD)

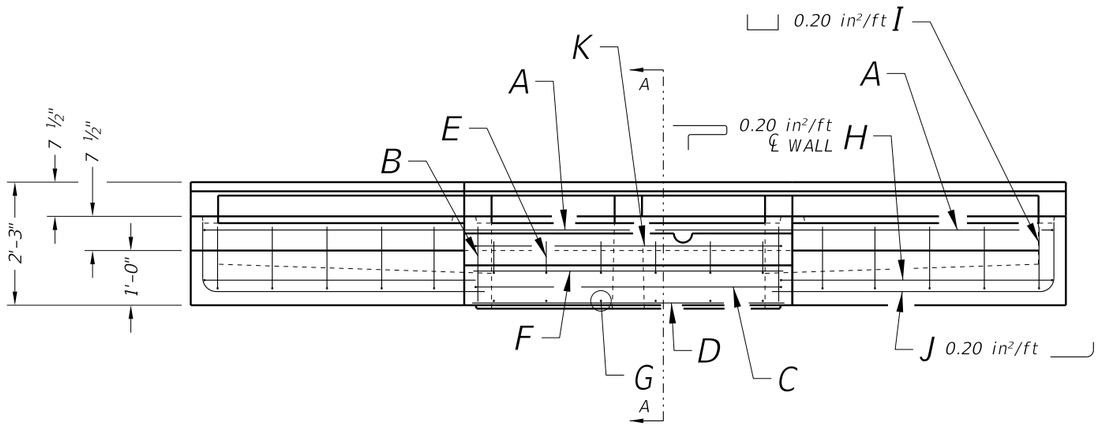
FILE: prestd04-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	72	360	BSW
	DIST	COUNTY		SHEET NO.
	12	HARRIS		402

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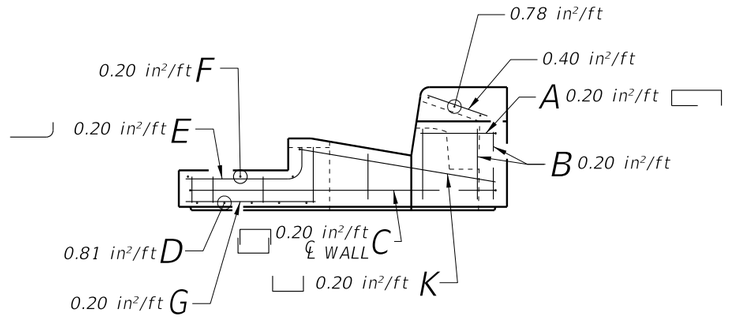
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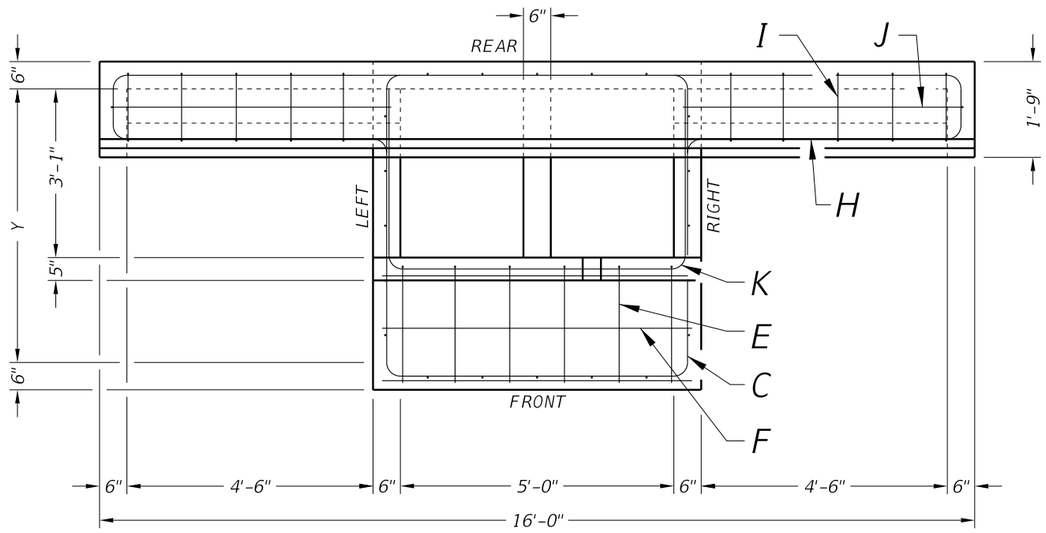


FRONT VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)



SECTION A-A



PLAN VIEW

(SHOWING LEFT AND RIGHT EXTENSIONS)

SIZE (Y)	Z
3'	0'
4'	1'
5'	2'
6'	3'

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 ½" to reinforcing steel from surface of concrete or lower outside shoulder.
4. Extensions may be right, left, both or none. Provide extensions as specified elsewhere in plans.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾". Top slab may employ a butt joint with dowels at the Contractor's option.
6. Provide lifting devices in conformance with Manufacturer's recommendations.
7. Chamfer vertical edges on inlet lid ¾" as shown in Front View, sheet 1.

INSTALLATION NOTES:

1. Inlet throat is placed under roadway and intended for direct traffic. Inlet lid is not for direct traffic. Do not place Inlet lid in roadway.
2. Seal tongue and groove joints and butt joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Open area of main throat = 324 sq in. Open area of one extension throat = 324 sq in.
3. Payment for inlet is per Item 465, "Junction Boxes, Manholes and Inlets" by type, size and extension placement. Extensions are subsidiary to inlet.

HS20 LOADING

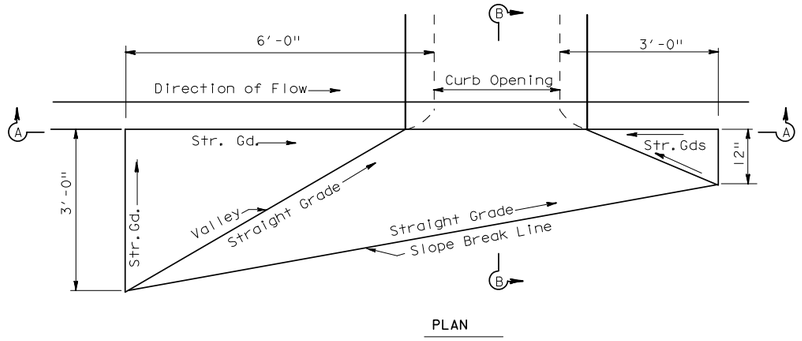
Texas Department of Transportation

Bridge Division Standard

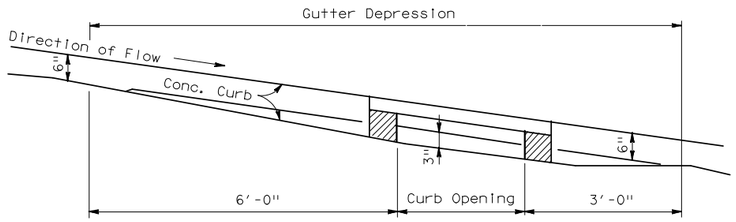
PRECAST CURB INLET UNDER ROADWAY

PCU

FILE: prestd04-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
	0912	72	360	BSW
	DIST	COUNTY		SHEET NO.
	12	HARRIS		403

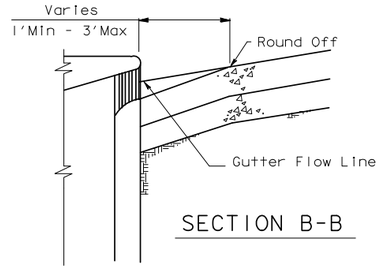


PLAN

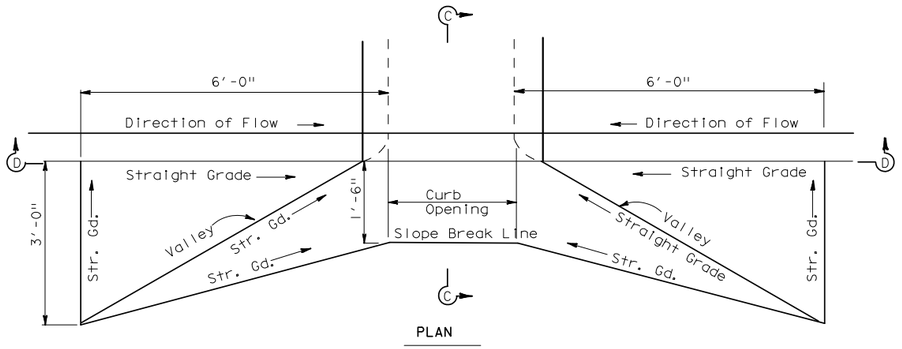


SECTION A-A

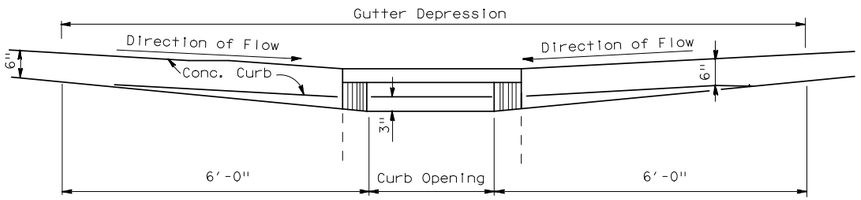
CURB INLET ON GRADE



SECTION B-B

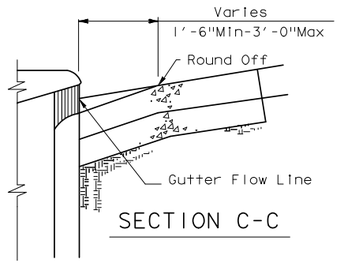


PLAN



SECTION D-D

CURB INLET AT SAG



SECTION C-C

GENERAL NOTES:

Base Course under Concrete Pavement shall be full depth and shall conform to surface depression details.

Texas Department of Transportation
Houston District

GUTTER DEPRESSION DETAILS FOR CURB INLETS

GD

FILE: STDD12.DGN	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	STD:	
© TxDOT Mar 2004	DIST	FED REG	PROJECT NO.			SHEET
REVISIONS	12	6	(SEE THE TITLE SHEET)			404
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	HARRIS		0912	72	360	BSW

STDD12.DGN

100% SUBMITTAL

02081-01

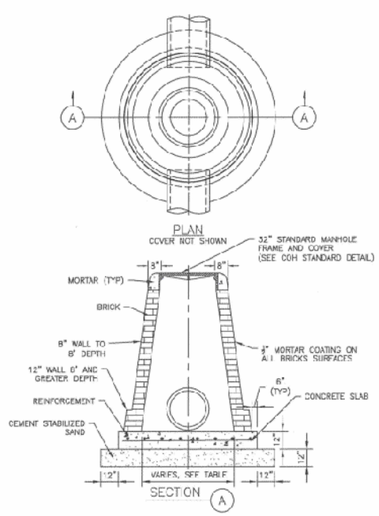


TABLE
SEWER SIZE VS MANHOLE SIZE

SEWER SIZE (INCHES)	MANHOLE BASE DIAMETER
42"	5'-0"
36"	4'-6"
30" AND LESS	4'-0"

STORM SEWER MANHOLE TYPE 'C'
FOR 42" DIAMETER RCP AND SMALLER
NTS

COH IS PHASING OUT BRICK. NEW DETAILS TO BE POSTED END OF 2019

02081-03

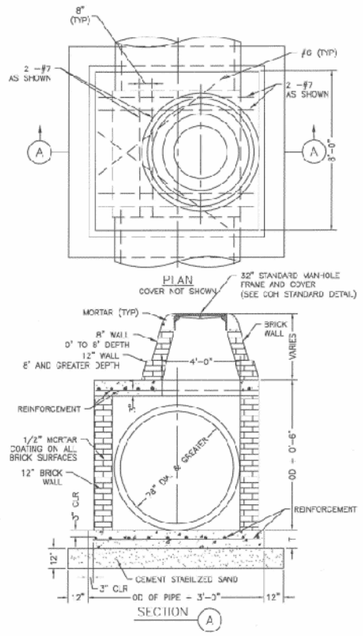


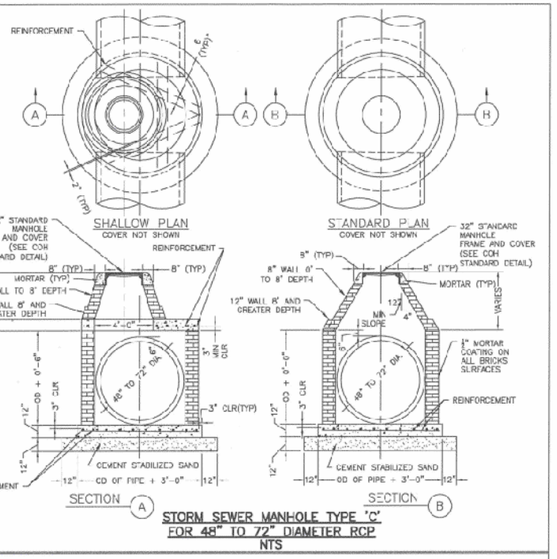
TABLE 1
PIPE DIAMETER VS SLAB THICKNESS

PIPE DIAMETER (INCHES)	SLAB THICKNESS T (INCHES)
78	12
84	12
90	13
96	14
102	14
108	15

STORM SEWER MANHOLE TYPE 'C'
FOR 78" DIAMETER RCP AND GREATER
NTS

COH IS PHASING OUT BRICK. NEW DETAILS TO BE POSTED END OF 2019

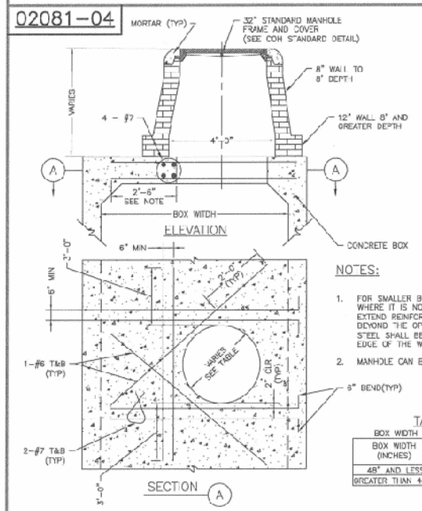
02081-02



NOTE:
1. WHEN MANHOLE HAS LESS DEPTH THAN MIN. SHOWN ON TABLE 1, BUILD SECTION A OTHERWISE BUILD SECTION B.

STORM SEWER MANHOLE TYPE 'C'
FOR 48" TO 72" DIAMETER RCP
NTS

02081-04



COH IS PHASING OUT BRICK. NEW DETAILS TO BE POSTED END OF 2019

NOTES:
1. FOR SMALLER BOX SEWER WIDTHS, WHERE IT IS NOT POSSIBLE TO EXTEND REINFORCING STEEL 2'-6" BEYOND THE OPENING, REINFORCING STEEL SHALL BE EXTENDED 3" TO THE EDGE OF THE WALL.
2. MANHOLE CAN BE PRECAST

8" BEND(TYP)

TABLE
BOX WIDTH VS OPENING SIZE

BOX WIDTH (INCHES)	OPENING SIZE (INCHES)
48" AND LESS	36"
GREATER THAN 48"	42"

STORM SEWER MANHOLE TYPE 'C'
FOR PROPOSED CONCRETE BOX SEWER
NTS

NO BRICK MANHOLES ALLOWED

FIRM INFORMATION | ENGINEER'S SEAL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02081-01 THROUGH 04

APPROVED BY:	APPROVED BY:
CITY ENGINEER	DEPUTY DIRECTOR
APPROVED BY:	
DIRECTOR	
EFFECTIVE DATE: JUL-01-2019	
FOR CITY OF HOUSTON USE ONLY	

SHEET NO.

STATE OF TEXAS
JOHN PETERSON
95319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

HDR
4828 Loop Central Dr, Suite 800
Houston, Texas 77081
713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

CITY OF HOUSTON STORM SEWER DETAIL

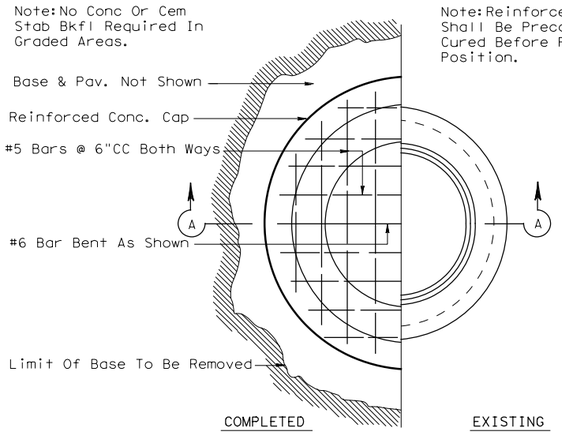
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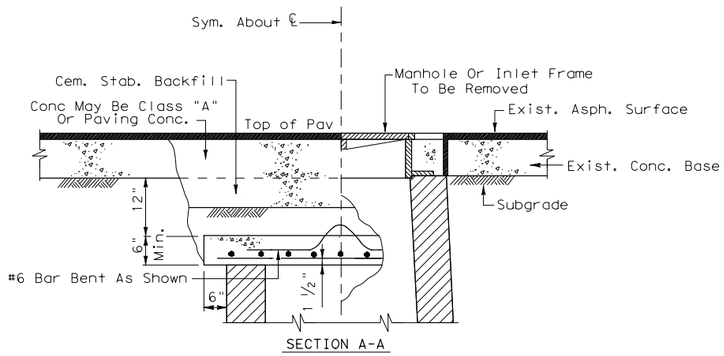
SHEET 1 OF 1

Texas Department of Transportation

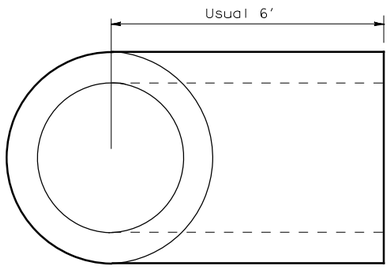
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6	(SEE THE TITLE SHEET)		405
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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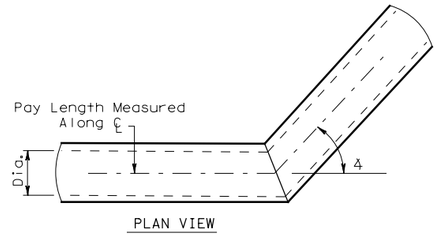


DETAIL SHOWING METHOD OF CAPPING ABANDONED MANHOLES OR INLETS (GRADED OR PAVED AREAS)



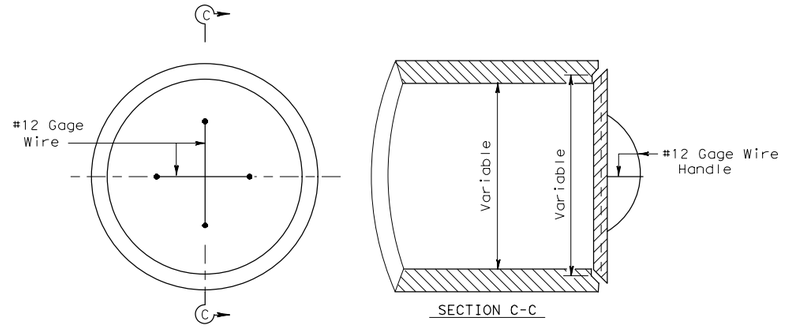
Note: Jointing Material Shall Conform To Requirements Of Item "Reinforced Concrete Pipe." Material For Tees Shall Conform To Requirements Of Item "Reinforced Concrete Pipe." Payment For Tee To Be In Accordance With Item "Reinforced Concrete Pipe."

PRECAST STORM SEWER TEE



BENDING DETAIL

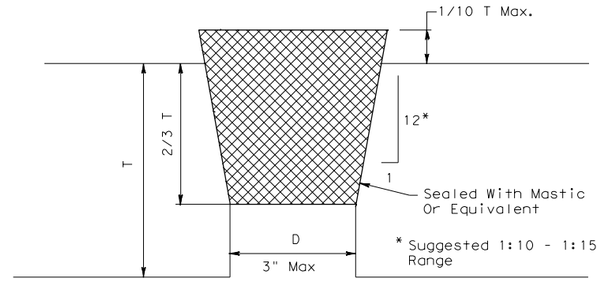
Note: Bending Of Proposed Pipe Sewer Or RCP In A Vertical & /Or Horizontal Plane Shall Be Accomplished By The Use Of A "Pipe Collar" Or A "Precast Elbow", As Approved By The Engineer.
Price Of "Pipe Collar" Or, "Precast Elbow" Shall Be Subsidiary To The Unit Prices Bid For Item Reinforced Concrete Pipe.
Pay Length Measurement To Be Along Horizontal ℄ & Horizontal Plane Of Pipes.



Note: The Price Of Plug Shall Be Subsidiary To The Unit Bid Price For Pipe Sewer Or RCP. Mortar Joints To Be Used As Directed By The Engineer. Removal Of The Existing Plugs For Storm Sewer Or RCP Conns. Shall Be Considered Incidental To Item "Excavation And Backfill For Structures."

Concrete Plug For End Of Pipe Culvert Or Sewer

CONCRETE PLUG FOR PIPE

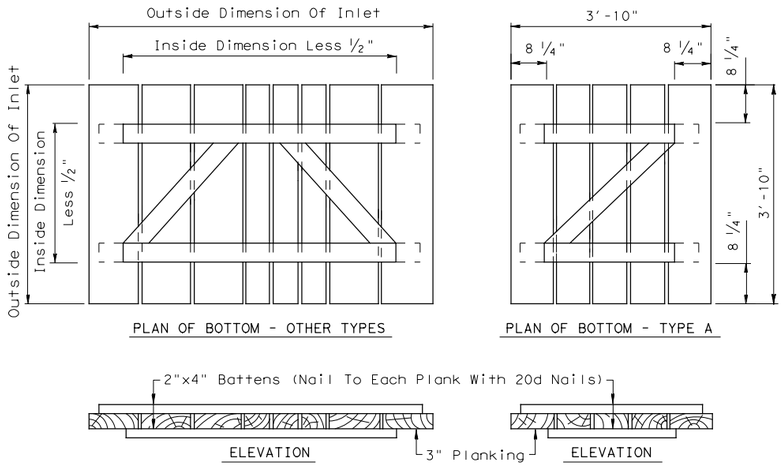


T = Wall Thickness On Top Of Box Or Pipe
D = Diameter Of Lifting Hole

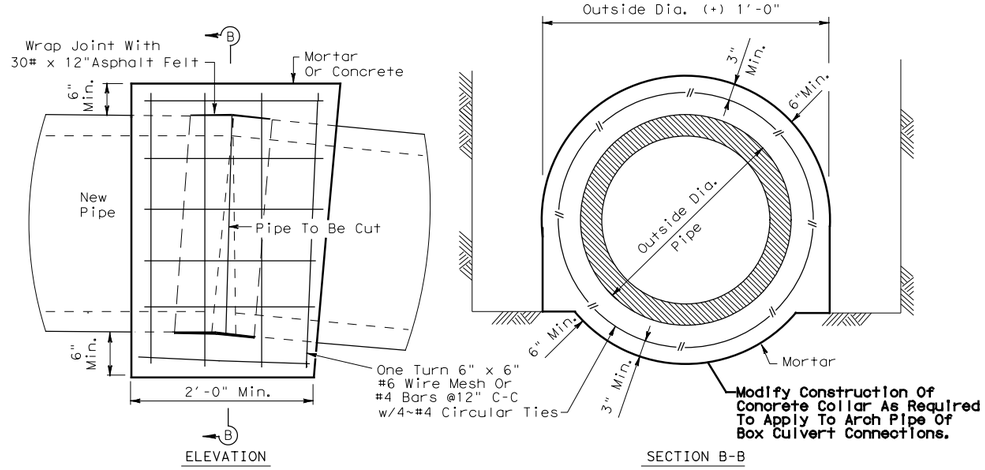
Minimum Length Of Plug Is 2/3 T +/-
Minimum Diameter At Bottom Of Plug = D - ⅛"
Maximum 1/10 T Of Plug Not Seated In Lifting Hole

Note: The Plug Shall Be Cast With The Same Taper As The Lifting Hole.

DETAIL OF PLUG FOR LIFTING HOLES IN RCB AND RCP



TEMPORARY COVERS FOR ALL TYPES OF INLETS



PIPE COLLAR DETAIL

For Horizontal Or Vertical Placement

d = Diameter
R = Radius

STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

Texas Department of Transportation
Houston District (Bridge)

MISCELLANEOUS SEWER DETAILS

MSD

FILE: STDD11.DGN	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK:	
© TxDOT Mar 2004	DISTRICT	FED REG	PROJECT NO.		SHEET
REVISIONS 3/2015 2014 Specs	HOU	6	(SEE THE TITLE SHEET)		406
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	HARRIS		0912	72	360	BSW

STDD11.DGN

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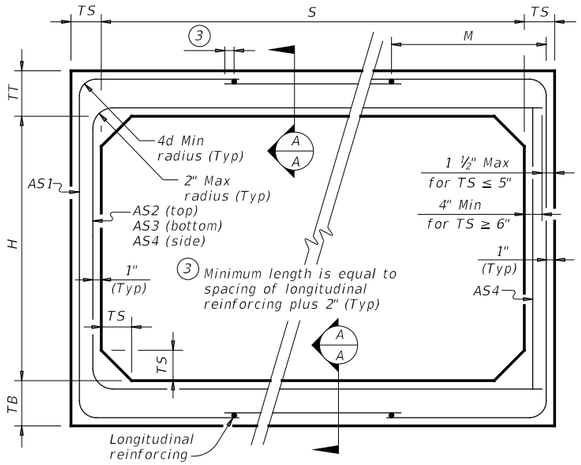
DATE:
FILE:

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
6	2	8	7	7	< 2	–	0.23	0.27	0.19	0.17	0.19	0.19	0.17	7.2
6	2	7	7	7	2 < 3	43	0.25	0.21	0.17	0.17	–	–	–	6.8
6	2	7	7	7	3 – 5	43	0.20	0.17	0.17	0.17	–	–	–	6.8
6	2	7	7	7	10	39	0.20	0.17	0.17	0.17	–	–	–	6.8
6	2	7	7	7	15	39	0.26	0.20	0.20	0.17	–	–	–	6.8
6	2	7	7	7	20	39	0.34	0.26	0.26	0.17	–	–	–	6.8
6	2	7	7	7	25	39	0.43	0.32	0.32	0.17	–	–	–	6.8
6	2	7	7	7	30	39	0.52	0.38	0.39	0.17	–	–	–	6.8
6	3	8	7	7	< 2	–	0.20	0.31	0.22	0.17	0.19	0.19	0.17	7.9
6	3	7	7	7	2 < 3	43	0.21	0.24	0.19	0.17	–	–	–	7.5
6	3	7	7	7	3 – 5	39	0.17	0.18	0.17	0.17	–	–	–	7.5
6	3	7	7	7	10	39	0.17	0.18	0.19	0.17	–	–	–	7.5
6	3	7	7	7	15	38	0.22	0.24	0.24	0.17	–	–	–	7.5
6	3	7	7	7	20	38	0.28	0.31	0.31	0.17	–	–	–	7.5
6	3	7	7	7	25	38	0.35	0.38	0.39	0.17	–	–	–	7.5
6	3	7	7	7	30	38	0.42	0.46	0.46	0.17	–	–	–	7.5
6	4	8	7	7	< 2	–	0.19	0.34	0.25	0.17	0.19	0.19	0.17	8.6
6	4	7	7	7	2 < 3	43	0.19	0.27	0.21	0.17	–	–	–	8.2
6	4	7	7	7	3 – 5	39	0.17	0.21	0.19	0.17	–	–	–	8.2
6	4	7	7	7	10	39	0.17	0.20	0.21	0.17	–	–	–	8.2
6	4	7	7	7	15	38	0.18	0.27	0.27	0.17	–	–	–	8.2
6	4	7	7	7	20	38	0.24	0.34	0.35	0.17	–	–	–	8.2
6	4	7	7	7	25	38	0.29	0.43	0.42	0.17	–	–	–	8.2
6	4	7	7	7	30	38	0.35	0.51	0.52	0.17	–	–	–	8.2
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6	5	7	7	7	25	38	0.25	0.45	0.46	0.17	–	–	–	8.9
6	5	7	7	7	30	38	0.30	0.54	0.55	0.17	–	–	–	8.9
6	6	8	7	7	< 2	–	0.19	0.38	0.30	0.17	0.19	0.19	0.17	10
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6	6	7	7	7	10	43	0.17	0.23	0.24	0.17	–	–	–	9.6
6	6	7	7	7	15	39	0.17	0.29	0.31	0.17	–	–	–	9.6
6	6	7	7	7	20	39	0.18	0.38	0.39	0.17	–	–	–	9.6
6	6	7	7	7	25	38	0.23	0.46	0.48	0.17	–	–	–	9.6
6	6	7	7	7	30	38	0.27	0.55	0.57	0.17	–	–	–	9.6

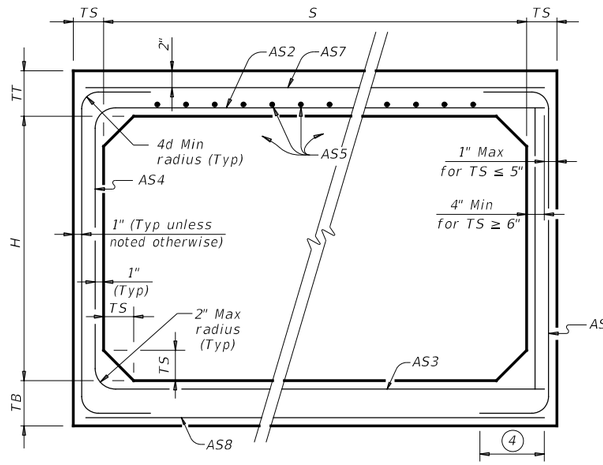
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

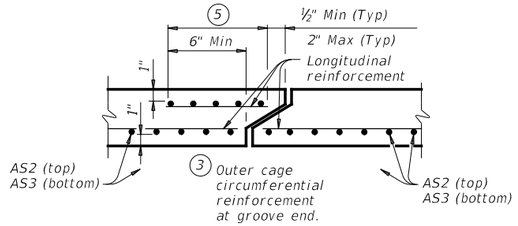
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.

Provide Class H concrete (f`c = 5,000 psi).

GENERAL NOTES:

Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.

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HL93 LOADING

STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

6'-0" SPAN

SCP-6

FILE: scp06sts-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	72	360	BSW
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	12	HARRIS		407

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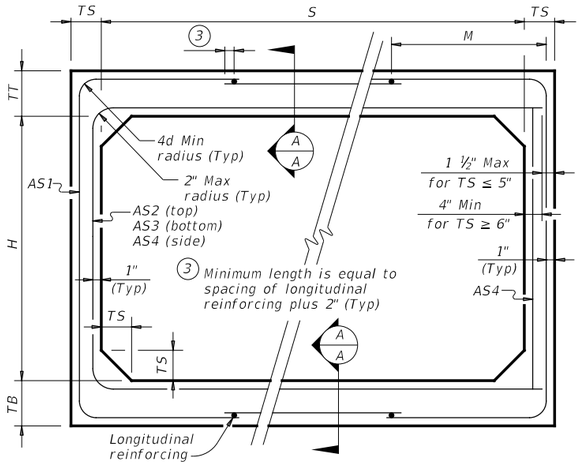
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FILE:

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
8	3	8	8	8	< 2	–	0.31	0.35	0.25	0.19	0.19	0.19	0.19	10.4
8	3	8	8	8	2 < 3	55	0.35	0.29	0.28	0.19	–	–	–	10.4
8	3	8	8	8	3 – 5	50	0.28	0.23	0.24	0.19	–	–	–	10.4
8	3	8	8	8	10	45	0.29	0.25	0.26	0.19	–	–	–	10.4
8	3	8	8	8	15	45	0.39	0.33	0.34	0.19	–	–	–	10.4
8	3	8	8	8	20	45	0.51	0.43	0.44	0.19	–	–	–	10.4
8	3	8	8	8	25	45	0.63	0.53	0.54	0.19	–	–	–	10.4
8	4	8	8	8	< 2	–	0.27	0.38	0.29	0.19	0.19	0.19	0.19	11.2
8	4	8	8	8	2 < 3	50	0.31	0.34	0.32	0.19	–	–	–	11.2
8	4	8	8	8	3 – 5	50	0.25	0.27	0.27	0.19	–	–	–	11.2
8	4	8	8	8	10	45	0.26	0.28	0.29	0.19	–	–	–	11.2
8	4	8	8	8	15	41	0.34	0.37	0.38	0.19	–	–	–	11.2
8	4	8	8	8	20	41	0.44	0.48	0.49	0.19	–	–	–	11.2
8	5	8	8	8	< 2	–	0.24	0.40	0.32	0.19	0.19	0.19	0.19	12.0
8	5	8	8	8	2 < 3	50	0.28	0.37	0.35	0.19	–	–	–	12.0
8	5	8	8	8	3 – 5	45	0.23	0.29	0.30	0.19	–	–	–	12.0
8	5	8	8	8	10	45	0.23	0.31	0.32	0.19	–	–	–	12.0
8	5	8	8	8	15	41	0.30	0.41	0.42	0.19	–	–	–	12.0
8	5	8	8	8	20	41	0.39	0.52	0.54	0.19	–	–	–	12.0
8	6	8	8	8	< 2	–	0.22	0.42	0.35	0.19	0.19	0.19	0.19	12.8
8	6	8	8	8	2 < 3	50	0.25	0.40	0.38	0.19	–	–	–	12.8
8	6	8	8	8	3 – 5	50	0.21	0.32	0.33	0.19	–	–	–	12.8
8	6	8	8	8	10	45	0.22	0.33	0.34	0.19	–	–	–	12.8
8	6	8	8	8	15	41	0.28	0.43	0.45	0.19	–	–	–	12.8
8	6	8	8	8	20	41	0.36	0.55	0.57	0.19	–	–	–	12.8
8	7	8	8	8	< 2	–	0.20	0.44	0.37	0.19	0.19	0.19	0.19	13.6
8	7	8	8	8	2 < 3	55	0.23	0.43	0.41	0.19	–	–	–	13.6
8	7	8	8	8	3 – 5	55	0.19	0.34	0.35	0.19	–	–	–	13.6
8	7	8	8	8	10	50	0.20	0.34	0.36	0.19	–	–	–	13.6
8	7	8	8	8	15	41	0.26	0.45	0.47	0.19	–	–	–	13.6
8	7	8	8	8	20	41	0.33	0.57	0.60	0.19	–	–	–	13.6
8	8	8	8	8	< 2	–	0.20	0.45	0.40	0.19	0.19	0.19	0.19	14.4
8	8	8	8	8	2 < 3	65	0.21	0.45	0.44	0.19	–	–	–	14.4
8	8	8	8	8	3 – 5	65	0.19	0.36	0.38	0.19	–	–	–	14.4
8	8	8	8	8	10	55	0.19	0.35	0.38	0.19	–	–	–	14.4
8	8	8	8	8	15	45	0.24	0.46	0.49	0.19	–	–	–	14.4
8	8	8	8	8	20	45	0.31	0.59	0.62	0.19	–	–	–	14.4

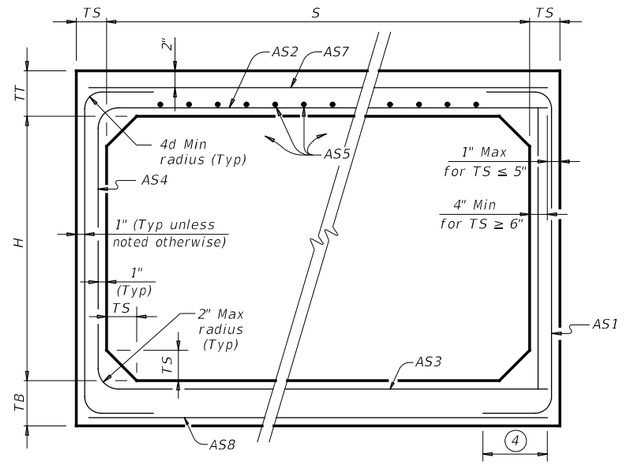
(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.



CORNER OPTION "A" CORNER OPTION "B"

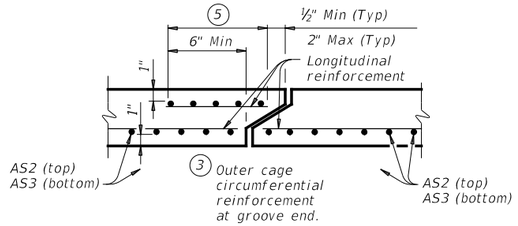
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.

Provide Class H concrete (f`c = 5,000 psi).

GENERAL NOTES:

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HL93 LOADING

STATE OF TEXAS
JOHN PETERSON
86318
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

8'-0" SPAN

SCP-8

FILE: scp08sts-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0912	72	360	BSW
	DIST	COUNTY		SHEET NO.
	12	HARRIS		408

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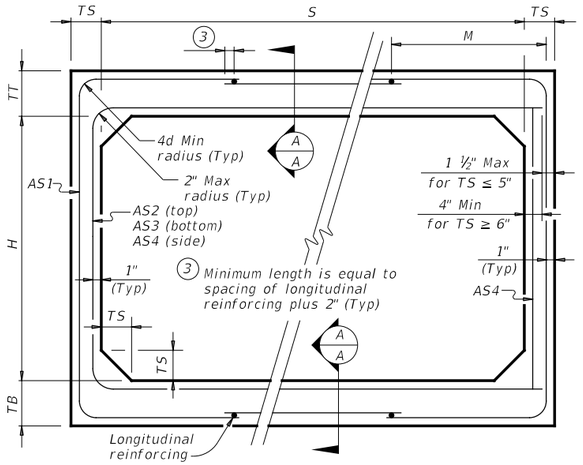
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BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
10	4	10	10	10	< 2	–	0.33	0.34	0.27	0.24	0.24	0.24	0.24	16.5
10	4	10	10	10	2 < 3	58	0.38	0.35	0.30	0.24	–	–	–	16.5
10	4	10	10	10	3 – 5	53	0.31	0.28	0.27	0.24	–	–	–	16.5
10	4	10	10	10	10	52	0.36	0.32	0.33	0.24	–	–	–	16.5
10	4	10	10	10	15	52	0.47	0.42	0.43	0.24	–	–	–	16.5
10	4	10	10	10	20	52	0.61	0.54	0.55	0.24	–	–	–	16.5
10	4	10	10	10	25	52	0.75	0.67	0.68	0.24	–	–	–	16.5
10	5	10	10	10	< 2	–	0.30	0.36	0.30	0.24	0.24	0.24	0.24	17.5
10	5	10	10	10	2 < 3	58	0.35	0.39	0.34	0.24	–	–	–	17.5
10	5	10	10	10	3 – 5	52	0.28	0.31	0.30	0.24	–	–	–	17.5
10	5	10	10	10	10	52	0.33	0.35	0.36	0.24	–	–	–	17.5
10	5	10	10	10	15	47	0.42	0.46	0.47	0.24	–	–	–	17.5
10	5	10	10	10	20	47	0.55	0.59	0.61	0.24	–	–	–	17.5
10	5	10	10	10	25	47	0.68	0.73	0.75	0.24	–	–	–	17.5
10	6	10	10	10	< 2	–	0.28	0.38	0.33	0.24	0.24	0.24	0.24	18.5
10	6	10	10	10	2 < 3	58	0.32	0.42	0.37	0.24	–	–	–	18.5
10	6	10	10	10	3 – 5	53	0.26	0.34	0.33	0.24	–	–	–	18.5
10	6	10	10	10	10	52	0.30	0.38	0.39	0.24	–	–	–	18.5
10	6	10	10	10	15	47	0.39	0.49	0.51	0.24	–	–	–	18.5
10	6	10	10	10	20	47	0.50	0.63	0.65	0.24	–	–	–	18.5
10	6	10	10	10	25	47	0.61	0.78	0.80	0.24	–	–	–	18.5
10	7	10	10	10	< 2	–	0.25	0.40	0.36	0.24	0.24	0.24	0.24	19.5
10	7	10	10	10	2 < 3	58	0.30	0.45	0.40	0.24	–	–	–	19.5
10	7	10	10	10	3 – 5	58	0.24	0.36	0.35	0.24	–	–	–	19.5
10	7	10	10	10	10	52	0.28	0.40	0.42	0.24	–	–	–	19.5
10	7	10	10	10	15	47	0.36	0.52	0.54	0.24	–	–	–	19.5
10	7	10	10	10	20	47	0.46	0.67	0.69	0.24	–	–	–	19.5
10	7	10	10	10	25	47	0.56	0.82	0.85	0.24	–	–	–	19.5
10	8	10	10	10	< 2	–	0.24	0.41	0.38	0.24	0.24	0.24	0.24	20.5
10	8	10	10	10	2 < 3	64	0.27	0.47	0.43	0.24	–	–	–	20.5
10	8	10	10	10	3 – 5	58	0.24	0.38	0.38	0.24	–	–	–	20.5
10	8	10	10	10	10	52	0.26	0.42	0.44	0.24	–	–	–	20.5
10	8	10	10	10	15	47	0.34	0.54	0.57	0.24	–	–	–	20.5
10	8	10	10	10	20	47	0.43	0.69	0.72	0.24	–	–	–	20.5
10	9	10	10	10	< 2	–	0.24	0.42	0.41	0.24	0.24	0.24	0.24	21.5
10	9	10	10	10	2 < 3	70	0.26	0.50	0.46	0.24	–	–	–	21.5
10	9	10	10	10	3 – 5	64	0.24	0.40	0.40	0.24	–	–	–	21.5
10	9	10	10	10	10	58	0.25	0.43	0.46	0.24	–	–	–	21.5
10	9	10	10	10	15	52	0.32	0.56	0.59	0.24	–	–	–	21.5
10	9	10	10	10	20	47	0.40	0.71	0.75	0.24	–	–	–	21.5
10	10	10	10	10	< 2	–	0.24	0.44	0.44	0.24	0.24	0.24	0.24	22.5
10	10	10	10	10	2 < 3	79	0.25	0.52	0.48	0.24	–	–	–	22.5
10	10	10	10	10	3 – 5	70	0.24	0.42	0.43	0.24	–	–	–	22.5
10	10	10	10	10	10	64	0.24	0.44	0.48	0.24	–	–	–	22.5
10	10	10	10	10	15	52	0.30	0.57	0.61	0.24	–	–	–	22.5
10	10	10	10	10	20	52	0.38	0.73	0.77	0.24	–	–	–	22.5

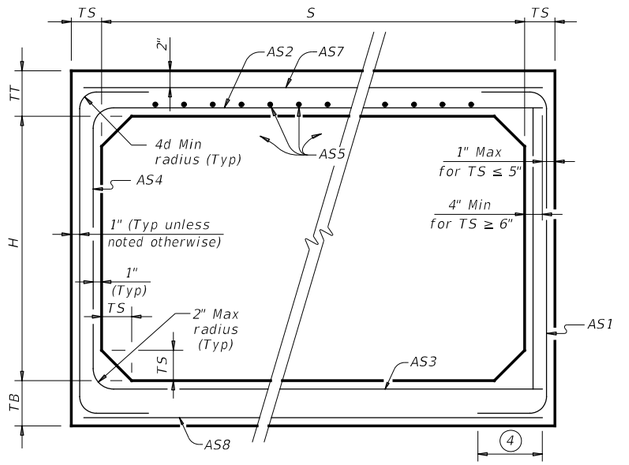
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CORNER OPTION "A" CORNER OPTION "B"

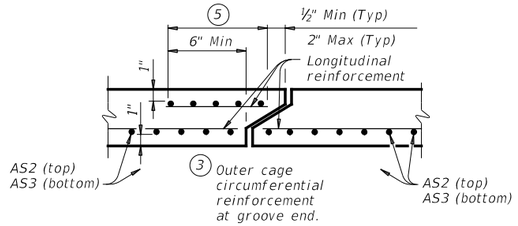
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:

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HL93 LOADING

STATE OF TEXAS
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8/24/2020

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

10'-0" SPAN

SCP-10

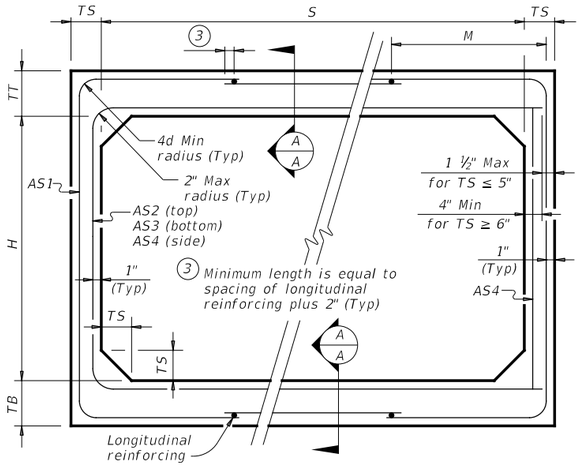
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REVISIONS	0912	72	360	BSW
	DIST	COUNTY		SHEET NO.
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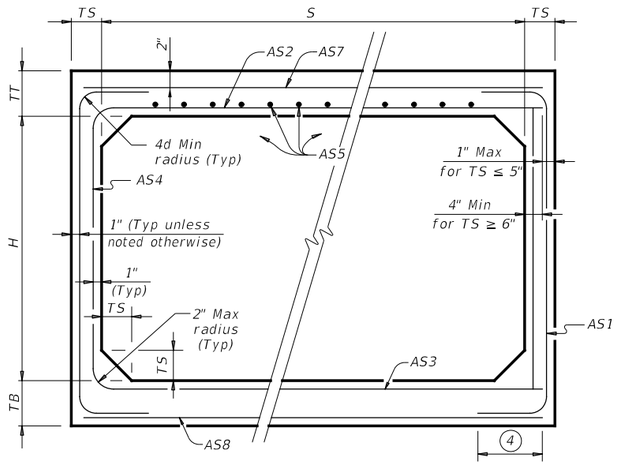
BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
11	4	11	11	11	< 2	–	0.36	0.33	0.27	0.26	0.26	0.26	0.26	19.5
11	4	11	11	11	2 < 3	62	0.41	0.36	0.30	0.26	–	–	–	19.5
11	4	11	11	11	3 – 5	62	0.34	0.29	0.27	0.26	–	–	–	19.5
11	4	11	11	11	10	55	0.41	0.34	0.35	0.26	–	–	–	19.5
11	4	11	11	11	15	55	0.53	0.44	0.45	0.26	–	–	–	19.5
11	4	11	11	11	20	55	0.69	0.57	0.58	0.26	–	–	–	19.5
11	4	11	11	11	25	55	0.86	0.70	0.72	0.26	–	–	–	19.5
11	5	11	11	11	< 2	–	0.32	0.35	0.29	0.26	0.26	0.26	0.26	20.6
11	5	11	11	11	2 < 3	62	0.38	0.39	0.33	0.26	–	–	–	20.6
11	5	11	11	11	3 – 5	57	0.31	0.32	0.30	0.26	–	–	–	20.6
11	5	11	11	11	10	55	0.37	0.37	0.38	0.26	–	–	–	20.6
11	5	11	11	11	15	55	0.49	0.49	0.50	0.26	–	–	–	20.6
11	5	11	11	11	20	50	0.63	0.63	0.64	0.26	–	–	–	20.6
11	5	11	11	11	25	50	0.78	0.77	0.79	0.26	–	–	–	20.6
11	6	11	11	11	< 2	–	0.30	0.36	0.33	0.26	0.26	0.26	0.26	21.7
11	6	11	11	11	2 < 3	62	0.35	0.43	0.37	0.26	–	–	–	21.7
11	6	11	11	11	3 – 5	55	0.29	0.35	0.33	0.26	–	–	–	21.7
11	6	11	11	11	10	55	0.35	0.40	0.42	0.26	–	–	–	21.7
11	6	11	11	11	15	50	0.45	0.52	0.54	0.26	–	–	–	21.7
11	6	11	11	11	20	50	0.57	0.67	0.69	0.26	–	–	–	21.7
11	6	11	11	11	25	50	0.71	0.83	0.85	0.26	–	–	–	21.7
11	7	11	11	11	< 2	–	0.27	0.38	0.35	0.26	0.26	0.26	0.26	22.8
11	7	11	11	11	2 < 3	62	0.32	0.45	0.40	0.26	–	–	–	22.8
11	7	11	11	11	3 – 5	55	0.27	0.37	0.35	0.26	–	–	–	22.8
11	7	11	11	11	10	55	0.32	0.42	0.44	0.26	–	–	–	22.8
11	7	11	11	11	15	50	0.41	0.55	0.57	0.26	–	–	–	22.8
11	7	11	11	11	20	50	0.53	0.71	0.73	0.26	–	–	–	22.8
11	7	11	11	11	25	50	0.65	0.87	0.90	0.26	–	–	–	22.8
11	8	11	11	11	< 2	–	0.26	0.40	0.38	0.26	0.26	0.26	0.26	23.9
11	8	11	11	11	2 < 3	62	0.30	0.48	0.42	0.26	–	–	–	23.9
11	8	11	11	11	3 – 5	62	0.26	0.40	0.38	0.26	–	–	–	23.9
11	8	11	11	11	10	55	0.30	0.44	0.47	0.26	–	–	–	23.9
11	8	11	11	11	15	50	0.39	0.58	0.60	0.26	–	–	–	23.9
11	8	11	11	11	20	50	0.49	0.74	0.77	0.26	–	–	–	23.9
11	8	11	11	11	25	50	0.61	0.91	0.94	0.26	–	–	–	23.9
11	9	11	11	11	< 2	–	0.26	0.42	0.40	0.26	0.26	0.26	0.26	25
11	9	11	11	11	2 < 3	69	0.28	0.51	0.45	0.26	–	–	–	25
11	9	11	11	11	3 – 5	62	0.26	0.42	0.40	0.26	–	–	–	25
11	9	11	11	11	10	55	0.29	0.46	0.49	0.26	–	–	–	25
11	9	11	11	11	15	50	0.37	0.60	0.63	0.26	–	–	–	25
11	9	11	11	11	20	50	0.47	0.76	0.80	0.26	–	–	–	25
11	9	11	11	11	25	50	0.57	0.94	0.98	0.26	–	–	–	25
11	10	11	11	11	< 2	–	0.26	0.45	0.43	0.26	0.26	0.26	0.26	26.1
11	10	11	11	11	2 < 3	75	0.27	0.53	0.48	0.26	–	–	–	26.1
11	10	11	11	11	3 – 5	69	0.26	0.44	0.43	0.26	–	–	–	26.1
11	10	11	11	11	10	62	0.28	0.48	0.52	0.26	–	–	–	26.1
11	10	11	11	11	15	55	0.35	0.61	0.65	0.26	–	–	–	26.1
11	10	11	11	11	20	55	0.44	0.78	0.83	0.26	–	–	–	26.1
11	11	11	11	11	< 2	–	0.26	0.47	0.46	0.26	0.26	0.26	0.26	27.2
11	11	11	11	11	2 < 3	86	0.26	0.55	0.51	0.26	–	–	–	27.2
11	11	11	11	11	3 – 5	75	0.26	0.46	0.45	0.26	–	–	–	27.2
11	11	11	11	11	10	69	0.27	0.49	0.54	0.26	–	–	–	27.2
11	11	11	11	11	15	55	0.34	0.63	0.68	0.26	–	–	–	27.2
11	11	11	11	11	20	55	0.42	0.80	0.85	0.26	–	–	–	27.2



CORNER OPTION "A" CORNER OPTION "B"

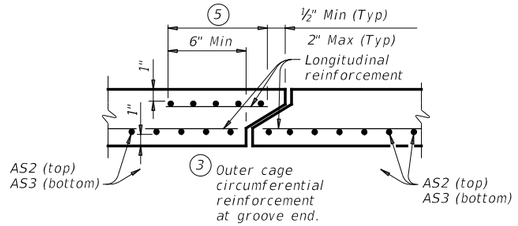
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.

Provide Class H concrete (f`c = 5,000 psi).

GENERAL NOTES:

Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.

See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.

In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
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8/24/2020

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

11'-0" SPAN

SCP-11

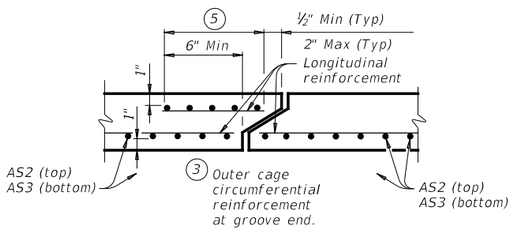
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©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS		0912	72	360	BSW
		DIST	COUNTY		SHEET NO.
		12	HARRIS		410

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DATE:
FILE:

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
12	4	12	12	12	< 2	–	0.38	0.31	0.29	0.29	0.29	0.29	0.29	22.8
12	4	12	12	12	2 < 3	73	0.44	0.37	0.30	0.29	–	–	–	22.8
12	4	12	12	12	3 – 5	66	0.37	0.30	0.29	0.29	–	–	–	22.8
12	4	12	12	12	10	66	0.44	0.34	0.35	0.29	–	–	–	22.8
12	4	12	12	12	15	59	0.60	0.46	0.48	0.29	–	–	–	22.8
12	4	12	12	12	20	59	0.78	0.60	0.61	0.29	–	–	–	22.8
12	4	12	12	12	25	59	0.97	0.74	0.75	0.29	–	–	–	22.8
12	5	12	12	12	< 2	–	0.34	0.33	0.29	0.29	0.29	0.29	0.29	24.0
12	5	12	12	12	2 < 3	66	0.41	0.40	0.33	0.29	–	–	–	24.0
12	5	12	12	12	3 – 5	61	0.34	0.33	0.30	0.29	–	–	–	24.0
12	5	12	12	12	10	59	0.41	0.38	0.39	0.29	–	–	–	24.0
12	5	12	12	12	15	59	0.55	0.51	0.52	0.29	–	–	–	24.0
12	5	12	12	12	20	59	0.71	0.66	0.67	0.29	–	–	–	24.0
12	5	12	12	12	25	59	0.88	0.81	0.82	0.29	–	–	–	24.0
12	6	12	12	12	< 2	–	0.32	0.36	0.32	0.29	0.29	0.29	0.29	25.2
12	6	12	12	12	2 < 3	66	0.38	0.43	0.36	0.29	–	–	–	25.2
12	6	12	12	12	3 – 5	59	0.32	0.36	0.33	0.29	–	–	–	25.2
12	6	12	12	12	10	59	0.38	0.41	0.42	0.29	–	–	–	25.2
12	6	12	12	12	15	53	0.51	0.55	0.57	0.29	–	–	–	25.2
12	6	12	12	12	20	53	0.65	0.71	0.72	0.29	–	–	–	25.2
12	6	12	12	12	25	53	0.81	0.87	0.89	0.29	–	–	–	25.2
12	7	12	12	12	< 2	–	0.30	0.39	0.35	0.29	0.29	0.29	0.29	26.4
12	7	12	12	12	2 < 3	66	0.35	0.46	0.39	0.29	–	–	–	26.4
12	7	12	12	12	3 – 5	59	0.29	0.38	0.36	0.29	–	–	–	26.4
12	7	12	12	12	10	59	0.36	0.43	0.45	0.29	–	–	–	26.4
12	7	12	12	12	15	53	0.47	0.58	0.61	0.29	–	–	–	26.4
12	7	12	12	12	20	53	0.61	0.75	0.77	0.29	–	–	–	26.4
12	8	12	12	12	< 2	–	0.29	0.41	0.38	0.29	0.29	0.29	0.29	27.6
12	8	12	12	12	2 < 3	66	0.33	0.49	0.42	0.29	–	–	–	27.6
12	8	12	12	12	3 – 5	59	0.29	0.41	0.38	0.29	–	–	–	27.6
12	8	12	12	12	10	59	0.34	0.46	0.48	0.29	–	–	–	27.6
12	8	12	12	12	15	53	0.44	0.61	0.64	0.29	–	–	–	27.6
12	8	12	12	12	20	53	0.57	0.78	0.81	0.29	–	–	–	27.6
12	8	12	12	12	25	53	0.69	0.96	0.99	0.29	–	–	–	27.6



SECTION A-A

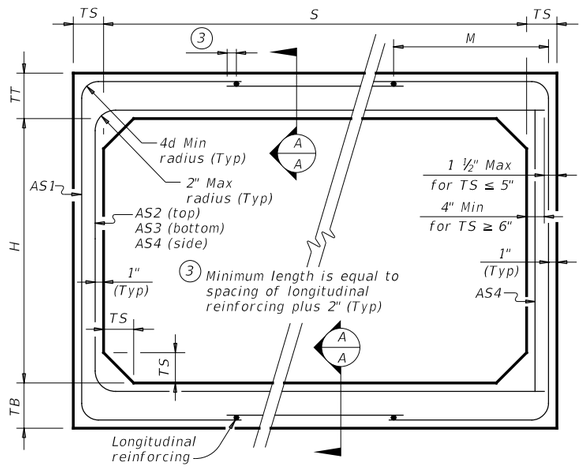
(Showing top and bottom slab joint reinforcement.)

(1) For box length = 8'-0"

(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.

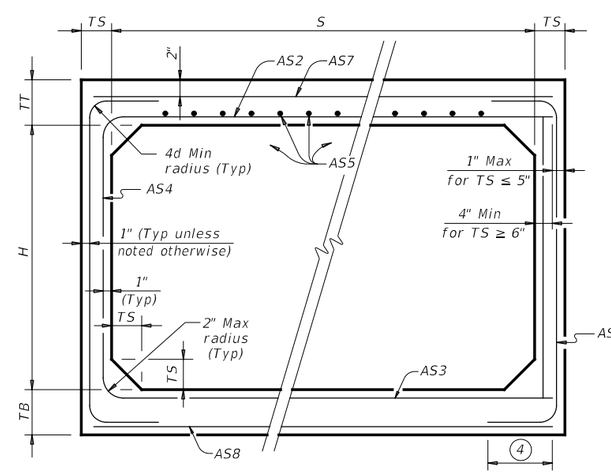
BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (sq. in. / ft.) (2)							(1) Lift Weight
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)	(ft.)	(in.)	AS1	AS2	AS3	AS4	AS5	AS7	AS8	(tons)
12	9	12	12	12	< 2	–	0.29	0.43	0.40	0.29	0.29	0.29	0.29	28.8
12	9	12	12	12	2 < 3	66	0.30	0.51	0.45	0.29	–	–	–	28.8
12	9	12	12	12	3 – 5	66	0.29	0.43	0.41	0.29	–	–	–	28.8
12	9	12	12	12	10	59	0.32	0.47	0.51	0.29	–	–	–	28.8
12	9	12	12	12	15	53	0.42	0.63	0.67	0.29	–	–	–	28.8
12	9	12	12	12	20	53	0.53	0.81	0.85	0.29	–	–	–	28.8
12	9	12	12	12	25	53	0.69	0.96	0.99	0.29	–	–	–	28.8
12	10	12	12	12	< 2	–	0.29	0.45	0.43	0.29	0.29	0.29	0.29	30.0
12	10	12	12	12	2 < 3	73	0.29	0.54	0.48	0.29	–	–	–	30.0
12	10	12	12	12	3 – 5	66	0.29	0.45	0.43	0.29	–	–	–	30.0
12	10	12	12	12	10	59	0.31	0.49	0.53	0.29	–	–	–	30.0
12	10	12	12	12	15	53	0.40	0.65	0.70	0.29	–	–	–	30.0
12	10	12	12	12	20	53	0.51	0.84	0.88	0.29	–	–	–	30.0
12	10	12	12	12	25	53	0.62	1.03	1.07	0.29	–	–	–	30.0
12	11	12	12	12	< 2	–	0.29	0.47	0.45	0.29	0.29	0.29	0.29	31.2
12	11	12	12	12	2 < 3	80	0.29	0.56	0.51	0.29	–	–	–	31.2
12	11	12	12	12	3 – 5	73	0.29	0.47	0.46	0.29	–	–	–	31.2
12	11	12	12	12	10	66	0.29	0.51	0.55	0.29	–	–	–	31.2
12	11	12	12	12	15	59	0.38	0.67	0.72	0.29	–	–	–	31.2
12	11	12	12	12	20	53	0.48	0.85	0.91	0.29	–	–	–	31.2
12	11	12	12	12	25	53	0.59	1.05	1.10	0.29	–	–	–	31.2
12	12	12	12	12	< 2	–	0.29	0.49	0.48	0.33	0.29	0.29	0.29	32.4
12	12	12	12	12	2 < 3	93	0.29	0.59	0.53	0.29	–	–	–	32.4
12	12	12	12	12	3 – 5	80	0.29	0.49	0.48	0.29	–	–	–	32.4
12	12	12	12	12	10	73	0.29	0.52	0.58	0.29	–	–	–	32.4
12	12	12	12	12	15	59	0.37	0.69	0.74	0.29	–	–	–	32.4
12	12	12	12	12	20	59	0.46	0.87	0.93	0.29	–	–	–	32.4



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

(4) Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)

MATERIAL NOTES:

Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.

Provide Class H concrete (f`c = 5,000 psi).

GENERAL NOTES:

Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.

See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.

In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

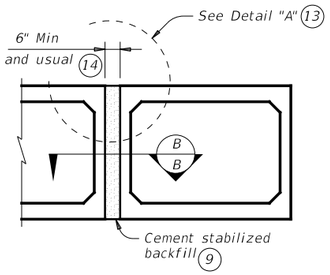
12'-0" SPAN

SCP-12

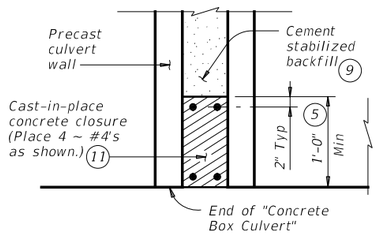
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		DIST	COUNTY		SHEET NO.
		12	HARRIS		411

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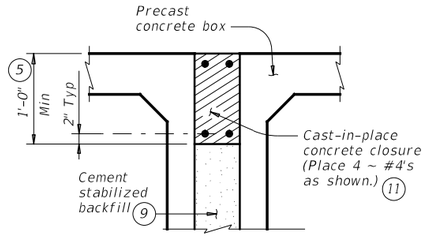
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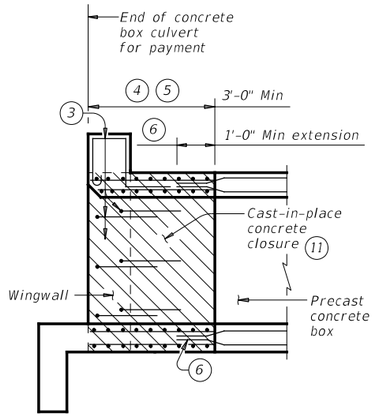
MULTIPLE UNIT PLACEMENT



SECTION B-B

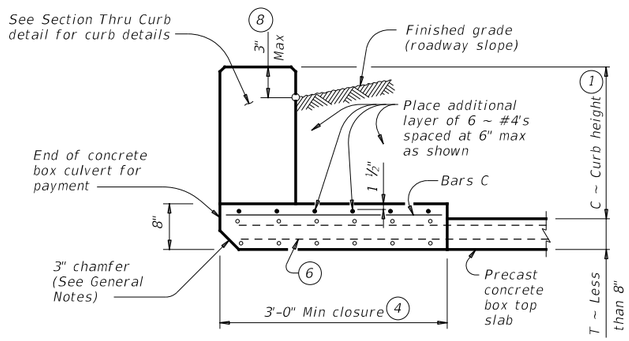


DETAIL "A" (13)

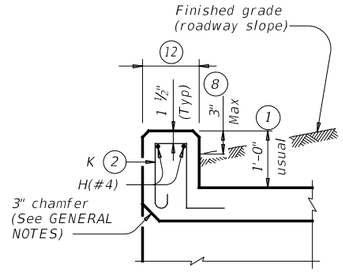


WINGWALL CONNECTION

(Also applies to safety end treatment.)

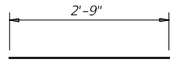


SECTION THRU TOP SLABS LESS THAN 8"

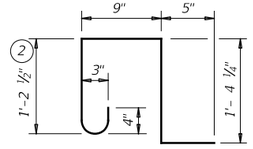


SECTION THRU CURB

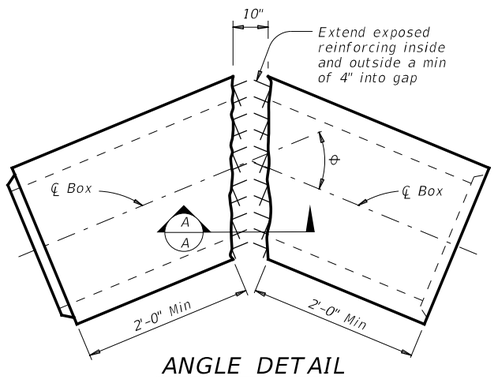
QUANTITIES PER FOOT OF CURB (10)	
Reinforcing Steel	4.12 Lb
Concrete	0.037 CY



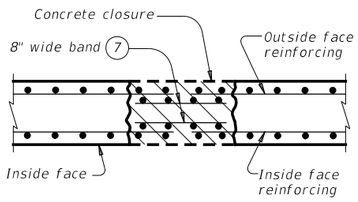
BARS C (#4)
(Spa = 1'–0" Max)



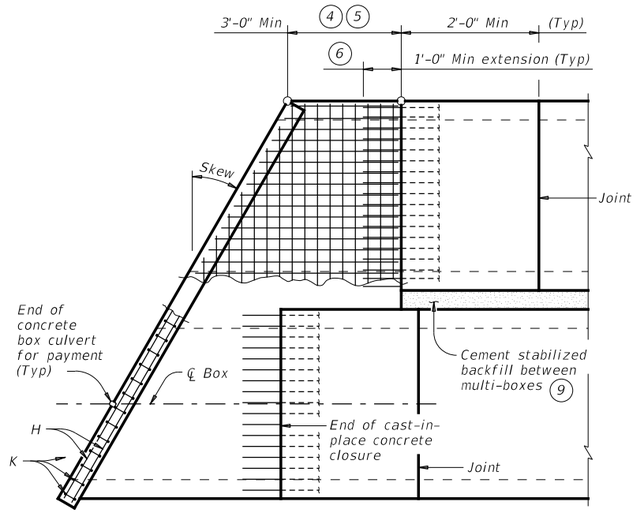
BARS K (#4)
(Spa = 1'–0" Max)
(Length = 4'–2")



ANGLE DETAIL



SECTION A-A



PLAN OF SKEWED ENDS

(Showing multi–box placement.)

1. 0" Min to 5'–0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail, or curbs taller than 1'–0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631–CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
2. For curbs less than 1'–0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.
3. Extend curb, wingwall, or safety end treatment reinforcing into concrete closure. Bend or trim, as necessary, any reinforcing that does not fit into closure area.
4. Provide a 3'–0" Min cast–in–place concrete closure. Break back boxes in the field or cast boxes short. Provide bands of reinforcing in the closure that are the same size and spacing as in the precast box section. Provide #4 longitudinal reinforcement spaced at 12 inches Max within the closure. Except where shown otherwise, construct the cast–in–place closure flush with the inside and outside faces of the precast box section.
5. For multiple unit placements, adjust the length of the closure for the interior walls as necessary. Provide a 3'–0" Min cast–in–place closure in the top slab, bottom slab, and exterior wall. See Section B–B detail when interior walls are cast full length.
6. Extend precast box reinforcing a minimum of 1'–0" into concrete closure (Typ).
7. Place bands of reinforcing matching the inside and outside face reinforcing in the gaps of the top and bottom slabs. Place a band matching the outside face reinforcing of the wall in the gaps of the walls (placed in the outside face only). Tack weld the bands to the exposed reinforcing at each point of contact.
8. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
9. Cement stabilized backfill between boxes is considered part of the box culvert for payment.
10. All curb concrete and reinforcing is considered part of the box culvert for payment.
11. Any additional concrete and reinforcing required for the closures will be considered subsidiary to the box culvert for payment.
12. 1'–0" typical. 2'–3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.
13. For multiple unit placement with overlay, with 1 to 2 course surface treatment, or with the top slab as the final riding surface, provide wall closure as shown in Detail "A".
14. This dimension may be increased with approval of the Engineer to allow the precast boxes to be tunneled or jacked in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box". No payment will be made for any additional material in the gap between adjacent boxes.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide ASTM A1064 welded wire reinforcement.
Provide Class C concrete (f'c = 3,600 psi) for the closures.
Provide cement stabilized backfill meeting the requirements of Item 400, "Excavation and Backfill for Structures."
Any additional concrete required for the closures will be considered subsidiary to the box culvert.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to the Single Box Culverts Precast (SCP) standard sheets for details and notes not shown.
Chamfer the bottom edge of the top slab closure 3 inches at culvert closure ends.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bars dimensions are out–to–out of bars.

HL93 LOADING

Texas Department of Transportation

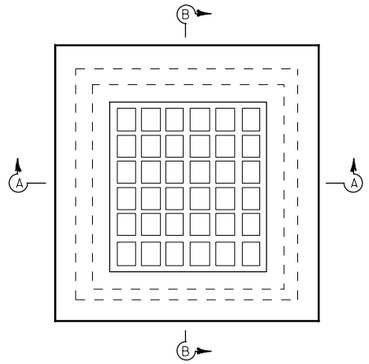
Bridge Division Standard

BOX CULVERTS PRECAST MISCELLANEOUS DETAILS

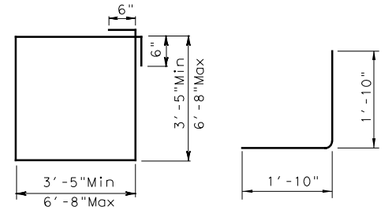
SCP-MD

STATE OF TEXAS
JOHN PETERSON
98319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

FILE: scpmdsts-20.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	72	360	BSW
	DIST	COUNTY		SHEET NO.
	12	HARRIS		412

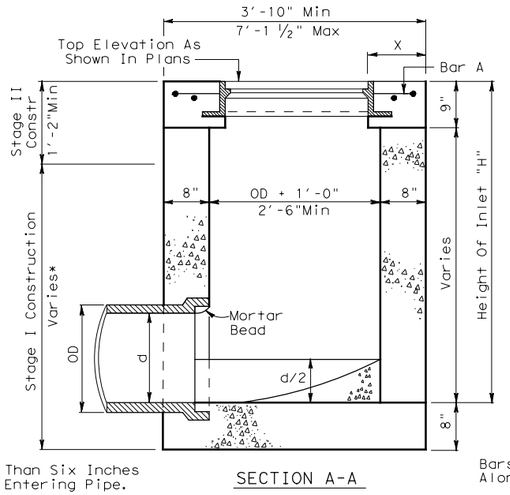


PLAN



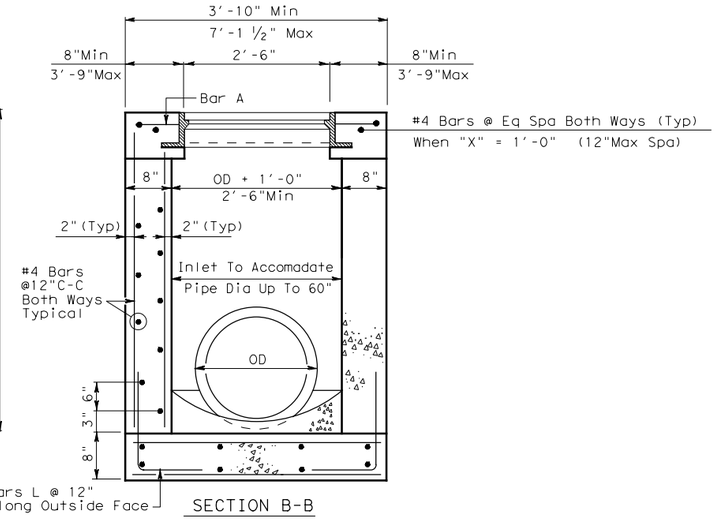
BAR A (#4)

BAR L (#4)



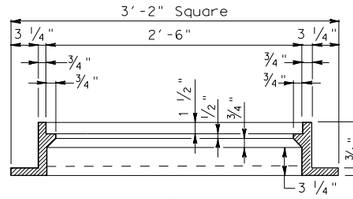
* But Not Less Than Six Inches
Over Highest Entering Pipe.

SECTION A-A

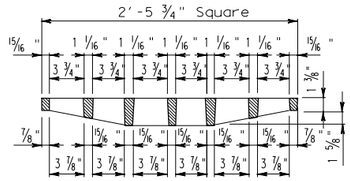


SECTION B-B

TYPE A INLET



SECTION THRU FRAME



SECTION THRU GRATE

FRAME AND GRATE

Neenah No. R3418-A
EJIW No. V-4880-1

GENERAL NOTES:

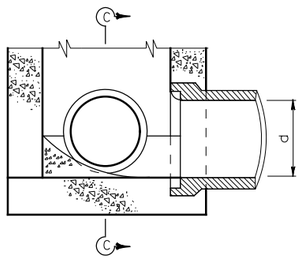
Where Size Of Pipes Passing Thru Inlet Exceeds 30" Increase Inside Width To Outside Diameter Of Pipe Plus 1'-0" (OD + 1'-0").

See Standard or Detail Sheet For Excavation and Backfill Diagrams.

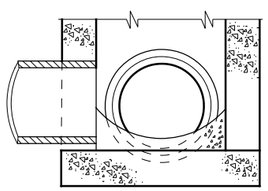
Inlets Shall Be Built To Stage I And Finished After All Grading Operations Are Substantially Completed.

Frames And Grates May Be Gray Cast Iron.

Shop Drawings Will Be Required For Precast Construction Of Inlets.

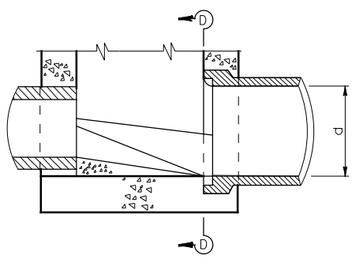


PART SECTION AT INVERT

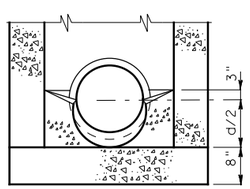


SECTION C-C

Showing Shaping Of Invert, Pipe Entering From Adjacent Sides



PART SECTION AT INVERT



SECTION D-D

Showing Shaping Of Invert, Pipe Entering From Opposite Sides

NOT FOR TRAFFIC LOADS

STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

d = Diameter

Texas Department of Transportation
Houston District

INLET TYPE A

HIL-A

FILE: STDD4.DGN	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	STD:	
© TxDOT 2014	DIST	FED REG	PROJECT NO.			SHEET
REVISIONS	HOUS	6	(SEE THE TITLE SHEET)			413
9/30/2016: Removed Manhole Steps	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	HARRIS		0912	72	360	BSW

STDD4.DGN

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing length (2~wings) (3)	
					Bars J1		Bars J2			
Maximum Wingwall Height Hw	W	X	Y	Z	Size	Spa	Size	Spa	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.26	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.55	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING
(2~wings)

Bar	Size	No.	Spa
DL	#5	~	1'-0"
DS	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
RS	#5	3	~
RL	#5	3	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:
(All values are in feet.)

Hw = H + T + C – 0.250'
A = (Hw – 0.333')(Sc)
B = (A) [tanget (θ + 15°)]
Lw = (A) ÷ [cosine (θ + 15°)]

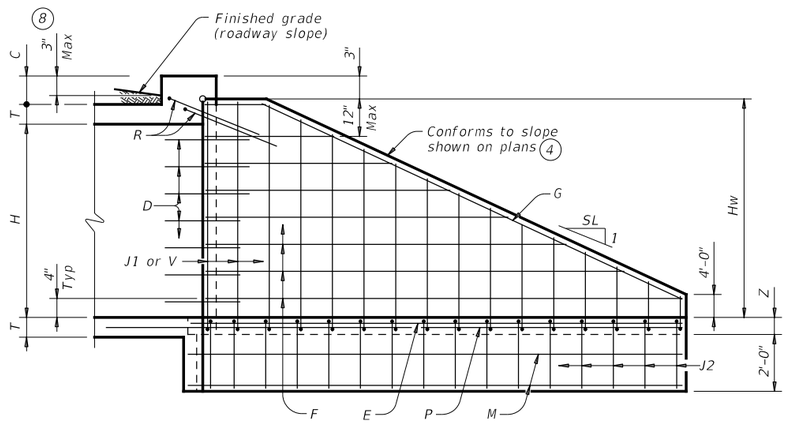
For cast–in–place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ cosine θ

For precast culverts:
Ltw = [(N) (2U + S) + (N – 1) (0.5')] ÷ cosine θ

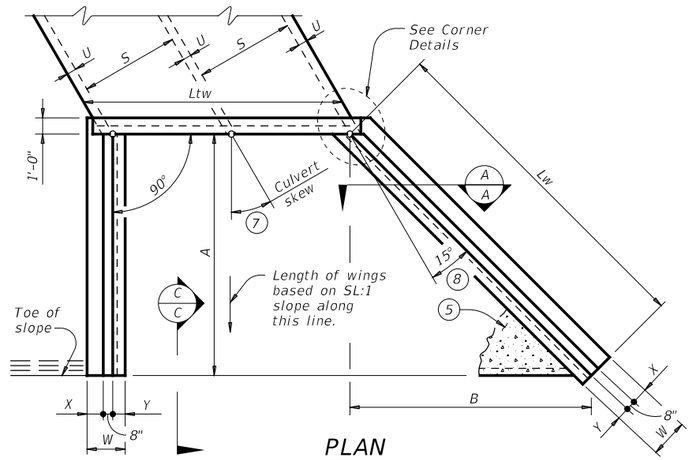
Total wingwall area (two wings ~ SF) = 0.5 (Hw + 0.333') (Lw + A)

Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
A = Length of short wingwalls
Lw = Length of long wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
θ = Culvert skew

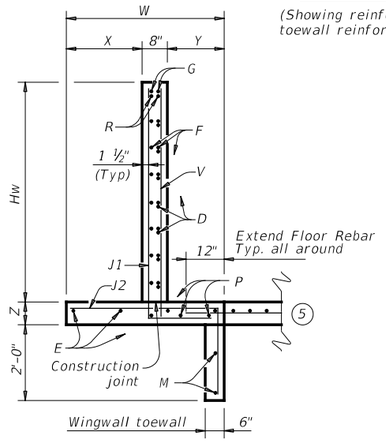
See applicable box culvert standard sheet for H, S, T, and U values.



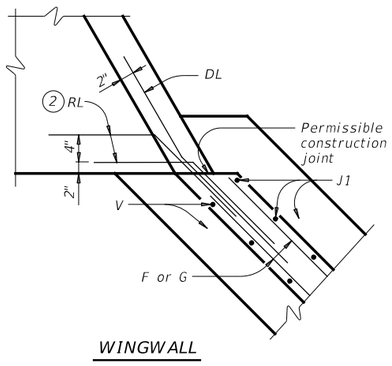
INSIDE ELEVATION
(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)



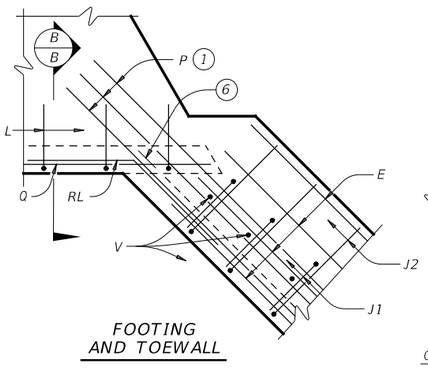
PLAN
(Showing dimensions and 30° skew.)



SECTION A-A

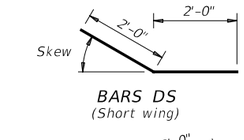


WINGWALL

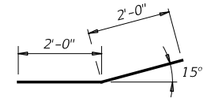


FOOTING AND TOEWALL

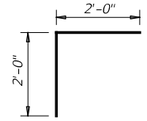
CORNER DETAILS
(Culvert and culvert toewall reinforcing not shown for clarity.)



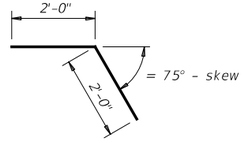
BARS DS
(Short wing)



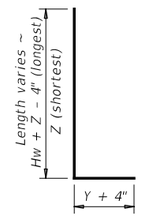
BARS DL
(Long wing)



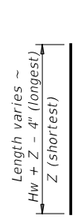
BARS RS
(Short wing)



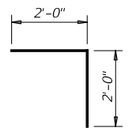
BARS RL
(Long wing)



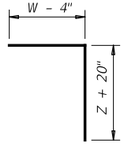
BARS J1



BARS V



BARS L



BARS J2

1. Extend Bars P 3'–0" minimum into bottom slab of box culvert.
2. Adjust as necessary to maintain 1 1/2" clear cover and 4" minimum between bars.
3. Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by 0.5 x (A + Lw).
4. Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.
5. A 6" deep concrete floor shall be constructed. The floor shall have a 12" wide by 2'–0" deep reinforced concrete toewall along pilot channel; the toewall shall be reinforced by extending typical floor reinforcing into the toewall; Construction joints or grooved joints, oriented in the direction of flow, shall extend across the full distance of the floor, at intervals of approximately 20'.
6. At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.
7. Applicable Skew is 15°.
8. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

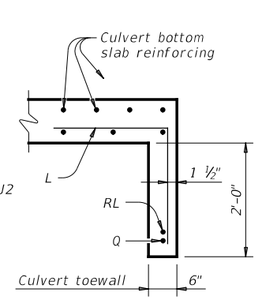
Rebar shop drawings required for review and approval by Engineer.

K. L. OZUNA
65754
REGISTERED PROFESSIONAL ENGINEER
STATE OF TEXAS
8/24/2020

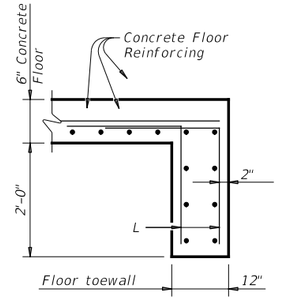
MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.
Payment is per Item 466 6232.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out–to–out of bars.



SECTION B-B (5)



SECTION C-C (5)

Texas Department of Transportation

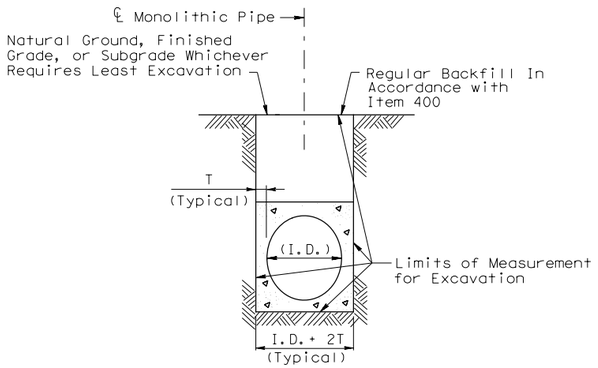
Bridge Division Standard

CONCRETE WINGWALLS WITH FLARED WINGS FOR SKEWED BOX CULVERTS

FW-S(MOD)

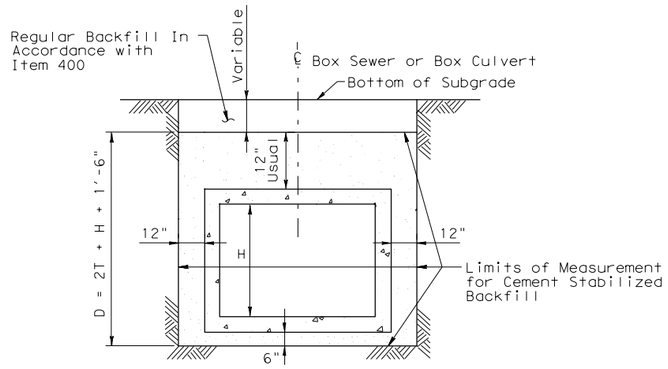
FILE:	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
	0912	72	360	BSW
	DIST	COUNTY		SHEET NO.
	HOU	HARRIS		414

DATE:
FILE:



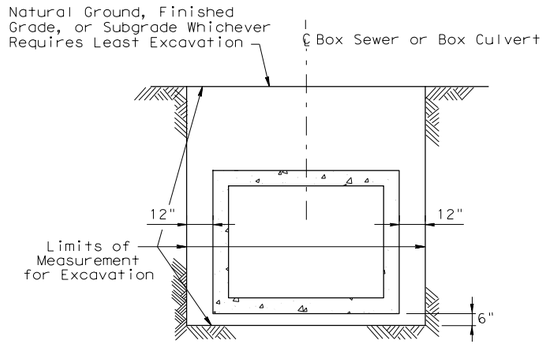
EXCAVATION DETAIL

MONOLITHIC PIPE
IN A PAVED OR GRADED AREA



BACKFILL DETAIL

BOX CULVERTS
IN A GRADED OR PAVED AREA
INCLUDING DETOURS *



EXCAVATION DETAIL

BOX CULVERTS
IN A GRADED AREA

REINFORCED CONCRETE PIPE

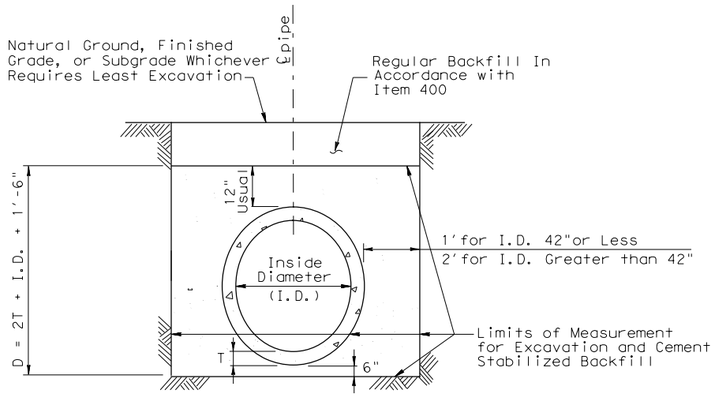
EXCAVATION AND BACKFILL QUANTITIES

PIPE DIA. IN.	T FT.	CULVERT OR SEWER EXCAVATION IN A PAVED OR GRADED AREA C.Y. PER L.F. PER FT. OF DEPTH	CEMENT STABILIZED BACKFILL IN A PAVED OR GRADED AREA C.Y. PER L.F. OF PIPE
18	0.19	0.144	0.383
24	0.23	0.165	0.478
30	0.29	0.188	0.586
36	0.33	0.210	0.692
42	0.38	0.231	0.808
48	0.42	0.327	1.394
54	0.46	0.349	1.560
60	0.50	0.370	1.731
66	0.54	0.392	1.907
72	0.58	0.414	2.088
78	0.62	0.435	2.275
84	0.67	0.457	2.474

MONOLITHIC PIPE

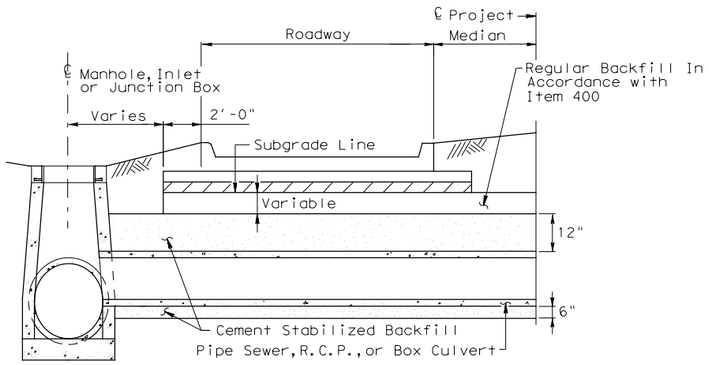
EXCAVATION QUANTITIES

PIPE DIA. IN.	T FT.	EXCAVATION C.Y. PER L.F. PER FT. OF DEPTH
36	0.417	0.142
42	0.458	0.164
48	0.458	0.182
54	0.500	0.204
60	0.583	0.228
66	0.583	0.247
72	0.625	0.269
78	0.625	0.287
84	0.625	0.306



EXCAVATION & BACKFILL DETAIL

REINFORCED CONCRETE PIPE
IN A GRADED OR PAVED AREA
INCLUDING DETOURS



BACKFILL DETAIL

AT MANHOLE, INLET OR JUNCTION BOX

NOTE:

Cement stabilized backfill may be omitted in private driveways as indicated elsewhere in the plans.

Rubber gaskets shall be required for all joints on proposed cross drainage, pipe culverts and proposed storm sewer systems, unless otherwise shown in the plans.

* Backfill with cement stabilized material will be required for all structures under detours unless noted otherwise in the General Notes.

SHEET 1 OF 2

STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

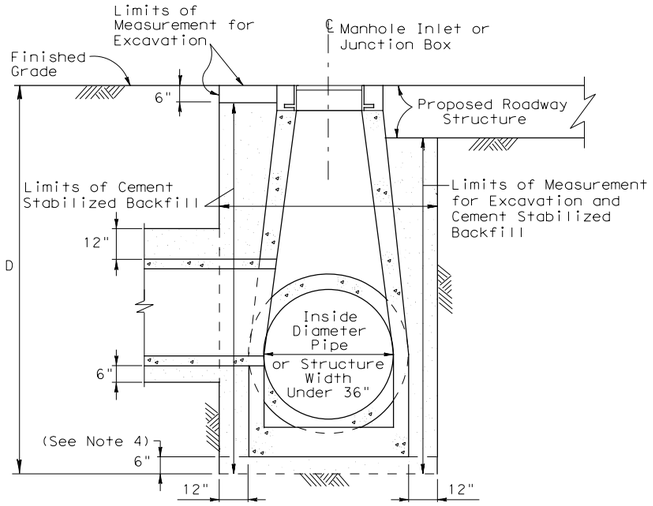
D = Depth
H = Height
T = Thickness
R = Radius
Dia = Diameter

Texas Department of Transportation
Houston District

EXCAVATION AND BACKFILL DIAGRAMS

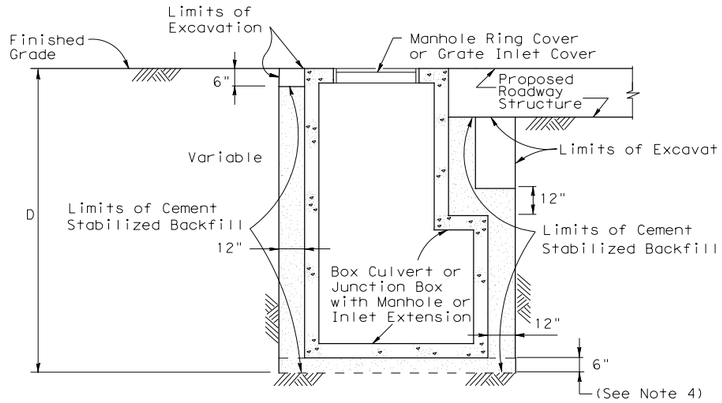
E&BD

FILE: STDE1.DGN	DN: TxDot	CK: TxDot	DW: TxDot	CK: TxDot
© TxDOT FEB 2010	DIST	FED REG	PROJECT NO.	SHEET
REVISIONS	HOUSTON	6	(SEE THE TITLE SHEET)	415
REVISED 11/05 REVISED 2/2010 Added note to Table 1, Sht 2 of 2. REVISED 6/12 REVISED 9/14	COUNTY		CONTROL SECT JOB	HIGHWAY
	HARRIS		0912 72 360	BSW



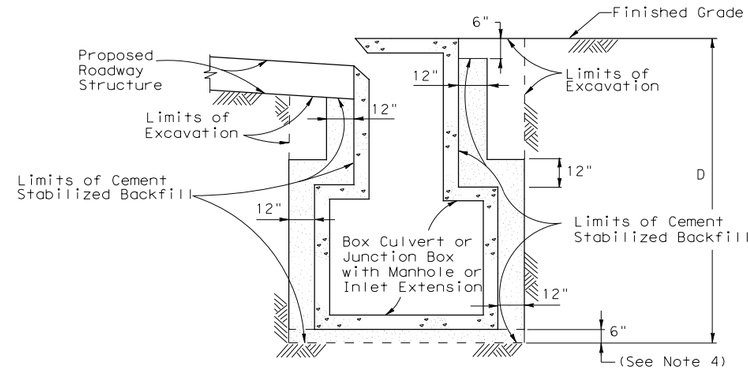
EXCAVATION AND BACKFILL DETAIL

MANHOLES SMALLER THAN 36 IN.
IN A PAVED OR GRADED AREAS
N.T.S.



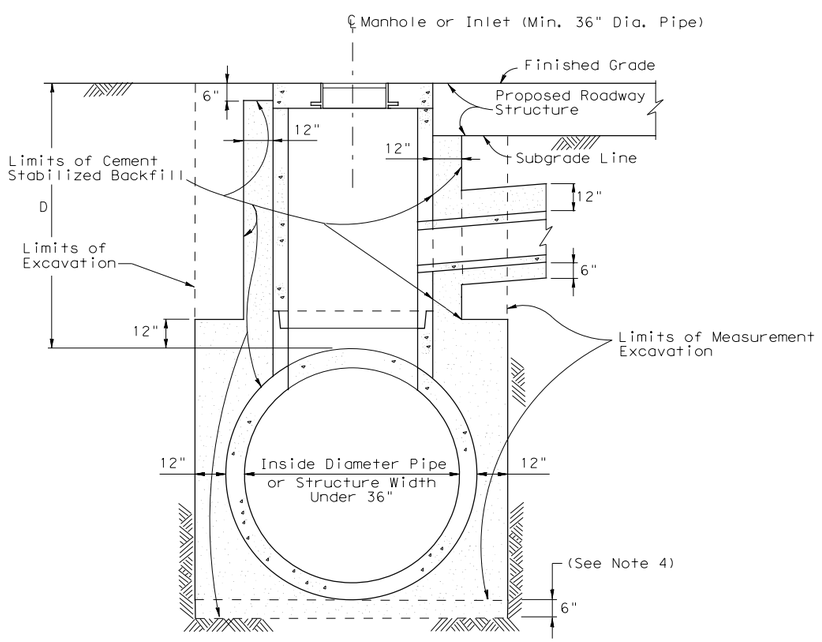
EXCAVATION AND BACKFILL DETAIL

JUNCTION BOXES IN A
PAVED OR GRADED AREA
N.T.S.



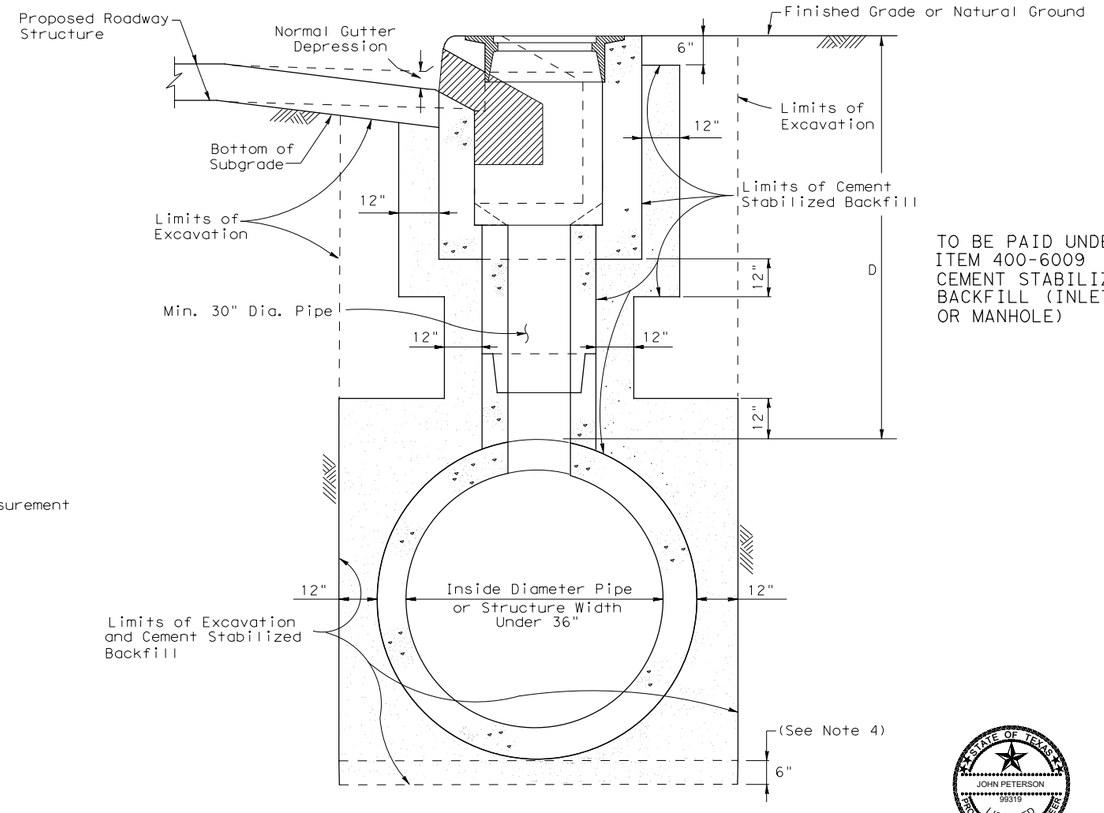
EXCAVATION AND BACKFILL DETAIL

INLET EXTENSIONS ON A BOX CULVERT
IN A PAVED OR GRADED AREA
N.T.S.



EXCAVATION AND BACKFILL DETAIL

MANHOLES 36 IN. AND GREATER
IN A PAVED OR GRADED AREA
N.T.S.



EXCAVATION AND BACKFILL DETAIL

CURB INLETS IN A PAVED OR GRADED AREA
N.T.S.

TABLE I

SCHEDULE FOR PAY QUANTITIES OF CEMENT STABILIZED BACKFILL (SEE NOTE 1)

MANHOLE OR INLET DEPTH (D) IN FEET	CEMENT STABILIZED BACKFILL IN CUBIC YARDS
0 through 5	5.75
> 5 through 10	8.25
greater than 10	12.75

TO BE PAID UNDER ITEM 400-6009 CEMENT STABILIZED BACKFILL (INLET OR MANHOLE)

NOTES:

1. The Contractor is paid a fixed estimated amount for cement stabilized backfill based on depth (D) and Table. 1.
2. Proposed roadway structure includes pavement, base and any subgrade.
3. For backfill of intersecting pipes and box culverts, see "Excavation and Backfill Diagram for Pipes and Box Culverts."
4. 6" cement stabilized backfill will be required only for precast units.

SHEET 2 OF 2

STATE OF TEXAS
JOHN PETERSON
98319
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8/24/2020

D = Depth
H = Height
T = Thickness
R = Radius
Dia = Diameter

Texas Department of Transportation
Houston District

EXCAVATION AND BACKFILL DIAGRAMS

E&BD

FILE: STDE1.DGN	DN: TxDot	CK: TxDot	DW: TxDot	CK: TxDot
© TxDOT FEB 2010	DIST	FED REG	PROJECT NO.	SHEET
REVISIONS REVISED 2/2010 Added note to Table 1. REVISED 6/12 REVISED 9/14 REVISED 3/15	HOUSTON	6	(SEE THE TITLE SHEET)	416
	COUNTY		CONTROL SECT JOB	HIGHWAY
	HARRIS		0192 72 360	BSW

100% SUBMITTAL

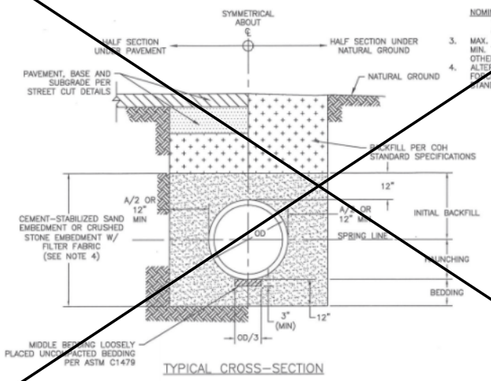
02317-03

NOTES:

1. THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITIONS PER COH STANDARDS. SEE COH STANDARD SPECIFICATION FOR REQUIREMENTS IN OTHER CONDITIONS.
2. MIN. TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:

NOMINAL PIPE SIZE	"A"
18" TO 30"	24"
OVER 30"	36"

3. MAX. TRENCH WIDTH SHALL BE NOT GREATER THAN MIN. TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
4. ALTERNATIVE EMBEDMENT BACKFILL MATERIALS FOR RCP/CS MAINS MAY BE ALLOWED. SEE COH STANDARD SPECIFICATIONS.



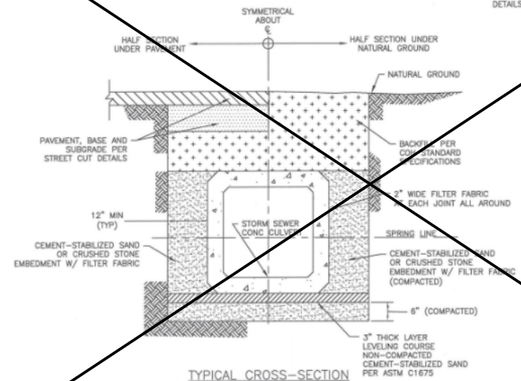
TYPICAL CROSS-SECTION

SANITARY OR STORM SEWER BEDDING AND BACKFILL FOR DRY STABLE TRENCH
NTS

02317-05

NOTES:

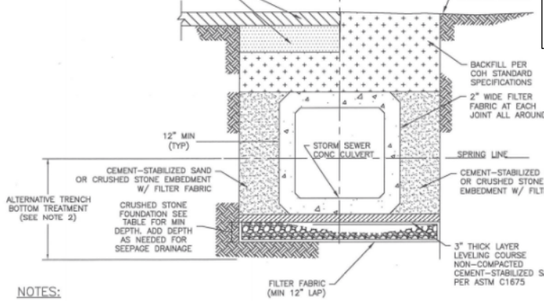
1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
2. SUBGRADE AND PAVEMENT FOR STREET CUT DETAILS – 02951.



TYPICAL CROSS-SECTION

PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL FOR DRY STABLE TRENCH
NTS

02317-06



NOTES:

1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
~~2. ALTERNATIVE TRENCH BOTTOM TREATMENT MAY BE USED AS APPROVED BY THE CITY OF HOUSTON ENGINEER AND AS PAID FOR IN THE CONTRACT.~~
2. ALTERNATIVE TRENCH BOTTOM TREATMENT MAY BE USED AS APPROVED BY THE CITY AND ENGINEER.

TABLE

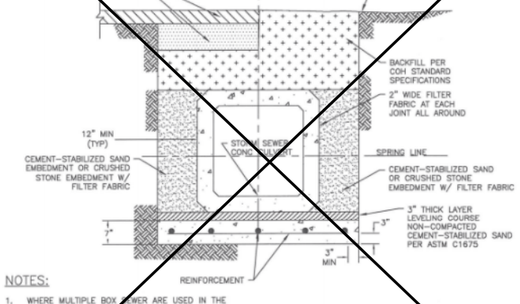
CULVERT SIZE (FT)	FOUNDATION DEPTH(INCHES)
3' X 2' TO 6' X 6'	12
6' X 6' AND LARGER	18

PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL FOR WET STABLE TRENCH
NTS

NOTES:
1. USE THIS DETAIL FOR BEDDING WET STABLE TRENCH ONLY. REFER TO TXDOT DETAILS FOR BACKFILL.

2. COST FOR WET CONDITION BEDDING IS INCIDENTAL AND IS INCLUDED UNDER THE DE-WATERING SECTION OF THE SPECIFICATIONS.

02317-07



NOTES:

1. WHERE MULTIPLE BOX SEWER ARE USED IN THE SAME TRENCH, MIN. OUTSIDE TO OUTSIDE BOX SEWER SEPERATION SHALL BE 6".
2. REINFORCED CONCRETE SLAB PIPE BEDDING TO BE PLACED IN DRY TRENCH ONLY.
3. CONCRETE SLAB TO REACH MIN COMPRESSIVE STRENGTH OF 1000 PSI BASED ON MAX DESIGN BEFORE PIPE IS LAID.
4. PRECAST SEAL SLAB MAYBE USED AS APPROVED BY CITY ENGINEER.

PRECAST CONCRETE BOX STORM SEWER BEDDING AND BACKFILL WITH SEAL SLAB
NTS

FIRM INFORMATION | ENGINEER'S SEAL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02317-03 THROUGH 07

APPROVED BY: CITY ENGINEER | APPROVED BY: DEPUTY DIRECTOR
APPROVED BY: DIRECTOR
EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY

SHEET NO.

STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

HDR
4828 Loop Central Dr, Suite 800
Houston, Texas 77081
713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

WET CONDITION BEDDING DETAILS

NOT TO SCALE

SHEET 1 OF 3

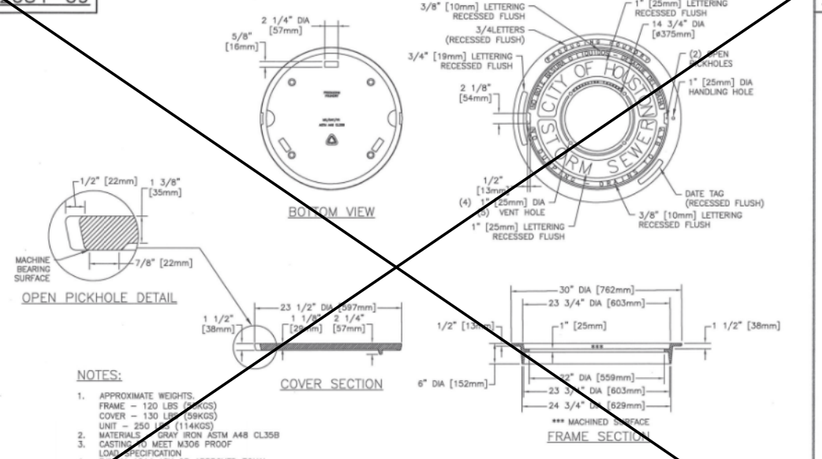
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			417
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	

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02084-09

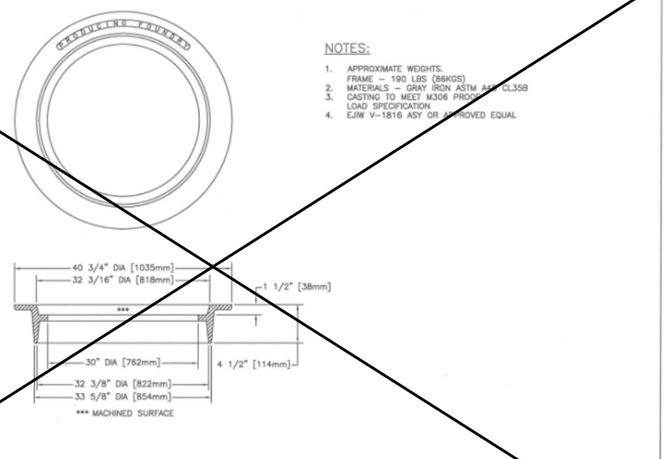


NOTES:

1. APPROXIMATE WEIGHTS.
   FRAME – 120 LBS (56KGS)
   COVER – 130 LBS (59KGS)
   UNIT – 250 LBS (114KGS)
2. MATERIALS – GRAY IRON ASTM A48 CL35B
3. CASTING TO MEET M306 PROOF LOAD SPECIFICATION
4. EJIW V-1814 ASY OR APPROVED EQUAL

STORM SEWER TYPE "C-1, C-2, C-2A" AND "H-2" INLET FRAME AND COVER
NTS

02084-10

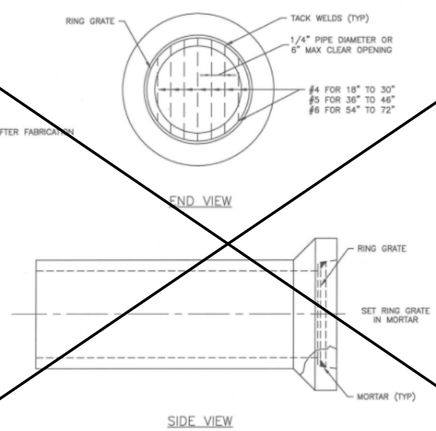


NOTES:

1. APPROXIMATE WEIGHTS.
   FRAME – 190 LBS (86KGS)
2. MATERIALS – GRAY IRON ASTM A48 CL35B
3. CASTING TO MEET M306 PROOF LOAD SPECIFICATION
4. EJIW V-1816 ASY OR APPROVED EQUAL

32" INVERTED MANHOLE FRAME
NTS

02084-11

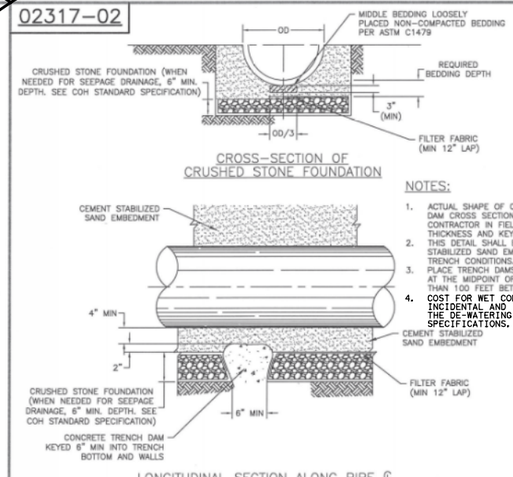


NOTES:

1. GALVANIZED GRATE AFTER FABRICATION

STORM SEWER RING GRATE FOR OPEN END OF 18" TO 72" RCP STUBS TO DITCH
NTS

02317-02



NOTES:

1. ACTUAL SHAPE OF CONCRETE TRENCH DAM CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING MINIMUM THICKNESS AND KEY DEPTH REQUIREMENTS.
2. THIS DETAIL SHALL BE USED WITH CEMENT STABILIZED SAND EMBEDMENT, IN WET STABLE TRENCH CONDITIONS.
3. PLACE TRENCH DAMS IN CLASS I EMBEDMENTS AT THE MIDPOINT OF LINE SEGMENTS LONGER THAN 100 FEET BETWEEN MANHOLES.
4. COST FOR WET CONDITION BEDDING IS INCIDENTAL AND IS INCLUDED UNDER THE DE-WATERING SECTION OF THE SPECIFICATIONS.

SANITARY OR STORM SEWER CRUSHED STONE FOUNDATION FOR WET STABLE TRENCH
NTS

FIRM INFORMATION | ENGINEER'S SEAL

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STORM SEWER
02084-09 THROUGH 11
AND 02317-02

APPROVED BY: CITY ENGINEER | APPROVED BY: DEPUTY DIRECTOR
APPROVED BY: DIRECTOR
EFFECTIVE DATE: JUL-01-2019
FOR CITY OF HOUSTON USE ONLY

SHEET NO.

STATE OF TEXAS
JOHN PETERSON
95310
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

HDR
4828 Loop Central Dr, Suite 800
Houston, Texas 77081
713-622-9264
HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

WET CONDITION BEDDING DETAILS

NOT TO SCALE

Texas Department of Transportation

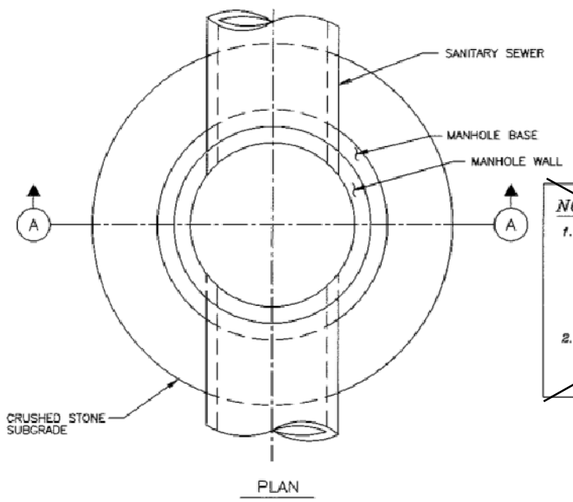
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6	(SEE THE TITLE SHEET)		418
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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NOTES:

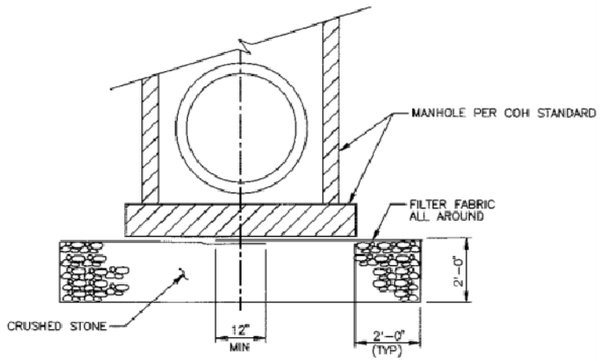
1. CRUSHED STONE SUPPORT UNDER A MANHOLE BASE SHALL BE INSTALLED AT LOCATIONS WHERE REQUIRED SUBGRADE COMPACTION OR DEWATERING CANNOT BE ACHIEVED.
2. WHERE HEAVING SUBGRADE CONDITIONS OCCUR, AS DETERMINED BY THE CITY ENGINEER, A PILE SUPPORTED MANHOLE SHALL BE PROVIDED.



PLAN

NOTE TO SPECIFIER:

1. *INCLUDE THIS DETAIL ONLY IF THE GEOTECHNICAL REPORT INDICATES THAT AN UNSTABLE FOUNDATION (ONE WHICH WILL NOT ALLOW COMPACTION OR DEWATERING AS SPECIFIED) IS POSSIBLE. IF THIS CONDITION IS REPORTED BY THE GEOTECHNICAL ENGINEER, NOTIFY THE CITY'S PROJECT MANAGER.*
2. *ALWAYS INCLUDE COMPANION STANDARD DETAIL FOR PILE SUPPORTED MANHOLE FOR UNSTABLE SUBGRADE WITH THIS DETAIL. IF GEOTECHNICAL REPORT INDICATES HEAVING SUBGRADE IS LIKELY.*



SECTION (A)

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE DIVISION	
SANITARY SEWER CRUSHED STONE SUPPORTED MANHOLE FOR WET STABLE TRENCH (NOT TO SCALE)	
APPROVED BY: CITY ENGINEER	APPROVED BY: DIRECTOR OF PUBLIC WORKS AND ENGINEERING
EFF DATE: OCT-01-2002	DWG NO: 02082-05

NOTES:
1. TO BE USED FOR STORM SEWER MANHOLES WHERE REQUIRED.

2. COST FOR WET CONDITION BEDDING IS INCIDENTAL AND IS INCLUDED UNDER THE DE-WATERING SECTION OF THE SPECIFICATIONS.

STATE OF TEXAS
JOHN PETERSON
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PROFESSIONAL ENGINEER
8/24/2020

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

WET CONDITION BEDDING DETAILS

NOT TO SCALE

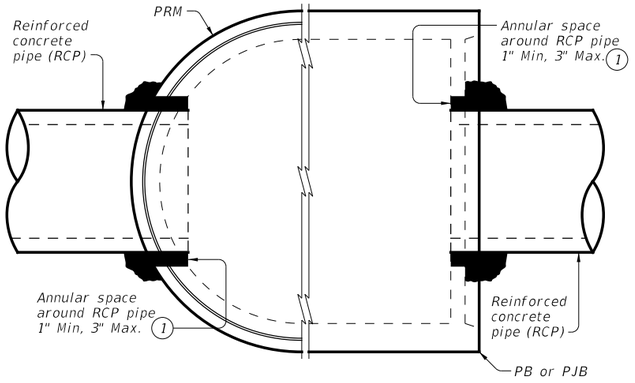
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		419
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CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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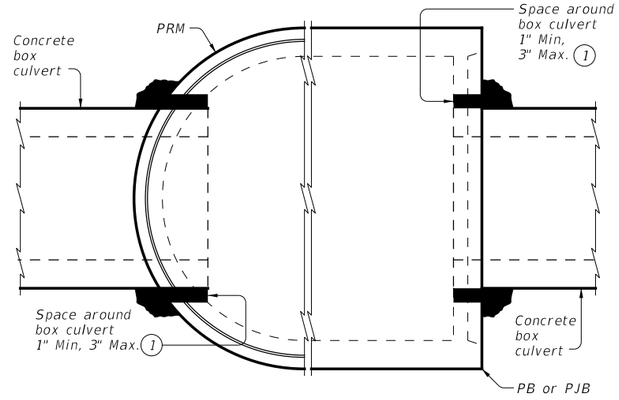
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PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

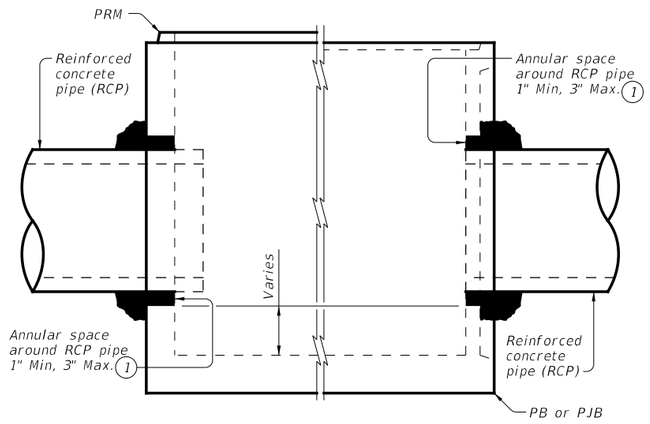
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

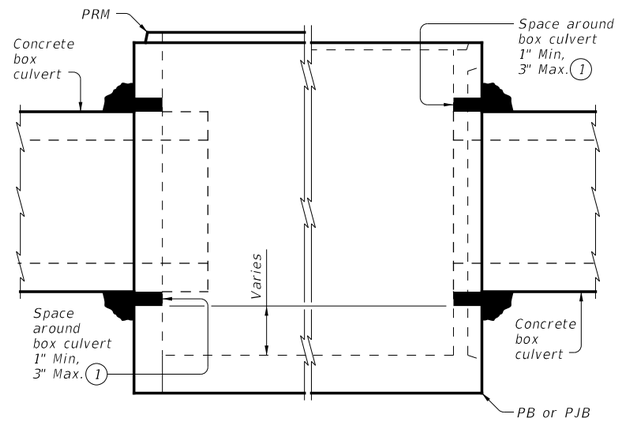
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

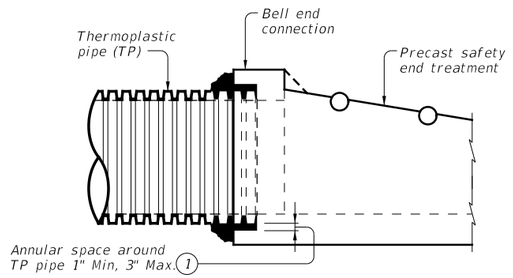
TYPICAL HALF ELEVATION



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF ELEVATION



TYPICAL PARTIAL ELEVATION OF PRECAST SAFETY END TREATMENTS

Showing square PSET for parallel drainage, cross drainage shown similar.

(1) Completely fill the void between the precast structure and the connecting pipe or box with cementitious grouts and mortars in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application".

CONSTRUCTION NOTES:

Do not grout rubber gasket joints without Manufacturer's recommendations.

Do not use bricks, masonry blocks, native stone, or similar materials in conjunction with grouted connections when filling void spaces around pipes or box culverts.

MATERIAL NOTES:

Provide grouted connections in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application".

GENERAL NOTES:

See applicable standards for notes and details not shown:
- Precast Base (PB)
- Precast Junction Box (PJB)
- Precast Round Manhole (PRM)
- Precast Safety End Treatments C/D Square (PSET-SC)
- Precast Safety End Treatments P/D Square (PSET-SP)

Provide Concrete Box Culverts in accordance with Item 462 "Concrete Box Culverts and Drains".

Provide Reinforced Concrete Pipe (RCP) in accordance with Item 464 "Reinforced Concrete Pipe".

Provide Thermoplastic Pipe (TP) in accordance with Special Specification Thermoplastic Pipe.

Payment for grouted connections is considered subsidiary to other bid Items.

STATE OF TEXAS
JOHN PETERSON
98319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

Texas Department of Transportation

Bridge Division Standard

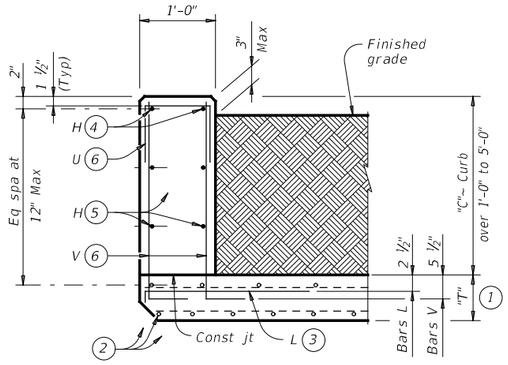
PIPE AND BOX GROUTED CONNECTIONS FOR PRECAST STRUCTURES

PBGC

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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	12	HARRIS		420

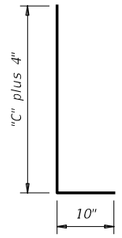
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

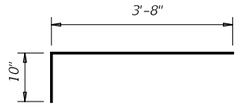


TYPICAL SECTION

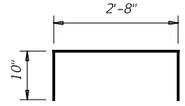
Used for curbs over 1'-0" to 5'-0"



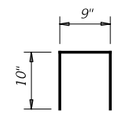
BARS V (#5) (6)
Spaced at 12" Max



BARS L (#5) (3)
Spaced at 12" Max



OPTIONAL BARS L (#5) (3) (7)
Spaced at 12" Max



BARS U (#4) (6)
Spaced at 12" Max

(1) "T" is equal to the culvert top slab thickness. For precast boxes with slabs less than 8" thick, see SCP-MD standard for additional details.

(2) Adjust normal culvert slab bars as necessary to clear obstructions.

(3) Place bars L as shown. Tilt hook as necessary to maintain cover.

(4) Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.

(5) Additional bars H(#4) as required to maintain 12" Max spacing.

(6) Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.

(7) Optional bars L are to be used only for precast box culverts with 3'-0" closure pour.

(8) Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).

TABLE OF ESTIMATED CURB QUANTITIES (8)

Curb Height "C"	Conc (CY/LF)	Reinf Steel (Lb/LF)
1'-0"	0.037	10.4
1'-6"	0.056	14.5
2'-0"	0.074	15.6
2'-6"	0.093	18.0
3'-0"	0.111	19.0
3'-6"	0.130	21.3
4'-0"	0.148	22.4
4'-6"	0.167	24.8
5'-0"	0.185	25.9

CONSTRUCTION NOTES:

Adjust reinforcing steel as necessary to provide 1 ¼" cover.

For vehicle safety, top of the curb must not project more than 3" above the finished grade.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

Provide galvanized reinforcing steel if required elsewhere in the plans.

Provide Class "C" concrete (f'c = 3,600 psi) minimum for curbs.

Provide bar laps, where required, as follows:

- Uncoated or galvanized ~ #4 = 1'-8" Min

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR11, PR22 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.

This Curb is considered as part of the Box Culvert for payment.

Cover dimensions are clear dimensions, unless noted otherwise.

Reinforcing bar dimensions shown are out-to-out of bar.

STATE OF TEXAS
K. L. OZUNA
65754
REGISTERED
PROFESSIONAL ENGINEER
8/24/2020

Texas Department of Transportation

Bridge Division Standard

EXTENDED CURB DETAILS

FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL

ECD

FILE: ecdstde1-20.dgn	DN: GAF	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	72	360	BSW
	DIST	COUNTY		SHEET NO.
	12	HARRIS		421

STANDARD HCFCD NOTES FOR CONSTRUCTION DRAWINGS

1. TxDOT will invite the Harris County Flood Control District (HCFCD) to the preconstruction meeting. An invitation will be sent to the following address at least two weeks prior to the meeting:

   Harris County Flood Control District, Property Management Department
   Attn: Development Coordination and Inspection Department (DCID)
   9900 Northwest Freeway, Houston, Texas 77092
   Fax: 346-286-4129
   Email: DCID@hcfcd.hctx.org

2. Obtain and comply with applicable City, County, State, and Federal permits and approvals. Obtain a permit (notification) from Harris County to enter Harris County Flood Control District (HCFCD) Right-of-Way. Deliver to HCFCD's Development Coordination and Inspection Section the completed Pre-Construction Notification Form (See Appendix B of HCFCD site http://www.hcfcd.org/About/Technical-Manuals/2019-Atlas-14-Policy-Criteria-and-Procedures-Manual-PCPM?folderId=86297&view=gridview&pageSize=10. Include with this delivery a copy of the approved construction drawings and a copy of any Section 404 Corps of Engineers individual permit(s). The address for delivery is listed above. Submit notifications by regular email, or fax. For minor projects, only the title sheet and any plan sheets showing HCFCD Right-of-Way need to be submitted. Ensure this pre-construction notification is received by the HCFCD at least four calendar days prior to construction.

3. Protect, maintain, and restore existing backslope drainage systems.

4. Before installing outfall(s), verify that the channel and pipe flow line(s) are in accordance with the applicable HCFCD standards in the plans. Resolve any discrepancies before construction in cooperation with the responsible Design Engineer. No water should remain in the facility during normal water surface conditions in the channel/waterway.

5. For wet bottom detention basins, ensure no water is above the design level in the wet bottom during normal water surface conditions in the channel/waterway.

6. Within HCFCD Right-of-Way, perform earthwork in accordance with TxDOT ITEM 110 - EXCAVATION (CHANNEL), ITEM 110 - EXCAVATION (SPECIAL), ITEM 132 - EMBANKMENT (FINAL) (ORD COMP)(TY C). Perform any excavation and backfill for structures in accordance with Item 400.

7. Backslope swale and interceptor structure elevations and locations shown on the plans are approximate. Final elevations and locations will be field verified by the Engineer and HCFCD's Development Coordination and Inspection Section before installation.

8. Maintain flow in channel during construction and restore the channel to original condition.

9. Remove excavated material from HCFCD Right-of-Way. Do not place fill within a designated flood plain area without first obtaining a fill permit from the appropriate jurisdictional authority. With HCFCD's written approval, the Contractor may place embankment material temporarily within HCFCD Right-of-Way for up to two days. The maximum height of this temporary material is 5 ft. and the minimum distance to the edge of the waterway slope is 3 ft.

10. Do not cast or mix any materials within HCFCD Right-of-Way.

11. Establish turf grass on disturbed areas within the channel or detention Right-of-Way, except the channel bottom and where structural erosion measures are used. Minimum acceptance criteria for vegetative cover is 75% with no erosion or rills deeper than 4 in. See Houston District Standard "Fertilizer, Seed, Sod, Straw, Compost, and Water", for seeding requirements. If block sod is called for on channel side slopes, pin each block with four 6-in. by 1-in. by 6-in. 11 gauge steel "U" staples.

12. After the Contractor informs the Engineer that the work performed within HCFCD's Right-of-Way is ready for HCFCD's final inspection, the Engineer will schedule HCFCD's final inspection at least one month before TxDOT's acceptance of project from the Contractor.

13. For the final HCFCD inspection request, TxDOT will submit the standard certification letter (See Appendix B of HCFCD site http://www.hcfcd.org/About/Technical-Manuals/2019-Atlas-14-Policy-Criteria-and-Procedures-Manual-PCPM?folderId=86297&view=gridview&pageSize=10.), along with record drawings of work performed within HCFCD's Right-of-Way, to the HCFCD's Development Coordination and Inspection Department requesting final inspection of items constructed in the HCFCD's Right-of-Way. Before requesting inspection, stake and flag Harris County Flood Control's Right-of-Way and/or easements. This flagging will be incidental to the work performed within the HCFCD Right-of-Way.

14. If deficiencies are found by HCFCD inspectors, TxDOT will immediately schedule a follow-up inspection and the Contractor will address any HCFCD comments in a timely manner.

15. Before project acceptance by TxDOT from the Contractor, TxDOT must receive a Letter of Final Acceptance from the HCFCD approving the work performed within their Right-of-Way.

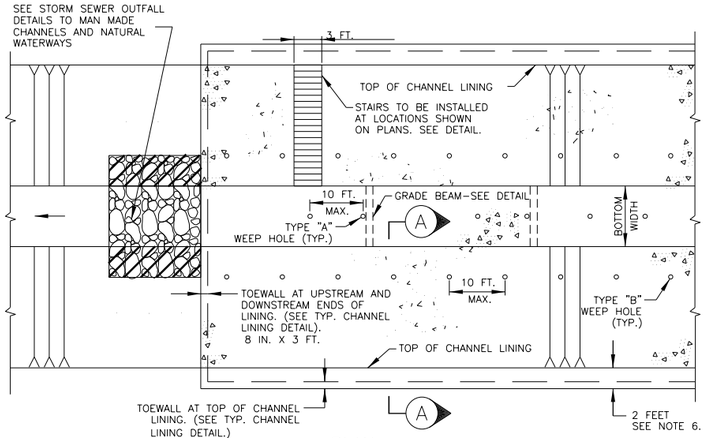


Texas Department of Transportation
Houston District

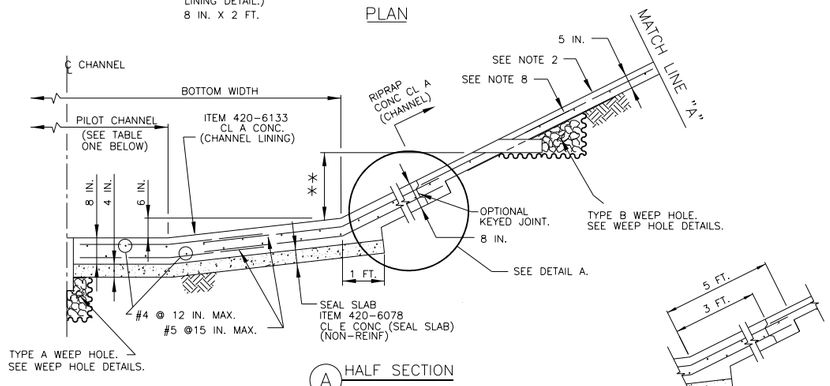
HARRIS COUNTY FLOOD CONTROL DISTRICT NOTES HCFCD-N (MOD)

FILE: STDG-5.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT DEC, 2012	DIST	FED REG	PROJECT NO.	SHEET
REVISIONS 10/2012 Rev. Notes in coord. w/ HCFCD 6/2012 Rev. Notes (minor) 02/2015 2014 SPECS	HOU	6	(SEE THE TITLE SHEET)	422
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	HARRIS	0912	72	360	BSW

STDG5A



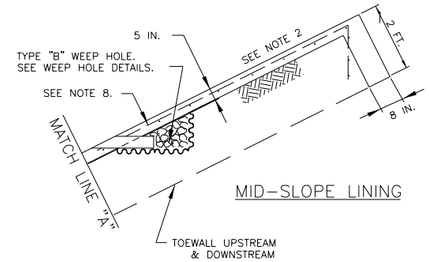
PLAN



A HALF SECTION

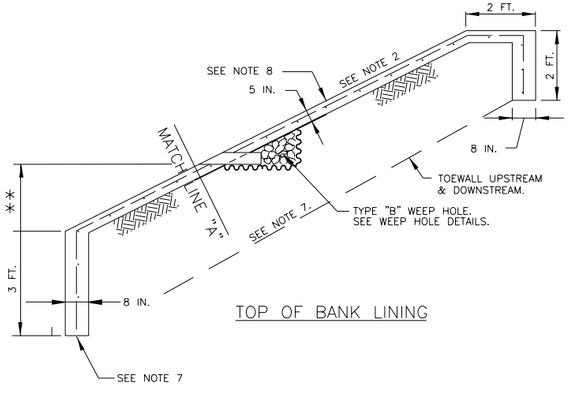
DETAIL A

TYPICAL TRAPEZOIDAL CHANNEL LINING



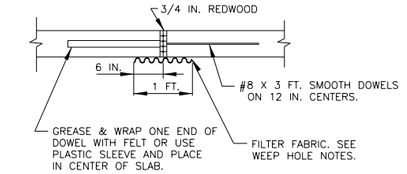
MID-SLOPE LINING

** 1/3 H MAXIMUM OR AS SHOWN ELSEWHERE ON PLANS AS RECOMMENDED BY GEOTECHNICAL REPORT.

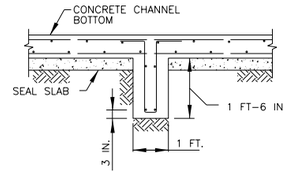


TOP OF BANK LINING

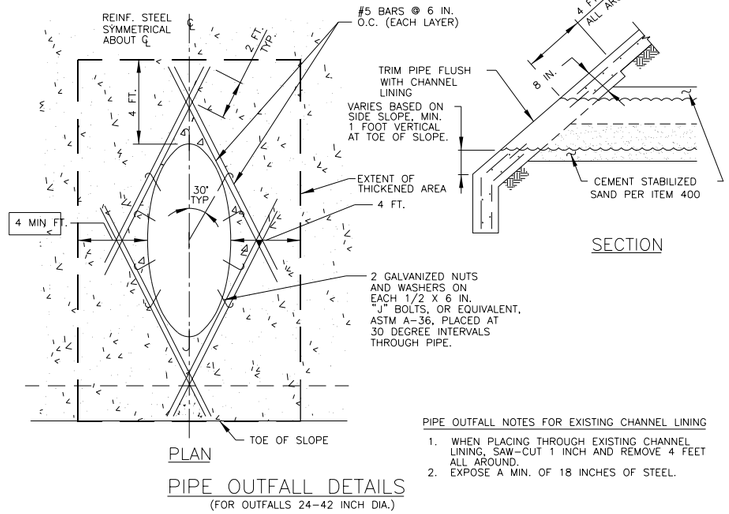
TYPICAL CHANNEL LINING DETAIL



EXPANSION JOINT



GRADE BEAM DETAIL
(SEE NOTE 4)



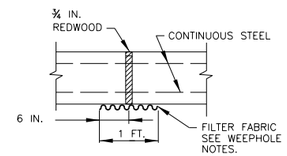
SECTION

PLAN

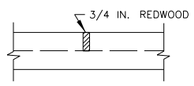
PIPE OUTFALL DETAILS
(FOR OUTFALLS 24-42 INCH DIA.)

PIPE OUTFALL NOTES FOR EXISTING CHANNEL LINING

1. WHEN PLACING THROUGH EXISTING CHANNEL LINING, SAW-CUT 1 INCH AND REMOVE 4 FEET ALL AROUND.
2. EXPOSE A MIN. OF 18 INCHES OF STEEL.

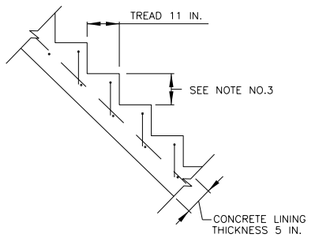


CONSTRUCTION JOINT



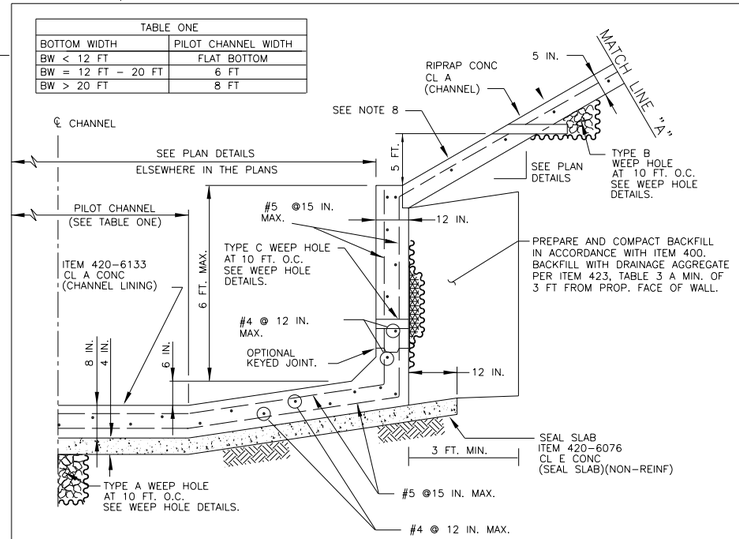
HALF JOINT
(SLOPES ONLY)

CONTROL JOINT



STAIR DETAIL
SEE NOTE 1

TABLE ONE	
BOTTOM WIDTH	PILOT CHANNEL WIDTH
BW < 12 FT	FLAT BOTTOM
BW = 12 FT - 20 FT	6 FT
BW > 20 FT	8 FT



TYPICAL RECTANGULAR CONCRETE CHANNEL LINING HALF SECTION

(A) THESE ARE GENERAL DETAILS AND NOTES. IF THERE ARE ANY DISCREPANCIES BETWEEN THIS STANDARD AND THE DETAILED SEALED DRAINAGE PLANS. THE SEALED PLANS WILL OVERRIDE.

(B) DESIGNER TO CONSULT WITH DISTRICT ENVIRONMENTAL SECTION TO DETERMINE IF OUTFALL IS OR IS NOT JURISDICTIONAL. IF JURISDICTIONAL, REQUEST ORDINARY HIGH WATER ELEVATION AND CORP OF ENGINEER'S PERMIT FROM ENVIRONMENTAL SECTION FOR ANY WORK BELOW ORDINARY HIGH WATER ELEVATION.

GENERAL NOTES:

1. TO BE PAID AS ITEM 420-6132 CL A CONC (STEPS.)
2. SEE SIDE SLOPE DETAILS ELSEWHERE ON PLANS.
3. RISE DIMENSION VARIES AS A FUNCTION OF SIDE SLOPE.
4. INSTALL STRUCTURAL CONCRETE GRADE BEAMS TRANSVERSLY AT 20 FOOT MAXIMUM CENTERS ON CONCRETE LINED CHANNELS WITH BOTTOM WIDTHS EQUAL TO OR GREATER THAN 20 FEET, GRADE BEAM TO BE PAID AS ITEM 420-6133 CL A CONC. (CHANNEL LINING.)
5. JOINTS:
   A. PLACE CONSTRUCTION JOINTS IN CONCRETE LOW-FLOW AND TRAPEZOIDAL BOTTOM SECTIONS AT 20 FEET MINIMUM, 60 FEET MAXIMUM, SPACING CONTINUOUSLY THROUGH CHANNEL LINING.
   B. PLACE EXPANSION JOINTS IN CONCRETE LOW-FLOW AND TRAPEZOIDAL BOTTOM SECTIONS AT 60 FEET MAXIMUM SPACING CONTINUOUSLY THROUGH CHANNEL LINING.
   C. PLACE CONTROL JOINT ON SLOPES AT 20 FOOT SPACING.
6. DELETE 2 FOOT FLAT EDGE WHEN LINING IS BELOW TOP OF BANK. SEE MID-SLOPE LINING DETAIL.
7. UPSTREAM AND DOWNSTREAM TOE WALL 3 FOOT MINIMUM DEPTH AT BOTTOM OF SLOPE AND 8 INCHES THICK.
8. #4 AT 12 IN. O.C. BOTH DIRECTIONS MIN. OR EQUIVALENT WELDED WIRE FABRIC.

K. L. OZNA 65754 LICENSED PROFESSIONAL ENGINEER
8/24/2020

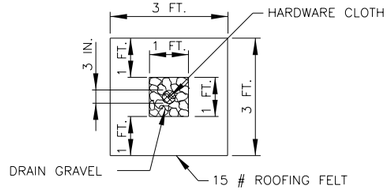
Texas Department of Transportation
Houston District

HCFCD
CONCRETE CHANNEL LINING DETAILS

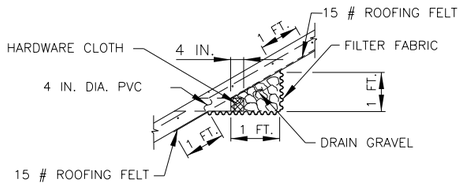
HCFCD-CCLD (1)

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©TxDOT DEC, 2012	DIST	FED REG	PROJECT NO.	SHEET
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	COUNTY	CONTROL	SECT	JOB	HIGHWAY
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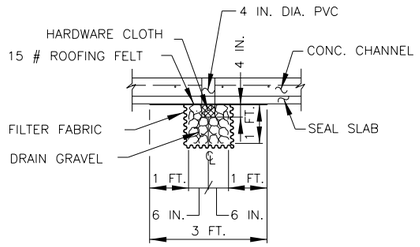
STDG5Ba



PLAN

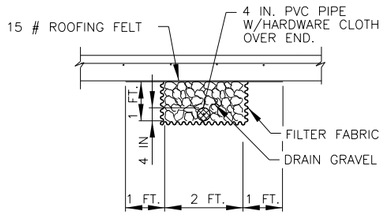


SECTION



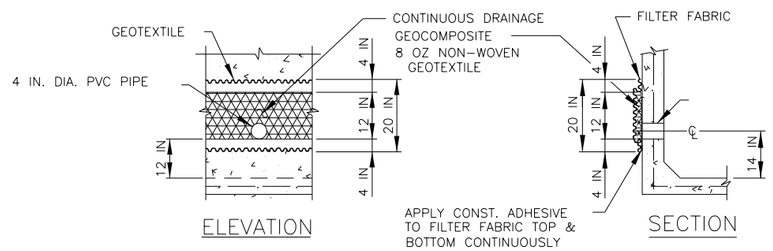
SECTION

TYPE "A" WEEP HOLE



SECTION

TYPE "B" WEEP HOLE



TYPE "C" WEEP HOLE

WEEP HOLE NOTES:

1. MATERIALS:
   a. PIPE: 4 INCH DIA. SCH. 40 PVC
   b. DRAIN GRAVEL:

SIEVE SIZE	% FINER
1 IN	100
3/4 IN	70 – 100
3/8 IN	20 – 90
NO. 4	0 – 60
NO. 8	0

   c. FILTER FABRIC – (TYPE 1 PER ITEM 556)

2. CUT WEEP HOLE PIPE FLUSH WITH CONCRETE SURFACE.

3. TYPE "A" AND "C" WEEP HOLES FOR TYPICAL RECTANGULAR CONCRETE CHANNEL LINING. TO BE STAGGERED.

4. HARDWARE CLOTH MIN. OPEN 1/8 IN, MAX. OPEN 1/4 IN

WEEP HOLE DETAILS



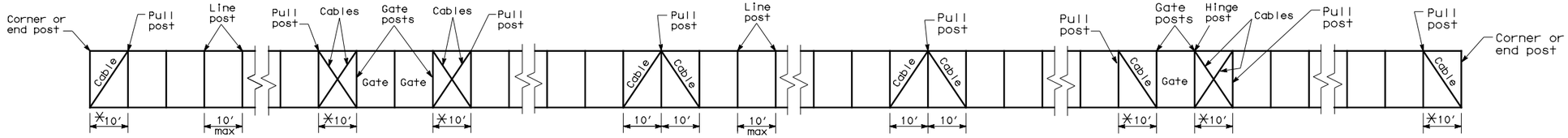
Texas Department of Transportation
Houston District

HCFCD
CONCRETE CHANNEL LINING DETAILS

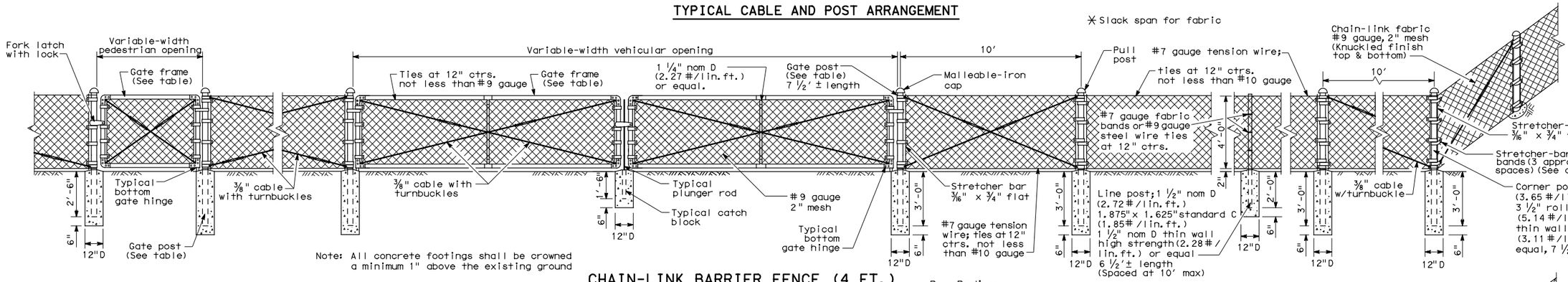
HCFCD-CCLD (2)

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REVISIONS 02/2015 2014 SPECS	HOU	6	(SEE THE TITLE SHEET)	424
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	HARRIS	0912	72	360	BSW

STDG5Bb



TYPICAL CABLE AND POST ARRANGEMENT

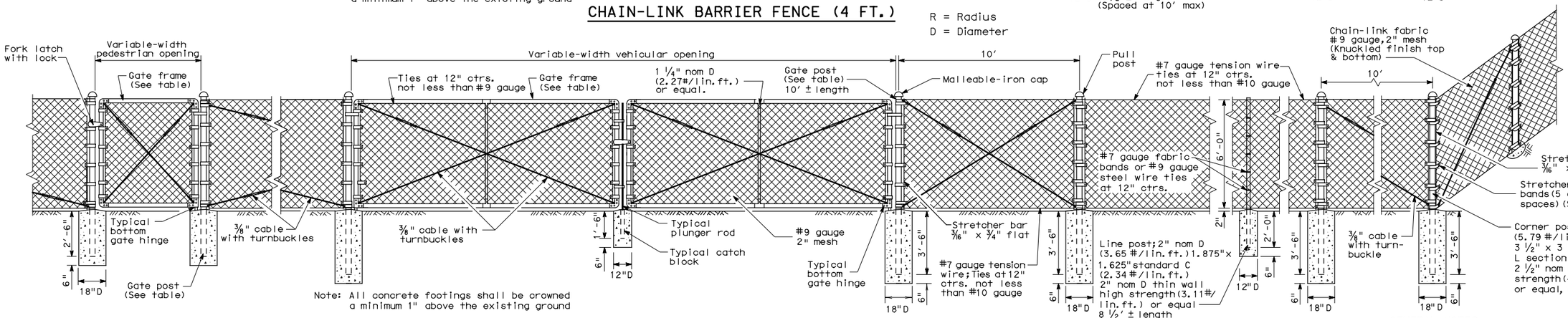


✳ Slack span for fabric

Note: All concrete footings shall be crowned a minimum 1" above the existing ground

CHAIN-LINK BARRIER FENCE (4 FT.)

R = Radius
D = Diameter



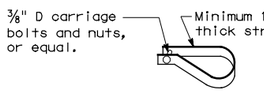
Note: All concrete footings shall be crowned a minimum 1" above the existing ground

CHAIN-LINK BARRIER FENCE (6 FT.)

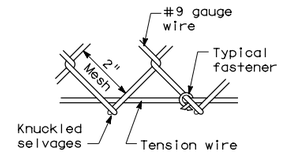
TABLE OF MINIMUM SIZES & WEIGHTS

GATE OPENING TYPE	
Single Inclusive	Double Inclusive
Up to 6′	Up to 12′
Over 6′ to 12′	Over 12′ to 26′
Over 12′ to 18′	Over 26′ to 36′
Over 18′	Over 36′

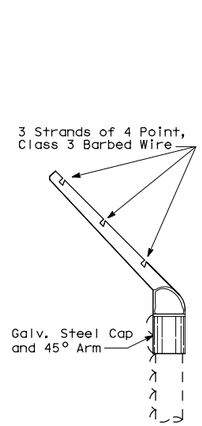
GATE FRAME		GATE POST	
SIZE	WT./LIN.FT.	SIZE	WT./LIN.FT.
1½" nom D or equal	2.72 LBS.	2½" nom D or equal	5.79 LBS.
	2.72 LBS.	3½" nom D or equal	9.11 LBS.
	2.72 LBS.	6" nom D	18.97 LBS.
	2.72 LBS.	8" nom D	24.70 LBS.



TYPICAL STRETCHER-BAR BAND

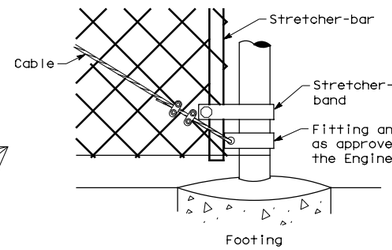


FABRIC & TENSION WIRE DETAIL TOP & BOTTOM

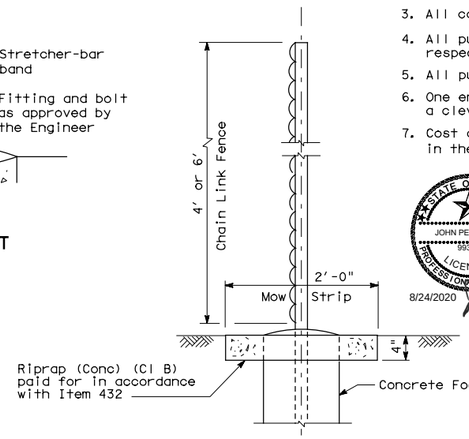


3 WIRE 45° BARBED WIRE ARM FOR CHAIN LINK SECURITY FENCE

⚠



TERMINAL POST DETAIL



MOWING STRIP DETAIL

⚠

GENERAL NOTES

1. Typical installation plan may vary as shown elsewhere on the plans or as directed by the Engineer. Location of gates shown elsewhere on plans.
2. Gate-frame members shall be bolted, at frame corners, to joint fittings with four ½" bolts per joint.
3. All cable connections are to be made with two ⅜" cable clamps.
4. All pull posts and end posts and their foundations shall have the same respective dimensions as those shown for corner post.
5. All pull post shall be furnished with two stretcher bars.
6. One end of each turnbuckle may be attached directly to fittings with a clevis.
7. Cost of furnishing and installing 45°Arm and Barbed Wire to be included in the unit price bid for "Chain Link Security Fence."

STATE OF TEXAS — JOHN PETERSON — 99319 — LICENSED PROFESSIONAL ENGINEER
8/24/2020

Texas Department of Transportation
Houston District

CHAIN-LINK BARRIER FENCE (4 AND 6 FOOT HEIGHT) CLF

FILE: STDG-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT NOV. 2006	DIST	FED REG	PROJECT NO.	SHEET
REVISIONS 3/15 2014 SPECS	HOU	6	(SEE THE TITLE SHEET)	425
	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	HARRIS	0912	72	360	BSW

STD 03

100% SUBMITTAL

GENERAL NOTES:

1. ALL EXISTING MANHOLES AND OTHER UTILITY STRUCTURES IN THE CONSTRUCTION AREA SHALL BE ADJUSTED TO FINISHED GRADE OR TOP OF PAVEMENT AS NOTED OR DETAILED IN PLANS.
2. TEMPORARY RELOCATION OF EXISTING UTILITIES SHALL BE COORDINATED WITH THE OWNER 24 HOURS PRIOR TO RELOCATION. THIS INCLUDES BUT IS NOT LIMITED TO WATER LINE AND SANITARY SEWER RELOCATIONS AND OPERATION OF WATER LINE VALVES. RELOCATION SHALL BE AT THE CONTRACTOR'S EXPENSE UNLESS OTHERWISE NOTED ON PLANS.
3. RIM ELEVATIONS FOR MANHOLES SHALL BE SET FLUSH WITH THE FINISHED GRADE FOR ALL MANHOLES LOCATED IN PAVEMENT. RIM ELEVATIONS SHALL BE 3 INCHES ABOVE NATURAL GROUND FOR ALL MANHOLES LOCATED IN OTHER AREAS, UNLESS OTHERWISE SHOWN. FOR MANHOLES OUTSIDE OF PAVEMENT, SLOPED FILL SHALL BE ADDED FOR STORM WATER DRAINAGE AWAY FORM MANHOLE RIM.
4. NO EXCAVATIONS SHALL BE LEFT OPEN OVERNIGHT. ALL EXCAVATIONS WHICH CANNOT BE BACKFILLED OVERNIGHT FOR THE INSTALLATION OF MANHOLES, SANITARY SEWER LINES, AND OTHER UTILITIES SHALL BE COVERED WITH STEEL SHEETING WHEN IN PAVED AREAS; 3/4" PLYWOOD, WOOD PLANKING OR SOME OTHER MATERIAL APPROVED BY THE OWNER IN OTHER AREAS. THE EXCAVATION AREA MUST BE WELL PROTECTED WITH TRAFFIC BARRICADES EQUIPPED WITH FLASHING YELLOW LIGHTS. THE EXCAVATION AREAS MUST BE COMPLETELY CORDONED OFF WITH ORANGE PLASTIC CONSTRUCTION FENCING.
5. ALL EXCAVATION AREAS MUST BE COMPLETELY CORDONED OFF WITH A MINIMUM OF ORANGE PLASTIC CONSTRUCTION FENCING ACCEPTABLE TO THE OWNER. THE FENCE SHALL BE SUPPORTED WITH ENOUGH INTERMEDIATE SUPPORTS TO AVOID EXCESSIVE SAGGING. THE FENCE MAY BE TIED TO TRAFFIC BARRICADES WITH FLASHING YELLOW LIGHTS AND WOODEN LATHE FOR SUPPORT. WHERE EXCAVATIONS EXTEND BEYOND THE EXISTING BACK OF CURB OR EDGE OF PAVEMENT, ADEQUATE BARRICADES WITH FLASHING YELLOW LIGHTS SHALL BE INSTALLED TO PROTECT PEDESTRIAN TRAFFIC.
6. CONTRACTOR SHALL NOT USE RESIDENT'S OR COMMERCIAL ESTABLISHMENTS WATER. THE CONTRACTOR SHALL OBTAIN A METER FROM THE OWNER AND USE FIRE HYDRANTS AS THE OWNER DIRECTS.
7. CONTRACTOR SHALL LOCATE EXISTING SANITARY SEWER AND WATER LINES PRIOR TO ANY CONSTRUCTION AND SHALL NOTIFY ENGINEER IMMEDIATELY IF OTHER THAN SHOWN ON THE DRAWINGS.

WATER LINE NOTES:

1. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL UNDERGROUND UTILITY LINES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL CONTACT THE RAILROAD COMMISSION OF TEXAS, 72 HOURS (MINIMUM) PRIOR TO EXCAVATION FOR VERIFICATION OF NATURAL GAS LINES AND OTHER UTILITY LINES IN THE CONSTRUCTION AREA AT (800) 545-6005. (NO SEPARATE PAY).
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE DEPTH, LOCATION, AND EXISTENCE OF ALL EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED CONSTRUCTION, PRIOR TO CONSTRUCTION. (NO SEPARATE PAY).
3. CONTRACTOR SHALL CONTACT ALL PERTINENT UTILITY COMPANIES AND LINE LOCATOR SERVICES 48 HOURS (MINIMUM) PRIOR TO EXCAVATION IN AREA. THE LONE STAR NOTIFICATION CENTER MAY BE CONTACTED FOR CERTAIN UTILITIES AT 713-223-4567, 48 HOURS BEFORE BEGINNING WORK. PIPELINE AND/OR FIBER OPTIC COMPANIES MAY BE CONTACTED THROUGH 1-800-DIG-TESS (344-8377) OR TEXAS ONE CALL AT 1-800-245-4545.
4. ALL WATER LINE PIPE SHALL BE RESTRAINED JOINT PIPE THROUGH ENTIRE INSTALLATION, ALL JOINTS.
5. WATER LINE TO BE CONSTRUCTED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION ITEM. ALL 4" - 12" DIA WATER LINES SHALL BE PVC AWWA C-900, CLASS 150, DR-18, AND ALL 2" DIA WATER LINES SHALL BE PVC ASTM D2241, CLASS 200, UNLESS OTHERWISE NOTED ON PLANS OR DIRECTED BY OWNER.
6. WATER LINES MAY BE AUGERED OR OPEN CUT FOR SAME UNIT PRICE BID. CONTRACTOR SHALL COMPLY WITH THE TREE PRESERVATON DETAILS AND SPECIFICATIONS.
7. ALL VALVES AND DUCTILE IRON FITTINGS, EXCEPT FIRE HYDRANTS, SHALL BE WRAPPED WITH 8-MIL POLYETHYLENE FILM. SECURE POLYETHYLENE WRAP WITH 3-INCH WIDE PLASTIC BACKED ADHESIVE TAPE (POLYKEN NO. 900, SCOTCHWRAP NO. 50, OR APPROVED EQUAL).
8. CONTRACTOR TO PROVIDE ADEQUATE CONCRETE THRUST BLOCKING TO WITHSTAND TEST PRESSURE OF 135 PSI.
9. FIRE HYDRANTS TO BE LOCATED 3-FEET FROM BACK OF CURB UNLESS OTHERWISE INDICATED ON PLANS.
10. VALVES TO BE LOCATED OPPOSITE PROPERTY LINES ON SAME SIDE OF STREET AS WATER LINE, UNLESS OTHERWISE INDICATED ON PLANS.
11. CONTRACTOR SHALL NOTIFY THE OWNER, AT LEAST 24 HOURS PRIOR TO CONNECTING PROPOSED WATER LINE TO EXISTING WATER SYSTEM AND PRIOR TO ANY DISRUPTION OF WATER SERVICE AND SHALL NOTIFY OWNER IMMEDIATELY UPON ENCOUNTERING LEAKING SANITARY SEWER DURING INSTALLATION OF WATER LINES.
12. SERVICE CONNECTION AND RE-CONNECT ARE TO BE MADE PERPENDICULAR TO ALL WATER MAINS.
13. ALL PROPOSED SERVICE CONNECTIONS SHOWN ON THESE PLANS ARE FOR ESTIMATING PURPOSES ONLY. THE EXACT LOCATION SHALL BE DETERMINED IN THE FIELD BY THE OWNER IN COOPERATION WITH EACH EFFECTED RESIDENT. EXISTING SERVICE LINES ON EXISTING WATER MAINS TO REMAIN IN SERVICE ARE TO BE REPLACED ONLY IF IN CONFLICT WITH PROPOSED UTILITIES, STORM SEWER, OR PAVING SUBGRADE.
14. WET CONNECTIONS ARE TO BE COORDINATED WITH THE OWNER IN SUCH A MANNER AND AT SUCH HOURS AS TO CAUSE THE LEAST INCONVENIENCE TO THE PUBLIC. WHEN THE EXISTING MAINS HAVE BEEN CUT OR A PLUG REMOVED FOR A CONNECTION, THEN THE WORK OR MAKING THE CONNECTION SHALL PROGRESS WITHOUT INTERRUPTION UNTIL COMPLETE. THE COMPENSATIONS FOR MAKING WET CONNECTIONS SHOWN ON PLANS WILL BE BASED ON THE UNIT PRICE BID, COMPLETE IN PLACE, AND NO ADDITIONAL COMPENSATION CONNECTION UNDER UNFAVORALE WORKING CONDITIONS. COMPENSATION FOR WET CONNECTION NOT SHOWN ON THE PLANS WILL BE BASED ON THE UNIT PRICE BID, ONLY WHEN REQUESTED BY THE CONTRACTOR AND ACCEPTED BY THE OWNER.
15. ALL WATER LINE FITTINGS SHALL HAVE BELL ENDS (MECHANICAL JOINTS EXCEPT AS NOTED).
16. CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF THE EXISTING WATER LINES DURING CONSTRUCTION, INCLUDING SERVICE LINES. CONTRACTOR SHALL UPON 24-HOUR NOTICE TO THE OWNER, CUT, PLUG, AND ABANDON EXISTING WATER LINES, AND REMOVE FIRE HYDRANTS, AND VALVES ON FIRE HYDRANT LEADS. TRANSFER ALL AFFECTED SERVICES TO THE PROPOSED MAINS PRIOR TO ABANDONMENT OF EXISTING MAINS UNLESS OTHERWISE SHOWN. ALL FIRE HYDRANTS AND VALVES ON EXISTING LINES BEING ABANDONED SHALL BE CLOSED WATERTIGHT, PLUGGED, THRUST BLOCKED AND THE OPERATING NUT ON SAID VALVE BE CUT OFF. ALL VALVE BOXES ON ABANDONED LINES SHALL BE REMOVED, EXCEPT THOSE IN PAVED AREAS. THOSE LOCATED IN PAVED AREAS SHALL BE POURED FULL OF CONCRETE AND THE CAP SHALL BE PERMANENTLY REMOVED. CONTRACTOR TO NOTIFY THE OWNER WHEN ANY VALVE ON A LINE BEING ABANDONED FAILS TO FULLY CLOSE OR IS NOT FULLY OPERATIONAL. CONTRACTOR SHALL DELIVER SALVAGED FIRE HYDRANTS AND VALVES TO THE LOCATION DESIGNATED BY OWNER.

WATER LINE NOTES (CONT):

17. CONTRACTOR MAY DEFLECT WATER LINES SLIGHTLY TO AVOID CONFLICTS WITH UTILITIES OR OTHER OBSTRUCTIONS. CONTRACTOR TO VERIFY DEPTH OF EXISTING WATER LINE PRIOR TO INSTALLING PROPOSED FIRE HYDRANT ASSEMBLY. THE OWNER'S REPRESENTATIVE MUST BE CONTACTED FOR APPROVAL AT LEAST 24-HOURS IN ADVANCE OF ANY DECISION TO DEFLECT WATER LINES. CONTRACTOR TO KEEP ACCURATE RECORDS OF LOCATIONS WHERE WATER LINES ARE DEFLECTED FOR REQUIRED RED LINE RECORD PRINT SET. SUCH DEFLECTION SHALL BE WITHIN THE LIMITS ALLOWED AND RECOMMENDED BY THE MANUFACTURER OF THE PIPE.
18. CONTRACTOR IS TO INSTALL TEMPORARY BLOW-OFF VALVES AS REQUIRED TO FLUSH THE NEWLY CONSTRUCTED WATER LINE FOR CHLORINATION AND TESTING AND BLOW-OFF VALVE SHALL BE REMOVED BY THE CONTRACTOR PROMPTLY UPON SUCCESSFUL COMPLETION OF ALL TESTING. (NO SEPARATE PAY).
19. CONTRACTOR TO ALLOW 6-INCH MINIMUM CLEARANCE BETWEEN PROPOSED WATER LINES AND OTHER FACILITIES UNLESS OTHERWISE NOTED. FOR CLEARANCE OF SANITARY SEWER FACILITIES USE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) CRITERIA.
20. WATER SERVICE LINES EXIST WITHIN THE STREET RIGHT-OF-WAY THROUGHOUT THE CONTRACT LIMITS. CONTRACTOR SHALL AVOID DISRUPTION OF WATER SERVICE. WHERE EXISTING WATER SERVICE LINES NOT IN CONFLICT WITH PROPOSED IMPROVEMENTS ARE DAMAGED BY THE CONTRACTOR. CONTRACTOR SHALL REPLACE THE SERVICE LINE (FROM EXISTING WATER MAIN TO EXISTING METER) AT NO EXTRA COST TO THE OWNER. HOWEVER, WHERE EXISTING WATER SERVICE LINES ARE IN CONFLICT WITH PROPOSED IMPROVEMENT, CONTRACTOR SHALL BE PAID PER UNIT PRICE FOR PROPOSED LONG SIDE OR SHORT SIDE SERVICE REPLACEMENT (FROM EXISTING WATER MAIN TO EXISTING METER) WHICHEVER IS APPLICABLE.
21. THE CITY OF HOUSTON (COH) IS NOT REPLACING ANY EXISTING WATER LINES IN THIS PROJECT. ANY DAMAGE TO THE EXISTING COH WATER LINES DURING CONSTRUCTION SHALL BE REPAIRED UNDER THIS CONTRACT WITH NO COST TO COH.

SANITARY SEWER NOTES:

1. SANITARY SEWER GRAVITY LINES AND FORCE MAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION ITEM.
2. PVC FITTINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION ITEM. PVC FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM D-3034.
3. CONTRACTOR SHALL MAINTAIN THE INTEGRIETY OF THE EXISTING SEWER SYSTEM DURING CONSTRUCTION.
4. THE CONTRACTOR SHALL BE AWARE THAT THERE MAY BE SERVICE CONNECTIONS IN EXISTENCE WHICH DO NOT APPEAR ON THESE DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL EXISTING SERVICES AND LATERALS AND RECONNECT THEM PER DETAILS AND SPECIFICATIONS. IN THE EVENT SERVICE CONNECTIONS ARE FOUND TO BE PLUGGED DURING EXCAVATION, THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND THE ENGINEER PRIOR TO ABANDONING THE SERVICES. NO SERVICES SHALL BE ABANDONED WITHOUT PRIOR APPROVAL FROM THE OWNER. PAYMENT FOR ABANDONING THE SERVICES SHALL BE MADE AT THE BID UNIT PRICE- IF ANY.
5. ALL 8"-15" DIAMETER SANITARY SEWER LINES SHALL BE PVC (ASTM 3034) SDR 26 PIPE BEDDED AND BACKFILLED AS PER STANDARD DETAIL IN PLANS.
6. ALL 4"-6" PIPE (SERVICE CONNECTIONS) SHALL BE SCH 80 PVC (ASTM D-1785 AND ASTM D-2467) BEDDED AND BACKFILLED PER DETAILS IN PLANS.
7. ALL SANITARY SEWER UNDER OR WITHIN TWO FEET OF PAVEMENT SHALL BE BACKFILLED WITH 1-1/2 SACK CEMENT STABILIZED SAND TO BOTTOM OF PROPOSED SUBGRADE.
8. CONTRACTOR SHALL BE AWARE THAT THERE MAY BE SANITARY SEWER SERVICE LEADS EXISTING WITHIN THE STREET RIGHT-OF-WAY THROUGHOUT THE PROJECT LIMITS. THE ENGINEER HAS NOT SHOWN THESE SERVICE LEADS. CONTRACTOR SHALL VERIFY LOCATION OF SERVICE LEADS IN PROXIMITY OF PROPOSED STRUCTURES, FIRE HYDRANTS AND/OR BORE PITS, ETC. AND NOTIFY THE ENGINEER OF ANY CONFLICTS PRIOR TO PROCEEDING WITH WORK IN AREA. IN AREAS WHERE PROPOSED STORM SEWER TRENCHING IS TO OCCUR, CONTRACTOR SHALL MAKE ATTEMPT TO AVOID DISRUPTION OF SERVICES. CONTRACTOR SHALL AVOID RUNNING NEW LEADS THROUGH NEW STORM SEWER UNLESS OTHERWISE SHOWN ON PLANS. IF AN EXISTING SERVICE IS FOUND WHICH CANNOT BE RECONNECTED WITHOUT CONFLICT WITH A PROPOSED STORM SEWER, CONTRACTOR SHALL STOP RELATED WORK AND NOTIFY OWNER AND ENGINEER IMEDIATELY. SEE PAVING AND DRAINAGE PLANS FOR STORM SEWER LOCATIONS. PAYMENT FOR RECONNECCTIONS SHALL BE MADE FOR EACH LINEAR FOOT OF SERVICE LEADS REPLACED PER UNIT PRICE BID.
9. ALL SANITARY SEWER FORCE MAINS SHALL BE (C900, DR 18 RESTRAINED JOINT PIPE THROUGHOUT ENTIRE INSTALLATION, ALL JOINTS.

PROJECT CONTROL NOTES:

BASELINES, STATIONS, AND ELEVATIONS ON THESE PLANS HAVE BEEN ESTABLISHED BASED ON INFORMATION PROVIDED BY OTHERS (SEE SURVEY CONTROL MAPS INCLUDED). CONTRACTOR SHALL ESTABLISH BASELINES PRIOR TO COMMENCING WITH CONSTRUCTION ACTIVITIES AND NOTIFY THE ENGINEER AS SOON AS POSSIBLE, OF ANY DISCREPANCIES OR PROBLEMS ASSOCIATED WITH DOING SO. THE CONTROL BASELINES DO NOT NECESSARILY REPRESENT THE CENTERLINE OR CROWN OF THE EXISTING OR PROPOSED PAVING SECTION NOR THE CENTERLINE OF THE EXISTING RIGHT-OF-WAY.

STATE OF TEXAS
JOHN PETERSON
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LICENSED
PROFESSIONAL ENGINEER
8/24/2020

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

UTILITY NOTES

SCALE: N/A

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		426
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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GENERAL NOTES

1. ALL STATIONING BASED ON BUFFALO SPEEDWAY UNLESS OTHERWISE NOTED.
2. ALL WATER LINES AND SANITARY SEWER FORCE MAINS CROSSING BUFFALO SPEEDWAY SHALL HAVE RESTRAINED JOINTS THE FULL LENGTH OF THE CROSSING, FROM EXISTING CONNECTION TO EXISTING CONNECTION.
3. PROPOSED WATER LINES AND SANITARY SEWER FORCE MAINS SHALL BE INSTALLED BY TRENCHLESS CONSTRUCTION.
4. ALL BENDS SHALL BE ROLLED TO ACCOMMODATED HORIZONTAL AND VERTICAL TRANSITIONS, AS NEEDED.
5. ANY NECESSARY ADJUSTMENTS AND REPAIRS TO EXISTING IRRIGATION LINES WILL BE PAID FOR UNDER ITEM 170-6002 IRRIGATION SYSTEM (TYI).
6. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.

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8/24/2020

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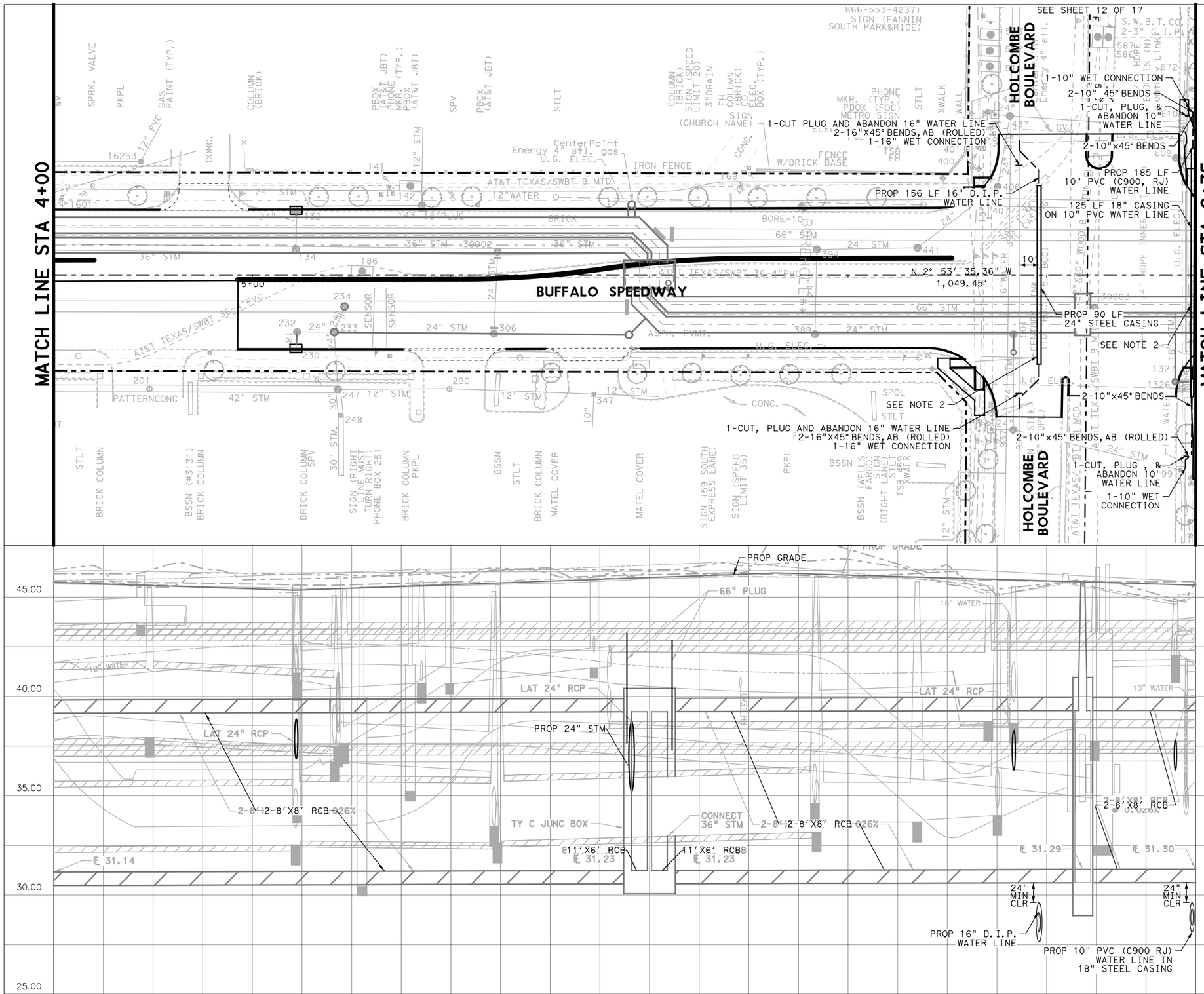
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

WATERLINE PLAN AND PROFILE

BUFFALO SPEEDWAY
BEGIN TO STA 4+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			427
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



GENERAL NOTES

1. ALL STATIONING BASED ON BUFFALO SPEEDWAY UNLESS OTHERWISE NOTED.
2. ALL WATER LINES AND SANITARY SEWER FORCE MAINS CROSSING BUFFALO SPEEDWAY SHALL HAVE RESTRAINED JOINTS THE FULL LENGTH OF THE CROSSING, FROM EXISTING CONNECTION TO EXISTING CONNECTION.
3. PROPOSED WATER LINES AND SANITARY SEWER FORCE MAINS SHALL BE INSTALLED BY TRENCHLESS CONSTRUCTION.
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STATE OF TEXAS
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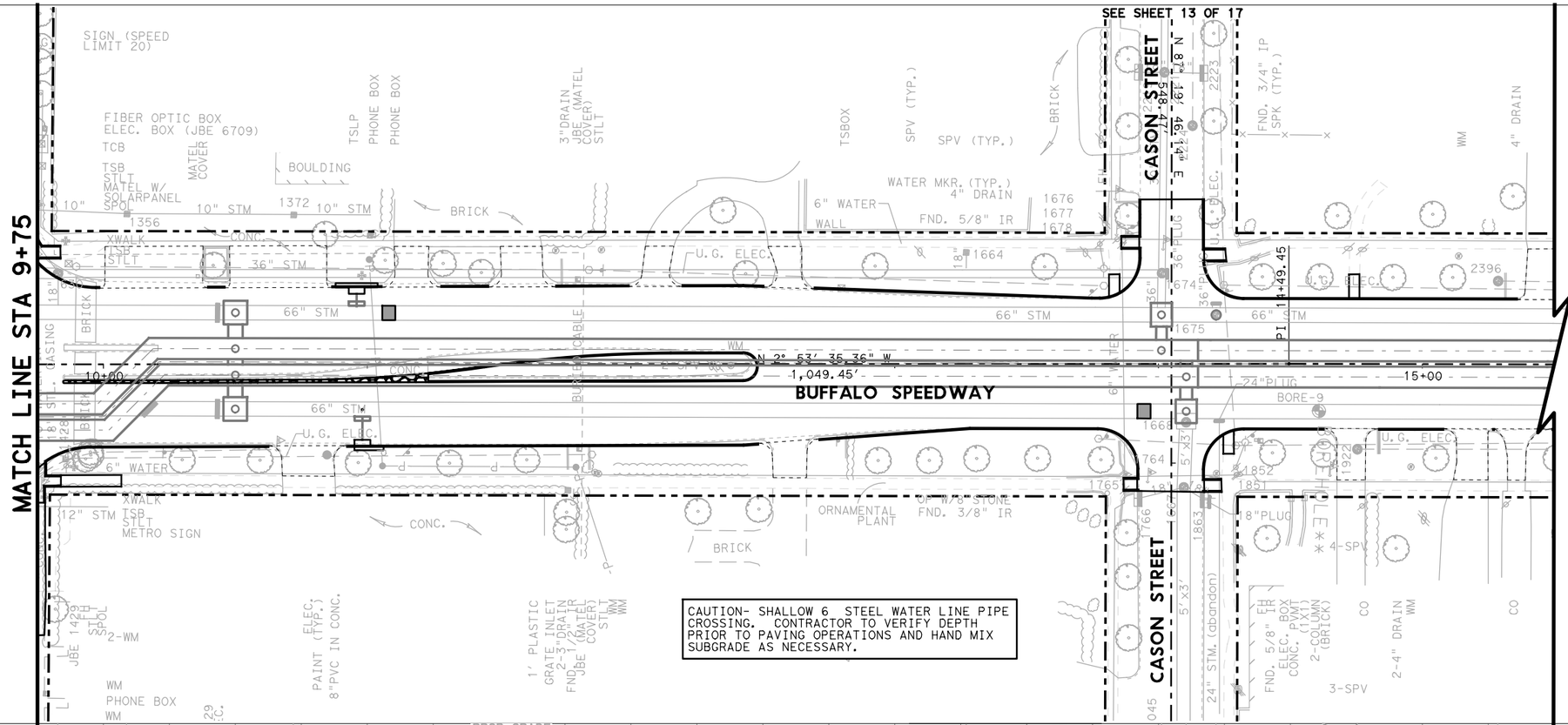
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

WATERLINE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 4+00 TO STA 9+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		428
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50′ 100′

SCALE IN FEET

GENERAL NOTES

1. ALL STATIONING BASED ON BUFFALO SPEEDWAY UNLESS OTHERWISE NOTED.
2. ALL WATER LINES AND SANITARY SEWER FORCE MAINS CROSSING BUFFALO SPEEDWAY SHALL HAVE RESTRAINED JOINTS THE FULL LENGTH OF THE CROSSING, FROM EXISTING CONNECTION TO EXISTING CONNECTION.
3. PROPOSED WATER LINES AND SANITARY SEWER FORCE MAINS SHALL BE INSTALLED BY TRENCHLESS CONSTRUCTION.
4. ALL BENDS SHALL BE ROLLED TO ACCOMMODATED HORIZONTAL AND VERTICAL TRANSITIONS, AS NEEDED.
5. ANY NECESSARY ADJUSTMENTS AND REPAIRS TO EXISTING IRRIGATION LINES WILL BE PAID FOR UNDER ITEM 170-6002 IRRIGATION SYSTEM (TYI).
6. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.

STATE OF TEXAS
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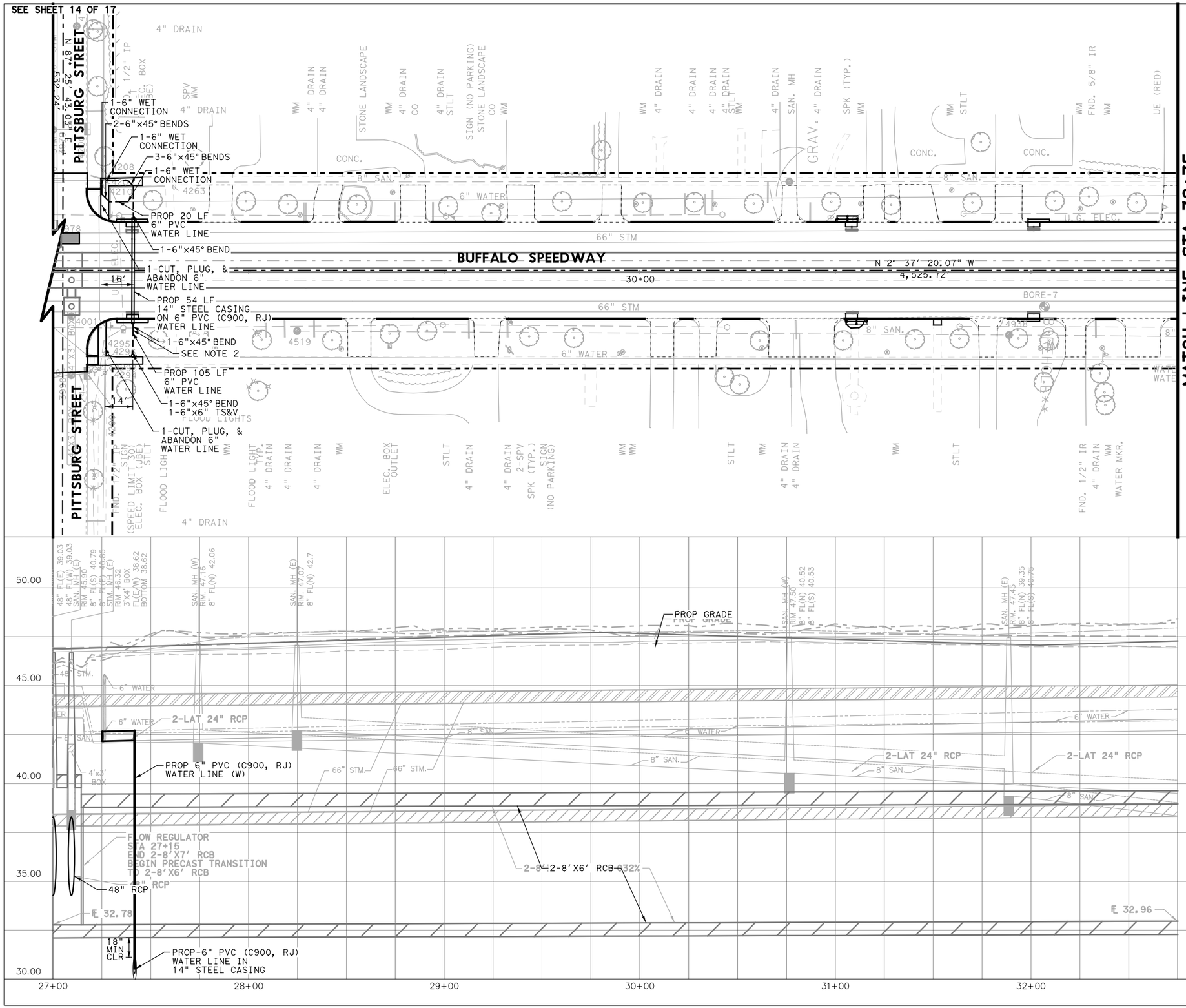
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

WATERLINE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 9+75 TO STA 15+50

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		429
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50′ 100′

SCALE IN FEET

GENERAL NOTES

1. ALL STATIONING BASED ON BUFFALO SPEEDWAY UNLESS OTHERWISE NOTED.
2. ALL WATER LINES AND SANITARY SEWER FORCE MAINS CROSSING BUFFALO SPEEDWAY SHALL HAVE RESTRAINED JOINTS THE FULL LENGTH OF THE CROSSING, FROM EXISTING CONNECTION TO EXISTING CONNECTION.
3. PROPOSED WATER LINES AND SANITARY SEWER FORCE MAINS SHALL BE INSTALLED BY TRENCHLESS CONSTRUCTION.
4. ALL BENDS SHALL BE ROLLED TO ACCOMMODATED HORIZONTAL AND VERTICAL TRANSITIONS, AS NEEDED.
5. ANY NECESSARY ADJUSTMENTS AND REPAIRS TO EXISTING IRRIGATION LINES WILL BE PAID FOR UNDER ITEM 170-6002 IRRIGATION SYSTEM (TYI).
6. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.

STATE OF TEXAS
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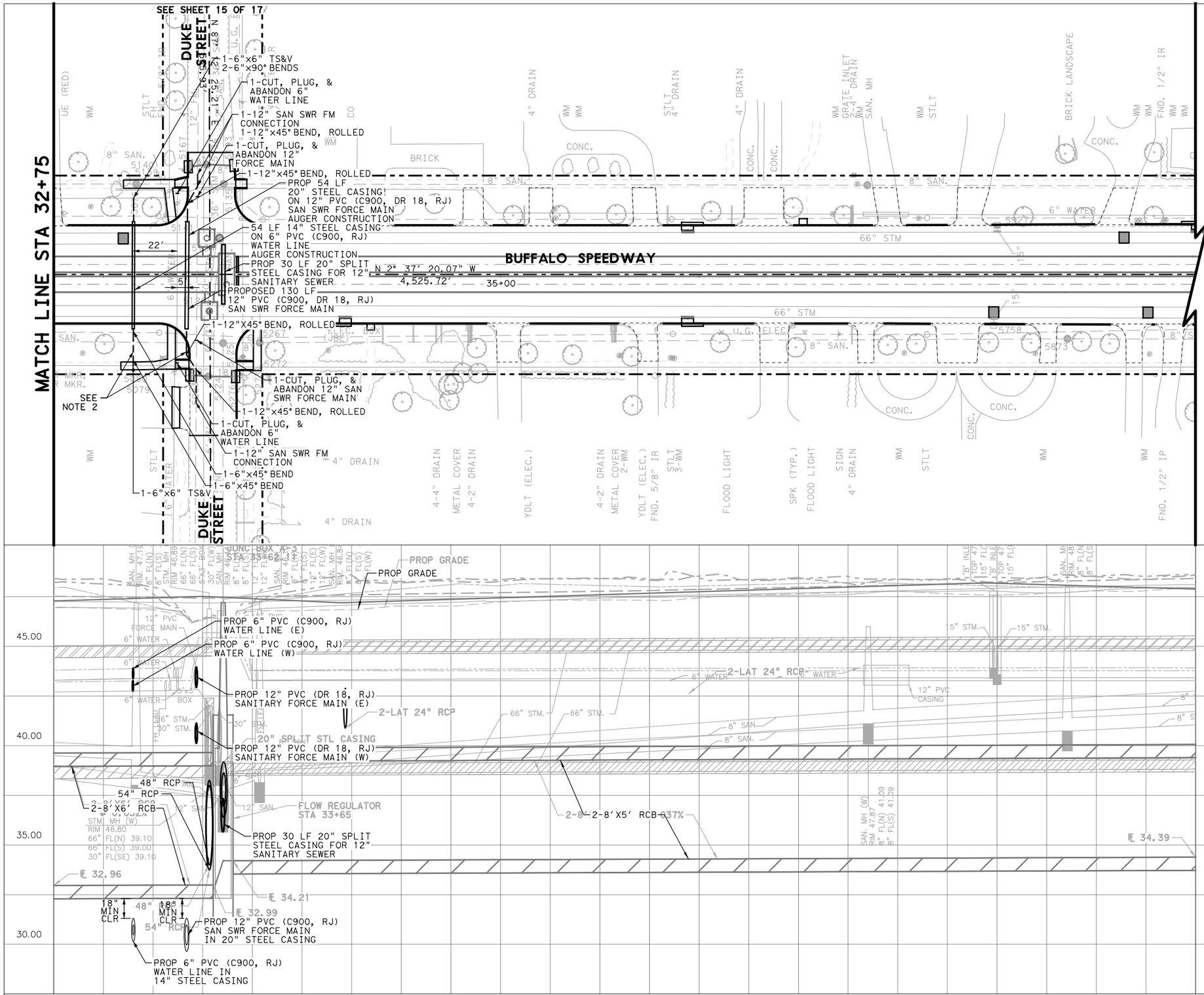
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

WATERLINE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 27+00 TO STA 32+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		430
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50′ 100′

SCALE IN FEET

GENERAL NOTES

1. ALL STATIONING BASED ON BUFFALO SPEEDWAY UNLESS OTHERWISE NOTED.
2. ALL WATER LINES AND SANITARY SEWER FORCE MAINS CROSSING BUFFALO SPEEDWAY SHALL HAVE RESTRAINED JOINTS THE FULL LENGTH OF THE CROSSING, FROM EXISTING CONNECTION TO EXISTING CONNECTION.
3. PROPOSED WATER LINES AND SANITARY SEWER FORCE MAINS SHALL BE INSTALLED BY TRENCHLESS CONSTRUCTION.
4. ALL BENDS SHALL BE ROLLED TO ACCOMMODATED HORIZONTAL AND VERTICAL TRANSITIONS, AS NEEDED.
5. ANY NECESSARY ADJUSTMENTS AND REPAIRS TO EXISTING IRRIGATION LINES WILL BE PAID FOR UNDER ITEM 170-6002 IRRIGATION SYSTEM (TYI).
6. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.

STATE OF TEXAS
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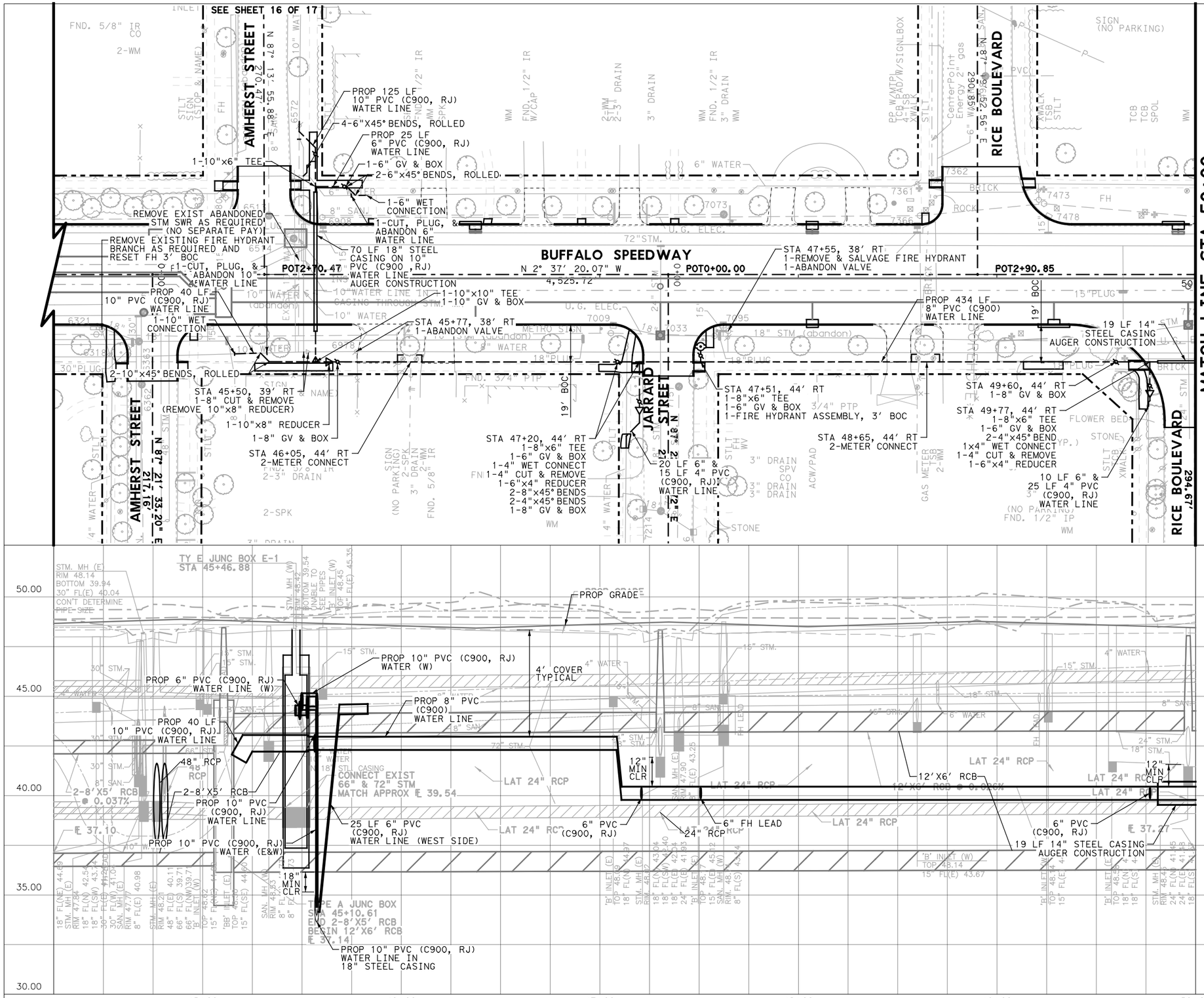
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

WATERLINE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 32+75 TO STA 38+50

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		431
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



GENERAL NOTES

1. ALL STATIONING BASED ON BUFFALO SPEEDWAY UNLESS OTHERWISE NOTED.
2. ALL WATER LINES AND SANITARY SEWER FORCE MAINS CROSSING BUFFALO SPEEDWAY SHALL HAVE RESTRAINED JOINTS THE FULL LENGTH OF THE CROSSING, FROM EXISTING CONNECTION TO EXISTING CONNECTION.
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4. ALL BENDS SHALL BE ROLLED TO ACCOMMODATED HORIZONTAL AND VERTICAL TRANSITIONS, AS NEEDED.
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6. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.

STATE OF TEXAS
JOHN PETERSON
99319
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

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HDR Engineering, Inc.
Texas Registered Engineering Firm 754

City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

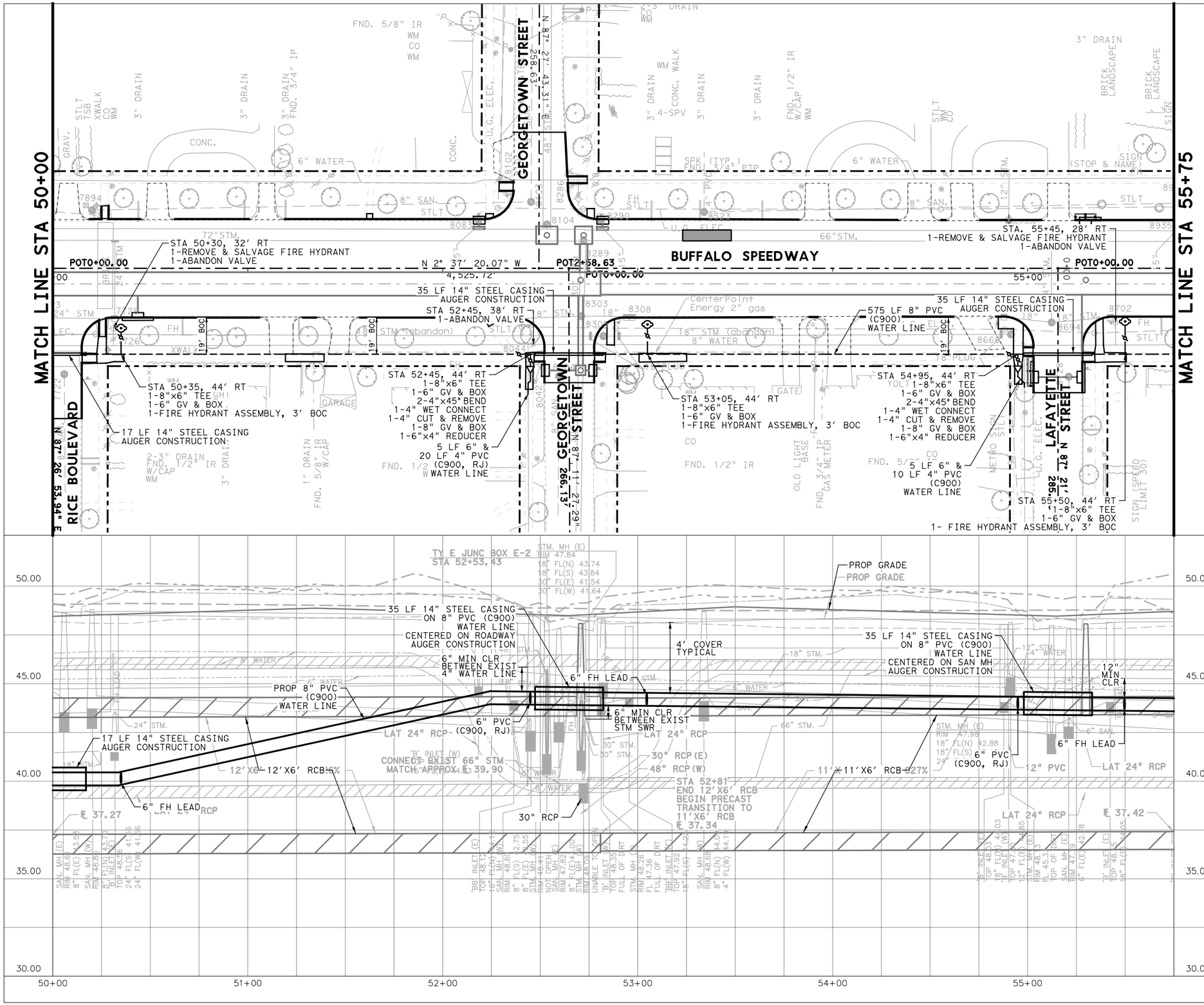
WATERLINE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 44+25 TO STA 50+00

SHEET 6 OF 17

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		432
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50′ 100′

SCALE IN FEET

GENERAL NOTES

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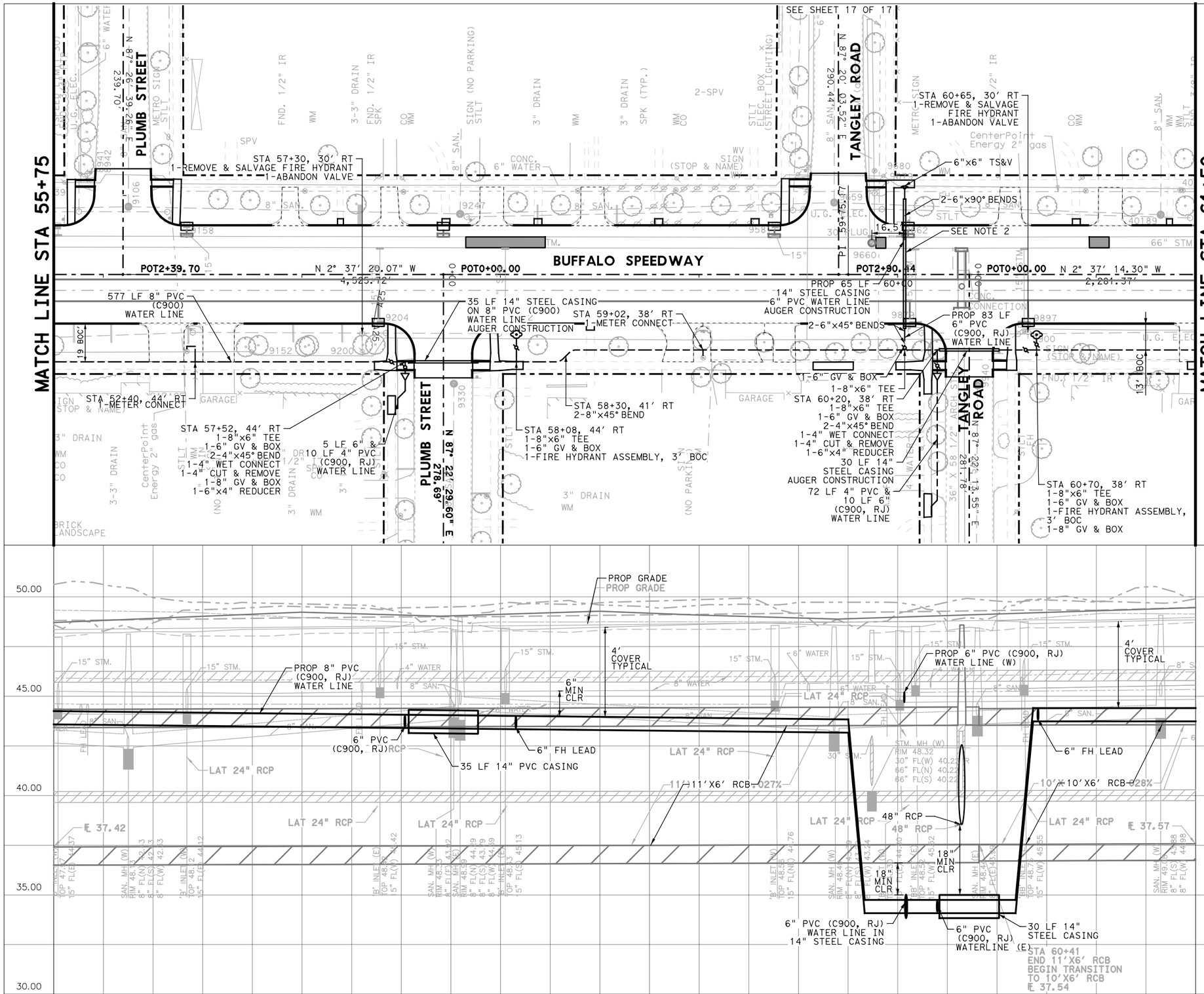
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

WATERLINE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 50+00 TO STA 55+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		433
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100'

SCALE IN FEET

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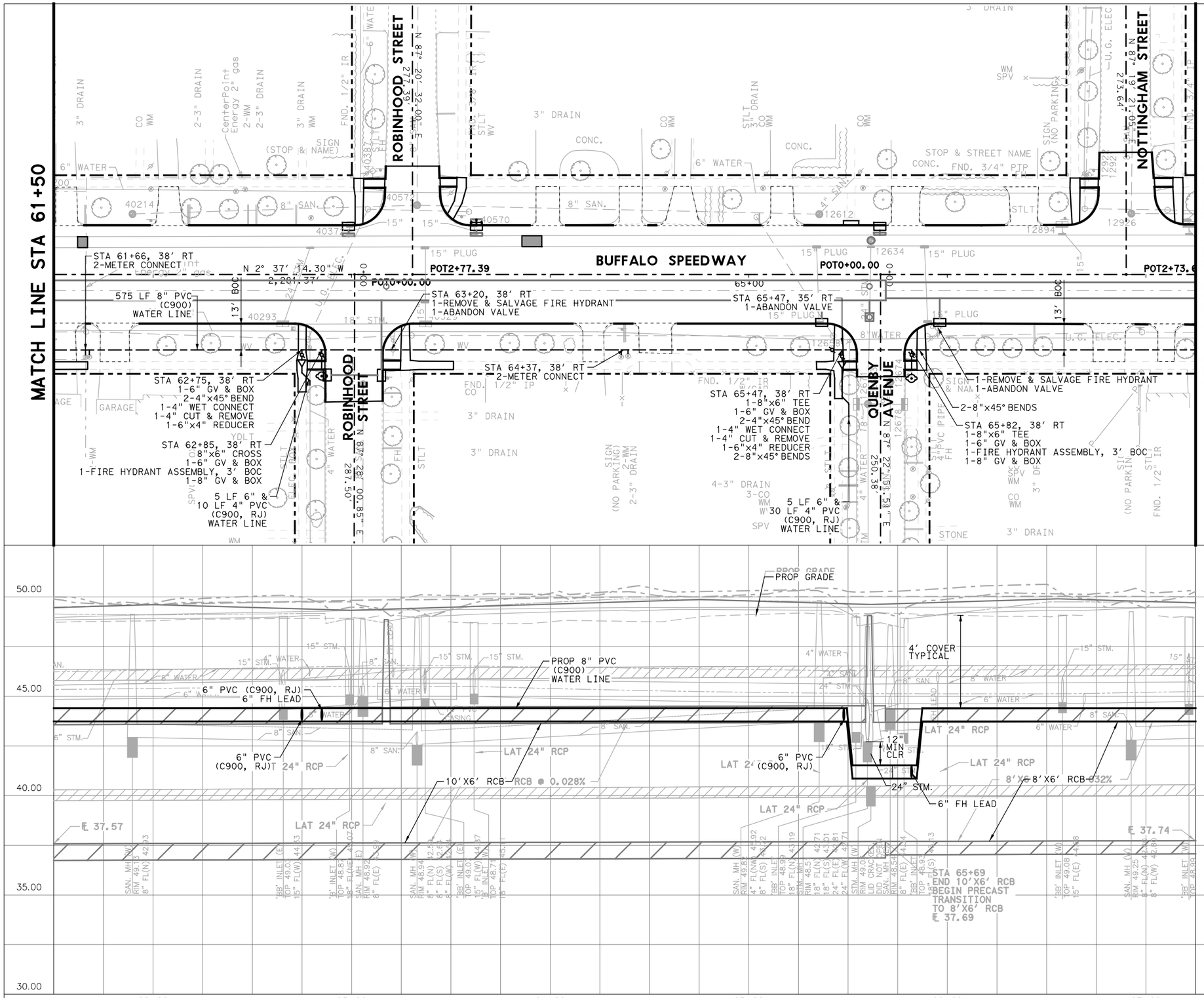
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

WATERLINE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 55+75 TO STA 61+50

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		434
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100'

SCALE IN FEET

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BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

WATERLINE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 61+50 TO STA 67+25

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		435
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

MATCH LINE STA 67+25

MATCH LINE STA 73+00

BUFFALO SPEEDWAY

SUNSET BOULEVARD

NOTTINGHAM STREET

POT0+00.00

N 2° 37' 14.30" W
2,281.37'

POT2+77.59

POT0+00.00

STA 68+10, 35' RT
1- ABANDON VALVE

STA 68+07, 38' RT
1-8"x6" TEE
1-6" GV & BOX
2-4"x45° BEND
1-4" WET CONNECT
1-4" CUT & REMOVE
1-8" GV & BOX
1-6"x4" REDUCER

20 LF 6" &
20 LF 4" PVC
(C900, RJ)
WATER LINE

STA 68+53, 38' RT
1-8"x6" TEE
1-6" GV & BOX
1-FIRE HYDRANT ASSEMBLY, 3' BOC

575 LF 8" PVC
(C900)
WATER LINE

STA 70+83, 33' RT
1-ABANDON VALVE

STA 70+67, 38' RT
1-8" GV & BOX

STA 70+80, 38' RT
1-8"x6" TEE
1-6" GV & BOX
2-4"x45° BEND
1-4" WET CONNECT
1-4" CUT & REMOVE
1-6"x4" REDUCER

15 LF 6" &
20 LF 4" PVC
(C900, RJ)
WATER LINE

STA 71+20, 38' RT
1-8"x6" TEE
1-6" GV & BOX
1-FIRE HYDRANT ASSEMBLY, 3' BOC

STA 72+82, 37' RT
1-METER CONNECT

PROP GRADE

4' COVER
TYPICAL

PROP 8" PVC
(C900)
WATER LINE

6" FH LEAD

6"
MIN
CLR

6" PVC
(C900, RJ)

LAT 24" (C900, RJ)

36" RCP

8'X6' RCB @ 0.032%

8'X5' RCB @ 0.037%

8'X5' RCB

4'x2' RCB

LAT 24" RCP

℄ 37.74

℄ 38.77

℄ 38.94

STA 68+37
END 8'X6' RCB
BEGIN PRECAST
TRANSITION
8'X5' RCB

50.00
45.00
40.00
35.00
30.00

68+00
69+00
70+00
71+00
72+00
73+00

0 50' 100'
SCALE IN FEET

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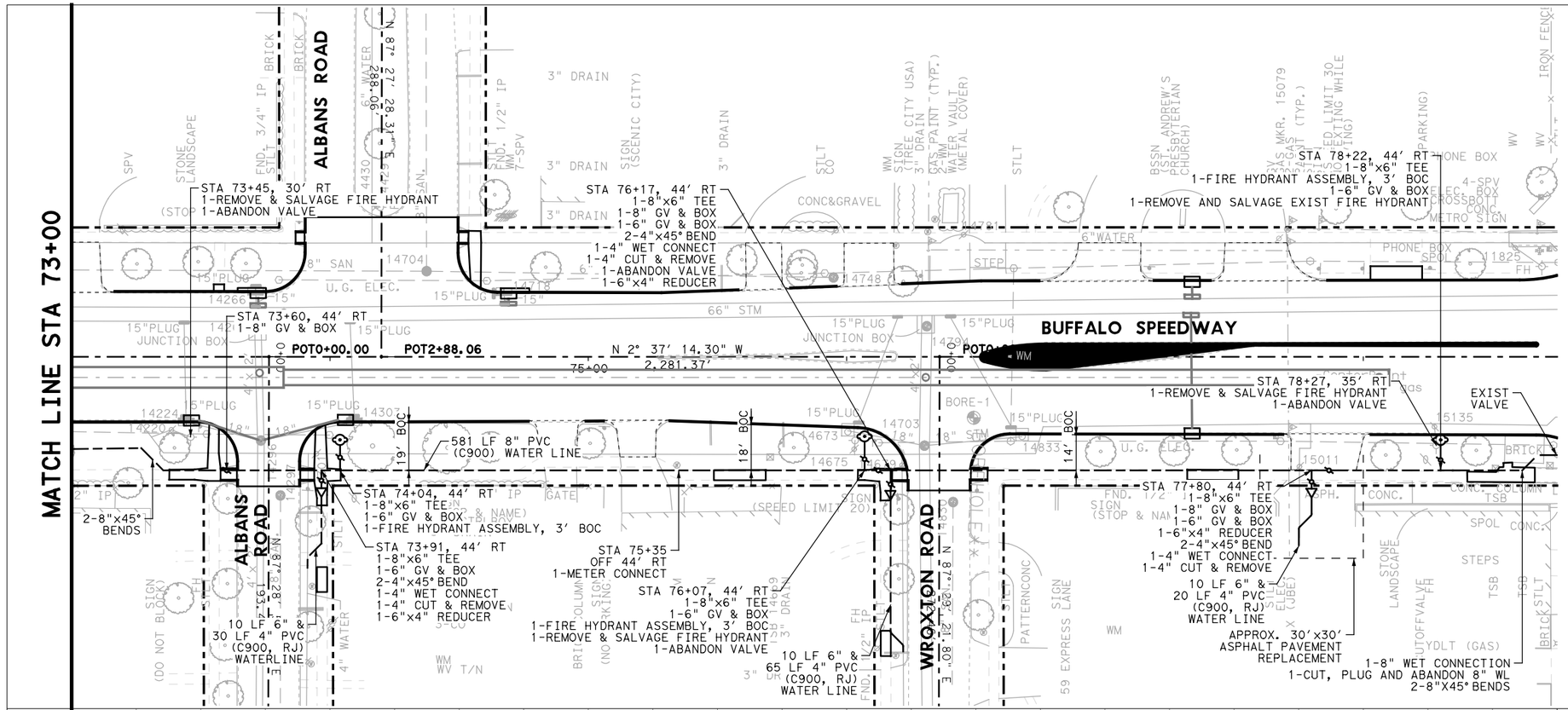
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

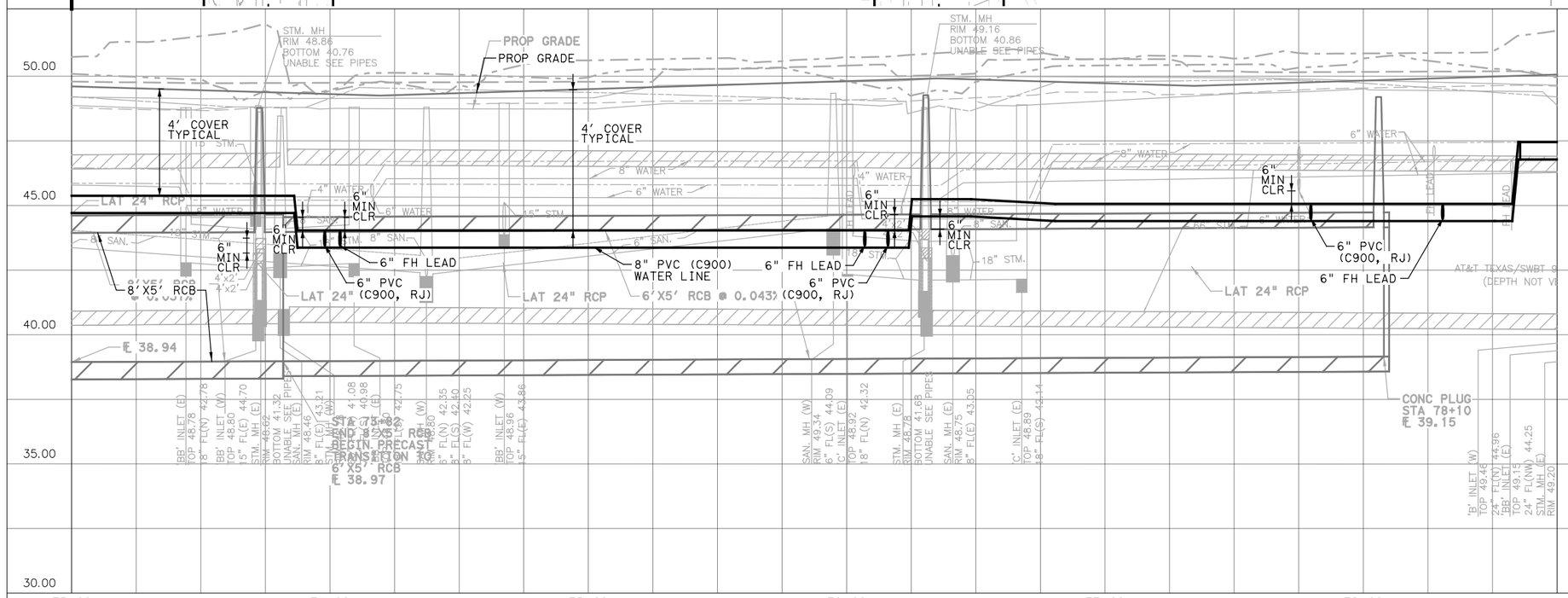
WATERLINE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 67+25 TO STA 73+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			436
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	





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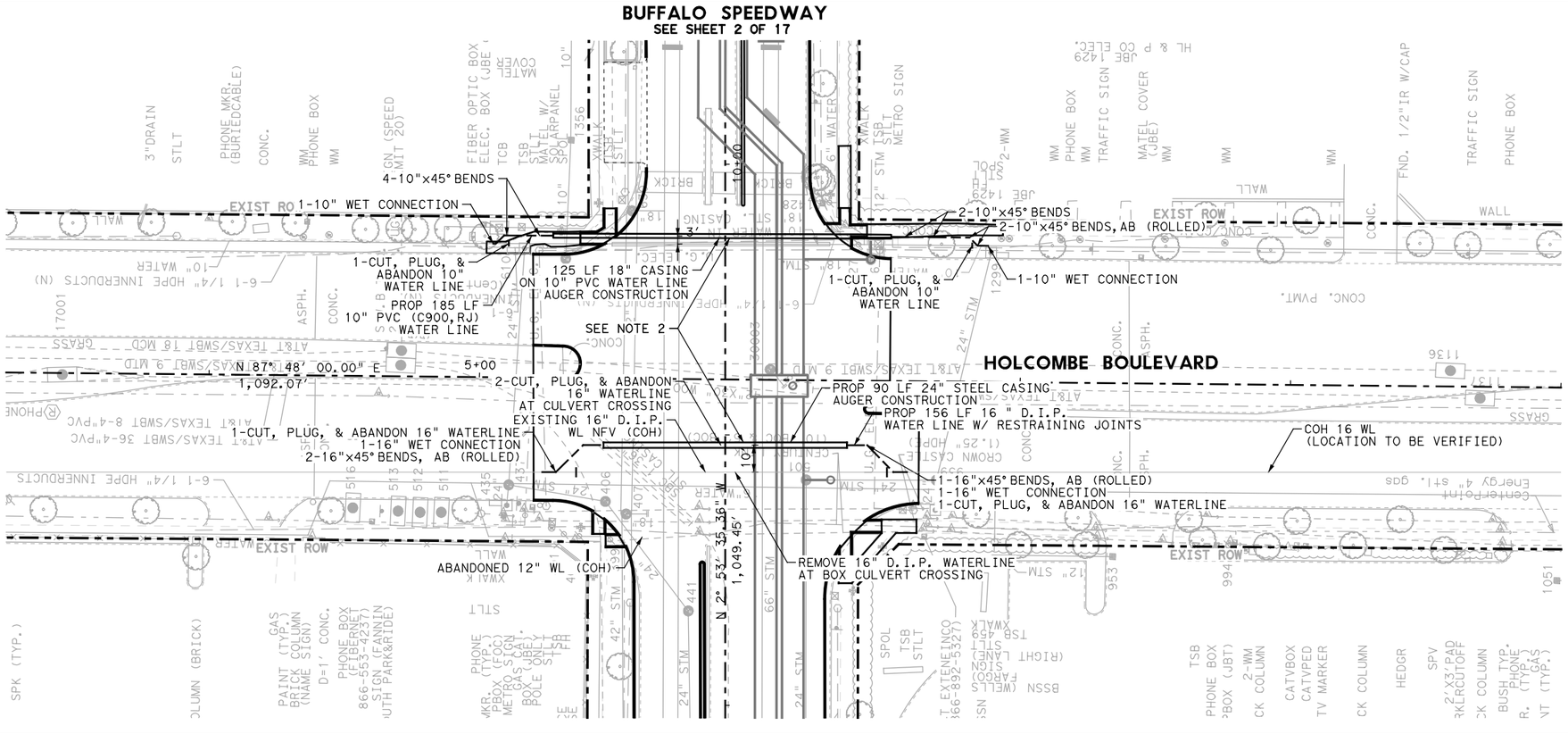
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

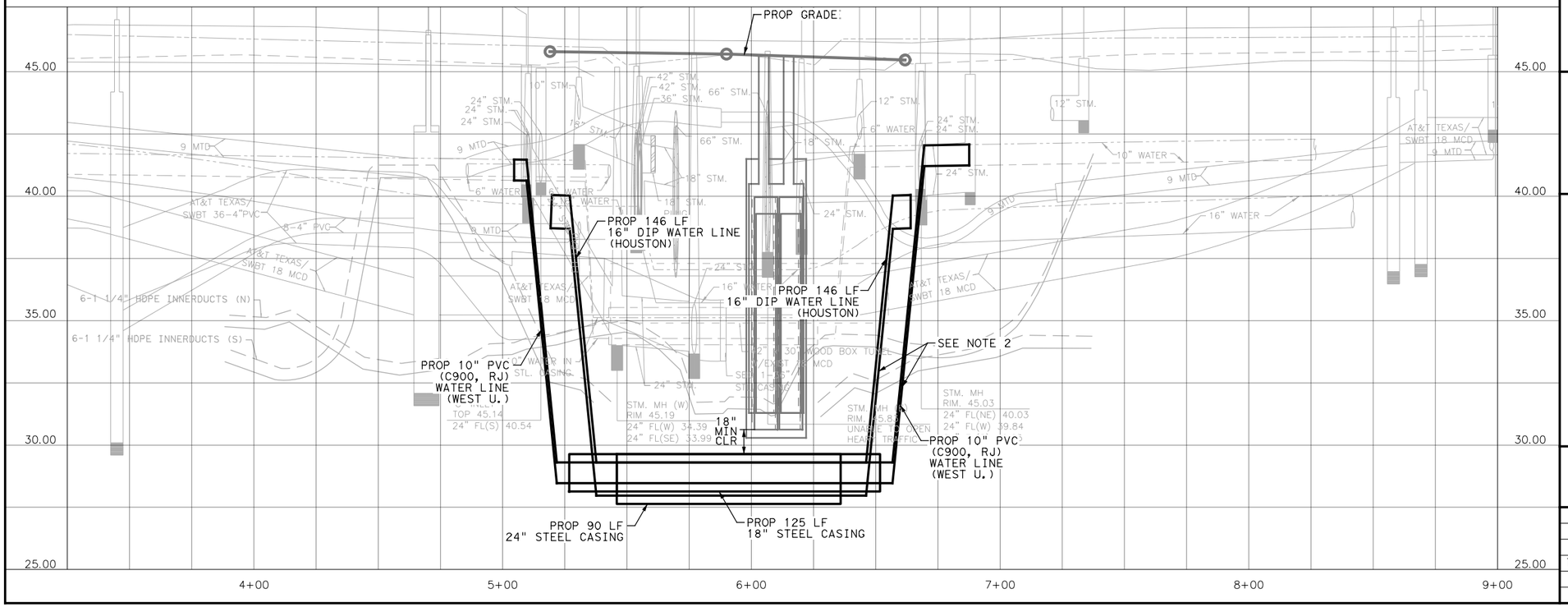
WATERLINE PLAN AND PROFILE

BUFFALO SPEEDWAY
STA 73+00 TO STA 78+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			437
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	





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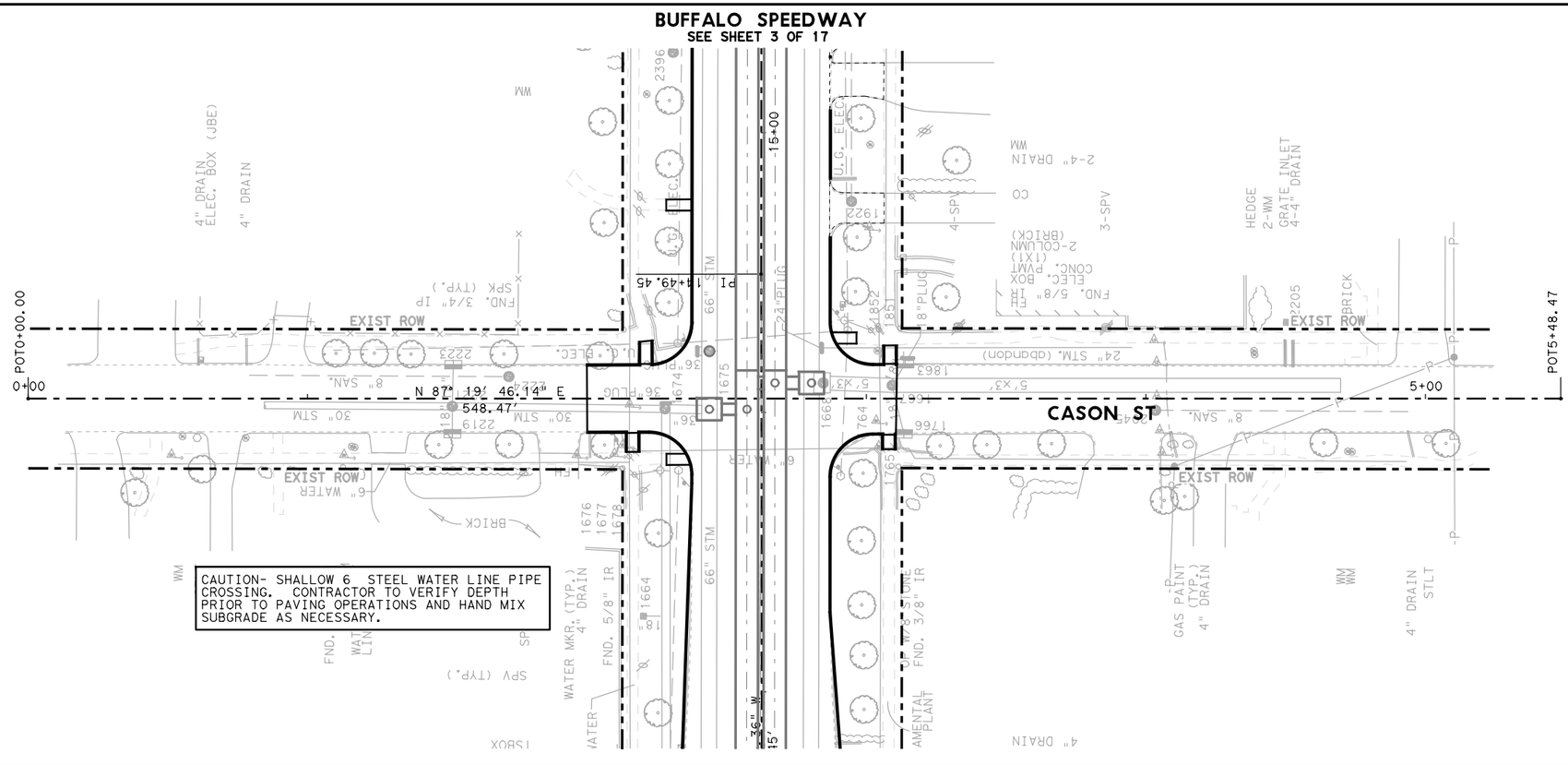
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

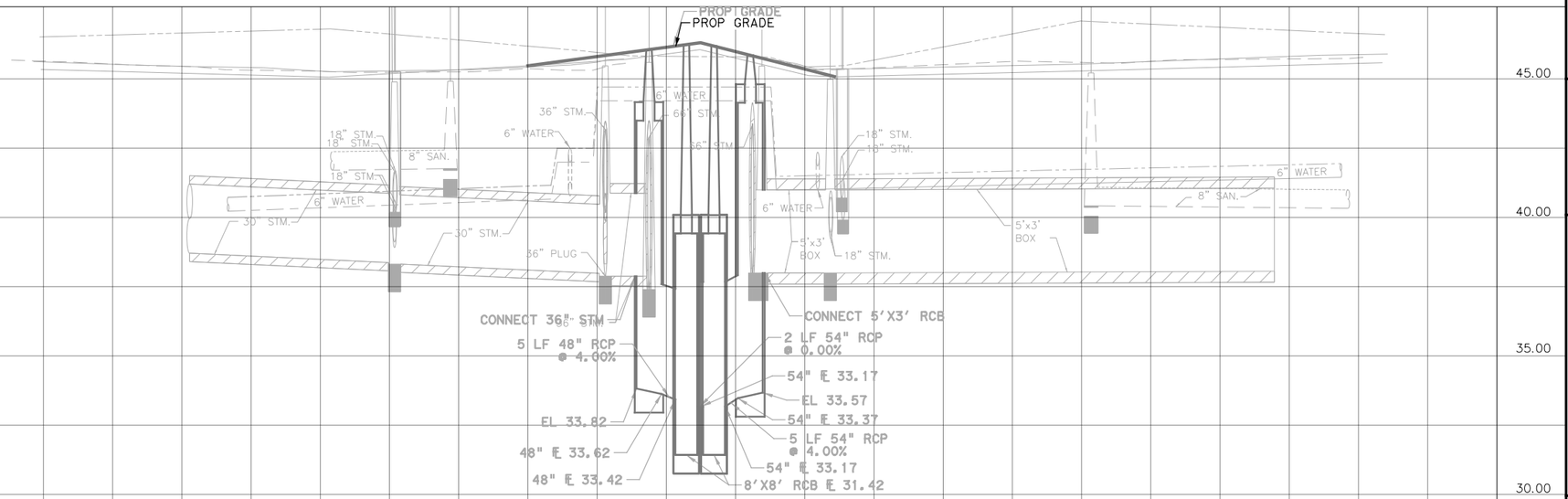
WATERLINE PLAN AND PROFILE

HOLCOMBE BOULEVARD

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		438
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY





0 50′ 100′

SCALE IN FEET

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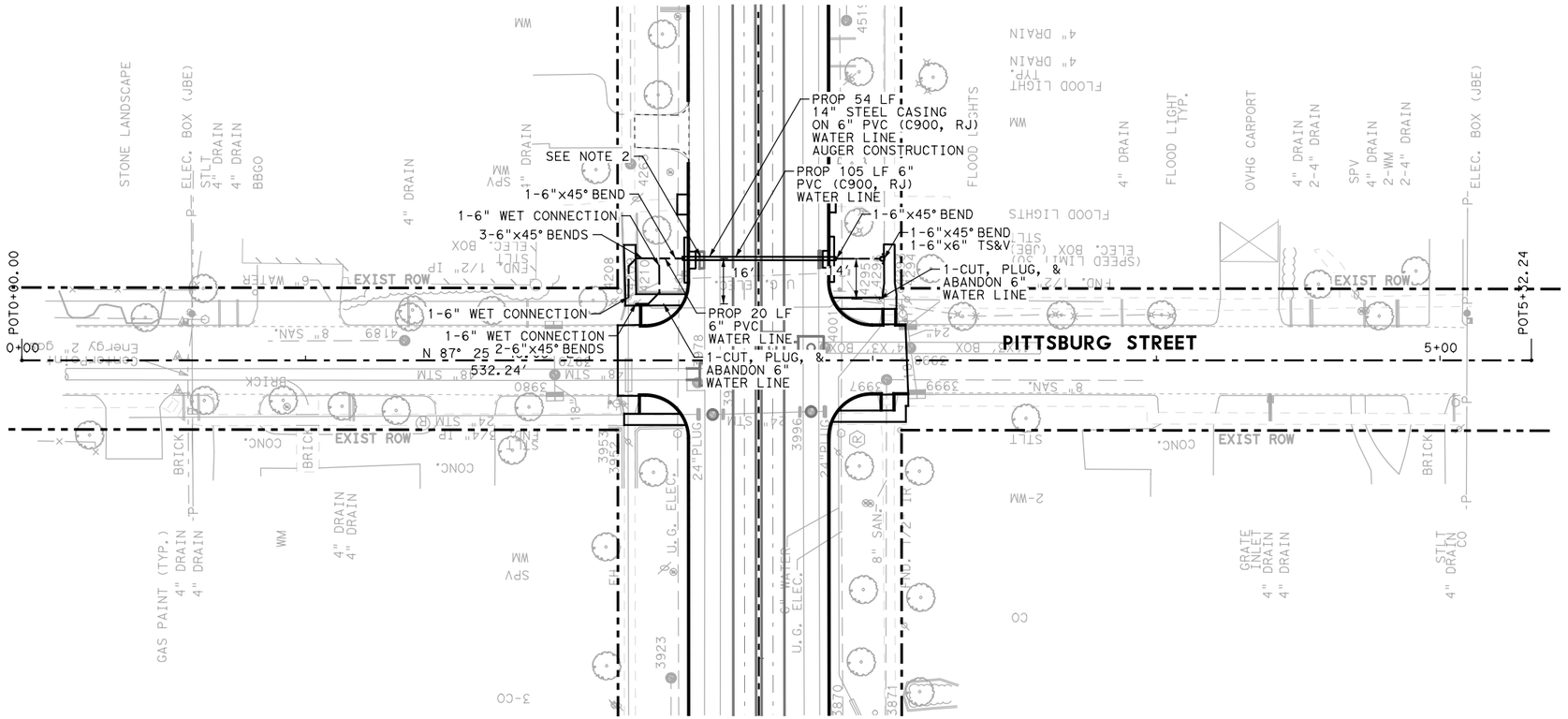
WATERLINE PLAN AND PROFILE

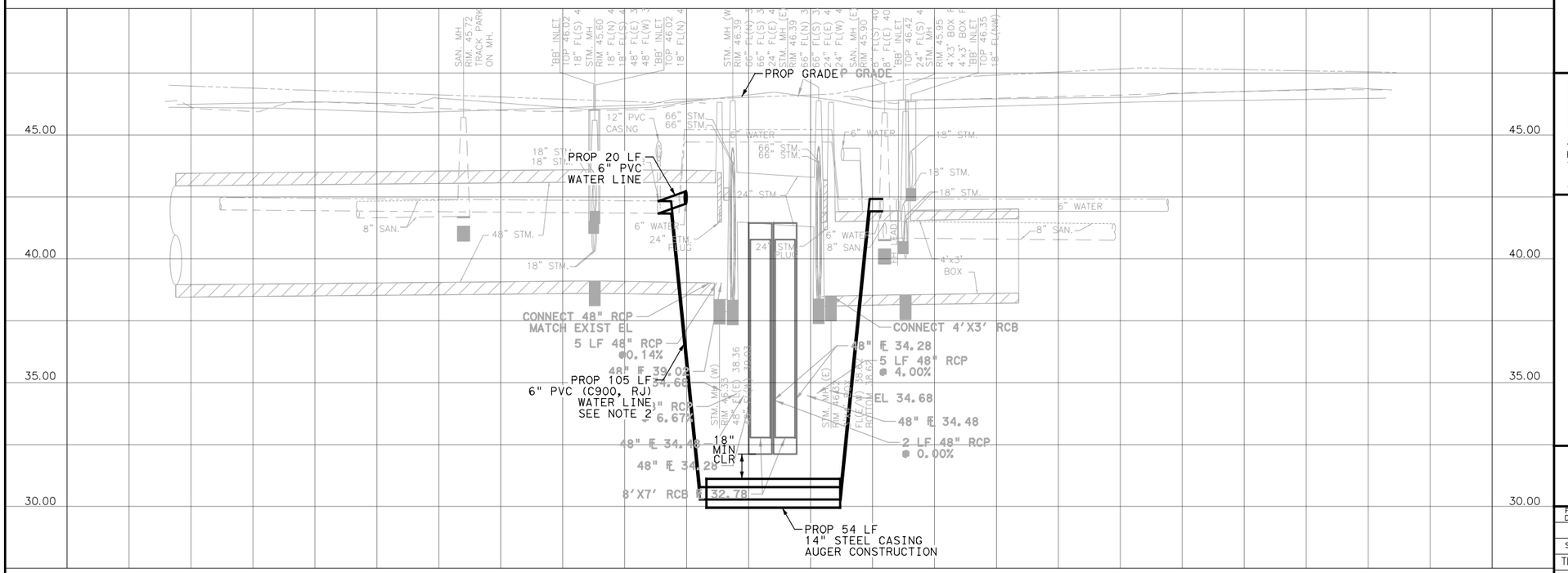
CASON STREET

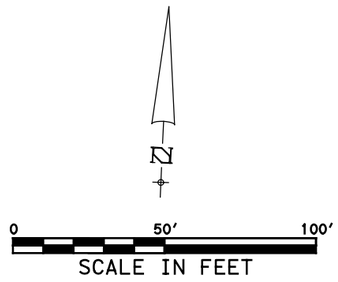
SHEET 13 OF 17

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			439
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	

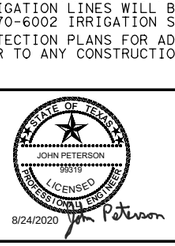






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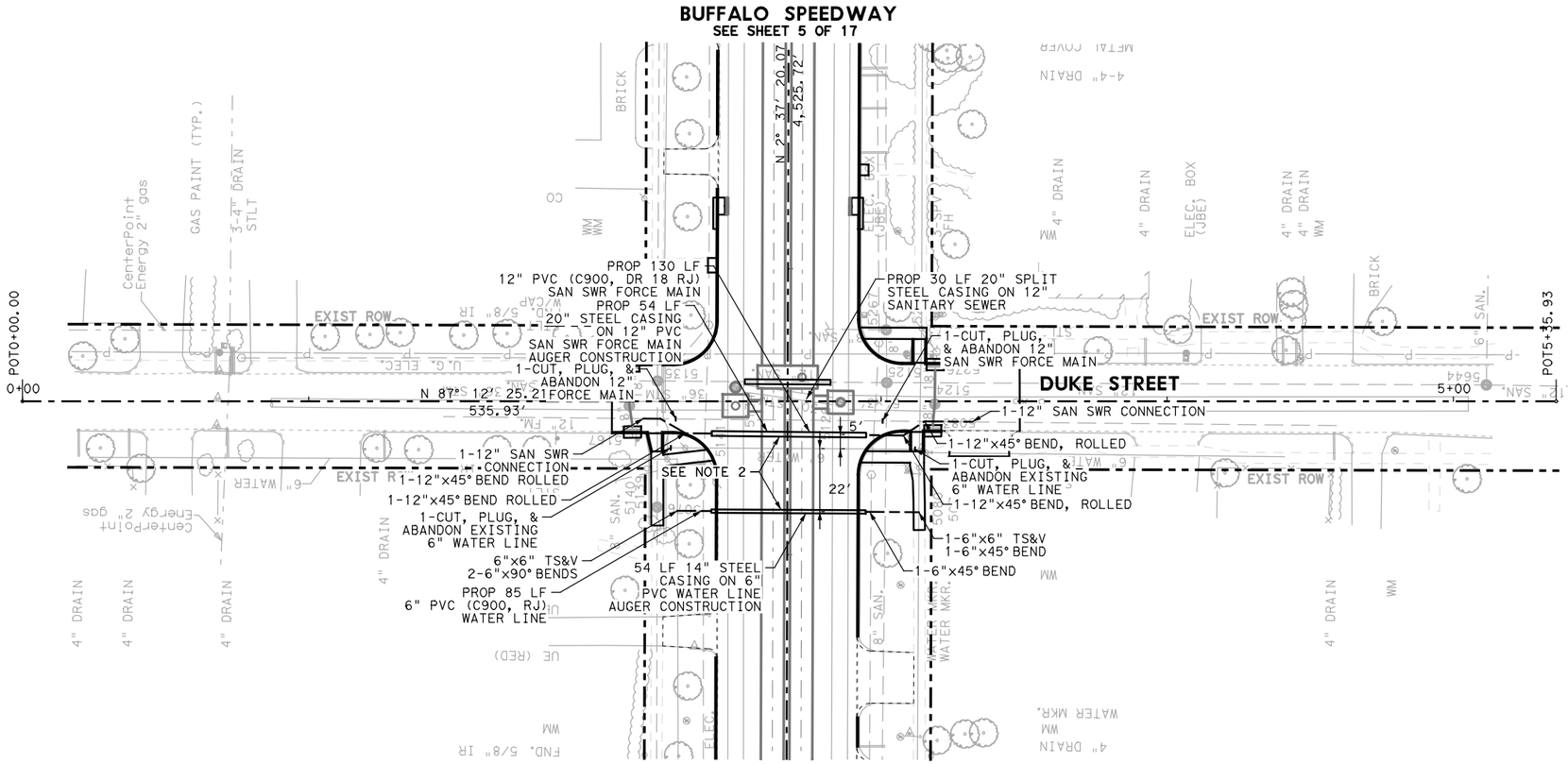
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

WATERLINE PLAN AND PROFILE

PITTSBURG STREET

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		440
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



N

0 50′ 100′

SCALE IN FEET

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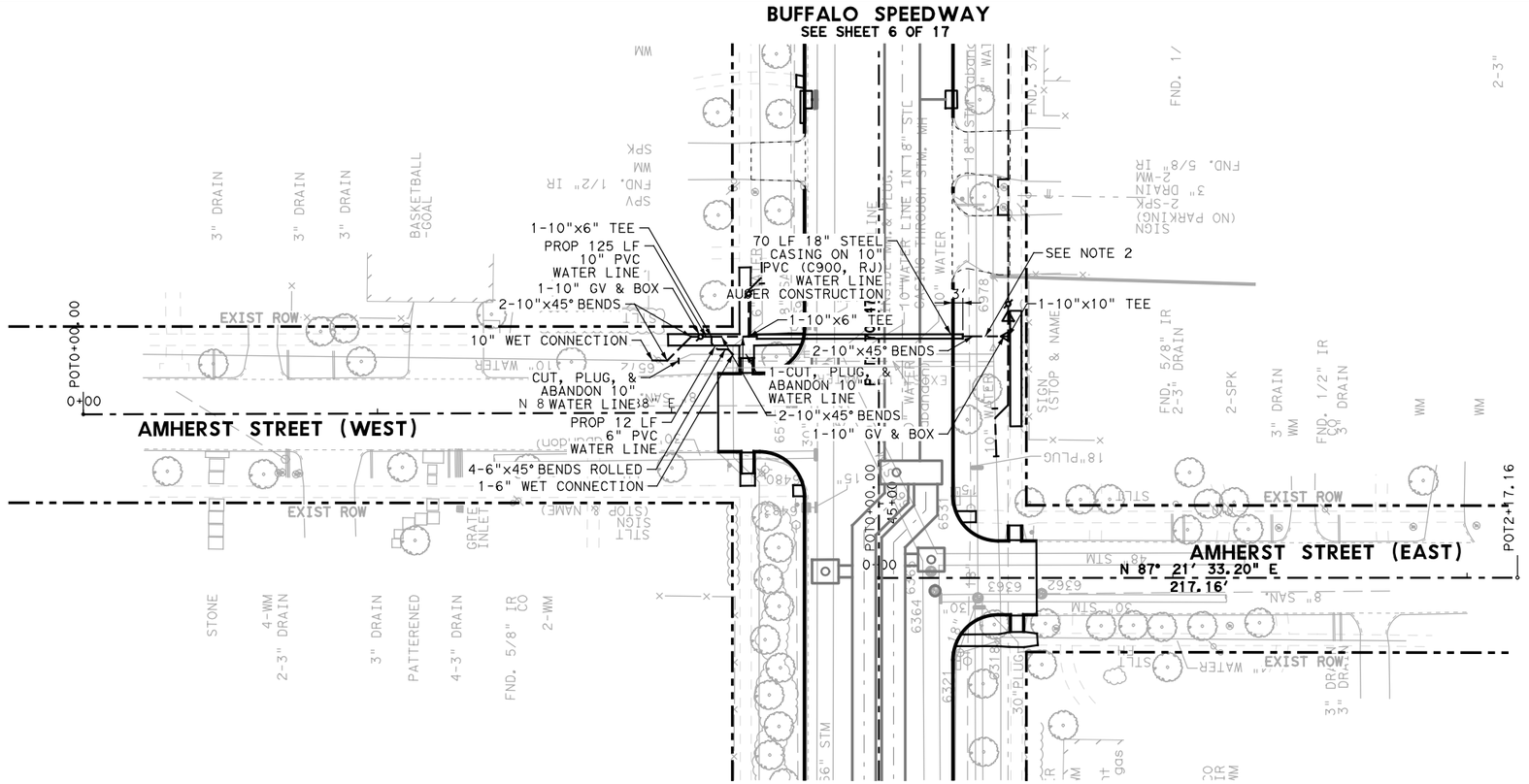
WATERLINE PLAN AND PROFILE

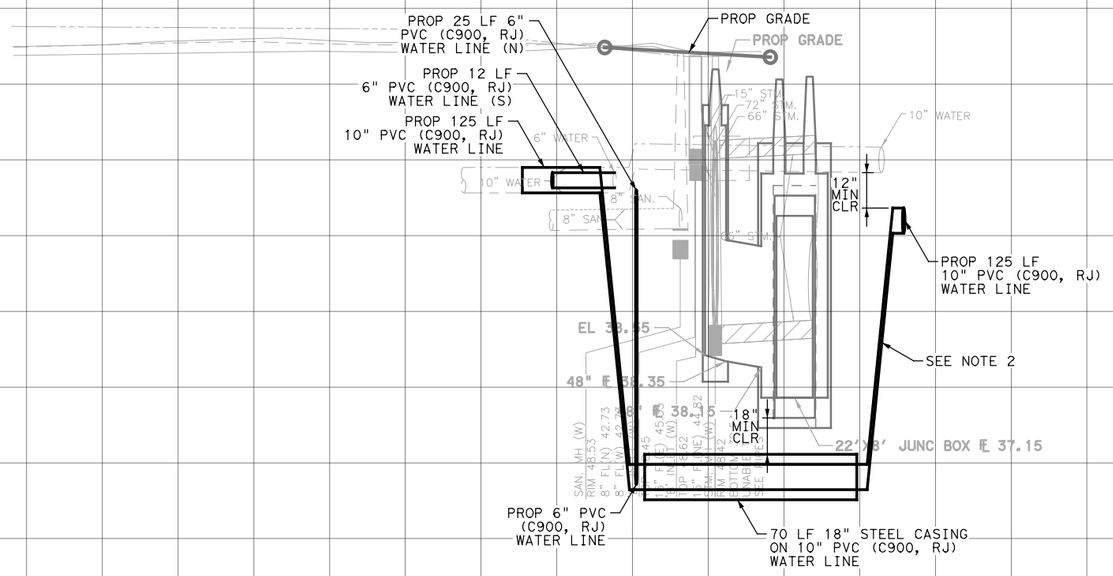
DUKE STREET

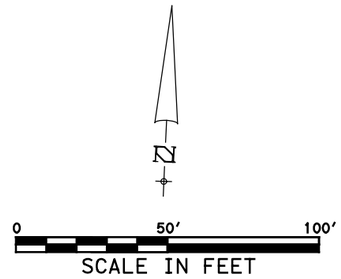
SHEET 15 OF 17

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			441
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	

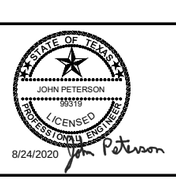






GENERAL NOTES

1. ALL STATIONING BASED ON BUFFALO SPEEDWAY UNLESS OTHERWISE NOTED.
2. ALL WATER LINES AND SANITARY SEWER FORCE MAINS CROSSING BUFFALO SPEEDWAY SHALL HAVE RESTRAINED JOINTS THE FULL LENGTH OF THE CROSSING, FROM EXISTING CONNECTION TO EXISTING CONNECTION.
3. PROPOSED WATER LINES AND SANITARY SEWER FORCE MAINS SHALL BE INSTALLED BY TRENCHLESS CONSTRUCTION.
4. ALL BENDS SHALL BE ROLLED TO ACCOMMODATED HORIZONTAL AND VERTICAL TRANSITIONS, AS NEEDED.
5. ANY NECESSARY ADJUSTMENTS AND REPAIRS TO EXISTING IRRIGATION LINES WILL BE PAID FOR UNDER ITEM 170-6002 IRRIGATION SYSTEM (TYI).
6. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.



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City of West University Place

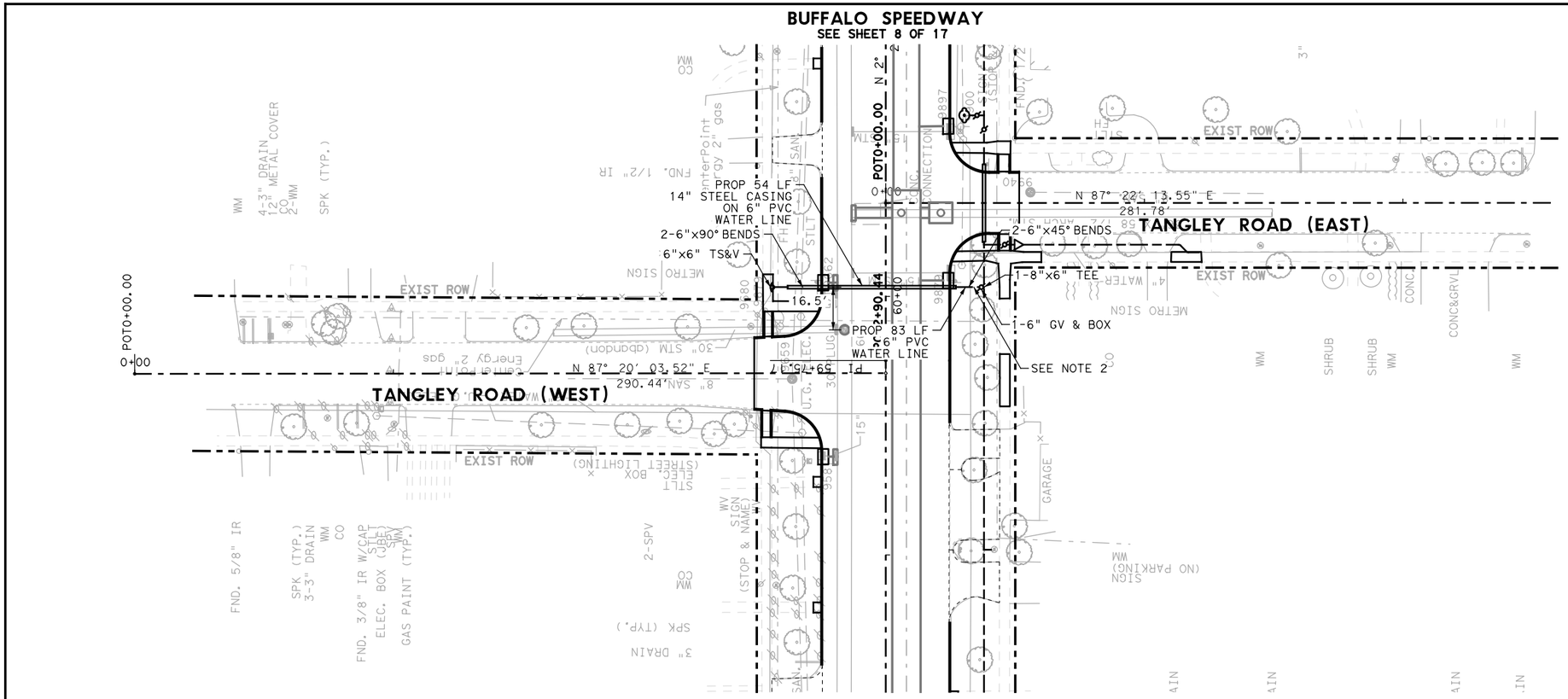
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

WATERLINE PLAN AND PROFILE

AMHERST STREET (WEST)

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		442
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



N

0 50′ 100′

SCALE IN FEET

GENERAL NOTES

1. ALL STATIONING BASED ON BUFFALO SPEEDWAY UNLESS OTHERWISE NOTED.
2. ALL WATER LINES AND SANITARY SEWER FORCE MAINS CROSSING BUFFALO SPEEDWAY SHALL HAVE RESTRAINED JOINTS THE FULL LENGTH OF THE CROSSING, FROM EXISTING CONNECTION TO EXISTING CONNECTION.
3. PROPOSED WATER LINES AND SANITARY SEWER FORCE MAINS SHALL BE INSTALLED BY TRENCHLESS CONSTRUCTION.
4. ALL BENDS SHALL BE ROLLED TO ACCOMMODATED HORIZONTAL AND VERTICAL TRANSITIONS, AS NEEDED.
5. ANY NECESSARY ADJUSTMENTS AND REPAIRS TO EXISTING IRRIGATION LINES WILL BE PAID FOR UNDER ITEM 170-6002 IRRIGATION SYSTEM (TYI).
6. SEE TREE PROTECTION PLANS FOR ADDITIONAL DETAILS PRIOR TO ANY CONSTRUCTION ACTIVITIES.

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8/24/2020

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BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

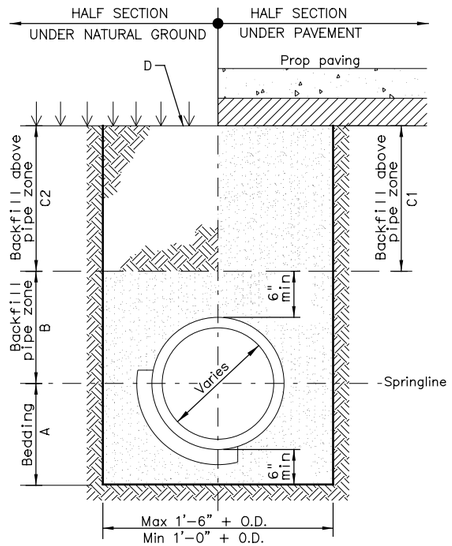
WATERLINE PLAN AND PROFILE

TANGLEY ROAD (WEST)

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		443
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

100% SUBMITTAL

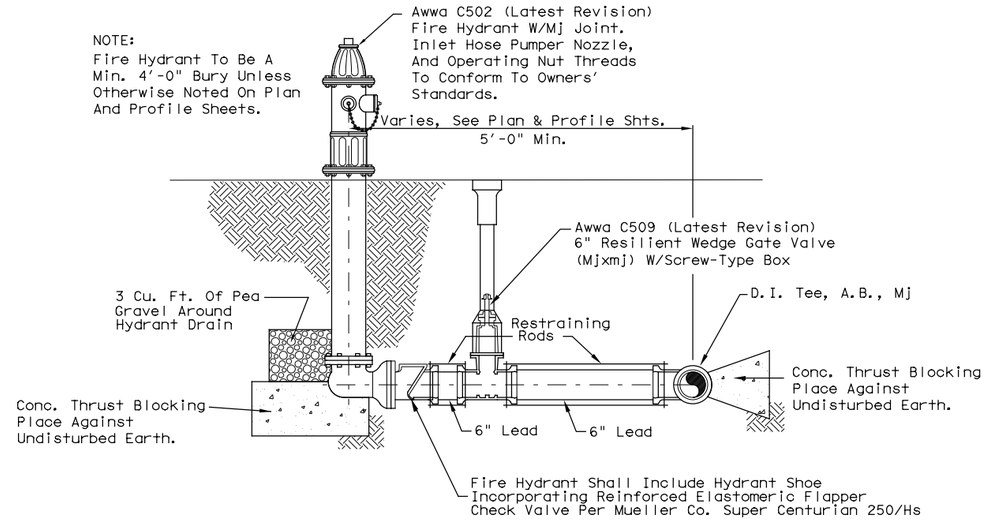


WATER LINE BEDDING & BACKFILL NOTES:

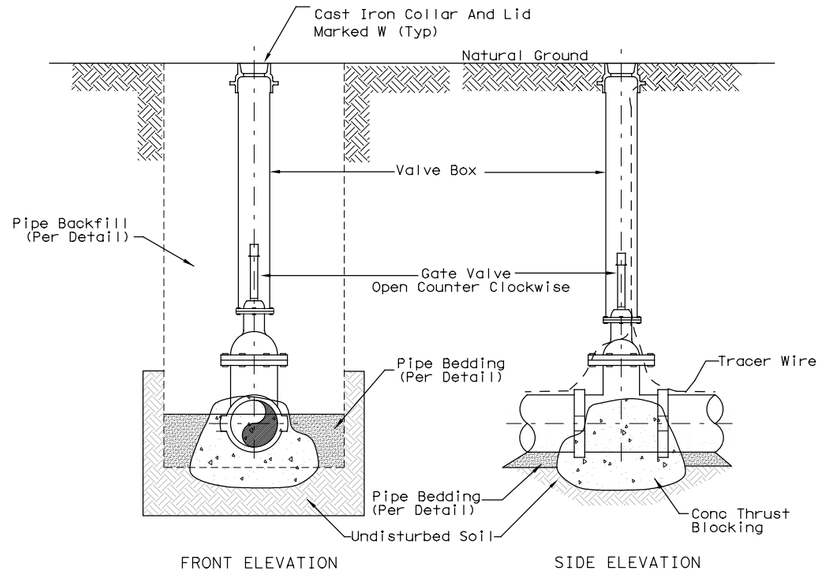
A. Compacted Bank-Sand (Min 6" Depth Below Bottom Of Pipe Barrel). If Unstable Soil Exists At Grade, Use Aggregate Bedding In Lieu Of Bank-Sand Bedding. No Separate Pay.
B. Backfill @ Pipe Zone: Compacted Bank-Sand Across Full Width Of Trench And To Elevation Of (6") Six-Inches Above Top Of Barrel Of Pipe. No Separate Pay.
C. Backfill Above Pipe Zone:
   1. For Trench Through Street, Sidewalks, Or Driveways, Use Cement-Stabilized Sand To Bottom Of Subgrade Of Surfacing Material. No Separate Pay.
   2. For Trench Through Areas Other Than Previously Stated Above, Bring Compacted Bank-Sand Backfill Up To One Foot Of Natural Ground. Then Use 12" Min Select Fill. Place Bank Sand And Select Fill In 12" Layers, Water Tamp If Necessary, And Compact To 95% Standard Proctor Density. No Separate Pay.
D. Solid Block Sod With St Augustine Grass. No Separate Pay.

WATER LINE BEDDING & BACKFILL

NOTE:
Fire Hydrant To Be A Min. 4'-0" Bury Unless Otherwise Noted On Plan And Profile Sheets.



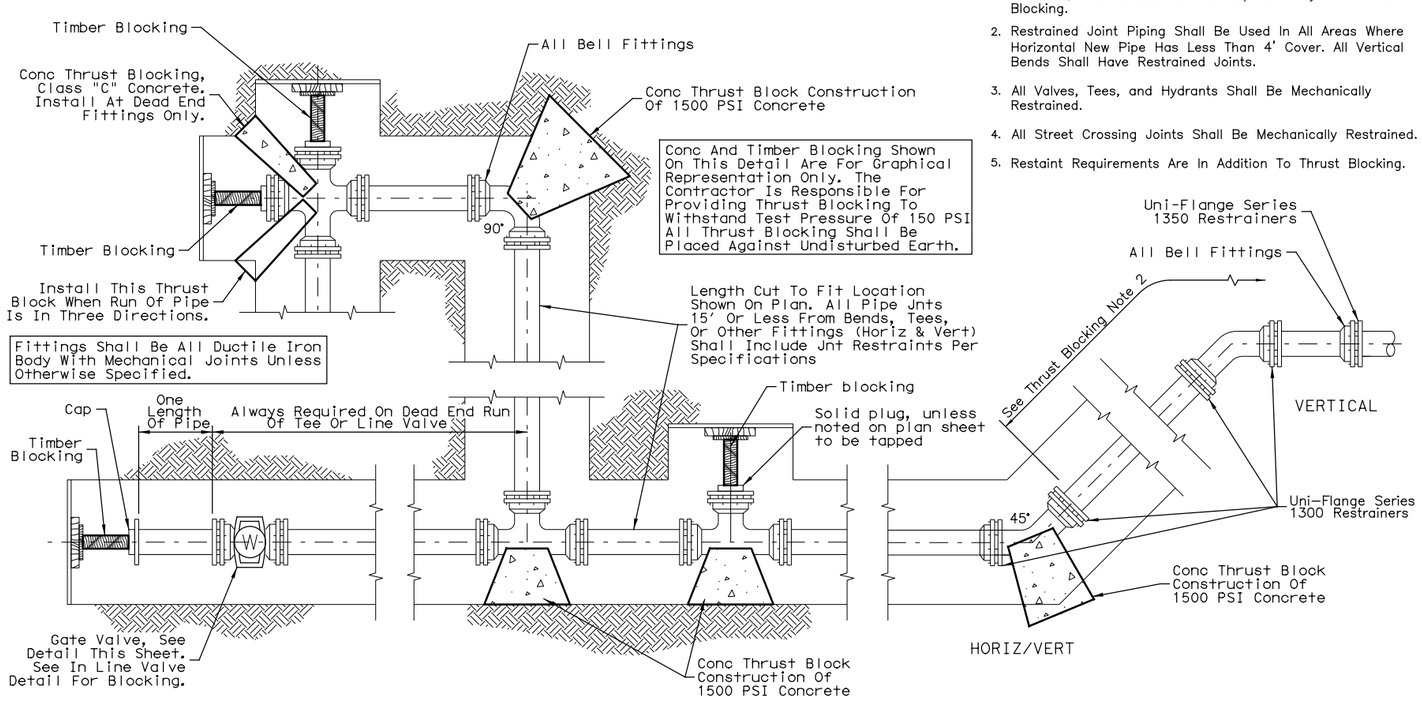
STANDARD FIRE HYDRANT



GATE VALVE INSTALLATION

THRUST BLOCKING NOTES:

1. Size Of Thrust Block To Be Adequate For Two Times, Test Pressure; That Is 250 PSI. No Separate Pay For Thrust Blocking.
2. Restrained Joint Piping Shall Be Used In All Areas Where Horizontal New Pipe Has Less Than 4' Cover. All Vertical Bends Shall Have Restrained Joints.
3. All Valves, Tees, and Hydrants Shall Be Mechanically Restrained.
4. All Street Crossing Joints Shall Be Mechanically Restrained.
5. Restaint Requirements Are In Addition To Thrust Blocking.



FITTING ASSEMBLY & THRUST BLOCKING

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

WATERLINE DETAILS

NOT TO SCALE

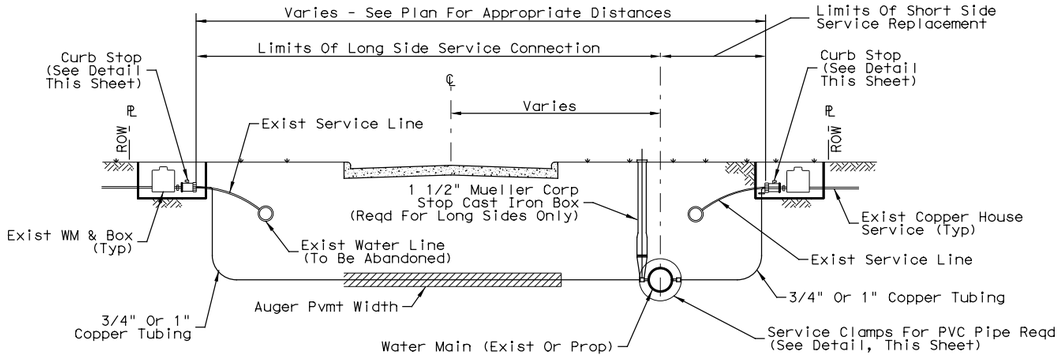
SHEET 1 OF 3

Texas Department of Transportation

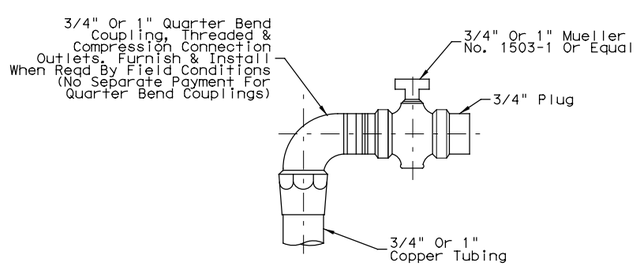
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		444
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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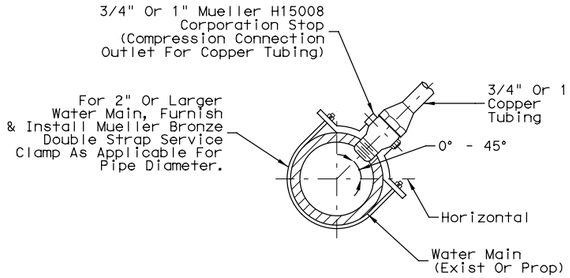
100% SUBMITTAL



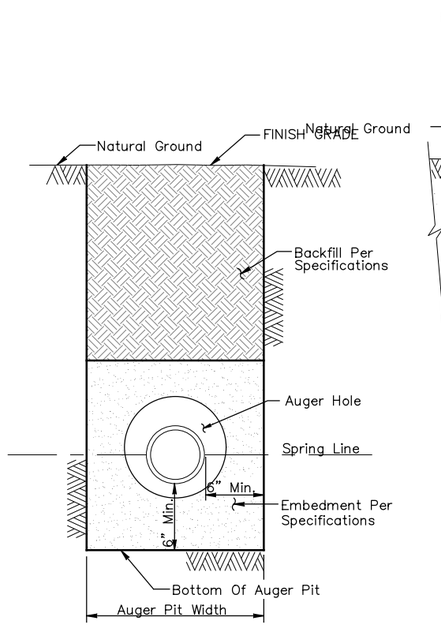
TYP RESIDENTIAL SERVICE REPLACEMENT



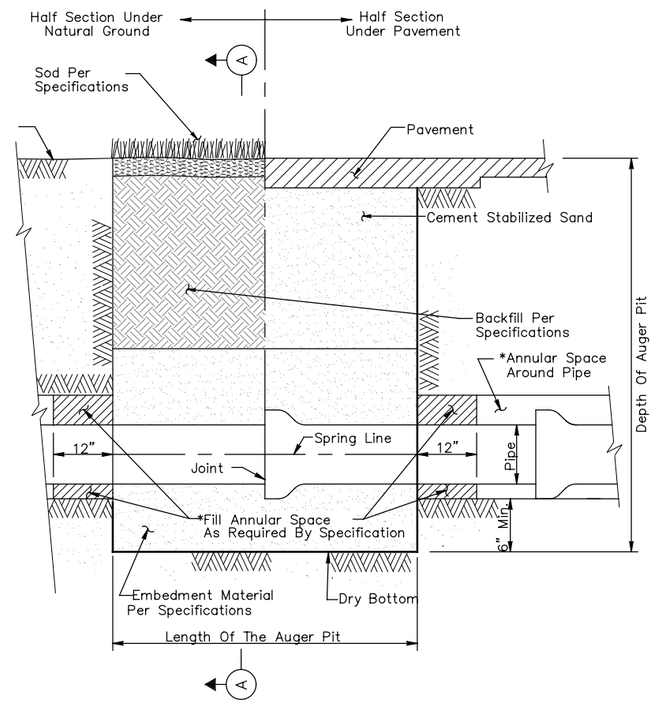
CURB STOP



SERVICE CLAMP & TAP



SECTION A-A



ELEVATION

*The Annular Space Around Augered Pipe At All Street, Roadway, And Driveway Crossings Shall Be Pressure Grouted The Entire Length. (No Separate Pay)

AUGER PIT AND AUGER HOLE

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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

WATERLINE DETAILS

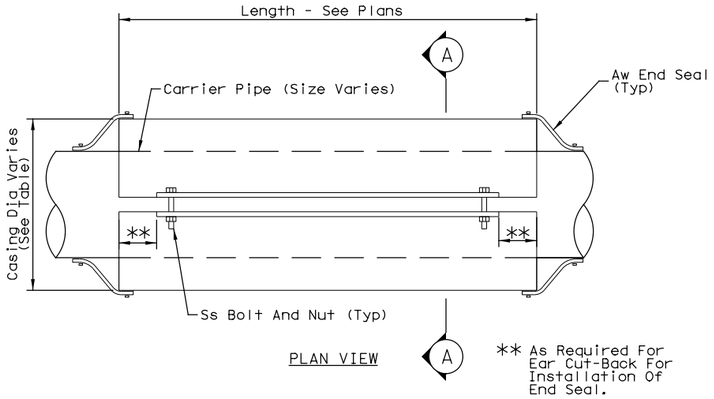
NOT TO SCALE

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		445
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

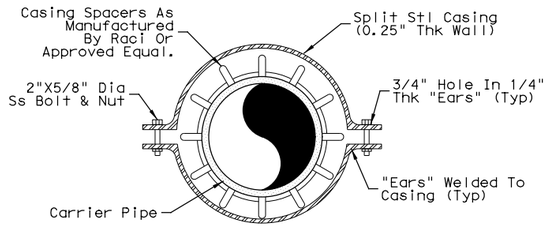
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100% SUBMITTAL



PLAN VIEW

** As Required For Ear Cut-Back For Installation Of End Seal.

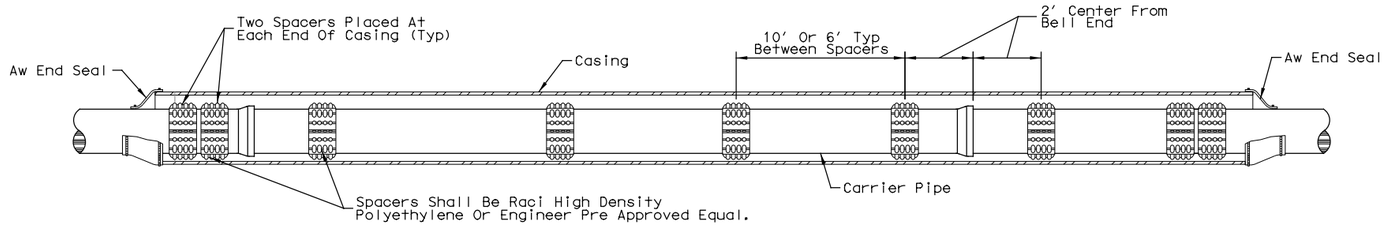


SECTION A-A

CASING TABLE	
CARRIER PIPE SIZE	SPLIT CASING SIZE
4"	10" (*6")
6"	12" (*8")
8"	16" (*10")
10"	18" (*12")
12"	20" (*14")
16"	24" (*16")

In The Event No Bell Joint Or Other Obstruction On The Carrier Pipe Falls Within The Proposed Installation Limits Of The Split Casing, Said Casing Size Maybe Minimized As Shown (*).

SPLIT CASING



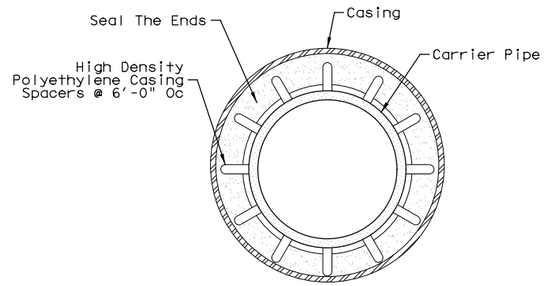
ELEVATION

CASING SPACERS

1. Casing Spacers Shall Be Used To Install The Carrier Pipe Inside The Encasement Pipe. Casing Spacers Shall Fasten Tightly Onto The Carrier Pipe So That When The Carrier Pipe Is Being Installed The Spacers Will Not Move Along The Carrier Pipe. Casing Spacers Shall Be Doubled On Each End Of The Encasement.

2. Each Casing Spacer Shall Be Capable Of Providing Support For The Carrier Pipe In Service At A Maximum Spacing. Calculations Shall Be Provided To The Engineer By The Casing Spacer Manufacturer Showing That The Casing Spacer Will Support The Service Load At The Recommended Spacing, Including A Factor Of Safety Of Two (2). Casing Spacers Used Under This Specification Shall Meet Or Exceed The Specifications Described Herein As Projection Type Casing Spacers.

3. Projection Type Casing Spacers Shall Be Constructed Of Preformed Sections Of High Density Polyethylene. The Flexible Sections Shall Be Joined Together Around The Pipe To Provide A Minimum Of 12 Plastic Projections Per Spacer Section. Projection Type Casing Spacers Shall Be "Raci" Type Projection Spacers Or Engineer Pre-Approved Equal.

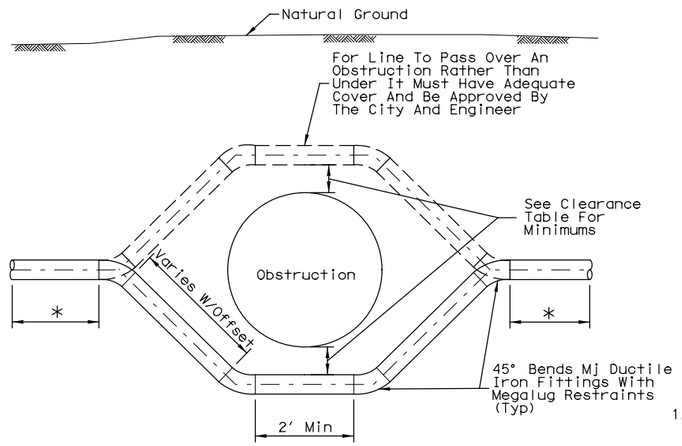


SECTION

PIPE TYPE & SIZE	MAX. SPACING
PVC 4"-14"	10'
PVC 16"-30"	6'
Ductile Iron Pipe	6'

CARRIER PIPE SIZE (IN.)	MINIMUM CASING PIPE SIZE (IN.)
4	10
6	14
8	16
10	18
12	20
16	24

PIPE CASING SPACERS



* Restrained Joint Coupling Shall Be Used For Joining Two Plain End Pipes Of The Same Or Dissimilar Materials. For Pipe Sizes 12" And Smaller The Contractor Shall Verify That No Other Joints Are Closer Than 10' From The Proposed Bend. If A Joint Is Found To Be Closer Than 10' From The Proposed Bend Then It Shall Be Exposed And Restrained.

WATER LINE ADJUSTMENT

PROPOSED WATER LINE VERTICAL CLEARANCE TABLE	
OBSTRUCTION	MINIMUM CLEARANCE
SANITARY SEWER	SEE TCEQ REGULATIONS
PRIVATE UTILITY	12"
PRIVATE PIPELINE	24"
WATER LINE	6"
STORM SEWER	6"

NOTES:
1. Clearance From All Existing Water Lines To Be Abandoned Shall Be 6" Vertically And 12" Horizontally.
2. 6" Minimum Clearance From Existing Drainage Structure Must Be Maintained. (Unless Otherwise Shown On Plans)
3. If Depth Of Water Line Is Greater Than 8' Or Cover Is Less Than 3', Material Shall Be Steel (2' Absolute Min Cover).

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City of West University Place

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

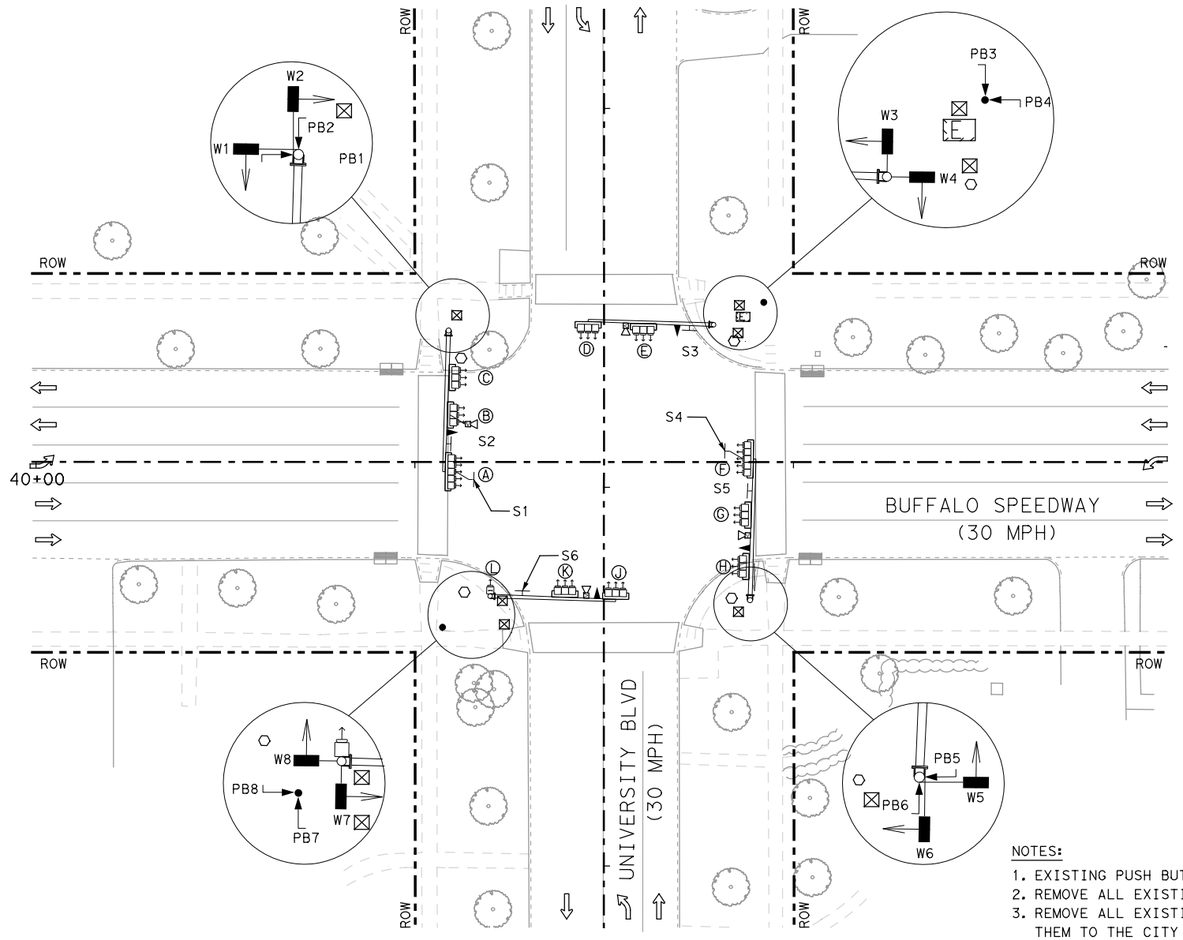
WATERLINE DETAILS

NOT TO SCALE

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		446
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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USER: RUGONZALE
FILE: $FILE$
DATE: 8/20/2020
TIME: 4:08:08 PM
PENTABLE: TXDOT.tbl



NOTES:

1. EXISTING PUSH BUTTON SIGN LOCATED WITH PUSH BUTTON.
2. REMOVE ALL EXISTING SIGNAL APPURTENANCES.
3. REMOVE ALL EXISTING EMERGENCY DETECTORS AND PROVIDE THEM TO THE CITY OF WEST UNIVERSITY PLACE TRAFFIC OPERATIONS STAFF.

0 40′ 80′

SCALE IN FEET

LEGEND

- DIRECTION OF TRAFFIC
- EXISTING ELECTRICAL SERVICE METER
- EXISTING SIGNAL CONTROLLER
- EXISTING PEDESTRIAN POLE
- EXISTING MAST ARM
- EXISTING SIGNAL HEAD
- EXISTING PEDESTRIAN SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING MAST ARM MOUNTED SIGN
- EXISTING VIDEO DETECTOR
- EXISTING EMERGENCY PREEMPTION DETECTOR
- EXISTING DECORATIVE ILLUMINATION POLE
- EXISTING GROUND BOX

EXISTING SIGNAL HEADS
(N.T.S.)

5-SECTION, 1-WAY



A, F

3-SECTION, 1-WAY



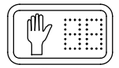
B, C, D, E, G, H, J, K

3-SECTION, 1-WAY



L

PEDESTRIAN SIGNAL
1-SECTION, 1-WAY



W1-W8

EXISTING SIGNS
(N.T.S.)

S1, S4



S2



D3-1B

S3



D3-1B

S5



D3-1B

S6



D3-1B

PB1, PB3, PB5, PB7



PB2, PB4, PB6, PB8



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08/24/20

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Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

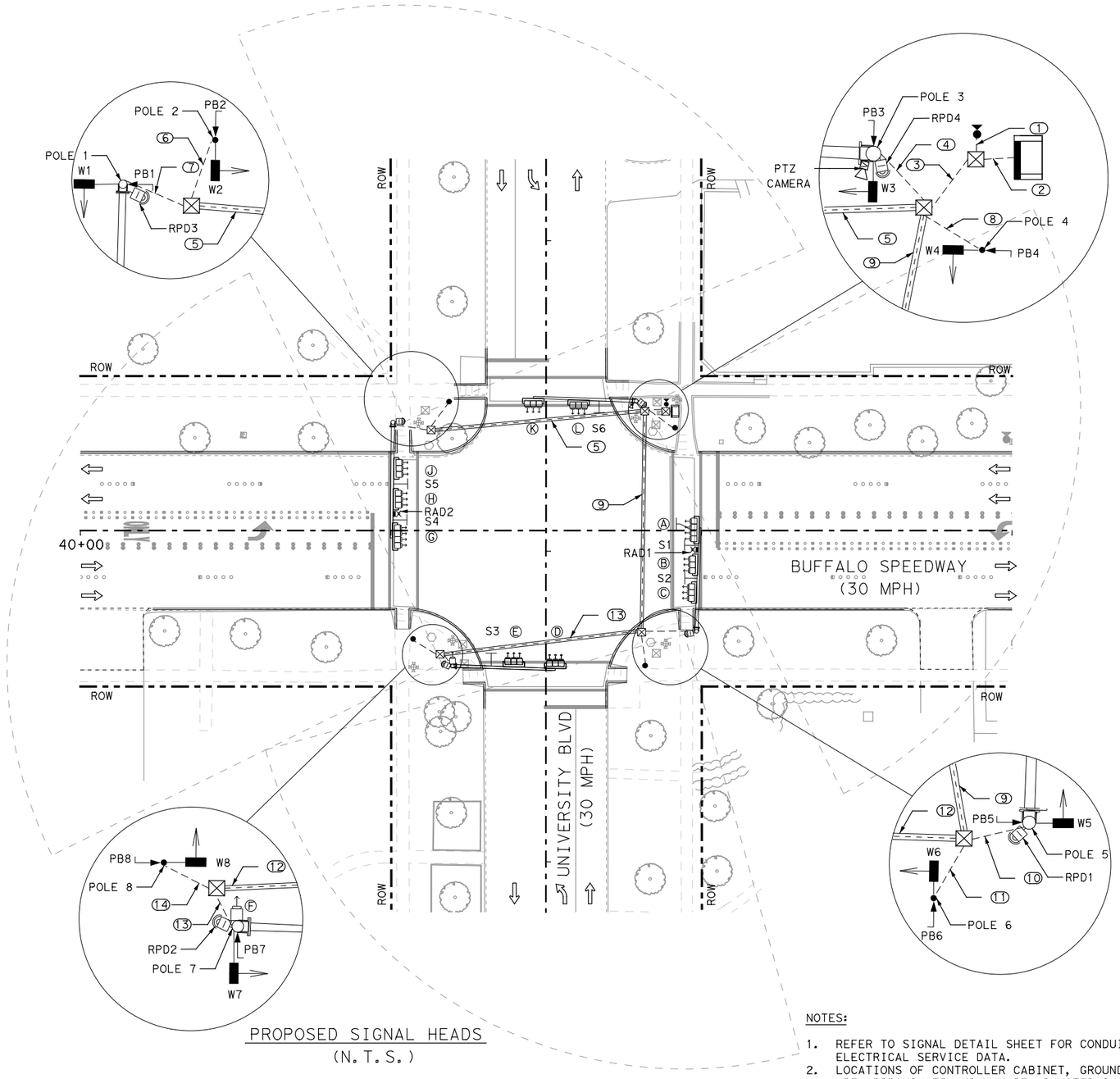
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

TRAFFIC SIGNAL LAYOUTS CONDITION DIAGRAM AT UNIVERSITY BLVD

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		447
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



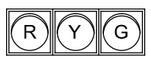
PROPOSED SIGNAL HEADS
(N.T.S.)

4-SECTION, 1-WAY
12" HORIZONTAL



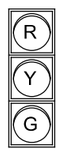
A, G

3-SECTION, 1-WAY
12" HORIZONTAL



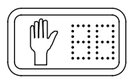
B, C, D, E,
H, J, K, L

3-SECTION, 1-WAY
12" VERTICAL



F

PEDESTRIAN SIGNAL
1-SECTION, 1-WAY



W1-W8

NOTES:

1. REFER TO SIGNAL DETAIL SHEET FOR CONDUIT AND CONDUCTOR RUNS AND ELECTRICAL SERVICE DATA.
2. LOCATIONS OF CONTROLLER CABINET, GROUND BOXES, AND CONDUITS ARE APPROXIMATE AND MAY BE ADJUSTED IN THE FIELD BASED ON FIELD CONDITION.
3. PEDESTRIAN PUSH BUTTONS SHALL BE ACCESSIBLE.
4. PROPOSED TRAFFIC SIGNAL POLE AND MAST ARM SHALL BE ORNAMENTAL.
5. REFER TO ROADWAY PLANS FOR CURB RAMP DETAILS.
6. REFER TO TREE PROTECTION PLANS FOR TREE PROTECTION DETAILS.

0 40′ 80′
SCALE IN FEET

LEGEND

- DIRECTION OF TRAFFIC
- PROP SERVICE METER
- PROP SIGNAL CONTROLLER
- PROP PEDESTIAN POLE
- PROP MAST ARM
- PROP SIGNAL HEAD
- PROP PTZ CAMERA
- PROP PEDESTRIAN SIGNAL HEAD
- PROP PEDESTRIAN PUSH BUTTON
- PROP MAST ARM MOUNTED SIGN
- PROP RADAR PRESENCE DETECTION DEVICE
- PROP RADAR ADVANCE DETECTION DEVICE
- PROP GROUND BOX (TY D)
- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- PROP RUN NUMBER
- PROP RADAR DETECTION ZONE

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City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

TRAFFIC SIGNAL LAYOUTS PROPOSED SIGNAL AT UNIVERSITY BLVD

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		448
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

CONDUIT AND CONDUCTOR RUNS																												
Run No.	CONDUIT (618)										CONDUCTORS (620)						CABLES (684)						RADAR (6292)				PTZ CAMERA	
	2" (SCHD 80)				3"(SCHD 80)		4" (SCHD 80)				POWER		GROUND				PUSH BUTTON		PED SIGNAL		VEHICLE SIGNAL		RPDD		RADD			
	6046 (TRENCH)		6047 (BORE)		6053 (TRENCH)		6058 (TRENCH)		6059 (BORE)		6012 (#4 INSULATED)		6011 (#4 BARE)		6009 (#6 BARE)		6007 (#12/2C)		6009 (#12/4C)		6012 (#12/7C)		6004 (#18/2C & 22/4C)		6005 (#18/2C & 22/4C)		POWER & COMM CABLE	
	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF
1	1	10									2	10	1	10														
2	1	5					2	5			2	5	1	5	3	5	8	5	8	5	6	5	4	5	2	5	1	5
3							2	15							2	15	8	15	8	15	6	15	4	15	2	15	1	15
4					1	15									1	15	1	20	1	25	1	70	1	50			1	50
5									1	80					1	80	2	80	2	80	2	80	1	50	1	80		
6	1	15													1	15	1	20	1	25								
7					1	15									1	15	1	20	1	25	2	80	1	50	1	80		
8	1	15													1	15	1	20	1	25								
9									1	90					1	90	4	90	4	90	3	90	2	90	1	90		
10					1	15									1	15	1	20	1	25	2	80	1	50	1	80		
11	1	15													1	15	1	20	1	25								
12									1	80					1	80	2	80	2	80	1	80	1	50				
13					1	15									1	15	1	20	1	25	1	70	1	50				
14	1	15													1	15	1	20	1	25								
TOTAL		75				60		40		250		30		15		415		1000		1040		1090		560		370		70

POLE CHART		
POLE #	DESCRIPTION	FND TYPE / LENGTH
POLE 1	36' MAST ARM	36-B/16
POLE 2	PEDESTRIAN POLE	SCREW AHCHOR
POLE 3	32' MAST ARM	36-A/14
POLE 4	PEDESTRIAN POLE	SCREW AHCHOR
POLE 5	32' MAST ARM	36-A/14
POLE 6	PEDESTRIAN POLE	SCREW AHCHOR
POLE 7	32' MAST ARM	36-A/14
POLE 8	PEDESTRIAN POLE	SCREW AHCHOR

ELECTRICAL SERVICE DATA										
ELECTRICAL SEVICE ID	ELECTRICAL SERVICE DESCRIPTION (SEE ED(5, 6, 7, 8 - 14))	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BRK. POLE/AMPS	TWO-POLE CONTRACTOR AMPS	PANELEB./LOADCENTER AMP RATING	BRANCH CIRCUIT ID	BRANCH CKT. BKR. POLE/AMPS	KVA LOAD
BUFFALO SPEEDWAY AT UNIVERSITY BLVD	TY D 120/240 060 (NS) SS (E) SP (U)	2"	3/#6	N/A	2P/60	N/A	100	SIG. CONTROLLER	2P/40	4.3

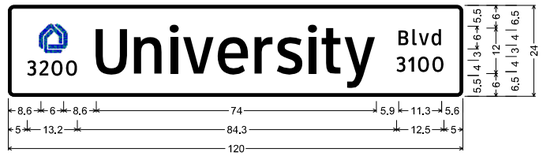
PROPOSED SIGNS
(N.T.S.)

S1, S4



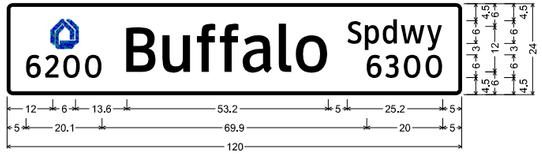
R10-17T
30x30

S2



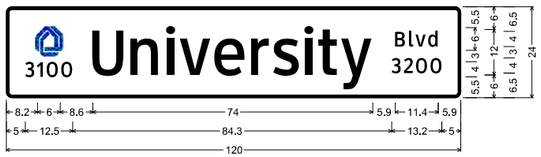
D3-1B:
1.5" Radius, 0.8" Border, White on, Blue;
"3200" ClearviewHwy-3-W; "3100" ClearviewHwy-3-W;
"University" ClearviewHwy-3-W 50% spacing; "Blvd" ClearviewHwy-3-W;

S3



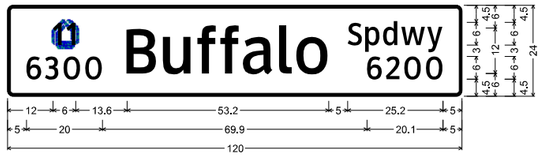
D3-1B:
1.5" Radius, 0.8" Border, White on, Blue;
"6200" ClearviewHwy-3-W; "6300" ClearviewHwy-3-W;
"Buffalo" ClearviewHwy-3-W 50% spacing; "Spdwy" ClearviewHwy-3-W 60% spacing;

S5



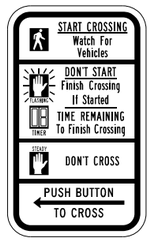
D3-1B:
1.5" Radius, 0.8" Border, White on, Blue;
"3100" ClearviewHwy-3-W; "3200" ClearviewHwy-3-W;
"University" ClearviewHwy-3-W 50% spacing; "Blvd" ClearviewHwy-3-W;

S6



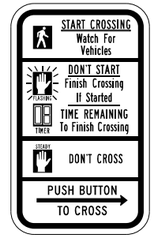
D3-1B:
1.5" Radius, 0.8" Border, White on, Blue;
"6300" ClearviewHwy-3-W; "6200" ClearviewHwy-3-W;
"Buffalo" ClearviewHwy-3-W 50% spacing; "Spdwy" ClearviewHwy-3-W 60% spacing;

PB1, PB2, PB4, PB5, PB6, PB8



R10-3eL
9x15

PB3, PB7



R10-3eR
9x15

NOTE: WHITE CITY LOGO TO BE USED ON OVERHEAD STREET NAME SIGNS.

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER
08/24/20

infraTECH
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368
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HOUSTON, TEXAS 77042

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11200 Broadway Street, Suite 2320
Pearland, Texas 77584
Phone – (832) 456-4700
Fax – (832) 456-4701
Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

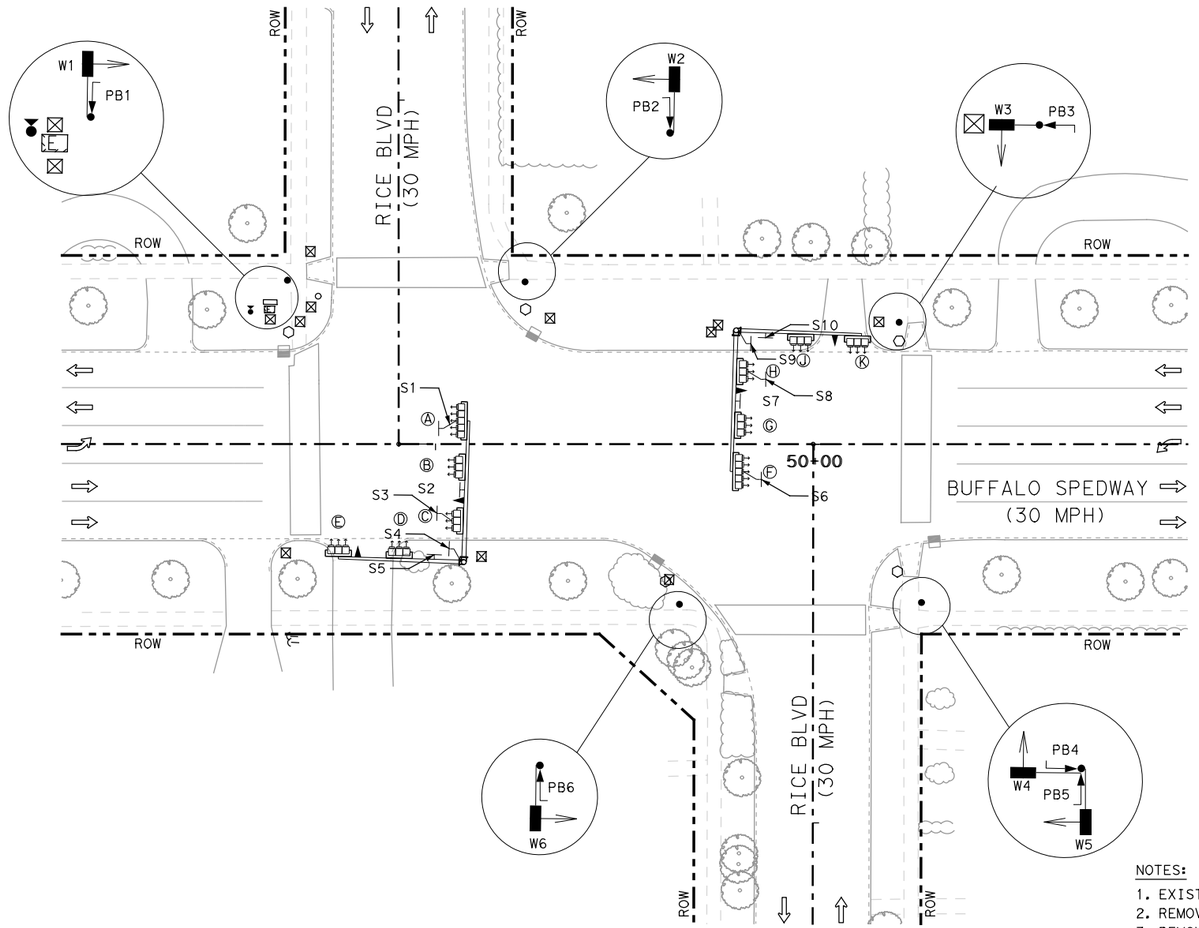
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

TRAFFIC SIGNAL LAYOUTS PROPOSED SIGNAL DETAILS AT UNIVERSITY BLVD

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		449
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 40′ 80′

SCALE IN FEET

LEGEND

- DIRECTION OF TRAFFIC
- EXISTING ELECTRICAL SERVICE METER
- EXISTING SIGNAL CONTROLLER
- EXISTING PEDESTRIAN POLE
- EXISTING MAST ARM
- EXISTING SIGNAL HEAD
- EXISTING PEDESTRIAN SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING MAST ARM MOUNTED SIGN
- EXISTING VIDEO DETECTOR
- EXISTING EMERGENCY PREEMPTION DETECTOR
- EXISTING DECORATIVE ILLUMINATION POLE
- EXISTING GROUND BOX

NOTES:

1. EXISTING PUSH BUTTON SIGN LOCATED WITH PUSH BUTTON.
2. REMOVE ALL EXISTING SIGNAL APPURTENANCES.
3. REMOVE ALL EXISTING EMERGENCY DETECTORS AND PROVIDE THEM TO THE CITY OF WEST UNIVERSITY PLACE TRAFFIC OPERATIONS STAFF.

EXISTING SIGNAL HEADS
(N.T.S.)

5-SECTION, 1-WAY



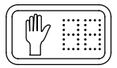
A, F

3-SECTION, 1-WAY



B, C, D, E
G, H, J, K

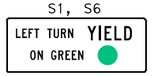
PEDESTRIAN SIGNAL
1-SECTION, 1-WAY



W1-W6

EXISTING SIGNS
(N.T.S.)

S1, S6

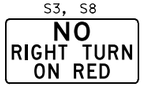


S2



D3-1B

S3, S8



S4, S9



R10-11T

S5



D3-1B

S7



D3-1B

S10



D3-1B

PB1, PB3, PB4, PB5



PB2, PB6



STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER

08/24/20

infraTECH
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

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City of West University Place

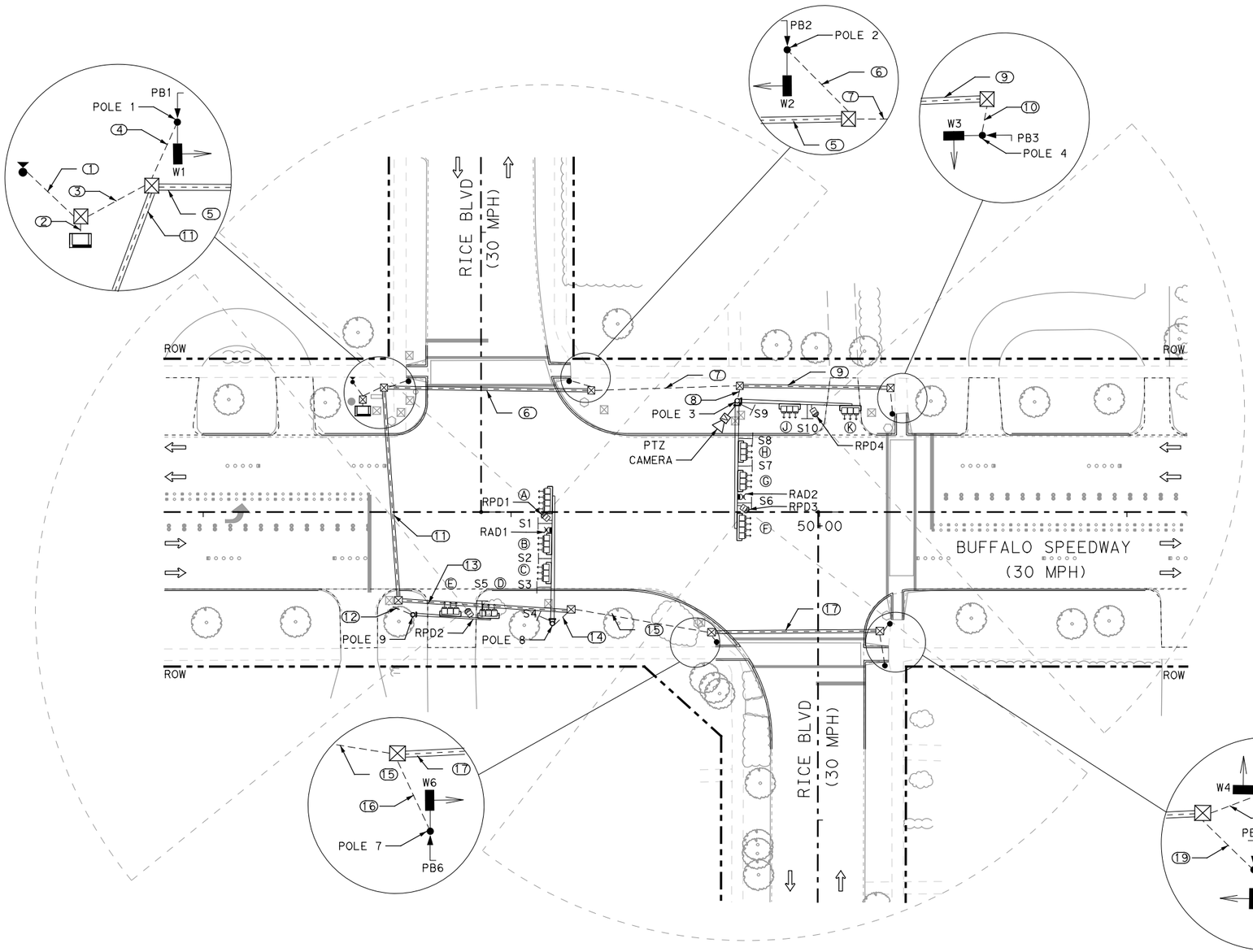
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

TRAFFIC SIGNAL LAYOUTS CONDITION DIAGRAM AT RICE BLVD

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		450
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 40' 80'

SCALE IN FEET

LEGEND

- DIRECTION OF TRAFFIC
- PROP SERVICE METER
- PROP SIGNAL CONTROLLER
- PROP PEDESTIAN POLE
- PROP MAST ARM
- PROP SIGNAL HEAD
- PROP PTZ CAMERA
- PROP PEDESTRIAN SIGNAL HEAD
- PROP PEDESTRIAN PUSH BUTTON
- PROP MAST ARM MOUNTED SIGN
- PROP RADAR PRESENCE DETECTION DEVICE
- PROP RADAR ADVANCE DETECTION DEVICE
- PROP GROUND BOX (TY D)
- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- PROP RUN NUMBER
- PROP RADAR DETECTION ZONE

PROPOSED SIGNAL HEADS

(N.T.S.)

4-SECTION, 1-WAY
12" HORIZONTAL



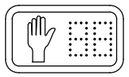
A, F

3-SECTION, 1-WAY
12" HORIZONTAL



B, C, D, E,
G, H, J, K

PEDESTRIAN SIGNAL
1-SECTION, 1-WAY



W1-W6

NOTES:

1. REFER TO SIGNAL DETAIL SHEET FOR CONDUIT AND CONDUCTOR RUNS AND ELECTRICAL SERVICE DATA.
2. LOCATIONS OF CONTROLLER CABINET, GROUND BOXES, AND CONDUITS ARE APPROXIMATE AND MAY BE ADJUSTED IN THE FIELD BASED ON FIELD CONDITION.
3. PEDESTRIAN PUSH BUTTONS SHALL BE ACCESSIBLE.
4. PROPOSED TRAFFIC SIGNAL POLE AND MAST ARM SHALL BE ORNAMENTAL.
5. REFER TO ROADWAY PLANS FOR CURB RAMP DETAILS.
6. REFER TO TREE PROTECTION PLANS FOR TREE PROTECTION DETAILS.

STATE OF TEXAS
ZAHIDUL SIDDIQUE
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LICENSED
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City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

TRAFFIC SIGNAL LAYOUTS PROPOSED SIGNAL AT RICE BLVD

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		451
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

CONDUIT AND CONDUCTOR RUNS

Run No.	CONDUIT (618)										CONDUCTORS (620)						CABLES (684)						RADAR (6292)				PTZ CAMERA	
	2" (SCHD 80)				3"(SCHD 80)		4" (SCHD 80)				POWER		GROUND				PUSH BUTTON		PED SIGNAL		VEHICLE SIGNAL		RPDD		RADD		POWER & COMM CABLE	
	6046 (TRENCH)		6047 (BORE)		6053 (TRENCH)		6058 (TRENCH)		6059 (BORE)		6012 (#4 INSULATED)		6011 (#4 BARE)		6009 (#6 BARE)		6007 (#12/2C)		6009 (#12/4C)		6012 (#12/7C)		6004 (#18/2C & 22/4C)		6005 (#18/2C & 22/4C)			
	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF
1	1	10									2	10	1	10														
2	1	5					2	5			2	5	1	5	3	5	6	5	6	5	6	5	4	5	2	5	1	5
3							2	10							2	10	6	10	6	10	6	10	4	10	2	10	1	10
4	1	15													1	15	1	20	1	25								
5									1	90					1	90	2	90	2	90	3	90	2	90	1	90	1	90
6	1	15													1	15	1	20	1	25								
7							1	60							1	60	1	60	1	60	3	60	2	60	1	60		
8							1	15							1	15					3	80	2	50	1	80	1	50
9			1	50											1	50	1	50	1	50								
10	1	15													1	15	1	20	1	25								
11									1	90					1	90	3	90	3	90	3	90	2	90	1	90		
12					1	10									1	10					1	70	1	50				
13									1	80					1	80	3	80	3	80	2	80	1	80	1	80		
14					1	15									1	15					2	80	1	50	1	80		
15	1	50													1	50	3	50	3	50								
16	1	15													1	15	1	20	1	25								
17			1	80											1	80	2	80	2	80								
18	1	15													1	15	1	20	1	25								
19	1	15													1	15	1	20	1	25								
TOTAL		155		130		25		105		260		30		15		665		1320		1350		1440		820		510		155

POLE CHART

POLE #	DESCRIPTION	FND TYPE / LENGTH
POLE 1	PEDESTRIAN POLE	SCREW AHCHOR
POLE 2	PEDESTRIAN POLE	SCREW AHCHOR
POLE 3	44'* 36' MAST ARM	42-A/13
POLE 4	PEDESTRIAN POLE	SCREW AHCHOR
POLE 5	PEDESTRIAN POLE	SCREW AHCHOR
POLE 6	PEDESTRIAN POLE	SCREW AHCHOR
POLE 7	PEDESTRIAN POLE	SCREW AHCHOR
POLE 8	40' MAST ARM	36-B/12
POLE 9	24' MAST ARM	36-A/11

ELECTRICAL SERVICE DATA

ELECTRICAL SEVICE ID	ELECTRICAL SERVICE DESCRIPTION (SEE ED(5, 6, 7, 8 - 14))	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BRK. POLE/AMPS	TWO-POLE CONTRACTOR AMPS	PANELEB./LOADCENTER AMP RATING	BRANCH CIRCUIT ID	BRANCH CKT. BKR. POLE/AMPS	KVA LOAD
BUFFALO SPEEDWAY AT RICE BLVD	TY D 120/240 060 (NS) SS (E) SP (U)	2"	3/#6	N/A	2P/60	N/A	100	SIG. CONTROLLE	2P/40	4.2

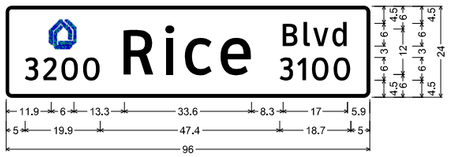
PROPOSED SIGNS
(N.T.S.)

S1, S6



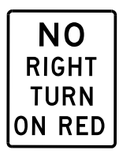
R10-17T
30x30

S2



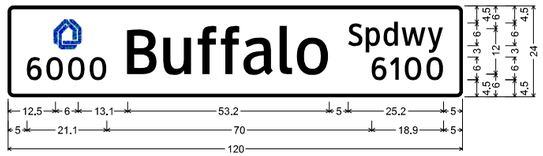
D3-1B;
1.5" Radius, 0.8" Border, White on, Blue;
"3200" ClearviewHwy-3-W; "3100" ClearviewHwy-3-W;
"Rice" ClearviewHwy-3-W; "Blvd" ClearviewHwy-3-W;

S3, S4, S8, S9



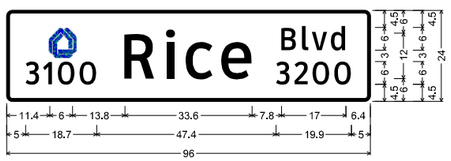
R10-11T
24x30

S5



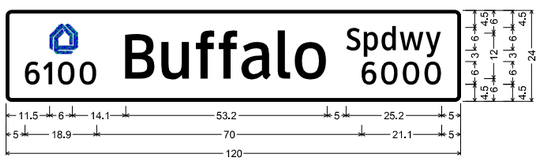
D3-1B;
1.5" Radius, 0.8" Border, White on, Blue;
"6000" ClearviewHwy-3-W; "6100" ClearviewHwy-3-W;
"Buffalo" ClearviewHwy-3-W 50% spacing; "Spdwy" ClearviewHwy-3-W 60% spacing;

S7



D3-1B;
1.5" Radius, 0.8" Border, White on, Blue;
"3100" ClearviewHwy-3-W; "3200" ClearviewHwy-3-W;
"Rice" ClearviewHwy-3-W; "Blvd" ClearviewHwy-3-W;

S10



D3-1B:
1.5" Radius, 0.8" Border, White on, Blue;
"6100" ClearviewHwy-3-W; "6000" ClearviewHwy-3-W;
"Buffalo" ClearviewHwy-3-W 50% spacing; "Spdwy" ClearviewHwy-3-W 60% spacing;

PB1, PB3



R10-3eL
9x15

PB2, PB4, PB5, PB6



R10-3eR
9x15

NOTE: WHITE CITY LOGO TO BE USED ON OVERHEAD STREET NAME SIGNS.

STATE OF TEXAS
ZAHIDUL SIDDIQUE
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LICENSED PROFESSIONAL ENGINEER
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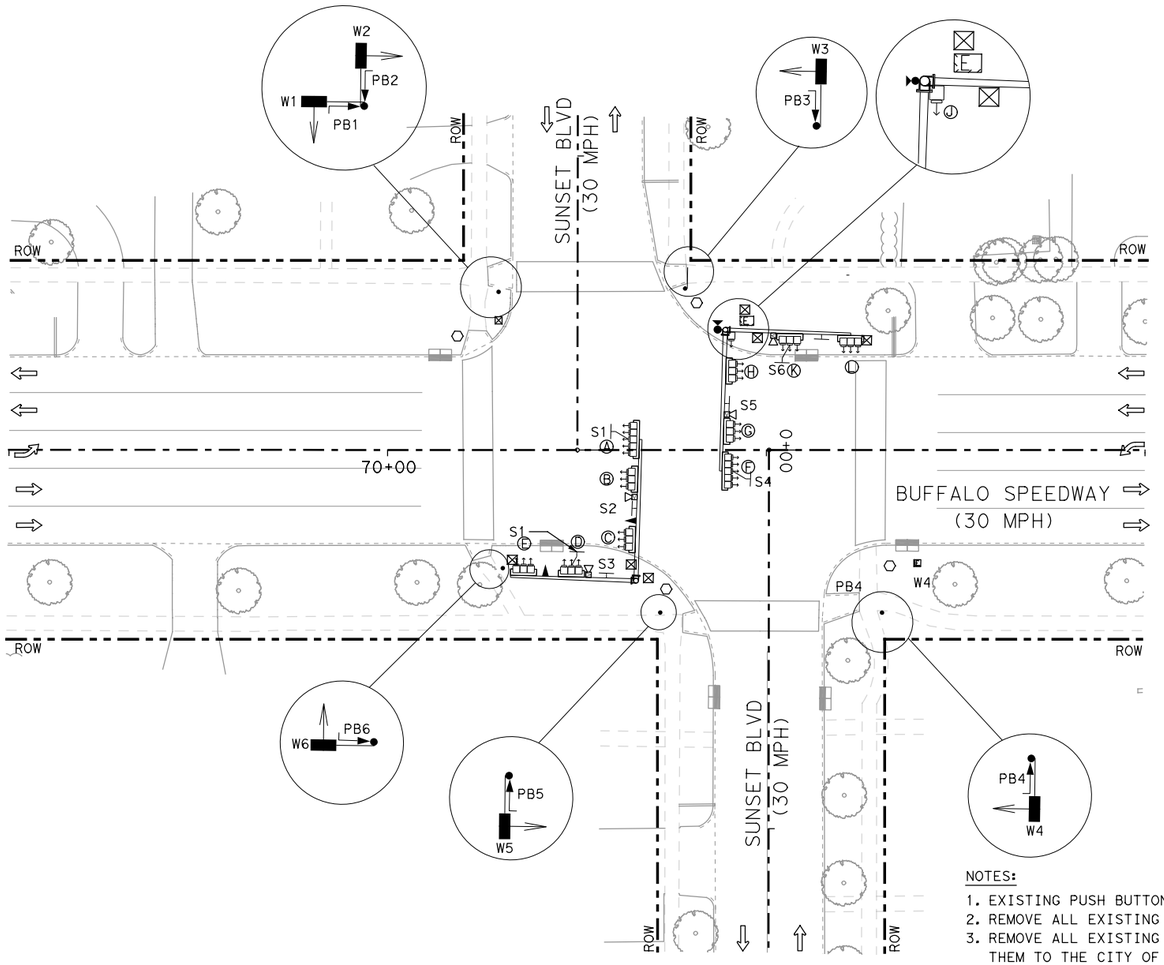
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

TRRAFIC SIGNAL LAYOUTS
PROPOSED SIGNAL DETAILS
AT RICE BLVD

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		452
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 40′ 80′

SCALE IN FEET

LEGEND

- DIRECTION OF TRAFFIC
- EXISTING ELECTRICAL SERVICE METER
- EXISTING SIGNAL CONTROLLER
- EXISTING PEDESTRIAN POLE
- EXISTING MAST ARM
- EXISTING SIGNAL HEAD
- EXISTING PEDESTRIAN SIGNAL HEAD
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING MAST ARM MOUNTED SIGN
- EXISTING VIDEO DETECTOR
- EXISTING EMERGENCY PREEMPTION DETECTOR
- EXISTING DECORATIVE ILLUMINATION POLE
- EXISTING GROUND BOX

NOTES:

1. EXISTING PUSH BUTTON SIGN LOCATED WITH PUSH BUTTON.
2. REMOVE ALL EXISTING SIGNAL APPURTENANCES.
3. REMOVE ALL EXISTING EMERGENCY DETECTORS AND PROVIDE THEM TO THE CITY OF WEST UNIVERSITY PLACE TRAFFIC OPERATIONS STAFF.

EXISTING SIGNAL HEADS
(N.T.S.)

5-SECTION, 1 WAY — A, F



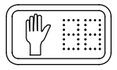
3-SECTION, 1-WAY — B, C, D, E, G, H, K, L



3-SECTION, 1-WAY — J

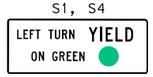


PEDESTRIAN SIGNAL 1-SECTION, 1-WAY — W1-W6



EXISTING SIGNS
(N.T.S.)

S1, S4



S2



D3-1B

S3



D3-1B

S5



D3-1B

S6



D3-1B

PB1, PB3, PB5



PB2, PB4, PB6



STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED PROFESSIONAL ENGINEER
08/24/20

infraTECH
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368
11111 WILCREST GREEN DR, SUITE 410
HOUSTON, TEXAS 77042

FREESE AND NICHOLS
11200 Broadway Street, Suite 2320
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Texas Registered Engineering Firm F-2144

City of West University Place

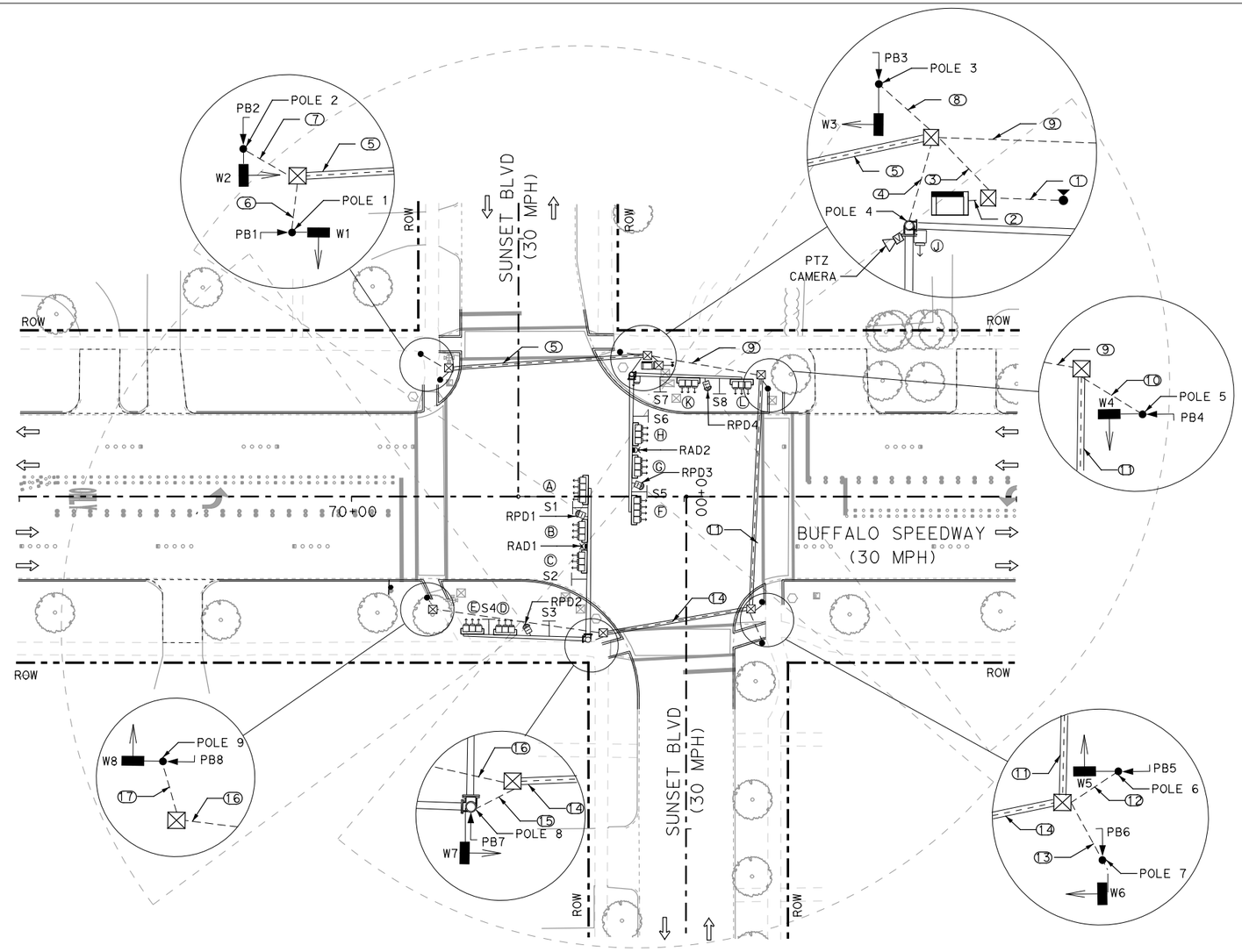
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

TRAFFIC SIGNAL LAYOUTS CONDITION DIAGRAM AT SUNSET BLVD

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		453
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 40′ 80′

SCALE IN FEET

LEGEND

- DIRECTION OF TRAFFIC
- PROP SERVICE METER
- PROP SIGNAL CONTROLLER
- PROP PEDESTIAN POLE
- PROP MAST ARM
- PROP SIGNAL HEAD
- PROP PTZ CAMERA
- PROP PEDESTRIAN SIGNAL HEAD
- PROP PEDESTRIAN PUSH BUTTON
- PROP MAST ARM MOUNTED SIGN
- PROP RADAR PRESENCE DETECTION DEVICE
- PROP RADAR ADVANCE DETECTION DEVICE
- PROP GROUND BOX (TY D)
- PROP CONDUIT (TRENCH)
- PROP CONDUIT (BORE)
- PROP RUN NUMBER
- PROP RADAR DETECTION ZONE

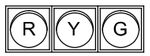
PROPOSED SIGNAL HEADS
(N.T.S.)

3-SECTION, 1-WAY
12" HORIZONTAL



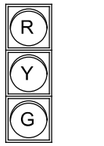
A, F

3-SECTION, 1-WAY
12" HORIZONTAL



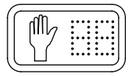
B, C, D, E
G, H, K, L

3-SECTION, 1-WAY
12" VERTICAL



J

PEDESTRIAN SIGNAL
1-SECTION, 1-WAY



W1-W8

NOTES:

1. REFER TO SIGNAL DETAIL SHEET FOR CONDUIT AND CONDUCTOR RUNS AND ELECTRICAL SERVICE DATA.
2. LOCATIONS OF CONTROLLER CABINET, GROUND BOXES, AND CONDUITS ARE APPROXIMATE AND MAY BE ADJUSTED IN THE FIELD BASED ON FIELD CONDITION.
3. PEDESTRIAN PUSH BUTTONS SHALL BE ACCESSIBLE.
4. PROPOSED TRAFFIC SIGNAL POLE AND MAST ARM SHALL BE ORNAMENTAL.
5. REFER TO ROADWAY PLANS FOR CURB RAMP DETAILS.
6. REFER TO TREE PROTECTION PLANS FOR TREE PROTECTION DETAILS.

STATE OF TEXAS
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BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

TRAFFIC SIGNAL LAYOUTS
PROPOSED SIGNAL AT SUNSET BLVD

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		454
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

CONDUIT AND CONDUCTOR RUNS																												
Run No.	CONDUIT (618)										CONDUCTORS (620)						CABLES (684)						RADAR (6292)				PTZ CAMERA	
	2" (SCHD 80)		3"(SCHD 80)		4" (SCHD 80)						POWER		GROUND				PUSH BUTTON		PED SIGNAL		VEHICLE SIGNAL		RPDD		RADD		POWER & COMM CABLE	
	6046 (TRENCH)		6047 (BORE)		6053 (TRENCH)		6058 (TRENCH)		6059 (BORE)		6012 (#4 INSULATED)		6011 (#4 BARE)		6009 (#6 BARE)		6007 (#12/2C)		6009 (#12/4C)		6012 (#12/7C)		6004 (#18/2C & 22/4C)		6005 (#18/2C & 22/4C)			
	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF	EA	LF
1	1	10									2	10	1	10														
2	1	5					2	5			2	5	1	5	3	5	8	5	8	5	6	5	4	5	2	5	1	5
3							2	10							2	10	8	10	8	10	6	10	4	10	2	10	1	10
4							1	15							1	15					3	80	2	50	1	80	1	50
5			1	80											1	80	2	80	2	80								
6	1	15													1	15	1	20	1	25								
7	1	15													1	15	1	20	1	25								
8	1	15													1	15	1	20	1	25								
9							1	40							1	40	5	40	5	40	3	40	2	40	1	40		
10	1	15													1	15	1	20	1	25								
11									1	90					1	90	4	90	4	90	3	90	2	90	1	90		
12	1	15													1	15	1	20	1	25								
13	1	15													1	15	1	20	1	25								
14									1	70					1	70	2	70	2	70	3	70	2	70	1	70		
15							1	15							1	15	1	20	1	25	3	80	2	50	1	80		
16	1	70													1	70	1	70	1	70								
17	1	15													1	15	1	20	1	25								
TOTAL		190		80				100		160		30		15		520		1210		1250		1170		660		390		65

POLE CHART		
POLE #	DESCRIPTION	FND TYPE / LENGTH
POLE 1	PEDESTRIAN POLE	SCREW AHCHOR
POLE 2	PEDESTRIAN POLE	SCREW AHCHOR
POLE 3	PEDESTRIAN POLE	SCREW AHCHOR
POLE 4	40'* 32' MAST ARM	42-A/17
POLE 5	PEDESTRIAN POLE	SCREW AHCHOR
POLE 6	PEDESTRIAN POLE	SCREW AHCHOR
POLE 7	PEDESTRIAN POLE	SCREW AHCHOR
POLE 8	44'* 36' MAST ARM	42-A/17
POLE 9	PEDESTRIAN POLE	SCREW AHCHOR

ELECTRICAL SERVICE DATA										
ELECTRICAL SEVICE ID	ELECTRICAL SERVICE DESCRIPTION (SEE ED(5, 6, 7, 8 - 14))	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CKT. BRK. POLE/AMPS	TWO-POLE CONTRACTOR AMPS	PANELEB./LOADCENTER AMP RATING	BRANCH CIRCUIT ID	BRANCH CKT. BKR. POLE/AMPS	KVA LOAD
BUFFALO SPEEDWAY AT SUNSET BLVD	TY D 120/240 060 (NS) SS (E) SP (U)	2"	3/#6	N/A	2P/60	N/A	100	SIG. CONTROLLER	2P/40	4.3

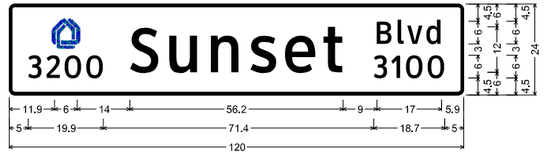
PROPOSED SIGNS
(N.T.S.)

S1, S5



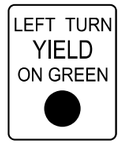
R10-17T
30x30

S2



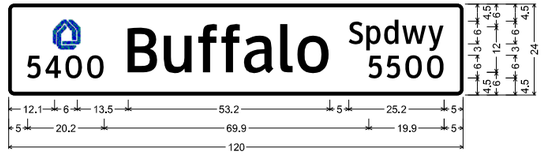
D3-1B;
1.5" Radius, 0.8" Border, White on, Blue;
"3200" ClearviewHwy-3-W; "Sunset" ClearviewHwy-3-W;
"Blvd" ClearviewHwy-3-W; "3100" ClearviewHwy-3-W;

S3, S7



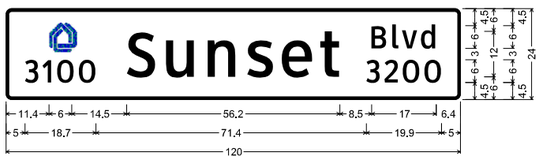
R10-12
30x36

S4



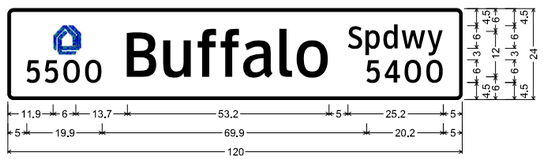
D3-1B;
1.5" Radius, 0.8" Border, White on, Blue;
"5400" ClearviewHwy-3-W; "5500" ClearviewHwy-3-W;
"Buffalo" ClearviewHwy-3-W 50% spacing; "Spdwy" ClearviewHwy-3-W 60% spacing;

S6



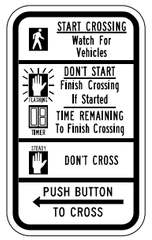
D3-1B;
1.5" Radius, 0.8" Border, White on, Blue;
"3100" ClearviewHwy-3-W; "Sunset" ClearviewHwy-3-W;
"Blvd" ClearviewHwy-3-W; "3200" ClearviewHwy-3-W;

S8



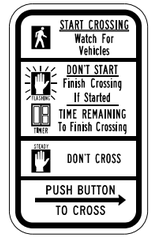
D3-1B;
1.5" Radius, 0.8" Border, White on, Blue;
"5500" ClearviewHwy-3-W; "5400" ClearviewHwy-3-W;
"Buffalo" ClearviewHwy-3-W 50% spacing; "Spdwy" ClearviewHwy-3-W 60% spacing;

PB2, PB4



R10-3eL
9x15

PB1, PB3, PB5
PB6, PB7, PB8



R10-3eR
9x15

NOTE: WHITE CITY LOGO TO BE USED ON OVERHEAD STREET NAME SIGNS.

STATE OF TEXAS
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BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

TRAFFIC SIGNAL LAYOUTS
PROPOSED SIGNAL DETAILS
AT SUNSET BLVD

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		455
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

NOTE FOR PERMANENT TRAFFIC SIGNALS

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REMOVE THE OPTICOM EQUIPMENT FROM THE EXISTING SIGNAL POLES AND CITY WILL REINSTALL OPTICOM ON THE NEW POLES.

2. THE CONTRACTOR TO FURNISH AND INSTALL ALL EQUIPMENT CALLED FOR AND REQUIRED AS NEEDED FOR A FULLY OPERATIONAL TRAFFIC SIGNAL WITH THE EXCEPTION OF THE RADAR EQUIPMENT. THE RADAR EQUIPMENT TO BE SUPPLIED BY THE TEXAS DEPARTMENT OF TRANSPORTATION AND PICKED UP AT THE TEXAS DEPARTMENT OF TRANSPORTATION SIGNAL SHOP, 6810 OLD KATY ROAD, HOUSTON, TEXAS AND INSTALLED BY THE CONTRACTOR. CONTACT MR. MICHAEL AWA, P.E., IN WRITING AT LEAST TWENTY (20) WORKING DAYS PRIOR TO ACQUIRING THE MATERIALS.

   ADDRESS: TEXAS DEPARTMENT OF TRANSPORTATION
   P. O. BOX 1386
   HOUSTON, TEXAS 77251-1386
   TEL. NO. (713) 802-5661

3. INSTALL SIGNALS HORIZONTALLY ON MAST ARM. THE BOTTOM OF SIGNAL HEADS SHALL BE 17 FT. 6 IN. ABOVE THE ROADWAY.
4. FURNISH BLACK HOUSING FOR VEHICLE AND PEDESTRIAN SIGNALS. FURNISH BLACK VEHICLE SIGNAL HEAD BACK PLATES WITH TWO - INCH RETROFLECTED YELLOW BORDERS.
5. FURNISH VEHICLE AND PEDESTRIAN SIGNALS WITH LIGHT EMITTING DIODE (LED) SIGNAL LAMP UNITS.
6. USE TYPE B (HIGH INTENSITY PRE - ASSEMBLE) OR TYPE D (DIAMOND GRADE) RETROFLECTED SHEETING TO SIGN MOUNTED UNDER OR ADJACENT TO THE SIGNAL HEAD.
7. FURNISH SYMBOL TYPE PEDESTRIAN COUNTDOWN SIGNALS. INSTALL USING MOUNTING HEIGHT IN ACCORDANCE WITH THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
8. FURNISH MATERIALS NECESSARY TO INSTALL ACCESSIBLE PEDESTRIAN SIGNAL UNITS AND SIGNS AS SHOWN IN THE PLANS. INSTALL AT 3 FT. 6 IN. TO 4 FT. 0 IN. ABOVE THE SIDEWALK OR CONCRETE WALKWAY.
9. FURNISH AND INSTALL FULL- ACTUATED CONTROLLERS WITH INTERNAL TIME BASE COORDINATION UNIT IN A BASE MOUNTED CABINET. THE FURNISHED CONTROLLERS ARE TO BE COMPATIBLE WITH THE EXISTING CLOSED LOOP SYSTEM COMPONENTS ALONG THE ROADWAY.
10. THE TRAFFIC SIGNAL CONSTRUCTION AND MAINTENANCE OFFICE WILL PROVIDE PHASING AND TIMING FOR TEMPORARY AND PERMANENT TRAFFIC SIGNALS.
11. LOCATE CONTROLLER(S), SIGNAL POLES, DETECTORS, VIVDS CAMERAS, ETC., AS APPROVED.
12. THE VENDORS' REPRESENTATIVES OF THE RADAR EQUIPMENT SUPPLIED FOR THIS PROJECT MUST SUPERVISE THE INSTALLATION, SETUP AND TESTING OF THIS EQUIPMENT AND BE FACTORY CERTIFIED. THE REPRESENTATIVE MUST BE ON SITE DURING THIS TIME. ANY EQUIPMENT REQUIRED FOR SETUP AND OPERATION OF THE RADAR DEVICES MUST BE PROVIDED TO TXDOT OR THE CITY UPON COMPLETION. THE VENDORS' REPRESENTATIVE MUST PROVIDE TRAINING TO THE MUNICIPALITIES WHO WILL BE RESPONSIBLE FOR THE MAINTENANCE OF THE RADAR EQUIPMENT AFTER ACCEPTANCE OF THE PROJECT.
13. THE RADAR PRESENCE DETECTOR AND RADAR ADVANCE DETECTION DEVICES MUST BE COMPATIBLE WITH EACH OTHER AND FROM THE SAME MANUFACTURER.
14. RADAR PRESENCE DETECTION DEVICE MUST UTILIZE TRUE - PRESENCE DETECTION. SYSTEM USING LOCKING ALGORITHMS TO ATTEMPT PRESENCE DETECTION WILL NOT BE ACCEPTED.
15. RADAR ADVANCE DETECTION DEVICE MUST CONTINUOUSLY TRACK VEHICLE SPEED, DISTANCE, AND ESTIMATED TIME OF ARRIVAL.
16. COMMUNICATION AND POWER TO THE RADAR DEVICES SHALL BE VIA CONTINUOUS CABLE RUN OF UP TO 1000 FEET WITH THE USE OF REPEATERS. THE FINAL PLACEMENT OF RADAR DEVICES TO BE APPROVED BY ENGINEER.
17. REPAIR OR REPLACE PAVEMENT AND SIDEWALKS DAMAGED BY THE CONTRACTOR'S FORCES DURING CONSTRUCTION AT NO COST TO THE DEPARTMENT.
18. REMOVE THE EXISTING STOP SIGN(S) AND THOSE ITEMS DEEMED SALVAGEABLE BY THE ENGINEER. STOCKPILE THOSE ITEMS ON THE RIGHT OF WAY. REMOVE AND DISPOSE OF OTHER ITEMS AT NO EXPENSE TO THE DEPARTMENT.
19. ASSUME OWNERSHIP OF THE REMOVED EXISTING SIGNS.
20. PLACE PAVEMENT MARKINGS AS SHOWN ON THE PLANS OR AS DIRECTED.
21. SEAL ENDS OF ALL CONDUITS WITH DUCT SEAL, EXPANDABLE FOAM, OR BY OTHER METHODS APPROVED BY THE ENGINEER. SEAL CONDUIT IMMEDIATELY AFTER COMPLETION OF CONDUCTOR INSTALLATION AND PULL TESTS. DO NOT USE DUCT TAPE AS A PERMANENT CONDUIT SEALANT. DO NOT USE SILICONE CAULK AS A CONDUIT SEALANT.
22. CAP SPARE CONDUITS INSTALLED IN POLE FOUNDATIONS AND GROUND BOXES USING APPROVED CAPPING DEVICES.
23. DO NOT PLACE SIGNAL HEADS OVER THE ROADWAY UNTIL ALL NECESSARY MATERIALS ARE ON HAND AS APPROVED.
24. INSTALL TWO SET SCREWS ON ALL VEHICLE SIGNAL HEAD MOUNTING HARDWARE FITTINGS.
25. PROVIDE CONTINUED OPERATION OF THE EXISTING SIGNAL(S) DURING CONSTRUCTION AND UNTIL THE PROPOSED OPERATION IS COMPLETED.
26. ONCE THE INTEGRITY AND/OR FUNCTION OF THE EXISTING TRAFFIC SIGNAL(S) IS ALTERED BY THE CONTRACTOR, MAINTAIN AND OPERATE THE EXISTING TRAFFIC SIGNAL(S) UNTIL THE TRAFFIC SIGNAL WORK IS ACCEPTED BY THE DEPARTMENT. DURING THE CONSTRUCTION OF THE PROPOSED TRAFFIC SIGNAL WORK, MAINTAIN THE EXISTING TRAFFIC SIGNAL(S) AND/OR TEMPORARY CONSTRUCTION TRAFFIC SIGNAL(S) IN CONFORMANCE WITH THE LATEST TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
27. DURING CONSTRUCTION OF THE PROPOSED SIGNAL WORK, IF THE EXISTING TRAFFIC SIGNAL EQUIPMENT REQUIRES REPLACEMENT DUE TO WEAR, DETERIORATION, OR ANY CIRCUMSTANCE OVER WHICH THE CONTRACTOR HAS NO CONTROL, THE EQUIPMENT WILL BE FURNISHED BY THE DEPARTMENT AT NO COST TO THE CONTRACTOR. INSTALL THIS EQUIPMENT AT NO COST TO THE DEPARTMENT. SUCH MATERIALS WILL BE PROVIDED AT THE DEPARTMENT'S SIGNAL SHOP LOCATED AT 6810 KATY ROAD, HOUSTON, TEXAS. CONTACT MR. MICHAEL AWA, P.E., AT TELEPHONE NUMBER (713) 802-5661.
28. MAINTAIN THE INTEGRITY AND FUNCTION OF EACH EXISTING SIGNALIZED INTERSECTION. ONCE THE INTEGRITY OR FUNCTION OF THE SIGNAL HAS BEEN ALTERED, PURSUE THE WORK AT THAT LOCATION WITHOUT DELAY OR INTERRUPTION TO RESTORE OPERATION TO ITS ORIGINAL OR FINAL OPERATIONAL DESIGN.
29. INSTALL A 5/8-IN. (MINIMUM) EYE BOLT FOR THE POINT OF ATTACHMENT BELOW THE SERVICE ENTRANCE WEATHER HEAD FOR THE SERVICE DROP TO STEEL OR WOOD POLE.
30. WRAP SIGNAL HEADS WITH DARK PLASTIC OR SUITABLE MATERIAL TO CONCEAL THE SIGNAL FACES FROM THE TIME OF INSTALLATION UNTIL PLACING INTO OPERATION.
31. GROUND STEEL MAST ARM POLE ASSEMBLIES IN ACCORDANCE WITH REQUIREMENTS SHOWN ON THE LATEST TRAFFIC SIGNAL POLE FOUNDATION STANDARD. USE THE GROUNDING LUG ON THE POLE TO GROUND THE POLE TO THE GROUND CONDUCTORS FROM THE CONDUITS.
32. VERIFY THE CORRECT MAST ARM POLE LENGTHS FOR EACH SIGNALIZED INTERSECTION PRIOR TO ORDERING THE EQUIPMENT.
33. INSTALL A CLOSE NIPPLE WITH LOCK NUT AND BUSHING (SIZE AS REQUIRED) WHERE THE CABLE ENTERS THE UPPER PORTION OF THE SIGNAL POLE.
34. MATCH EXISTING SAG ON MODIFIED SIGNAL INSTALLATIONS.
35. GROUND ALL EXISTING METAL GROUND BOX COVERS AS OUTLINED ON LATEST STANDARD SHEET ED (4)-14. REPLACEMENTS FOR THESE GROUND BOXES MUST BE MADE OF POLYMER CONCRETE AS DETAILED ON THE LATEST STANDARD SHEET ED (4)-14. THE MATERIALS AND LABOR ASSOCIATED WITH THIS WORK IS SUBSIDIARY TO VARIOUS BID ITEMS IN THE PROJECT.
36. CLAMP ALL CONDUITS ATTACHED TO SIGNAL POLE FOUNDATIONS OR WOOD POLES WITH CONDUIT STRAPS AND CLAMPS BACKS (MALLEABLE IRON) AT A MAXIMUM SPACING OF 5 FT. CENTER TO CENTER.
37. THE CONTRACTOR IS RESPONSIBLE FOR THE SIGNAL CARRYING CAPABILITY AND PERFORMANCE OF THE CABLE. INSTALL EACH WIRE WITH A LIGHTNING PROTECTION DEVICE UNLESS OTHERWISE NOTED.
38. SEAL EACH END OF COMMUNICATION CABLE THAT IS EXPOSED TO ELEMENT DURING STORAGE OR AFTER INSTALLATION WITH A WATERPROOFING SEALANT OR AS PER MANUFACTURER RECOMMENDATIONS.
39. GROUND COMMUNICATIONS CABLE IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATION.

NOTE FOR 6292 6004 AND 6292 6005

1. ONCE THE CONTRACT HAS BEEN EXECUTED OR DURING THE KICK - OFF MEETING, THE ENGINEER OR HIS/HER REPRESENTATIVE WILL COORDINATE OR ARRANGE FOR THE RADAR EQUIPMENT TO BE PROVIDE BY THE DEPARTMENT
2. THE ENGINEER OR HIS/HER REPRESENTATIVE WILL COORDINATE THE ORDERING OF THE RADAR EQUIPMENT BY USING THE FORCE ACCOUNT. ENGINEER OR HIS/HER REPRESENTATIVE WILL CONTACT ARNOLD TREVINO AT (713) 806-7101 TO ORDER THE RADAR EQUIPMENT.

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER
08/24/20

infraTECH
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368
11111 WILCREST GREEN DR, SUITE 410
HOUSTON, TEXAS 77042

FREESE AND NICHOLS
11200 Broadway Street, Suite 2320
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Phone – (832) 456-4700
Fax – (832) 456-4701
Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

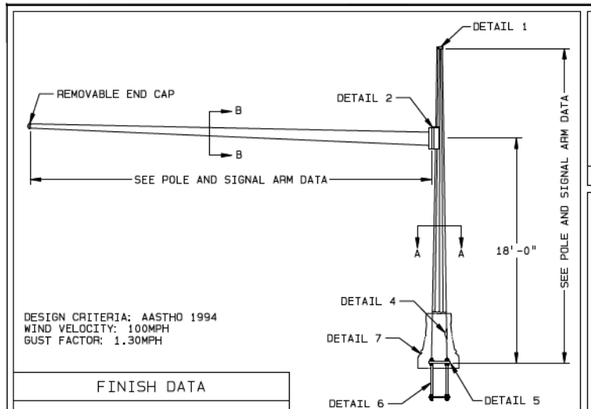
City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

TRAFFIC SIGNAL GENERAL NOTES

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		456
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



FINISH DATA

SYSTEM:	FINISH PAINT/GALVANIZED (FPGV)
BASE COAT:	HOT-DIP GALVANIZED TO ASTM A123
PRIME COAT:	NONE
FINISH COAT:	TGIC OR URETHANE POLYESTER POWDER
COLOR:	BLACK
SPEC:	F-283A



SECTION A-A



SECTION B-B

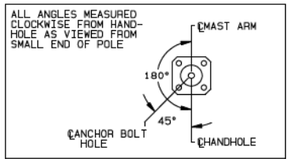
MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
TAPERED TUBES	A595 GR.A OR A572	55
BASE PLATE	A36	36
MAST ARM CONNECTION	A36	36
MAST ARM CONN BOLTS	A325	--

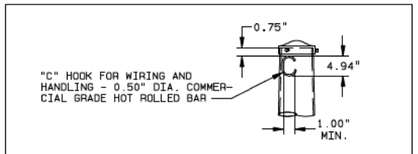
COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
ANCHOR BOLTS	F1554 GR.55	55
ANCHOR BOLT TEMPLATE	A36	36
GALVANIZING-HARDWARE	HOT DIP ZINC	--

MANUFACTURING NOTES

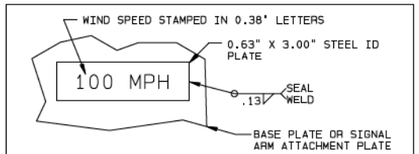
1. OUTSIDE EDGES OF BASE PLATES AND SIGNAL ARM CONNECTING PLATES TO BE CHAMFERED APPROX. 0.06"
2. PLATES OVER 0.50" THICK TO MEET ASTM A673 & A370 15 FT.-LBS @ 40°F CHARPY REQUIREMENTS.



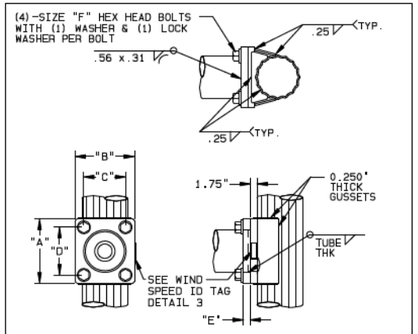
RADIAL INDEX



DETAIL 1 | POLE TOP



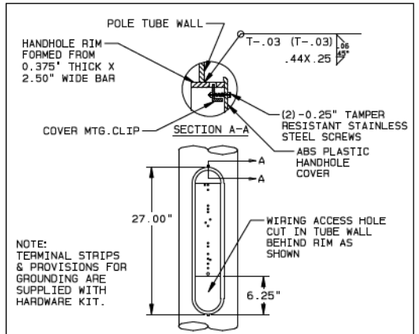
DETAIL 3 | WIND SPEED ID TAG



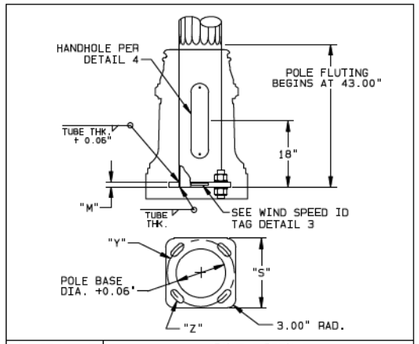
DETAIL 2 | SIGNAL ARM ATTACHMENT

SIGNAL ARM ATTACHMENT DATA

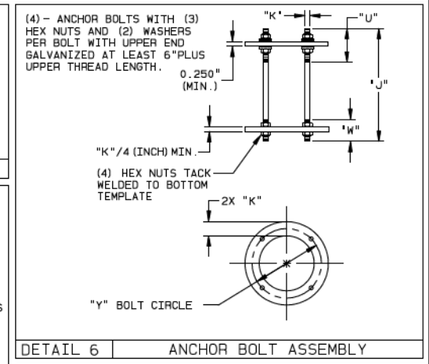
POLE BASE DIA.	"A" (IN)	"B" (IN)	"C" (IN)	"D" (IN)	"E" (IN)	"F" (IN)
12.00'	16.25	11.25	8.00	13.00	2.00	1.25 X 4.25
13.00'	18.25	12.25	9.00	15.00	2.00	1.25 X 4.25
14.50'	18.75	13.75	10.00	15.00	3.00	1.50 X 5.50



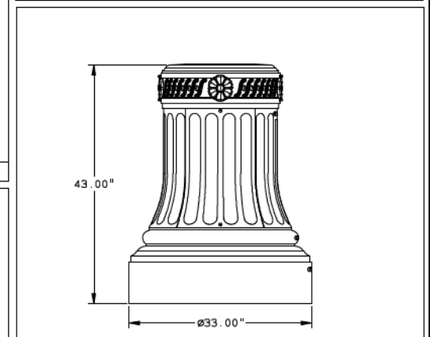
DETAIL 4 | BASE HANDHOLE



DETAIL 5 | POLE BASE



DETAIL 6 | ANCHOR BOLT ASSEMBLY



DETAIL 7 | HN33AC DECORATIVE BASE

IMPORTANT NOTES

1. WRITTEN CONFIRMATION MUST BE PROVIDED CONFIRMING ALL MOUNTING HEIGHTS, ORIENTATIONS, & FINISH PRIOR TO RELEASE FOR PRODUCTION.
2. PLEASE VERIFY IF SIGNAL COUPLINGS AND ARM END TENON ARE NEEDED OR NOT PRIOR TO RELEASE FOR PRODUCTION.

REV	DRAWN BY-DATE	CHECK BY-DATE	DESCRIPTION
—	LD7 06/30/20	JWK3 07/01/20	— — —

POLE AND SIGNAL ARM DATA

ITEM	QTY.	POLE TUBE				POLE BASE				ANCHOR BOLT				FOUNDATION TYPE	SIGNAL ARM TUBE					DECO BASE TYPE
		BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	GAUGE OR THK. (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	SLOT "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	THREAD LENGTH "U" (IN)	THREAD LENGTH "W" (IN)		NOM. ARM LENGTH (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	GA. OR THK. (IN)	SPAN (FT)	
24II-100	1	12.00	9.20	20.00	3	20.00	19.00	1.75	2.00 X 4.00	1.75	46.00	7.00	4.50	36-A	24.00	8.00	4.77	7	23.06	HN33AC
32III-100	3	13.00	10.20	20.00	3	20.00	19.00	1.75	2.00 X 4.00	1.75	46.00	7.00	4.50	36-A	32.00	9.50	5.15	3	31.06	HN33AC
36III-100	1	14.50	11.70	20.00	0.250	22.00	21.00	2.00	2.25 X 4.50	2.00	51.00	8.00	5.00	36-B	36.00	11.00	6.09	3	35.06	HN33AC
40III-100	1	14.50	11.70	20.00	0.250	22.00	21.00	2.00	2.25 X 4.50	2.00	51.00	8.00	5.00	36-B	40.00	11.00	5.53	3	39.06	HN33AC

JOB CITY OF HOUSTON, TEXAS
BUFFALO SPEEDWAY

TITLE TRAFFIC SIGNAL STRUCTURES

VALMONT INDUSTRIES, INC. RESERVES THE RIGHT TO INSTALL VARIOUS, ENGINEER APPROVED, MATERIAL HANGING ACCOMMODATIONS TO FACILITATE THE MANUFACTURING PROCESS.

valmont
Valley, NE 68064
(402) 359-2201

ORDER NUMBER: 480811-P2
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STATE OF TEXAS
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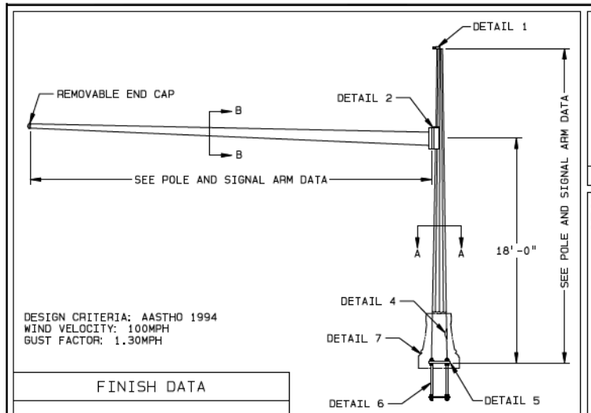
BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

TRAFFIC SIGNAL SUPPORT STRUCTURES
SINGLE MAST ARM ASSEMBLY
(100 MPH WIND ZONE)
SMA-100(2)

SHEET 2 OF 2

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		458
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



FINISH DATA

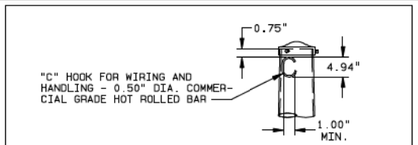
SYSTEM:	FINISH PAINT/GALVANIZED (FPGV)
BASE COAT:	HOT-DIP GALVANIZED TO ASTM A123
PRIME COAT:	NONE
FINISH COAT:	TGIC OR URETHANE POLYESTER POWDER
COLOR:	BLACK
SPEC:	F-283A



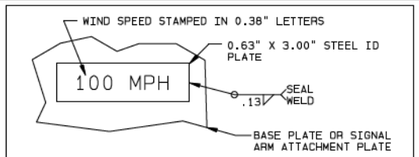
SECTION A-A



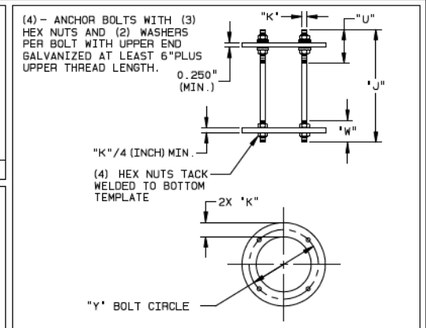
SECTION B-B



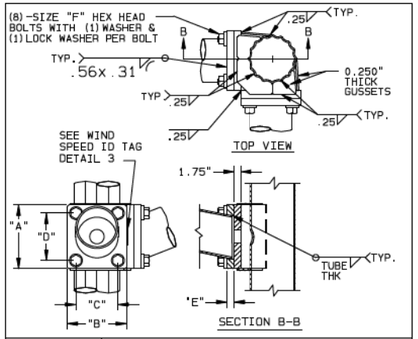
DETAIL 1 | POLE TOP



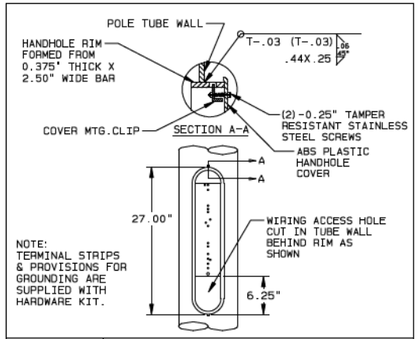
DETAIL 3 | WIND SPEED ID TAG



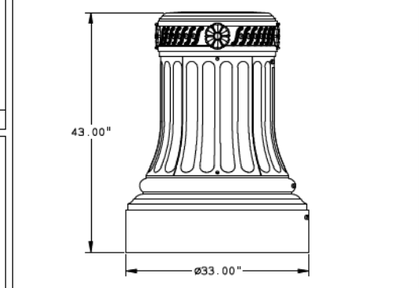
DETAIL 6 | ANCHOR BOLT ASSEMBLY



DETAIL 2 | DOUBLE ARM ATTACHMENT



DETAIL 4 | BASE HANDHOLE



DETAIL 7 | HN33AC DECORATIVE BASE

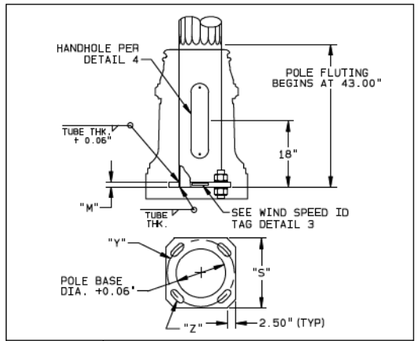
MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
TAPERED TUBES	A595 GR.A OR A572	55
BASE PLATE	A36	36
MAST ARM CONNECTION	A36	36
MAST ARM CONN BOLTS	A325	--

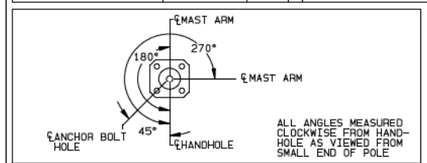
COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
ANCHOR BOLTS	F1554 GR.55	55
ANCHOR BOLT TEMPLATE	A36	36
GALVANIZING-HARDWARE	HOT DIP ZINC	--

SIGNAL ARM ATTACHMENT DATA

POLE BASE DIA. (IN)	'A" (IN)	"B" (IN)	"C' (IN)	"D" (IN)	"E" (IN)	"F" (IN)
16.00'	17.25	16.00	12.00	13.25	3.00	1.50 X 5.50
17.00'	17.25	16.00	12.00	13.25	3.00	1.50 X 5.50



DETAIL 5 | POLE BASE



RADIAL INDEX

MANUFACTURING NOTES

1. OUTSIDE EDGES OF BASE PLATES AND SIGNAL ARM CONNECTING PLATES TO BE CHAMFERED APPROX. 0.06"
2. PLATES OVER 0.50" THICK TO MEET ASTM A673 & A370 15 FT.-LBS @ 40°F CHARPY REQUIREMENTS.

IS RADIAL INDEX CORRECT

☐ YES CORRECT

☐ NO-MARK DRAWING UP AS NECESSARY

IMPORTANT NOTES

1. WRITTEN CONFIRMATION MUST BE PROVIDED CONFIRMING ALL MOUNTING HEIGHTS, ORIENTATIONS, & FINISH PRIOR TO RELEASE FOR PRODUCTION.
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JOB: CITY OF HOUSTON, TEXAS
BUFFALO SPEEDWAY

TITLE: TRAFFIC SIGNAL STRUCTURES

VALMONT INDUSTRIES, INC. RESERVES THE RIGHT TO INSTALL VARIOUS, ENGINEER APPROVED, MATERIAL HANGING ACCOMMODATIONS TO FACILITATE THE MANUFACTURING PROCESS.

valmont
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ORDER NUMBER: 480811-P2
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City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

TRAFFIC SIGNAL SUPPORT STRUCTURES DUAL MAST ARM ASSEMBLY (100 MPH WIND ZONE) DMA-100(1)

SHEET 1 OF 2

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		459
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

POLE AND SIGNAL ARM DATA

ITEM	QTY.	POLE TUBE				POLE BASE				ANCHOR BOLT				FOUNDATION TYPE	SIGNAL ARM TUBE					DECO BASE TYPE
		BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	GAUGE OR THK. (IN)	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	SLOT "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	THREAD LENGTH "U" (IN)	THREAD LENGTH "W" (IN)		NOM. ARM LENGTH (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	GA. OR THK. (IN)	SPAN (FT)	
40III/32II-100	1	17.00	14.20	20.00	0.250	24.00	23.00	2.25	2.50 X 5.00	2.25	57.00	9.00	5.50	42-A	40.00	12.50	7.03	3	39.06	HN33AC
															32.00	10.00	5.65	3	31.06	
40III/36III-100	1	17.00	14.20	20.00	0.250	24.00	23.00	2.25	2.50 X 5.00	2.25	57.00	9.00	5.50	42-A	40.00	12.50	7.03	3	39.06	HN33AC
															36.00	11.00	6.09	3	35.06	
44III/36III-100	1	16.00	13.20	20.00	0.250	24.00	23.00	2.25	2.50 X 5.00	2.25	57.00	9.00	5.50	42-A	44.00	12.50	6.47	3	43.08	HN33AC
															36.00	11.00	6.09	3	35.06	

JOB CITY OF HOUSTON, TEXAS
BUFFALO SPEEDWAY

TITLE TRAFFIC SIGNAL STRUCTURES

VALMONT INDUSTRIES, INC. RESERVES THE RIGHT TO INSTALL VARIOUS, ENGINEER APPROVED, MATERIAL HANGING ACCOMMODATIONS TO FACILITATE THE MANUFACTURING PROCESS.

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City of West University Place

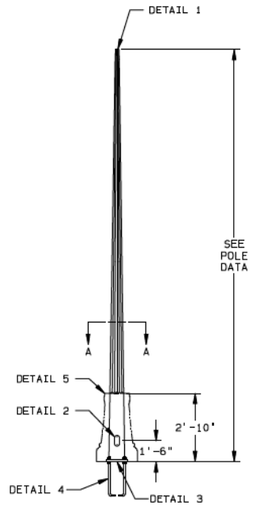
BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

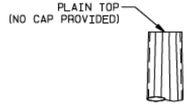
TRAFFIC SIGNAL SUPPORT STRUCTURES
DUAL MAST ARM ASSEMBLY
(100 MPH WIND ZONE)
DMA-100(2)

SHEET 2 OF 2

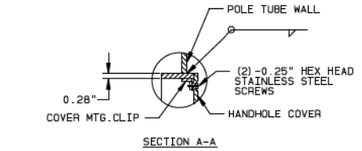
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		460
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

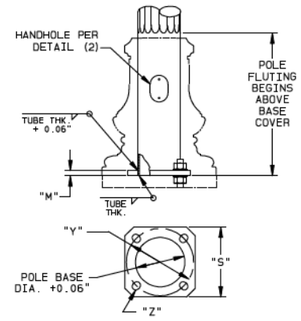




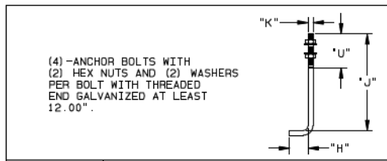
DETAIL 1 | POLE TOP



DETAIL 2 | 4"x6.5" HANDHOLE



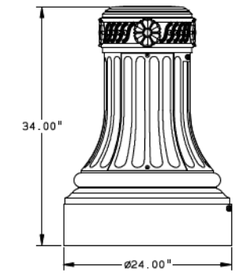
DETAIL 3 | POLE BASE



DETAIL 4 | ANCHOR BOLT

ALTHOUGH RARE, VIBRATIONS SEVERE ENOUGH TO CAUSE DAMAGE CAN OCCASIONALLY OCCUR IN STRUCTURES OF ALL TYPES. BECAUSE THEY ARE INFLUENCED BY MANY INTERACTING VARIABLES, VIBRATIONS ARE GENERALLY UNPREDICTABLE. THE USER'S MAINTENANCE PROGRAM SHOULD INCLUDE OBSERVATION FOR EXCESSIVE VIBRATION AND EXAMINATION FOR ANY STRUCTURAL DAMAGE OR BOLT LOOSENING. THE VALMONT WARRANTY SPECIFICALLY EXCLUDES FATIGUE FAILURE OR SIMILAR PHENOMENA RESULTING FROM INDUCED VIBRATION, HARMONIC OSCILLATION OR RESONANCE ASSOCIATED WITH MOVEMENT OF AIR CURRENTS AROUND THE PRODUCT.

VIBRATION DISCLAIMER



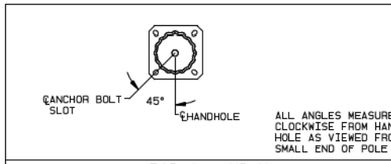
DETAIL 5 | HN24AC DECORATIVE BASE

MATERIAL DATA

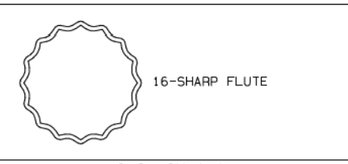
COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
TAPERED TUBES	A595 GR.A OR A572	55
POLE BASE	A36	36
ANCHOR BOLTS	F1554 GR.55	55
HARDWARE COATING	HOT DIP ZINC	--

FINISH DATA

SYSTEM: FINISH PAINT/GALVANIZED (FPGV)
BASE COAT: HOT-DIP GALVANIZED TO ASTM A123
PRIME COAT: NONE
FINISH COAT: TGIC OR URETHANE POLYESTER POWDER
COLOR: BLACK
SPEC: F-283A



RADIAL INDEX



SECTION A-A

POLE DATA

ITEM	QTY.	POLE TUBE BASE DIA. (IN)	POLE TUBE TOP DIA. (IN)	POLE TUBE LENGTH (FT)	POLE TUBE GAUGE OR THK. (IN)	POLE BASE SQUARE "S" (IN)	POLE BASE BOLT CIRCLE "Y" (IN)	POLE BASE THK. "M" (IN)	POLE BASE SLOT "Z" (IN)	ANCHOR BOLT DIA. "K" (IN)	ANCHOR BOLT LENGTH "J" (IN)	ANCHOR BOLT HOOK "H" (IN)	ANCHOR BOLT THREAD LENGTH "U" (IN)
1	17	8.00	6.60	10.00	11	11.50	11.00	0.88	1.13 X 1.69	1.00	36.00	4.00	6.00

REV	DRAWN BY-DATE	CHECK BY-DATE	DESCRIPTION
A	JWK3 08/11/20	JWK3 08/11/20	UPD TITLE OF DRAWING WAS LTG STRUCT.
—	LD7 06/30/20	JWK3 07/01/20	— — — — — — — — — — — — — — — — — —

SOLD TO:
SHIP TO:
P.O. #:
AGENT: REDWINE-WALLACE & ASSOCIATES

JOB: CITY OF HOUSTON, TEXAS
BUFFALO SPEEDWAY
TITLE: PEDESTRIAN POLE STRUCTURE

VALMONT INDUSTRIES, INC. RESERVES THE RIGHT TO INSTALL VARIOUS, ENGINEER APPROVED, MATERIAL HANGING ACCOMMODATIONS TO FACILITATE THE MANUFACTURING PROCESS.

valmont
Valley,NE 68064
(402) 359-2201

ORDER NUMBER: 480811-P3
PAGE NUMBER: 1 OF 1
DRAWING NUMBER: TX480811P3
REV: A

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER
08/24/20

infraTECH
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368
11111 WILCREST GREEN DR, SUITE 410
HOUSTON, TEXAS 77042

FREESE AND NICHOLS
11200 Broadway Street, Suite 2320
Pearland, Texas 77584
Phone – (832) 456-4700
Fax – (832) 456-4701
Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

TRAFFIC SIGNAL SUPPORT STRUCTURES PEDESTRIAN POLE STRUCTURE

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	(SEE THE TITLE SHEET)	461

STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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DATE:
FILE:

GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is ½ in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

Texas Department of Transportation

Traffic Operations Division Standard

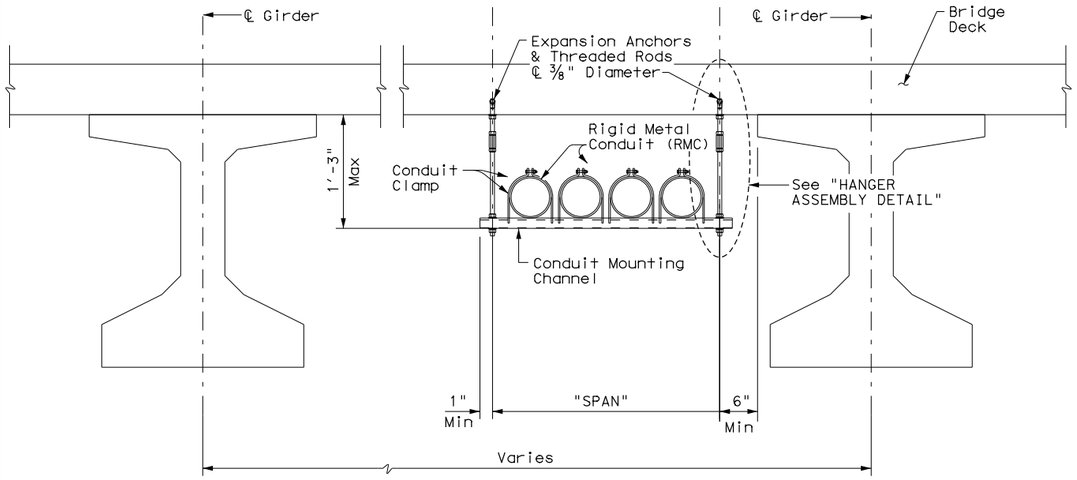
ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

FILE:	ed1-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS		0912	72	360	BSW
		DIST	COUNTY		SHEET NO.
		12	HARRIS		462

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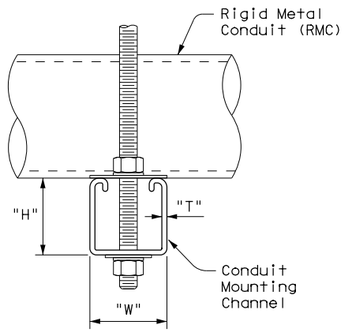
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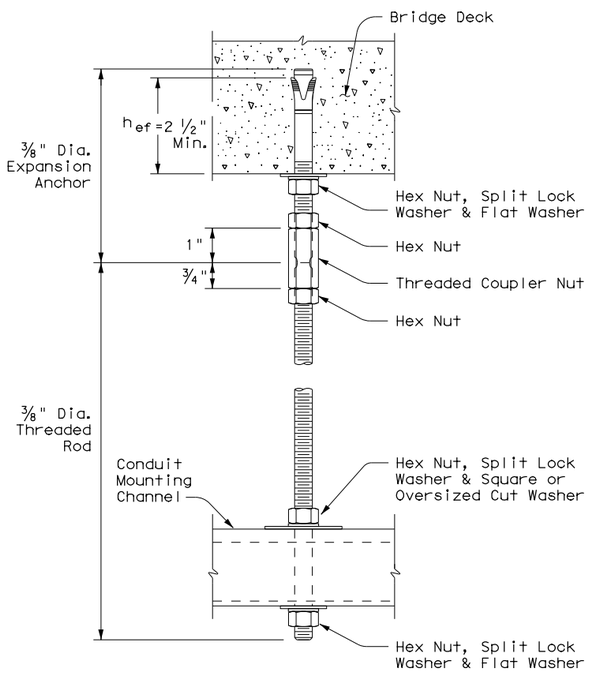


CONDUIT HANGING DETAIL

CONDUIT MOUNTING CHANNEL		
"SPAN"	"W" x "H"	"T"
less than 2'	1 5/8" x 1 3/8"	12 Ga.
2'-0" to 2'-6"	1 5/8" x 1 5/8"	12 Ga.
>2'-6" to 3'-0"	1 5/8" x 2 7/16"	12 Ga.

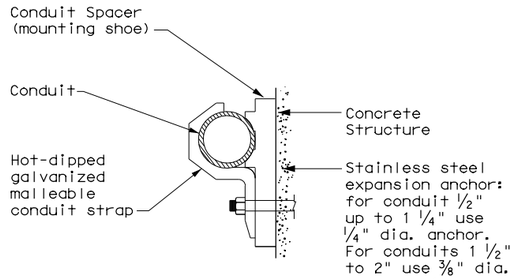
Channels with round or short slotted hole patterns are allowed, if the load carrying capacity is not reduced by more than 15%.

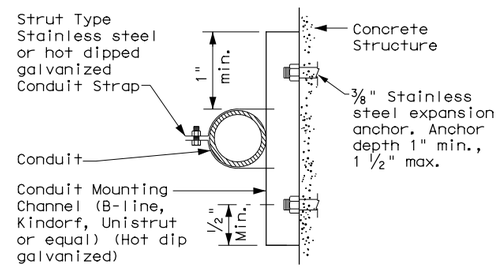




HANGER ASSEMBLY DETAIL

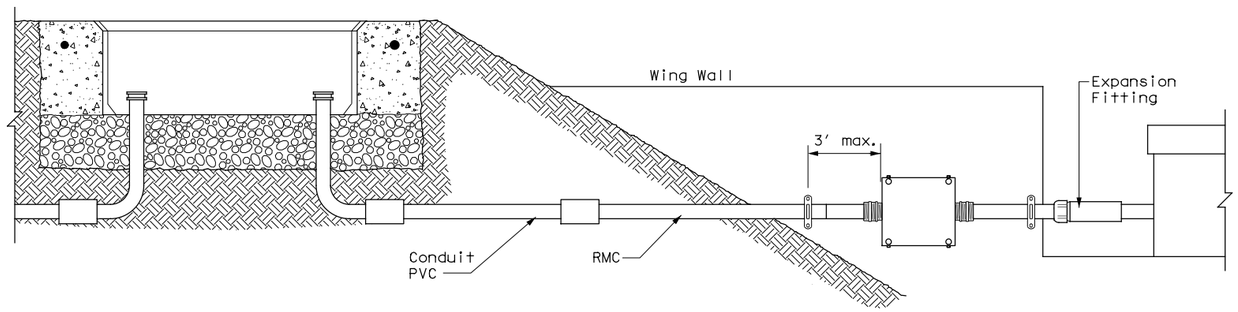
ELECTRIC CONDUIT TO BRIDGE DECK ATTACHMENT





CONDUIT MOUNTING OPTIONS

Attachment to concrete surfaces
See ED(1)B.2



TYPICAL CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL

EXPANSION ANCHOR NOTES FOR BRIDGE DECK ATTACHMENT

1. Use torque controlled mechanical expansion anchors that are approved for use in cracked concrete by the International Code Council, Evaluation Service (ICC-ES). The chosen anchor product shall have a designated ICC-ES Evaluation Report number, and its approval status shall be maintained on the ICC-ES website under Division 031600 for Concrete Anchors.

2. Unless otherwise approved by the Engineer: do not use adhesive anchors; do not use expansion anchors that are not included in the ICC-ES approval list; and do not use expansion anchors that are only approved for use in uncracked concrete.

3. Use anchors manufactured with stainless steel expansion wedges. Anchors manufactured with carbon steel expansion wedges are not allowed. Anchor bodies can be either zinc-plated carbon steel or stainless steel. For application in marine environment, both the anchor body and expansion wedge shall be stainless steel.

4. Install anchors as shown on the plans and in accordance with the anchor manufacturer's published installation instructions. Arrange a field demonstration test to evaluate the procedures and tools. The test shall be witnessed and approved by the Engineer prior to furnishing anchors on the structure.

5. Prior to hole drilling, use rebar locator to ensure clearing of existing deck strands or reinforcement. Install anchors to ensure a minimum effective embedment depth, (h_{ef}), as shown. Increase (h_{ef})as needed to ensure sufficient thread length for proper torqueing and tightening of anchors.

6. Use anchors of minimum 1600 Lbs tensile capacity (minimum of steel, concrete breakout, and concrete pullout strengths as determined by ACI 318 Appendix D) at the required minimum embedment depth (h_{ef}). No lateral loads shall be introduced after conduit installation.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
CONDUIT SUPPORTS

ED(2)-14

FILE: ed2-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	72	360	BSW
	DIST	COUNTY		SHEET NO.
	12	HARRIS		463

71B

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ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.
2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.
3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.
4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.
2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.
3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.
4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.
5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.
6. Support conductors in illumination poles with a J-hook at the top of the pole.
7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.
8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.
9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.
10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.
11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.
12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.
2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.
3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.
4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.
5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

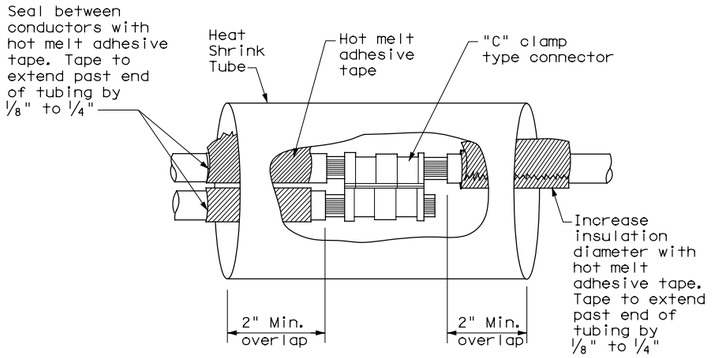
GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.
2. Do not place ground rods in the same drilled hole as a timber pole.
3. Install ground rods so the imprinted part number is at the upper end of the rod.
4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.
6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type

SPLICE OPTION 2
Split Bolt Type

SPLICE OPTION 3
Listed Screw Type

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUCTORS

ED(3)-14

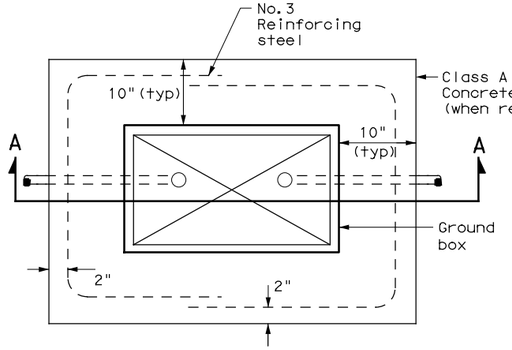
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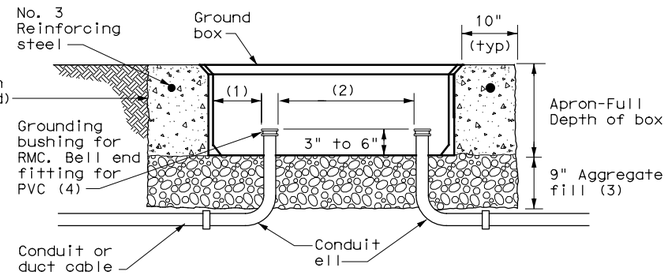
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PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

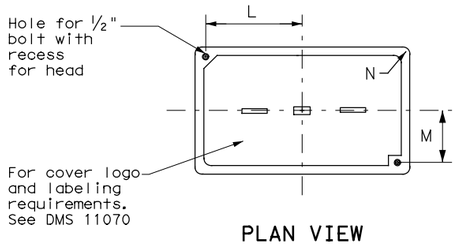
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

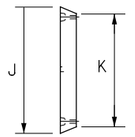
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

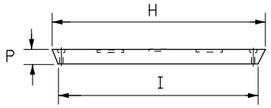
GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



END



SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
GROUND BOXES

ED(4)-14

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ELECTRICAL SERVICES NOTES

1. Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.

2. Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services,"DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

3. Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.

4. Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

5. The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

6. Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

7. When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

8. Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.

9. All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.

10. Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.

11. Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.

12. Ensure all mounting hardware and installation details of services conform to utility company specifications.

13. For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.

14. When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.

15. Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

1. Provide threaded hub for all conduit entries into the top of enclosure.

2. Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.

3. Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.

4. Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

1. Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.

2. When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

PHOTOELECTRIC CONTROL

1. Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

* ELECTRICAL SERVICE DATA

Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit **Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 ¼"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 ¼"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

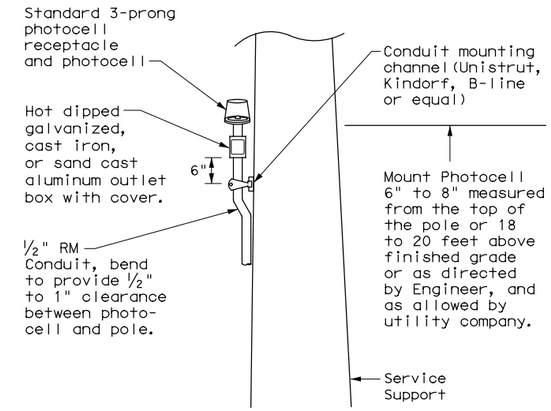
* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National ELectrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X XXX/XXX XXX (XX) XX (X) XX (X)

- Schematic Type
- Service Voltage V / V
- Disconnect Amp Rating
  000 indicates main lug only/
  Typically Type T
- (SS)= Safety Switch Ahead of Meter-Check with Utility
  (NS)= No safety Switch Ahead of Meter-Check with Utility
- Enclosure Type
  GS= Galvanized steel("off the shelf")
  SS= Stainless steel(Custom Enclosure)See MPL
  AL= Aluminum (Custom Enclosure)See MPL
- Photocell Mounting Location
  (E)= Inside Service/Enclosure Mounted
  (T)= Top of pole
  (L)= Luminaire mounted
  (N)= None/No Photocell or Lighting Contactor Required
- Service Support Type
  GC= Granite concrete
  OC= Other concrete
  TP= Timber pole
  SP= Steel pole
  SF= Steel frame
  OT= Pole by others or paid for separately
  EX= Existing pole
  TS= Service on traffic signal pole
  PS= Pedestal Service
- O= Overhead Service Feed from Utility
  U= Underground Service Feed from Utility



TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

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ELECTRICAL DETAILS SERVICE NOTES & DATA

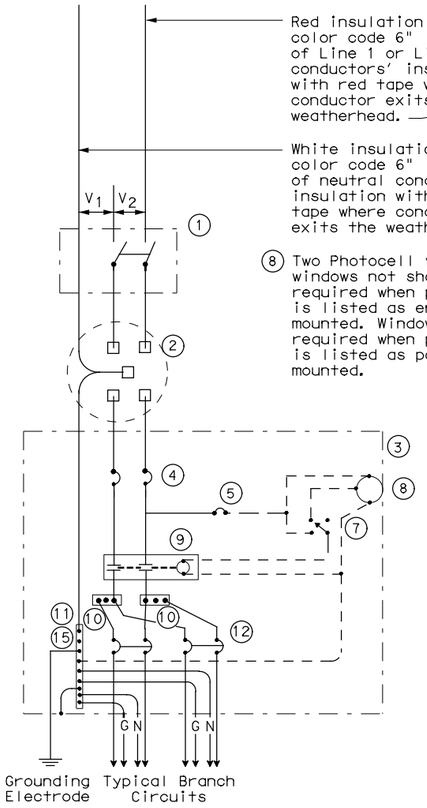
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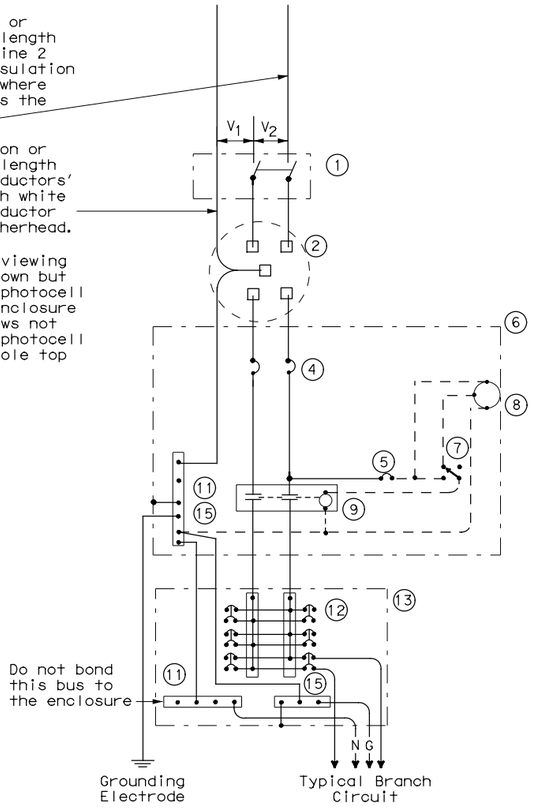
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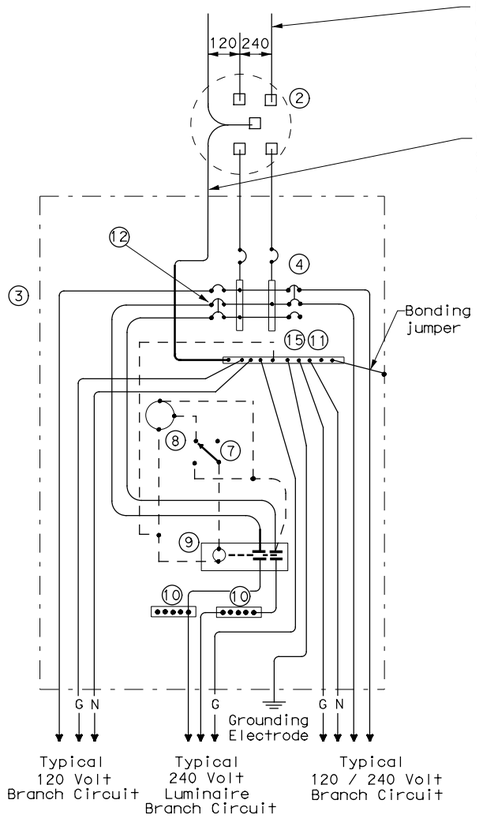
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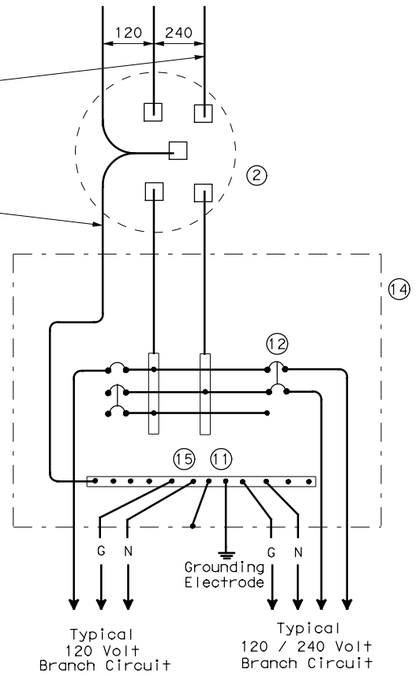
SCHEMATIC TYPE A
THREE WIRE



SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE

Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

WIRING LEGEND	
———	Power Wiring
- - - -	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES

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SUPPORT TYPE STEEL POLE (SP) AND STEEL FRAME (SF)

1. Provide steel pole and steel frame supports as per TxDOT Departmental Material Specification (DMS)11080 "Electrical Services." Mount all equipment and conduit on 12 gauge galvanized steel or stainless steel channel strut, 1 ½ in. or 1 ⅝ in. wide by 1 in. up to 3 ¾ in. deep Unistrut, Kindorf, B-line or equal. Bolt or weld all channel and hardware to vertical members as approved. Do not stack channel. File smooth and paint field cut ends of all channel with zinc-rich paint before installing.

2. Provide poles for overhead service with an eyebolt or similar fitting for attachment of the service drop to the pole in conformance with the electric utility provider's specifications.

3. Provide and install galvanized ¾ in. x 18 in. x 4 in. (dia. x length x hook length) anchor bolts for underground service supports. Provide and install galvanized ¾ in. x 56 in. x 4 in. anchor bolts for overhead service supports. Ensure anchor bolts have 3 in of thread, with 3 ¼ in. to 3 ½ in. of the exposed anchor bolt projecting above finished foundation. Provide and install leveling nuts for all anchor bolts.

4. Bond one of the anchor bolts to the rebar cage with 6 AWG bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. See Inset B.

5. Furnish and install rigid metallic ells in all steel pole and steel frame foundations for all conduits entering the service from underground.

6. Use class C concrete for foundations. Ensure reinforcing steel is Grade 60 with 3" of unobstructed concrete cover.

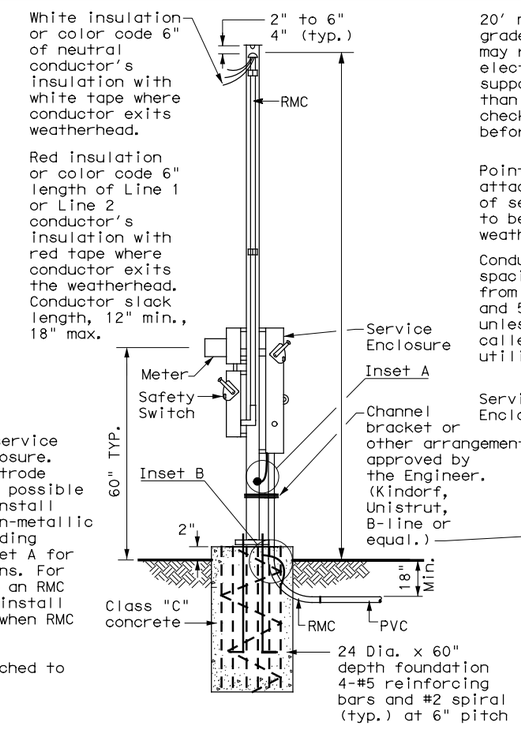
7. Drill and tap steel poles and frames for ½ in. X 13 UNC tank ground fitting. For steel pole service supports, provide and install tank ground fitting 4 in. to 6 in. below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. For steel frame service supports, provide and install tank ground fitting on steel frame post. Install service grounding electrode conductor in a non-metallic conduit or tubing from the enclosure to the steel frame post. Connect electrical service grounding electrode conductor to the tank ground fitting. See steel frame and steel pole details and Inset A for more information. Size service entrance conduit and branch circuit conduit as shown in the plans. For underground conduit runs from the electrical service, extend RMC from the service enclosure to an RMC elbow, and then connect the schedule type and size of conduit shown in the plans. Provide and install grounding bushings where RMC terminates in the enclosure. Grounding bushings are not required when RMC is fitted into a sealing hub or threaded boss.

8. If Steel pole or frame is painted, bond each separate painted piece with a bonding jumper attached to a tapped hole.

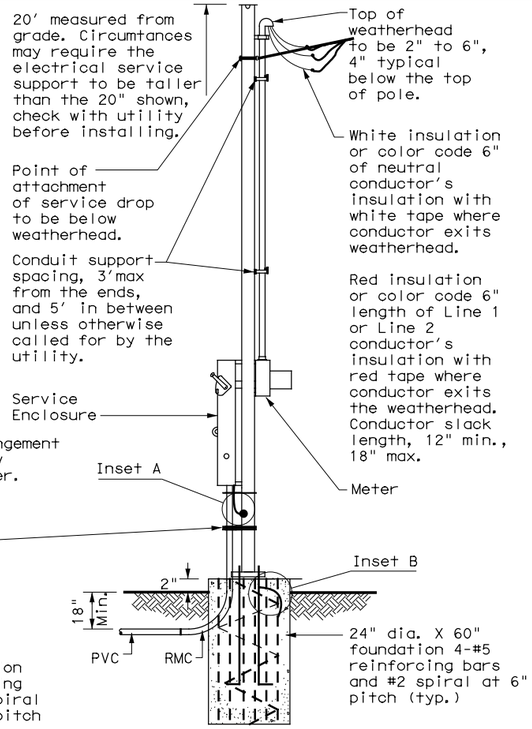
9. Provide ¼" - 20 machine screws for bonding. Do not use sheet metal screws. Remove all non-conductive material at contact points. Terminate bonding jumpers with listed devices. Install minimum size 6 AWG stranded copper bonding jumpers. Make up all threaded bonding connections wrench tight.

10. Avoid contact of the service drop and service entrance conductors with the metal pole to prevent abrasion of the insulated conductors.

11. Shop drawings are not required for service support structure unless specifically stated elsewhere or directed by the Engineer.

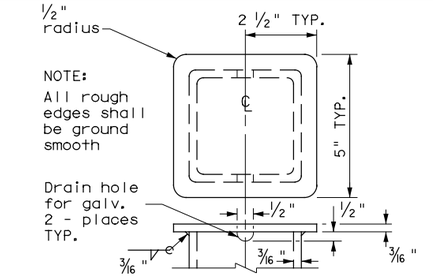


WITH SAFETY SWITCH

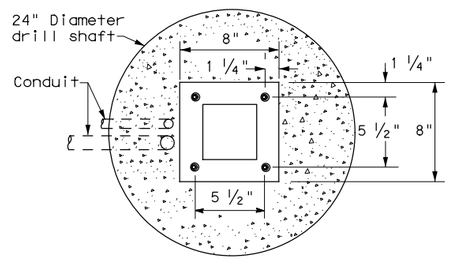


WITHOUT SAFETY SWITCH

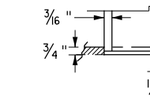
SERVICE SUPPORT TYPE SP (O) - OVERHEAD SERVICE



POLE TOP PLATE

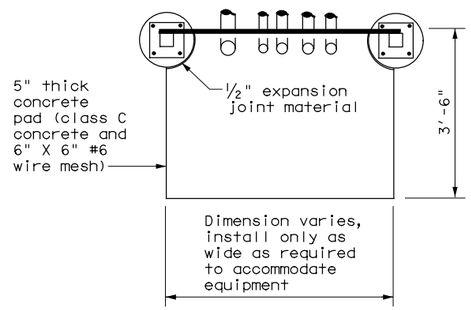


BASE PLATE DETAIL



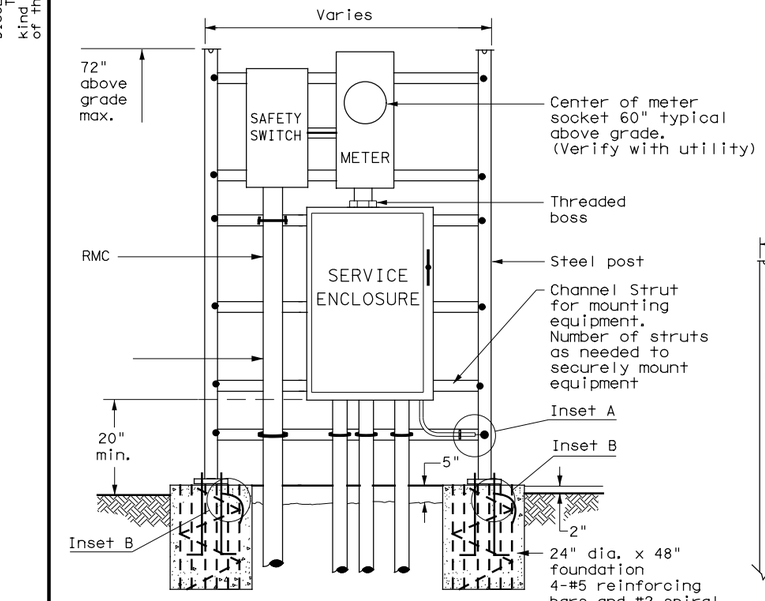
BOTTOM OF POLE

SERVICE SUPPORT TYPE SF & SP



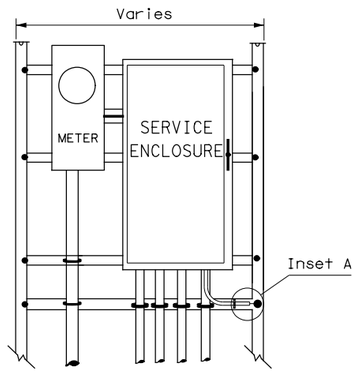
TOP VIEW

SERVICE SUPPORT TY SF (O) & SF (U)



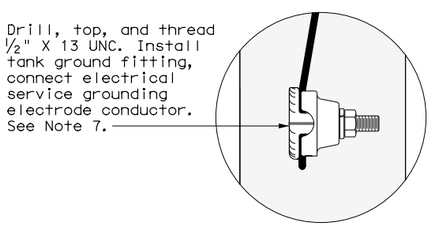
WITH SAFETY SWITCH

FRONT VIEW



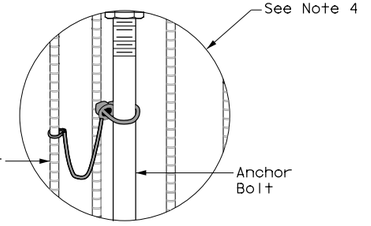
WITHOUT SAFETY SWITCH

SERVICE SUPPORT TYPE SF(U) - UNDERGROUND SERVICE

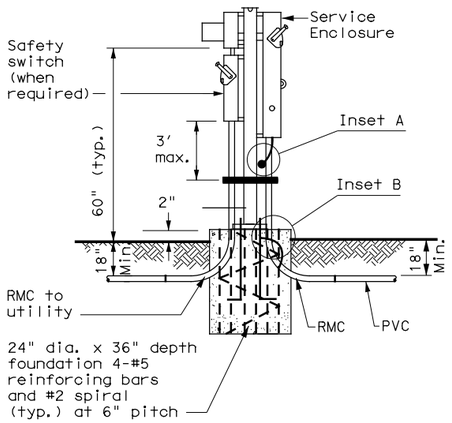


FRONT VIEW

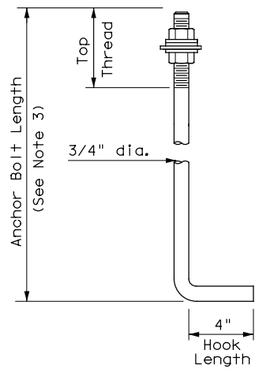
INSET A



INSET B



WITH SAFETY SWITCH



HOOKED ANCHOR DETAIL

SERVICE SUPPORT TYPE SP(U) - UNDERGROUND SERVICE

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE SUPPORT TYPES SF & SP

ED(7)-14

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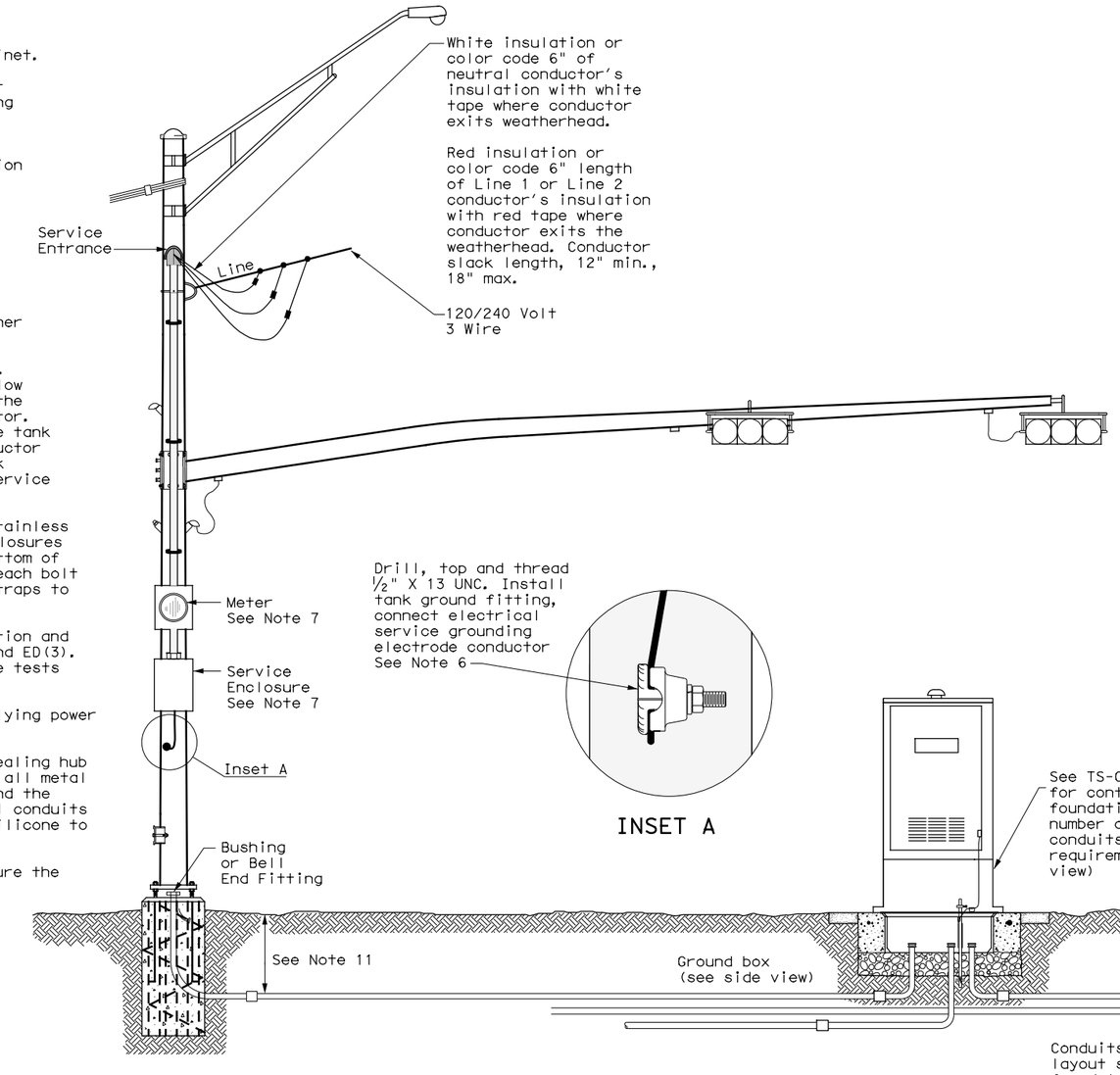
71G

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TRAFFIC SIGNAL NOTES

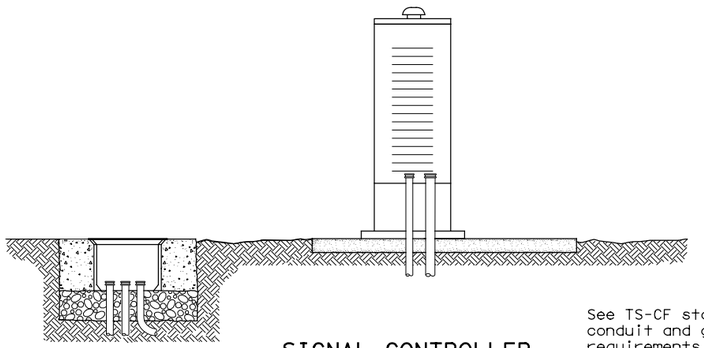
1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material and construction sections of Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.
4. If internally illuminated street name signs are approved for use, ground the fixture to the pole with a 12 AWG green XHHW conductor.
5. Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.
6. Drill and tap signal poles for ½ in. X 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of ¾ in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.
8. Conduct pull tests and insulation resistance tests on all illumination and power conductors as required in Item 620 "Electrical Conductors" and ED(3). To prevent electronics damage, do not conduct insulation resistance tests on traffic signal cables after termination.
9. Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.
11. For all conduits, ensure the burial depth is a minimum of 18". Ensure the minimum burial depth for conduit placed under a roadway is 24".



SIGNAL POLE WITH SERVICE

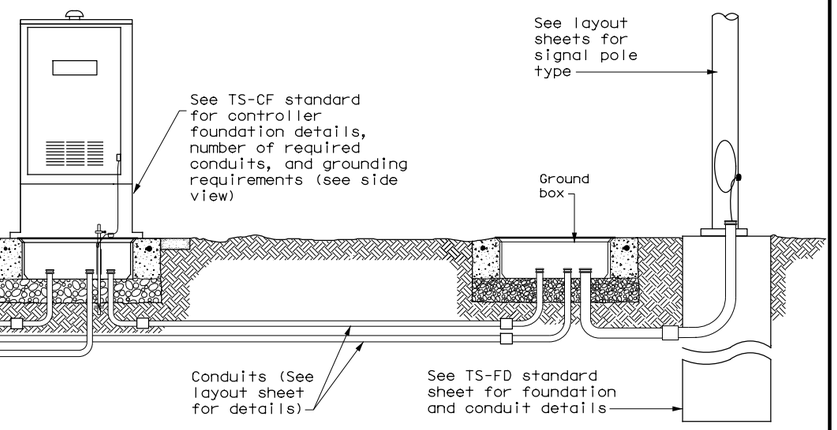
Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.

INSET A



SIGNAL CONTROLLER SIDE VIEW

See TS-CF standard for conduit and grounding requirements. See layout sheets for ground box locations and any additional conduits that are required.



SIGNAL CONTROLLER FRONT VIEW

SIGNAL POLE

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS

ED(8)-14

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TIMBER POLE (TP) SERVICE SUPPORT NOTES

1. Ensure electrical service support is a class 5 treated timber pole as per Item 627 "Treated Timber Poles." Embed timber pole to depth required in Item 627.
2. Conduit and electrical conductors attached to the electrical service pole and underground within 12 in. of service pole are not paid for directly but are subsidiary to the electrial service.
3. Install pole-top mounted photocell (T) on north side of pole, or in service enclosure (E) as required. See Electrical Service Data chart in plan set.
4. Gain pole as required to provide flat surface for each channel. Gain timber pole to 5/8 in. max. depth and 1 7/8 in. max. height. Gain pole in a neat and workmanlike manner.
5. Mount meter and service equipment on stainless steel or galvanized channel (Unistrut, Kindorf, or equal). Provide channel sized 1 in. to 3 3/4 in. maximum depth, and 1½ in. to 1⅝ in. maximum width. File smooth the cut ends of galvanized channel and paint with zinc rich paint before installing on pole. Secure each channel section to timber pole with two galvanized or SS lag bolts, ¼ in. minimum diameter by 1½ in. minimum length. Use a galvanized or SS flat washer on each lag bolt. Do not stack channel.
6. When excess length must be trimmed from poles, trim from the top end only.

(1) Class 5 pole, height as required

(2) Service drop from utility company (attached below weatherhead)

(3) Service conduit (RMC) and service entrance conductors - One Red, One Black, One White (See Electrical Service Data)

(4) Safety switch (when required)

(5) Meter (when required)

(6) Service enclosure

(7) 6 AWG bare grounding electrode conductor in ½ in. PVC to ground rod - extend ½ in. PVC 6 in. underground.

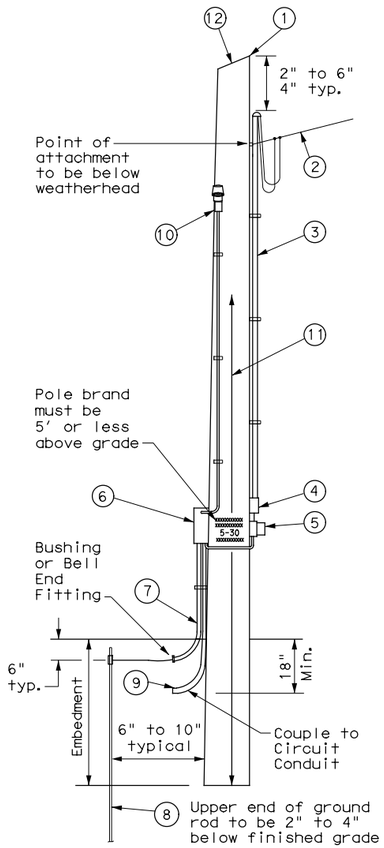
(8) ⅝ in. x 8 ft. Copper clad ground rod - drive ground rod to a depth of 2 in. to 4 in. below grade.

(9) RMC same size as branch circuit conduit.

(10) See pole-top mounted photocell detail on ED(5).

(11) When required by the serving utility provide bare 6 AWG copper conductor. Run wire from pole top to butt wrap or copper butt plate. Protect conductor with non-conductive material to a height of 8 ft. above finished grade.

(12) When required by utility, cut top of pole at an angle to enhance rain run off.

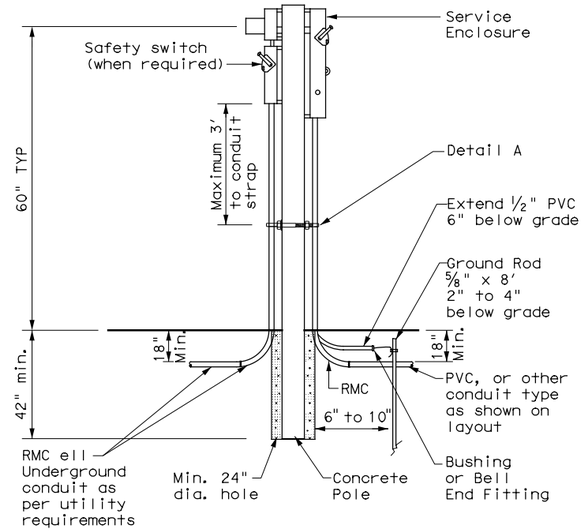


SERVICE SUPPORT TYPE TP (O)

GRANITE CONCRETE (GC) & OTHER CONCRETE (OC) NOTES

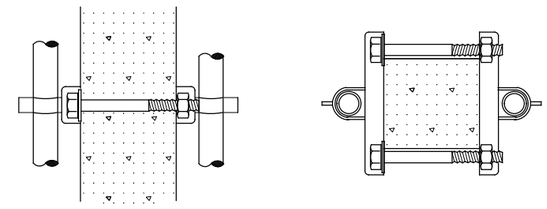
Ensure electrical service support structures bid as type Granite Concrete (GC) or Other Concrete (OC) meet the following requirements.

1. Provide GC and OC poles that meet the requirements of DMS 11080 "Electrical Services."
2. Provide prestressed concrete poles suitable for direct embedment into the ground without special foundations.
3. Verify poles are marked as required on DMS 11080. Location of marking should be approximately 4' above final grade. Use the two-point pickup locations when handling pole in horizontal position, and one-point pickup location for use in raising the pole to a vertical position. These marks are small but conspicuous.
4. Embed poles 42 in. or 10% of the length plus 2 ft., whichever is greater.
5. Ensure all installation details of services are in accordance with utility company specifications.
6. Install a one point rack or eye bolt bracket 6 inches to 12 inches below the weatherhead as an overhead service drop anchoring point for the electric utility.
7. Furnish and install galvanized or stainless steel channel strut 1 ½ in. or 1 ⅝ in. wide by 1 in. up to 3 3/4 in. deep (Unistrut, Kindorf, B-line or equal). Attach channel strut with stainless steel concrete anchors (max. 1" depth), square U-bolts or back to back channel strut with long bolts, or other secure mounting as approved by the Engineer. Ensure bolts are galvanized in accordance with ASTM A153. Do not stack channel struts.
8. Backfill the holes thoroughly by tamping in 6 in. lifts. After tamping to grade, place additional backfill material in a 6 inch high cone around the pole to allow for settling. Use material equal in composition and density to the surrounding area. Backfilling will not be paid for directly but is subsidiary to various bid items.



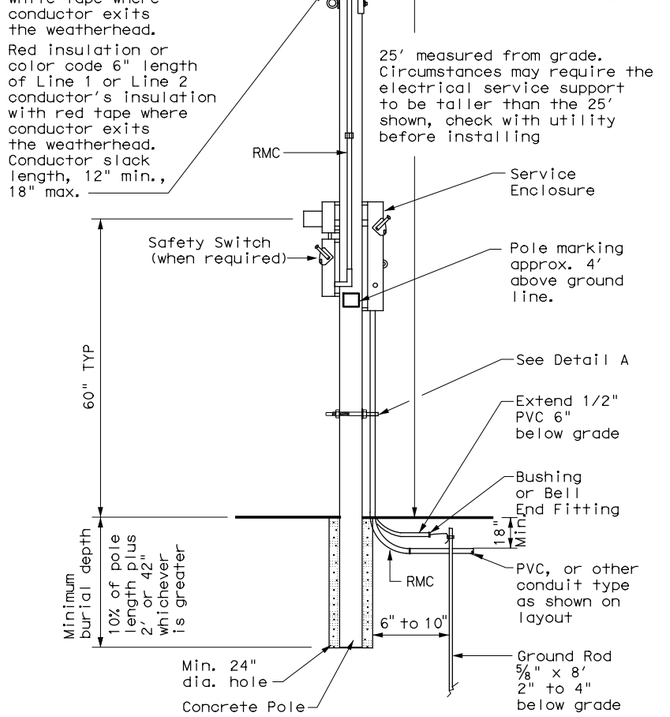
CONCRETE SERVICE SUPPORT

Underground (U)



DETAIL A

See Note 7. Before installing channel that has been cut, file sharp edges and paint with zinc-rich paint. Ensure there is no paint splatter on the pole.



CONCRETE SERVICE SUPPORT

Overhead (O)

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE SUPPORT TYPES GC, OC, & TP

ED(10)-14

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DUCT CABLE & HDPE CONDUIT NOTES

1. Provide duct cable in accordance with Departmental Material Specification (DMS) 11060 "Duct Cable" and Item 622 "Duct Cable." Provide duct cable as listed on the Material Producer List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 622.

2. Provide High-Density Polyethylene (HDPE) conduit in accordance with DMS 11060 and Item 618, "Conduit." Provide HDPE as listed on the MPL on the Department web site under "Roadway Illumination and Electrical Supplies," Item 618.

3. Supply duct cable with a minimum 2 in. diameter, unless otherwise shown in the plans. Provide duct cable and HDPE conduit as shown by descriptive code or on the plans. Bend duct cable and HDPE conduit as recommended by the manufacturer, with a minimum bending radius of 26 in. for 2 in. duct. Follow manufacturers' recommendations when handling duct cable and HDPE conduit reels and during installation of duct cable and HDPE conduit.

4. Do not splice conductors within duct cable or HDPE conduit. Couple duct cable and HDPE entering a ground box or foundation to a PVC elbow. When galvanized steel RMC elbows are called for in the plans and any portion of the RMC elbow is buried less than 18" from possible contact, ground the RMC elbow.

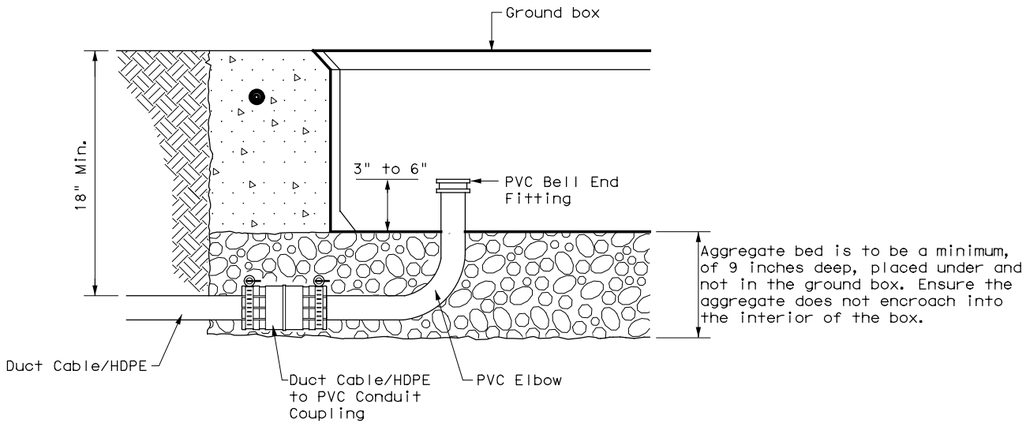
5. Furnish and install duct cable with factory installed conductors, sized as shown in the plans and as required by the National Electrical Code (NEC). The NEC contains specific requirements for duct cable in Article, "Nonmetallic Underground Conduit with Conductors: Type NUCC."

6. When conduit casing is called for in the plans, extend duct cable or HDPE conduit through the conduit casing in one continuous length without connection to the casing.

7. Seal the ends of duct cable or HDPE conduit with duct seal, expandable foam, or other approved method after completing the pull tests required by Item 622.

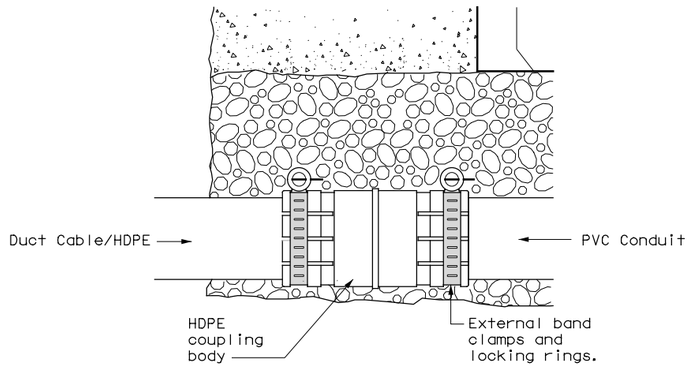
8. Provide minimum cover of 24 in. under roadways, 18 in. in other locations, or as shown on the plans.

9. Furnish and install listed fittings to couple duct cable or HDPE conduit to other types of conduit. Duct cable and HDPE conduit may be field-threaded and spliced with PVC or RMC threaded couplings; connected with listed tie-wrap fittings; connected using listed coupling made of HDPE with stainless steel external banding clamps and locking rings; connected with approved electrofusion conduit couplings; or connected using an approved chemical fusion method using an epoxy or adhesive specifically designed for HDPE couplings and connectors all installed in accordance with their manufacturer's instructions. Do not use PVC glue on HDPE. Do not use water pipe fittings, or connect conduit with heat shrink tubing.

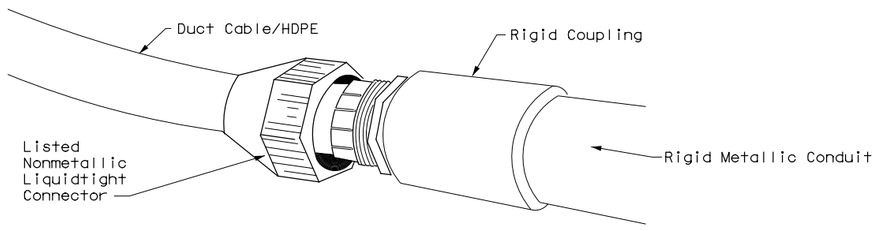


DUCT CABLE/HDPE AT GROUND BOX

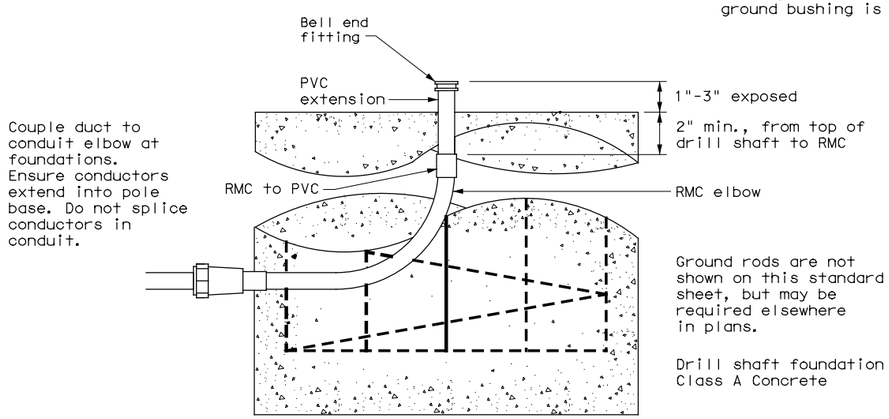
When the upper end of an RMC Ell does not enter the ground box, it may be extended with a SCH-40 PVC conduit nipple and bell end, provided there is a minimum of 18" of cover over all parts of the elbow. If not, a rigid extension and ground bushing is required.



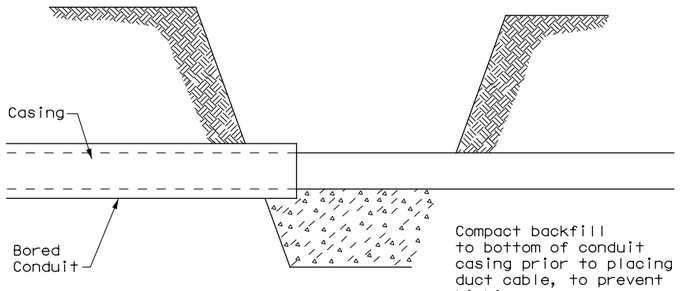
DUCT CABLE/HDPE TO PVC



DUCT CABLE/HDPE TO RMC



DUCT CABLE / HDPE AT FOUNDATION



BORE PIT DETAIL

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
DUCT CABLE/ HDPE CONDUIT

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BATTERY BOX GROUND BOXES NOTES

A. MATERIALS

1. Provide polymer concrete or fiberglass reinforced plastic (FRP) battery box ground box and cover in accordance with Departmental Material Specification (DMS) 11071 "Battery Box Ground Boxes." Battery box will accommodate up to 4 batteries, each measuring 8 in. x 13.5 in. x 10 in. (W x L x D). Label battery box ground box cover in accordance with DMS 11071.

2. Supply a marine grade batteries with covers. Secure the marine grade batteries with covers to the stainless steel rack in the bottom of the ground box with tie down straps.

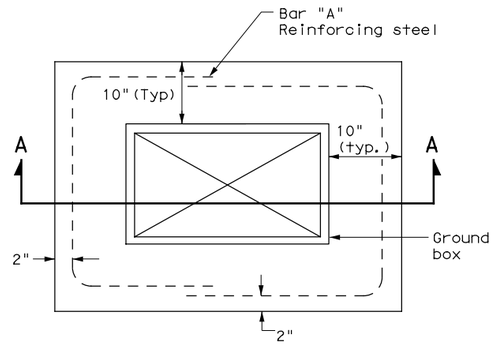
B. CONSTRUCTION METHODS

1. Ensure conduit entry will not interfere with placement of the batteries in the battery box ground box.

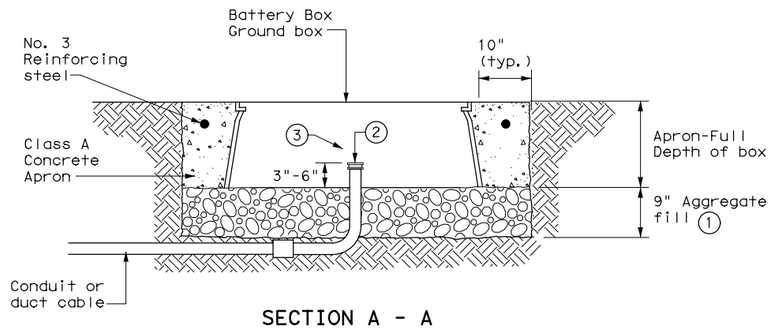
2. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting battery box ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure the aggregate bed is in place and is a minimum of 9 in. deep prior to setting the box. Install battery box ground box on top of aggregate.

3. Cast battery box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Battery box ground box aprons, including concrete and reinforcing steel, are subsidiary to battery box ground boxes when called for by descriptive code.

4. Bolt covers down when not working in battery box ground boxes. Keep bolt holes in the box clear of dirt.



PLAN VIEW



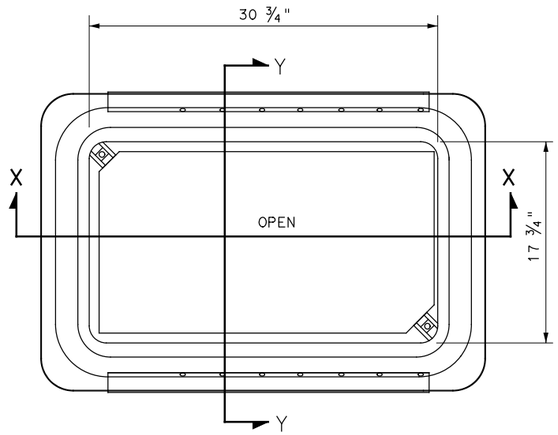
SECTION A - A

APRON FOR BATTERY BOX GROUND BOXES

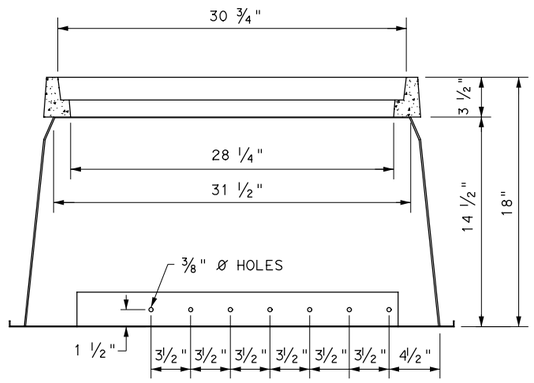
(1) Place aggregate under the box and not in the box. Aggregate should not encroach on the interior volume of the box.

(2) Install bushing or bell end fitting on the upper end of all ells.

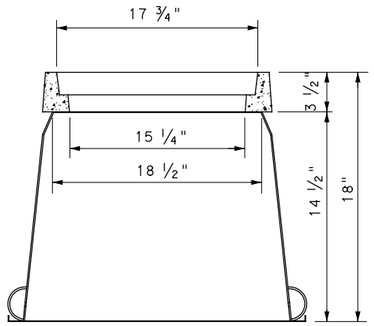
(3) Install all conduits in a neat and workmanlike manner.



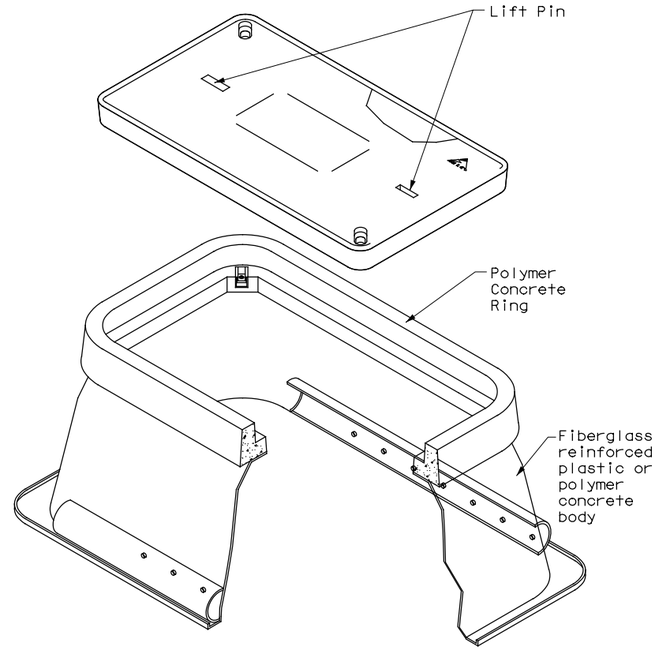
BATTERY BOX TOP VIEW



SECTION X-X



SECTION Y-Y



Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS BATTERY BOX GROUND BOXES

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FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft ④, ⑤, ⑥			ANCHOR BOLT DESIGN ①				FOUNDATION DESIGN LOAD ②		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft 10	15	40	ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	¾"	36	12 ¾"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 ½"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 ¾"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 ¼"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

NOTES:

① Anchor bolt design develops the foundation capacity given under Foundation Design Loads.

② Foundation Design Loads are the allowable moments and shears at the base of the structure.

③ Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

④ Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.

⑤ If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

⑥ Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

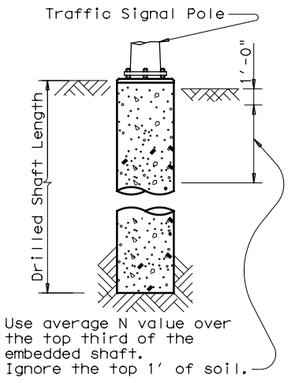
FOUNDATION SUMMARY TABLE ③

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH ⑥ (FEET) 24-A	30-A	36-A	36-B	42-A
BUFFALO SPDWY @ UNIVERSITY BLVD								
POLE 1	10	36-B	1				16	
POLE 2	10	36-A	1			14		
POLE 3	10	36-A	1			14		
POLE 4	10	36-A	1			14		
BUFFALO SPDWY @ RICE BLVD								
POLE 3	32	42-A	1					13
POLE 8	32	36-B	1				12	
POLE 9	32	36-A	1			11		
BUFFALO SPDWY @ SUNSET BLVD								
POLE 4	13	42-A	1					17
POLE 8	13	42-A	1					17
TOTAL DRILLED SHAFT LENGTHS						53	28	47

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

		FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	32'	48'		
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 28'	32' X 32'		
			36' X 36'		
			40' X 36'		
			44' X 28'	44' X 36'	
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS		24' X 24'		
			28' X 28'		
			32' X 24'	32' X 32'	
				36' X 36'	
				40' x24'	40' X 36'
					44' x 36'

EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.

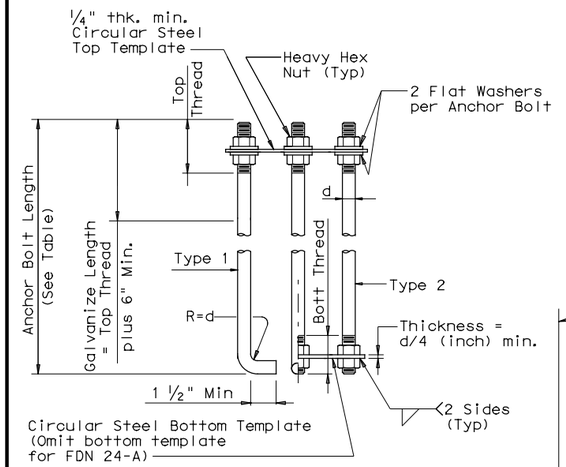


Use average N value over the top third of the embedded shaft. Ignore the top 1' of soil.

ANCHOR BOLT & TEMPLATE SIZES

BOLT DIA IN.	⑦ BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
¾"	1'-6"	3"	—	12 ¾"	7 ⅛"	5 ⅝"
1 ½"	3'-4"	6"	4"	17"	10"	7"
1 ¾"	3'-10"	7"	4 ½"	19"	11 ¼"	7 ¾"
2"	4'-3"	8"	5"	21"	12 ½"	8 ½"
2 ¼"	4'-9"	9"	5 ½"	23"	13 ¾"	9 ¼"

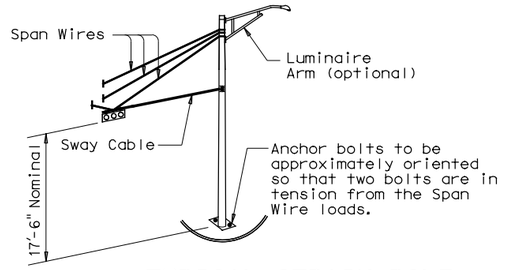
⑦ Min dimensions given, longer bolts are acceptable.



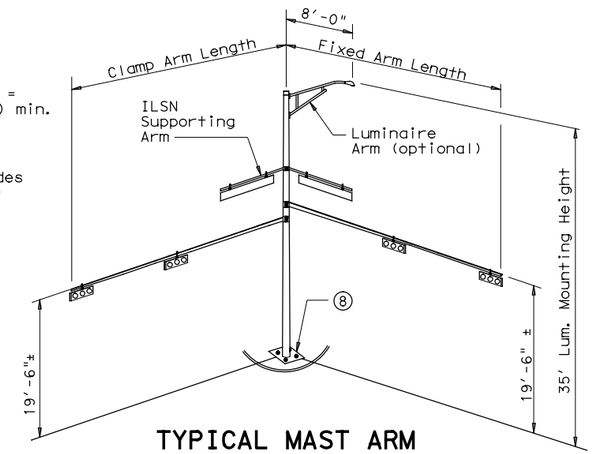
HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY

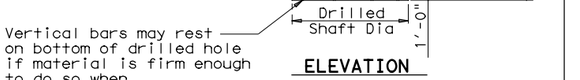
⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.



TYPICAL STRAIN POLE ASSEMBLY



TYPICAL MAST ARM ASSEMBLY



TOP VIEW

ELEVATION

FOUNDATION DETAILS

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".

Engineer's Seal

STATE OF TEXAS
ZAHIDUL Q. SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER

08/24/20

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

©TxDOT August 1995

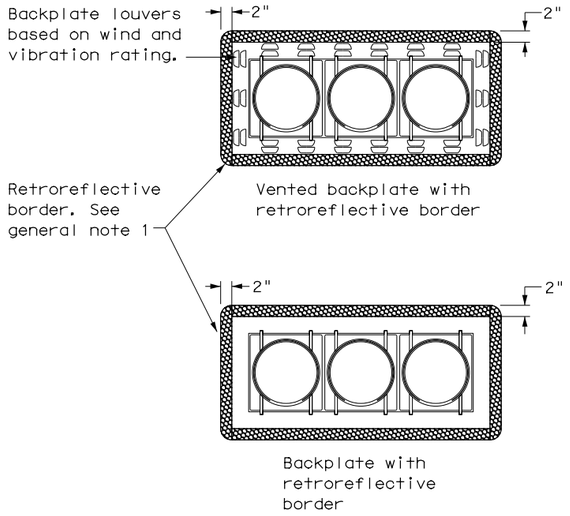
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REVISIONS: 5-96, 11-99, 1-12

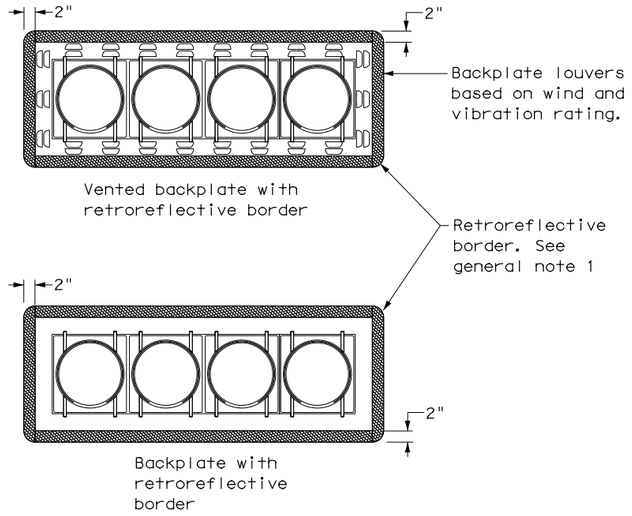
CONT	SECT	JOB	HIGHWAY
0912	72	360	BSW
DIST	COUNTY		SHEET NO.
12	HARRIS		473

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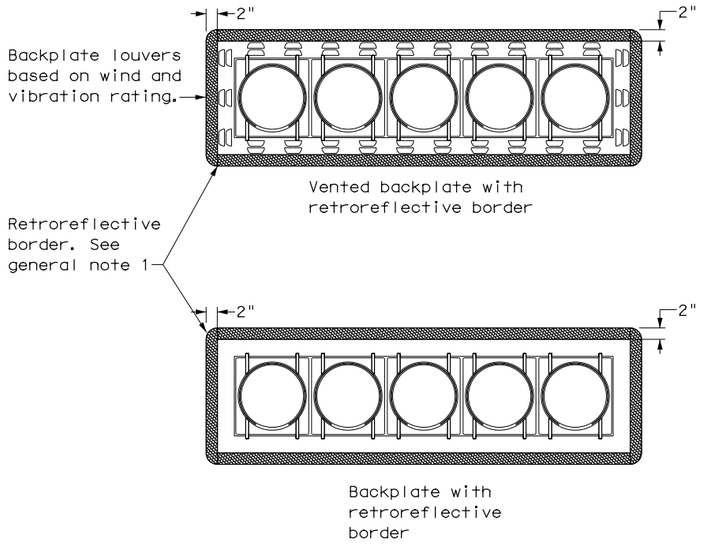
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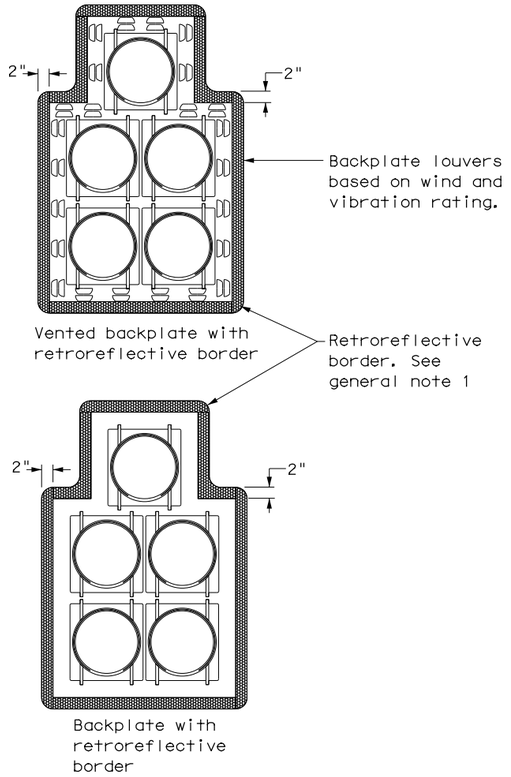
THREE-SECTION HEAD
HORIZONTAL OR VERTICAL



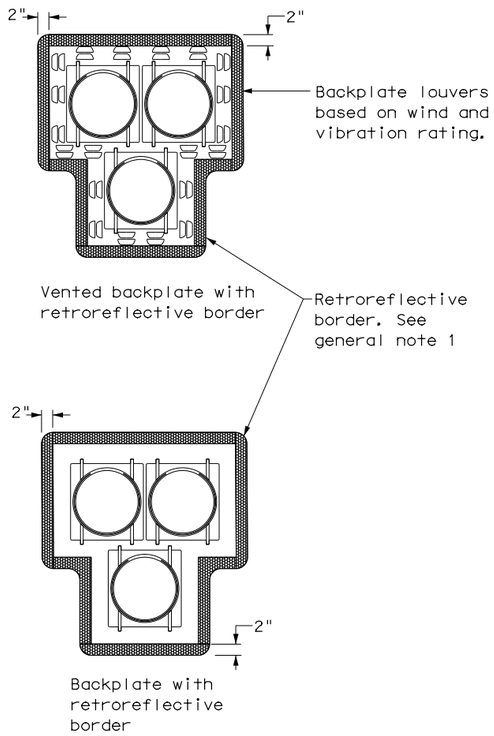
FOUR-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
HORIZONTAL OR VERTICAL



FIVE-SECTION HEAD
CLUSTER



PEDESTRIAN HYBRID
BEACON

GENERAL NOTES:

1. Backplates are optional for traffic signals and pedestrian hybrid beacons. When backplates are used, a 2-inch wide fluorescent yellow AASHTO Type B_{FL} or C_{FL} retroreflective border conforming to TxDOT DMS-8300 is required. Place on all approaches when used.
2. Signal head and backplate compatability must be verified by the contractor prior to installation.
3. When using backplates on signal heads, venting is preferred to reduce cyclic vibration stress.
4. When a vented backplate is used, the retroreflective border must not be placed over the louvers.
5. This standard sheet applies to all signal heads with backplates, including but not limited to:
   - Pole mounted
   - Overhead mounted
   - Span wire mounted
   - Mast arm mounted
   - Vertical signal heads
   - Horizontal signal heads
   - Clustered signal heads
   - Pedestrian hybrid beacons

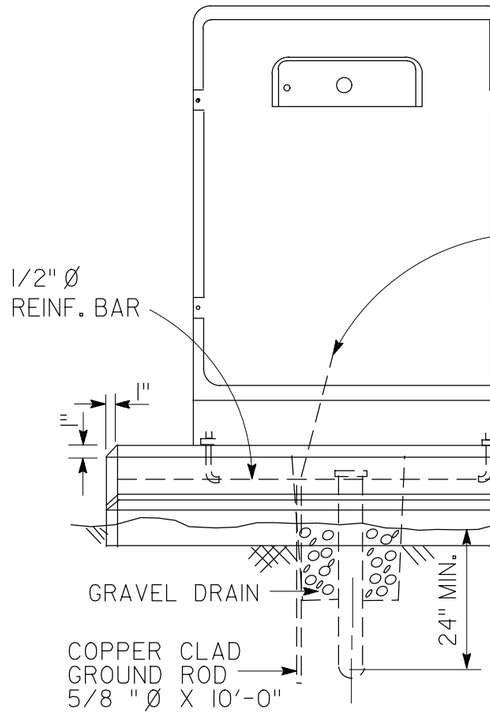
Texas Department of Transportation

Traffic Safety Division Standard

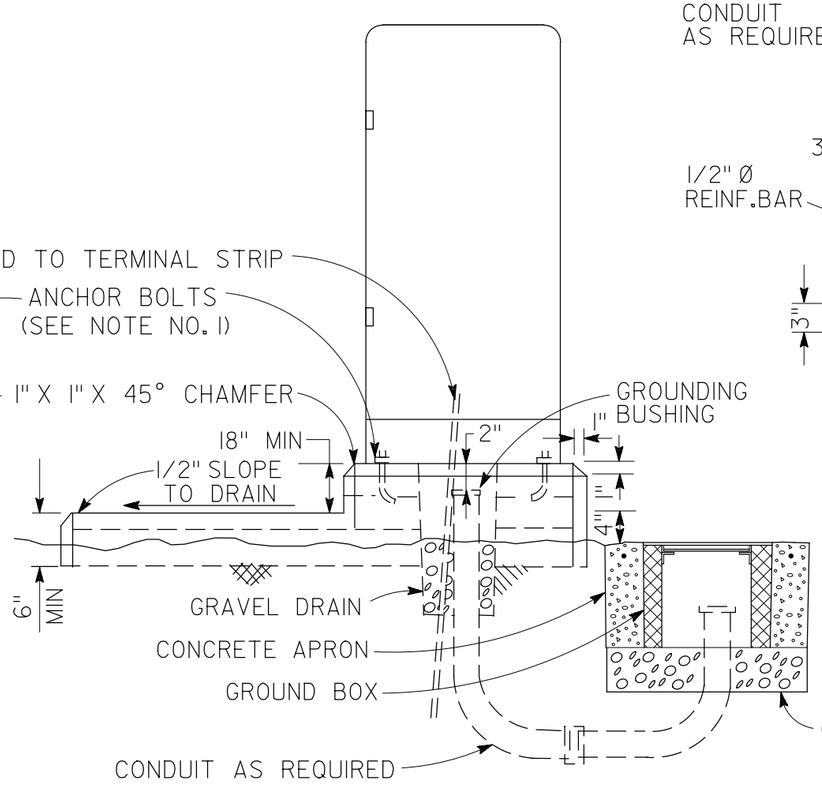
TRAFFIC SIGNAL HEAD WITH BACKPLATE

TS-BP-20

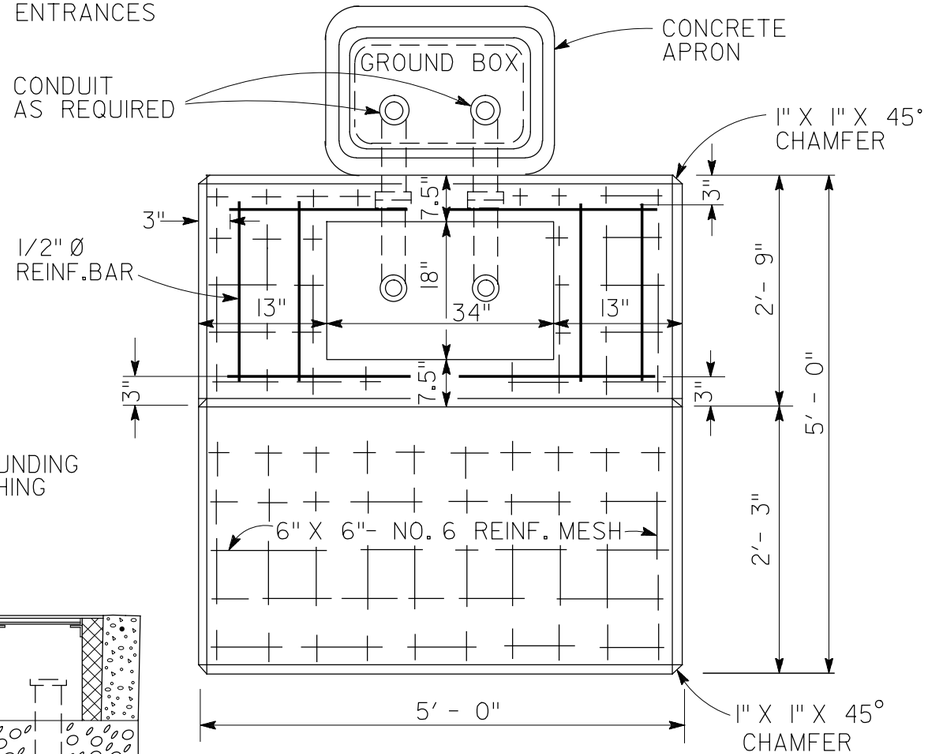
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©TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	72	360	BSW
	DIST	COUNTY		SHEET NO.
	12	HARRIS		474



FRONT VIEW



SIDE VIEW



TOP VIEW
(LESS CABINET)

NOTES:

1. CABINET MANUFACTURER TO PROVIDE DETAILS OF ANCHOR BOLT LOCATION.
2. MODIFY DIMENSIONS FOR CONCRETE BASE TO FIT EQUIPMENT FURNISHED, IF NECESSARY.
3. PROVIDE GRAVEL DRAIN FOR CONTROLLER AND ALL GROUND BOXES.
4. FURNISH CLASS "B" OR CLASS "C" CONCRETE.
5. SET CONTROLLER FOUNDATION LEVEL WITH THE PAVEMENT SURFACE OR AS APPROVED BY THE ENGINEER.
6. FURNISH AT NO COST TO THE DEPARTMENT ANY ADDITIONAL CONCRETE WHICH MAY BE NECESSARY TO STABILIZE THE FOUNDATION AT UNUSUAL LOCATIONS.
7. PLACE REINFORCING BARS AS DIRECTED.
8. UPON INSTALLING THE CONTROLLER CABINET, APPLY A SILICON-BASED CAULKING COMPOUND AROUND THE BASE OF THE CONTROLLER CABINET.

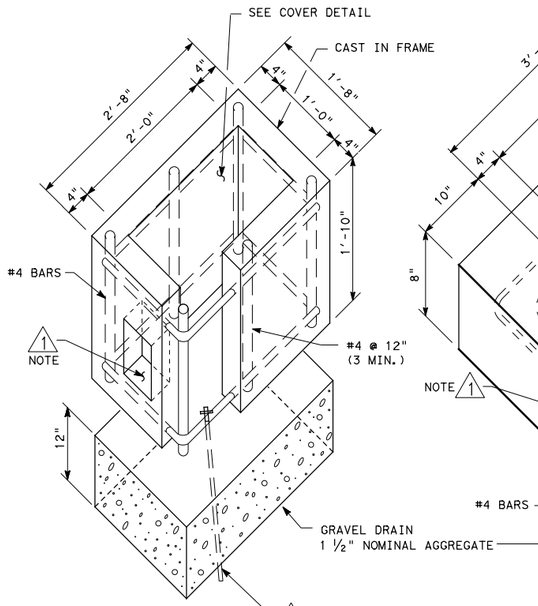
Texas Department of Transportation
Houston District

SIGNAL DETAILS/STANDARDS CONTROLLER FOUNDATION DETAIL

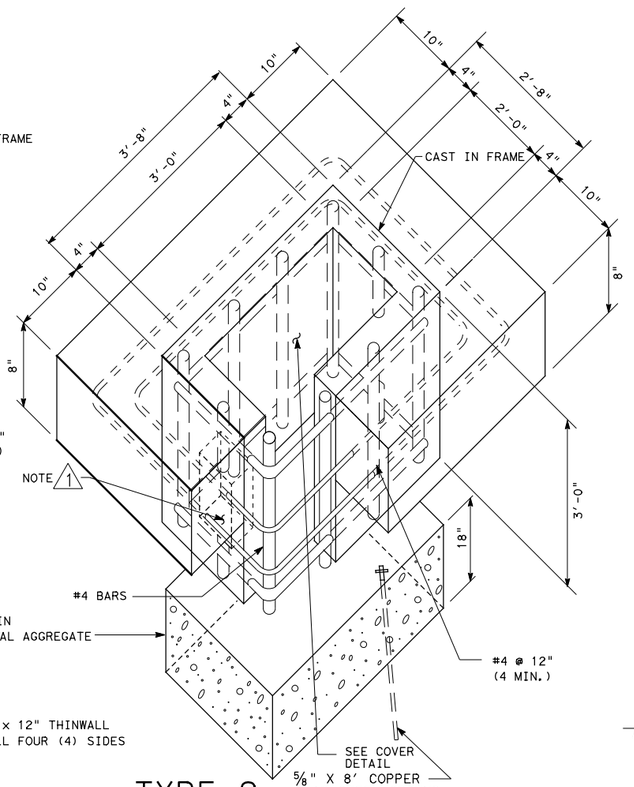
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	HARRIS	0912	72 360	BSW

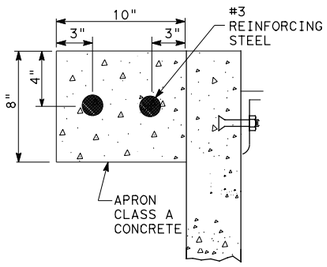
STD-M1



TYPE 1
GROUND BOX



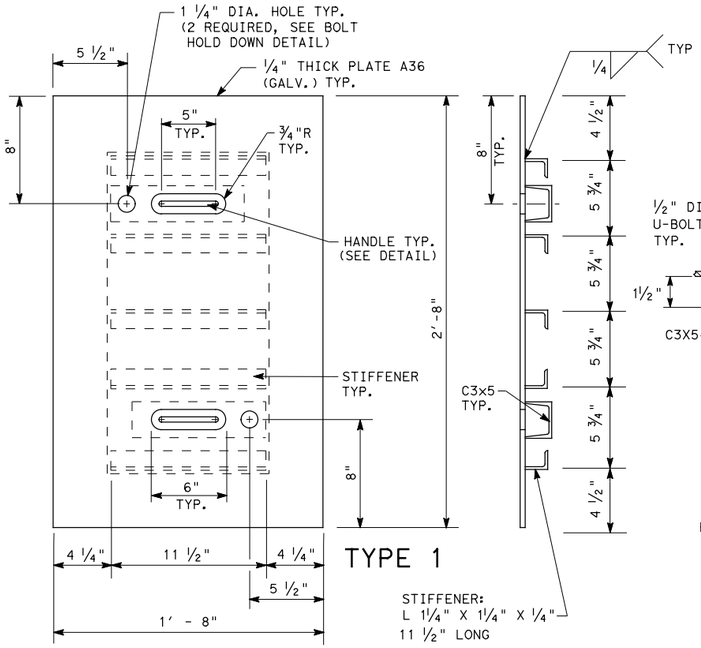
TYPE 2
GROUND BOX
W/APRON



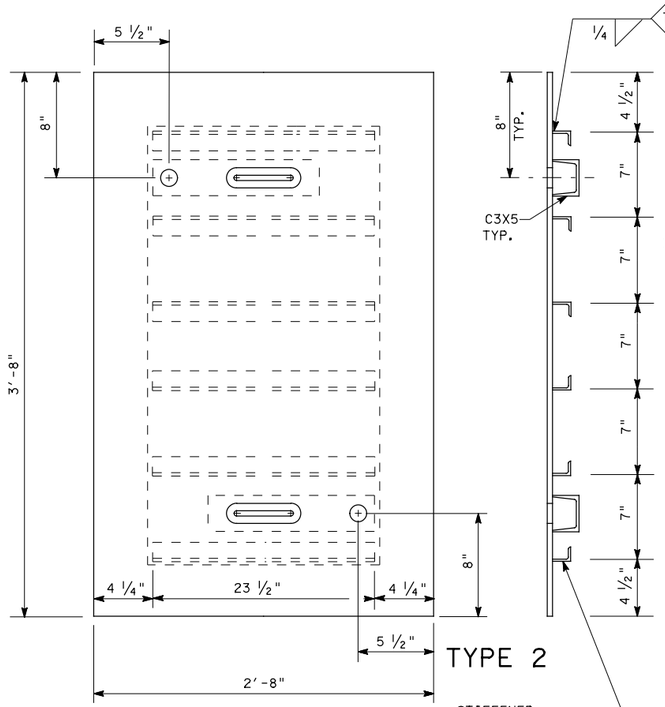
CONCRETE APRON

NOTES:

1. FURNISH REINFORCED CONCRETE GROUND BOXES CONSTRUCTED TO THE APPROXIMATE DIMENSIONS SHOWN ON THIS SHEET.
2. FURNISH GALVANIZED STEEL CHECKERED FLOOR PLATE GROUND BOX COVERS WITH 1 IN. RAISED LETTERS READING "TRAFFIC SIGNALS" OR "F. O. CABLE". SECURE COVERS TO THE GROUND BOX AS SHOWN ON THIS SHEET WITH ⅜ IN. DIA. (MIN.) BOLTS.
3. PROVIDE A GROUNDING LUG FOR STEEL COVERS WITH ½"-13 UNC FEMALE THREADS ON THE UNDERSIDE OF THE COVER.
4. FURNISH FLEXIBLE METAL BRAID TYPE GROUNDING STRAP. ENSURE THE STRAP IS NO LESS THAN 1 IN. IN WIDTH AND 5 FT. MIN. IN LENGTH TO ALLOW FOR GROUND BOX COVER REMOVAL FROM THE BOX WITHOUT DISCONNECTING THE GROUND STRAP.
5. AFTER PLACING GROUND BOX, FURNISH AND INSTALL BACKFILL FOR THE EXCAVATED AREA AND COMPACT THE FILL TO THE DENSITY OF THE SURROUNDING GROUND AS APPROVED BY THE ENGINEER.
6. AFTER INSTALLING CONDUIT THROUGH KNOCKOUT, GROUT REMAINING OPENING OF KNOCKOUT.
7. PLACE GROUND BOXES AS SHOWN ON LAYOUT SHEET. FURNISH ADDITIONAL GROUND BOXES IF REQUIRED.
8. PLACE TYPE 1 GROUND BOXES AT 350 FT. MAXIMUM SPACING. PLACE TYPE 2 GROUND BOXES AT 1,000 FT. MAXIMUM SPACING OR AS DIRECTED BY THE ENGINEER.
9. FURNISH CLASS "A" CONCRETE.

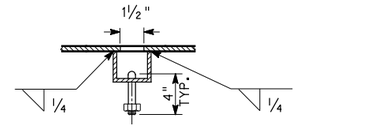


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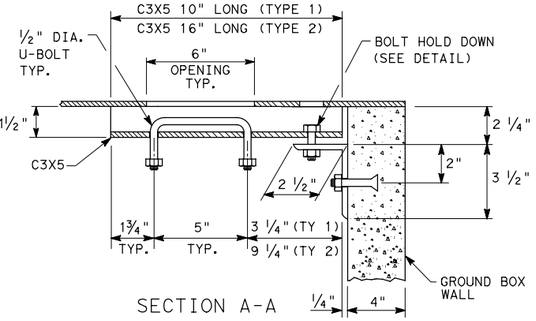


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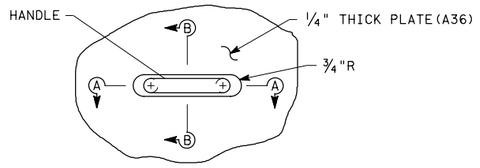
COVER DETAIL



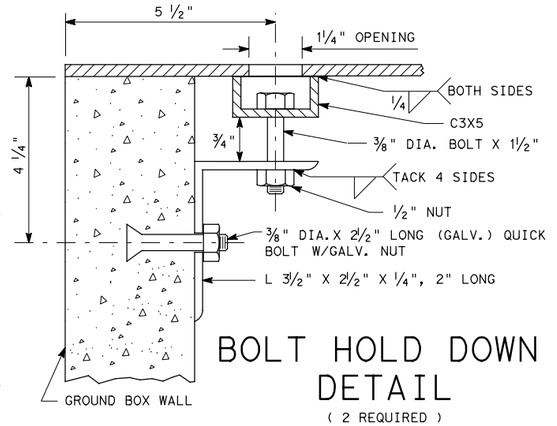
SECTION B-B



SECTION A-A



HANDLE DETAIL



BOLT HOLD DOWN
DETAIL
(2 REQUIRED)

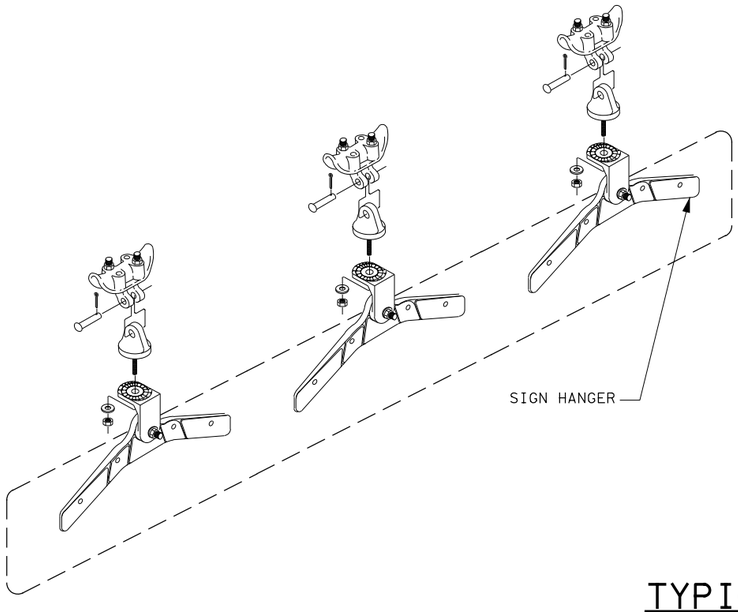
Texas Department of Transportation
Houston District

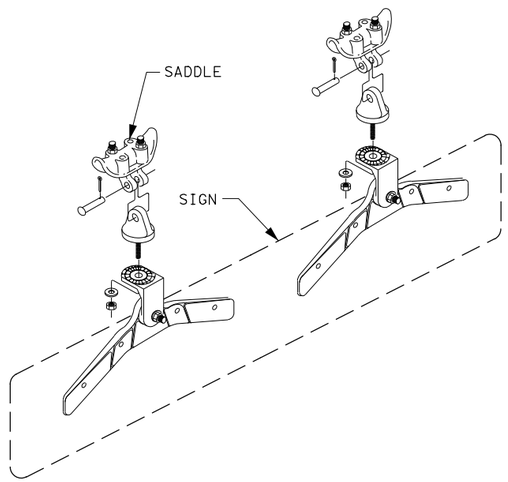
SIGNAL DETAILS/STANDARDS GROUND BOX DETAILS INSTALLATIONS

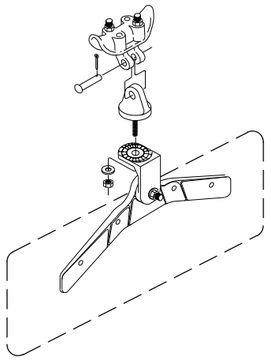
GBDI

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© TxDOT 2004	DIST	FED REG	PROJECT NO.	SHEET
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04-17 REVISIONS	COUNTY		CONTROL SECT JOB	HIGHWAY
	HARRIS		0912 72 360	BSW

STD-M2



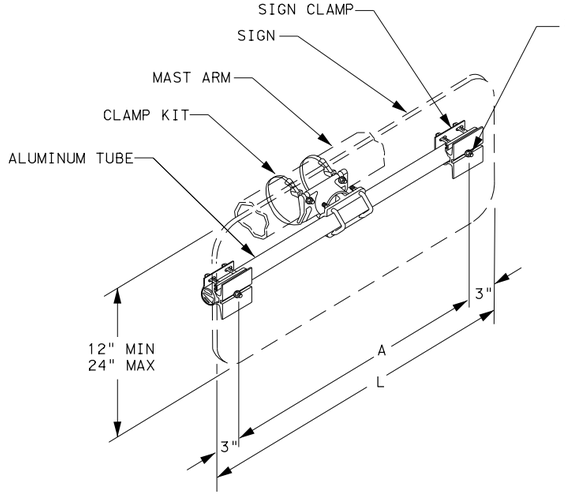


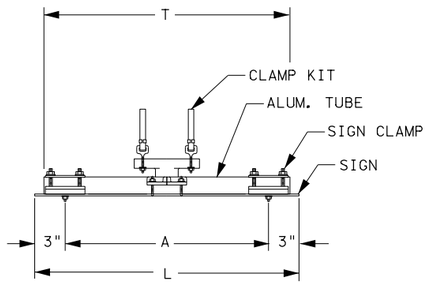


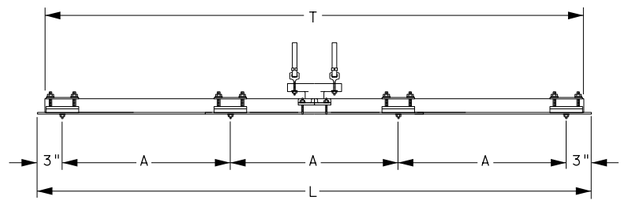


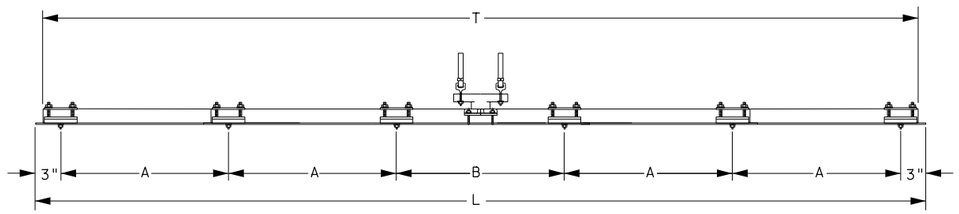
1. USE PELCO PARTS OR APPROVED EQUAL.
2. FURNISH HARDWARE FOR A COMPLETE INSTALLATION.
3. ATTACH THE 90 LB SPAN WIRE CLAMPS (SADDLES) TO TETHERS (SWAY CABLES).
4. FURNISH 1 ADJUSTABLE FREE SWINGING SIGN HANGER PER STREET NAME SIGN SMALLER THAN 3 FT. - 0 IN. SIGNS 3 FT - 0 IN. TO 6 FT.- 0 IN. REQUIRE 2 HANGERS. SIGNS LARGER THAN 6 FT. - 0 IN. REQUIRE 3 HANGERS.

TYPICAL SPAN WIRE SIGN HANGER DETAILS









SIGNS (1'-6" to 3'-0" Long)

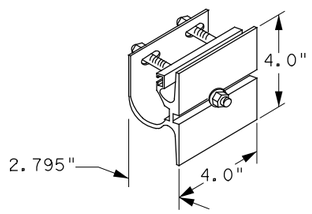
SIGN LENGTH (L)	TUBE LENGTH (T)	A
1'-6"	16"	12"
2'-0"	22"	18"
2'-6"	28"	24"
3'-0"	34"	30"

SIGNS (3'-6" to 8'-0" Long)

SIGN LENGTH (L)	TUBE LENGTH (T)	A
3'-6"	40"	12"
4'-0"	46"	14"
4'-6"	52"	16"
5'-0"	58"	18"
5'-6"	64"	20"
6'-0"	70"	22"
6'-6"	76"	24"
7'-0"	82"	26"
7'-6"	88"	28"
8'-0"	94"	30"

SIGNS (8'-6" to 10'-0" Long)

SIGN LENGTH (L)	TUBE LENGTH (T)	A	B
8'-6"	100"	19"	20"
9'-0"	106"	20"	22"
9'-6"	112"	21"	24"
10'-0"	118"	22"	26"



SIGN CLAMP DETAIL



GUSSETED TUBE CROSS SECTION

TYPICAL MAST ARM SIGN MOUNT DETAILS

Texas Department of Transportation
Houston District

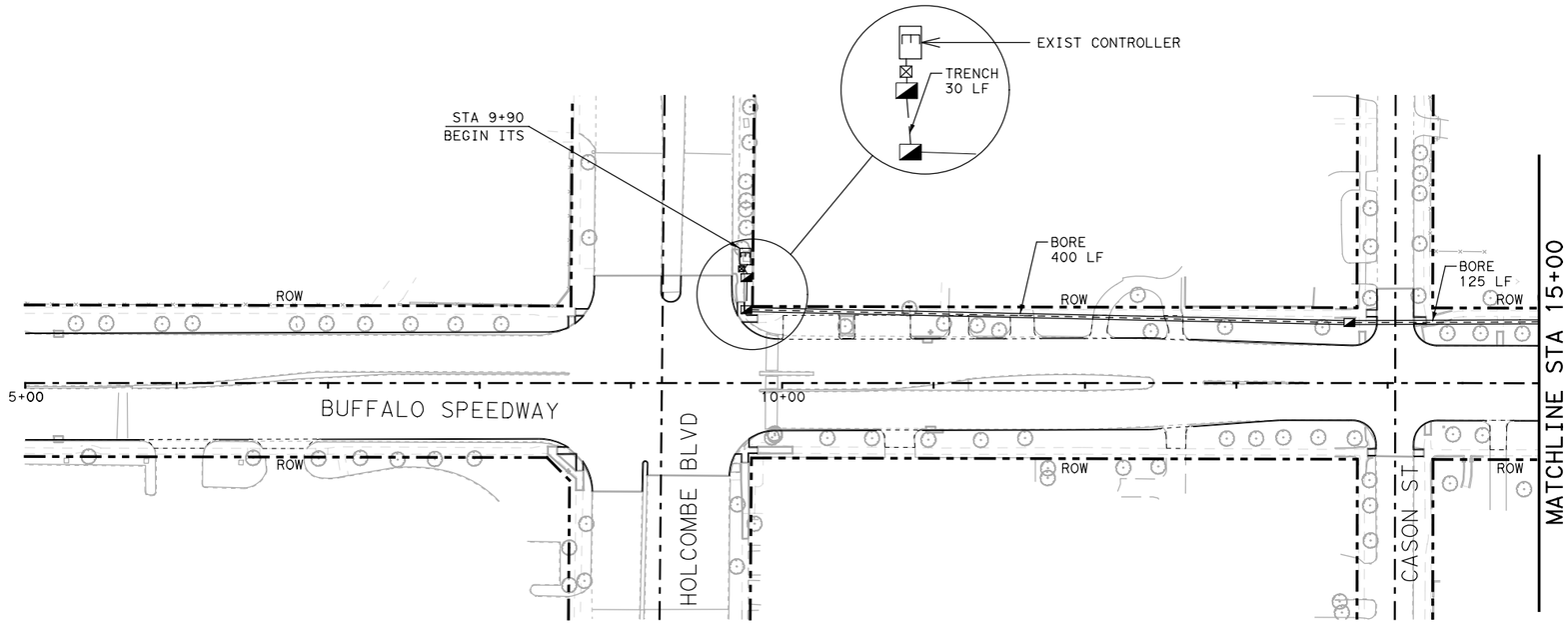
SIGNAL DETAILS/STANDARDS
OVERHEAD STREET NAME SIGN MOUNTING DETAILS

OSNS/MD

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© TxDOT 2004	DIST	FED REG	PROJECT NO.		SHEET
	12	6	(SEE TITTLE SHEET)		477
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	HARRIS		0912	72	360	BSW

FILE: Overhead-Sign-mount-det-sp04.dgn

STD-M12



0 100′ 200′

SCALE IN FEET

LEGEND

- EXIST SIGNAL COTROLLER
- PROP SIGNAL COTROLLER
- SIGNAL GROUND BOX
- PROP ITS GROUND BOX TY I W/ APRON
- PROP 3" PVC CONDUIT (SCH 80") (TRENCH)
- PROP 3" PVC CONDUIT (SCH 80") (BORE)

ESTIMATED QUANTITIES

ITEM	CODE	DESCRIPTION	UNIT	QTY
618	6053	CONDT (PVC) (SCH 80) (3")	LF	30
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	525
6186	6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	3

NOTES:

1. LOCATIONS OF UNDERGROUND INSTALLATIONS ARE APPROXIMATE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL UNDERGROUND INSTALLATIONS AND ROW PRIOR TO ANY CONSTRUCTION. ALL WORK SHALL BE PERFORMED WITHIN THE ROW.
2. THE CONTACT OR SHALL CONTACT ALL UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.
3. LOCATIONS OF ALL PROPOSED ITS DEVICES ARE APPROXIMATE AND MAY BE ADJUSTED IN THE FIELD BASED ON FIELD CONDITION.
4. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE ALL UTILITIES.
5. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY DAMAGE CAUSED BY CONTRACTOR'S FAILURE TO IDENTIFY CONFLICTS AND PROTECT TREES. REFER TO TREE PROTECTION PLANS FOR DETAILS.

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER
08/24/20

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Texas Registered Engineering Firm F–2144

City of West University Place

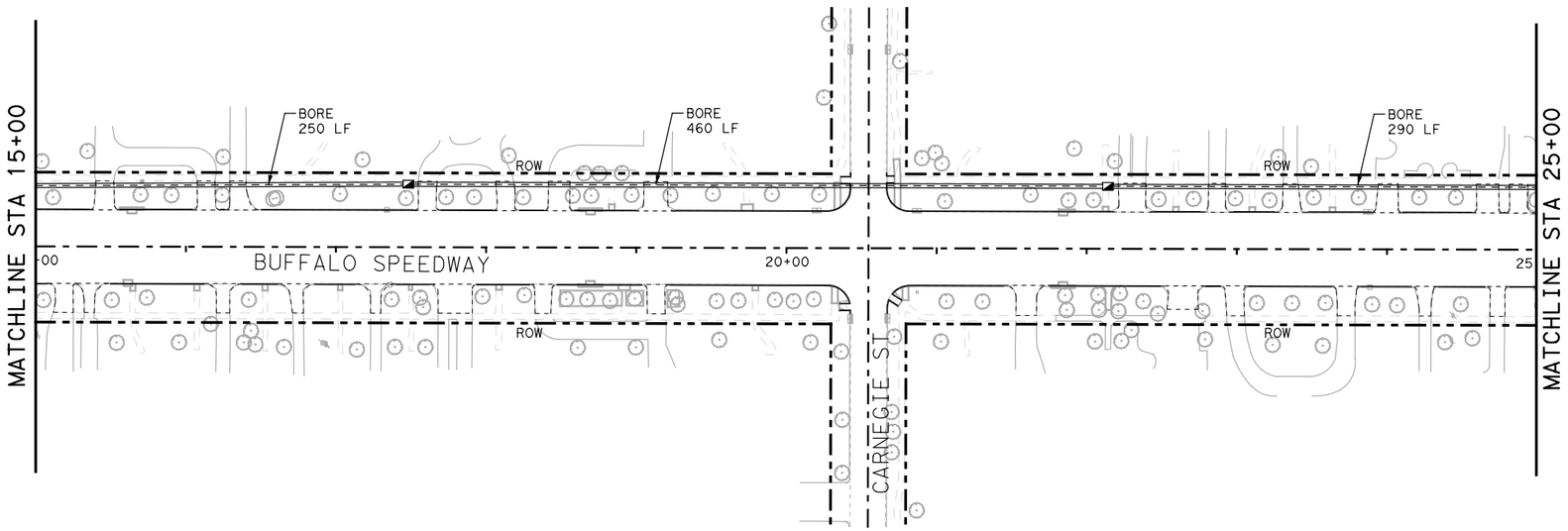
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

ITS LAYOUTS

BUFFALO SPEEDWAY
FROM STA 5+00 TO STA 15+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		478
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 100′ 200′

SCALE IN FEET

LEGEND

- EXIST SIGNAL COTROLLER
- PROP SIGNAL COTROLLER
- SIGNAL GROUND BOX
- PROP ITS GROUND BOX TY I W/ APRON
- PROP 3" PVC CONDUIT (SCH 80") (TRENCH)
- PROP 3" PVC CONDUIT (SCH 80") (BORE)

ESTIMATED QUANTITIES

ITEM	CODE	DESCRIPTION	UNIT	QTY
618	6053	CONDT (PVC) (SCH 80) (3")	LF	0
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	1000
6186	6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	2

NOTES:

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2. THE CONTACT OR SHALL CONTACT ALL UTILITIES FOR LOCATION OF UNDERGROUND FACILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.
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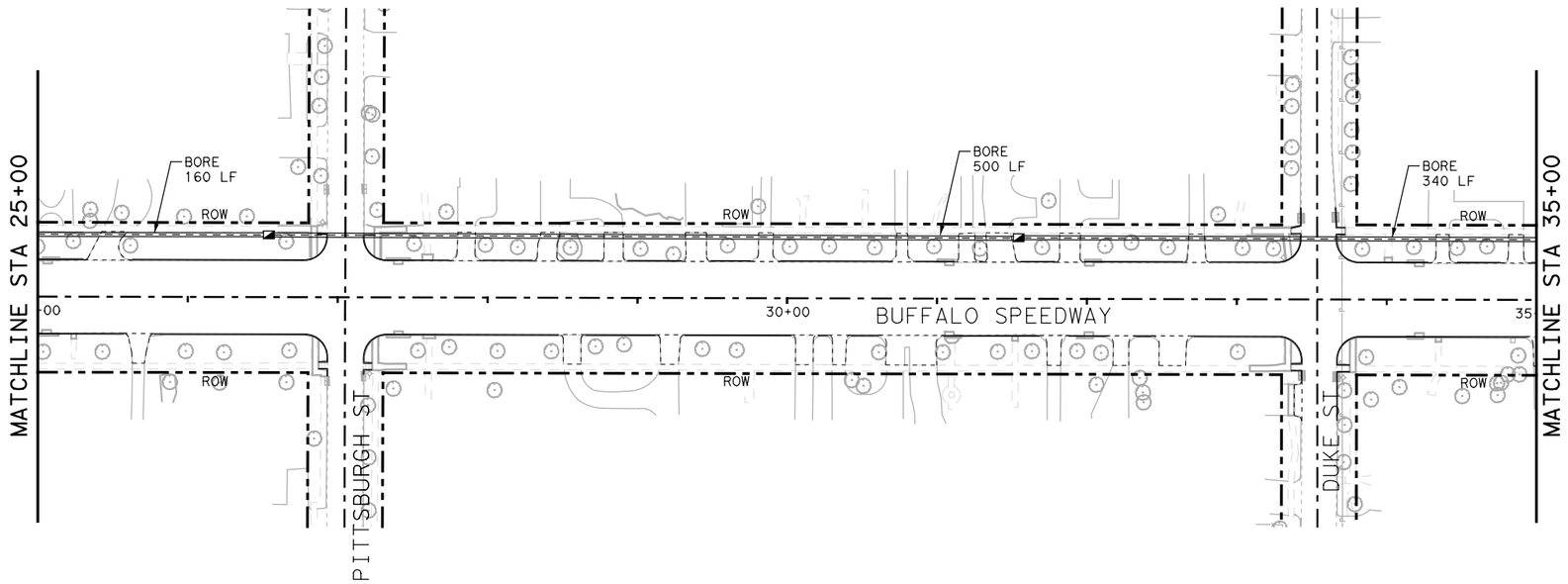
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

ITS LAYOUTS

BUFFALO SPEEDWAY
FROM STA 15+00 TO STA 25+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		479
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 100′ 200′

SCALE IN FEET

LEGEND

- EXIST SIGNAL COTROLLER
- PROP SIGNAL COTROLLER
- SIGNAL GROUND BOX
- PROP ITS GROUND BOX TY I W/ APRON
- PROP 3" PVC CONDUIT (SCH 80") (TRENCH)
- PROP 3" PVC CONDUIT (SCH 80") (BORE)

ESTIMATED QUANTITIES

ITEM	CODE	DESCRIPTION	UNIT	QTY
618	6053	CONDT (PVC) (SCH 80) (3")	LF	0
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	1000
6186	6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	2

NOTES:

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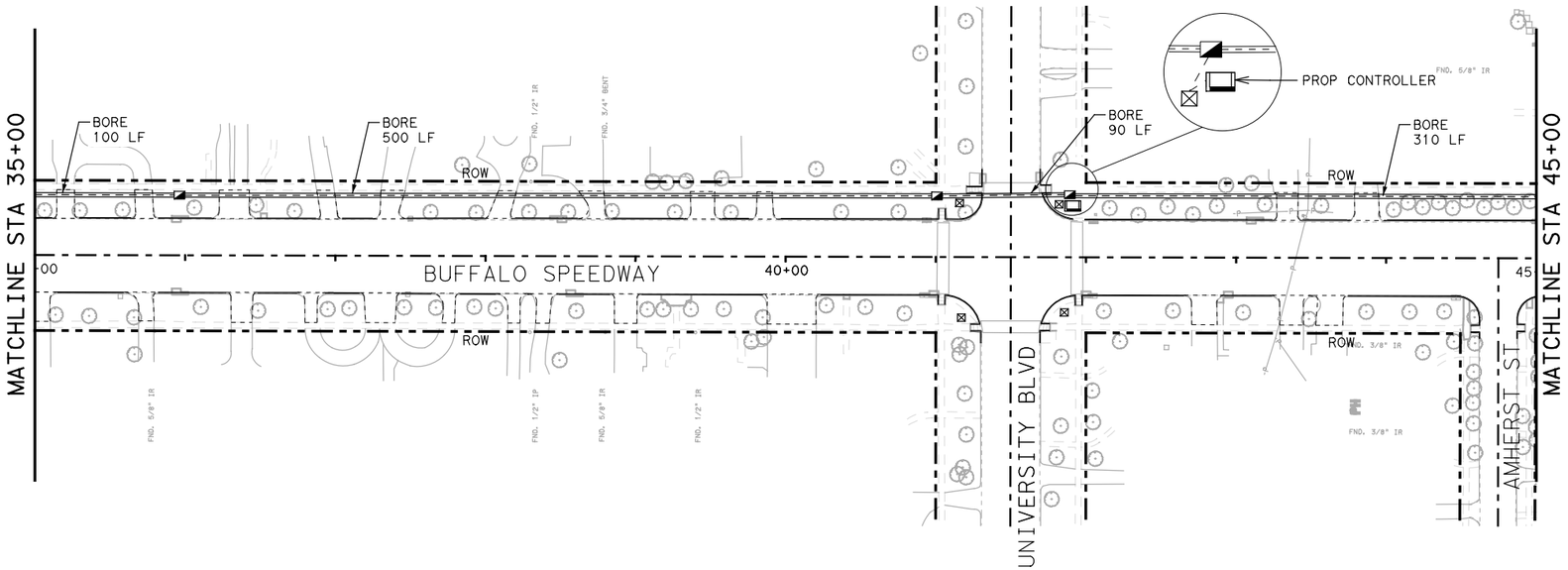
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

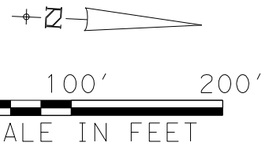
ITS LAYOUTS

BUFFALO SPEEDWAY
FROM STA 25+00 TO STA 35+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		480
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY





LEGEND

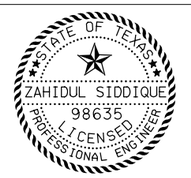
- EXIST SIGNAL COTROLLER
- PROP SIGNAL COTROLLER
- SIGNAL GROUND BOX
- PROP ITS GROUND BOX TY I W/ APRON
- PROP 3" PVC CONDUIT (SCH 80") (TRENCH)
- PROP 3" PVC CONDUIT (SCH 80") (BORE)

ESTIMATED QUANTITIES

ITEM	CODE	DESCRIPTION	UNIT	QTY
618	6053	CONDT (PVC) (SCH 80) (3")	LF	0
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	1000
6186	6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	3

NOTES:

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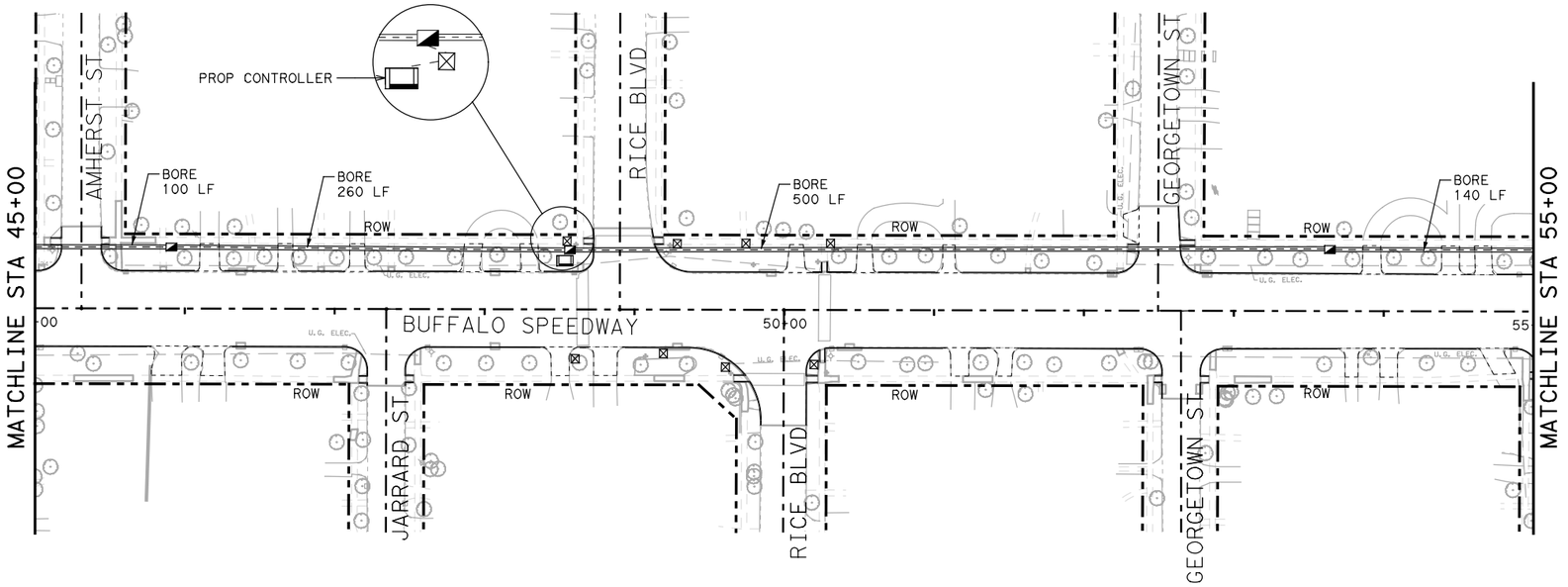
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

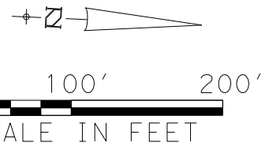
ITS LAYOUTS

BUFFALO SPEEDWAY
FROM STA 35+00 TO STA 45+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		481
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY





LEGEND

- EXIST SIGNAL COTROLLER
- PROP SIGNAL COTROLLER
- SIGNAL GROUND BOX
- PROP ITS GROUND BOX TY I W/ APRON
- PROP 3" PVC CONDUIT (SCH 80") (TRENCH)
- PROP 3" PVC CONDUIT (SCH 80") (BORE)

ESTIMATED QUANTITIES

ITEM	CODE	DESCRIPTION	UNIT	QTY
618	6053	CONDT (PVC) (SCH 80) (3")	LF	0
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	1000
6186	6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	3

NOTES:

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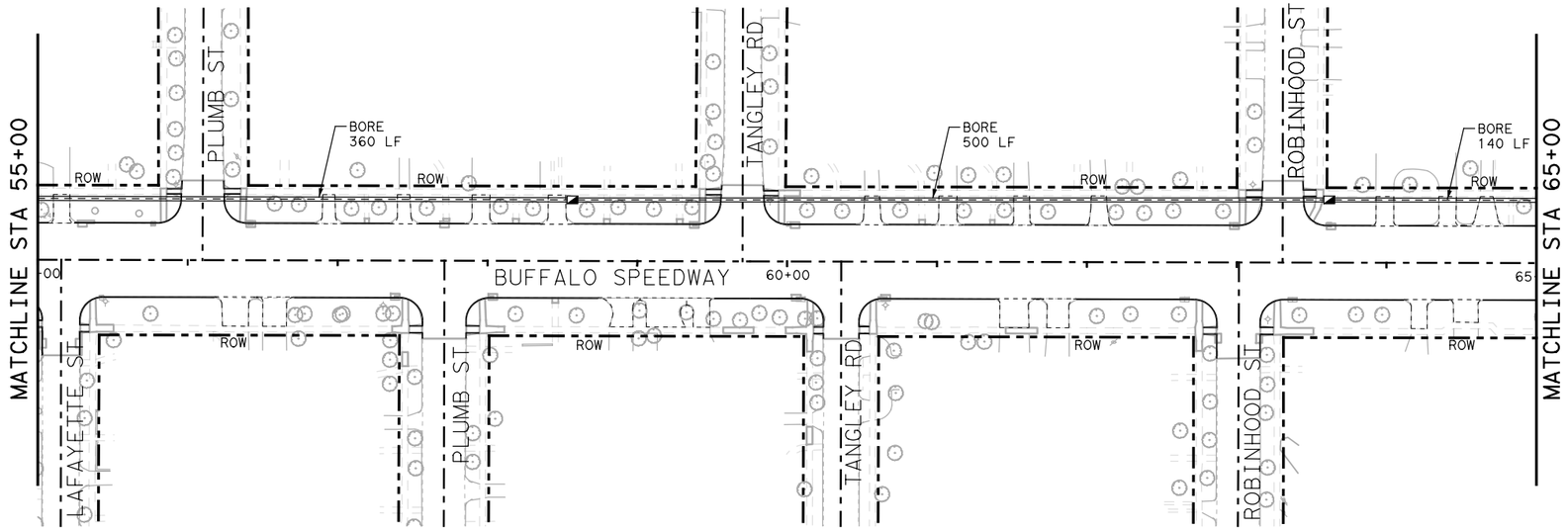
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

ITS LAYOUTS

BUFFALO SPEEDWAY
FROM STA 45+00 TO STA 55+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		482
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 100′ 200′

SCALE IN FEET

LEGEND

- EXIST SIGNAL COTROLLER
- PROP SIGNAL COTROLLER
- SIGNAL GROUND BOX
- PROP ITS GROUND BOX TY I W/ APRON
- PROP 3" PVC CONDUIT (SCH 80") (TRENCH)
- PROP 3" PVC CONDUIT (SCH 80") (BORE)

ESTIMATED QUANTITIES

ITEM	CODE	DESCRIPTION	UNIT	QTY
618	6053	CONDT (PVC) (SCH 80) (3")	LF	0
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	1000
6186	6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	2

NOTES:

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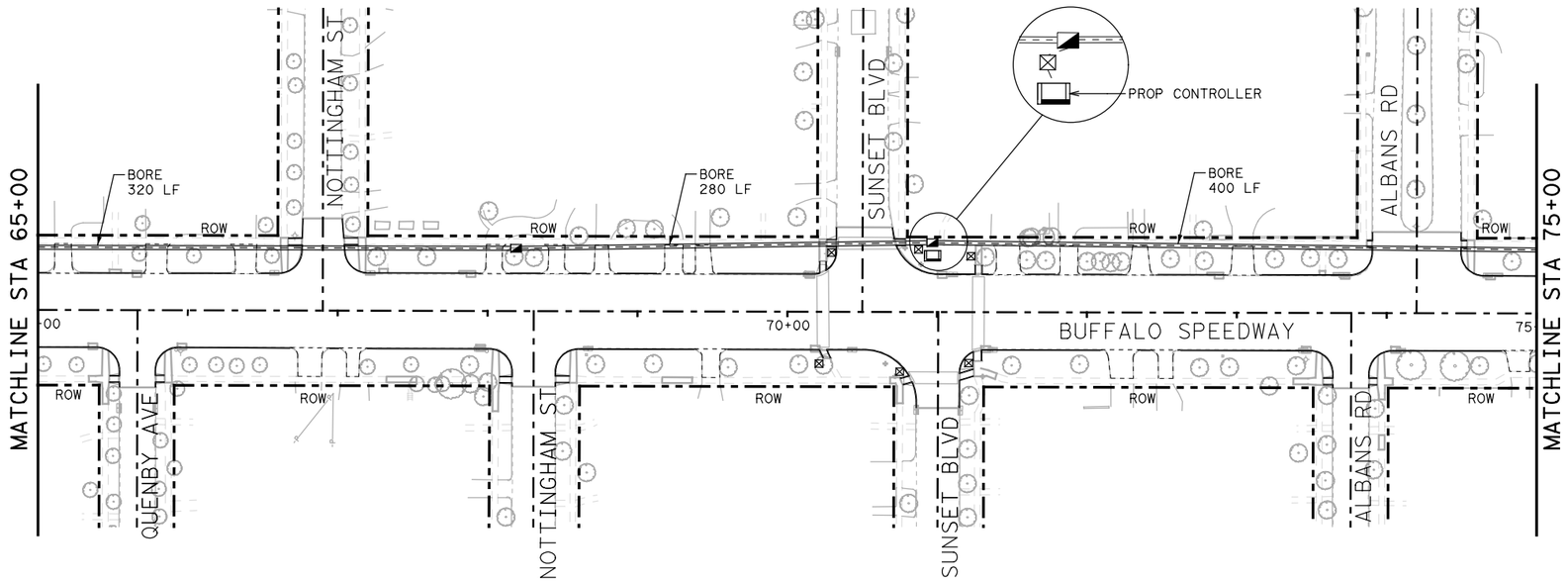
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

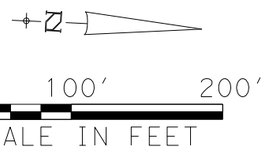
ITS LAYOUTS

BUFFALO SPEEDWAY
FROM STA 55+00 TO STA 65+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		483
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY





ESTIMATED QUANTITIES

ITEM	CODE	DESCRIPTION	UNIT	QTY
618	6053	CONDT (PVC) (SCH 80) (3")	LF	0
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	1000
6186	6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	2

NOTES:

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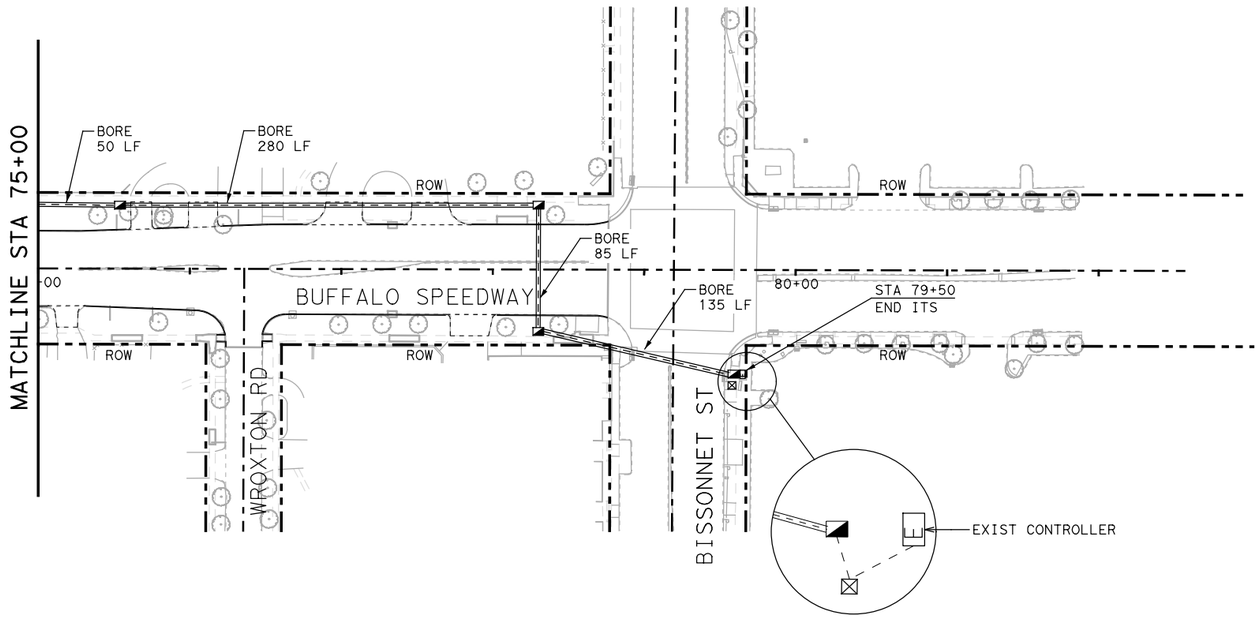
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

ITS LAYOUTS

BUFFALO SPEEDWAY
FROM STA 65+00 TO STA 75+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		484
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 100′ 200′

SCALE IN FEET

LEGEND

- EXIST SIGNAL COTROLLER
- PROP SIGNAL COTROLLER
- SIGNAL GROUND BOX
- PROP ITS GROUND BOX TY I W/ APRON
- PROP 3" PVC CONDUIT (SCH 80") (TRENCH)
- PROP 3" PVC CONDUIT (SCH 80") (BORE)

ESTIMATED QUANTITIES

ITEM	CODE	DESCRIPTION	UNIT	QTY
618	6053	CONDT (PVC) (SCH 80) (3")	LF	0
618	6054	CONDT (PVC) (SCH 80) (3") (BORE)	LF	550
6186	6002	ITS GND BOX(PCAST) TY 1 (243636)W/APRN	EA	4

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BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

ITS LAYOUTS

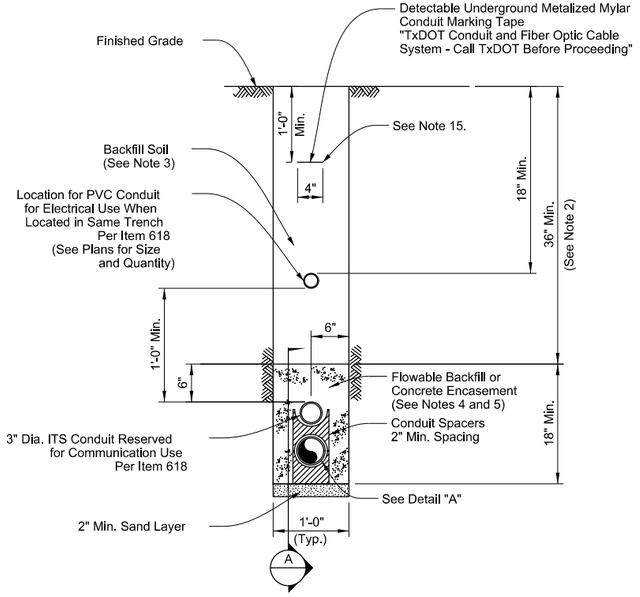
BUFFALO SPEEDWAY
FROM STA 75+00 TO END

SHEET 8 OF 8

Texas Department of Transportation

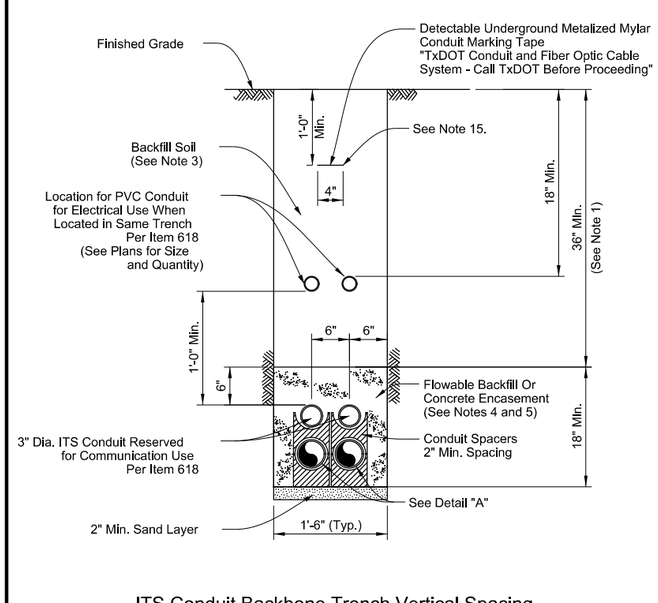
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		485
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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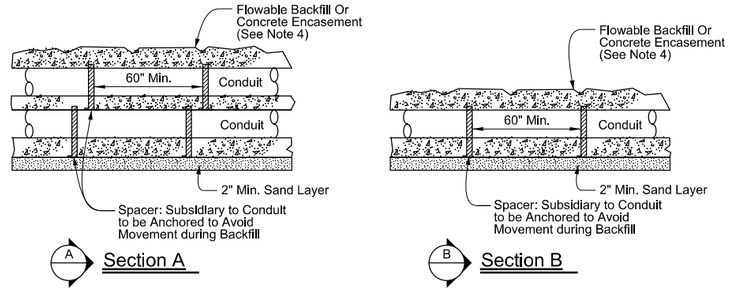
ITS Conduit Backbone Trench Vertical Spacing

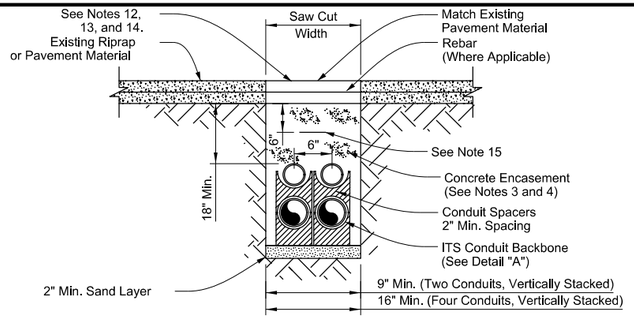
Two Conduit System



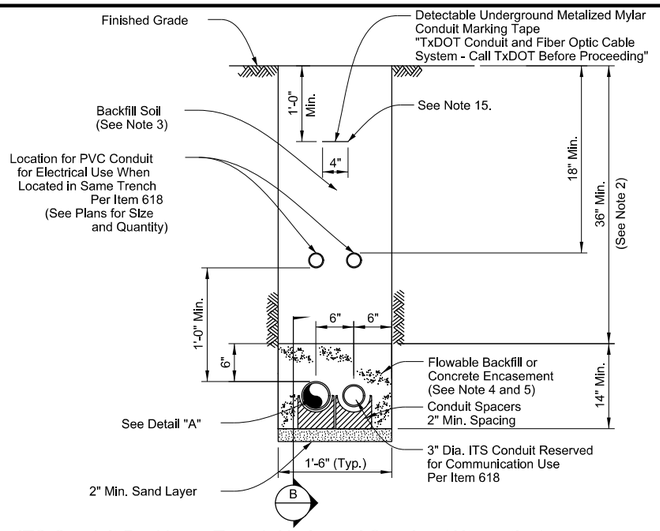
ITS Conduit Backbone Trench Vertical Spacing

Four Conduit System



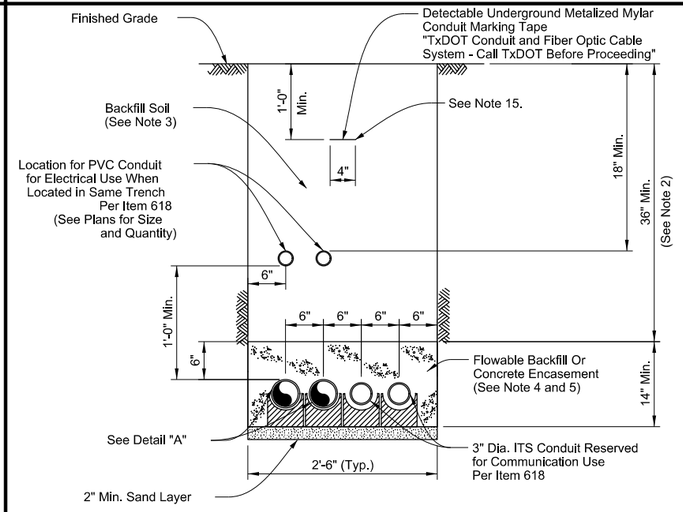


Open Cut Trenching Details



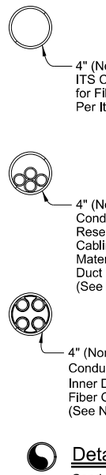
ITS Conduit Backbone Trench Horizontal Spacing (Alternative)

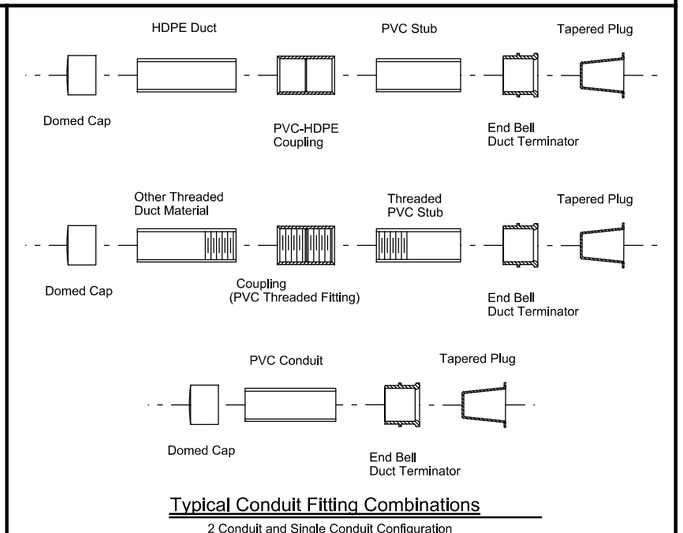
Two Conduit System



ITS Conduit Backbone Trench Horizontal Spacing (Alternative)

Four Conduit System





Typical Conduit Fitting Combinations

2 Conduit and Single Conduit Configuration

SHEET 1 OF 2

General Notes:

1. Construct the ITS conduit backbone system by vertically spacing conduit, unless field constraints, obstructions, or utility conflicts require horizontal spacing of conduits. Both vertical and horizontal spacing configurations have been detailed for contractor information for construction.
2. Install ITS conduit backbone system a minimum of 42 inches from finished grade to the top of the conduit unless otherwise directed or to avoid conflicts or field conditions such as utilities or obstructions. Vary depth of the trench in order to pass over/under any existing utilities. Refer to ITS Conduit Obstruction Crossing Standard ITS(35) for further detail.
3. Perform trench excavation and backfilling in accordance with Item 400, "Excavation and Backfill for Structures."
4. When a trench depth greater than 24 inches can be achieved from the finished grade to the top of ITS conduit, encase the conduits with flowable backfill in accordance with Item 401, "Flowable Backfill." Use Class B concrete as a substitute in accordance with Item 421, "Hydraulic Cement Concrete" at the discretion of the Engineer.
5. When a trench depth of less than 24 inches is required due to field conditions, encase the conduits in Class B concrete in accordance with Item 421, "Hydraulic Cement Concrete."
6. Concrete encasement will be paid for under Special Specification "ITS Multi-Duct Conduit" or as shown on the plans.
7. Provide ITS PVC conduit identified for electrical and communication use in accordance with Item 618, "Conduit."
8. Provide ITS multi-duct conduit identified for fiber optic communication use in accordance with Special Specification "ITS Multi-Duct Conduit."
9. Conduit per Item 618, "Conduit" (See Plans for Material Type and Quantity).
10. Provide a single 1/C #14 insulated wire in conduit runs which have been identified in the plans to carry fiber optic cable. Provide UL listed solid copper wire with orange color low density polyethylene insulation suitable for conduit installation rated for temperature range -20 C to 60 C and a voltage rating of 600V. This wire will serve as a tracer, or locate, wire for locating underground conduit containing fiber optic cabling and will be paid for under Item 620, "Electrical Conductors."
11. Provide a flat pull cord in all empty conduits and innerducts. Provide a pull cord with a tensile strength of 1,250 Lbs. minimum and have foot markings to determine length installed. Pull cord and installation to be subsidiary to various bid items.
12. Remove saw cut width to accommodate conduit installation.
13. Replace rebar as necessary, lapped and tied a minimum of 3 inches to existing rebar.
14. Replace broken pavement materials with similar materials to exact shape, and thickness of existing.
15. Place marking tape a minimum of 1 foot - 0 inches below grade when no other electrical marking tape required, or 8 inches below electrical marking tape when provisioned under Item 618.
16. Provide a 1/C #8 insulated grounding conductor within one inner duct of a pre-assembled multi-duct when no other grounding conductor is provisioned for in the plans.

Sheet Details
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Texas Department of Transportation

Traffic Operations Division Standard

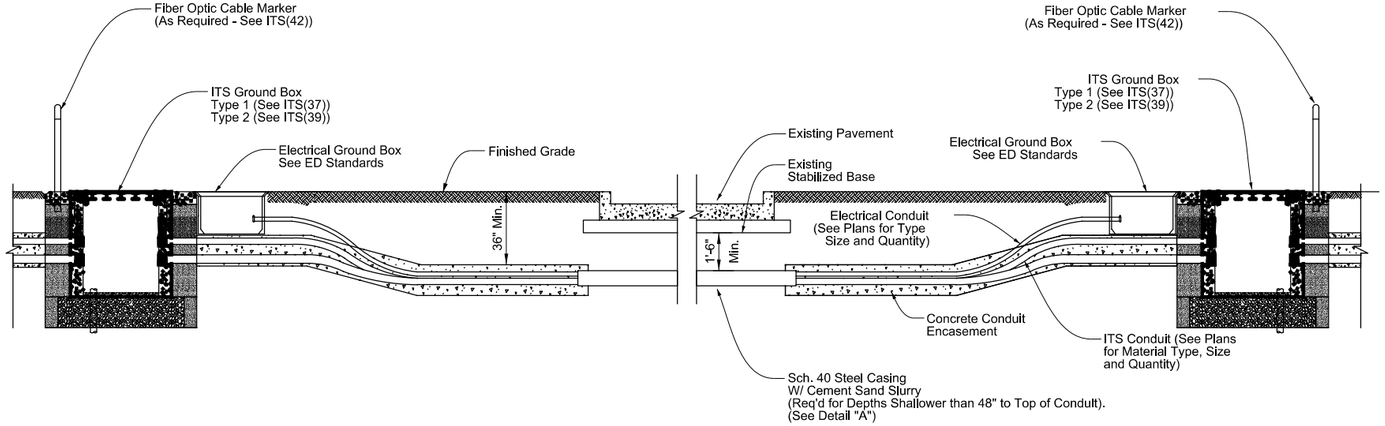
ITS CONDUIT TRENCH DETAILS

ITS(27)-16

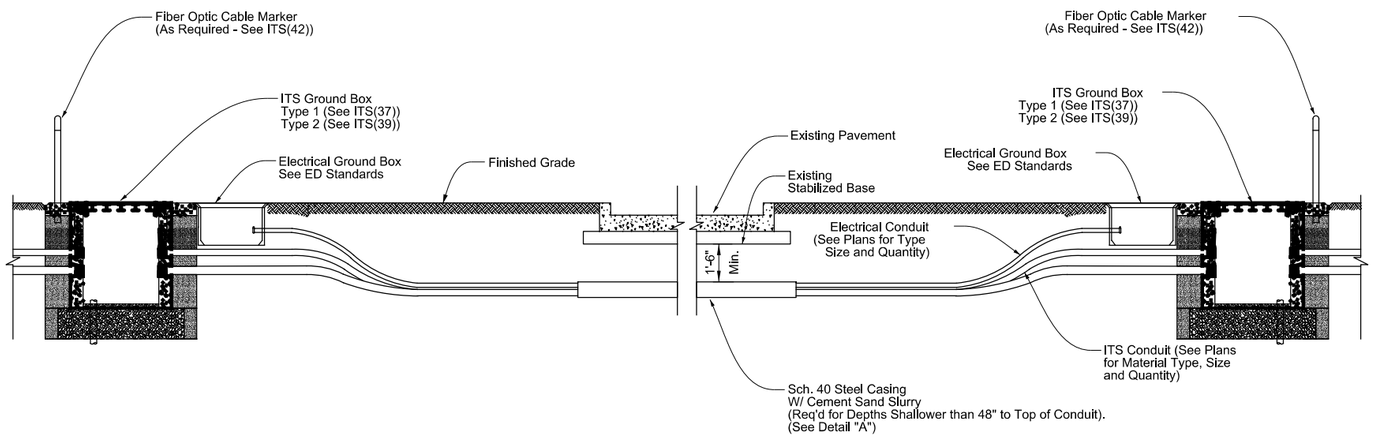
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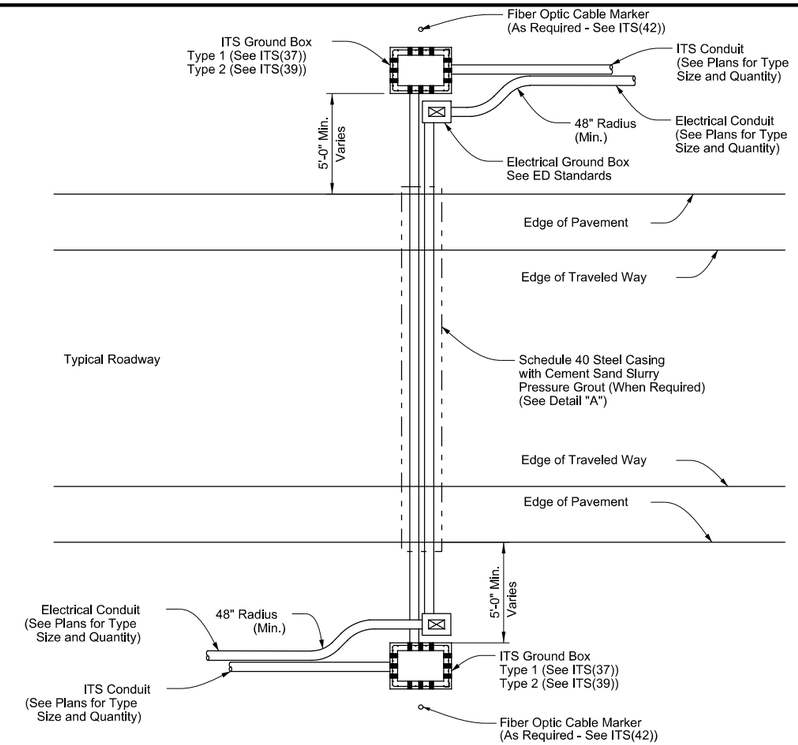
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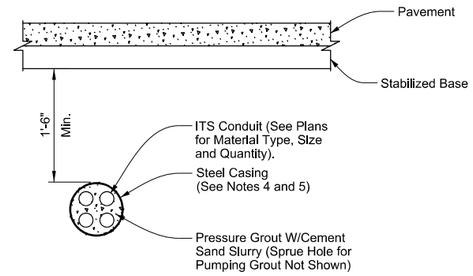
Typical Conduit Installation Jacking
or Boring Beneath Existing Roadway



Typical Conduit Installation Jacking
or Boring Beneath Existing Roadway
(Where Concrete Encasement Not Required)



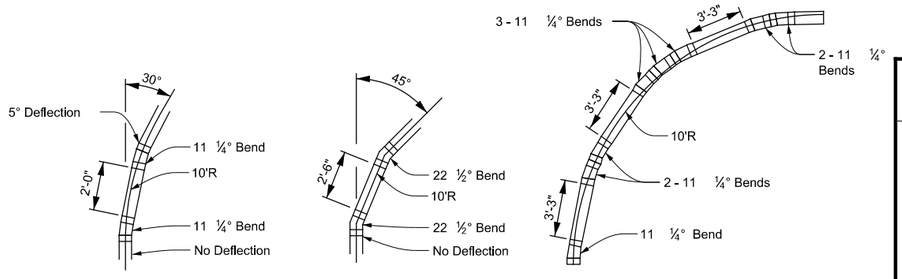
Bore Under Pavement



Steel Casing Detail "A"

General Notes:

1. Typical conduit installation details for jacking or boring beneath existing roadway is diagrammatic in nature. Roadway cross-slopes may vary for each crossing.
2. Jack or bore in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box" except for measurement and payment.
3. Furnishing and installation of pressure grouting will not be paid for directly but considered incidental to Special Specification "ITS Multi-Duct Conduit" or Item 618, "Conduit."
4. When boring under pavement shallower than 48 inches from finished grade to top of conduit, provide Schedule 40 steel casing under pavement to encase the conduit system. Provide steel casing of a size to accommodate ITS conduit and electrical conduit as shown in the plans. Provide a minimum 20 percent void space around all conduits. Steel casing will not be paid for directly but considered incidental to Special Specification, "ITS Multi-Duct Conduit" or Item 618, "Conduit."
5. When a depth greater than 48 inches can be achieved from finished grade to top of conduit, provide Schedule 80 PVC. No steel casing required unless otherwise directed.
6. Ensure all conduit bends are in conformance with the latest edition of the National Electrical Code.
7. Provide GPS coordinate points to the District for all ground boxes installed, and shifts or deviations of the conduit alignment from the plans required to avoid obstructions or utilities. Take GPS coordinate points at the start of the transition, at the point of curvature, and at the end of the transition at the point of tangency. Document the turnout radius and installed depth. Provide GPS coordinate points in NAD83 coordinate system and be accurate to 5 feet.



30° Turnout Detail

45° Turnout Detail

90° Turnout Detail

Provide this arrangement of conduit and fittings or approved equal at all 30°, 45°, and 90° bends, horizontal and vertical, to achieve a nominal 10' conduit radius for pre-assembled multi-duct conduit. See Note 7.

Sheet Details
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SHEET 2 OF 2

Texas Department of Transportation

Traffic Operations Division Standard

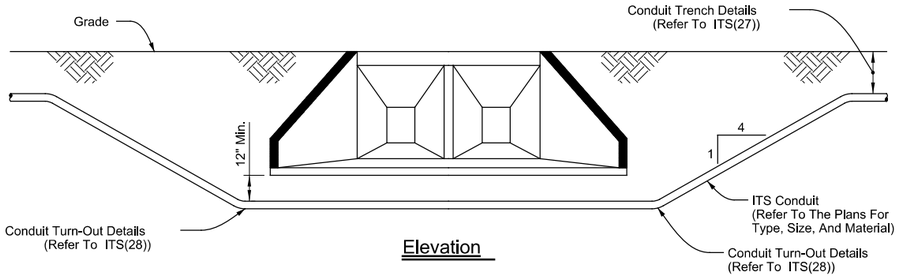
ITS CONDUIT BORE AND STEEL CASING DETAILS

ITS(28)-16

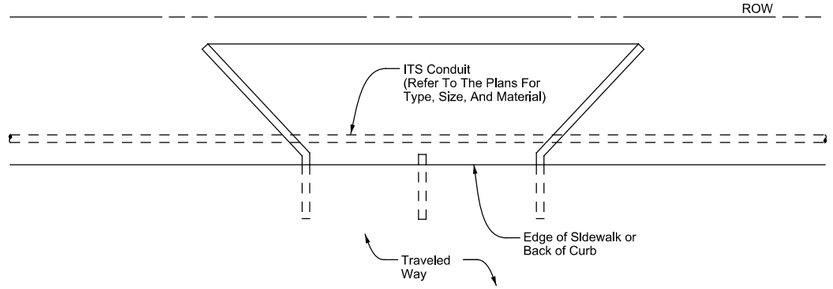
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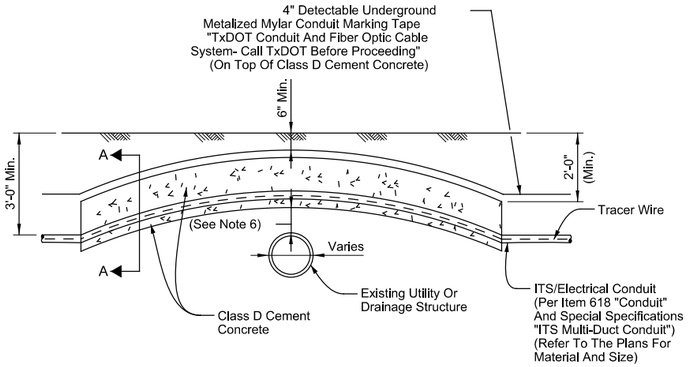


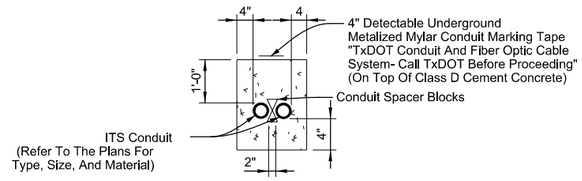
Elevation



Plan View

Conduit Bored Under Culvert



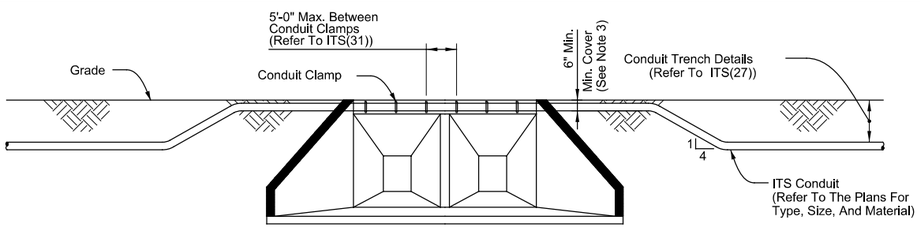


Section A-A

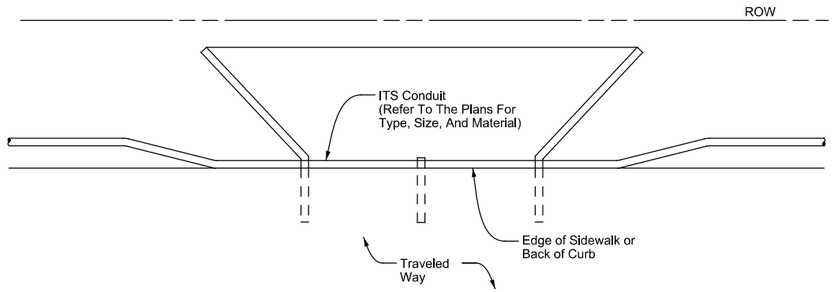
Conduit Installation Detail Above Existing Drain Pipes Or Utilities

General Notes:

1. With approval from the field engineer adjust the final burial depth of conduit(s) in circumstances requiring traversal of non-movable object conflicts.
2. Where conduits are to be installed over existing underground infrastructure (i.e., existing utility or drainage structure) which are less than 3'-0" deep, encase conduit in Class D cement concrete in accordance with Item 421, "Hydraulic Cement Concrete", for the entire length of the conduit that is installed at a depth of less than 3'-0".
3. If depth of cover over encasement is less than 6", install the conduit to pass beneath the underground infrastructure.
4. Refer to the plans for type, size and configuration of all conduits. Refer to ITS(27) and ITS(28) for further installation details.
5. It is the responsibility of the contractor to verify all existing underground infrastructure. The contractor is responsible for any damage to any underground infrastructure during construction. Verify all utility locations at least 100' in advance of trenches, plowing or boring, and make changes in conduit placement in the event of conflict.
6. If proposed conduit is crossing or in close proximity to an existing underground utility, maintain a minimum clearance of 1'-6" vertical, 1'-6" horizontal or a clearance dictated by municipal code and or utility owner.
7. Install underground warning tape directly above all conduits per ITS(27) standard.
8. Do not install communications and electric cables in the same conduit. Separate conduits installed within the same trench based on NFPA 70, National Electrical Code. Refer to ITS(27) for additional conduit installation details.
9. Ensure all work is in compliance with the latest edition of NFPA 70, National Electrical Code.
10. Utilize PVC conduit for all underground applications as required by design. Transition with a conduit coupling to RMC conduit or other as required by design that is approved for above ground applications.
11. Do not exceed a rise:run ratio of 1:4 for conduit sloped through increases or decreases in elevation.

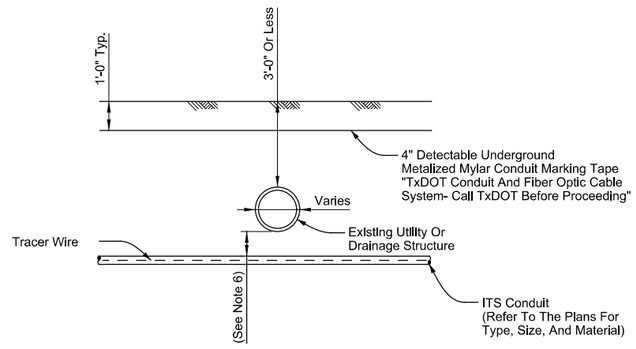


Elevation



Plan View

Conduit Attached To Culvert Headwall



Conduit Installation Detail Below Existing Drain Pipes Or Utilities

Texas Department of Transportation

Traffic Operations Division Standard

ITS CONDUIT OBSTRUCTION CROSSING

ITS(35)-16

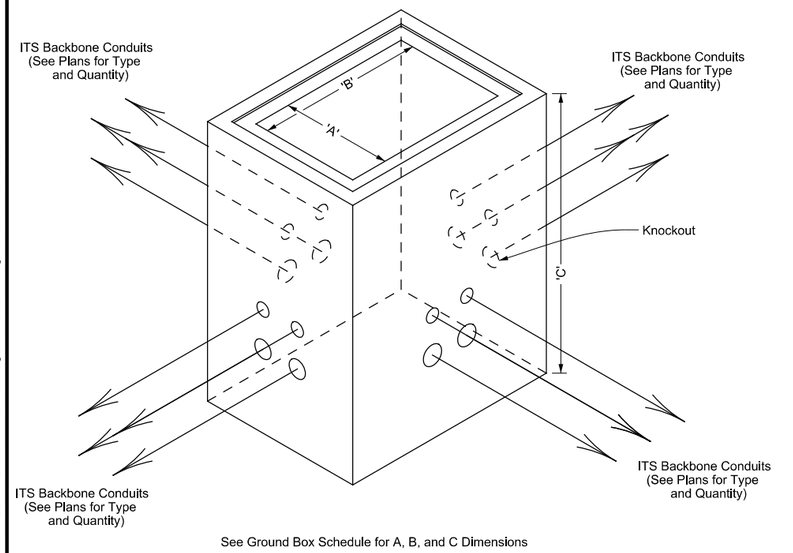
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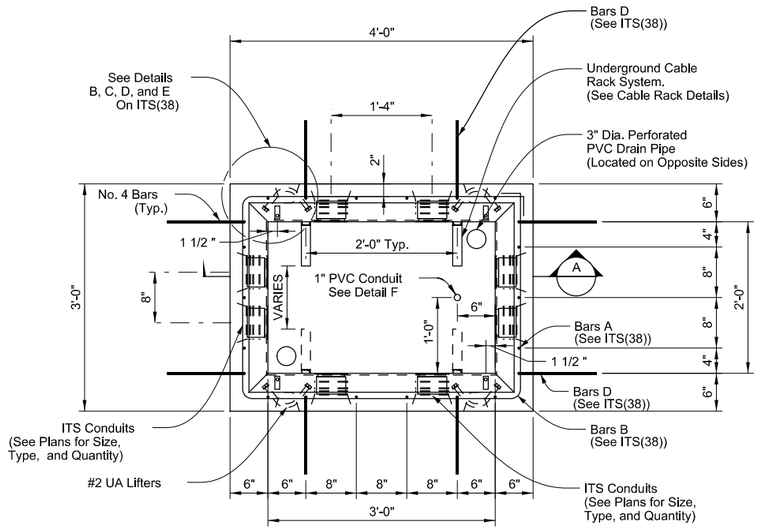
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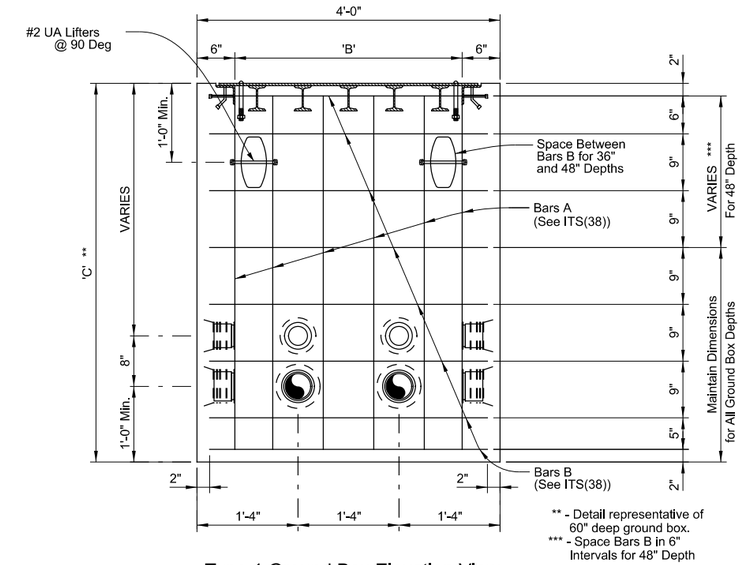


Type 1 Ground Box Isometric View

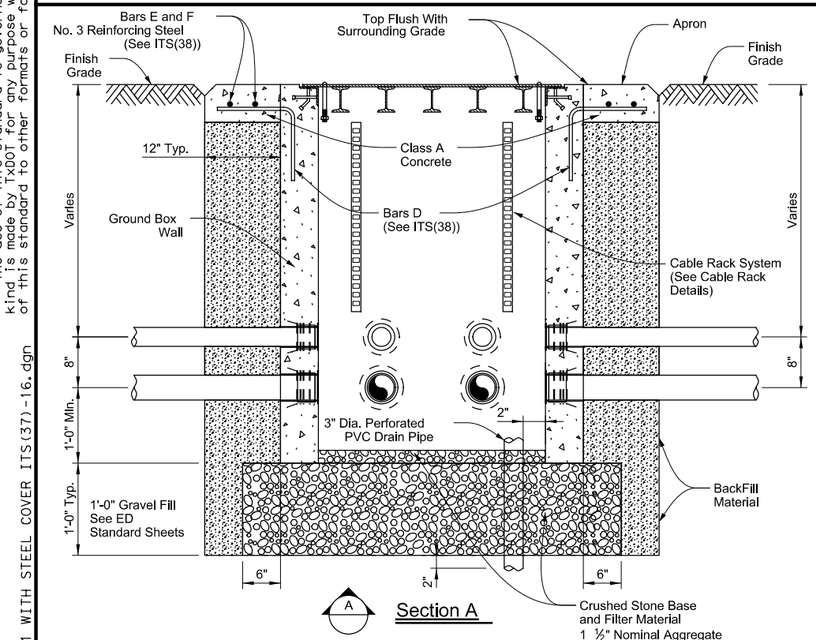


Note: Bar Spacing is The Same on Opposing Sides.

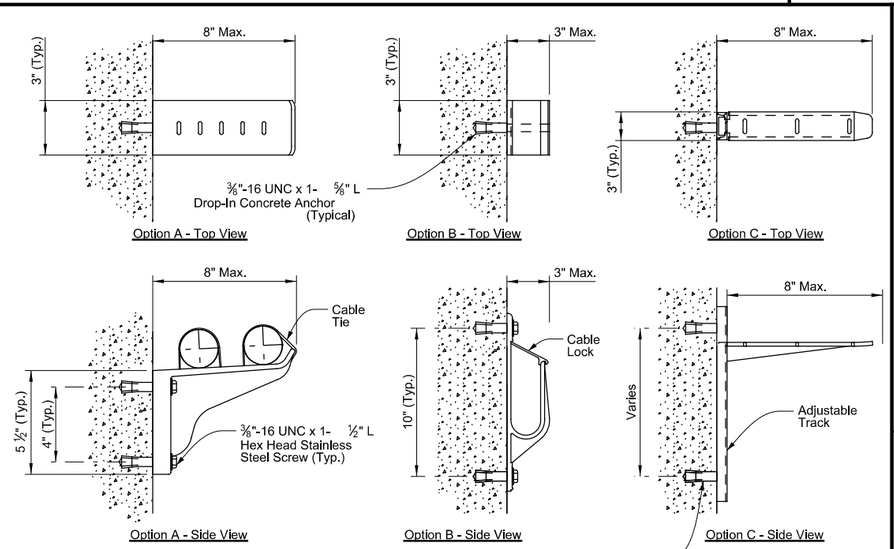
Type 1 Ground Box Plan View



Type 1 Ground Box Elevation View

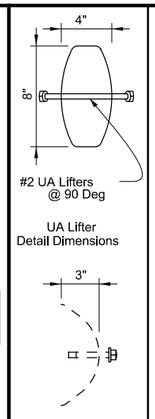


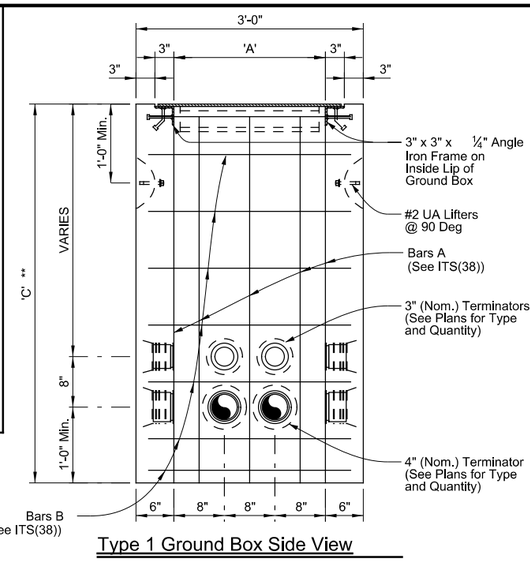
Section A



Note: Options Shown for Cable Racks and Attachment Methods. Furnish Shop Drawings of Cable Rack for Engineer Approval Prior to Installation.

Type 1 Cable Rack Details





Type 1 Ground Box Side View

** - Detail representative of 60" deep ground box.

General Notes:

1. Conduit entry points shown represent the standard configuration for backbone conduit as detailed on ITS(27). Additional conduits may be required as shown on the plans.
2. Provide Class A concrete for Type "1" ground boxes.
3. Provide terminators for the PVC conduit cast in the walls and placed symmetrically about the centerline of the box at the depths shown, unless otherwise noted, for the number of conduits identified on the plans to enter the box.
4. Provide terminators appropriately sized for the conduits indicated on the plans. Provide terminators with an air tight and water tight connection.
5. Closed bottom Type "1" ground boxes are acceptable in lieu of open bottom boxes. Provide two 3" Dia. perforated PVC drain pipes on opposite corners to optimize water drainage. Provide 12-inch base of crushed stone which extends 6 inches in all directions from the perimeter of the box for closed bottom boxes. Crushed stone will be subsidiary to Special Specification, "ITS Ground Box."
6. Install all open bottom Type "1" ground boxes on a 12-inch base of crushed stone which extends 6 inches in all directions from the perimeter of the box. Crushed stone will be subsidiary to Special Specification, "ITS Ground Box."
7. Cap and seal terminators that do not have conduits attached.
8. When additional conduit entry points are needed to accommodate existing conduit, core drill conduit knockouts in the field of the appropriate number and size of conduit at each location, as directed by the Engineer.
9. Provide a bell fitting on the end of each conduit to ensure a flush fit inside the ground box.
10. Concrete grout around the knockout (inside and out) and around the conduit and bell fitting to ensure a neat watertight fit after the conduit and bell fitting have been placed in a knockout. Ensure all openings in the ground box are sealed prior to grouting operations.
11. Install a nylon string and plug all unused conduits with tug-plugs sized for the particular conduits. Provide split innerduct plugs in conduits or innerducts with cables to seal the innerduct around the cables to prevent water and dirt from entering.
12. Provide steel (ASTM A-153), glass reinforced nylon, or equivalent cable rack assemblies designed to support the amount of cable storage slack identified in the plans. Locate cable rack system on one side only (longer length side) to allow access to the inside of the ground box. Cable racks may be installed at the factory or in the field. When mounting cable racks in the field, seal all penetrations to the concrete side wall to prevent moisture penetration. Ground metallic cable rack systems to grounding system inside ground box in accordance with the National Electrical Code.

Ground Box Schedule			
Ground Box Type	'A' Width Inside (Inches)	'B' Length Inside (Inches)	'C' Depth Inside (Inches)
Type 1	24	36	36, 48, 60

Sheet Details
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SHEET 1 OF 2

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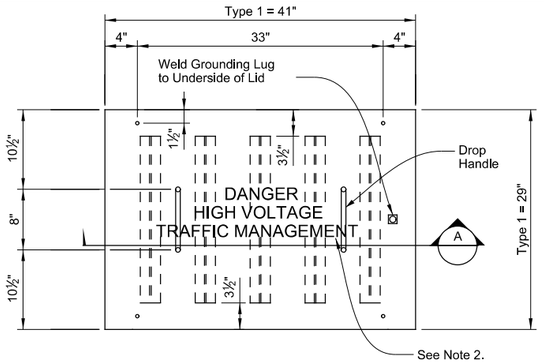
Traffic Operations Division Standard

ITS GROUND BOX DETAILS TYPE "1" WITH STEEL COVER

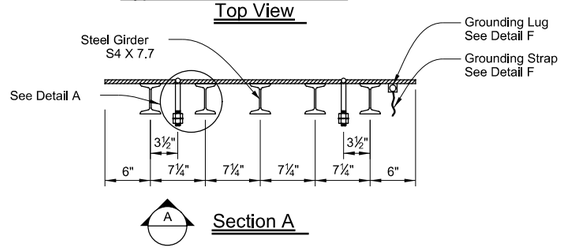
ITS(37)-16

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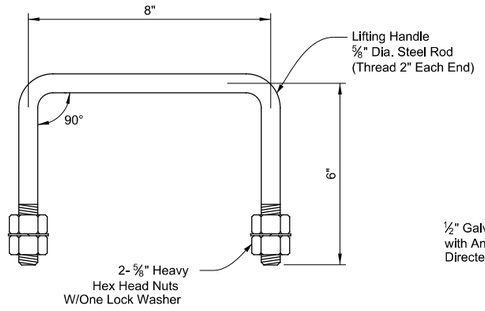
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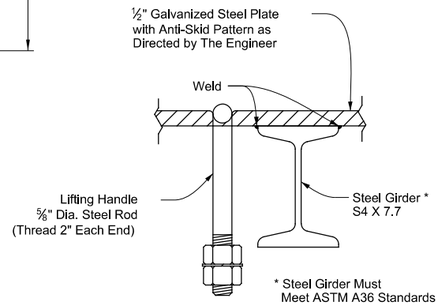
Type 1 Steel Cover Details
Top View



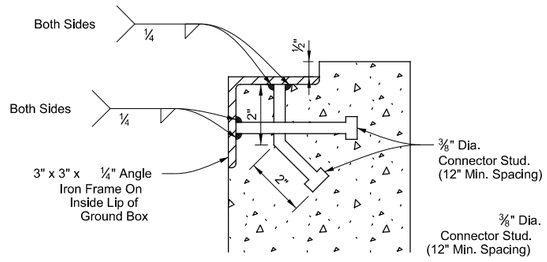
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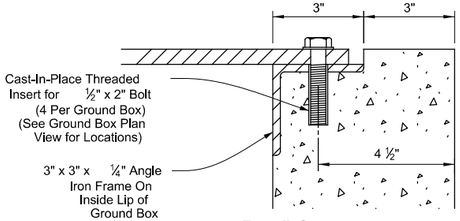
Drop Handle Detail



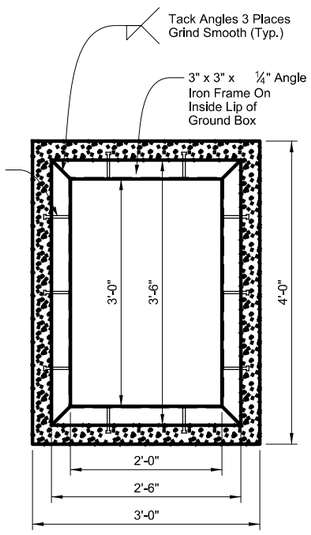
Detail A



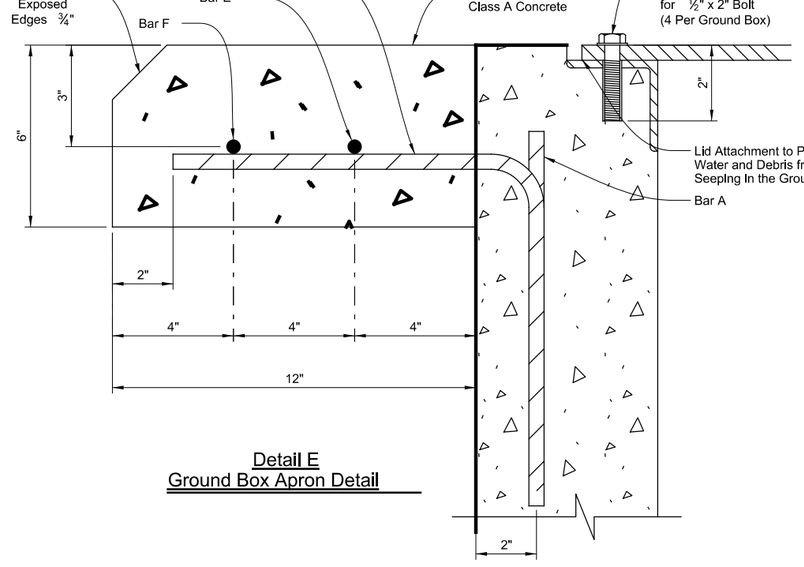
Detail B



Detail C
Lid Attachment Detail



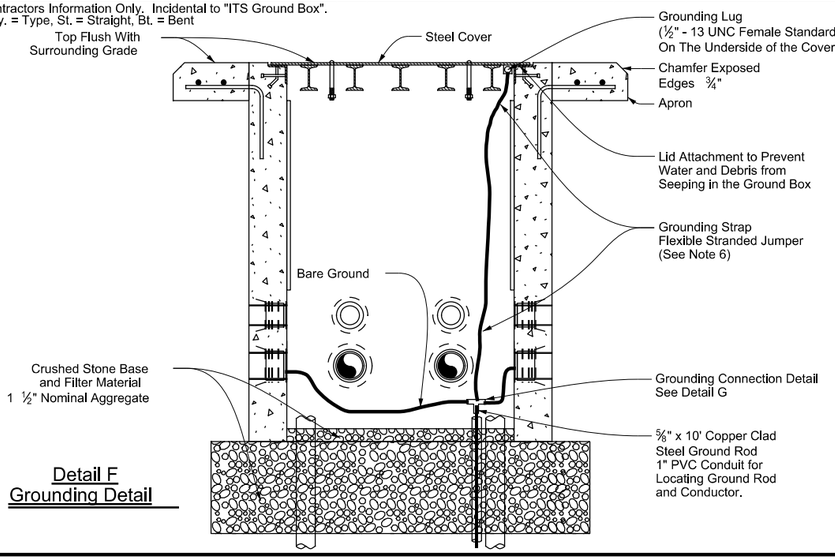
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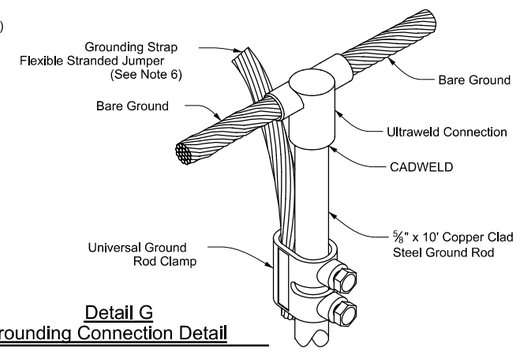
Detail E
Ground Box Apron Detail

Ground Box Type 1	BAR A					BAR B					BAR D					BAR E					BAR F					TOTALS	
	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	No.	Size	Ty.	Length	Weight	Steel * LBS.	Conc. * CY
36" Depth	22	#4	St.	2'-8"	39.3	5	#4	Bt.	13'-2"	44.1	8	#4	Bt.	2'-0"	10.7	1	#3	Bt.	17'-2"	6.5	1	#3	Bt.	19'-10"	7.5	108.1	.67
48" Depth	22	#4	St.	3'-8"	54.0	7	#4	Bt.	13'-2"	61.8	8	#4	Bt.	2'-0"	10.7	1	#3	Bt.	17'-2"	6.5	1	#3	Bt.	19'-10"	7.5	140.5	.89
60" Depth	22	#4	St.	4'-8"	68.8	8	#4	Bt.	13'-2"	70.6	8	#4	Bt.	2'-0"	10.7	1	#3	Bt.	17'-2"	6.5	1	#3	Bt.	19'-10"	7.5	164.1	1.11

* - For Contractors Information Only. Incidental to "ITS Ground Box".
Legend: Ty. = Type, St. = Straight, Bt. = Bent



Detail F
Grounding Detail



Detail G
Grounding Connection Detail

Note - All grounding connections to be CADWELD or approved equal. This work will not be paid for directly, but is considered incidental to ITS ground box.

General Notes:

1. See ITS(37) for additional Type "1" ground box details.
2. Hot-dip galvanized steel covers after all welds are made.
3. Label top of cover with the words "DANGER HIGH VOLTAGE TRAFFIC MANAGEMENT" using template-guided, hand-welded lettering at a height of 2 inches to ensure neatness.
4. Provide all Type "1" ground boxes with a securable, tamper-proof cover equipped with a bolting system that positively secures the cover in place.
5. Ground steel covers in accordance with the National Electrical Code.
6. Ground covers to the grounding cable using a split-bolt kearney clamp, and a minimum 8-foot long flexible stranded jumper the same size as the grounding conductor. Terminate to metal ground box cover with a tank ground type lug as approved and directed by the Engineer.
7. Provide Type "1" ground box and cover designed for heavy duty loading in accordance with AASHTO H20 loading when located where the box may experience deliberate, continuous vehicular traffic, such as near the shoulder or an auxiliary lane, or immediately adjacent to the unprotected edge of pavement.
8. Provide a Type "1" ground box and cover tested by a laboratory independent of the manufacturer certifying loading requirements are met. Provide certification of such tests to the Engineer for approval.
9. Provide a steel or cast iron cover in accordance with Item 471, Article 471.2, "Frames, Grates, Rings, and Covers." Provide covers with the number of drop handles shown. Provide Class "A" concrete for ground box construction and aprons.
10. Fabricate cover so to fits properly on the ground box, and no undue noise results when traffic contacts the cover.

Sheet Details
Not to Scale

SHEET 2 OF 2

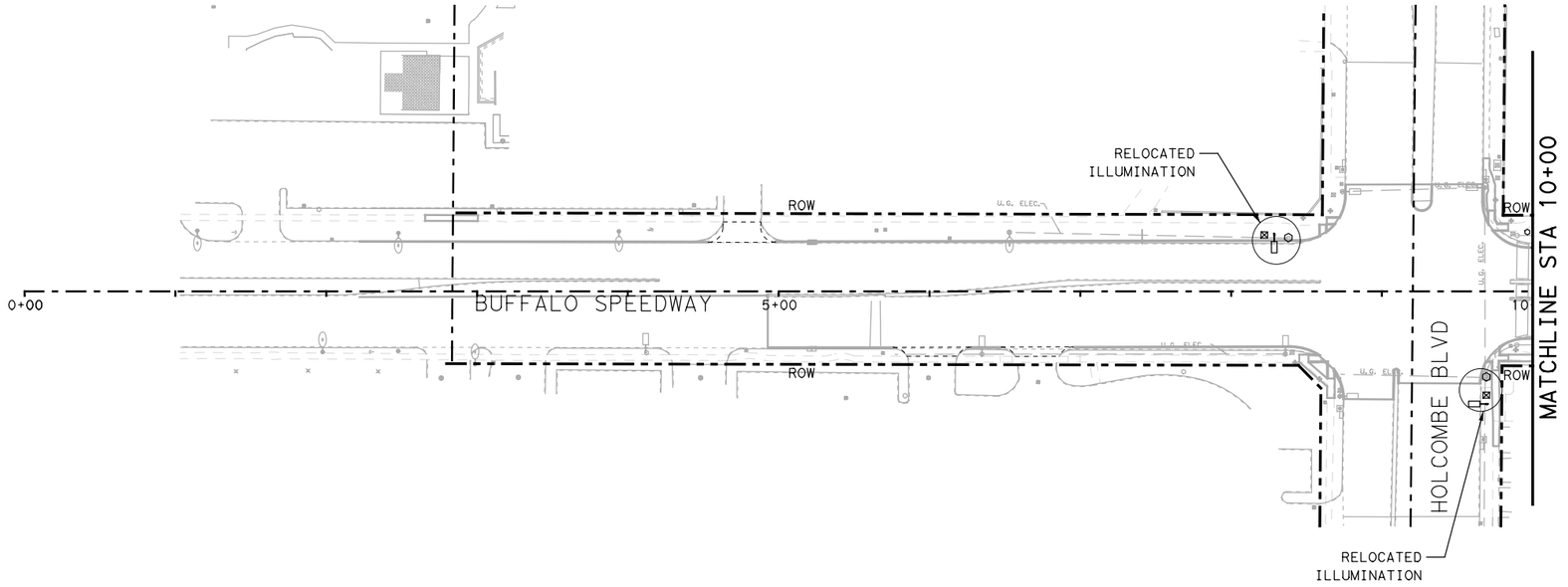
Texas Department of Transportation | Traffic Operations Division Standard

ITS GROUND BOX DETAILS TYPE "1" WITH STEEL COVER

ITS(38)-17

FILE: its(38)-17.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS 5-17	0912	72	360	BSW
	DIST	COUNTY		SHEET NO.
	12	HARRIS		490

DATE: 8/24/2020 11:41:58 AM
FILE: 481 ITS GROUND BOX DETAILS TYPE 1 WITH STEEL COVER ITS(38)-16.dgn



0 100′ 200′

SCALE IN FEET

LEGEND

- EXIST ILLUMINATION POLE TO BE RELOCATED
- RELOCATED RDWY ILLUMINATION POLE
- RELOCATED ORNAMENTAL ILLUMINATION POLE
- PROP GROUND BOX

NOTES:

1. ONLY MARKED ILLUMINATION TO BE RELOCATED. OTHER EXISTING ILLUMINATIONS TO REMAIN.
2. ALL CONDUIT INSTALLATION SHALL CONFORM TO TXDOT SPECIFICATION LATEST REVISION, UNLESS OTHERWISE AUTHORIZED BY LIGHTING DESIGN SERVICES DEPARTMENT.
3. CONTRACTOR TO CALL (713) 945-3222 FOR THE ARRANGEMENT OF ENERGY STANDBY TIME FOR CONDUIT STUB UP.
4. CENTER LINE OF CONDUIT & POLE CASE ARE 3′-6" MIN. FROM FACE OF CURB EXCEPT AS NOTED.

ESTIMATED QUANTITIES

ITEM	CODE	DESCRIPTION	UNIT	QTY
416	6029	DRILL SHAFT (RDWY ILL POLE) (30 IN)	LF	20
610	6004	RELOCATE RD IL ASM (TRANS-BASE)	EA	2

NOTE: NO SEPARATE PAYMENTS WILL BE MADE FOR CONDUITS, CONDUCTORS AND GROUND BOXES. THESE PAYMENTS WILL BE INCIDENTAL TO THE POLE RELOCATION.

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER
08/24/20

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Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

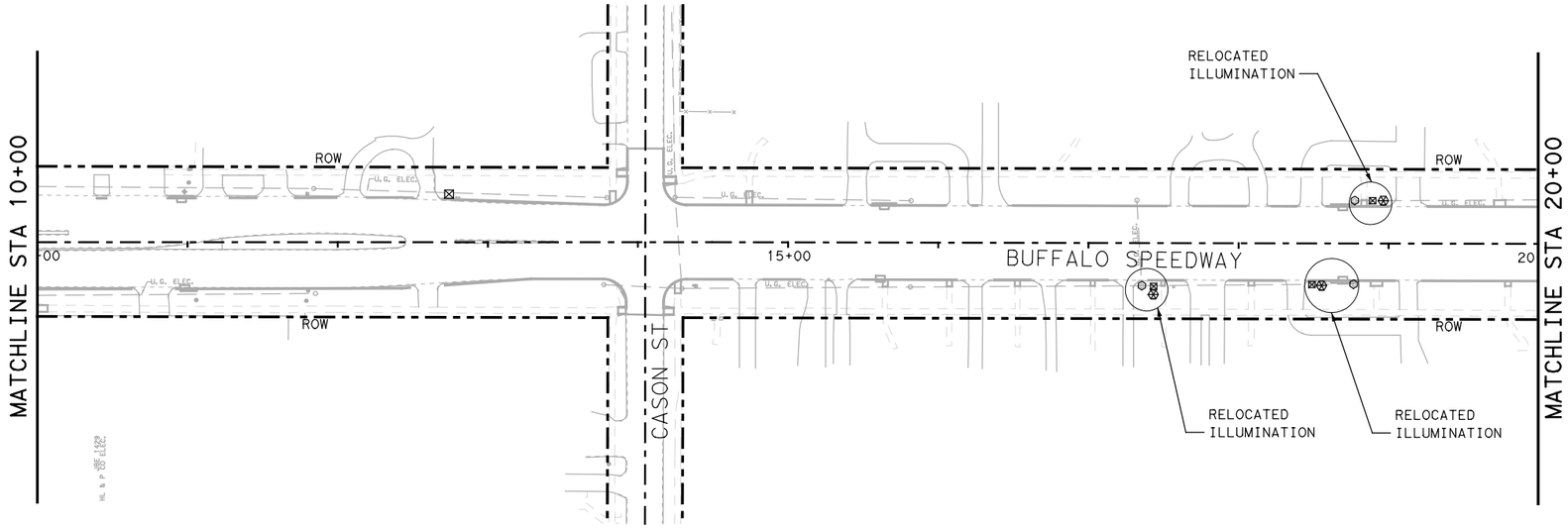
ILLUMINATION LAYOUTS

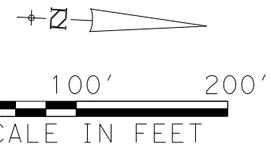
BUFFALO SPEEDWAY
FROM BEGIN TO STA 10+00

SHEET 1 OF 8

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		491
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY





LEGEND

- EXIST ILLUMINATION POLE TO BE RELOCATED
- RELOCATED RDWY ILLUMINATION POLE
- RELOCATED ORNAMENTAL ILLUMINATION POLE
- PROP GROUND BOX

NOTES:

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ESTIMATED QUANTITIES

ITEM	CODE	DESCRIPTION	UNIT	QTY
610	6004	RELOCATE RD IL ASM (TRANS-BASE)	EA	3

NOTE: NO SEPARATE PAYMENTS WILL BE MADE FOR FOUNDATION, CONDUITS, CONDUCTORS AND GROUND BOXES. THESE PAYMENTS WILL BE INCIDENTAL TO THE POLE RELOCATION.



08/24/20

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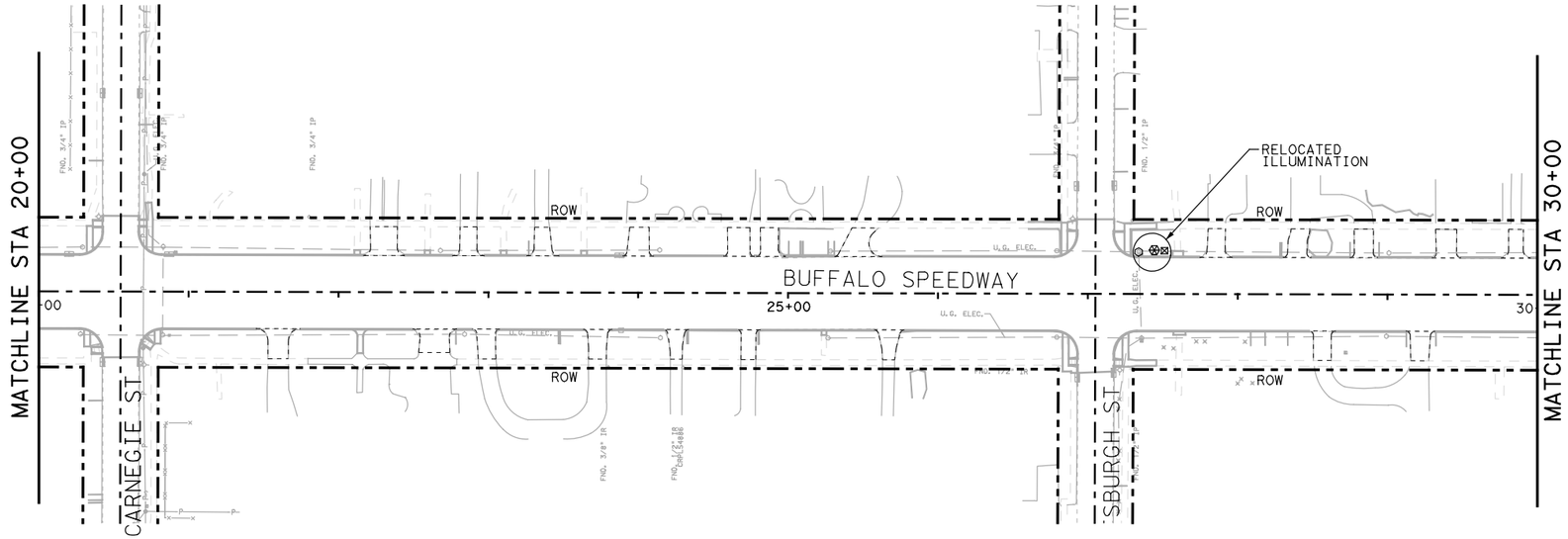
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

ILLUMINATION LAYOUTS

BUFFALO SPEEDWAY
FROM STA 10+00 TO STA 20+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			492
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



0 100′ 200′

SCALE IN FEET

LEGEND

- ⬡ EXIST ILLUMINATION POLE TO BE RELOCATED
- ▭ RELOCATED RDWY ILLUMINATION POLE
- ⊛ RELOCATED ORNAMENTAL ILLUMINATION POLE
- ⊠ PROP GROUND BOX

NOTES:

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4. CENTER LINE OF CONDUIT & POLE CASE ARE 3′-6" MIN. FROM FACE OF CURB EXCEPT AS NOTED.

ESTIMATED QUANTITIES

ITEM	CODE	DESCRIPTION	UNIT	QTY
610	6004	RELOCATE RD IL ASM (TRANS-BASE)	EA	1

NOTE: NO SEPARATE PAYMENTS WILL BE MADE FOR FOUNDATION, CONDUITS, CONDUCTORS AND GROUND BOXES. THESE PAYMENTS WILL BE INCIDENTAL TO THE POLE RELOCATION.

STATE OF TEXAS
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PROFESSIONAL ENGINEER
08/24/20

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City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

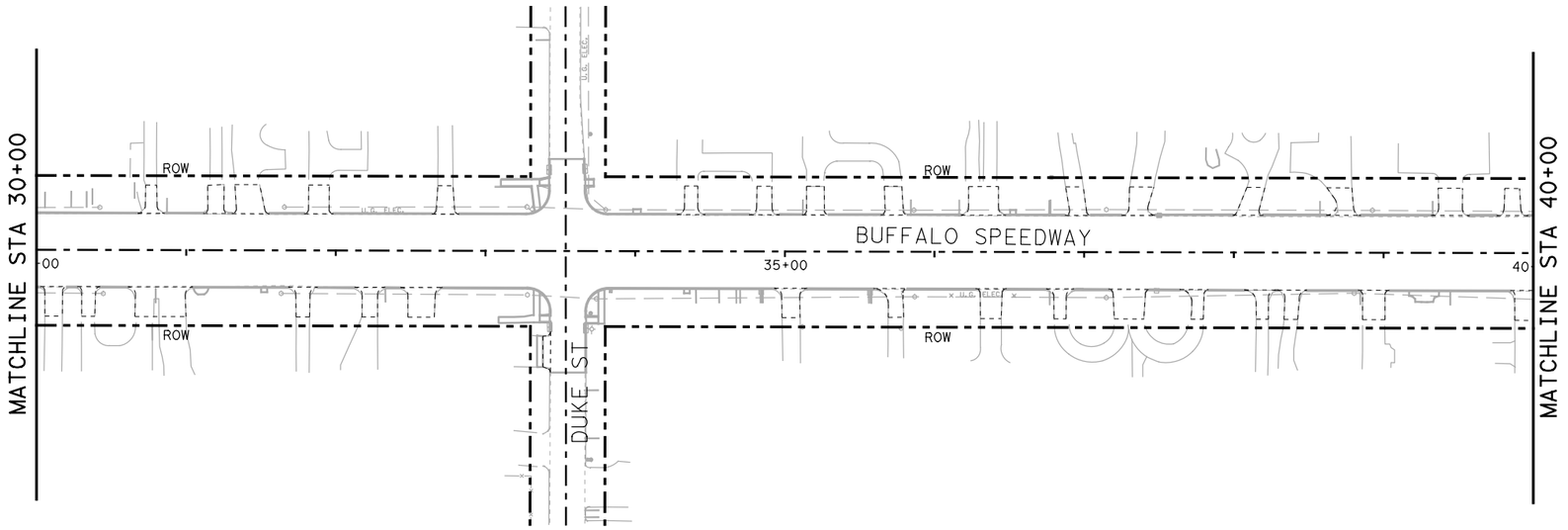
ILLUMINATION LAYOUTS

BUFFALO SPEEDWAY
FROM STA 20+00 TO STA 30+00

SHEET 3 OF 8

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		493
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



NOTE: NO ILLUMINATION WORK IN SHEET 4.

0 100′ 200′

SCALE IN FEET

LEGEND

- EXIST ILLUMINATION POLE TO BE RELOCATED
- RELOCATED RDWY ILLUMINATION POLE
- RELOCATED ORNAMENTAL ILLUMINATION POLE
- PROP GROUND BOX

STATE OF TEXAS
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08/24/20

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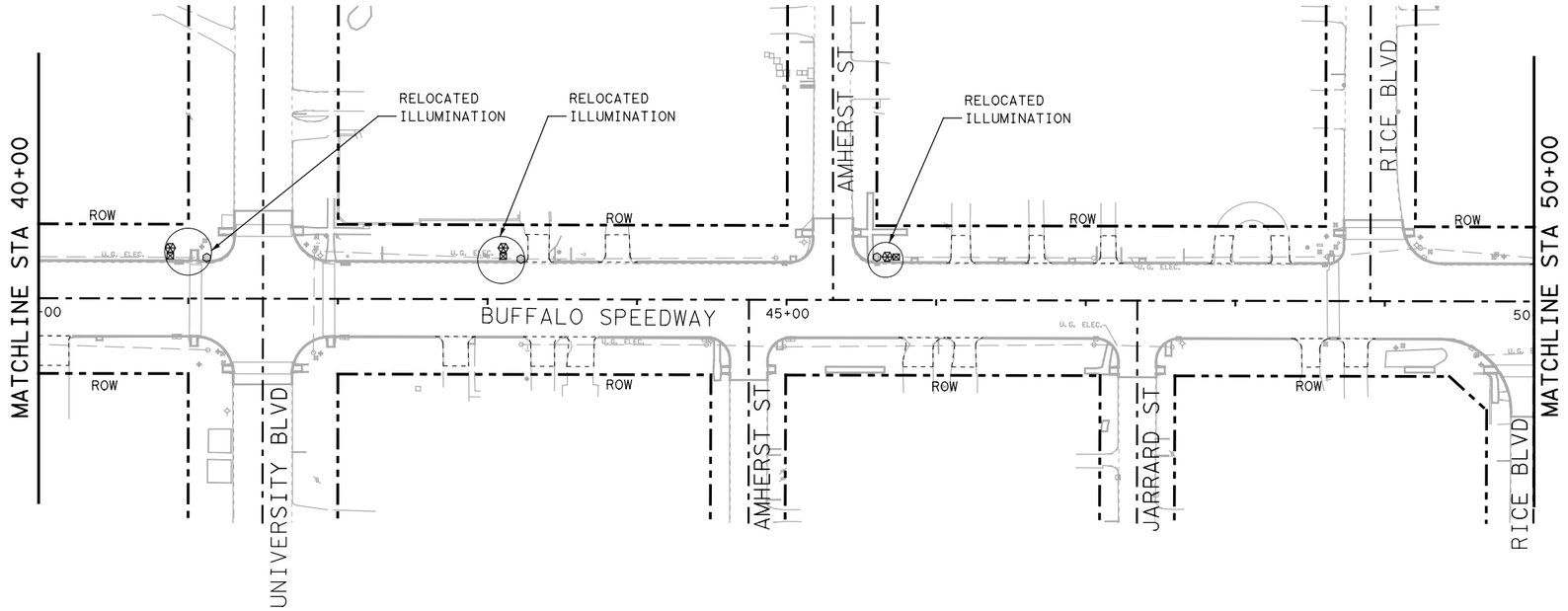
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

ILLUMINATION LAYOUTS

BUFFALO SPEEDWAY
FROM STA 30+00 TO STA 40+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		494
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 100′ 200′

SCALE IN FEET

LEGEND

- EXIST ILLUMINATION POLE TO BE RELOCATED
- RELOCATED RDWY ILLUMINATION POLE
- RELOCATED ORNAMENTAL ILLUMINATION POLE
- PROP GROUND BOX

NOTES:

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3. CONTRACTOR TO CALL (713) 945-3222 FOR THE ARRANGEMENT OF ENERGY STANDBY TIME FOR CONDUIT STUB UP.
4. CENTER LINE OF CONDUIT & POLE CASE ARE 3′-6" MIN. FROM FACE OF CURB EXCEPT AS NOTED.

ESTIMATED QUANTITIES

ITEM	CODE	DESCRIPTION	UNIT	QTY
610	6004	RELOCATE RD IL ASM (TRANS-BASE)	EA	3

NOTE: NO SEPARATE PAYMENTS WILL BE MADE FOR FOUNDATION, CONDUITS, CONDUCTORS AND GROUND BOXES. THESE PAYMENTS WILL BE INCIDENTAL TO THE POLE RELOCATION.

STATE OF TEXAS
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City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

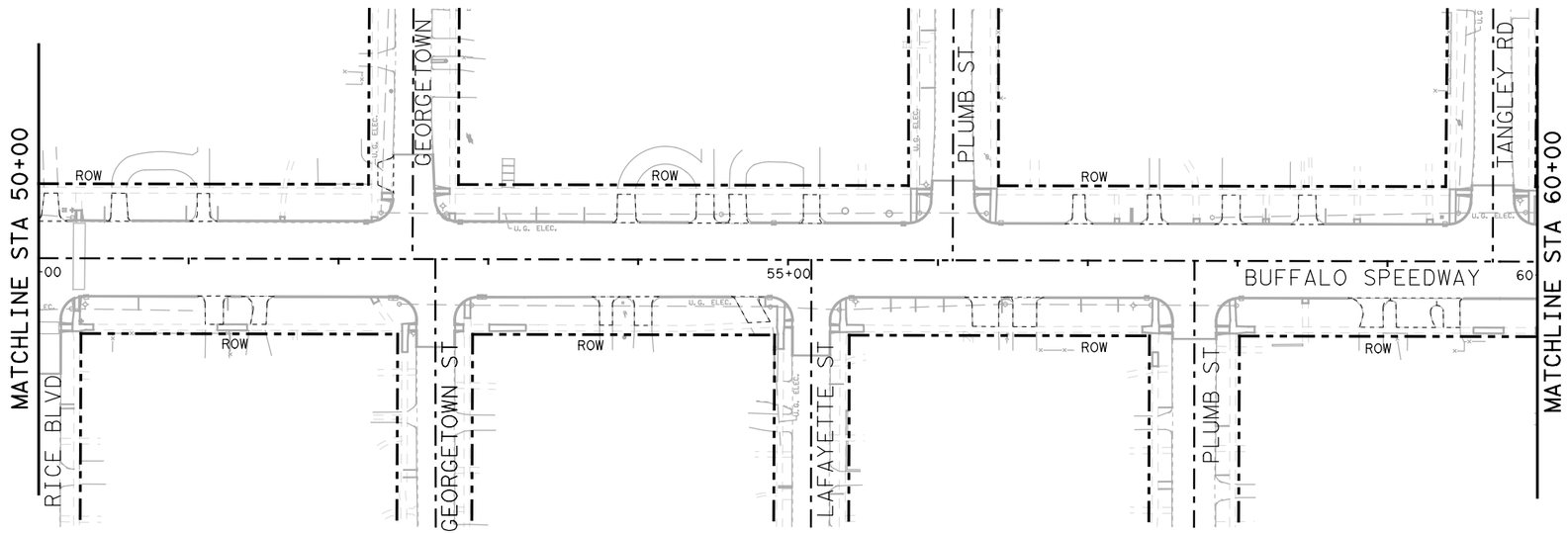
ILLUMINATION LAYOUTS

BUFFALO SPEEDWAY
FROM STA 40+00 TO STA 50+00

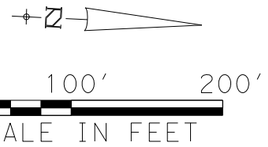
SHEET 5 OF 8

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			495
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



NOTE: NO ILLUMINATION WORK IN SHEET 6.



LEGEND

- EXIST ILLUMINATION POLE TO BE RELOCATED
- RELOCATED RDWY ILLUMINATION POLE
- RELOCATED ORNAMENTAL ILLUMINATION POLE
- PROP GROUND BOX



08/24/20

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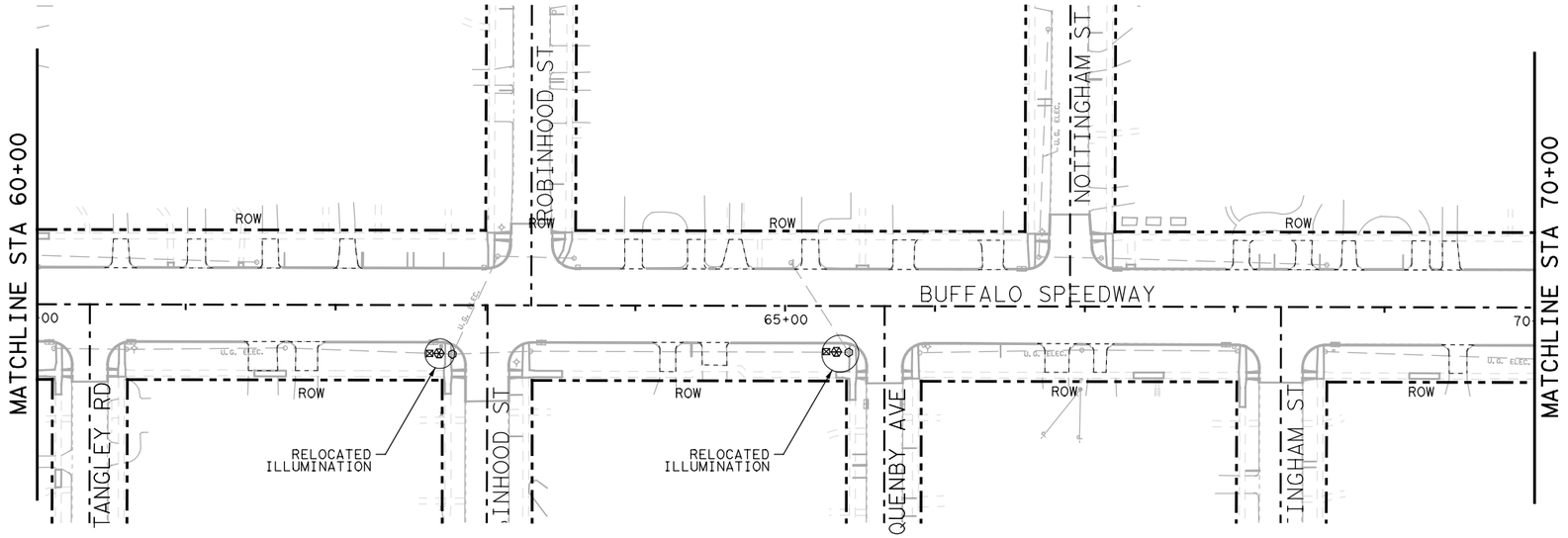
ILLUMINATION LAYOUTS

BUFFALO SPEEDWAY
FROM STA 50+00 TO STA 60+00

SHEET 6 OF 8

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		496
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 100′ 200′

SCALE IN FEET

LEGEND

- EXIST ILLUMINATION POLE TO BE RELOCATED
- RELOCATED RDWY ILLUMINATION POLE
- RELOCATED ORNAMENTAL ILLUMINATION POLE
- PROP GROUND BOX

NOTES:

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3. CONTRACTOR TO CALL (713) 945-3222 FOR THE ARRANGEMENT OF ENERGY STANDBY TIME FOR CONDUIT STUB UP.
4. CENTER LINE OF CONDUIT & POLE CASE ARE 3′-6" MIN. FROM FACE OF CURB EXCEPT AS NOTED.

ESTIMATED QUANTITIES

ITEM	CODE	DESCRIPTION	UNIT	QTY
610	6004	RELOCATE RD IL ASM (TRANS-BASE)	EA	2

NOTE: NO SEPARATE PAYMENTS WILL BE MADE FOR FOUNDATION, CONDUITS, CONDUCTORS AND GROUND BOXES. THESE PAYMENTS WILL BE INCIDENTAL TO THE POLE RELOCATION.

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER
08/24/20

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BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

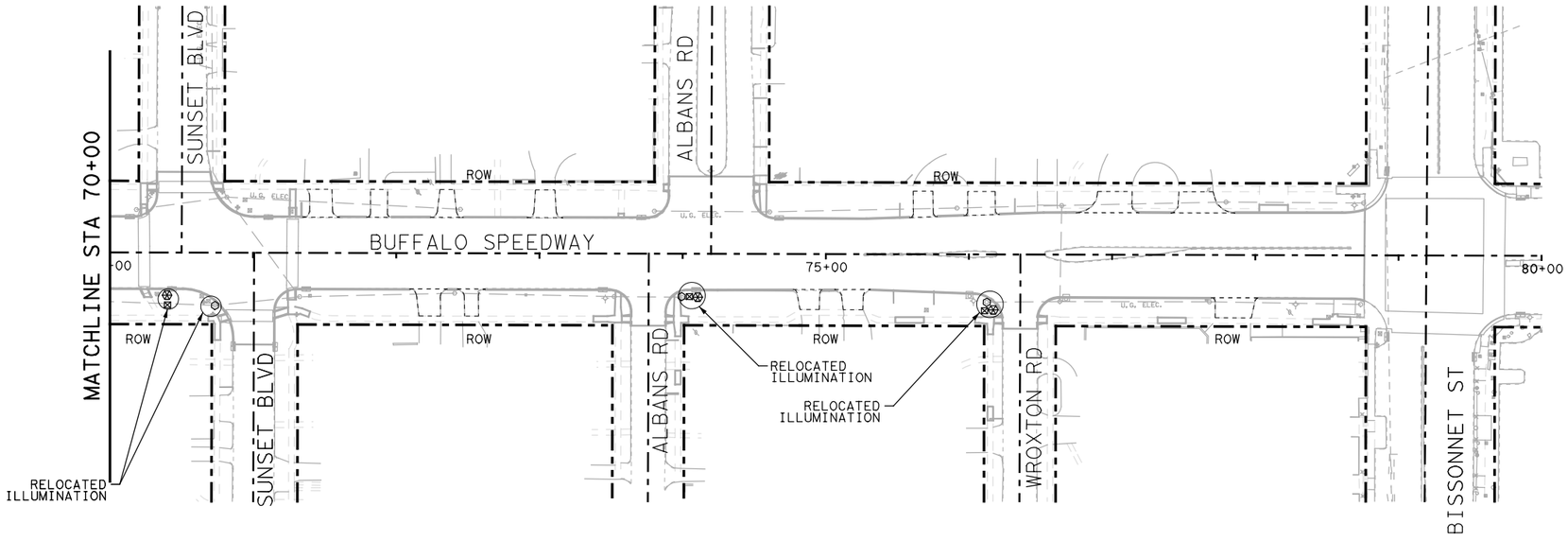
ILLUMINATION LAYOUTS

BUFFALO SPEEDWAY
FROM STA 60+00 TO STA 70+00

SHEET 7 OF 8

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		497
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 100′ 200′

SCALE IN FEET

LEGEND

- EXIST ILLUMINATION POLE TO BE RELOCATED
- RELOCATED RDWY ILLUMINATION POLE
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- PROP GROUND BOX

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ESTIMATED QUANTITIES

ITEM	CODE	DESCRIPTION	UNIT	QTY
610	6004	RELOCATE RD IL ASM (TRANS-BASE)	EA	3

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City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

ILLUMINATION LAYOUTS

BUFFALO SPEEDWAY
FROM STA 70+00 TO END

SHEET 8 OF 8

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		498
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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DATE:
FILE:

ROADWAY ILLUMINATION ASSEMBLY NOTES

1. Details apply to roadway lighting installations bid or referenced under Item 610, "Roadway Illumination Assemblies." Provide, furnish, and install all other materials not shown on the plans which may be necessary for complete and proper construction. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the State such warranties or guarantees.

2. The locations of poles and fixtures may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.

3. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC),TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA),and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association, Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection.

4. Provide Roadway Illumination Light Fixtures as per TxDOT Departmental Material Specification (DMS) 11010, Item 610, and as shown on the Material Producers List (MPL) for Roadway Illumination and Electrical Supplies.

5. Fabricate steel roadway illumination poles in accordance with Roadway Illumination Poles (RIP) standards and Item 610. Poles fabricated according to RIP standards do not require shop drawing submittals.

   a. Alternate designs to RIP standards or the use of aluminum to fabricate poles will require the submission of shop drawings electronically. For instructions on submitting shop drawings electronically see "Guide to Electronic Shop Drawing Submittal" on the TxDOT web site.

   b. Limitations on use of the RIP standard: The RIP standard details were developed for installations in locations where the 3-second gust basic maximum wind speed is 110 mph, and where the elevation of the base of the pole is less than (i.e. not more than) 25′ above the elevation of the surrounding terrain, in accordance with the "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," 4th Edition (2001) (AASHTO Design Specifications). For poles to be installed in regions where the maximum basic wind speed exceeds 110 mph or to be mounted more than 25′ above the surrounding terrain, provide poles meeting the following requirements:

      i. Submittals. Following the electronic shop drawing submittal process (see Guide to Electronic Shop Drawing Submittal on the TxDOT web site), submit to the Engineer for approval fabrication drawings and calculations for the poles, sealed by a Texas licensed professional engineer (P.E.).

      ii. Luminaire Structural Support Requirements. Provide light poles, arms, and anchor bolt assemblies with a 25 year design life to safely resist dead loads, ice loads and the required basic wind speeds at the location of installation in accordance with the 6th edition (2013) of the AASHTO Design Specifications. For transformer base poles, include transformer base and connecting hardware in calculations and shop drawing submittals. Structurally test all transformer bases to resist the theoretical plastic moment capacity of the pole. Submit certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished with the shop drawings. Show breakaway base model number, manufacturer's name, and logo on shop drawings. Include on manufacturer's shop drawings the ASTM designations for all materials to be used.

6. For both transformer and shoe-base type illumination poles, provide and install double-pole breakaway fuse holders as specified by DMS-11040. Breakaway fuse holders are listed on the MPL for Roadway Illumination and Electrical Supplies under Items 610 & 620. Provide 10 amp time delay fuses for breakaway connectors in light poles, or inside the light fixture for underpass luminaires. In each pole, connect luminaires to the breakaway connector with continuous stranded 12 AWG copper conductors as listed on the MPL. Bond all equipment grounding conductors together and to the ground lug in the transformer base or hand hole.

7. Tighten anchor bolts for shoe base, concrete traffic barrier base, and bridge mount roadway illumination poles, in accordance with Item 449.

8. Install T-Base with following procedure:

   a. Anchor Bolt Tightening.

      i. Coat the threads of the anchor bolts with electrically conductive lubricant.

      ii. Place the T-base over the anchor bolts. Foundation must be level and flat. The maximum permissible gap under any one corner of the t-base is 1/8" before nuts are tightened.

      iii. Coat the bearing surfaces of the nuts and washers with electrically conductive lubricant. Install (1) 1/2" hold down washer, (1) lock washer, and (1) nut on each anchor bolt. Turn the nuts onto the bolts so that each is hand-tight against the washer.

      iv. Using a torque wrench, tighten each nut to 150 ft-lb. Uniform contact is required between the foundation and the T-base in the corner regions of the T-base, and all corner gaps must be closed after applying torque. If a gap still exists after torquing to 150 ft-lbs, continue torquing each bolt incrementally until gap is closed or maximum allowable torque of 250 ft. pound is reached, whichever comes first. If 250 ft-lbs is not enough to close the gap the foundation must be leveled. Gaps along the straight sides of the T-bases and the foundation are permissible. Ensure that no high point of contact occurs between the straight sides of the T-base and the foundation.

      v. Check top of T-base for level. If not level then foundation must be leveled.

   b. Top Bolt Procedure

      i. Erect pole over T-base with crane. Coat bolts, nuts, washers, and lock washers with electrically conductive lubricant.

      ii. Install bolts and 1/2" connecting washers from the inside of the T-base, thread up through the pole base. Install flat washers, lock washers and nuts snug tight according to Item 447, "Structural Bolting."

      iii. Tighten each nut to 150 ft-lb. using a torque wrench.

   c. Level and Plumb

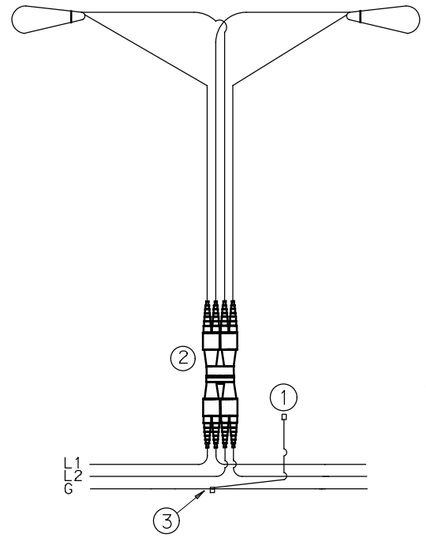
      i. Ensure pole is plumb and mast arm is perpendicular to the roadway according to plans to within 5 degrees.

9. Construct luminaire pole foundations in accordance with Item 416, "Drilled Shaft Foundations," and TxDOT standard sheet RID(2).

10. Provide and install underpass luminaires in accordance with Item 610, DMS-11010, and TxDOT standard sheet RID(3). Typical luminaire size for underpass luminaires is 150W HPS or 150W EQ LED.

11. Mount luminaires on arms level as shown by the luminaire level indicator.

12. Orient luminaires perpendicular to the roadway intended to be lit unless otherwise shown on the plans.



L1,L2 = Hot Conductors
G = Grounding Conductor

TYPICAL WIRING DIAGRAM

LUMINAIRES SERVED AT 480V ON 240/480 VOLT SERVICE OR LUMINAIRES SERVED AT 240V FOR 120/240 VOLT SERVICE.

NOTES:

(1) Use 1/2 in.-13 UNC threaded, copper or tin-plated copper, pole bonding connector, sized appropriately for conductors, bonded to T-base, or use ground lug in handhole as available.

(2) Use pre-qualified two-pole breakaway connectors for all luminaire pole installations. For luminaires fed by a circuit with a neutral conductor, use double pole breakaway connectors with the neutral side unfused and marked white.

(3) Split Bolt or other connector.

Texas Department of Transportation

Traffic Operations Division Standard

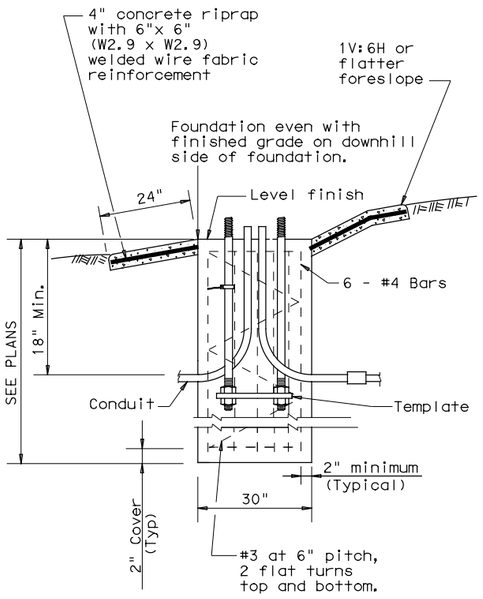
ROADWAY ILLUMINATION DETAILS

RID(1)-17

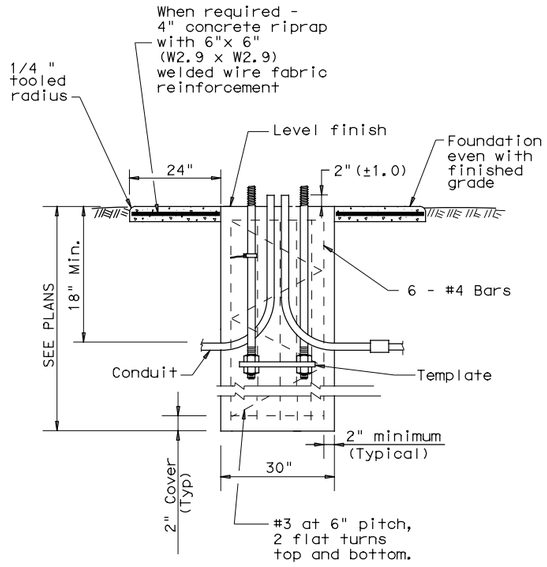
FILE: rid1-17.dgn	DN:	CK:	DW:	CK:
©TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	72	360	BSW
7-17	DIST	COUNTY		SHEET NO.
	12	HARRIS		499

72A

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SECTION A-A
SHOWING SLOPED GRADE



SECTION A-A
SHOWING CONSTANT GRADE

TABLE 1

ANCHOR BOLTS

POLE MOUNTING HEIGHT	BOLT CIRCLE		ANCHOR BOLT SIZE
	Shoe Base	T-Base	
<40 ft.	13 in.	14 in.	1 in. x 30 in.
40-50 ft.	15 in.	17 1/4 in.	1 1/4 in. x 30 in.

TABLE 2

RECOMMENDED FOUNDATION LENGTHS
(See note 1)

MOUNTING HEIGHT	TEXAS CONE PENETROMETER N Blows/ft		
	10	15	40
≤20 ft.	6′	6′	6′
>20 ft. to 30 ft.	8′	6′	6′
>30 ft. to 40 ft.	8′	8′	6′
>40 ft. to 50 ft.	10′	8′	6′

TABLE 3

PAY QUANTITY OF RIPRAP PER FOUNDATION (Install only when shown on the plans)

Foundation Diameter	RIPRAP DIAMETER	RIPRAP (CONC) (CL B)
30 in.	78 in.	0.35 CY

GENERAL NOTES:

1. "Recommended Foundation Lengths" table is for information purposes only. Foundation lengths shall be as shown on the plans, or as directed by the Engineer. Foundations will be paid for under Item 416, "Drilled Shaft Foundations," unless otherwise shown on the plans.
2. Erect roadway illumination assembly poles plumb and true. Form and level the top 6" of the foundation so the pole will be plumb. Use leveling nuts to plumb shoe base poles. Do not use shims or leveling nuts under transformer bases. Do not grout between baseplate and the foundation.
3. Ensure Class 2A and 2B fit for anchor bolts and nuts. Tap and chase nuts after galvanizing. Anchor bolt body with rolled threads need not be full size.
4. Use appropriate class of concrete as specified in Items 416 and 432. Concrete for riprap may be upgraded to Class C at no extra cost to the Department.
5. Place riprap around the foundation when called for elsewhere in the plans. Riprap will be paid for under Item 432.
6. Locate breakaway roadway illumination assemblies as shown in the placement table, unless otherwise dimensioned on the plans. Protect non-breakaway illumination assemblies from vehicular impact (i.e. 2.5 ft. behind guard rail or mounted on traffic barrier), or located outside the clear zone, except that 2.5 ft. from curb face is minimum desired for light poles on city streets, 45 mph or less. See Roadway Design Manual for further information.
7. Use 4 hold down and 4 connecting washers on transformer base poles as recommended by the manufacturer and supplied with base.
8. Install a minimum of 2 conduits in each foundation. See lighting layout sheets for locations of foundations with more than 2 conduits. Cap unused conduits in foundations on both ends.
9. Conduit location in foundations is critical for breakaway devices. Place conduits 2 in. apart on centerline as shown.
10. Bond anchor bolt to rebar cage with #6 bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. The bonded steel in the foundation creates a concrete encased grounding electrode which replaces the ground rod.
11. Use riprap on T-base foundations that are located on sloped grades.

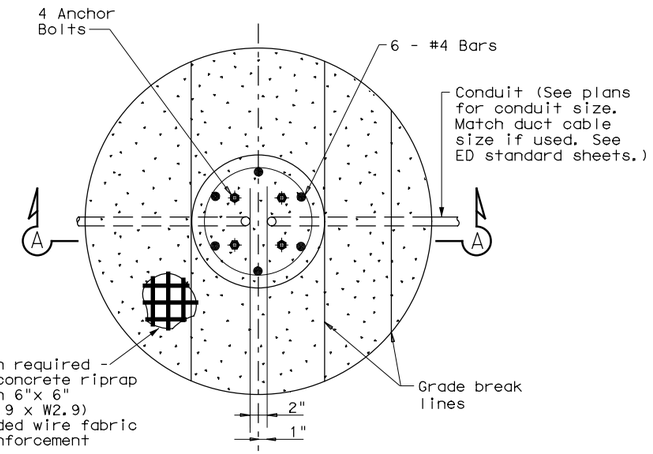
TABLE 4

BREAKAWAY POLE PLACEMENT (See note 6)

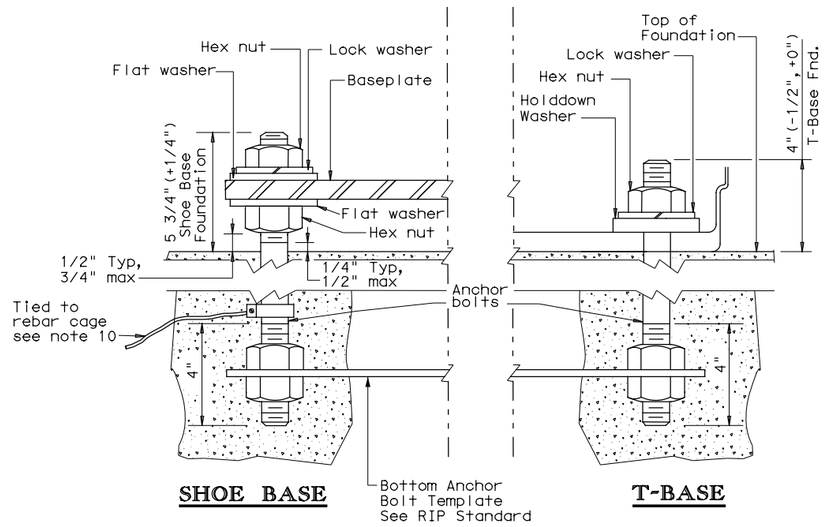
ROADWAY FUNCTIONAL CLASSIFICATION	** POLE OFFSET (DISTANCE TO FACE OF TRANSFORMER BASE)
Freeway Mainlanes (roadway with full control of access)	15 ft. (minimum and typical) from lane edge
All curbed, 45 mph or less design speed	2.5 ft. minimum (15 ft. desirable) from curb face
All others	10 ft. minimum*(15 ft. desirable) from lane edge

* or as close to ROW line as is practical

** provide 2/5 of the luminaire mounting height behind the pole for "falling area" to prevent encroachment on the other travel lanes. See design guidelines.



FOUNDATION DETAIL



ANCHOR BOLT DETAIL

Texas Department of Transportation

Traffic Operations Division Standard

ROADWAY ILLUMINATION DETAILS
(RDWY ILLUM FOUNDATIONS)

RID(2)-17

FILE: rid2-17.dgn	DN:	CK:	DW:	CK:
© TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-11 7-17	0912	72	360	BSW
	DIST	COUNTY		SHEET NO.
	12	HARRIS		500

72B

DATE:
FILE:

SUMMARY OF SMALL SIGNS

LAYOUT SHEET NO.	SIGN NO.	SIGN TYPE	SIGN TEXT	SIGN DIMENSIONS (IN)	PLYWOOD SIGNS	ALUMINIUM SIGNS TYPE A	644 - INS SM RD SN SUP & AM TYPE OF MOUNT																		
							6001 10BWG (1) SA (P) EA	6002 10BWG (1) SA (P-BM) EA	6004 10BWG (1) SA (T) EA	6005 10BWG (1) SA (T-2EXT) EA	6006 10BWG (1) SA (U) EA	6017 10BWG (2) SA (P) EA	6019 10BWG (2) SA (T-2EXT) EA	6027 S80 (1) SA (P) EA	6040 S80 (1) SA (P-BM) EA	6030 S80 (1) SA (T) EA	6031 S80 (1) SA (T-2EXT) EA	6033 S80 (1) SA (U) EA	6034 S80 (1) SA (U-1EXT) EA	6035 S80 (1) SA (U-2EXT) EA	6036 S80 (1) SA (U-BM) EA	6037 S80 (1) SA (U-WC) EA	6050 S80 (2) SA (P) EA	6052 S80 (2) SA T-2EXT) EA	
1 OF 15	1	R3-7	RIGHT LANE MUST TURN RIGHT	36X36		X								1											
2 OF 15	2	S5-1	SCHOOL SPEED LIMIT 20 WHEN FLASHING	24X48		X								1											
		S7-1T	CELL PHONE USE PROHIBITED UP TO $200 FINE	24X18		X																			
	3	R3-7	RIGHT LANE MUST TURN RIGHT	36X36		X								1											
	4	S5-2aTP	END SCHOOL ZONE	30X12		X								1											
		R2-1	SPEED LIMIT XX	30X36		X																			
3 OF 15	5	D4-2	PARK-RIDE	30X36		X								1											
		M6-3G	DIRECTIONAL ARROW ↑	21X15		X																			
	6	S1-1	SCHOOL	36X36		X								1											
		SW16-9P	AHEAD	24X12		X																			
	7	R7-1L	NO PARKING ANY TIME ←	12X18		X								1											
	8	D3-1B	CASON St 3200	46X12		X								1											
		D3-1B	BUFFALO Spdwy 6700	50X12		X																			
		R1-1	STOP	36X36		X																			
	9	R7-2aR	NO PARKING 4:00 PM TO 7:00 PM →	12X18		X								1											
	10	R2-1	SPEED LIMIT XX	30X36		X								1											
	11	R7-1DBL	NO PARKING ANY TIME ↔	12X18		X								1											
	12	R7-1R	NO PARKING ANY TIME →	12X18		X								1											
	13	D3-1B	CASON St 3100	46X12		X								1											
		D3-1B	BUFFALO Spdwy 6600	50X12		X																			
		R1-1	STOP	36X36		X																			
	14	R7-2aL	NO PARKING 7:00 AM TO 9:00 AM ←	12X18		X								1											
4 OF 15	15	R7-2aDBL	NO PARKING 4:00 PM TO 7:00 PM ↔	12X18		X								1											
	16	D3-1B	Carnegie St 3200	55X12		X								1											
		D3-1B	BUFFALO Spdwy 6600	50X12		X																			
		R1-1	STOP	36X36		X																			
	17	D3-1B	Carnegie St 3100	55X12		X								1											
		D3-1B	BUFFALO Spdwy 6500	50X12		X																			
		R1-1	STOP	36X36		X																			
5 OF 15	18	R7-2aDBL	NO PARKING 4:00 PM TO 7:00 PM ↔	12X18		X								1											
	19	D3-1B	Pitsburg St 3200	56X12		X								1											
		D3-1B	BUFFALO Spdwy 6500	50X12		X																			
		R1-1	STOP	36X36		X																			
	20	R7-2aDBL	NO PARKING 7:00 AM TO 9:00 AM ↔	12X18		X								1											
6 OF 15	21	R2-1	SPEED LIMIT XX	30X36		X								1											
	22	R7-2aDBL	NO PARKING 4:00 PM TO 7:00 PM ↔	12X18		X								1											
	23	D3-1B	Pitsburg St 3100	56X12		X								1											
		D3-1B	BUFFALO Spdwy 6400	50X12		X																			
		R1-1	STOP	36X36		X																			

GENERAL NOTES:

ALL SIGNS SHALL BE ERECTED ACCORDING TO THE LOCATION SHOWN ON THE LAYOUT SHEETS EXCEPT THAT THE ENGINEER MAY SHIFT A SIGN IN ORDER TO SECURE A MORE DESIRABLE LOCATION. THE CONTRACTOR WILL STAKE ALL SIGN LOCATIONS, AND NO CHANGES IN THOSE LOCATIONS SHALL BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.

ALUMINUM SIGN BLANKS(TY A)

Square Ft.	Min. Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

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$STATUS$

MODEL NAME: $MODELNAME$
FILE NAME: SOSS (Houston District Standard).dgn

STATE OF TEXAS
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PROFESSIONAL ENGINEER
08/24/20

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Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

SUMMARY OF SMALL SIGNS

SHEET 1 OF 4

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		501
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

SUMMARY OF SMALL SIGNS

LAYOUT SHEET NO.	SIGN NO.	SIGN TYPE	SIGN TEXT	SIGN DIMENSIONS (IN)	PLYWOOD SIGNS	ALUMINIUM SIGNS TYPE A	644 - INS SM RD SN SUP & AM TYPE OF MOUNT: 6001 10BWG (1) SA (P) EA	6002 10BWG (1) SA (P-BM) EA	6004 10BWG (1) SA (T) EA	6005 10BWG (1) SA (T-2EXT) EA	6006 10BWG (1) SA (U) EA	6017 10BWG (2) SA (P) EA	6019 10BWG (2) SA (T-2EXT) EA	6027 S80 (1) SA (P) EA	6040 S80 (1) SA (P-BM) EA	6030 S80 (1) SA (T) EA	6031 S80 (1) SA (T-2EXT) EA	6033 S80 (1) SA (U) EA	6034 S80 (1) SA (U-1EXT) EA	6035 S80 (1) SA (U-2EXT) EA	6036 S80 (1) SA (U-BM) EA	6037 S80 (1) SA (U-WC) EA	6050 S80 (2) SA (P) EA	6052 S80 (2) SA T-2EXT) EA
	24	R2-1	SPEED LIMIT XX	24X30		X	DRIVER FEEDBACK SPEED SIGN ASSEMBLY (SOLAR POWERED)																		
	25	R7-2aDBL	NO PARKING 7:00 AM TO 9:00 AM ↔	12X18		X								1											
7 OF 15	26	D3-1B	Duke St 3200	42X12		X																			
		D3-1B	BUFFALO Spdwy 6400	50X12		X								1											
		R1-1	STOP	36X36		X																			
	27	D3-1B	Duke St 3100	42X12		X																			
		D3-1B	BUFFALO Spdwy 6300	50X12		X								1											
		R1-1	STOP	36X36		X																			
	28	W3-3	SIGNAL AHEAD	30X30		X								1											
8 OF 15	29	R7-1R	NO PARKING ANY TIME →	12X18		X								1											
		R7-2aL	NO PARKING 4:00 PM TO 7:00 PM ←	12X18		X																			
	30	R5-2	NO TRUCKS	24X24		X								1											
		M5-1R	RIGHT	21X15		X																			
	31	W11-2	PEDESTRIAN CROSSING	36X36		X								1											
		W16-9P	AHEAD	24X12		X																			
	32	R7-1L	NO PARKING ANY TIME ←	12X18		X								1											
		R7-2aR	NO PARKING 7:00 AM TO 9:00 AM →	12X18		X																			
	33	R7-1DBL	NO PARKING ANY TIME ↔	12X18		X								1											
9 OF 15	34	W11-2	PEDESTRIAN CROSSING	36X36		X								1											
		W16-9P	AHEAD	24X12		X																			
	35	D3-1B	Amherst St 3200	54X12		X								1											
		D3-1B	Buffalo Speedway 6200	50X12		X																			
		R1-1	STOP	36X36		X																			
	36	R7-1DBL	NO PARKING ANY TIME ↔	12X18		X								1											
	37	D3-1B	Amherst St 3100	54X12		X								1											
		D3-1B	Buffalo Speedway 6200	50X12		X																			
		R1-1	STOP	36X36		X																			
	38	R7-1DBL	NO PARKING ANY TIME ↔	12X18		X								1											
	39	D3-1B	Jarrard St 3100	50X12		X								1											
		D3-1B	Buffalo Speedway 6100	50X12		X																			
		R1-1	STOP	36X36		X																			
	40	R2-1	SPEED LIMIT XX	30X36		X								1											
10 OF 15	41	R7-1L	NO PARKING ANY TIME ←	12X18		X								1											
	42	D3-1B	Georgetown St 3200	66X12		X								1											
		D3-1B	Buffalo Spdwy 6000	50X12		X																			
		R1-1	STOP	36X36		X																			
	43	R7-2aR	NO PARKING 4:00 PM TO 7:00 PM→	12X18		X								1											
	44	R2-1	SPEED LIMIT XX	30X36		X								1											
	45	R3-7	RIGHT LANE MUST TURN RIGHT	36X36		X								1											

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$STATUS$

MODEL NAME: $MODELNAME$
FILE NAME: SOSS (Houston Disctrict Standard).dgn

STATE OF TEXAS
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City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

SUMMARY OF SMALL SIGNS

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		502
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

SUMMARY OF SMALL SIGNS

LAYOUT SHEET NO.	SIGN NO.	SIGN TYPE	SIGN TEXT	SIGN DIMENSIONS (IN)	PLYWOOD SIGNS	ALUMINIUM SIGNS TYPE A	644 - INS SM RD SN SUP & AM TYPE OF MOUNT																		
							6001 10BWG (1) SA (P) EA	6002 10BWG (1) SA (P-BM) EA	6004 10BWG (1) SA (T) EA	6005 10BWG (1) SA (T-2EXT) EA	6006 10BWG (1) SA (U) EA	6017 10BWG (2) SA (P) EA	6019 10BWG (2) SA (T-2EXT) EA	6027 S80 (1) SA (P) EA	6040 S80 (1) SA (P-BM) EA	6030 S80 (1) SA (T) EA	6031 S80 (1) SA (T-2EXT) EA	6033 S80 (1) SA (U) EA	6034 S80 (1) SA (U-1EXT) EA	6035 S80 (1) SA (U-2EXT) EA	6036 S80 (1) SA (U-BM) EA	6037 S80 (1) SA (U-WC) EA	6050 S80 (2) SA (P) EA	6052 S80 (2) SA T-2EXT) EA	
	46	R7-1R	NO PARKING ANY TIME →	12X18		X								1											
	47	D3-1B	Georgetown St 3100	66X12		X								1											
		D3-1B	Buffalo Spdwy 5900	50X12		X																			
		R1-1	STOP	36X36		X																			
	48	R7-2aL	NO PARKING 7:00 AM TO 9:00 AM ←	12X18		X								1											
	49	D3-1B	Lafayette St 3100	57X12		X								1											
		D3-1B	Buffalo Spdwy 5900	50X12		X																			
		R1-1	STOP	36X36		X																			
11 OF 15	50	D3-1B	Plumb St 3200	47X12		X								1											
		D3-1B	Buffalo Spdwy 5900	50X12		X																			
		R1-1	STOP	36X36		X																			
	51	R7-2aDBL	NO PARKING 4:00 PM TO 7:00 PM ↔	12X18		X								1											
	52	D3-1B	Tangley St 3200	53X12		X								1											
		D3-1B	Buffalo Spdwy 5800	50X12		X																			
		R1-1	STOP	36X36		X																			
	53	R2-1	SPEED LIMIT XX	30X36		X								1											
	54	R7-2aDBL	NO PARKING 7:00 AM TO 9:00 AM ↔	12X18		X								1											
	55	D3-1B	Plumb St 3100	47X12		X								1											
		D3-1B	Buffalo Spdwy 5800	50X12		X																			
		R1-1	STOP	36X36		X																			
	56	R7-2aDBL	NO PARKING 7:00 AM TO 9:00 AM ↔	12X18		X								1											
	57	D3-1B	Tangley St 3100	53X12		X								1											
		D3-1B	Buffalo Spdwy 5700	50X12		X																			
		R1-1	STOP	36X36		X																			
12 OF 15	58	R7-2aDBL	NO PARKING 4:00 PM TO 7:00 PM ↔	12X18		X								1											
	59	D3-1B	Robinhood St 3200	61X12		X								1											
		D3-1B	Buffalo Spdwy 5700	50X12		X																			
		R1-1	STOP	36X36		X																			
	60	R2-1	SPEED LIMIT XX	24X30		X	DRIVER FEEDBACK SPEED SIGN ASSEMBLY (SOLAR POWERED)																		
	61	R7-2aL	NO PARKING 4:00 PM TO 7:00 PM ←	12X18		X								1											
	62	D3-1B	Nottingham St 3200	65X12		X								1											
		D3-1B	Buffalo Spdwy 5600	50X12		X																			
		R1-1	STOP	36X36		X																			
	63	R7-2aDBL	NO PARKING 7:00 AM TO 9:00 AM ↔	12X18		X								1											
	64	D3-1B	Robinhood St 3100	61X12		X								1											
		D3-1B	Buffalo Spdwy 5600	50X12		X																			
		R1-1	STOP	36X36		X																			
	65	R7-2aDBL	NO PARKING 7:00 AM TO 9:00 AM ↔	12X18		X								1											
	66	D3-1B	Quenby Ave 3100	51X12		X								1											
		D3-1B	Buffalo Spdwy 5600	50X12		X																			
		R1-1	STOP	36X36		X																			

GENERAL NOTES:

ALL SIGNS SHALL BE ERECTED ACCORDING TO THE LOCATION SHOWN ON THE LAYOUT SHEETS EXCEPT THAT THE ENGINEER MAY SHIFT A SIGN IN ORDER TO SECURE A MORE DESIRABLE LOCATION. THE CONTRACTOR WILL STAKE ALL SIGN LOCATIONS, AND NO CHANGES IN THOSE LOCATIONS SHALL BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.

ALUMINUM SIGN BLANKS(TY A)

Square Ft.	Min. Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

DISCLAIMER:
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City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

SUMMARY OF SMALL SIGNS

SHEET 3 OF 4

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		503
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

MODEL NAME: $MODELNAME$
FILE NAME: SOSS (Houston District Standard).dgn
ysh
$STATUS$

SUMMARY OF SMALL SIGNS

LAYOUT SHEET NO.	SIGN NO.	SIGN TYPE	SIGN TEXT	SIGN DIMENSIONS (IN)	PLYWOOD SIGNS	ALUMINIUM SIGNS TYPE A	644 - INS SM RD SN SUP & AM TYPE OF MOUNT																		
							6001 10BWG (1) SA (P) EA	6002 10BWG (1) SA (P-BM) EA	6004 10BWG (1) SA (T) EA	6005 10BWG (1) SA (T-2EXT) EA	6006 10BWG (1) SA (U) EA	6017 10BWG (2) SA (P) EA	6019 10BWG (2) SA (T-2EXT) EA	6027 S80 (1) SA (P) EA	6040 S80 (1) SA (P-BM) EA	6030 S80 (1) SA (T) EA	6031 S80 (1) SA (T-2EXT) EA	6033 S80 (1) SA (U) EA	6034 S80 (1) SA (U-1EXT) EA	6035 S80 (1) SA (U-2EXT) EA	6036 S80 (1) SA (U-BM) EA	6037 S80 (1) SA (U-WC) EA	6050 S80 (2) SA (P) EA	6052 S80 (2) SA T-2EXT) EA	
12 OF 15	67	R7-2aR	NO PARKING 7:00 AM TO 9:00 AM →	12X18		X								1											
		R7-1L	NO PARKING ANY TIME ←	12X18		X																			
13 OF 15	68	R7-1R	NO PARKING ANY TIME →	12X18		X								1											
	69	R7-1DBL	NO PARKING ANY TIME ↔	12X18		X								1											
	70	D3-1B	Nottingham St 3100	65X12		X								1											
		D3-1B	Buffalo Spdwy 5500	50X12		X																			
		R1-1	STOP	36X36		X																			
	71	R7-1DBL	NO PARKING ANY TIME ↔	12X18		X								1											
14 OF 15	72	D3-1B	Albans Rd 3200	49X12		X								1											
		D3-1B	Buffalo Spdwy 5400	50X12		X																			
		R1-1	STOP	36X36		X																			
	73	R2-1	SPEED LIMIT XX	30X36		X								1											
	74	R7-1L	NO PARKING ANY TIME ←	12X18		X								1											
	75	R10-7	DO NOT BLOCK INTERSECTION	24X30		X								1											
	76	D3-1B	Albans Rd 3100	49X12		X								1											
		D3-1B	Buffalo Spdwy 5300	50X12		X																			
		R1-1	STOP	36X36		X																			
	77	R7-1DBL	NO PARKING ANY TIME ↔	12X18		X								1											
	78	R10-7	DO NOT BLOCK INTERSECTION	24X30		X								1											
	79	D3-1B	Wroxton Rd 3100	54X12		X								1											
		D3-1B	Buffalo Spdwy 5300	50X12		X																			
		R1-1	STOP	36X36		X																			

GENERAL NOTES:

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City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

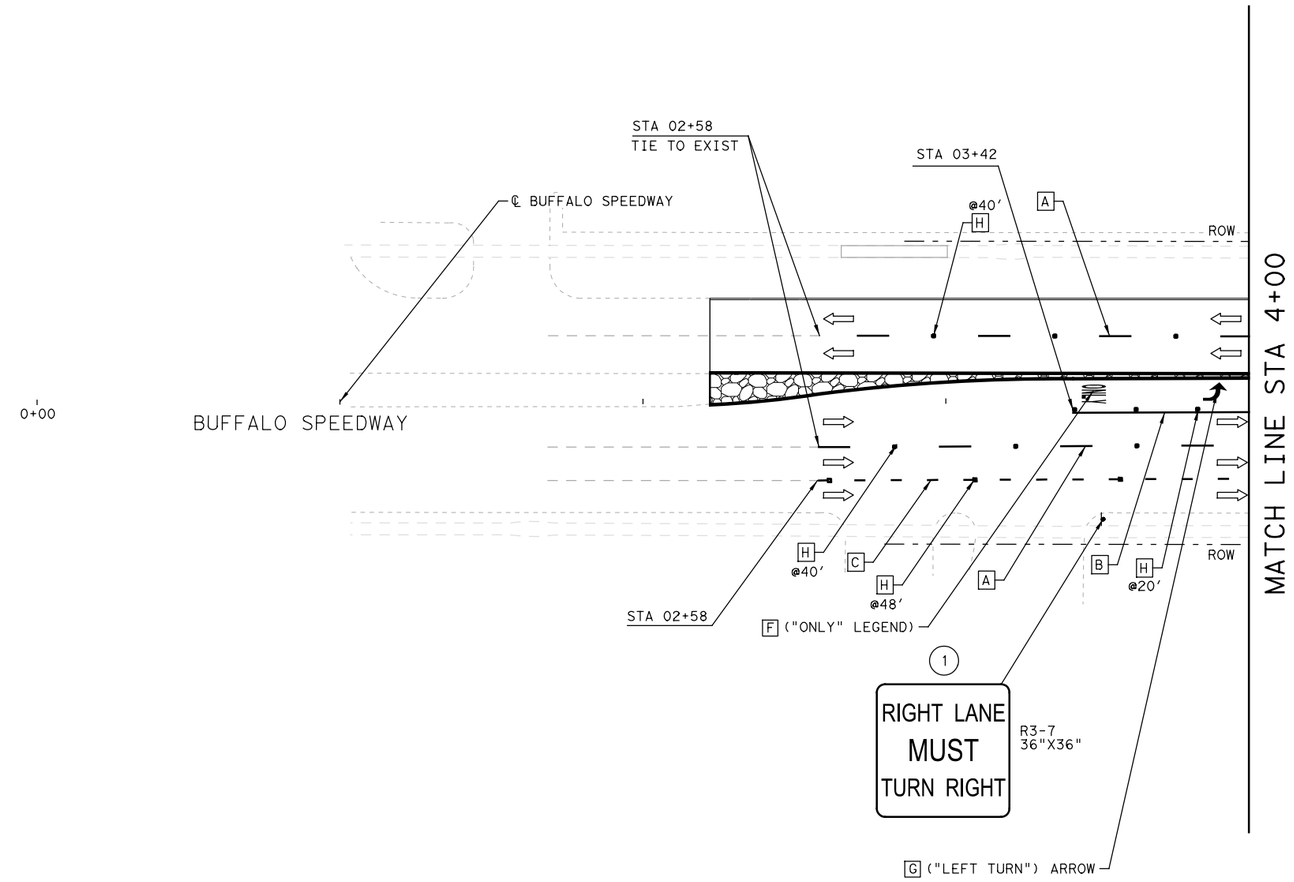
SUMMARY OF SMALL SIGNS

SHEET 4 OF 4

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		504
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

ysh
$STATUS$
MODEL NAME: $MODELNAME$
FILE NAME: SOSS (Houston District Standard).dgn



0 50' 100'

SCALE IN FEET

LEGENDS:

- A — RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- B — RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- C — REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
- D — PREFAB PAV MRK TY C (W) 12"(SLD)
- E — PREFAB PAV MRK TY C (W) 24"(SLD)
- F — PREFAB PAV MRK TY C (W) (WORD)
- G — PREFAB PAV MRK TY C (W) (ARROW)
- H — REFL PAV MRKR TY I-C
- I — REFL PAV MRKR TY II-A-A
- J — TRAFFIC BUTTON TY W
- K — TRAFFIC BUTTON TY Y
- L — REFL PAV MRK TY II (Y) (ISLAND)
- (#) — SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

STATE OF TEXAS
ZAHIDUL SIDDIQUE
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BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 0+00 TO STA 4+00

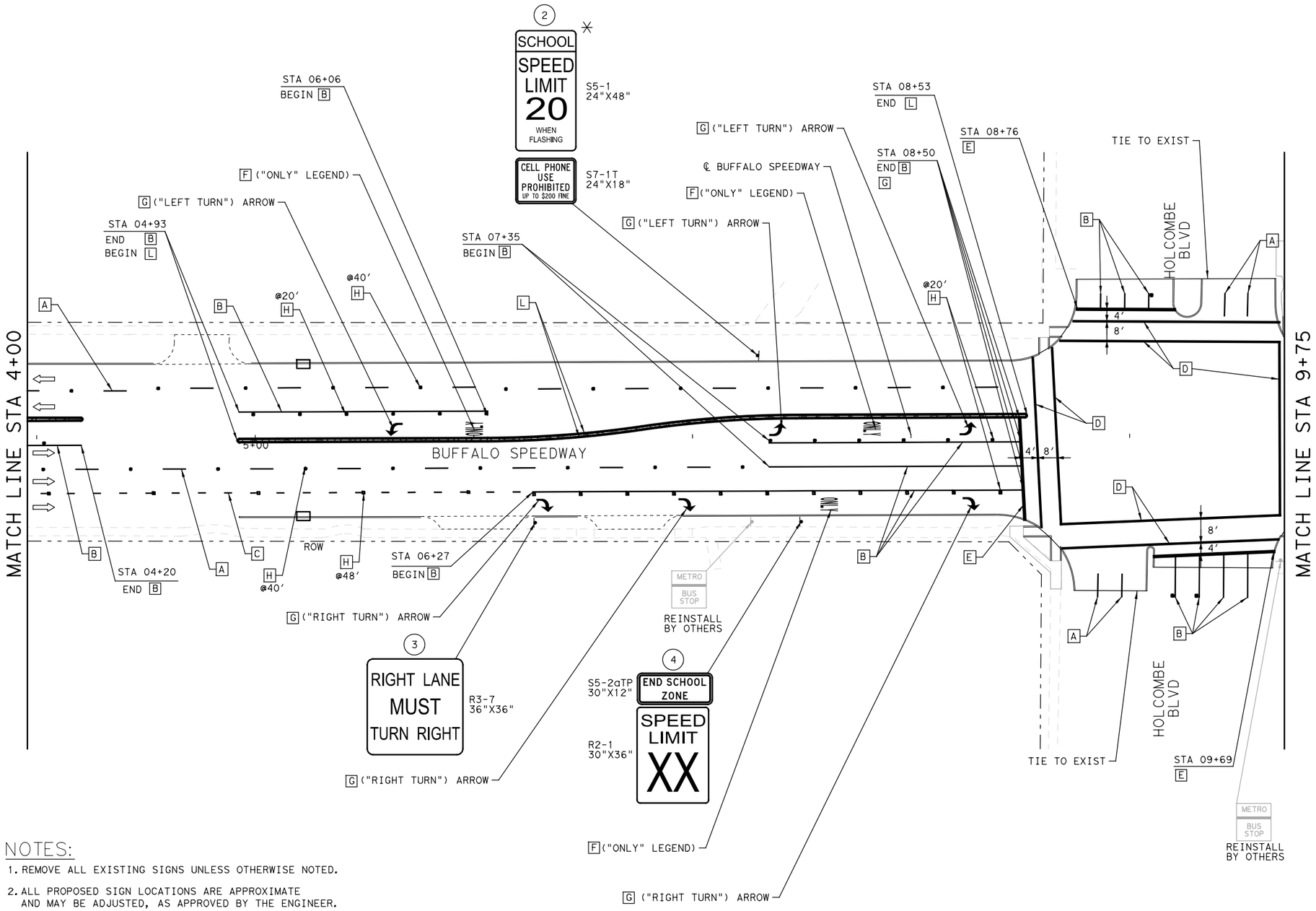
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			505
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	

NOTES:

1. REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.
2. ALL PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED, AS APPROVED BY THE ENGINEER.
3. BUFFALO SPEEDWAY CENTERLINE IS NOT SHOWN FOR CLARITY.
4. REFER TO PAVEMENT MARKING DETAILS SHEET FOR DETAILS OF CENTER LINE, BROKEN LINE, AND CHANNELIZING LINE.

INSTALL PERMANENT PAVEMENT MARKINGS AND MARKERS, BEYOND THE PAVING LIMITS, REMOVED DURING THE CONSTRUCTION IN THEIR ORIGINAL LOCATIONS. THESE MARKINGS ARE NOT SHOWN IN THE PLANS.



0 50′ 100′

SCALE IN FEET

LEGENDS:

- [A] RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- [B] RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- [C] REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
- [D] PREFAB PAV MRK TY C (W) 12"(SLD)
- [E] PREFAB PAV MRK TY C (W) 24"(SLD)
- [F] PREFAB PAV MRK TY C (W) (WORD)
- [G] PREFAB PAV MRK TY C (W) (ARROW)
- [H] REFL PAV MRKR TY I-C
- [I] REFL PAV MRKR TY II-A-A
- [J] TRAFFIC BUTTON TY W
- [K] TRAFFIC BUTTON TY Y
- [L] REFL PAV MRK TY II (Y) (ISLAND)
- (#) SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

NOTES:

1. REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.
2. ALL PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED, AS APPROVED BY THE ENGINEER.
3. BUFFALO SPEEDWAY CENTERLINE IS NOT SHOWN FOR CLARITY.
4. REFER TO PAVEMENT MARKING DETAILS SHEET FOR DETAILS OF CENTER LINE, BROKEN LINE, AND CHANNELIZING LINE.

⚹ ROADSIDE FLASHING BEACON ASSEMBLY (SOLAR POWERED)

INSTALL PERMANENT PAVEMENT MARKINGS AND MARKERS, BEYOND THE PAVING LIMITS, REMOVED DURING THE CONSTRUCTION IN THEIR ORIGINAL LOCATIONS. THESE MARKERS ARE NOT SHOWN IN THE PLANS.

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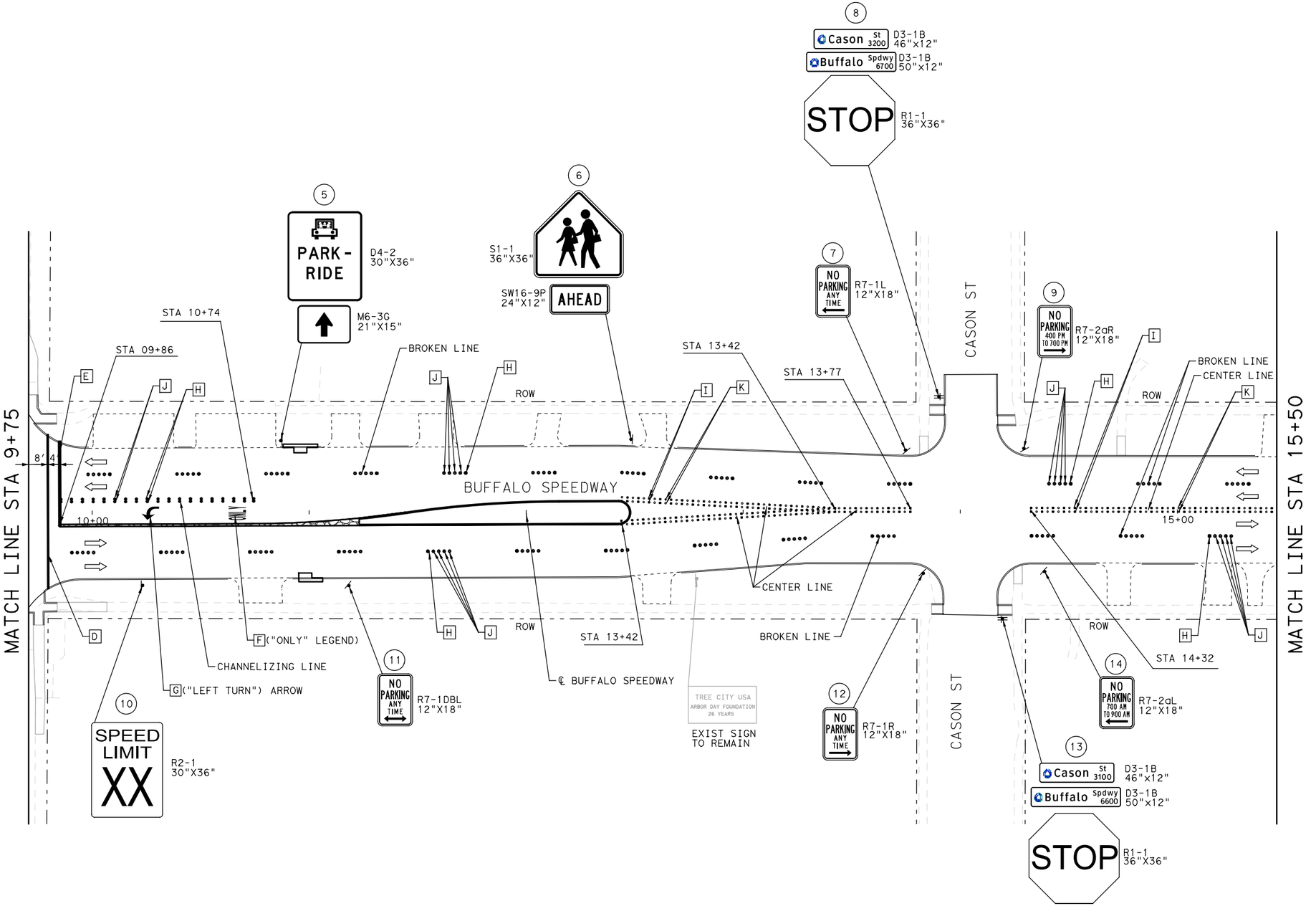
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 4+00 TO STA 9+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		506
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



NOTES:

1. REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.
2. ALL PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED, AS APPROVED BY THE ENGINEER.
3. BUFFALO SPEEDWAY CENTERLINE IS NOT SHOWN FOR CLARITY.
4. REFER TO PAVEMENT MARKING DETAILS SHEET FOR DETAILS OF CENTER LINE, BROKEN LINE, AND CHANNELIZING LINE.
5. USE EPOXY ADHESIVE FOR ALL MARKERS AND BUTTONS.

0 50′ 100′

SCALE IN FEET

LEGENDS:

- [A] RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- [B] RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- [C] REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
- [D] PREFAB PAV MRK TY C (W) 12"(SLD)
- [E] PREFAB PAV MRK TY C (W) 24"(SLD)
- [F] PREFAB PAV MRK TY C (W) (WORD)
- [G] PREFAB PAV MRK TY C (W) (ARROW)
- [H] REFL PAV MRKR TY I-C
- [I] REFL PAV MRKR TY II-A-A
- [J] TRAFFIC BUTTON TY W
- [K] TRAFFIC BUTTON TY Y
- [L] REFL PAV MRK TY II (Y) (ISLAND)
- (#) SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

STATE OF TEXAS
ZAHIDUL SIDDIQUE
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08/24/20

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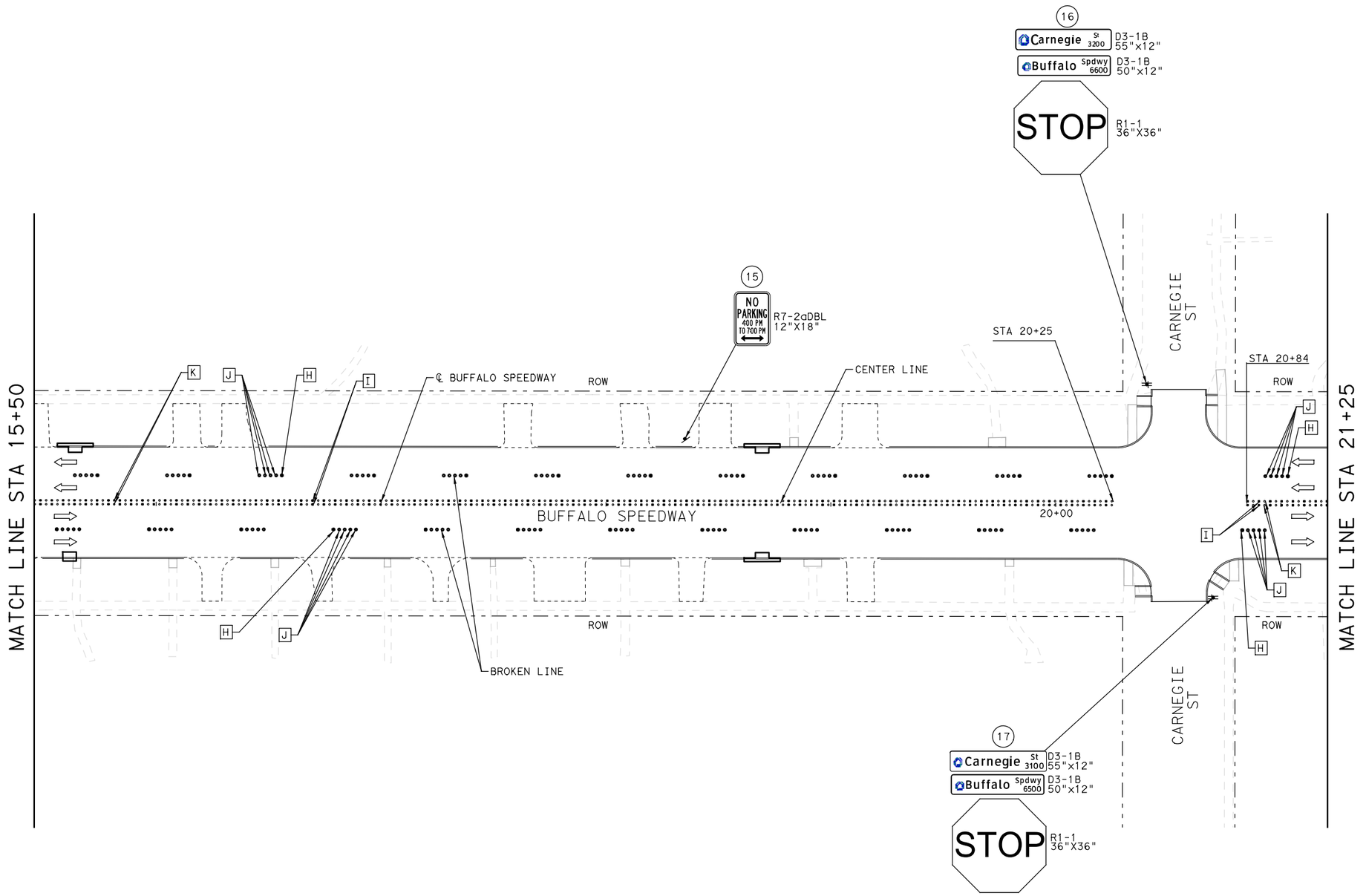
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 9+75 TO STA 15+50

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		507
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50′ 100′

SCALE IN FEET

LEGENDS:

- [A] RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- [B] RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- [C] REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
- [D] PREFAB PAV MRK TY C (W) 12"(SLD)
- [E] PREFAB PAV MRK TY C (W) 24"(SLD)
- [F] PREFAB PAV MRK TY C (W) (WORD)
- [G] PREFAB PAV MRK TY C (W) (ARROW)
- [H] REFL PAV MRKR TY I-C
- [I] REFL PAV MRKR TY II-A-A
- [J] TRAFFIC BUTTON TY W
- [K] TRAFFIC BUTTON TY Y
- [L] REFL PAV MRK TY II (Y) (ISLAND)
- (#) SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

NOTES:

1. REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.
2. ALL PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED, AS APPROVED BY THE ENGINEER.
3. BUFFALO SPEEDWAY CENTERLINE IS NOT SHOWN FOR CLARITY.
4. REFER TO PAVEMENT MARKING DETAILS SHEET FOR DETAILS OF CENTER LINE, BROKEN LINE, AND CHANNELIZING LINE.
5. USE EPOXY ADHESIVE FOR ALL MARKERS AND BUTTONS.

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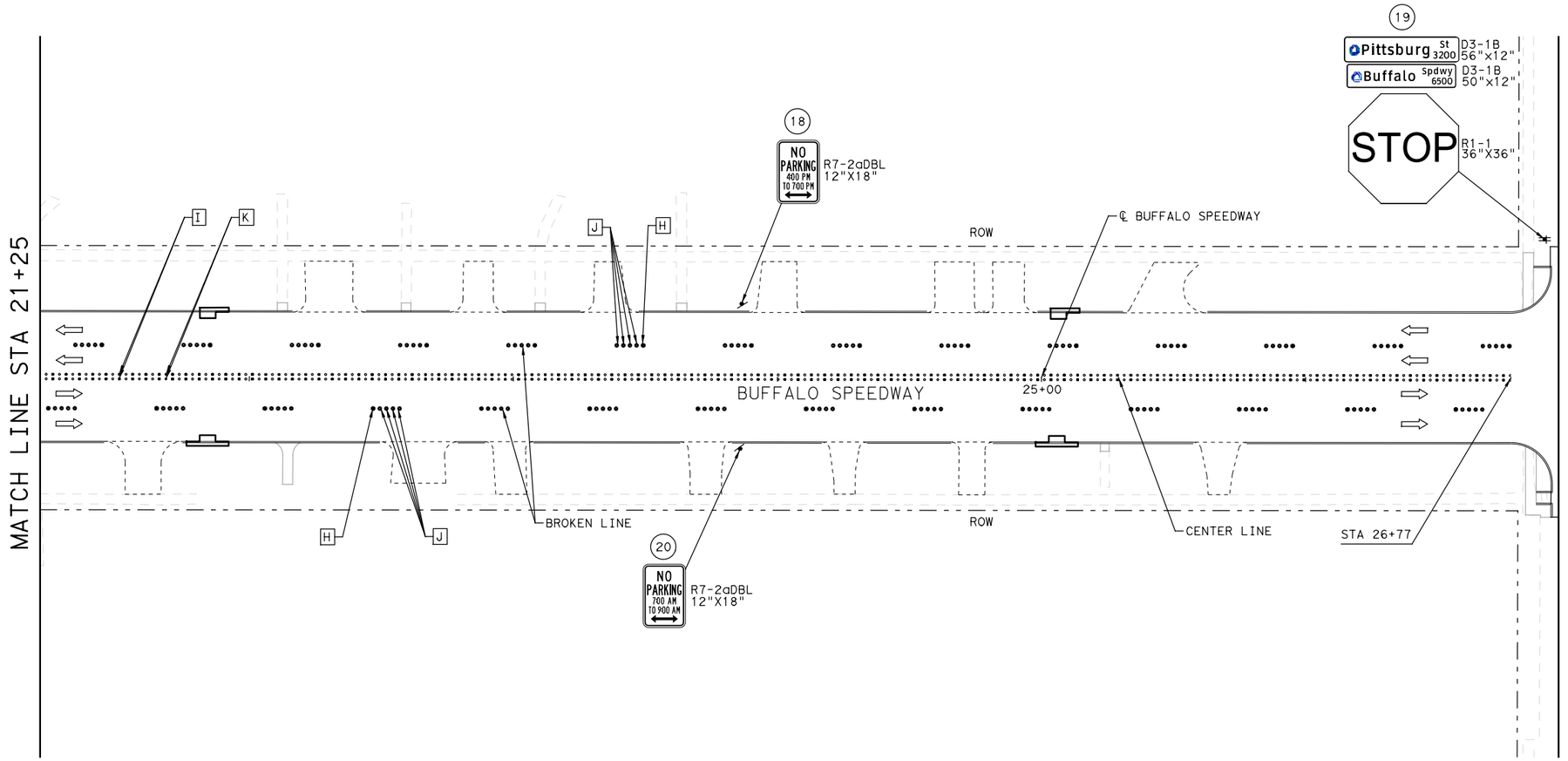
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 15+50 TO STA 21+25

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		508
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50′ 100′

SCALE IN FEET

LEGENDS:

- [A] RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- [B] RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- [C] REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
- [D] PREFAB PAV MRK TY C (W) 12"(SLD)
- [E] PREFAB PAV MRK TY C (W) 24"(SLD)
- [F] PREFAB PAV MRK TY C (W) (WORD)
- [G] PREFAB PAV MRK TY C (W) (ARROW)
- [H] REFL PAV MRKR TY I-C
- [I] REFL PAV MRKR TY II-A-A
- [J] TRAFFIC BUTTON TY W
- [K] TRAFFIC BUTTON TY Y
- [L] REFL PAV MRK TY II (Y) (ISLAND)
- (#) SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

NOTES:

1. REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.
2. ALL PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED, AS APPROVED BY THE ENGINEER.
3. BUFFALO SPEEDWAY CENTERLINE IS NOT SHOWN FOR CLARITY.
4. REFER TO PAVEMENT MARKING DETAILS SHEET FOR DETAILS OF CENTER LINE, BROKEN LINE, AND CHANNELIZING LINE.
5. USE EPOXY ADHESIVE FOR ALL MARKERS AND BUTTONS.

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Texas Registered Engineering Firm F-2144

City of West University Place

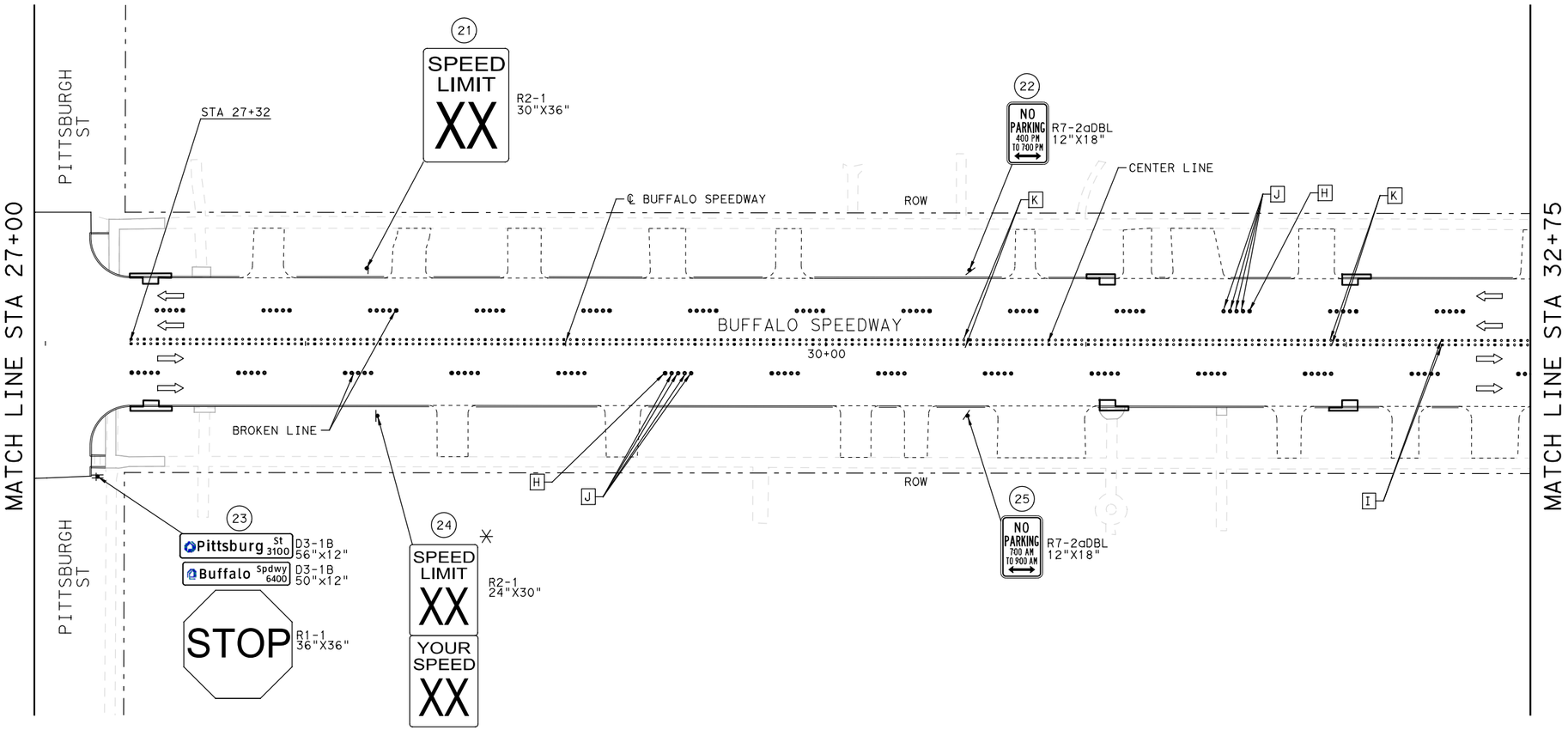
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 21+25 TO STA 27+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		509
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50′ 100′

SCALE IN FEET

LEGENDS:

- [A] RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- [B] RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- [C] REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
- [D] PREFAB PAV MRK TY C (W) 12"(SLD)
- [E] PREFAB PAV MRK TY C (W) 24"(SLD)
- [F] PREFAB PAV MRK TY C (W) (WORD)
- [G] PREFAB PAV MRK TY C (W) (ARROW)
- [H] REFL PAV MRKR TY I-C
- [I] REFL PAV MRKR TY II-A-A
- [J] TRAFFIC BUTTON TY W
- [K] TRAFFIC BUTTON TY Y
- [L] REFL PAV MRK TY II (Y) (ISLAND)
- (#) SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

NOTES:

1. REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.
2. ALL PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED, AS APPROVED BY THE ENGINEER.
3. BUFFALO SPEEDWAY CENTERLINE IS NOT SHOWN FOR CLARITY.
4. REFER TO PAVEMENT MARKING DETAILS SHEET FOR DETAILS OF CENTER LINE, BROKEN LINE, AND CHANNELIZING LINE.
5. USE EPOXY ADHESIVE FOR ALL MARKERS AND BUTTONS.

⚹ RADAR SPEED SIGN ASSEMBLY, WILL BE PAID UNDER PAY ITEM "4018 6001". REFER TO CITY OF HOUSTON TYPICAL DETAILS.

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED PROFESSIONAL ENGINEER
08/24/20

infraTECH Engineers & Innovators, LLC
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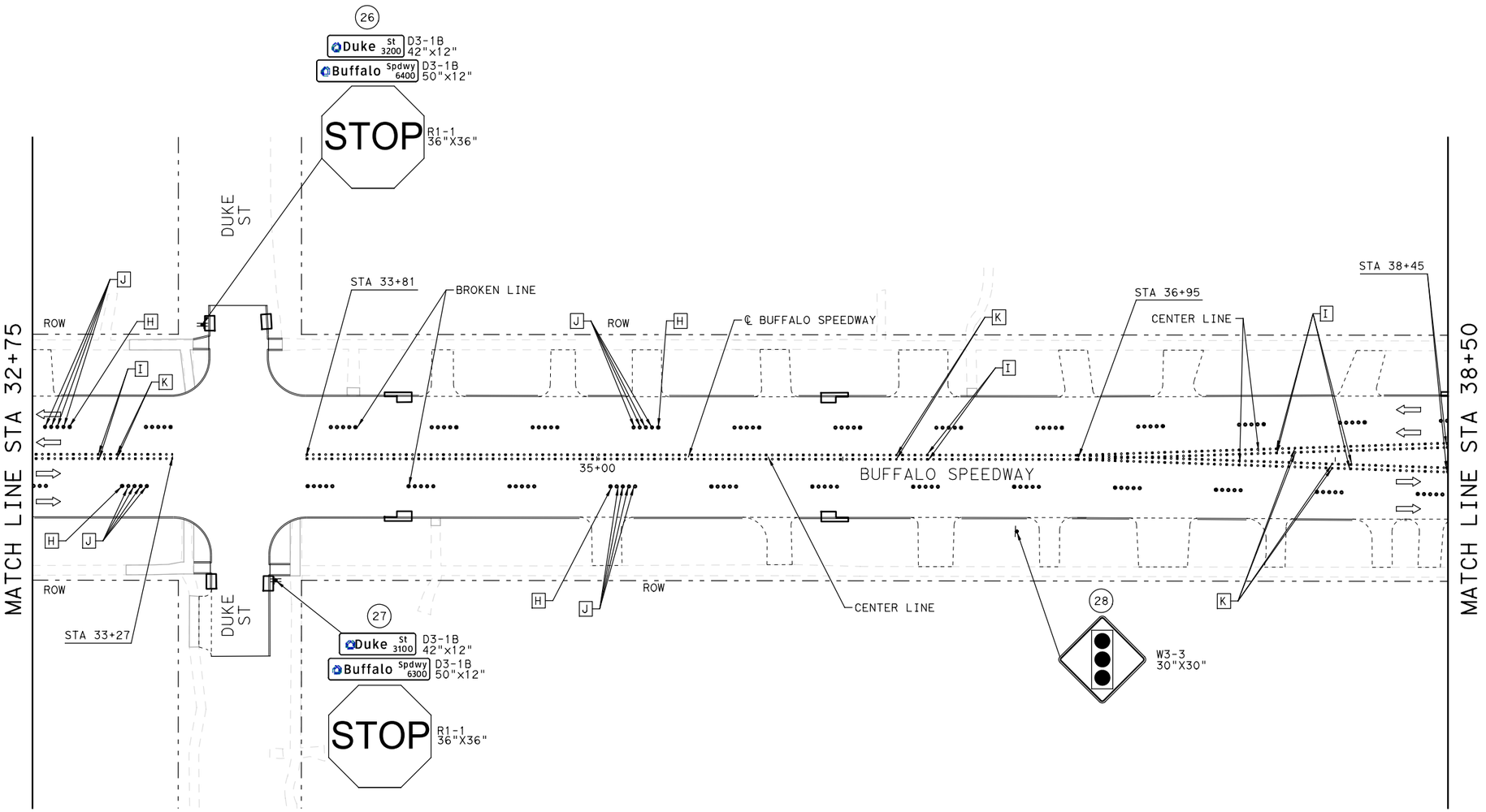
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 27+00 TO STA 32+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		510
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



NOTES:

1. REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.
2. ALL PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED, AS APPROVED BY THE ENGINEER.
3. BUFFALO SPEEDWAY CENTERLINE IS NOT SHOWN FOR CLARITY.
4. REFER TO PAVEMENT MARKING DETAILS SHEET FOR DETAILS OF CENTER LINE, BROKEN LINE, AND CHANNELIZING LINE.
5. USE EPOXY ADHESIVE FOR ALL MARKERS AND BUTTONS.

0 50′ 100′

SCALE IN FEET

LEGENDS:

- [A] RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- [B] RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- [C] REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
- [D] PREFAB PAV MRK TY C (W) 12"(SLD)
- [E] PREFAB PAV MRK TY C (W) 24"(SLD)
- [F] PREFAB PAV MRK TY C (W) (WORD)
- [G] PREFAB PAV MRK TY C (W) (ARROW)
- [H] REFL PAV MRKR TY I-C
- [I] REFL PAV MRKR TY II-A-A
- [J] TRAFFIC BUTTON TY W
- [K] TRAFFIC BUTTON TY Y
- [L] REFL PAV MRK TY II (Y) (ISLAND)
- (#) SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED PROFESSIONAL ENGINEER
08/24/20

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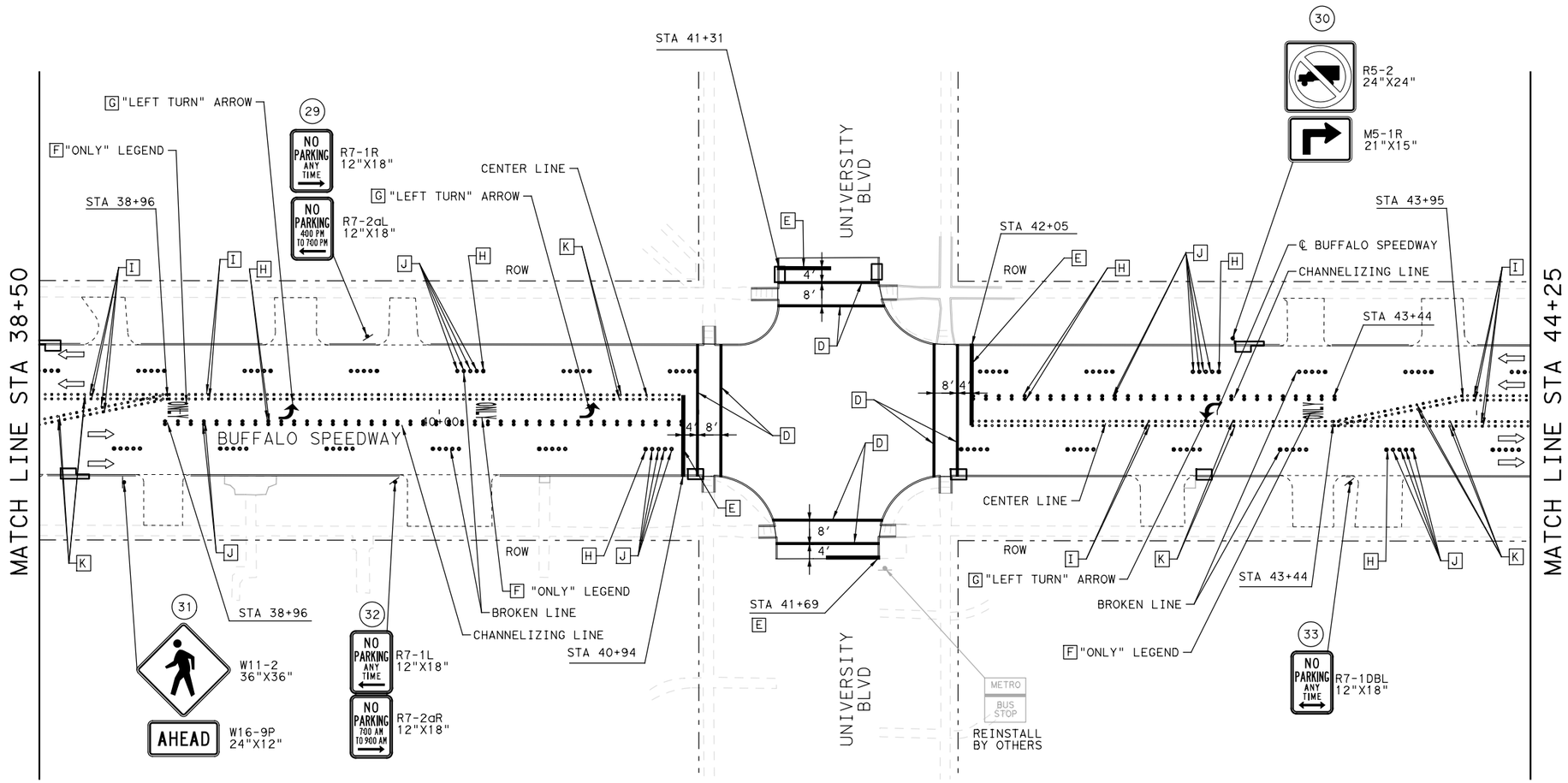
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 32+75 TO STA 38+50

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		511
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50′ 100′

SCALE IN FEET

LEGENDS:

- A — RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- B — RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- C — REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
- D — PREFAB PAV MRK TY C (W) 12"(SLD)
- E — PREFAB PAV MRK TY C (W) 24"(SLD)
- F — PREFAB PAV MRK TY C (W) (WORD)
- G — PREFAB PAV MRK TY C (W) (ARROW)
- H — REFL PAV MRKR TY I-C
- I — REFL PAV MRKR TY II-A-A
- J — TRAFFIC BUTTON TY W
- K — TRAFFIC BUTTON TY Y
- L — REFL PAV MRK TY II (Y) (ISLAND)
- (#) — SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

NOTES:

1. REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.
2. ALL PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED, AS APPROVED BY THE ENGINEER.
3. BUFFALO SPEEDWAY CENTERLINE IS NOT SHOWN FOR CLARITY.
4. REFER TO PAVEMENT MARKING DETAILS SHEET FOR DETAILS OF CENTER LINE, BROKEN LINE, AND CHANNELIZING LINE.
5. USE EPOXY ADHESIVE FOR ALL MARKERS AND BUTTONS.

STATE OF TEXAS
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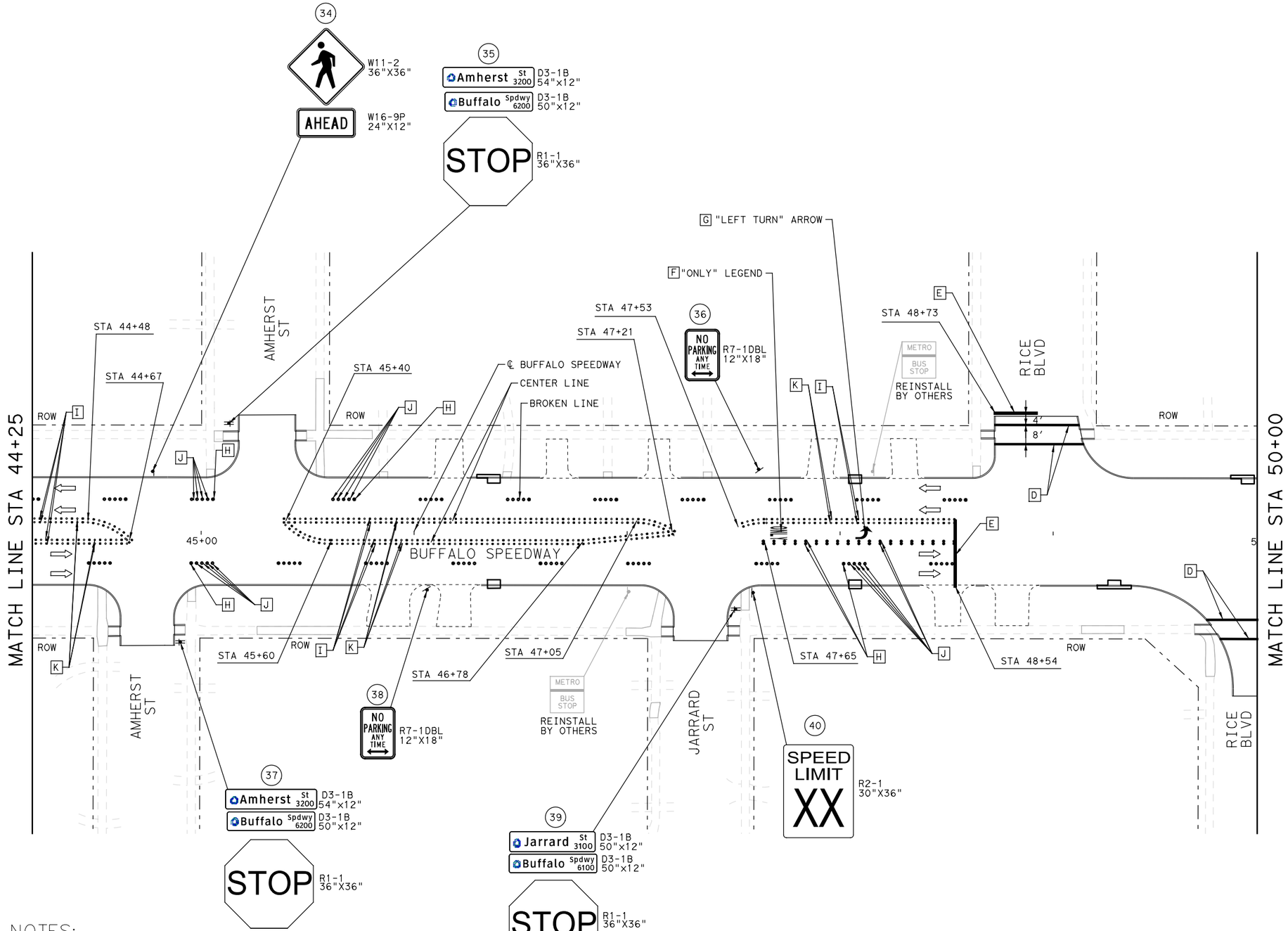
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 38+50 TO STA 44+25

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		512
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



NOTES:

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4. REFER TO PAVEMENT MARKING DETAILS SHEET FOR DETAILS OF CENTER LINE, BROKEN LINE, AND CHANNELIZING LINE.
5. USE EPOXY ADHESIVE FOR ALL MARKERS AND BUTTONS.

0 50′ 100′

SCALE IN FEET

LEGENDS:

- [A] RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- [B] RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- [C] REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
- [D] PREFAB PAV MRK TY C (W) 12"(SLD)
- [E] PREFAB PAV MRK TY C (W) 24"(SLD)
- [F] PREFAB PAV MRK TY C (W) (WORD)
- [G] PREFAB PAV MRK TY C (W) (ARROW)
- [H] REFL PAV MRKR TY I-C
- [I] REFL PAV MRKR TY II-A-A
- [J] TRAFFIC BUTTON TY W
- [K] TRAFFIC BUTTON TY Y
- [L] REFL PAV MRK TY II (Y) (ISLAND)
- (#) SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER
08/24/20

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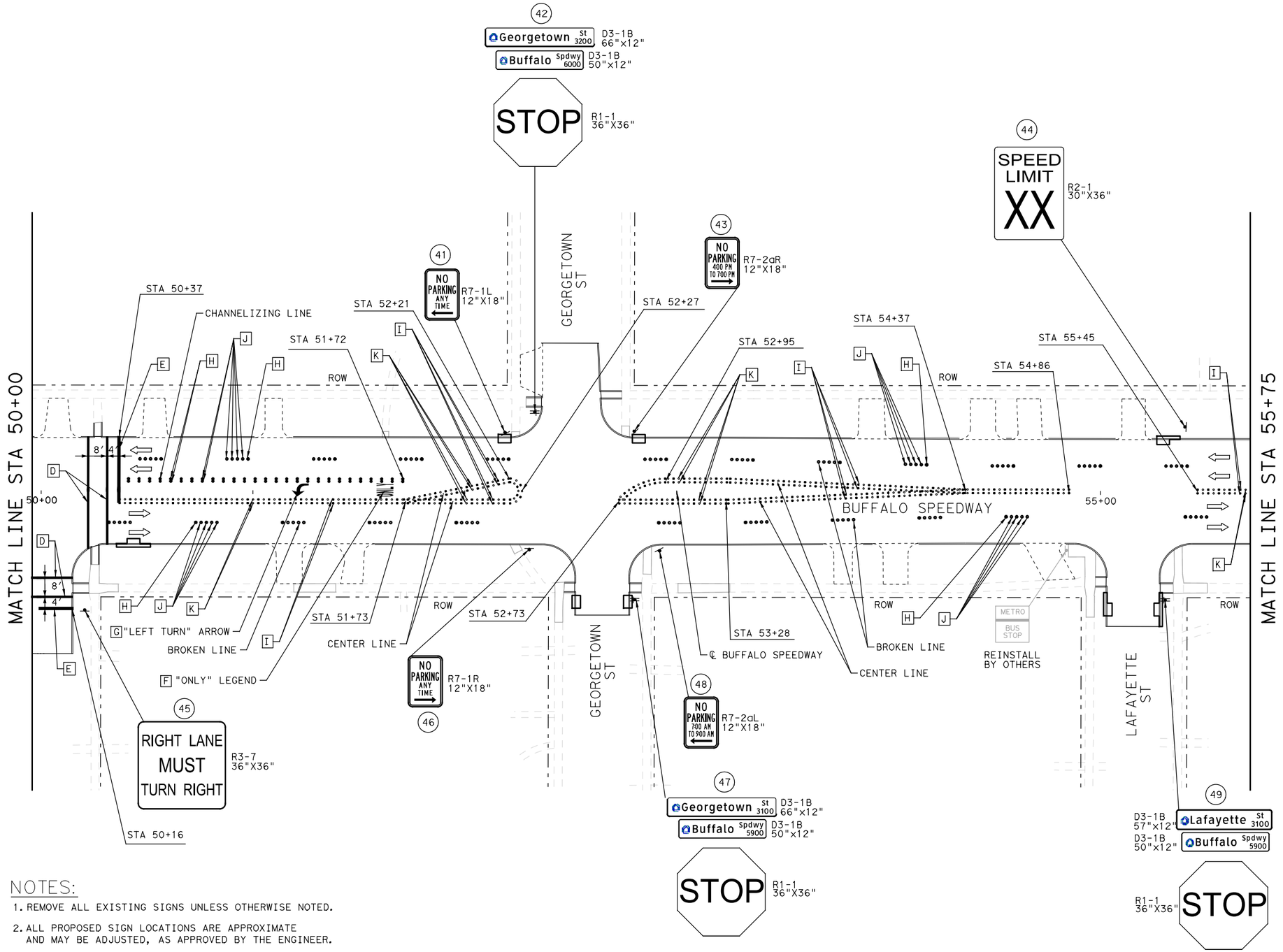
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 44+25 TO STA 50+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			513
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



NOTES:

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4. REFER TO PAVEMENT MARKING DETAILS SHEET FOR DETAILS OF CENTER LINE, BROKEN LINE, AND CHANNELIZING LINE.
5. USE EPOXY ADHESIVE FOR ALL MARKERS AND BUTTONS.

0 50′ 100′

SCALE IN FEET

LEGENDS:

- [A] RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- [B] RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- [C] REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
- [D] PREFAB PAV MRK TY C (W) 12"(SLD)
- [E] PREFAB PAV MRK TY C (W) 24"(SLD)
- [F] PREFAB PAV MRK TY C (W) (WORD)
- [G] PREFAB PAV MRK TY C (W) (ARROW)
- [H] REFL PAV MRKR TY I-C
- [I] REFL PAV MRKR TY II-A-A
- [J] TRAFFIC BUTTON TY W
- [K] TRAFFIC BUTTON TY Y
- [L] REFL PAV MRK TY II (Y) (ISLAND)
- (#) SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED PROFESSIONAL ENGINEER
08/24/20

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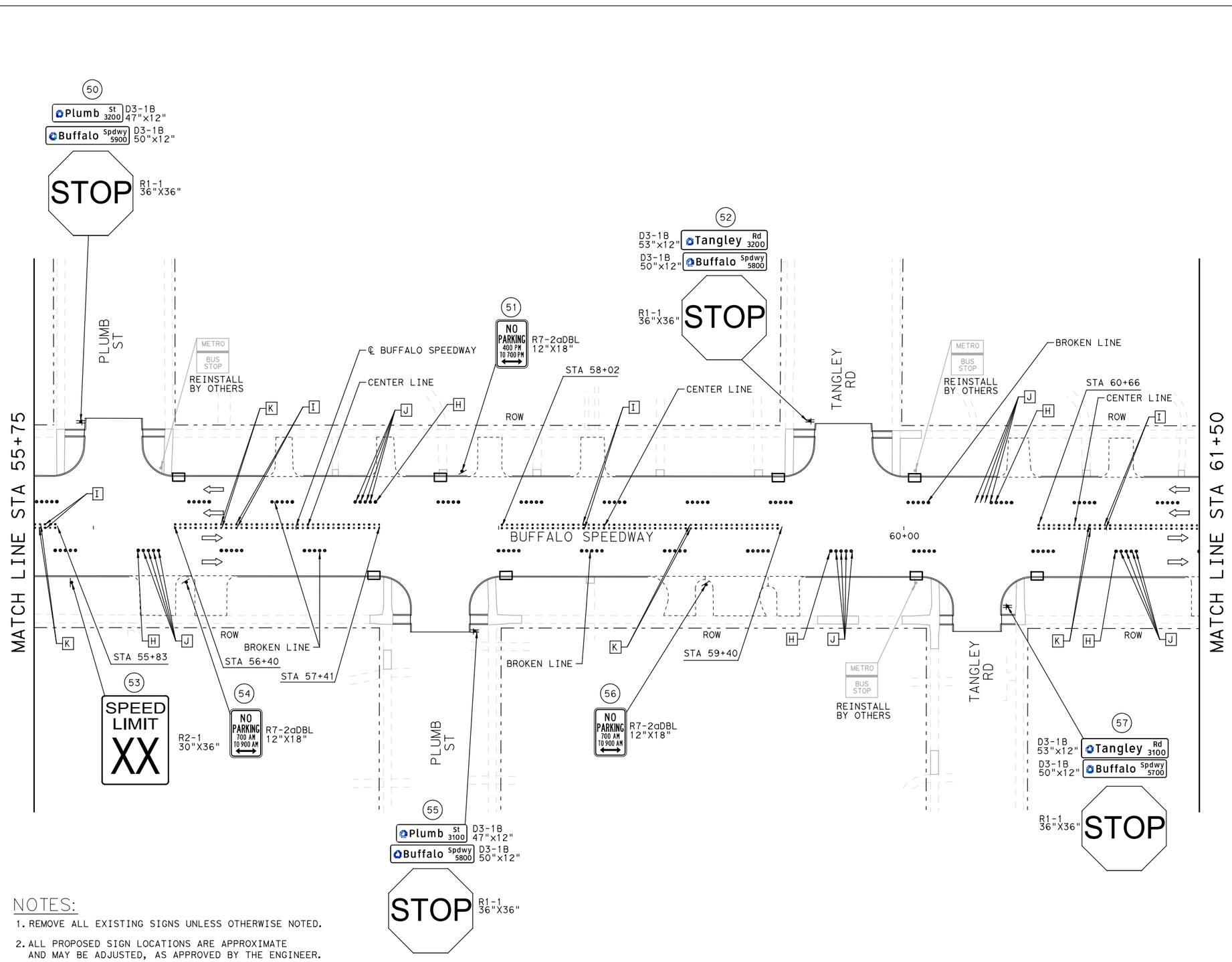
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 50+00 TO STA 55+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		514
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



NOTES:

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4. REFER TO PAVEMENT MARKING DETAILS SHEET FOR DETAILS OF CENTER LINE, BROKEN LINE, AND CHANNELIZING LINE.
5. USE EPOXY ADHESIVE FOR ALL MARKERS AND BUTTONS.

0 50′ 100′

SCALE IN FEET

LEGENDS:

- [A] RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- [B] RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- [C] REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
- [D] PREFAB PAV MRK TY C (W) 12"(SLD)
- [E] PREFAB PAV MRK TY C (W) 24"(SLD)
- [F] PREFAB PAV MRK TY C (W) (WORD)
- [G] PREFAB PAV MRK TY C (W) (ARROW)
- [H] REFL PAV MRKR TY I-C
- [I] REFL PAV MRKR TY II-A-A
- [J] TRAFFIC BUTTON TY W
- [K] TRAFFIC BUTTON TY Y
- [L] REFL PAV MRK TY II (Y) (ISLAND)
- (#) SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED PROFESSIONAL ENGINEER
08/24/20

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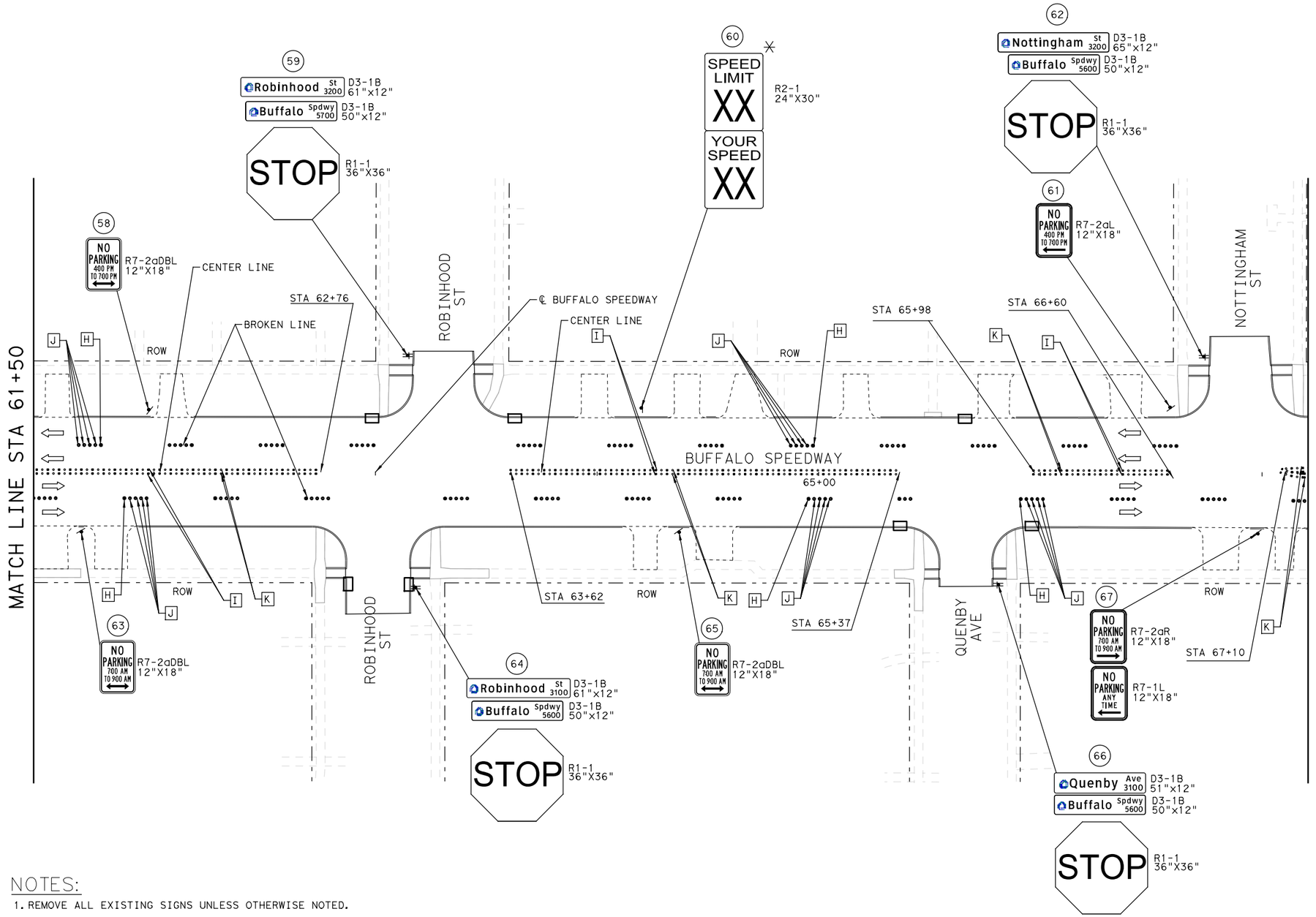
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 55+75 TO STA 61+50

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			515
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



0 50′ 100′

SCALE IN FEET

LEGENDS:

- [A] RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- [B] RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- [C] REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
- [D] PREFAB PAV MRK TY C (W) 12"(SLD)
- [E] PREFAB PAV MRK TY C (W) 24"(SLD)
- [F] PREFAB PAV MRK TY C (W) (WORD)
- [G] PREFAB PAV MRK TY C (W) (ARROW)
- [H] REFL PAV MRKR TY I-C
- [I] REFL PAV MRKR TY II-A-A
- [J] TRAFFIC BUTTON TY W
- [K] TRAFFIC BUTTON TY Y
- [L] REFL PAV MRK TY II (Y) (ISLAND)
- (#) SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

NOTES:

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5. USE EPOXY ADHESIVE FOR ALL MARKERS AND BUTTONS.

⚹ RADAR SPEED SIGN ASSEMBLY, WILL BE PAID UNDER PAY ITEM "4018 6001". REFER TO CITY OF HOUSTON TYPICAL DETAILS.

STATE OF TEXAS
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08/24/20

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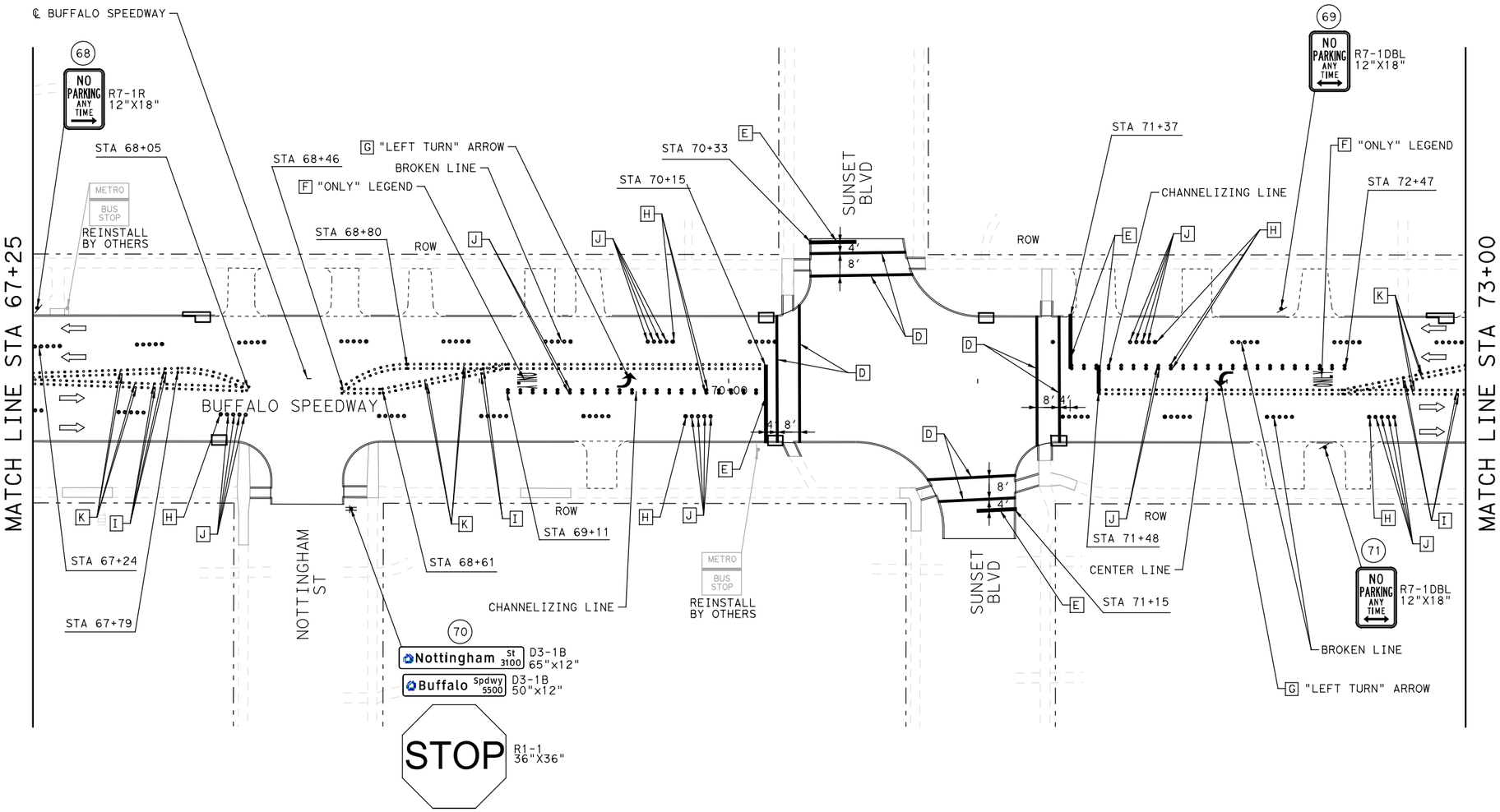
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 61+50 TO STA 67+25

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		516
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



NOTES:

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5. USE EPOXY ADHESIVE FOR ALL MARKERS AND BUTTONS.

0 50′ 100′

SCALE IN FEET

LEGENDS:

- [A] RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- [B] RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- [C] REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
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- [E] PREFAB PAV MRK TY C (W) 24"(SLD)
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- [G] PREFAB PAV MRK TY C (W) (ARROW)
- [H] REFL PAV MRKR TY I-C
- [I] REFL PAV MRKR TY II-A-A
- [J] TRAFFIC BUTTON TY W
- [K] TRAFFIC BUTTON TY Y
- [L] REFL PAV MRK TY II (Y) (ISLAND)
- (#) SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER
08/24/20

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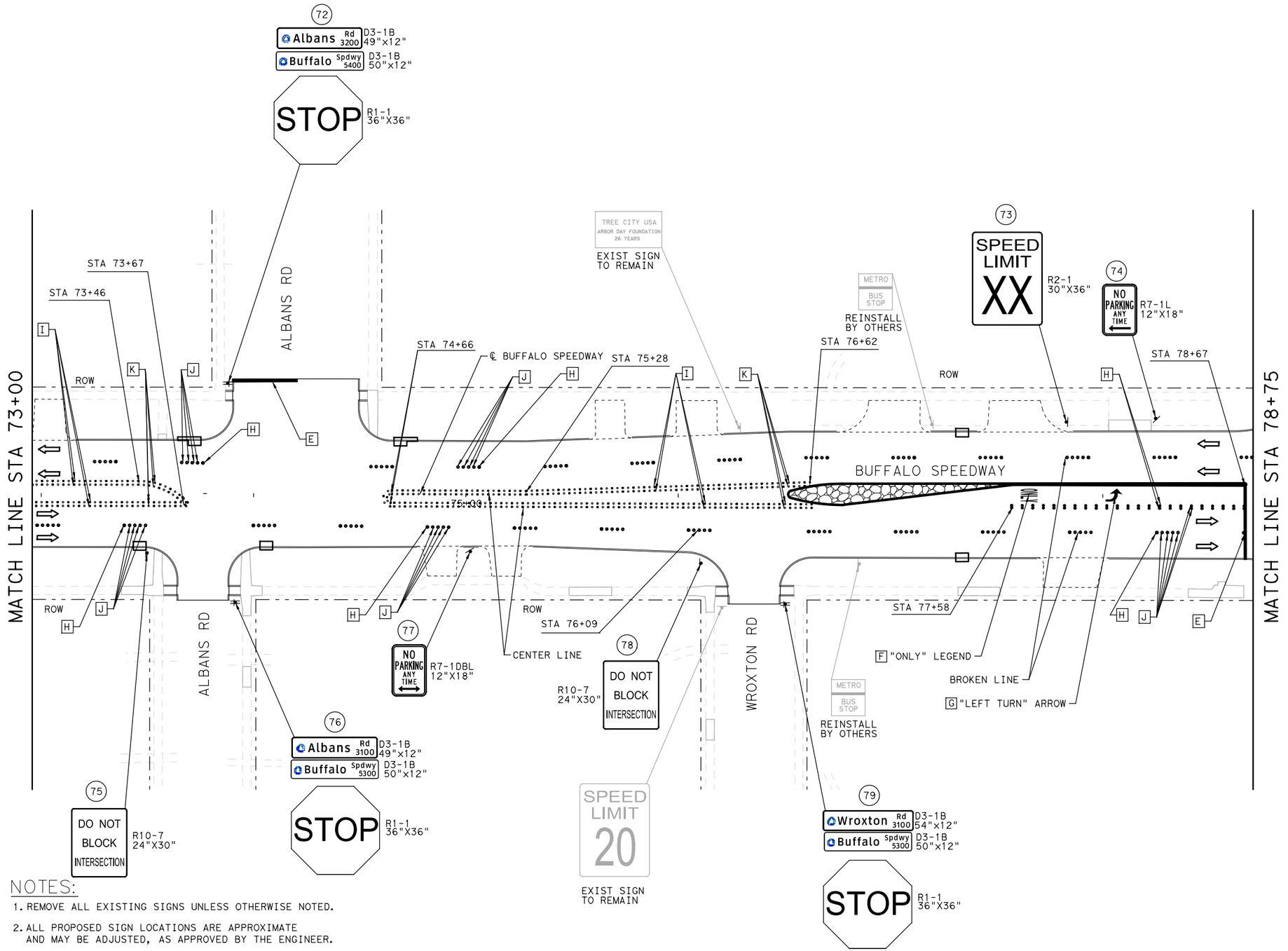
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 67+25 TO STA 73+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		517
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



NOTES:

1. REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.
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5. USE EPOXY ADHESIVE FOR ALL MARKERS AND BUTTONS.

0 50′ 100′

SCALE IN FEET

LEGENDS:

- [A] RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- [B] RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- [C] REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
- [D] PREFAB PAV MRK TY C (W) 12"(SLD)
- [E] PREFAB PAV MRK TY C (W) 24"(SLD)
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- [G] PREFAB PAV MRK TY C (W) (ARROW)
- [H] REFL PAV MRKR TY I-C
- [I] REFL PAV MRKR TY II-A-A
- [J] TRAFFIC BUTTON TY W
- [K] TRAFFIC BUTTON TY Y
- [L] REFL PAV MRK TY II (Y) (ISLAND)
- (#) SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER

08/24/20

infraTECH
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

11111 WILCREST GREEN DR, SUITE 410
HOUSTON, TEXAS 77042

FREESE AND NICHOLS

11200 Broadway Street, Suite 2320
Pearland, Texas 77584
Phone – (832) 456-4700
Fax – (832) 456-4701
Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

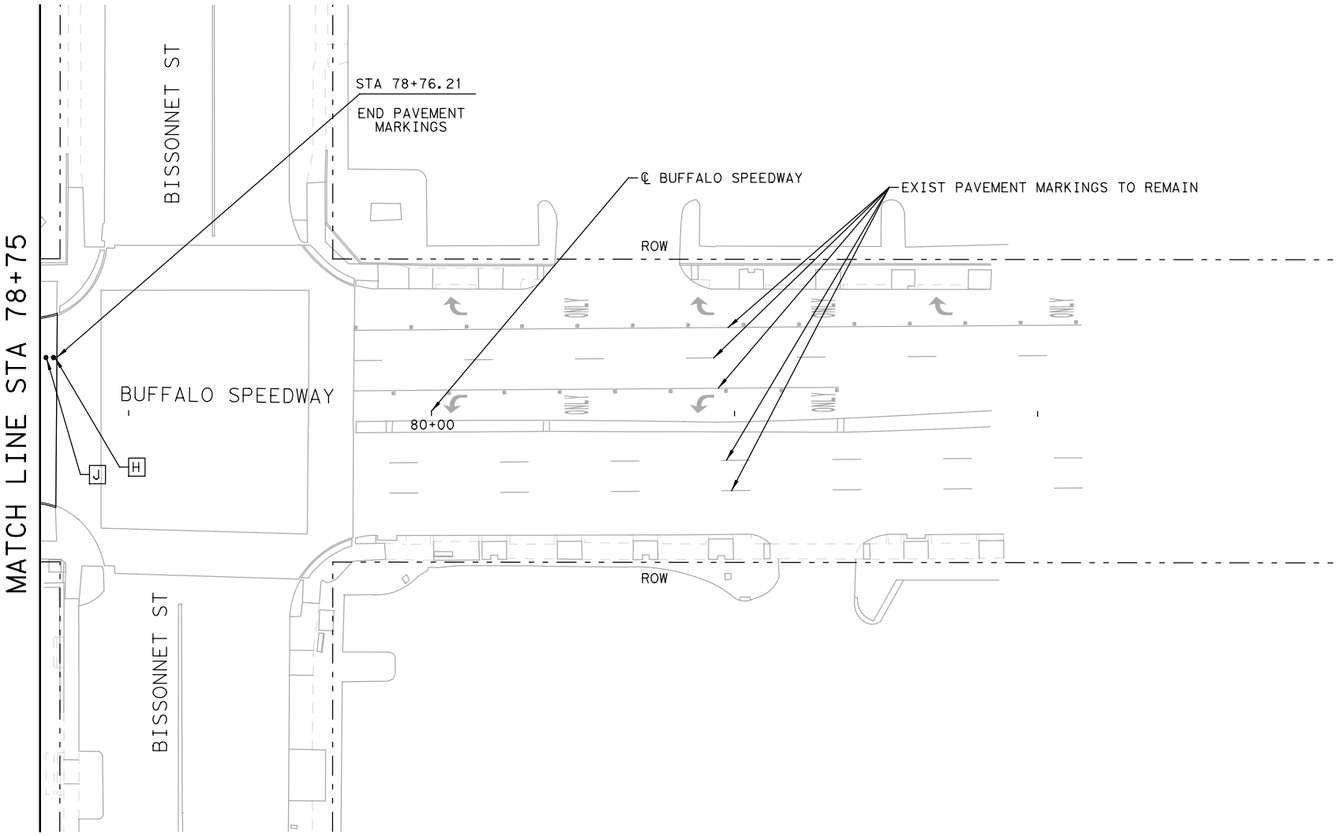
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 73+00 TO STA 78+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			518
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



NOTES:

1. REMOVE ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.
2. ALL PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED, AS APPROVED BY THE ENGINEER.
3. BUFFALO SPEEDWAY CENTERLINE IS NOT SHOWN FOR CLARITY.
4. REFER TO PAVEMENT MARKING DETAILS SHEET FOR DETAILS OF CENTER LINE, BROKEN LINE, AND CHANNELIZING LINE.
5. USE EPOXY ADHESIVE FOR ALL MARKERS AND BUTTONS.

0 50′ 100′

SCALE IN FEET

LEGENDS:

- [A] RE PM W/RET REQ TY I (W) 4"(BRK) (060MIL)
- [B] RE PM W/RET REQ TY I (W) 6"(SLD) (060MIL)
- [C] REFL PAV MRK TY I (W) 6"(LNDP) (060MIL)
- [D] PREFAB PAV MRK TY C (W) 12"(SLD)
- [E] PREFAB PAV MRK TY C (W) 24"(SLD)
- [F] PREFAB PAV MRK TY C (W) (WORD)
- [G] PREFAB PAV MRK TY C (W) (ARROW)
- [H] REFL PAV MRKR TY I-C
- [I] REFL PAV MRKR TY II-A-A
- [J] TRAFFIC BUTTON TY W
- [K] TRAFFIC BUTTON TY Y
- [L] REFL PAV MRK TY II (Y) (ISLAND)
- (#) SIGN NO.
- PROPOSED SIGN
- DIRECTION OF TRAFFIC

STATE OF TEXAS
ZAHIDUL SIDDIQUE
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City of West University Place

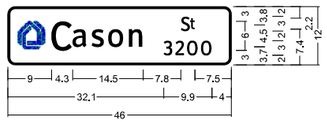
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGNING & PAVEMENT MARKING PLAN

STA 78+75 TO END

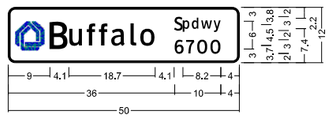
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			519
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



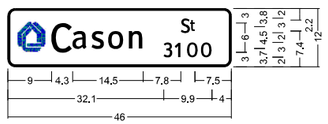
SIGN NO. 8

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Cason" ClearviewHwy-3-W;
"St" ClearviewHwy-3-W;
"3200" ClearviewHwy-3-W;



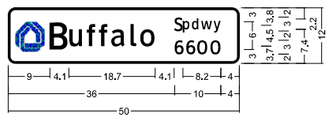
SIGN NO. 8

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"6700" ClearviewHwy-3-W;



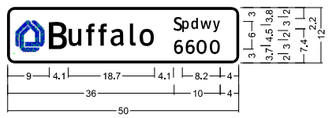
SIGN NO. 13

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Cason" ClearviewHwy-3-W;
"St" ClearviewHwy-3-W;
"3100" ClearviewHwy-3-W;



SIGN NO. 13

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"6600" ClearviewHwy-3-W;



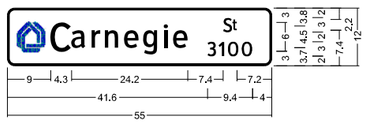
SIGN NO. 16

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"6600" ClearviewHwy-3-W;



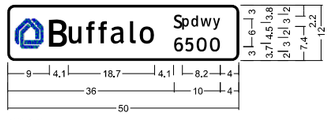
SIGN NO. 16

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Carnegie" ClearviewHwy-3-W;
"St" ClearviewHwy-3-W; "3200" ClearviewHwy-3-W;



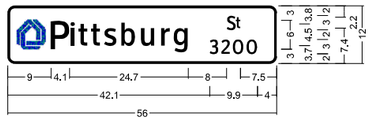
SIGN NO. 17

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Carnegie" ClearviewHwy-3-W;
"St" ClearviewHwy-3-W; "3100" ClearviewHwy-3-W;



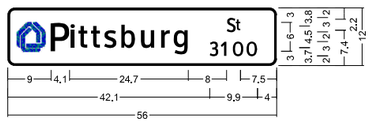
SIGN NO. 17, 19

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"6500" ClearviewHwy-3-W;



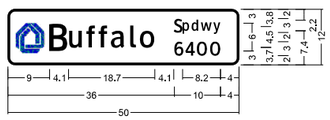
SIGN NO. 19

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Pittsburg" ClearviewHwy-3-W; "St" ClearviewHwy-3-W;
"3200" ClearviewHwy-3-W;



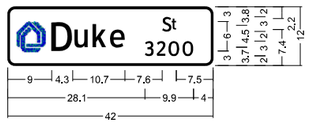
SIGN NO. 23

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Pittsburg" ClearviewHwy-3-W; "St" ClearviewHwy-3-W;
"3100" ClearviewHwy-3-W;



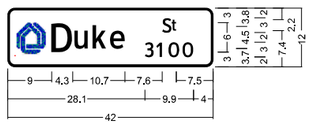
SIGN NO. 23, 26

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"6400" ClearviewHwy-3-W;



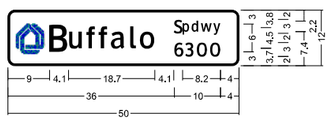
SIGN NO. 26

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Duke" ClearviewHwy-3-W;
"St" ClearviewHwy-3-W;
"3200" ClearviewHwy-3-W;



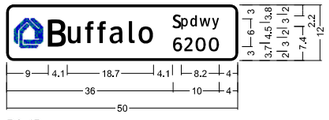
SIGN NO. 27

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Duke" ClearviewHwy-3-W;
"St" ClearviewHwy-3-W;
"3100" ClearviewHwy-3-W;



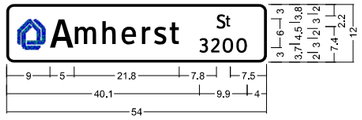
SIGN NO. 27

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"6300" ClearviewHwy-3-W;



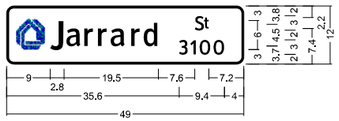
SIGN NO. 35, 37

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"6200" ClearviewHwy-3-W;



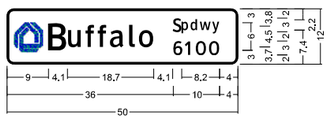
SIGN NO. 35, 37

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Amherst" ClearviewHwy-3-W;
"St" ClearviewHwy-3-W; "3200" ClearviewHwy-3-W;



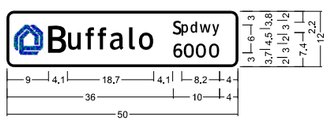
SIGN NO. 39

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Jarrard" ClearviewHwy-3-W;
"St" ClearviewHwy-3-W;
"3100" ClearviewHwy-3-W;



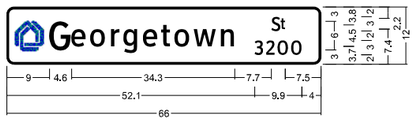
SIGN NO. 39

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"6100" ClearviewHwy-3-W;



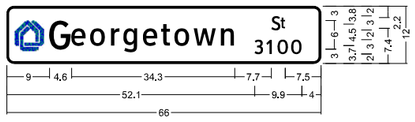
SIGN NO. 42

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"6000" ClearviewHwy-3-W;



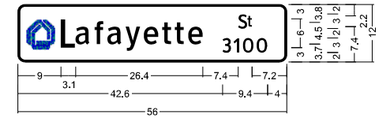
SIGN NO. 42

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Georgetown" ClearviewHwy-3-W; "St" ClearviewHwy-3-W;
"3200" ClearviewHwy-3-W;



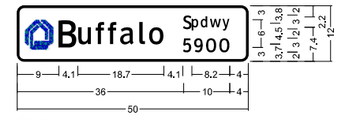
SIGN NO. 47

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Georgetown" ClearviewHwy-3-W; "St" ClearviewHwy-3-W;
"3100" ClearviewHwy-3-W;



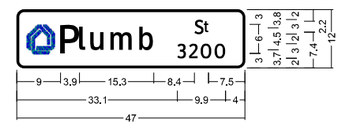
SIGN NO. 49

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Lafayette" ClearviewHwy-3-W; "St" ClearviewHwy-3-W;
"3100" ClearviewHwy-3-W;



SIGN NO. 47, 49, 50

D3-1B;
1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"5900" ClearviewHwy-3-W;



SIGN NO. 50

D3-1B,
1.5" Radius, 0.5" Border, White on, Blue;
"Plumb" ClearviewHwy-3-W;
"St" ClearviewHwy-3-W;
"3200" ClearviewHwy-3-W;

NOTE:

THE COLOR OF CITY LOGO SHALL BE WHITE

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER
08/24/20

infraTECH
Engineers & Innovators, LLC
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Texas Registered Engineering Firm F-2144

City of West University Place

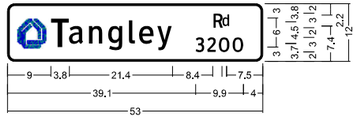
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SIGN DETAILS

SHEET 1 OF 2

Texas Department of Transportation

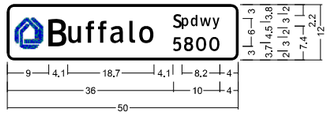
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		520
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



SIGN NO. 52

D3-1B;

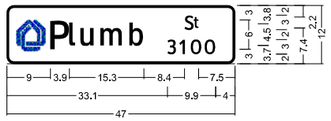
1.5" Radius, 0.5" Border, White on, Blue;
"Tangley" ClearviewHwy-3-W;
"St" ClearviewHwy-3-W; "3200" ClearviewHwy-3-W;



SIGN NO. 52, 55

D3-1B;

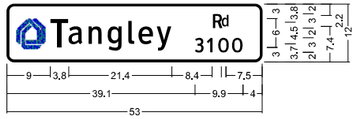
1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"5800" ClearviewHwy-3-W;



SIGN NO. 55

D3-1B,

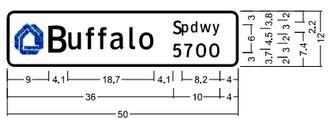
1.5" Radius, 0.5" Border, White on, Blue;
"Plumb" ClearviewHwy-3-W;
"St" ClearviewHwy-3-W;
"3100" ClearviewHwy-3-W;



SIGN NO. 57

D3-1B;

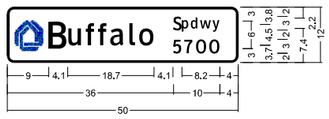
1.5" Radius, 0.5" Border, White on, Blue;
"Tangley" ClearviewHwy-3-W;
"St" ClearviewHwy-3-W; "3100" ClearviewHwy-3-W;



SIGN NO. 57

D3-1B;

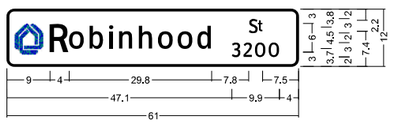
1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"5700" ClearviewHwy-3-W;



SIGN NO. 59

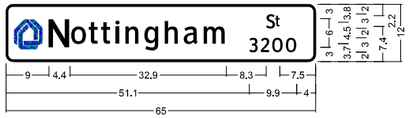
D3-1B;

1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"5700" ClearviewHwy-3-W;



SIGN NO. 59

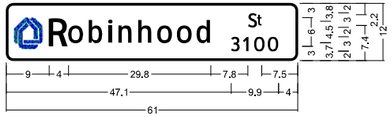
D3-1B:
1.5" Radius, 0.5" Border, White on, Blue:
"Robinhood" ClearviewHwy-3-W; "St" ClearviewHwy-3-W;
"3200" ClearviewHwy-3-W;



SIGN NO. 62

D3-1B;

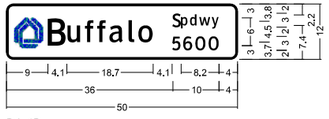
1.5" Radius, 0.5" Border, White on, Blue;
"Nottingham" ClearviewHwy-3-W; "St" ClearviewHwy-3-W;
"3200" ClearviewHwy-3-W;



SIGN NO. 64

D3-1B;

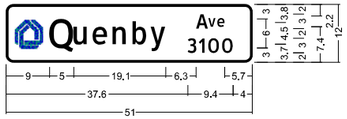
1.5" Radius, 0.5" Border, White on, Blue;
"Robinhood" ClearviewHwy-3-W; "St" ClearviewHwy-3-W;
"3100" ClearviewHwy-3-W;



SIGN NO. 62, 64, 66

D3-1B;

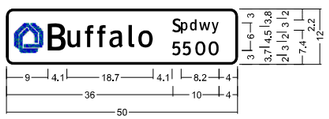
1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"5600" ClearviewHwy-3-W;



SIGN NO. 66

D3-1B;

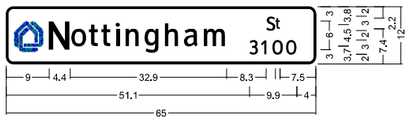
1.5" Radius, 0.5" Border, White on, Blue;
"Quenby" ClearviewHwy-3-W;
"Ave" ClearviewHwy-3-W;
"3100" ClearviewHwy-3-W;



SIGN NO. 70

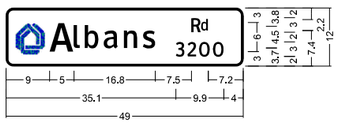
D3-1B;

1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"5500" ClearviewHwy-3-W;



SIGN NO. 70

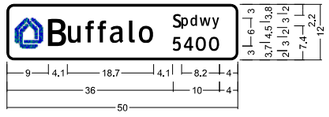
D3-1B:
1.5" Radius, 0.5" Border, White on, Blue:
"Nottingham" ClearviewHwy-3-W; "St" ClearviewHwy-3-W;
"3100" ClearviewHwy-3-W;



SIGN NO. 72

D3-1B;

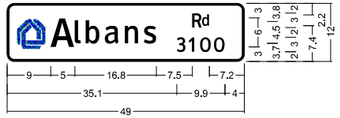
1.5" Radius, 0.5" Border, White on, Blue;
"Albans" ClearviewHwy-3-W;
"Rd" ClearviewHwy-3-W;
"3200" ClearviewHwy-3-W;



SIGN NO. 72

D3-1B;

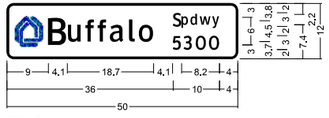
1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"5400" ClearviewHwy-3-W;



SIGN NO. 76

D3-1B;

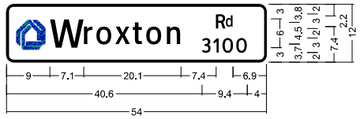
1.5" Radius, 0.5" Border, White on, Blue;
"Albans" ClearviewHwy-3-W;
"Rd" ClearviewHwy-3-W;
"3100" ClearviewHwy-3-W;



SIGN NO. 76, 79

D3-1B;

1.5" Radius, 0.5" Border, White on, Blue;
"Buffalo" ClearviewHwy-3-W;
"Spdwy" ClearviewHwy-3-W;
"5300" ClearviewHwy-3-W;



SIGN NO. 79

D3-1B;

1.5" Radius, 0.5" Border, White on, Blue;
"Wroxton" ClearviewHwy-3-W;
"Rd" ClearviewHwy-3-W; "3100" ClearviewHwy-3-W;

NOTE:

THE COLOR OF CITY LOGO SHALL BE WHITE

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER
08/24/20

infraTECH
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

11111 WILCREST GREEN DR, SUITE 410
HOUSTON, TEXAS 77042

FREESE AND NICHOLS

11200 Broadway Street, Suite 2320
Pearland, Texas 77584
Phone – (832) 456-4700
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Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

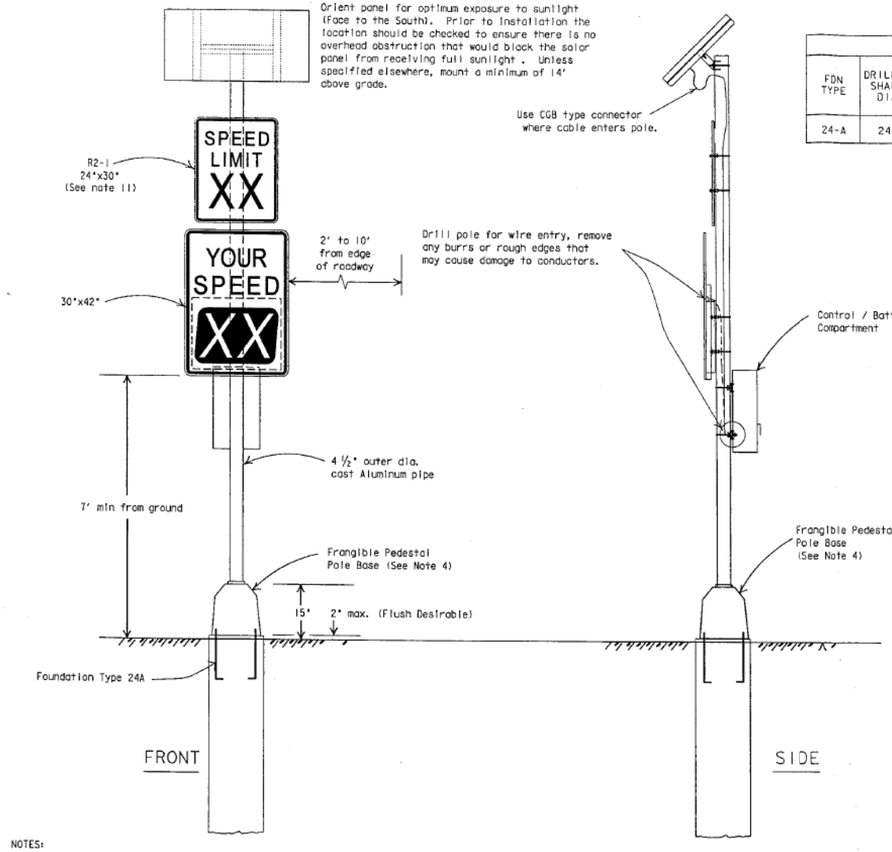
BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

SIGN DETAILS

SHEET 2 OF 2

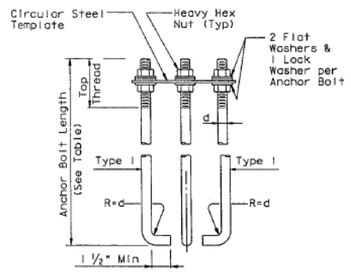
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		521
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



FOUNDATION DESIGN TABLE										
FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		DRILLED SHAFT LENGTH-ft	ANCHOR BOLT DESIGN ①				FOUNDATION DESIGN LOAD ②	
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER 10 blows/ft	ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips
24-A	24"	4-#5	#2 at 12"	6	¾"	36	12 ¾"	1	10	1

NOTES:
① Anchor bolt design develops the foundation capacity given under Foundation Design Loads.
② Foundation Design Loads are the allowable moments and shears at the base of the structure.



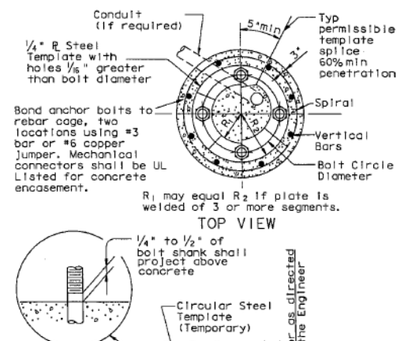
HOOKED ANCHOR
(TYPE 1)

ANCHOR BOLT & TEMPLATE SIZES						
BOLT DIA IN.	③ BOLT LENGTH	TOP THREAD	BOTT THREAD	BOLT CIRCLE	Rz	Ri
¾"	1'-6"	3"	—	12 ¾"	7 ⅛"	5 ⅝"

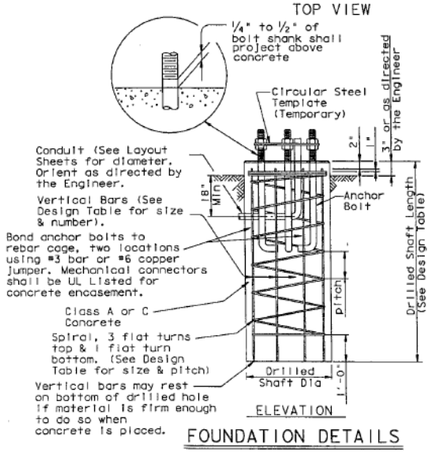
③ Min dimensions given, longer bolts are acceptable.

ANCHOR BOLT ASSEMBLY

INSTALLATION PROCEDURE:
Threads of anchor bolts shall be coated with pipe joint compound prior to installation of upper nuts when erecting pole. After pole is plumbed and in permanent alignment, the exposed threads of painted bolts shall be cleaned and an additional coating of zinc-rich paint applied to seal the bolt thread-nut joint.



TOP VIEW



ELEVATION

FOUNDATION DETAILS

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and Interim revisions thereto.
Concrete shall be Class A or C.
Threads for anchor bolts and nuts shall be rolled or cut threads of unifled national coarse thread series except for A193B7 bolts which shall have 8 pitch thread series. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.
Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize all anchor bolts unless otherwise noted. Exposed nuts shall be galvanized or coated with zinc-rich paint. Washers shall be galvanized. Templates and embeded nuts need not be galvanized.

NOTES:
1. Details show a typical sign, other arrangements are possible.
2. Use 24 in. Drill Shaft Foundation as shown.
3. Use materials specifically designed for attaching cabinets, solar panels, etc., to poles.
4. Per manufacturer's recommendations, engage all threads on the pedestal pole base and pipe unless the pipe is fully seated into base. In high winds, use a pole and base collar assembly to add strength and prevent loosening on connection.
5. Provide non-fused watertight breakaway electrical connectors for breakaway poles. (Bussmann HET, Littelfuse LET, Ferraz-Shawmut FEBN, or approved equal).
6. When required, install batteries in the cabinet. Provide the number of batteries as required. Wire batteries according to manufacturers recommendations.
7. Provide clearance as shown above the sidewalk or pavement grade at the edge of the road. Mount the sign at least 7 ft. above the sidewalk or pavement grade at the edge of the road.
8. Pole shaft shall be one piece, schedule 40 Aluminum pipe, ASTM B429 or B221 (Alloy 6061-T6 only). Aluminum conduit will not develop the necessary strength and will not be allowed.
9. When required, provide 120/240VAC electrical service in accordance with current City of Houston standards and local power company requirements.
10. Orient the solar panel as shown above.
11. Confirm speed limit requirement with the City of Houston.

NO.	DATE	REVISION	BY:	CHKD:	APPROVAL (SIGNATURE):

CITY OF HOUSTON
PUBLIC WORKS & ENGINEERING DEPARTMENT
TRAFFIC SIGNAL ENGINEERING AND OPERATIONS SECTION
...\Radar speed sign.dgn

RADAR SPEED SIGN ASSEMBLY TYPICAL DETAILS

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED PROFESSIONAL ENGINEER
08/24/20

infraTECH Engineers & Innovators, LLC
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11111 WILCREST GREEN DR, SUITE 410
HOUSTON, TEXAS 77042

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Freese and Nichols, Inc.
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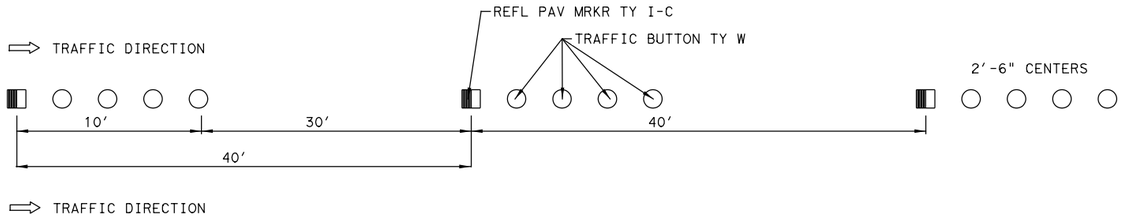
City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

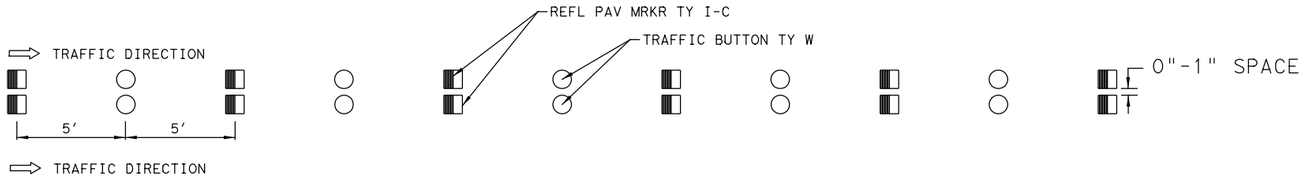
RADAR SPEED SIGN ASSEMBLY DETAILS

Texas Department of Transportation

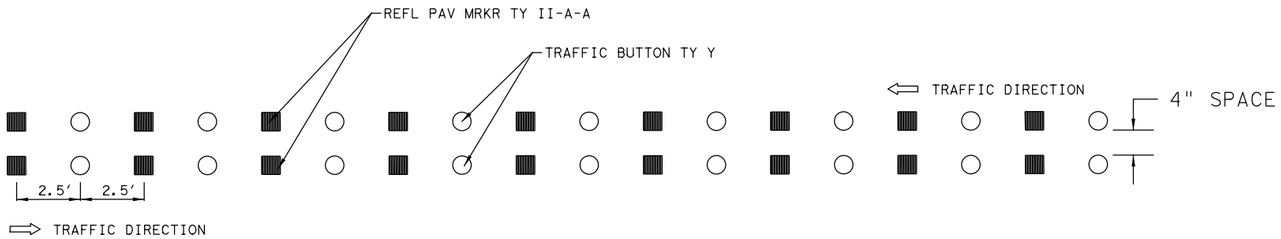
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		522
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



BROKEN LINE
NTS



CHANNELIZING LINE
NTS



CENTER LINE
NTS

ZAHIDUL SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
08/24/20

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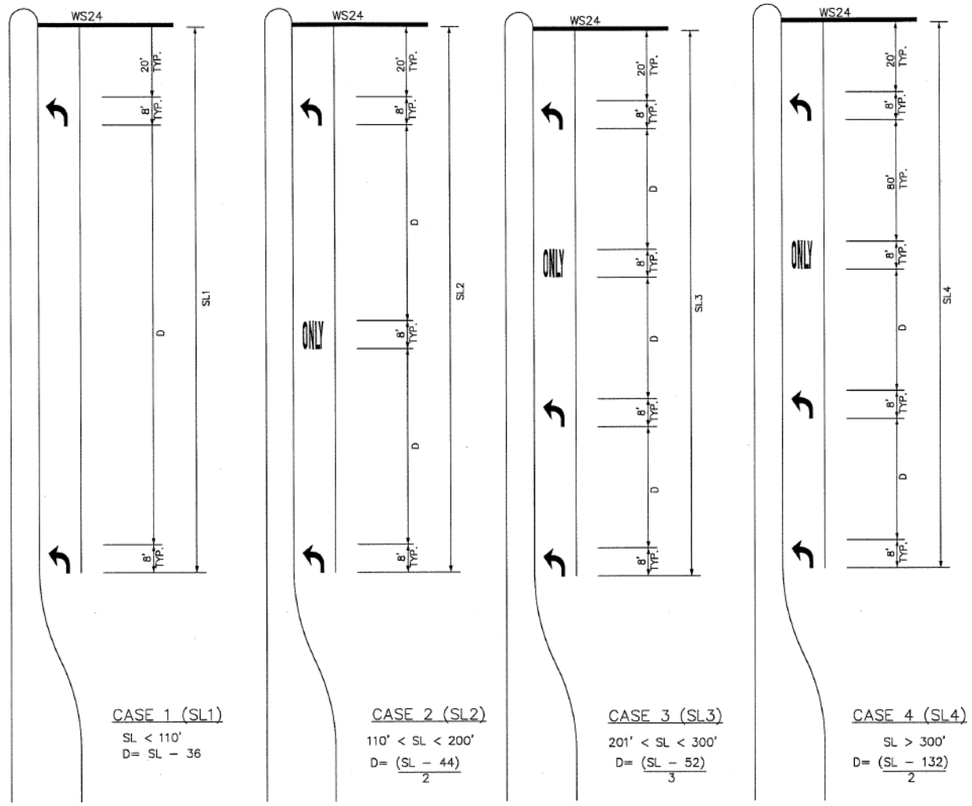
City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

PAVEMENT MARKING DETAILS

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		523
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



KEY (FOR TURN LANES ONLY):

SL – STORAGE LENGTH (FEET)

D – DISTANCE BETWEEN ARROWS AND/OR WORDS (FEET)

GENERAL NOTES:

1. ALL CASES AND DETAILS ALSO APPLY TO RIGHT–TURN LANES.
2. FOR DUAL–TURN LANES, DIMENSIONS SHALL BE THE SAME FOR EACH LANE.
3. SL DIMENSION IS FROM BACK OF STOP LINE TO END OF TURN LANE. NOTE: DO NOT INCLUDE TAPER LENGTH.
4. PAVEMENT ARROWS AND "ONLY" LEGEND MARKINGS ARE TYPICALLY USED AT ALL SIGNALIZED INTERSECTIONS AND AT ALL UNSIGNALIZED INTERSECTIONS THAT HAVE TURN LANES.
5. MINIMUM SL= 100'. SL MAY BE LESS THAN 100 FEET ONLY BY APPROVAL OF THE CITY TRAFFIC ENGINEER.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LEFT/RIGHT–TURN "ONLY" AND ARROW SPACING

(NOT TO SCALE)

CITY TRAFFIC ENGINEER

CITY ENGINEER

DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: JUL–01–2018

DWG NO: 01510–02

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED PROFESSIONAL ENGINEER

08/24/20

infraTECH
Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368

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HOUSTON, TEXAS 77042

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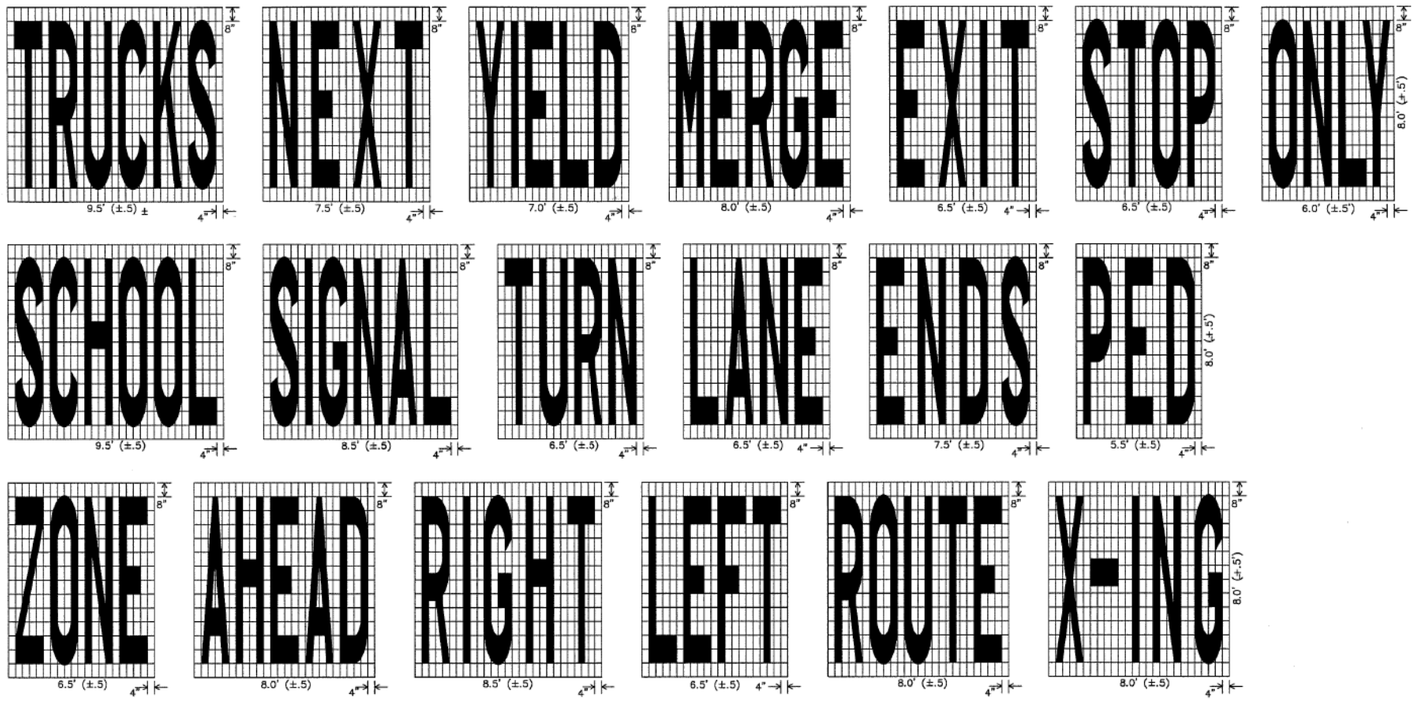
City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

PAVEMENT MARKING DETAILS

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		524
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STANDARD PAVEMENT MARKING – (WORDS)

(NOT TO SCALE)

CITY TRAFFIC ENGINEER
CITY ENGINEER

DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: JUL-01-2018

DWG NO: 01510-03

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED PROFESSIONAL ENGINEER

08/24/20

infraTECH
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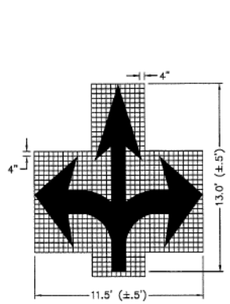
City of West University Place

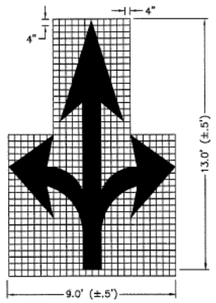
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

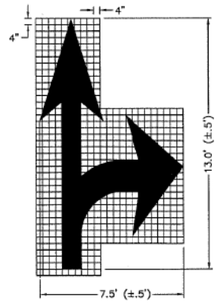
PAVEMENT MARKING DETAILS

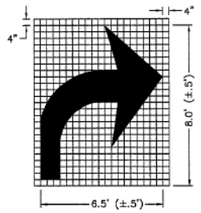
Texas Department of Transportation

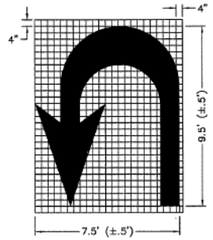
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		525
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

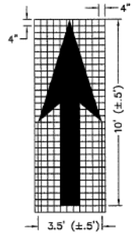


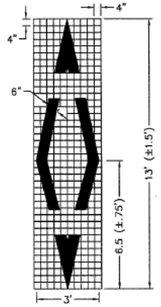


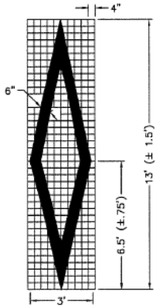


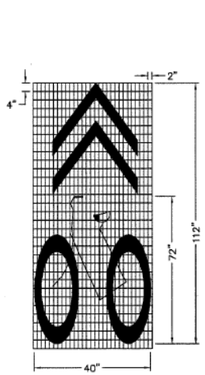


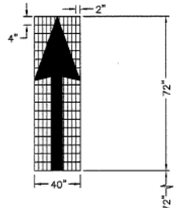


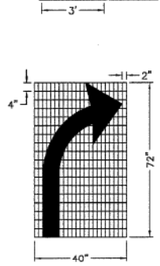


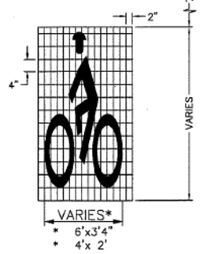












NOTES FOR PAVEMENT MARKINGS "SYMBOLS" AND "ARROWS":

1. MINIMUM 8 FOOT WHITE MARKINGS SHALL BE USED, UNLESS OTHERWISE NOTED. IF MESSAGE CONSISTS OF MORE THAN ONE WORD, IT SHOULD BE PLACED WITH FIRST WORD NEAREST THE DRIVER.

2. THESE DETAILS ARE STANDARD SIZE FOR NORMAL INSTALLATION; SIZES MAY BE REDUCED APPROXIMATELY ONE-THIRD DEPENDING ON CONDITIONS. SPECIAL PERMISSION NEEDED BY CITY TRAFFIC ENGINEER FOR REDUCTION BELOW ONE-THIRD OF STANDARD SIZES.

3. THE LONGITUDINAL SPACE BETWEEN MARKINGS SHOULD BE 30 FEET, OR AS INDICATED ON THE PLANS.

4. MARKINGS CONSIDERED APPROPRIATE FOR USE WHEN WARRANTED INCLUDE THE FOLLOWING:

   A. REGULATORY
      STOP
      RIGHT (LEFT) TURN ONLY, SYMBOL ARROWS.

   B. WARNING
      STOP AHEAD
      SIGNAL AHEAD
      SCHOOL
      SCHOOL X-ING
      PED X-ING
      R X R (SEE SHEET 01510-08 DETAILS)
      OTHER WORDS OR SYMBOLS MAY BE NECESSARY UNDER CERTAIN CONDITIONS. SPECIAL PERMISSION NEEDED BY CITY TRAFFIC ENGINEER FOR SPECIAL CONDITIONS.

5. UNCONTROLLED USE OF PAVEMENT MARKINGS CAN RESULT IN DRIVER CONFUSION. WORD AND SYMBOL MARKINGS SHOULD BE NO MORE THAN THREE LINES.

6. THE WORD "STOP" SHALL NOT BE USED ON THE PAVEMENT UNLESS ACCOMPANIED BY A STOP LINE AND STOP SIGN. THE WORD "STOP" SHALL NOT BE PLACED ON THE PAVEMENT IN ADVANCE TO A STOP LINE, UNLESS EVERY VEHICLE IS REQUIRED TO STOP AT ALL TIMES (ALL-WAY STOP).

7. PAVEMENT MARKINGS SHOULD GENERALLY BE NO MORE THAN ONE LANE IN WIDTH, WITH SCHOOL MESSAGES BEING THE EXCEPTION. FOR DETAILS OF SCHOOL AND SCHOOL CROSSING PAVEMENT MARKINGS, REFER TO PART VII OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

8. SPACING BETWEEN STANDARD SIZE LETTERS SHOULD BE 4 INCHES (MIN). THE WIDTH OF NON-STANDARD SIZE LETTERS MAY VARY DEPENDING ON THE WIDTH OF THE TRAVEL LANES. APPROVAL BY CITY TRAFFIC ENGINEER. SPECIAL PERMISSION NEEDED FOR NON-STANDARD SIZE "LETTER" AND/OR "ARROWS".

9. LANE-USE ARROW MARKINGS MAY BE USED TO CONVEY EITHER GUIDANCE OR MANDATORY MESSAGES. SINGLE TURN ARROWS USED TO CONVEY A MANDATORY MOVEMENT MUST BE ACCOMPANIED STANDARD SIGNS AND THE PAVEMENT MARKING WORD "ONLY".

10. PAVEMENT MARKINGS ARE TO BE LOCATED AS SPECIFIED IN THE DESIGN PLANS.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STANDARD PAVEMENT MARKING - SYMBOLS

(NOT TO SCALE)

CITY TRAFFIC ENGINEER / CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2018	DWG NO: 01510-04

STATE OF TEXAS
ZAHIDUL SIDDIQUE
98635
LICENSED
PROFESSIONAL ENGINEER
08/24/20

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Engineers & Innovators, LLC
TBPE REGISTRATION NO. F-18368
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Fax - (832) 456-4701
Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

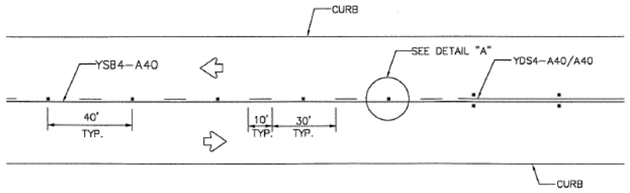
BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

PAVEMENT MARKING DETAILS

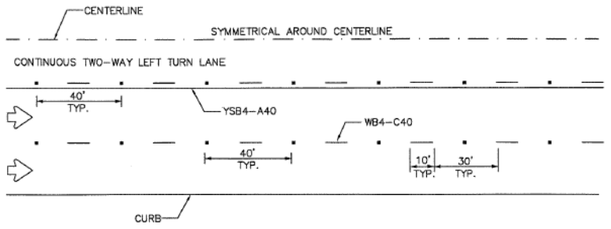
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		526
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

CENTERLINE & FOR ALL TWO LANE STREETS WITH PASSING ZONE

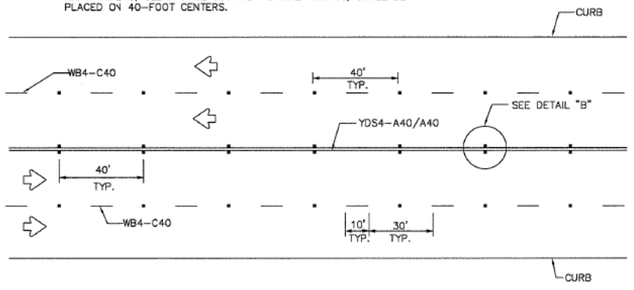


CENTERLINE & LANE LINES FOR TWO-WAY LEFT TURN LANE



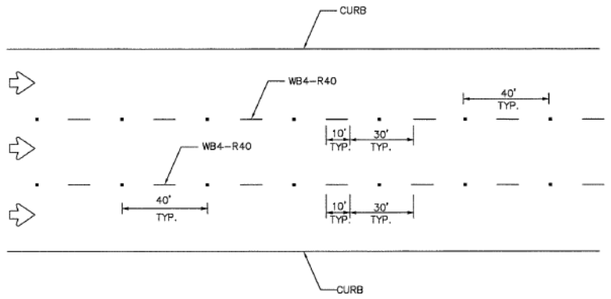
CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY STREETS

RRPM TYPE C, CLEAR FACE TOWARD NORMAL TRAFFIC, SHALL BE PLACED ON 40-FOOT CENTERS.



LANE LINES FOR ONE-WAY MULTILANE STREET

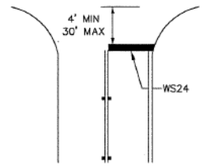
RRPM TYPE R SHALL HAVE CLEAR FACE TOWARD NORMAL TRAFFIC AND RED FACE TOWARD WRONG-WAY TRAFFIC.



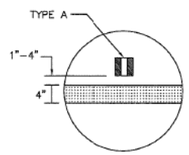
GENERAL NOTES:

1. EDGELINE ADJACENT TO CURB AND GUTTER IS NOT REQUIRED IN ALL CASES, HOWEVER SHALL BE PLACED AS DIRECTED BY CITY TRAFFIC ENGINEER.
2. THE TRAVELED WAY INCLUDES ONLY THAT PORTION OF THE ROADWAY USED FOR VEHICULAR TRAVEL AND NOT THE PARKING LANES, SIDEWALKS, BERMS AND SHOULDERS. THE TRAVELED WAYS SHALL BE MEASURED FROM THE INSIDE OF EDGELINE TO INSIDE OF EDGELINE OF A TWO LANE ROADWAY.
3. ALL RAISED PAVEMENT MARKERS PLACED IN BROKEN LINES SHALL BE PLACED IN LINE WITH AND MIDWAY BETWEEN THE STRIPES.
4. ON CONCRETE PAVEMENTS THE RAISED PAVEMENT MARKERS SHOULD BE PLACED TO ONE SIDE OF THE LONGITUDINAL JOINTS.
5. ALL PAVEMENT MARKING MATERIAL SHALL MEET THE REQUIRED MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF HOUSTON STANDARD SPECIFICATIONS.

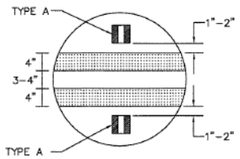
GUIDE FOR PLACEMENT OF STOP LINES & CENTERLINE



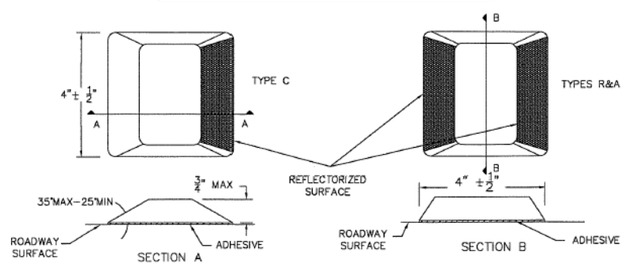
DETAIL "A"



DETAIL "B"



REFLECTIVE RAISED PAVEMENT MARKERS



CITY OF HOUSTON
HOUSTON PUBLIC WORKS

STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE
(NOT TO SCALE)

CITY TRAFFIC ENGINEER / CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2018	DWG NO: 01510-05

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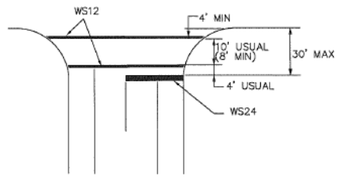
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

PAVEMENT MARKING DETAILS

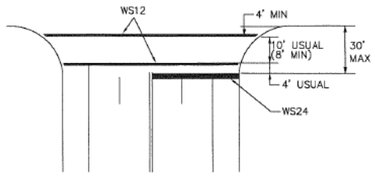
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		527
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

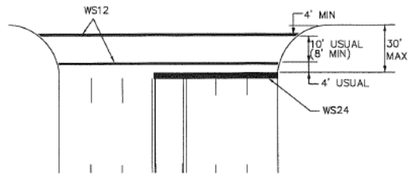
TWO LANES WITH SHOULDERS



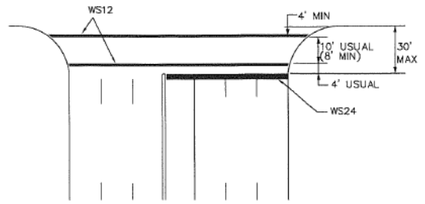
FOUR LANES WITH SHOULDERS



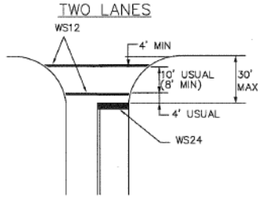
MULTI – LANES



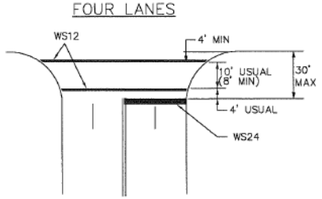
MULTI – LANE WITH MEDIAN



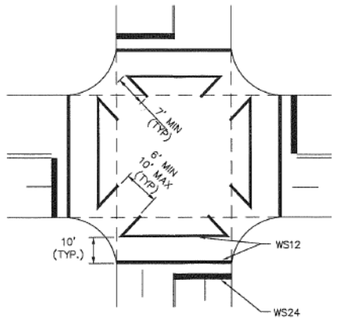
TWO LANES



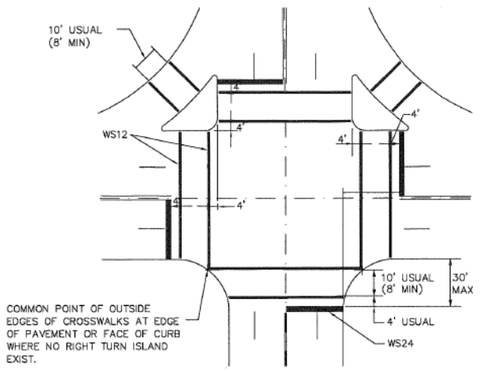
FOUR LANES



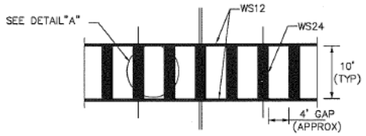
EXCLUSIVE PEDESTRIAN PHASE



INTERSECTION WITH RIGHT – TURN ISLANDS

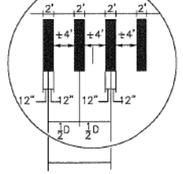


HIGH VISIBILITY CROSSWALK DETAIL



TYPICALLY USED AT SIGNALIZED AND NON-SIGNALIZED CROSSINGS ON COLLECTOR AND ARTERIAL ROADWAYS AND AT LOCATIONS REQUIRING EXTRA EMPHASIS.

DETAIL "A"



NOTES:

1. CROSSWALKS AND STOP LINES SHALL BE WHITE.
2. "D" IS EQUAL TO ONE HALF THE WIDTH OF TRAVEL LANE.

CITY OF HOUSTON HOUSTON PUBLIC WORKS	
TYPICAL CROSSWALK DETAILS (NOT TO SCALE)	
CITY TRAFFIC ENGINEER CITY ENGINEER	DIRECTOR OF HOUSTON PUBLIC WORKS
EFF DATE: JUL-01-2018	DWG NO: 01510-10

STATE OF TEXAS
ZAHIDUL SIDDIQUE
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City of West University Place

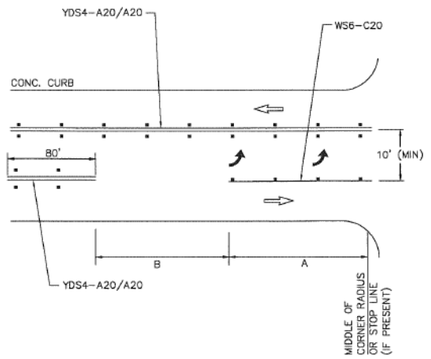
BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

PAVEMENT MARKING DETAILS

Texas Department of Transportation

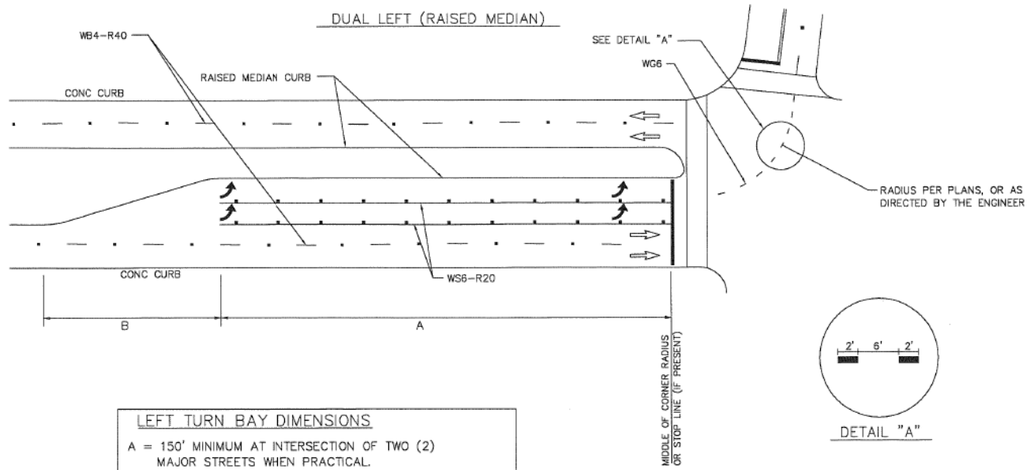
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		528
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

LEFT-TURN LANE



LEFT-TURN LANE (RAISED MEDIAN)

DUAL LEFT (RAISED MEDIAN)



DETAIL "A"

LEFT TURN BAY DIMENSIONS

A = 150' MINIMUM AT INTERSECTION OF TWO (2) MAJOR STREETS WHEN PRACTICAL.
= 100' MINIMUM AT ALL OTHER INTERSECTIONS.

B = 100' MINIMUM ON STRAIGHT ROADWAYS.
*TAPER LENGTH MAY BE SHORTER IF IT IS ON A HORIZONTAL CURVE TO THE LEFT.
*TAPER LENGTH MAY BE LONGER IF CURVE IS TO THE RIGHT.

NOTE:
1. DIMENSIONS SHALL BE ADJUSTED AS DETERMINED BY CITY OF HOUSTON TRAFFIC ENGINEER.
2. REFER TO CITY OF HOUSTON DESIGN MANUAL (DWG No. 10.06-07) FOR DETAILS.

NOTES:

1. THE DIMENSIONS GIVEN FOR DUAL LEFT (RAISED MEDIAN) ON THIS SHEET ARE ALSO APPLICABLE FOR DUAL RIGHT-TURN LANES.
2. STORAGE LENGTHS LONGER THAN THE MINIMUMS LISTED ON THIS DRAWING MAY BE DETERMINED USING TRAFFIC ENGINEERING ANALYSIS.
3. FOR THE PLACEMENT OF PAVEMENT ARROWS AND WORDS SEE LEFT-TURN "ONLY" AND ARROW SPACING WORKSHEET.
4. REFER TO APPLICABLE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS FOR POSITION GUIDANCE AND LEFT-TURN & RIGHT-TURN LANE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKINGS.
5. REFER TO BICYCLE LANE PAVEMENT MARKINGS STANDARD FOR TYPE AND PLACEMENT.

CITY OF HOUSTON
HOUSTON PUBLIC WORKS

LEFT-TURN LANE & RIGHT-TURN LANE DESIGN WORKSHEET 1

(NOT TO SCALE)

CITY TRAFFIC ENGINEER
CITY ENGINEER

DIRECTOR OF HOUSTON PUBLIC WORKS

EFF DATE: JUL-01-2018

DWG NO: 01510-11

STATE OF TEXAS
ZAHIDUL SIDDIQUE
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City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

PAVEMENT MARKING DETAILS

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		529
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

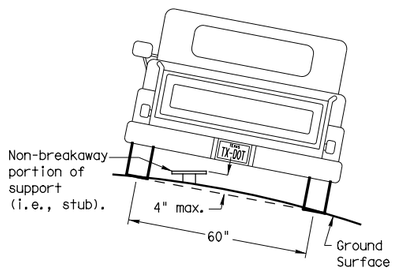
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-1))

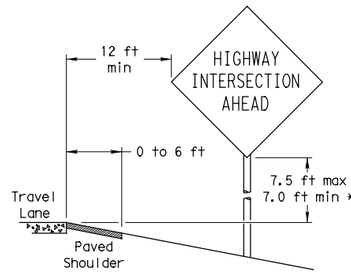
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

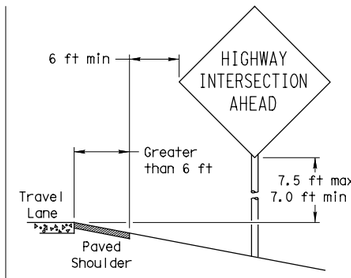
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

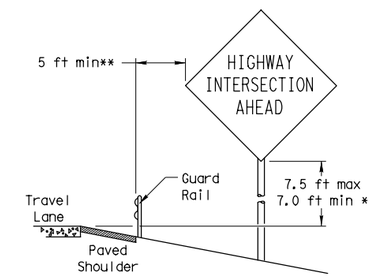
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



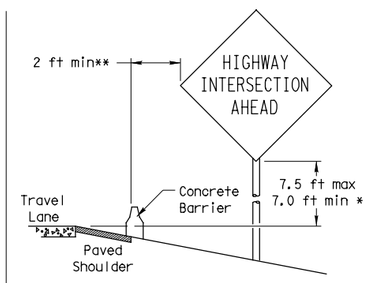
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

BEHIND BARRIER



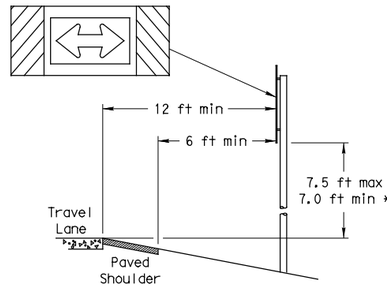
BEHIND GUARDRAIL



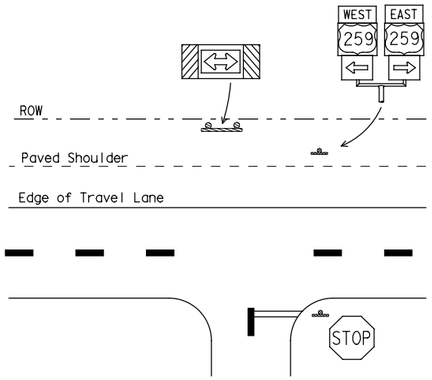
BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

T-INTERSECTION



When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

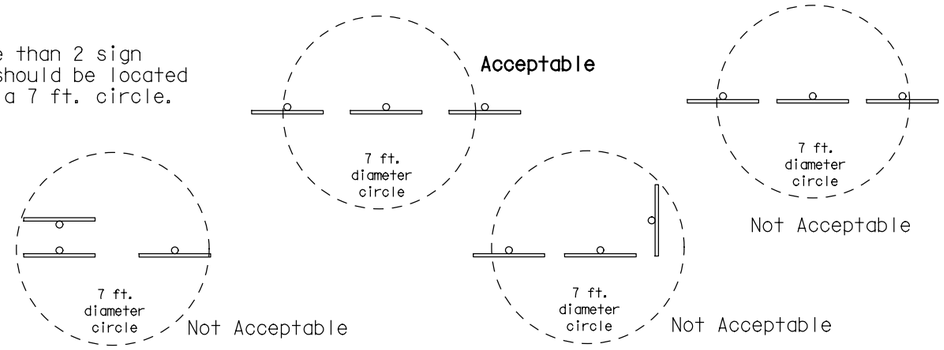
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

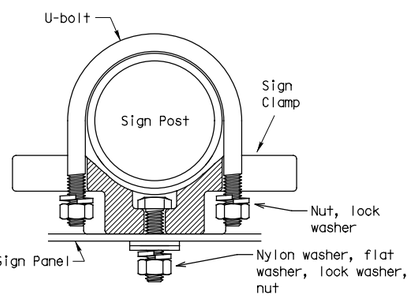
The website address is:
http://www.txdot.gov/publications/traffic.htm

No more than 2 sign posts should be located within a 7 ft. circle.



TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

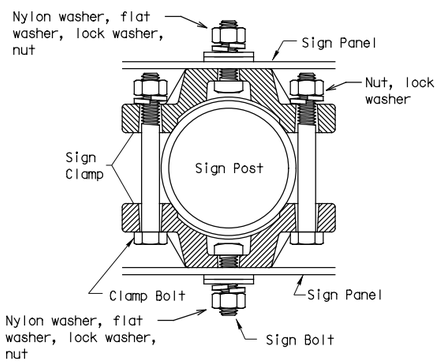


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

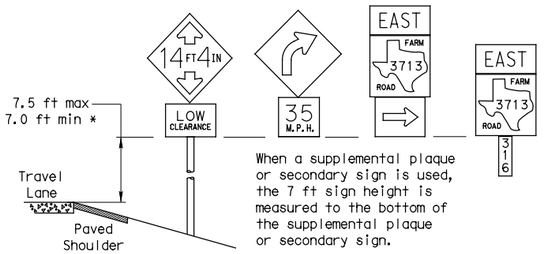
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs

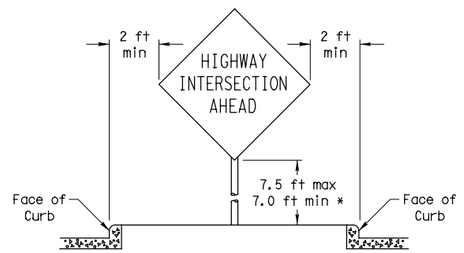


Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES

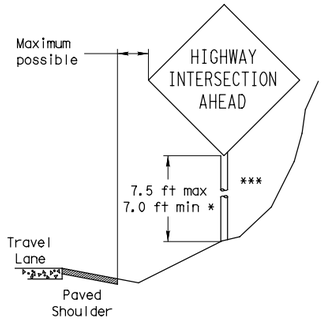


CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

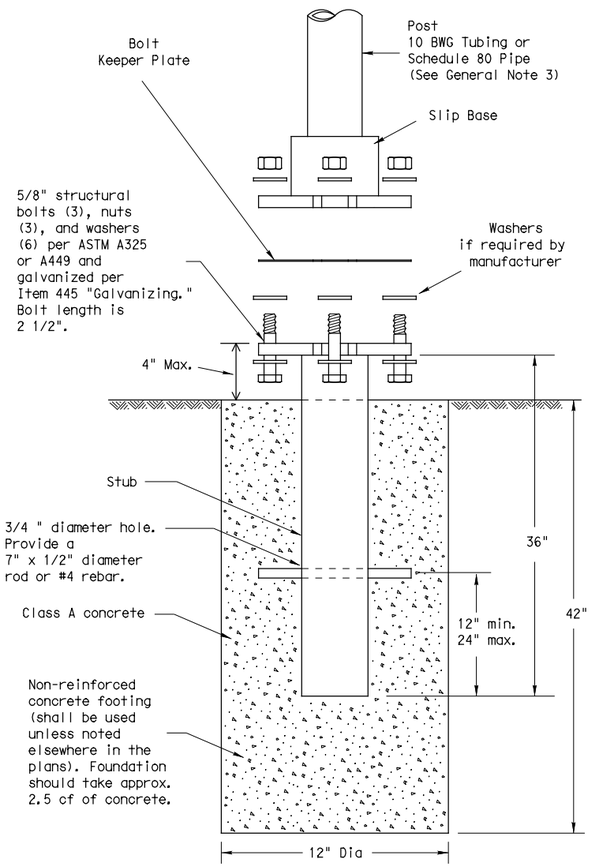
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REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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	DIST	COUNTY		SHEET NO.
	12	HARRIS		530

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TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

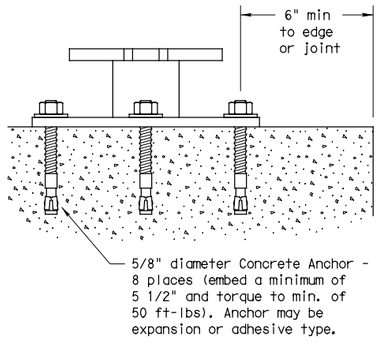
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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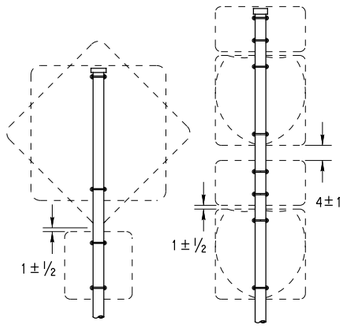
REVISIONS
9-08

CONT	SECT	JOB	HIGHWAY
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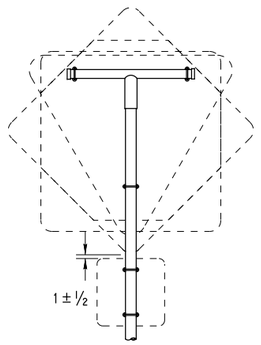
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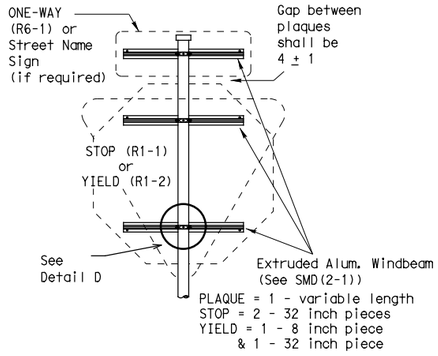
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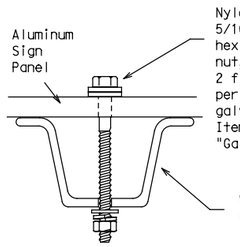
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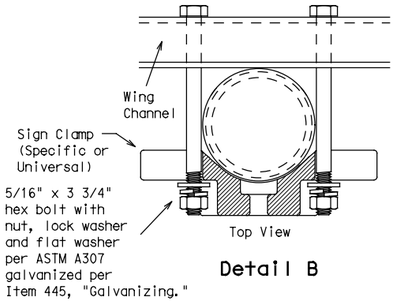
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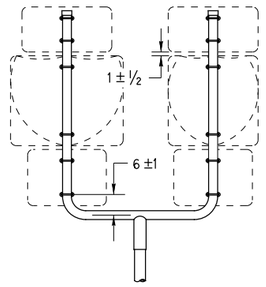
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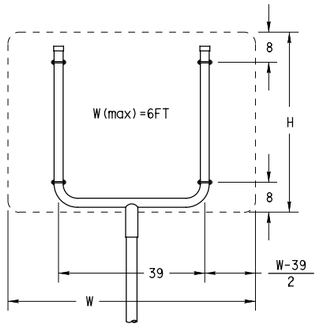
Detail A



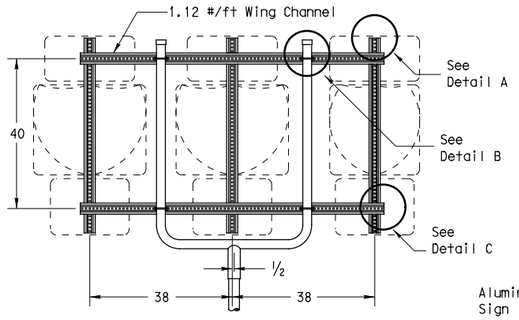
Detail B



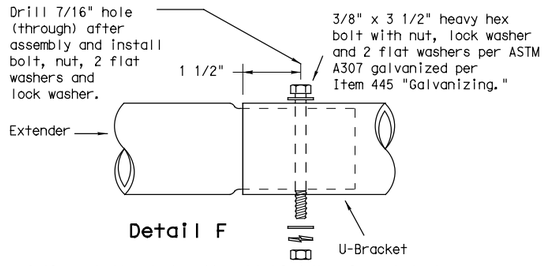
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SM RD SGN ASSM TY XXXXX(1)XX(U)

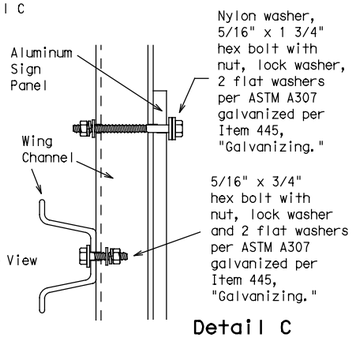


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

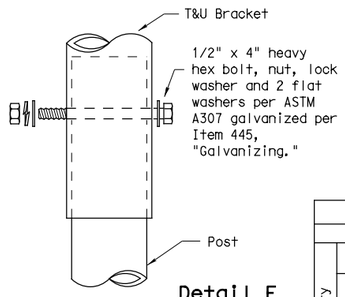


Detail F

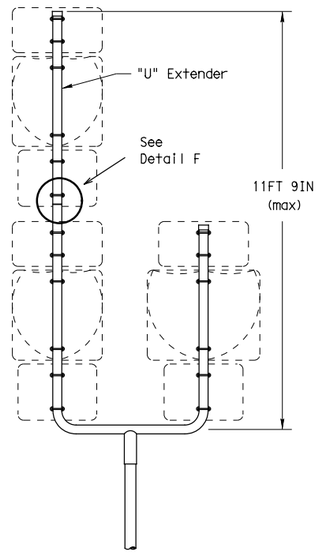
Splices shall only be allowed behind the sign substrate.



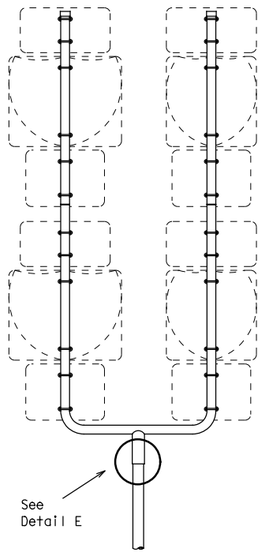
Detail C



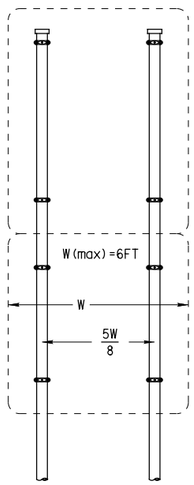
Detail E



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

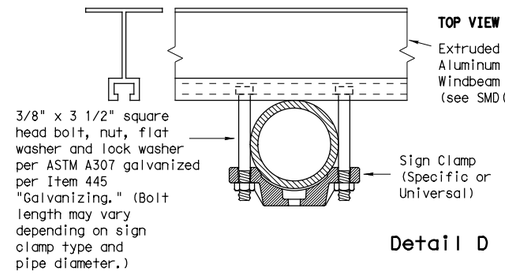


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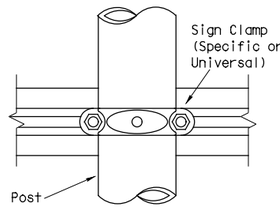


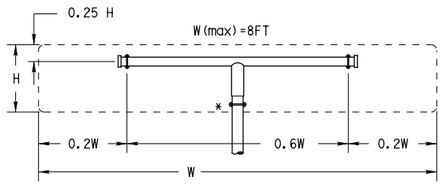
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SIDE VIEW



Detail D

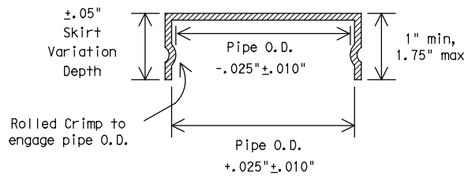




SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

All dimensions are in english unless detailed otherwise.

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

GENERAL NOTES:

1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

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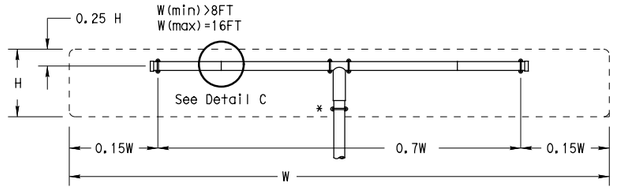
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0912	72	360	BSW

DIST	COUNTY	SHEET NO.
12	HARRIS	532

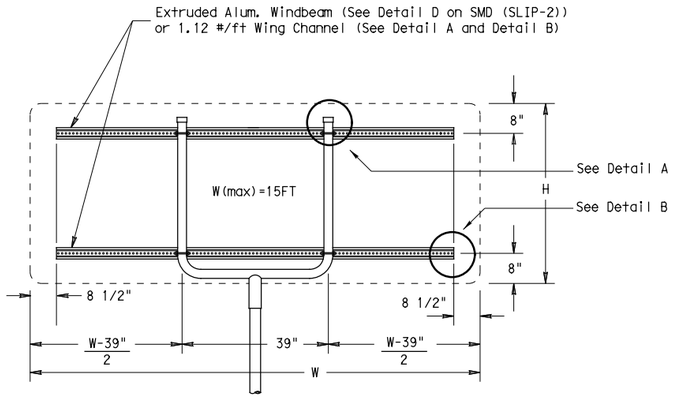
9-08 REVISIONS

DATE: 8/24/2020 11:42:40 AM
FILE: smds2.dgn

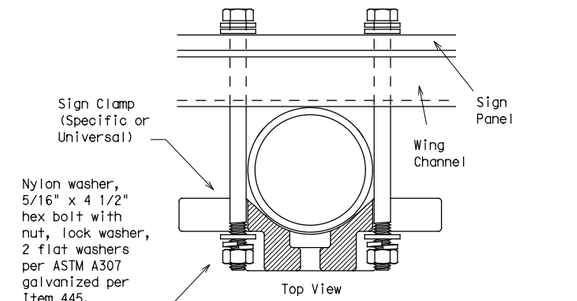
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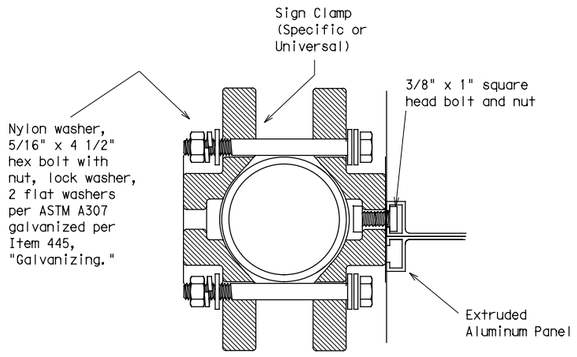
SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



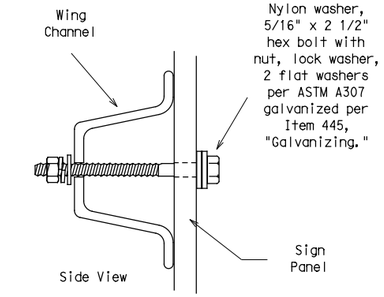
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



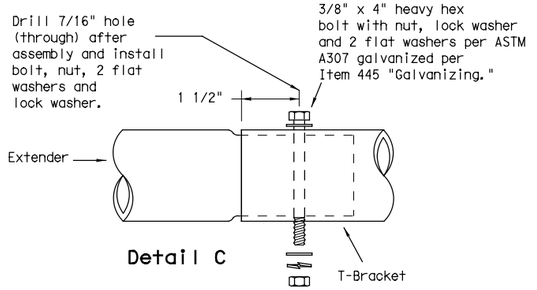
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

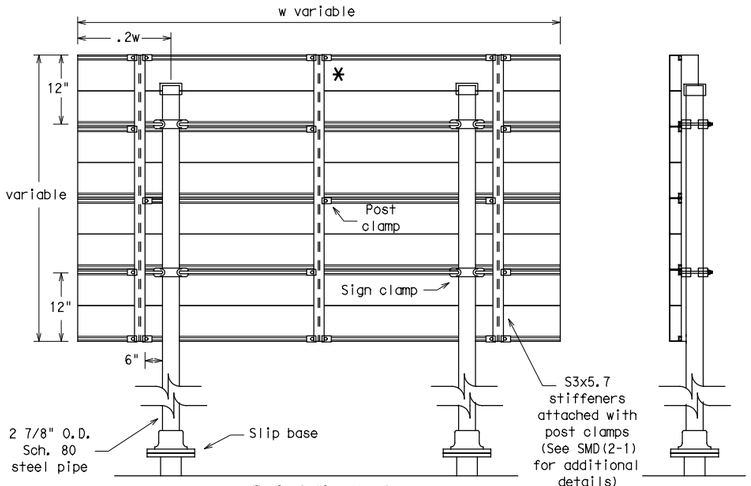


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

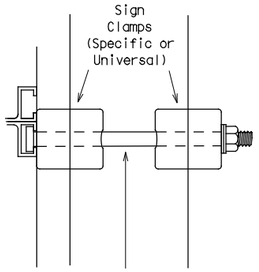


Typical Sign Mount

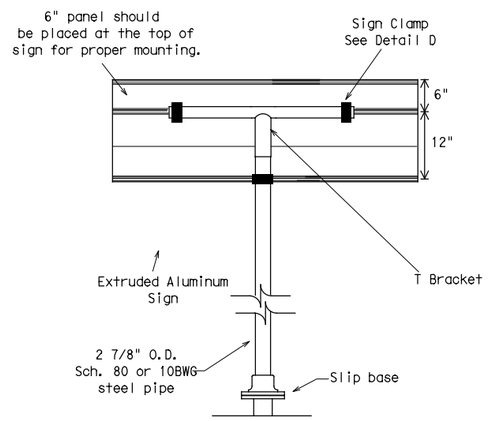
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

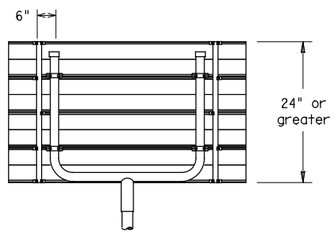
See Detail E
for clamp installation



Detail E



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

GENERAL NOTES:

1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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REVISIONS
9-08

CONT	SECT	JOB	HIGHWAY
0912	72	360	BSW

DIST	COUNTY	SHEET NO.
12	HARRIS	533

DATE: 8/24/2020 11:42:41 AM
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FILE: tsr3-13.dgn

REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



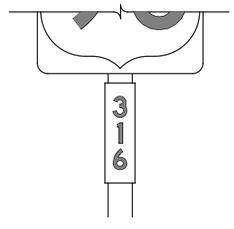




TYPICAL EXAMPLES

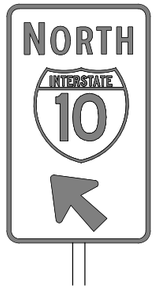
REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING













TYPICAL EXAMPLES

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).

2. White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).

4. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.

5. Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.

6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.

7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.

8. Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

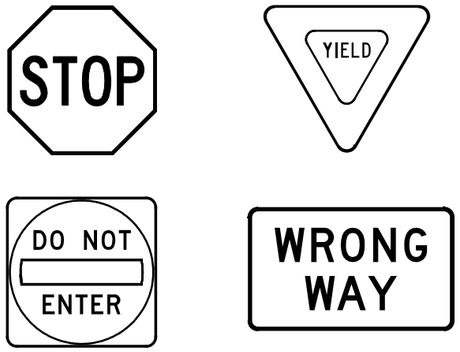
TYPICAL SIGN REQUIREMENTS

TSR(3)-13

FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	72	360	BSW
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	12	HARRIS		534

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REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS
(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

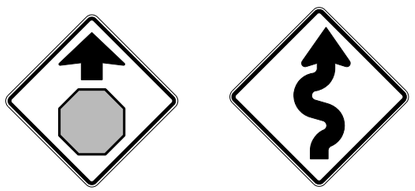
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(4)-13

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© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
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12-03 7-13 9-08	DIST	COUNTY		SHEET NO.
	12	HARRIS		535

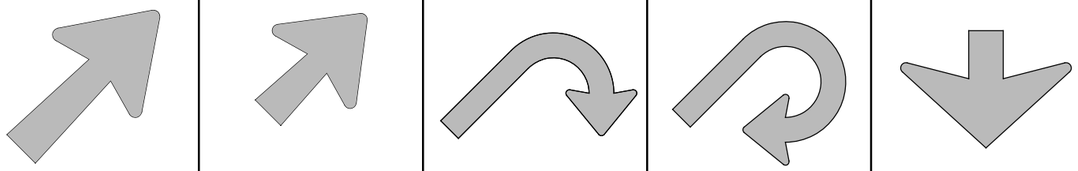
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FILE: tsr4-13.dgn

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ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

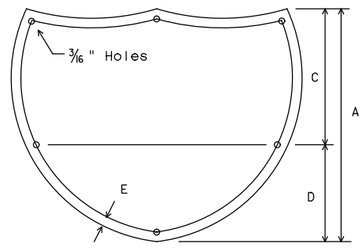
NOTE

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

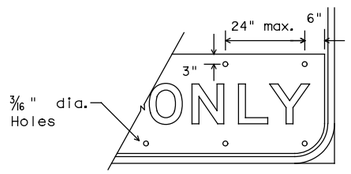
http://www.txdot.gov/

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)

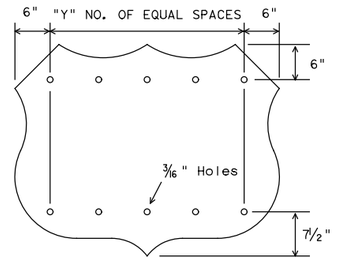


INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	11/2
48	28	20	13/4

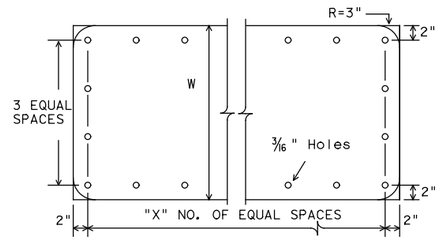


EXIT ONLY PANEL



U.S. ROUTE MARKERS

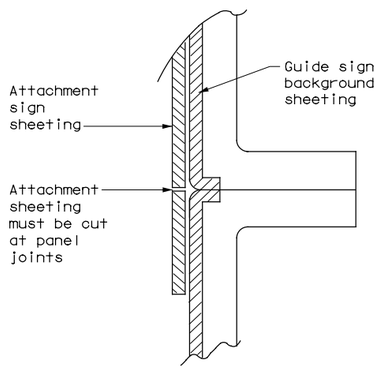
Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5

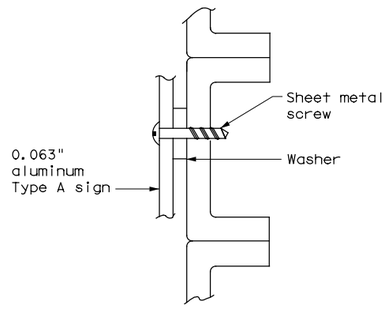
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



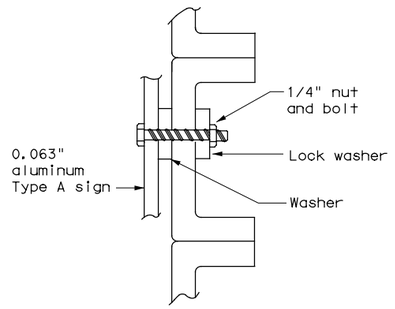
DIRECT APPLIED ATTACHMENT

NOTE:

1. Sheeting for legend, symbols, and borders must be cut at panel joints.
2. Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".



SCREW ATTACHMENT



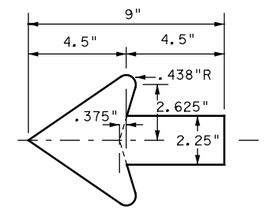
NUT/BOLT ATTACHMENT

NOTE:

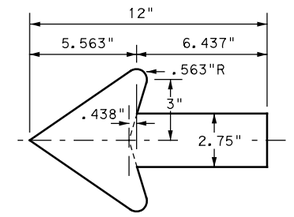
Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

ARROW DETAILS

for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.

Texas Department of Transportation

Traffic Operations Division Standard

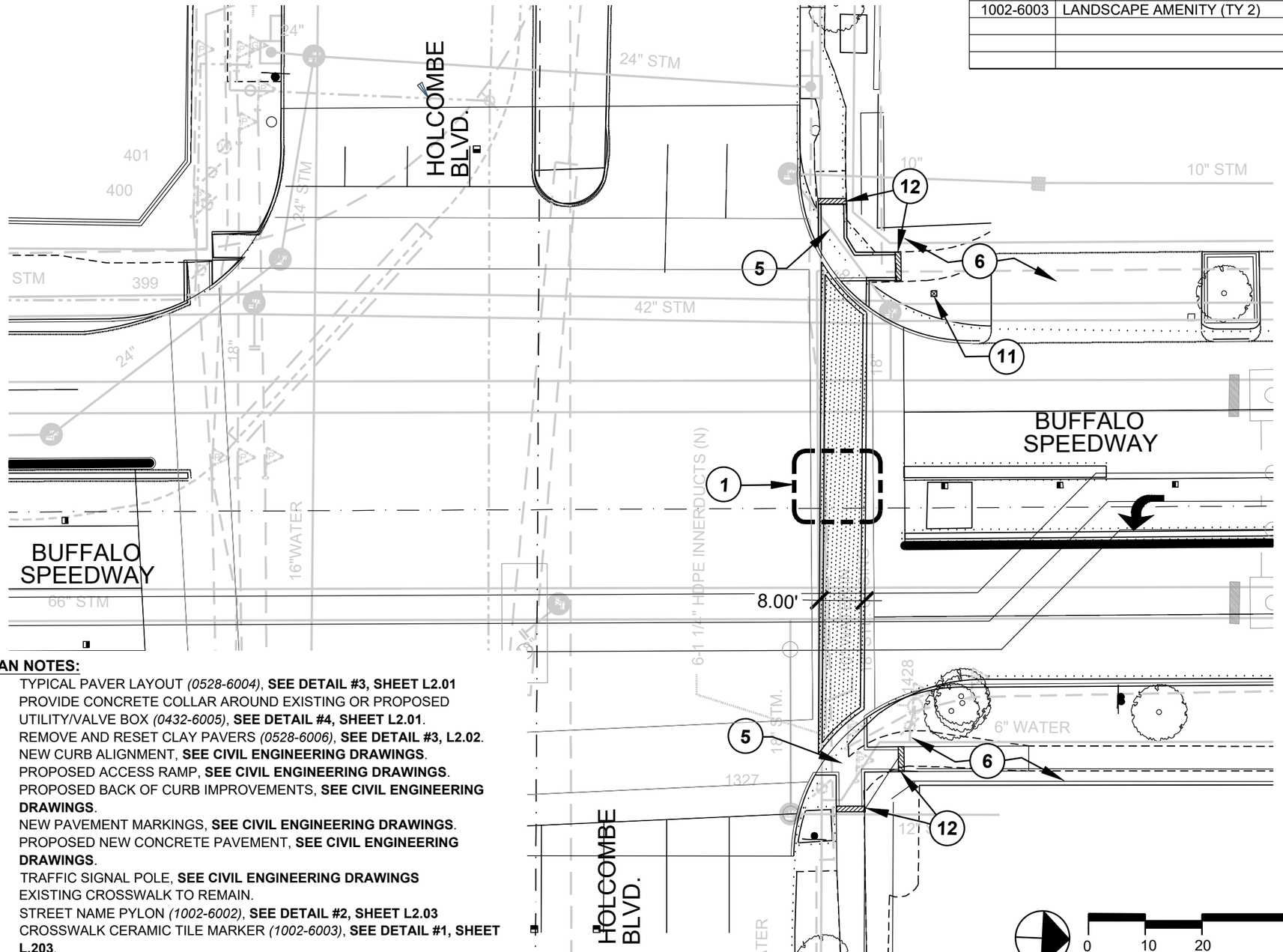
TYPICAL SIGN REQUIREMENTS

TSR(5)-13

FILE: tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	72	360	BSW
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	12	HARRIS		536

DATE: 8/24/2020 11:42:43 AM
FILE: tsr5-13.dgn

SHEET QUANTITIES - LANDSCAPE			
ITEM	DESCRIPTION	UNIT	QTY
0432-6005	CLASS-A RIP RAP CONCRETE	CY	0.0
0528-6004	LANDSCAPE PAVERS	SY	69.0
0528-6006	REMOVE AND RELAY PAVERS	SY	0.0
1002-6002	LANDSCAPE AMENITY (TY 1)	EA	1.0
1002-6003	LANDSCAPE AMENITY (TY 2)	EA	4.0



PLAN NOTES:

1. TYPICAL PAVER LAYOUT *(0528-6004)*, **SEE DETAIL #3, SHEET L2.01**
2. PROVIDE CONCRETE COLLAR AROUND EXISTING OR PROPOSED UTILITY/VALVE BOX *(0432-6005)*, **SEE DETAIL #4, SHEET L2.01**.
3. REMOVE AND RESET CLAY PAVERS *(0528-6006)*, **SEE DETAIL #3, L2.02**.
4. NEW CURB ALIGNMENT, **SEE CIVIL ENGINEERING DRAWINGS**.
5. PROPOSED ACCESS RAMP, **SEE CIVIL ENGINEERING DRAWINGS**.
6. PROPOSED BACK OF CURB IMPROVEMENTS, **SEE CIVIL ENGINEERING DRAWINGS**.
7. NEW PAVEMENT MARKINGS, **SEE CIVIL ENGINEERING DRAWINGS**.
8. PROPOSED NEW CONCRETE PAVEMENT, **SEE CIVIL ENGINEERING DRAWINGS**.
9. TRAFFIC SIGNAL POLE, **SEE CIVIL ENGINEERING DRAWINGS**
10. EXISTING CROSSWALK TO REMAIN.
11. STREET NAME PYLON *(1002-6002)*, **SEE DETAIL #2, SHEET L2.03**
12. CROSSWALK CERAMIC TILE MARKER *(1002-6003)*, **SEE DETAIL #1, SHEET L.203**.



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Pearland, Texas 77584
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Fax – (832) 456–4701
Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

CROSSWALK SPECIAL PAVING LAYOUT PLAN

BUFFALO SPEEDWAY
(HOLCOMBE BLVD. INTERSECTION)

Texas Department of Transportation

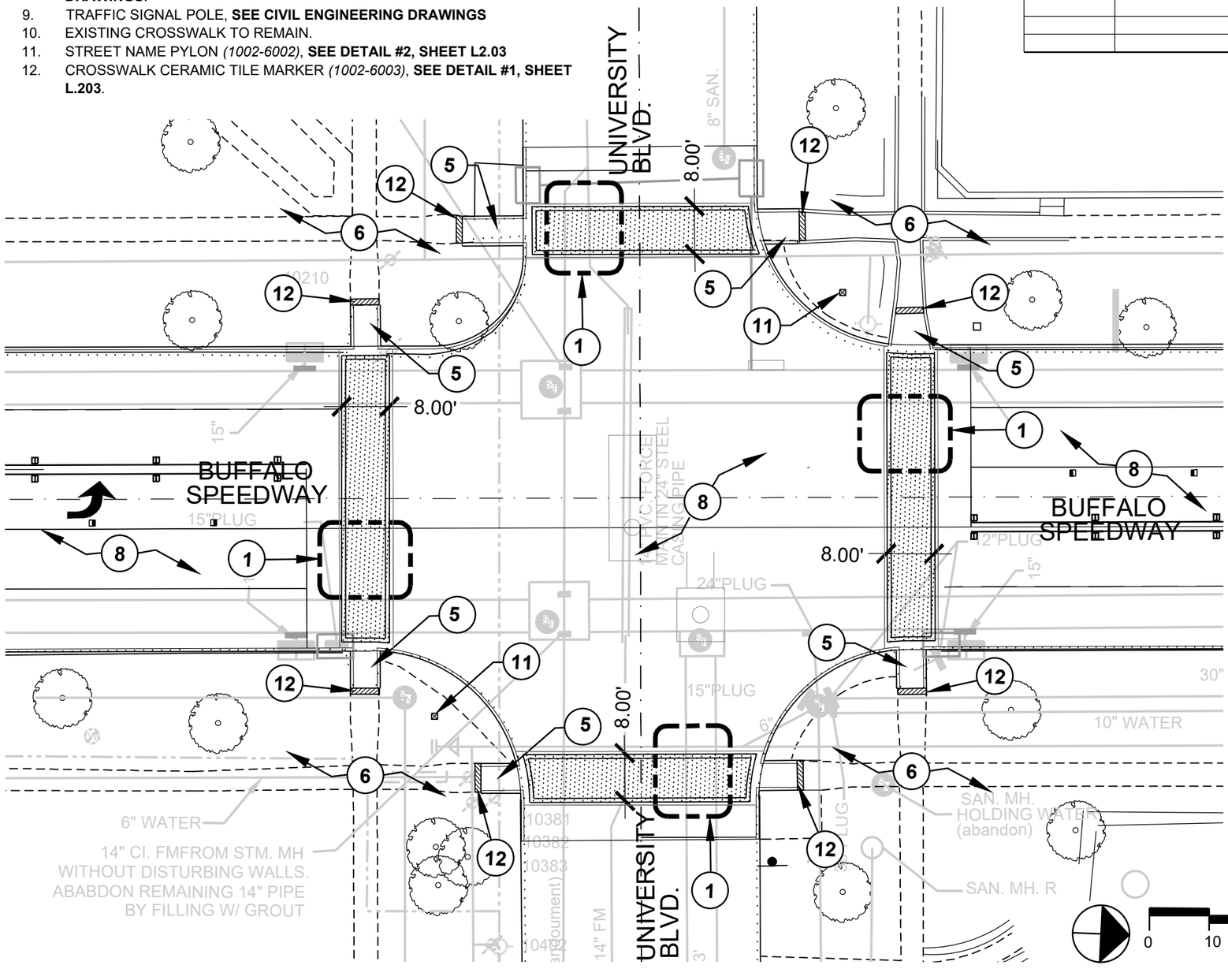
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		537
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

PLAN NOTES:

1. TYPICAL PAVER LAYOUT *(0528-6004)*, **SEE DETAIL #3, SHEET L2.01**
2. PROVIDE CONCRETE COLLAR AROUND EXISTING OR PROPOSED UTILITY/VALVE BOX *(0432-6005)*, **SEE DETAIL #4, SHEET L2.01**.
3. REMOVE AND RESET CLAY PAVERS *(0528-6006)*, **SEE DETAIL #3, L2.02**.
4. NEW CURB ALIGNMENT, **SEE CIVIL ENGINEERING DRAWINGS**.
5. PROPOSED ACCESS RAMP, **SEE CIVIL ENGINEERING DRAWINGS**.
6. PROPOSED BACK OF CURB IMPROVEMENTS, **SEE CIVIL ENGINEERING DRAWINGS**.
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9. TRAFFIC SIGNAL POLE, **SEE CIVIL ENGINEERING DRAWINGS**
10. EXISTING CROSSWALK TO REMAIN.
11. STREET NAME PYLON *(1002-6002)*, **SEE DETAIL #2, SHEET L2.03**
12. CROSSWALK CERAMIC TILE MARKER *(1002-6003)*, **SEE DETAIL #1, SHEET L.203**.

SHEET QUANTITIES - LANDSCAPE

ITEM	DESCRIPTION	UNIT	QTY
0432-6005	CLASS-A RIP RAP CONCRETE	CY	0.5
0528-6004	LANDSCAPE PAVERS	SY	152.0
0528-6006	REMOVE AND RELAY PAVERS	SY	0.0
1002-6002	LANDSCAPE AMENITY (TY 1)	EA	2.0
1002-6003	LANDSCAPE AMENITY (TY 2)	EA	8.0



STATE OF TEXAS
MICHAEL P. MAUER
1510
LICENSED LANDSCAPE ARCHITECT
AUG-24-2020

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BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

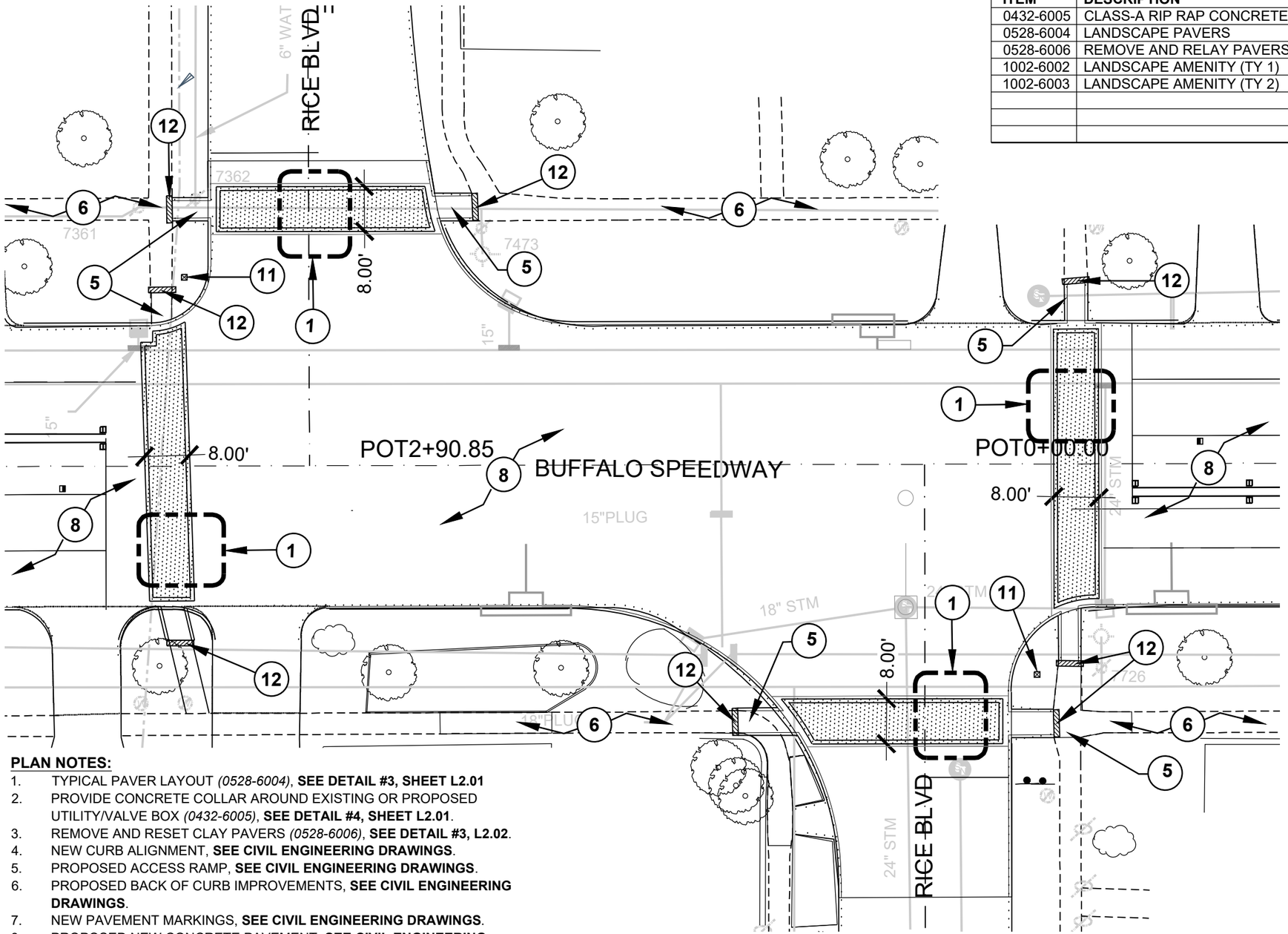
CROSSWALK SPECIAL PAVING LAYOUT PLAN

BUFFALO SPEEDWAY
(UNIVERSITY BLVD. INTERSECTION)

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO. (SEE THE TITLE SHEET)		SHEET NO.
6			538
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

SHEET QUANTITIES - LANDSCAPE			
ITEM	DESCRIPTION	UNIT	QTY
0432-6005	CLASS-A RIP RAP CONCRETE	CY	0.0
0528-6004	LANDSCAPE PAVERS	SY	152.0
0528-6006	REMOVE AND RELAY PAVERS	SY	0.0
1002-6002	LANDSCAPE AMENITY (TY 1)	EA	2.0
1002-6003	LANDSCAPE AMENITY (TY 2)	EA	8.0



PLAN NOTES:

1. TYPICAL PAVER LAYOUT *(0528-6004)*, **SEE DETAIL #3, SHEET L2.01**
2. PROVIDE CONCRETE COLLAR AROUND EXISTING OR PROPOSED UTILITY/VALVE BOX *(0432-6005)*, **SEE DETAIL #4, SHEET L2.01**.
3. REMOVE AND RESET CLAY PAVERS *(0528-6006)*, **SEE DETAIL #3, L2.02**.
4. NEW CURB ALIGNMENT, **SEE CIVIL ENGINEERING DRAWINGS**.
5. PROPOSED ACCESS RAMP, **SEE CIVIL ENGINEERING DRAWINGS**.
6. PROPOSED BACK OF CURB IMPROVEMENTS, **SEE CIVIL ENGINEERING DRAWINGS**.
7. NEW PAVEMENT MARKINGS, **SEE CIVIL ENGINEERING DRAWINGS**.
8. PROPOSED NEW CONCRETE PAVEMENT, **SEE CIVIL ENGINEERING DRAWINGS**.
9. TRAFFIC SIGNAL POLE, **SEE CIVIL ENGINEERING DRAWINGS**
10. EXISTING CROSSWALK TO REMAIN.
11. STREET NAME PYLON *(1002-6002)*, **SEE DETAIL #2, SHEET L2.03**
12. CROSSWALK CERAMIC TILE MARKER *(1002-6003)*, **SEE DETAIL #1, SHEET L.203**.

0 10 20 40
SCALE: 1"=20'

STATE OF TEXAS
MICHAEL P. MAUER
1510
LICENSED LANDSCAPE ARCHITECT
AUG-24-2020

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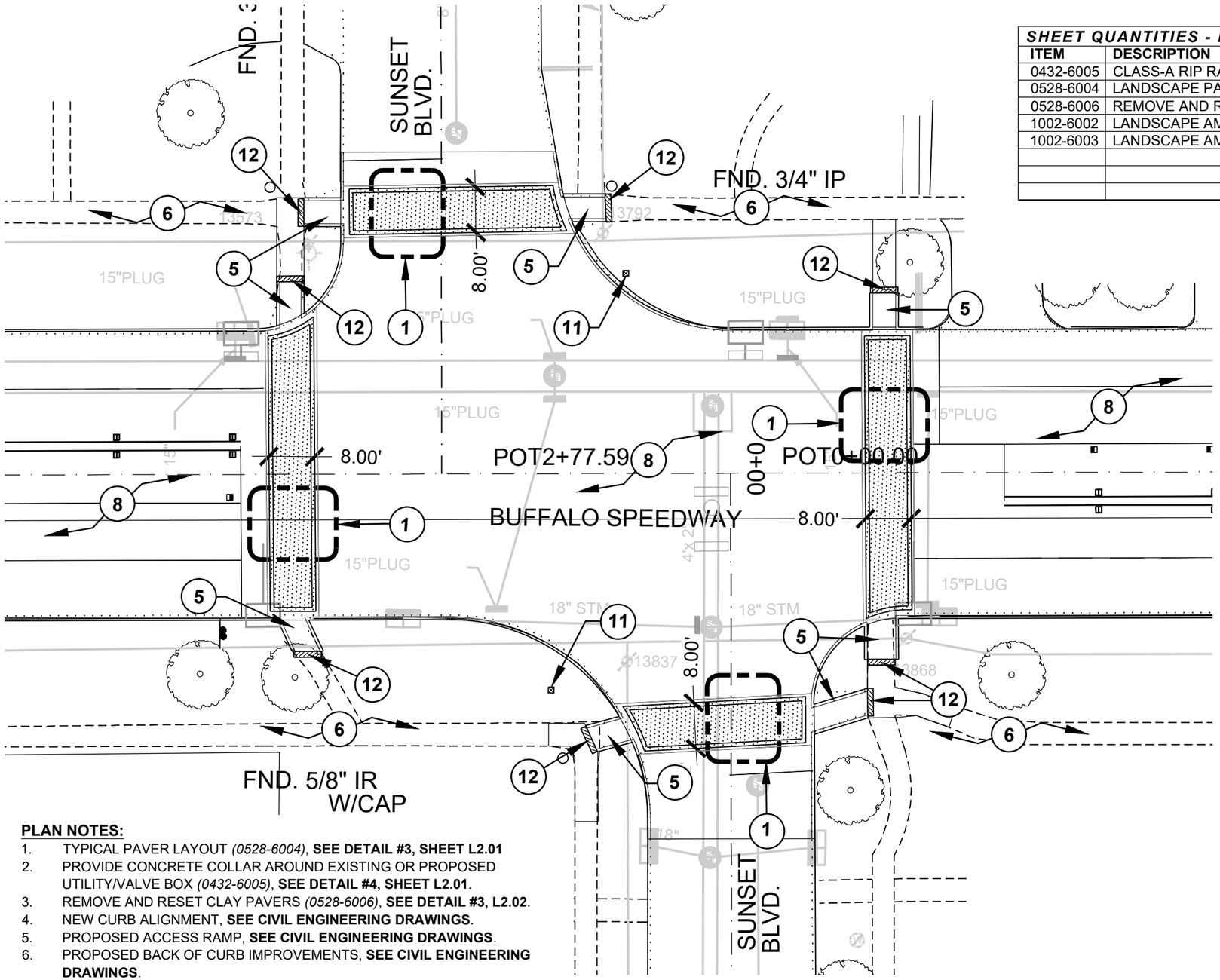
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

CROSSWALK SPECIAL PAVING LAYOUT PLAN

BUFFALO SPEEDWAY
(RICE BLVD. INTERSECTION)

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		539
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



SHEET QUANTITIES - LANDSCAPE			
ITEM	DESCRIPTION	UNIT	QTY
0432-6005	CLASS-A RIP RAP CONCRETE	CY	0.5
0528-6004	LANDSCAPE PAVERS	SY	157
0528-6006	REMOVE AND RELAY PAVERS	SY	0
1002-6002	LANDSCAPE AMENITY (TY 1)	EA	2
1002-6003	LANDSCAPE AMENITY (TY 2)	EA	8

PLAN NOTES:

1. TYPICAL PAVER LAYOUT *(0528-6004)*, **SEE DETAIL #3, SHEET L2.01**
2. PROVIDE CONCRETE COLLAR AROUND EXISTING OR PROPOSED UTILITY/VALVE BOX *(0432-6005)*, **SEE DETAIL #4, SHEET L2.01**.
3. REMOVE AND RESET CLAY PAVERS *(0528-6006)*, **SEE DETAIL #3, L2.02**.
4. NEW CURB ALIGNMENT, **SEE CIVIL ENGINEERING DRAWINGS**.
5. PROPOSED ACCESS RAMP, **SEE CIVIL ENGINEERING DRAWINGS**.
6. PROPOSED BACK OF CURB IMPROVEMENTS, **SEE CIVIL ENGINEERING DRAWINGS**.
7. NEW PAVEMENT MARKINGS, **SEE CIVIL ENGINEERING DRAWINGS**.
8. PROPOSED NEW CONCRETE PAVEMENT, **SEE CIVIL ENGINEERING DRAWINGS**.
9. TRAFFIC SIGNAL POLE, **SEE CIVIL ENGINEERING DRAWINGS**
10. EXISTING CROSSWALK TO REMAIN.
11. STREET NAME PYLON *(1002-6002)*, **SEE DETAIL #2, SHEET L2.03**
12. CROSSWALK CERAMIC TILE MARKER *(1002-6003)*, **SEE DETAIL #1, SHEET L.203**.

0 10 20 40
SCALE: 1"=20'

STATE OF TEXAS
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AUG-24-2020

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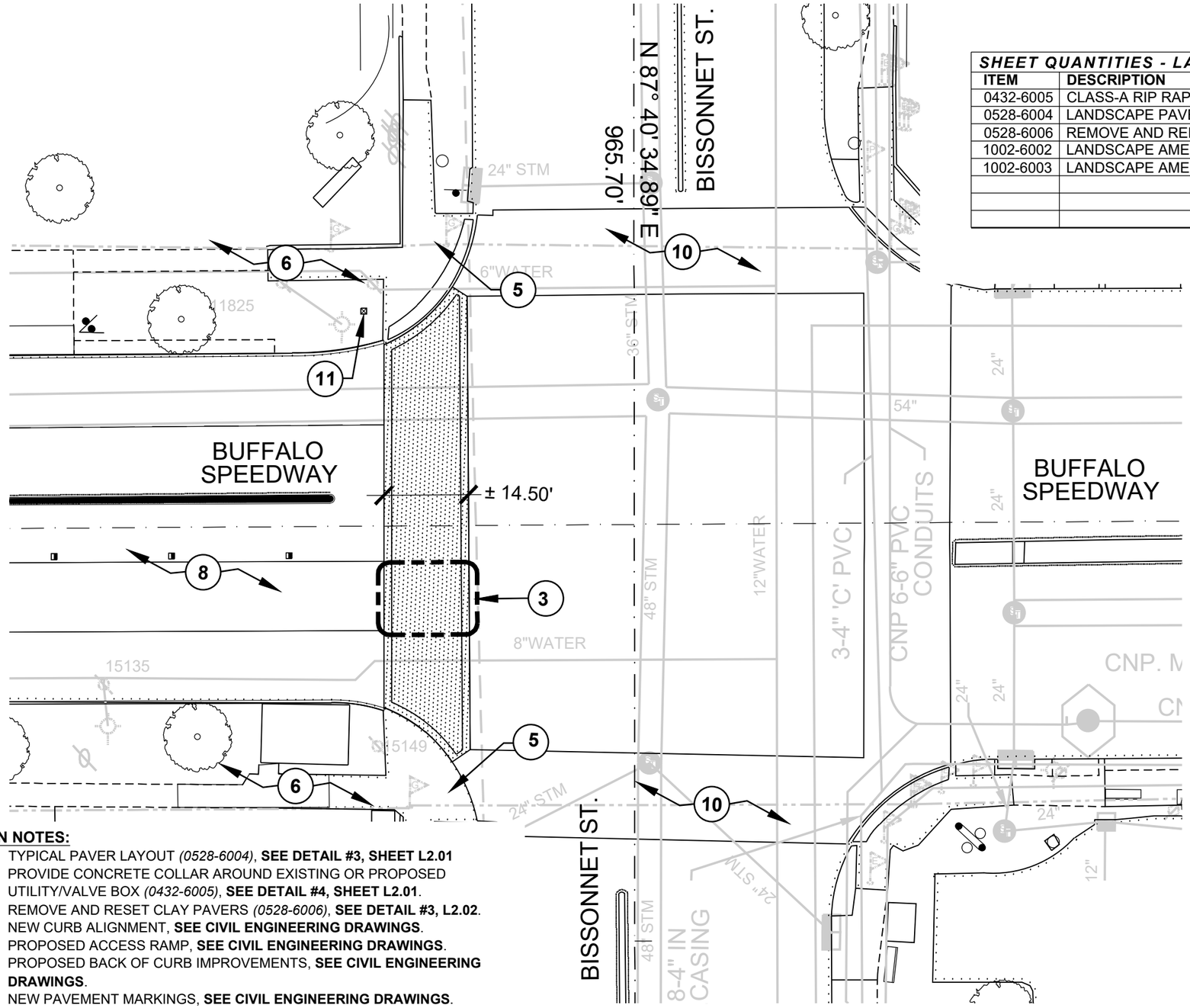
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

CROSSWALK SPECIAL PAVING LAYOUT PLAN

BUFFALO SPEEDWAY
(SUNSET BLVD. INTERSECTION)

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		540
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



SHEET QUANTITIES - LANDSCAPE			
ITEM	DESCRIPTION	UNIT	QTY
0432-6005	CLASS-A RIP RAP CONCRETE	CY	0
0528-6004	LANDSCAPE PAVERS	SY	0
0528-6006	REMOVE AND RELAY PAVERS	SY	118.0
1002-6002	LANDSCAPE AMENITY (TY 1)	EA	1
1002-6003	LANDSCAPE AMENITY (TY 2)	EA	0

PLAN NOTES:

1. TYPICAL PAVER LAYOUT *(0528-6004)*, **SEE DETAIL #3, SHEET L2.01**
2. PROVIDE CONCRETE COLLAR AROUND EXISTING OR PROPOSED UTILITY/VALVE BOX *(0432-6005)*, **SEE DETAIL #4, SHEET L2.01**.
3. REMOVE AND RESET CLAY PAVERS *(0528-6006)*, **SEE DETAIL #3, L2.02**.
4. NEW CURB ALIGNMENT, **SEE CIVIL ENGINEERING DRAWINGS**.
5. PROPOSED ACCESS RAMP, **SEE CIVIL ENGINEERING DRAWINGS**.
6. PROPOSED BACK OF CURB IMPROVEMENTS, **SEE CIVIL ENGINEERING DRAWINGS**.
7. NEW PAVEMENT MARKINGS, **SEE CIVIL ENGINEERING DRAWINGS**.
8. PROPOSED NEW CONCRETE PAVEMENT, **SEE CIVIL ENGINEERING DRAWINGS**.
9. TRAFFIC SIGNAL POLE, **SEE CIVIL ENGINEERING DRAWINGS**
10. EXISTING CROSSWALK TO REMAIN.
11. STREET NAME PYLON *(1002-6002)*, **SEE DETAIL #2, SHEET L2.03**
12. CROSSWALK CERAMIC TILE MARKER *(1002-6003)*, **SEE DETAIL #1, SHEET L.203**.

0 10 20 40
SCALE: 1"=20'

STATE OF TEXAS
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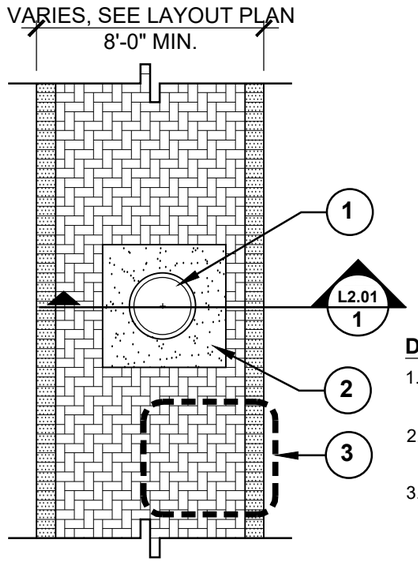
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

CROSSWALK SPECIAL PAVING LAYOUT PLAN

BUFFALO SPEEDWAY
(BISSONNET ST. INTERSECTION)

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		541
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



DETAIL NOTES:

1. UTILITY BOX, VALVE COVER, OR MANHOLE AS APPLICABLE.
2. CONCRETE UTILITY COLLAR, **SEE DETAIL #1, THIS SHEET.**
3. CROSSWALK PAVER DETAIL, **SEE DETAIL #2, THIS SHEET**.

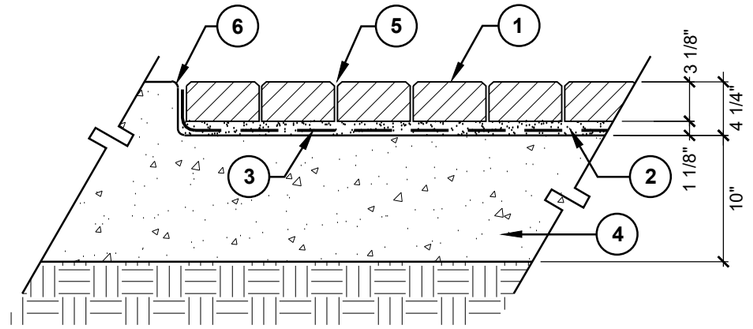
4 UNIT PAVER @ UTILITY BOX — SCALE: 3/16"=1'-0"

DETAIL NOTES:

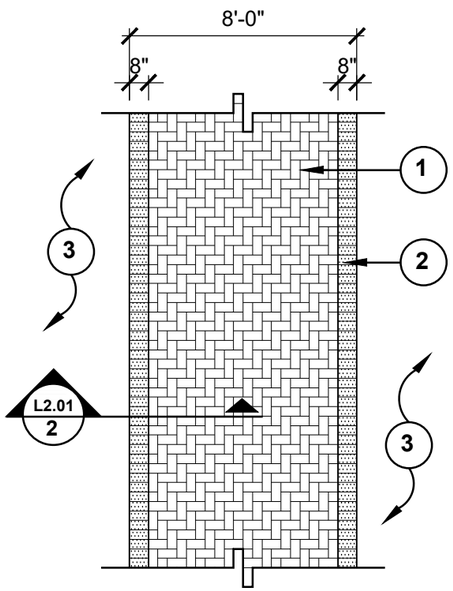
1. PAVESTONE - HOLLAND, ANTIQUE RED, 3-1/8" (8-CM)THICK CONCRETE UNIT PAVER, **SEE LAYOUT PLAN FOR PAVER TYPE AND COLOR.**
2. 1-1/8" MIN. CLEAN, WASHED SAND LEVELING BASE. INCIDENTAL; NOT PAID FOR SEPARATELY.
3. CONTINUOUS FILTER FABRIC, MIRAFI 140-N OR APPROVED EQUAL. INCIDENTAL; NOT PAID FOR SEPARATELY.
4. CONCRETE PAVEMENT, **SEE CIVIL ENGINEERING DRAWINGS.**
5. AFTER INSTALLATION OF BEDDING SAND, EDGE RESTRAINTS, PAVERS, AND JOINT SAND, VIBRATE TO FINAL ALIGNMENT AND ELEVATION, APPLY SUREBOND PAVER JOINT SEALER OVER ENTIRE SURFACE OF UNIT PAVERS AT MANUFACTURER'S RATE RE-VIBRATING BETWEEN APPLICATIONS UNTIL JOINTS ARE FULL (OR APPROVED EQUAL). INCIDENTAL; NOT PAID FOR SEPARATELY.
6. PROVIDE CONTINUOUS RADIUS HAND TOOLED EDGE.

MATERIAL NOTES:

A. SEE LANDSCAPE NOTES, SHEET L2.02 FOR ADDITIONAL LAYOUT MATERIAL AND INSTALLATION REQUIREMENTS.
B. PAVESTONE (KEYSTONE HARDSCAPES)
830 BROOKLINE
KATY, TEXAS 77494
281-391-7283
C. SURE BOND PAVER JOINT SEALER
WWW.SUREBOND.COM
608-237-7554
D. MATERIALS, INSTALLATION AND CLEANUP OF UNIT PAVERS ARE INCIDENTAL TO PAY ITEM 0528-6004



2 CROSSWALK PAVER SECTION - TYPICAL (PAY ITEM 0528-6004) — SCALE: 1"=1'-0"



DETAIL NOTES:

1. 3-7/8" X 7-13/16" X 3-1/8" THICK, UNIT PAVER IN 90° HERRINGBONE PATTERN.
2. 3-7/8" X 7-13/16" X 3-1/8" THICK, UNIT PAVER IN 90° SOLDIER COURSE PATTERN.
3. CONCRETE PAVEMENT, **SEE CIVIL ENGINEERING DRAWINGS**.

MATERIAL NOTES:

A. SEE SPECIFICATIONS FOR ADDITIONAL LAYOUT MATERIAL AND INSTALLATION REQUIREMENTS.
B. PAVESTONE (KEYSTONE HARDSCAPES)
830 BROOKLINE
KATY, TEXAS 77494
281-391-7283
C. SURE BOND PAVER JOINT SEALER
WWW.SUREBOND.COM
608-237-7554

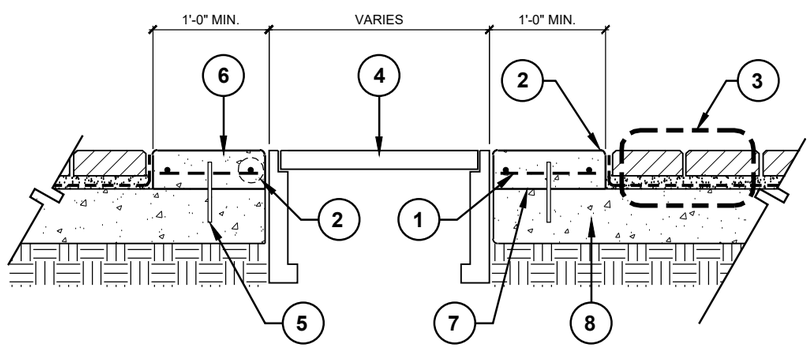
INTERSECTION LOCATIONS:
HOLCOMBE, UNIVERSITY, RICE & SUNSET

3 CROSSWALK UNIT PAVER LAYOUT (PAY ITEM 0528-6004) — SCALE: 3/16"=1'-0"

GENERAL NOTE:
ALL PAVING MATERIALS, INSTALLATION AND PREPARATION FOR UTILITY COLLAR ITEMS LISTED IN THIS DETAIL ARE INCIDENTAL AND NOT PAID FOR SEPARATELY.

DETAIL NOTES:

1. #3 REBAR AT 12" O.C.
2. (2) #3 REBAR HORIZONTAL.
3. UNIT PAVERS ON CONCRETE BASE, **SEE DETAIL #2, THIS SHEET**
4. PROPOSED UTILITY BOX OR VALVE, **SEE CIVIL ENGINEERING DRAWINGS.**
5. PROVIDE #4 X 6" U-SHAPE REBAR @ 2'-0" O.C. TIE INTO ROADWAY SUB-SLAB REINFORCING
6. 5,000 PSI MIN. CLASS-A RIP RAP CONCRETE COLLAR. (0432-6005)
7. CLEAN CONCRETE SLAB AND TREAT WITH APPROVED CONCRETE CONDITIONER PRIOR TO PLACING CONCRETE COLLAR.
8. CONCRETE ROAD BASE, SEE CIVIL ENGINEER DRAWINGS.



1 PAVER @ UTILITY BOX SECTION (PAY ITEM 0432-6005) — SCALE: 1"=1'-0"

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City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

CROSSWALK /
SPECIAL PAVING
DETAILS - L2.01

SHEET 1 OF 3

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		542
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

A. GENERAL CONTRACTOR TO COORDINATE FINAL DEPTH OF LEAVE OUT FOR UNIT PAVERS TO ALLOW FOR A FLUSH CONNECTION WITH PROPOSED AND/OR ADJACENT ROADWAY SURFACES & UTILITY OBSTRUCTIONS.

B. INSTALL PAVERS PER THE DRAWINGS & LANDSCAPE GENERAL NOTES..

C. CONCRETE UNDERLAYMENT BELOW PROPOSED UNIT PAVING TO BE PAID FOR SEPARATELY, **SEE CIVIL ENGINEERING DRAWINGS**.

D. PAVING CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR TO PROVIDE PROPER TRAFFIC CONTROL.

E. GENERAL CONTRACTOR SHALL COORDINATE LOCATIONS WITH ALIGNMENT OF CROSSWALKS, **SEE CIVIL ENGINEERING DRAWINGS**.

F. NO TRAFFIC MOVEMENT SHALL BE ALLOWED ON THE PAVERS UNTIL FINAL INSTALLATION OF REQUIRED 'SURE HAND' PAVEMENT SEALER HAS CURED AND IT HAS CORED.

G. CONTRACTOR SHALL PROVIDE A MINIMUM 4'X4' MOCKUP OF EACH PROPOSED PAVING PATTERN DRAWINGS FOR REVIEW BY OWNER'S REPRESENTATIVE AND/OR LANDSCAPE ARCHITECT.

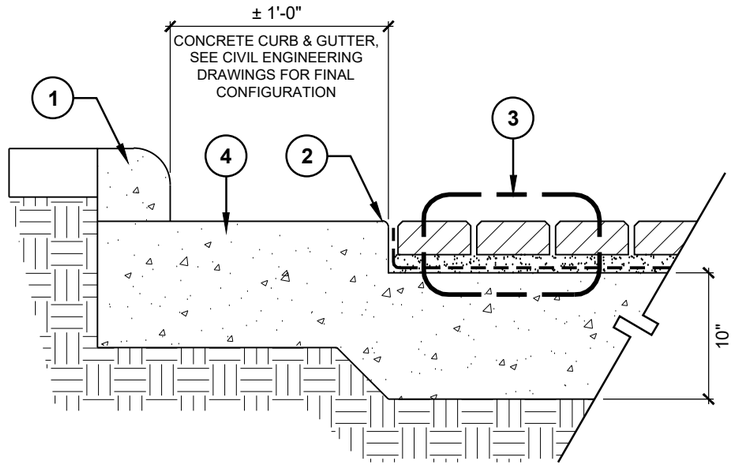
H. CONTRACTOR TO VERIFY THE LOCATION, CONDITION, & QUANTITY OF SURFACE UTILITY OBSTRUCTIONS WITHIN THE PROPOSED PAVER AREA. ALL SURFACE UTILITY OBSTRUCTIONS SHALL BE REQUIRED TO HAVE A CONCRETE COLLAR. **PER DETAIL #4, SHEET L2.01.**

I. COORDINATE PROPOSED CROSSWALK LAYOUT VIA **CIVIL ENGINEERING DRAWINGS.**

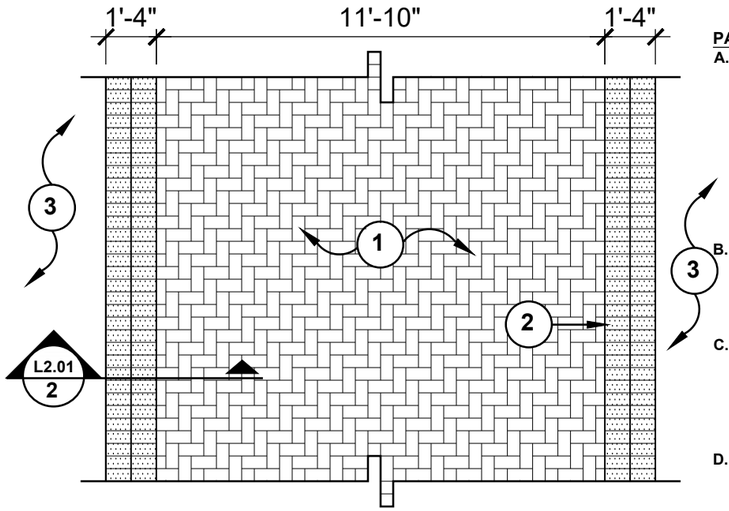
J. CONTRACTOR SHALL VERTICALLY AND HORIZONTALLY COMPACT PAVERS PER TXDOT SPECIFICAITONS

4 GENERAL LANDSCAPE NOTES — SCALE: *N.A.*

DETAIL NOTES:
1. PROPOSED ROADWAY CURB, **SEE CIVIL ENGINEERING DRAWINGS.**
2. PROVIDE RADIUSED JOINT AT PAVEMENT EDGE.
3. UNIT PAVERS ON CONCRETE BASE, **SEE DETAIL #2, SHEET L2.01**.
4. CONCRETE ROADWAY, **SEE CIVIL ENGINEERING DRAWINGS.**



2 CROSSWALK LAYOUT OFFSET @ CURB (SEE CIVIL DRAWINGS) — SCALE: 1"=1'-0"



PAVER MATERIAL NOTES:

A. CONTRACTOR TO UTILIZE EXISTING INTERSECTION PAVERS FOR THIS WORK. THIS INCLUDES REMOVAL PRIOR TO CONSTRUCTION, STORAGE DURING INTERSECTION WORK, TRANSPROTATION TO AND FROM STORAGE LOCATION, REINSTALLATION AND REPLACEMENT OF ANY DAMAGED OR MISSING PAVERS.

B. CONTRACTOR TO SUBMIT SAMPLE FOR REPLACEMENT PAVERS TO TXDOT AND CITY FOR APPROVAL PRIOR TO PERFORMING WORK.

C. PACIFIC CLAYPAVER REPLACEMENT (IF APPLICABLE)
UPCHURCH KIMBROUGH
7401 WESTVIEW HOUSTON,
TEXAS 77055 713-957-1520

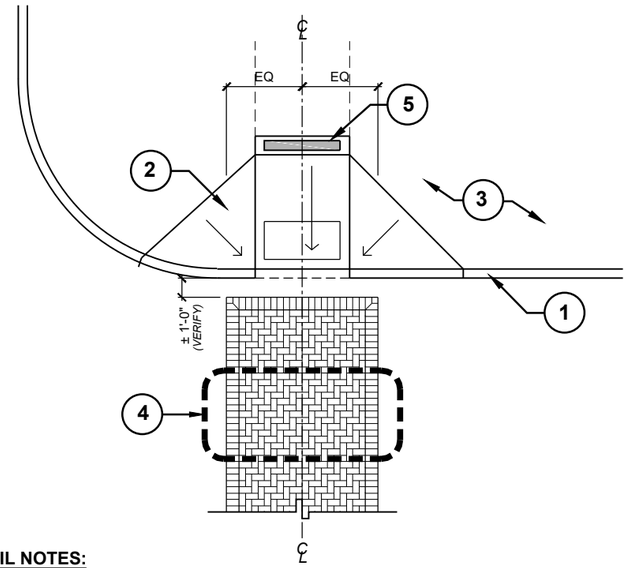
D. SURE BOND PAVER JOINT SEALER
WWW.SUREBOND.COM
608-237-7554

E. CONTRACTOR TO VERIFY PAVER TYPE AND MANUFACTURER AND ALLOW FOR UP TO 20% REPLACEMENT AS INCIDENTAL TO 0528-6006

DETAIL NOTES:
1. 4" X 8" X 2-5/8" (VERIFY) THICK, EXISTING CLAY PAVERS IN 90° HERRINGBONE PATTERN.
2. 4" X 8" X 2-5/8" (VERIFY) THICK, EXISTING CLAY PAVER IN DOUBLE ROW SOLDIER COURSE PATTERN.
3. CONCRETE PAVEMENT, **SEE CIVIL ENGINEERING DRAWINGS**.

BISSONNET INTERSECTION

3 EXISTING CLAY PAVER CROSSWALK LAYOUT (0528-6006) — SCALE:1/4"=1'-0"



DETAIL NOTES:
1. PROPOSED ROADWAY CURB, **SEE CIVIL ENGINEERING DRAWINGS** FOR CURB & GUTTER CONFIGURATION.
2. ACCESS RAMP, **SEE CIVIL ENGINEERING DRAWINGS.**
3. SIDEWALK TREATMENT, **SEE CIVIL ENGINEERING DRAWINGS.**
4. CROSSWALK PAVER LAYOUT, SEE CROSSWALK SPECIAL PAVING LAYOUT PLANS & ENGINEERING DRAWINGS FOR TYPE & FINISH.
5. CERAMIC TILE INSERT. **SEE DETAIL #1, SHEET L2.03**

1 CROSSWALK PAVERS @ RAMP — SCALE: 1/8"=1'-0"

M2L ASSOCIATES, INC.
8955 KATY FWY, SUITE 300
HOUSTON, TX 77024
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Landscape Architecture • Land Planning • Urban Design

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Freese and Nichols, Inc,
Texas Registered Engineering Firm F–2144

City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

CROSSWALK /
SPECIAL PAVING
DETAILS - L2.02

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		543
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

FABRICATOR:
WILLIAMS ARCHITECTUAL SIGNAGE
5002 CORAL GABLES DRIVE
HOU-TX-77069 TEL: 281-802-3546

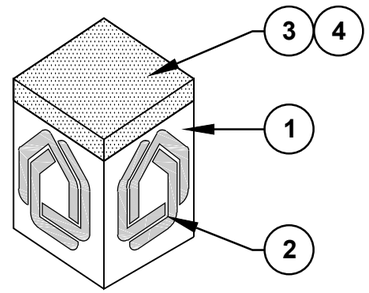
MATERIAL NOTES:

A. CONTRACTOR TO SUBMIT FULL SIZE MOCKUP SAMPLE TO TXDOT LANDSCAPE ARCHITECT AND CITY FOR APPROVAL PRIOR TO BEGINNING WORK.

B. MARK PROPOSED LOCATIONS AND ORIENTATION FOR TXDOT LANDSCAPE ARCHITECT AND CITY APPROVAL PRIOR TO BEGINNING WORK.

C. WEST UNIVERSITY VECTOR GRAPHIC WILL BE PROVIDED BY LANDSCAPE ARCHITECT UPON REQUEST.

D. SOLID CONTINUOUS WELDED OR EXTRUDED CONSTRUCTION. NO OVERLAPPING ALLOWED.



ENLARGED DETAIL NOTES:

1. REFLECTIVE CAP AND SIDES
2. THERMAL PAINTED METAL LOGO
3. 3/16" THICK ALUMINUM CONCRETE CAP
4. ACCENT COLOR

4 CROSSWALK TILE MARKER (INCIDENTAL TO PAY ITEM 1002-6002) SCALE:1/2"=1'-0"

DETAIL NOTES:

1. METAL POST CAP, **SEE ENLARGED DETAIL THIS SHEET**
2. V-CUT LETTERS, VARIES PER INTERSECTION LOCATIONS.
3. 6" SQUARE X 6'-0" CUSTOM ETERNA-STONE PYLON WITH HAND-TOOLED EDGES.
4. 14"Ø X 24" DEEP 3000 PSI CONCRETE FOOTING.

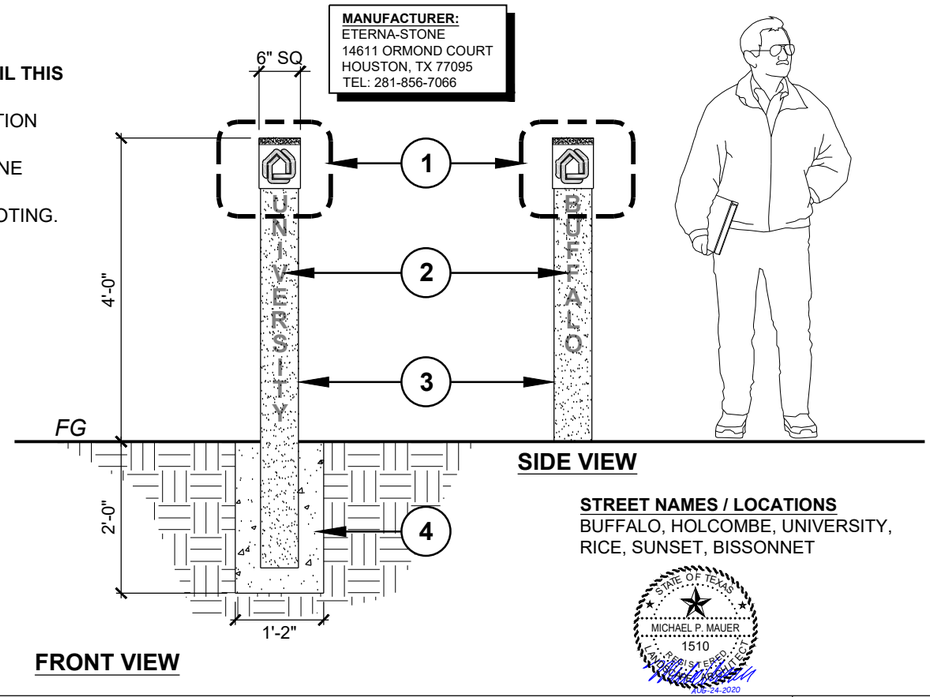
MATERIAL NOTES:

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C. WEST UNIVERSITY VECTOR GRAPHIC WILL BE PROVIDED BY LANDSCAPE ARCHITECT UPON REQUEST.

MANUFACTURER:
ETERNA-STONE
14611 ORMOND COURT
HOUSTON, TX 77095
TEL: 281-856-7066



FRONT VIEW

SIDE VIEW

STREET NAMES / LOCATIONS
BUFFALO, HOLCOMBE, UNIVERSITY, RICE, SUNSET, BISSONNET

STATE OF TEXAS
MICHAEL P. MAUER
1510
LICENSED LANDSCAPE ARCHITECT
AUG-24-2020

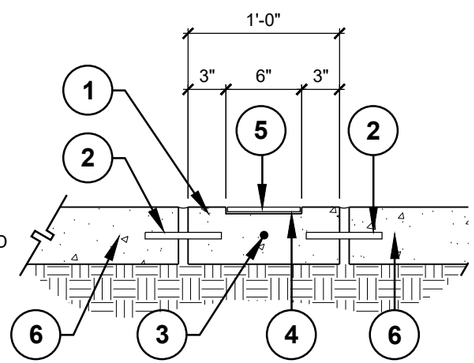
2 STREET NAME PYLON (PAY ITEM 1002-6002) SCALE: 1/2"=1'-0"

MATERIAL NOTES:

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C. WEST UNIVERSITY VECTOR GRAPHIC WILL BE PROVIDED BY LANDSCAPE ARCHITECT UPON REQUEST.



GENERAL NOTE:
ALL ITEMS LISTED IN THIS DETAIL ARE INCIDENTAL AND NOT PAID FOR SEPARATELY.

DETAIL NOTES:

1. STANDARD 3000 PSI CONCRETE W/SMOOTH TROWEL FINISH.
2. 6" (MIN) DOWEL AT 24" O.C.
3. #4 HORIZONTAL REBAR, CONTINUOUS.
4. 1/2" DEEP RECESS TO ACCEPT TILE INLAY.
5. TILE INLAY, **SEE DETAIL #1, THIS SHEET**.
6. PROPOSED CONCRETE RAMP OR PAVEMENT.

3 TILE INLAY PAD (INCIDENTAL TO PAY ITEM 1002-6003) SCALE: 1"=1'-0"

1/2 X 1/2 CERAMIC TILE LEGEND:

(01) WHITE, 1/2" SQUARE TILE

(45) COBALT, 1/2" SQUARE TILE

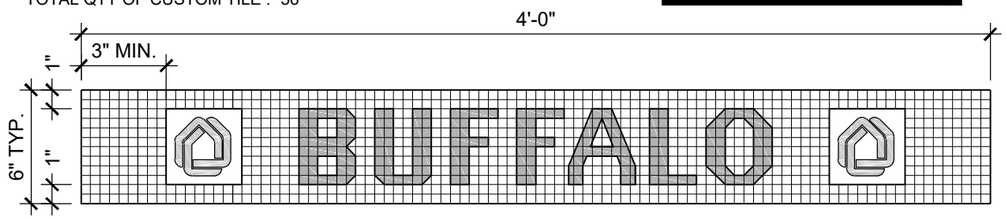
CUSTOM GRAPHIC 4" SQUARE TILE

STREETS & LOCATIONS	QTY
BUFFALO	14
HOLCOMBE	2
UNIVERSITY	4
RICE	4
SUNSET	4
TOTAL INLAYS :	28
TOTAL QTY OF CUSTOM TILE :	56

INSTALLATION NOTES:

1. PROVIDE 1/2" DEEP RECESS ON CONCRETE.
2. TILE TO BE INTEGRAL COLOR WITH MATT FINISH.
3. INSTALL WITH APPROVED OUTDOOR TILE ADHESIVE. (LATAPOXY 300 OR APPROVED EQUAL).
4. COORDINATE WITH TXDOT LANDSCAPE ARCHITECT ON LOCATIONS OF EACH TILE STREET NAME.
5. REMOVE EXISTING TILE MARKINGS MAY OCCUR AS PART OF DEMOLITION AND DO NOT NEED PRIOR APPROVAL.

MANUFACTURER:
LONE STAR CERAMICS
DISTRIBUTOR: **AMERICAN TILE**
4647 PINE TIMBERS, SUITE 100
HOU-TX-77041 TEL: 832-766-6188



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1 CERAMIC TILE INSERT (PAY ITEM 1002-6003) SCALE: 1.5"=1'-0"

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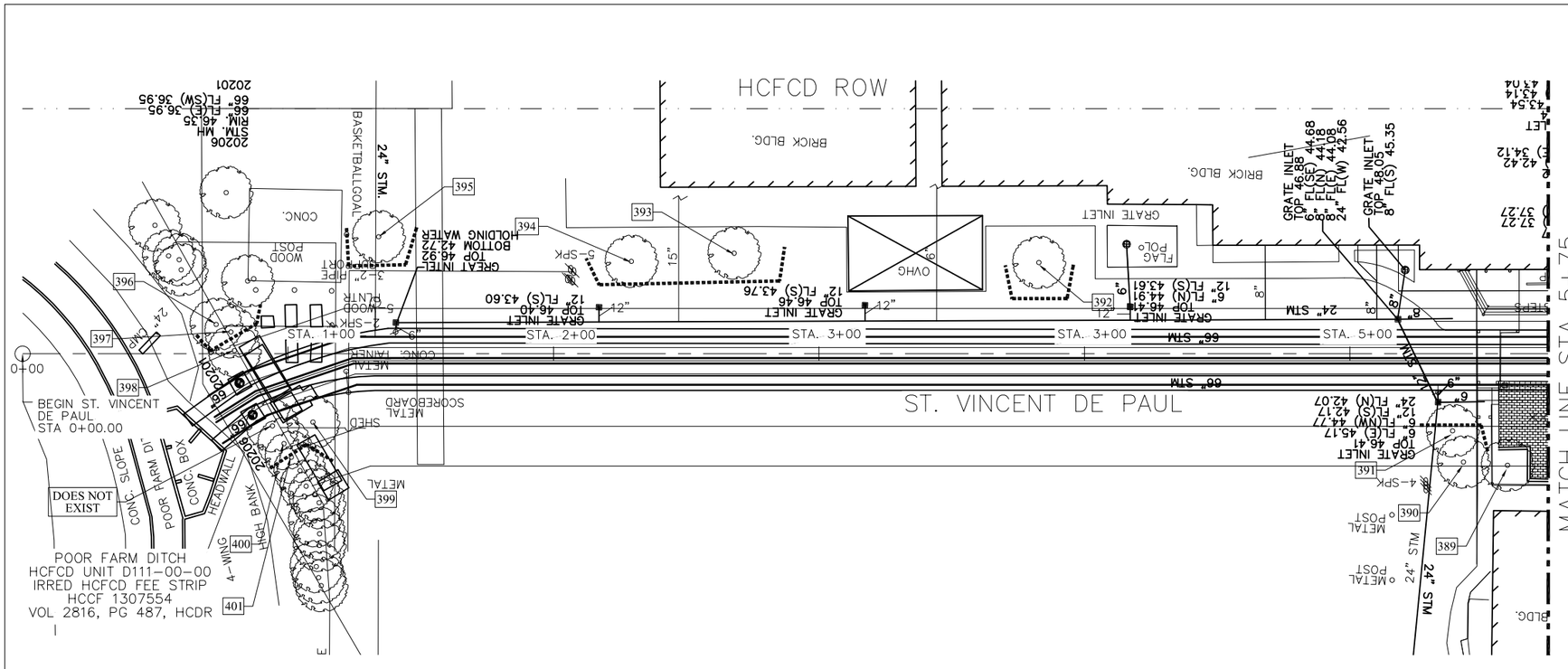
BUFFALO SPEEDWAY IMPROVEMENTS
(HOLCOMBE BLVD. TO BISSONNET)

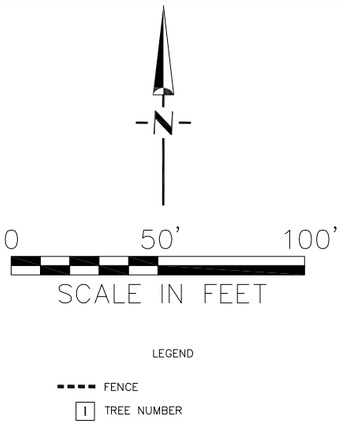
CROSSWALK /
SPECIAL PAVING
DETAILS - L2.03

SHEET 3 OF 3

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		544
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY





GENERAL NOTES

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
2. FOR DRIVEWAY STATION AND OFFSET DATA SEE DRIVEWAY DETAIL SHEETS.
3. ALL STATIONS ARE FOR ℄ BUFFALO SPEEDWAY UNLESS NOTED OTHERWISE.
4. MARK ALL TREES FOR REMOVAL, PROTECTION, AND PRUNING TREATMENT FOR APPROVAL BY TXDOT ENGINEER, AND CITY OF WEST UNIVERSITY PRIOR TO WORK.

389	6"Mexican Plum	St Vincent De Paul	Good	Fence
390	6" Mexican Plum	St Vincent De Paul	Good	Fence
391	8"Live Oak	St Vincent De Paul	Good	Fence
392	8" Live Oak	St Vincent De Paul	Good	Fence
393	10" Live Oak	St Vincent De Paul	Good	Fence
394	10" Live Oak	St Vincent De Paul	Good	Fence
396	12" Hackberry	St Vincent De Paul	Fair	Fence
397	24" American Elm	St Vincent De Paul	fair	Fence
398	10" Az Ash	St Vincent De Paul	Fair	Remove
399	28" Water Oak	St Vincent De Paul	Fair	Remove
400	10" Ligustrum	St Vincent De Paul	Fair	Remove
401	12" Hackberry	St Vincent De Paul	Fair	Fence

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

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CONSULTING URBAN FORESTERS
P.O. Box 57134
Houston, TX 77527-1435
Eric E. Enos
S.I. Anderson Company, Ltd.
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713-515-0740

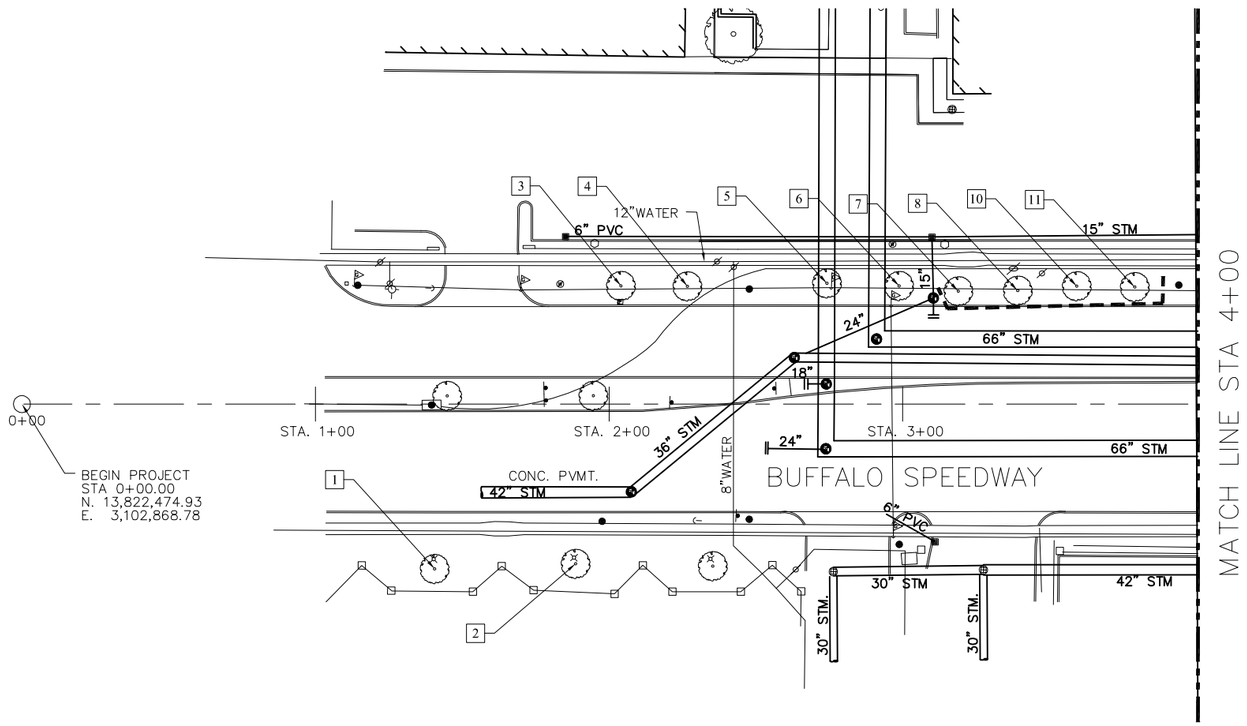
BUFFALO SPEEDWAY RECONSTRUCTION (ST. VINCENT DE PAUL) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA 0+00 TO STA 5+75

SHEET 1 OF 27

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			545
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



0 50' 100'

SCALE IN FEET

LEGEND

FENCE

1 TREE NUMBER

GENERAL NOTES

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Tree #	Size & Species	Address	Condition/Comments	Treatment
1	15" Live Oak	N/A	Good	Not Impacted
2	14" Live Oak	N/A	Good	Not Impacted
3	6" Holly	N/A	Poor, Decayed Trunk	Not Impacted
4	4" Holly	N/A	Fair,	Not Impacted
5	20" Live Oak	N/A	Good, Ordinance Tree	Remove Tree, Replace 20"
6	4" Holly	N/A	Fair , Ordinance Tree	Remove Tree, Replace 4"
7	4" Holly	N/A	Fair, Ordinance Tree	Remove Tree, Replace 4"
8	4" Holly	N/A	Fair	Fence
10	4" Holly	N/A	Fair	Fence
11	4" Holly	N/A	Fair	Fence

STATE OF TEXAS
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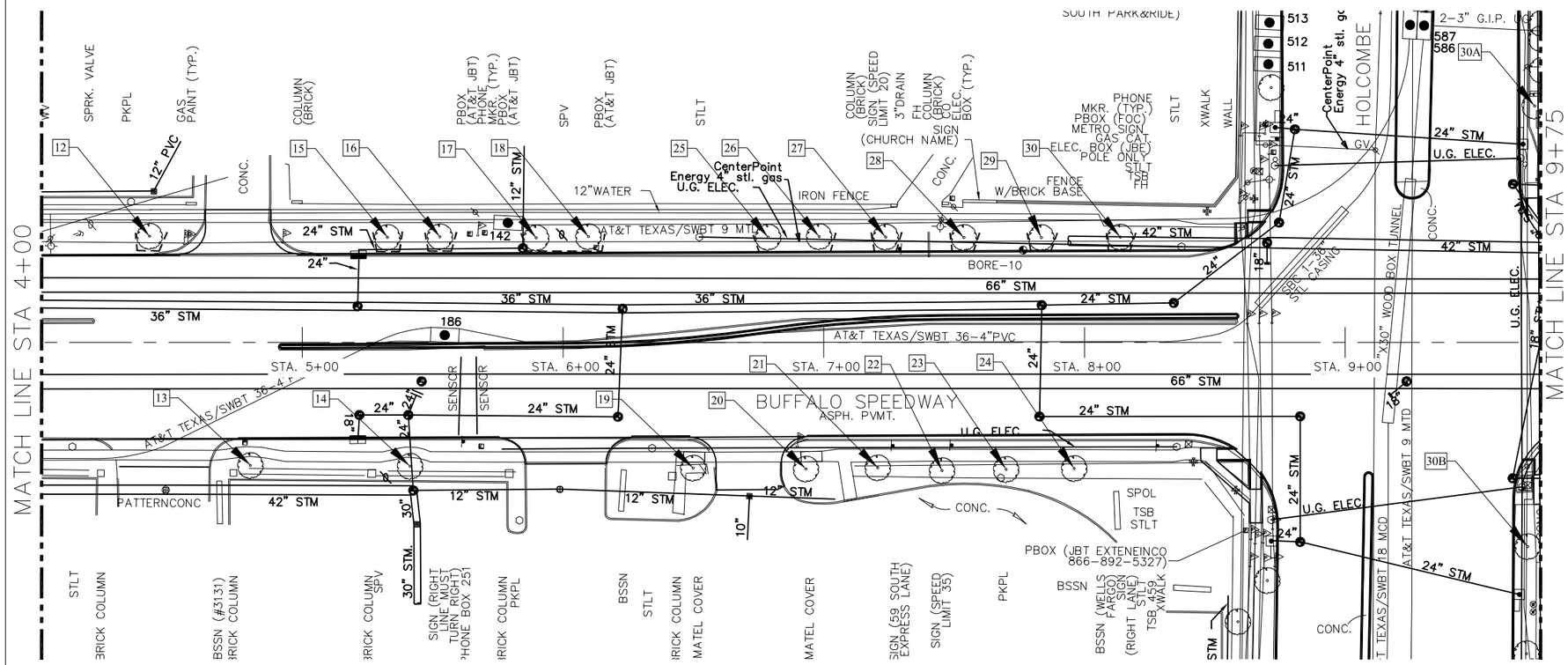
S.L. ANDERSON COMPANY, LTD.
CONSULTING URBAN FORESTERS
P.O. Box 57134
Houston, TX 77527–1435
Eric E. Enos
S.L. Anderson Company, Ltd.
Consulting Urban Forester
713–515–0740

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA 0+00 TO STA 4+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			546
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



0 50' 100'

SCALE IN FEET

LEGEND

- - - FENCE

[1] TREE NUMBER

GENERAL NOTES

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2. FOR DRIVEWAY STATION AND OFFSET DATA SEE DRIVEWAY DETAIL SHEETS.
3. ALL STATIONS ARE FOR ℄ BUFFALO SPEEDWAY UNLESS NOTED OTHERWISE.
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Tree #	Size & Species	Address	Condition/Comments	Treatment
12	4" Holly	N/A	Fair	Fence
13	20" Live Oak	N/A	Fair	Not Impacted
14	18" Live Oak	N/A	Fair	Not Impacted
15	3" Holly	N/A	Fair	Fence
16	3" Holly	N/A	Fair	Fence
17	3" Holly	N/A	Fair	Fence
18	3" Holly	N/A	Fair	Fence
19	14" Live Oak	N/A	Fair,	Not Impacted
20	12" Live Oak	N/A	Fair	Not Impacted
21	14" Live Oak	N/A	Fair	Not Impacted
22	12" Live Oak	N/A	Good	Not Impacted
23	12" Live Oak	N/A	Good	Not Impacted
24	14" Live Oak	N/A	Good	Not Impacted
25	3" Holly	N/A	Fair	Fence
26	3" Holly	N/A	Fair	Fence
27	3" Holly	N/A	Fair	Fence
28	3" Holly	N/A	Fair	Fence
29	3" Holly	N/A	Fair	Fence
30	3" Holly	N/A	Fair	Fence
30A	5" Pistache	N/A	Fair, Ordinance Tree	Remove, Replace 5"
30B	18" Live Oak	N/A	Fair, Ordinance Tree	Remove, Replace 18"

STATE OF TEXAS
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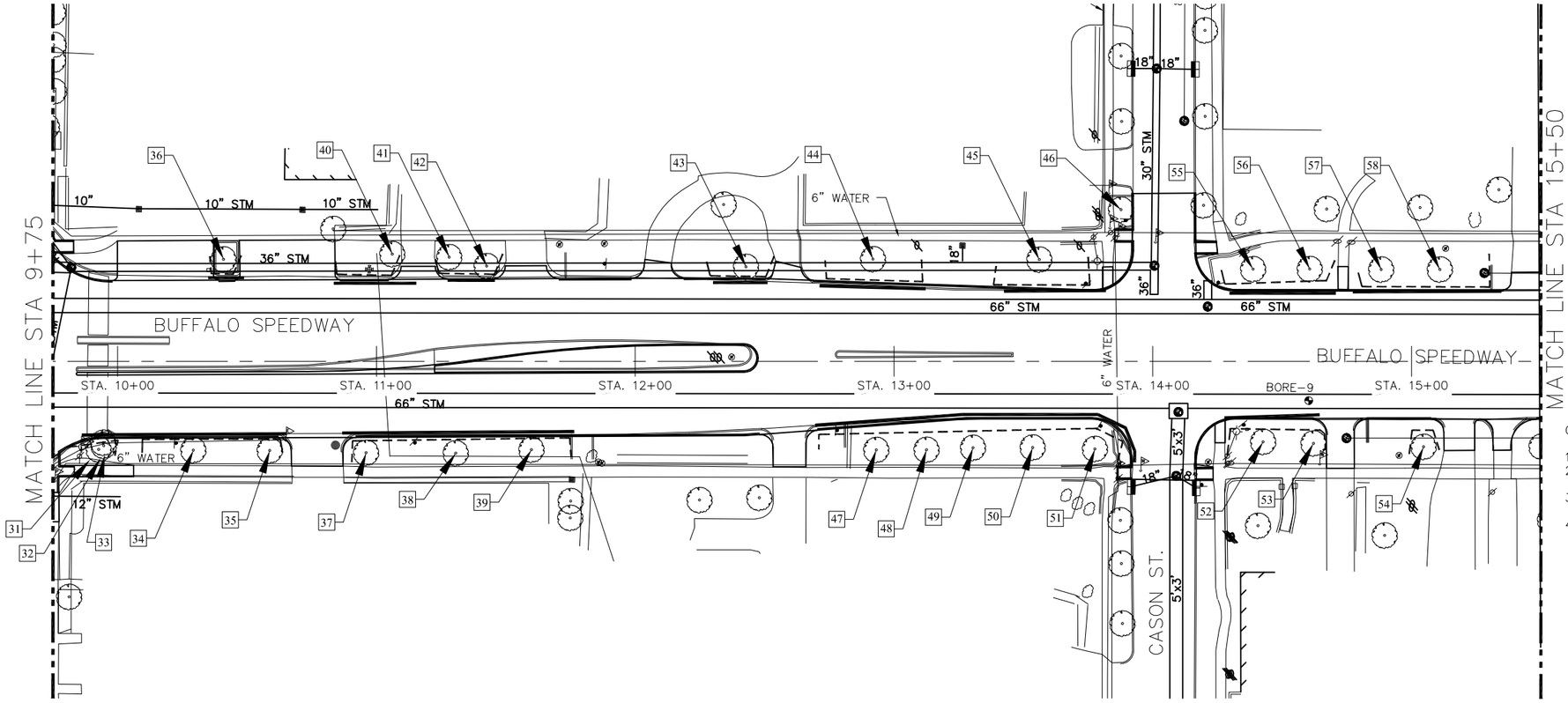
BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA 4+00 TO STA 9+75

SHEET 3 OF 27

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		547
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100'

SCALE IN FEET

LEGEND

- FENCE
- [1] TREE NUMBER
- ZERO CURB CUT

GENERAL NOTES

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
2. FOR DRIVEWAY STATION AND OFFSET DATA SEE DRIVEWAY DETAIL SHEETS.
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4. MARK ALL TREES FOR REMOVAL, PROTECTION, AND PRUNING TREATMENT FOR APPROVAL BY TXDOT ENGINEER, AND CITY OF WEST UNIVERSITY PRIOR TO WORK.

STATE OF TEXAS
MEHRAN BAVARIAN
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8/25/2020

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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA 9+75 TO STA 15+50

SHEET 4 OF 27

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		548
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

Tree #	Size & Species	Address	Condition/Comments	Treatment
31	14" Palm	N/A	Fair	Fence
32	14" Palm	N/A	Fair	Fence
33	15" Water Oak	N/A	Fair	Fence, Zero Curb Cut
34	14" Live Oak	N/A	Fair	Fence, Zero Curb Cut
35	19" Live Oak	N/A	Fair	Fence, Zero Curb Cut
36	23" Live Oak	N/A	Fair,	Fence, Zero Curb Cut
37	18" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Root prune for inlet
38	18" Live Oak	N/A	Fair	Fence, Zero Curb Cut
39	16" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Root prune for inlet.
40	36" Live Oak	6720 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Root prune for inliet, Form/pour drive approach w/o damaging roots 1" and larger., Trunk Barricade
41	8" Magnolia	6720 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
42	6" Loquat	6720 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
43	18" Magnolia	6716 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
44	33" Ash	N/A	Fair	Fence, Zero Curb Cut
45	18" Ash	N/A	Fair	Fence, Zero Curb Cut
46	18" Ash	N/A	Fair	Fence, Zero Curb Cut
47	30" Live Oak	6703 Buffalo Spdwy	Good	Fence, Zero Curb Cut
48	24" Live Oak	6703 Buffalo Spdwy	Good	Fence, Zero Curb Cut
49	19" Live Oak	6703 Buffalo Spdwy	Good	Fence, Zero Curb Cut
50	32" Live Oak	6703 Buffalo Spdwy	Good	Fence, Zero Curb Cut
51	24" Live Oak	6703 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
52	8" Magnolia	6647 Buffalo Spdwy	Good	Fence, Zero Curb Cut
53	10" Magnolia	6647 Buffalo Spdwy	Good	Fence, Zero Curb Cut
54	2" Magnolia	6641 Buffalo Spdwy	Fair,	Fence
55	28" Ash	6648 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
56	16" Magnolia	6648 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
57	21" Magnolia	6648 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
58	27" Ash	6648 Buffalo Spdwy	Fair	Fence, Zero Curb Cut

1 REVISED 03/11/2021

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

UPDATED
3/11/2021

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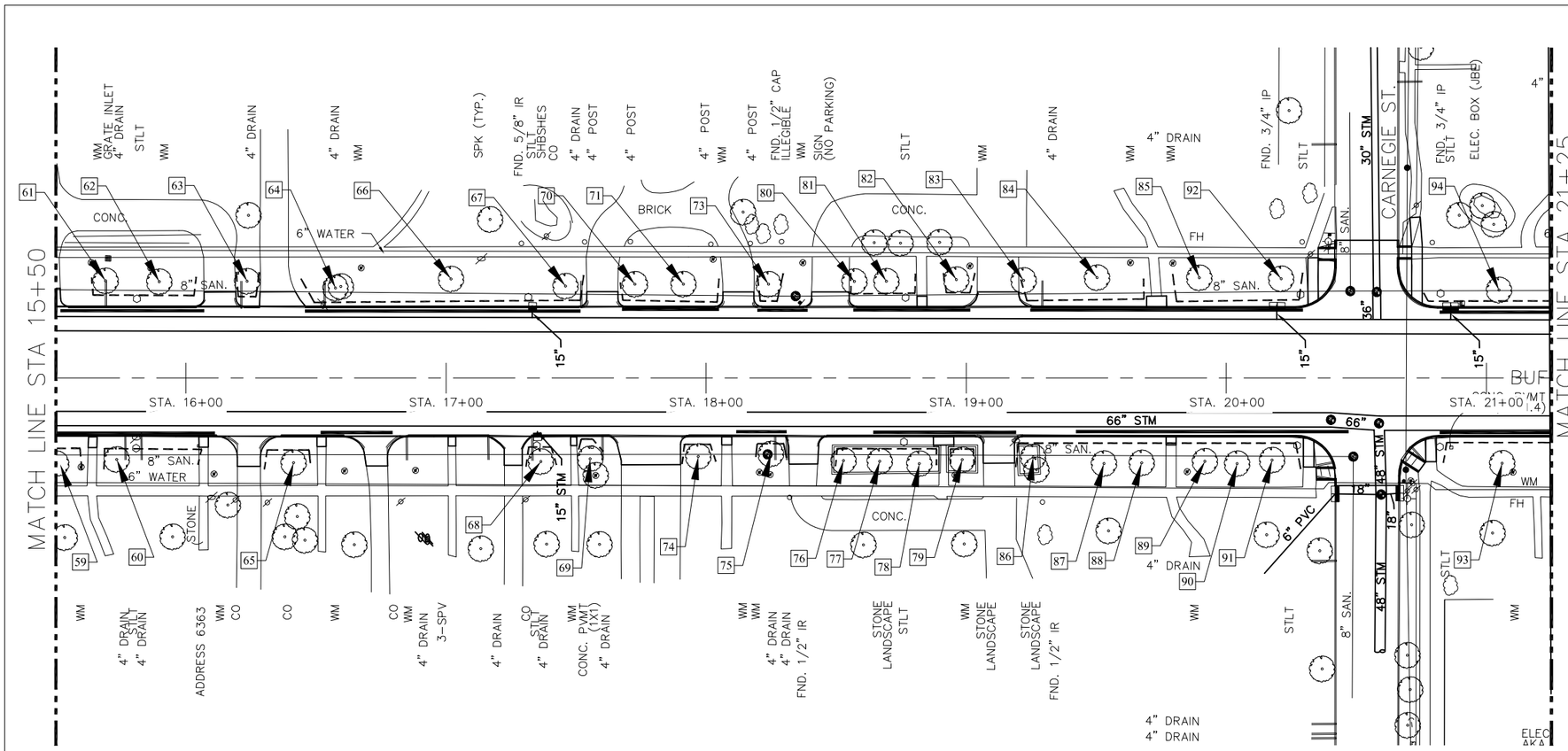
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION LIST

BUFFALO SPEEDWAY IMPROVEMENTS
STA 9+75 TO STA 15+50

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		549
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100'

SCALE IN FEET

LEGEND

- FENCE
- [1] TREE NUMBER
- ZERO CURB CUT

GENERAL NOTES

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8/25/2020

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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA15+50 TO STA 21+25

SHEET 6 OF 27

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		550
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

Tree #	Size & Species	Address	Condition/Comments	Treatment
59	18" Magnolia	6637 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
60	22" Magnolia	6637 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
61	16" Live Oak	6636 Buffalo Spdwy	Good	Fence, Zero Curb Cut, Root Prune for inlet.
62	16" Live Oak	6636 Buffalo Spdwy	Good	Fence, Zero Curb Cut
63	10" Live Oak	6636 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
64	23" Magnolia	6630 Buffalo Spdwy	Good	Fence, Zero Curb Cut
65	23" Shumard Oak	6629 Buffalo Spdwy	Good	Fence, Zero Curb Cut
66	26" Live Oak	6630 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
67	23" Live Oak	6630 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Hand dig ITS Ground box.
68	2" Live Oak	6621 Buffalo Spdwy	Poor	Fence
69	2" Live Oak	6621 Buffalo Spdwy	Poor	Fence
70	18" Live Oak	6622 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
71	24" Live Oak	6622 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
73	8" Live Oak	6622 Buffalo Spdwy	Good	Fence, Zero Curb Cut
74	18" Live Oak	6619 Buffalo Spdwy	Good	Fence, Zero Curb Cut
75	3" Live Oak	6619 Buffalo Spdwy	Good	Fence
76	24" Live Oak	6615 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
77	18" Live Oak	6615 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Root Prune for inlet
78	14" Live Oak	6615 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
79	24" Live Oak	6615 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
80	12" Magnolia	6616 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
81	12" Magnolia	6616 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Root prune for inlet.
82	18" Magnolia	6616 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
83	16" Crape Myrtle	6602 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
84	27" Live Oak	6602 Buffalo Spdwy	Good	Fence, Zero Curb Cut
85	25" Live Oak	6602 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
86	14" Palm	6609 Buffalo Spdwy	Fair	Fence
87	10" Live Oak	6609 Buffalo Spdwy	Good	Fence, Zero Curb Cut
88	23" Ash	6609 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
89	25" Ash	6609 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
90	3" Live Oak	6609 Buffalo Spdwy	Good	Fence
91	20" Ash	6609 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
92	24" Live Oak	6602 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Pour/form SW w/o damaging roots 1" and larger.
93	18" Magnolia	N/A	Fair	Fence, Zero Curb Cut
94	47" Live Oak	6546 Buffalo Spdwy	Fair	Fence, Zero Curb Cut

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED
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8/25/2020

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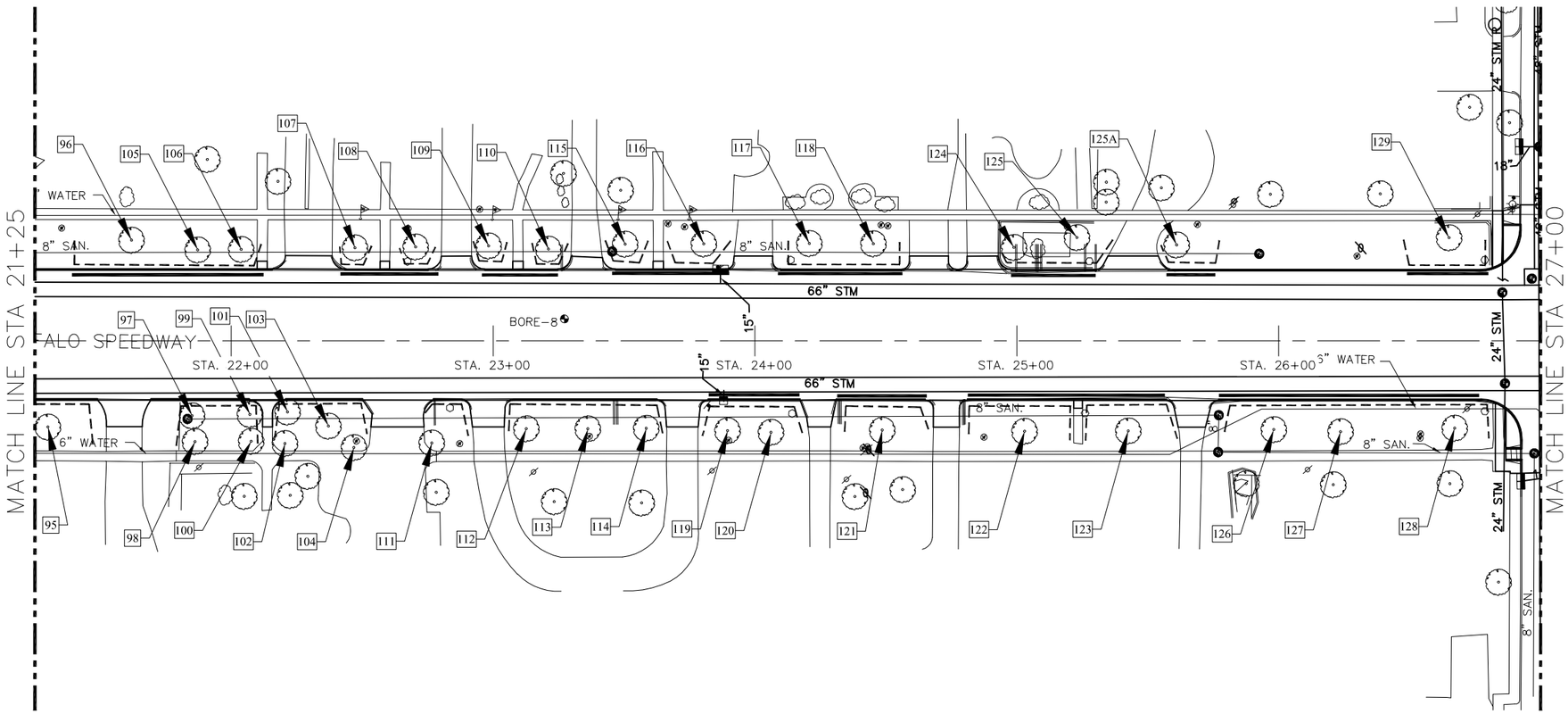
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION LIST

BUFFALO SPEEDWAY IMPROVEMENTS
STA 15+50 TO STA 21+25

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		551
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100'

SCALE IN FEET

LEGEND

FENCE

[1] TREE NUMBER

ZERO CURB CUT

GENERAL NOTES

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
2. FOR DRIVEWAY STATION AND OFFSET DATA SEE DRIVEWAY DETAIL SHEETS.
3. ALL STATIONS ARE FOR ℄ BUFFALO SPEEDWAY UNLESS NOTED OTHERWISE.
4. MARK ALL TREES FOR REMOVAL, PROTECTION, AND PRUNING TREATMENT FOR APPROVAL BY TXDOT ENGINEER, AND CITY OF WEST UNIVERSITY PRIOR TO WORK.

STATE OF TEXAS
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA 21+25 TO STA 27+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		552
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

Tree #	Size & Species	Address	Condition/Comments	Treatment
95	15" Magnolia	6515 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
96	10" Pecaan	6540 Buffalo Spdwy	Fair	Fence, Bore ITS line
97	5" Crape Myrtle	6515 Buffalo Spdwy	Good	Fence
98	5" Crape Myrtle	6515 Buffalo Spdwy	Good	Fence
99	5" Crape Myrtle	6515 Buffalo Spdwy	Good	Fence
100	5" Crape Myrtle	6515 Buffalo Spdwy	Good	Fence
101	5" Crape Myrtle	6515 Buffalo Spdwy	Good	Fence
102	5" Crape Myrtle	6515 Buffalo Spdwy	Good	Fence
103	6" Magnolia	6515 Buffalo Spdwy	Good	Fence
104	10" Water Oak	6515 Buffalo Spdwy	Fair	Fence
105	19" Live Oak	6546 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Bore ITS line, Root Prune for inlet, Trunk Barricade.
106	16" Live Oak	6546 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Bore ITS line, Trunk barricade
107	31" Live Oak	6536 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
108	25" Live Oak	6536 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
109	32" Ash	6530 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
110	17" Ashe	6530 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
111	8" Crape Myrtle	6515 Buffalo Spdwy	Good	Fence
112	9" Live Oak	6527 Buffalo Spdwy	Good	Fence
113	5" Live Oak	6527 Buffalo Spdwy	Fair	Fencc
114	6" Live Oak	6527 Buffalo Spdwy	Fair	Fence
115	12" Live Oak	6528 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
116	18" Live Oak	6528 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
117	19" Live Oak	6520 Buffalo Spdwy	Good	Fence, Zero Curb Cut
118	20" Live Oak	6520 Buffalo Spdwy	Good	Fence Zero Curb Cut
119	18" Live Oak	6523 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
120	17" Live Oak	6523 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
121	17" Live Oak	6523 Buffalo Spdwy	Good	Fence Zero Curb Cut
122	29" Live Oak	N/A	Good	Fence, Zero Curb Cut, Root Prune for inlet
123	31" Live Oak	N/A	Fair	Fence, Zero Curb Cut
124	13" Live Oak	6514 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
125	16" Pecan	6514 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
125A	18" Live Oak	6512 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
126	21" Live Oak	6501 Buffalo Spdwy	Good	Fence, Zero Curb Cut
127	22" Willow Oak	6501 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
128	19" Water Oak	6501 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
129	18" Water Oak	N/A	Fair	Fence, Zero Curb Cut, Hand dig ITS Ground box.

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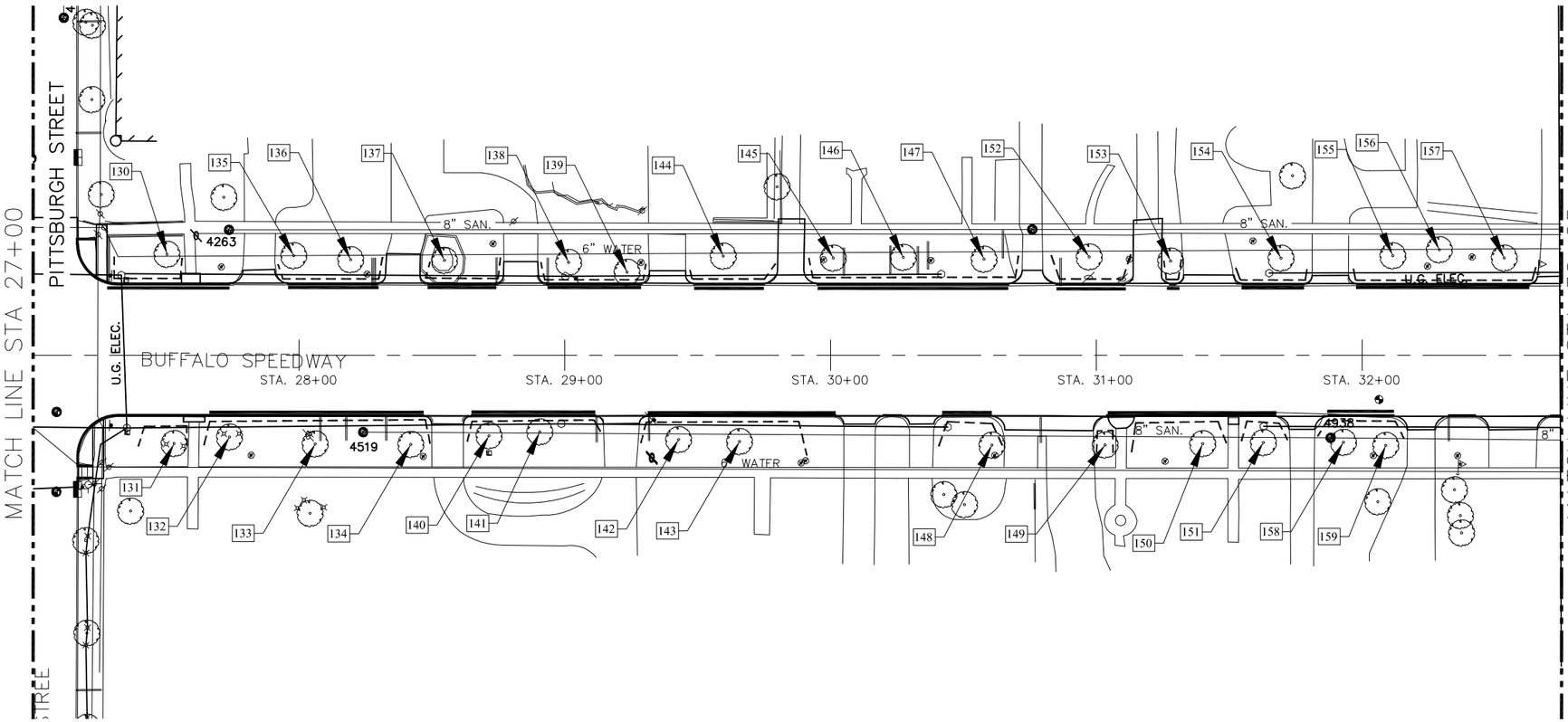
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION LIST

BUFFALO SPEEDWAY IMPROVEMENTS
STA 21+25 TO STA 27+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		553
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100'

SCALE IN FEET

LEGEND

- FENCE
- [1] TREE NUMBER
- ZERO CURB CUT

GENERAL NOTES

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
2. FOR DRIVEWAY STATION AND OFFSET DATA SEE DRIVEWAY DETAIL SHEETS.
3. ALL STATIONS ARE FOR ℄ BUFFALO SPEEDWAY UNLESS NOTED OTHERWISE.
4. MARK ALL TREES FOR REMOVAL, PROTECTION, AND PRUNING TREATMENT FOR APPROVAL BY TXDOT ENGINEER, AND CITY OF WEST UNIVERSITY PRIOR TO WORK.

STATE OF TEXAS
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA 27+00 TO STA 32+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		554
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

Tree #	Size & Species	Address	Condition/Comments	Treatment
130	21" Water Oak	6448 Buffalo Spdwy	Poor	Remove, replace 21"
131	17" Palm	N/A	Fair	Fence
132	30" Water Oak	6445 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
133	19" Live Oak	6445 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
134	18" Pecan	6435 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
135	23" Live Oak	6442 Buffalo Spdwy	Poor	Fence, Zero Curb Cut
136	23" Live Oak	6442 Buffalo Spdwy	Good	Fence, Zero Curb Cut
137	34" Live Oak	6438 Buffalo Spdwy	Poor	Fence, Zero Curb Cut, Hand dig ITS Ground box.
138	16" Pecan	6438 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
139	16" Pecan	6438 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Trunk barricade
140	3" Crape Myrtle	6435 Buffalo Spdwy	Fair	Fence
141	12" Magnolia	6435 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
142	20" Pecan	6427 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
143	19" Pecan	6427 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
144	19" Live Oak	6430 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
145	14" Live Oak	6426 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
146	19" Live Oak	6424 Buffalo Spdwy	Good	Fence, Zero Curb Cut
147	22" Live Oak	6424 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
148	18" Pine	6421 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
149	10" Live Oak	6417 Buffalo Spdwy	Good	Fence, Zero Curb Cut
150	34" Live Oak	6415 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
151	35" Live Oak	6415 Buffalo Spdwy	Poor	Fence, Zero Curb Cut
152	20" Live Oak	6420 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
153	20" Live Oak	6412 Buffalo Spdwy	Fair	Fence Zero Curb Cut
154	17" Live Oak	6412 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
155	19" Live Oak	6404 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Root prune for inlet
156	21" Live Oak	6404 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
157	17" Live Oak	6404 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
158	2" Live Oak	6411 Buffalo Spdwy	Fair	Fence
159	16" Magnolia	6411 Buffalo Spdwy	Poor	Fence, Zero Curb Cut, Root prune for inlet.

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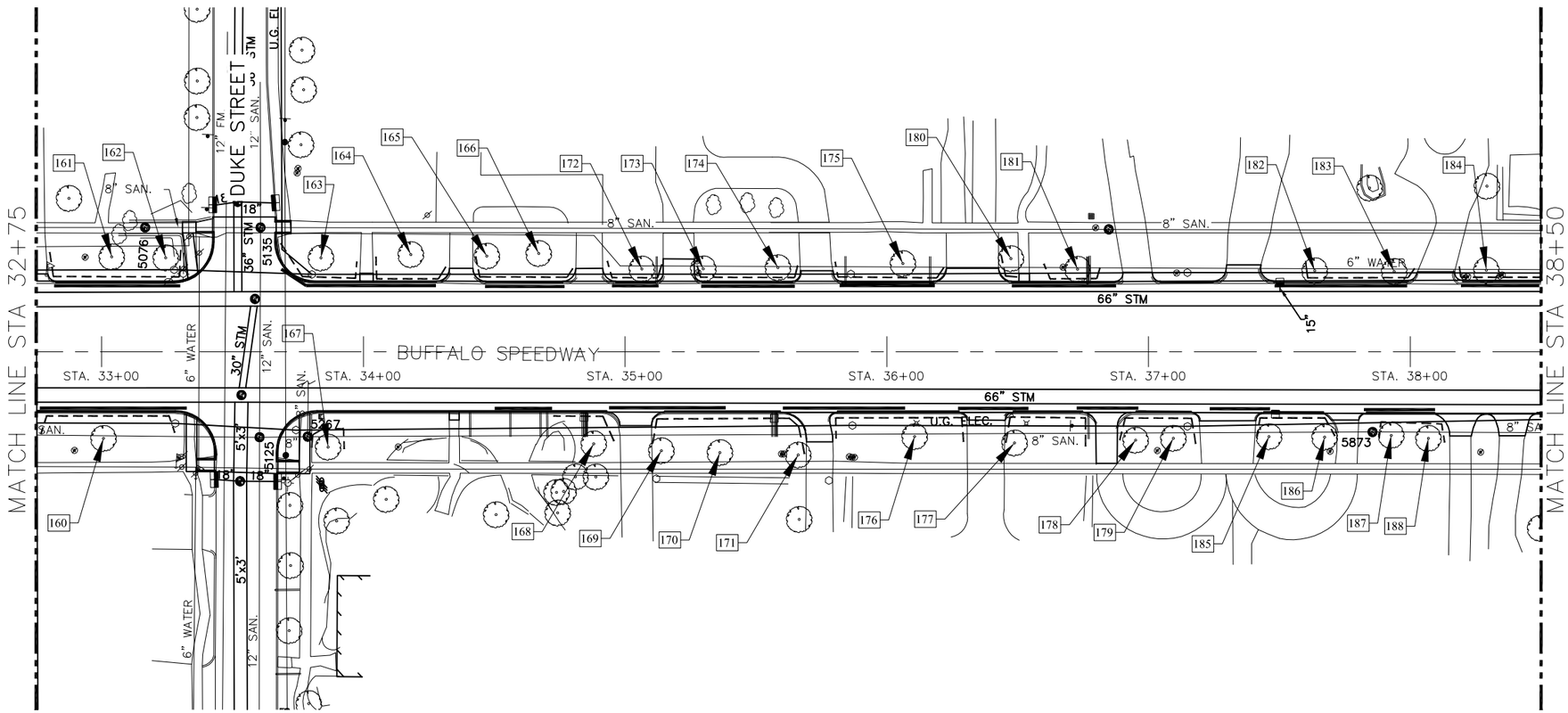
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION LIST

BUFFALO SPEEDWAY IMPROVEMENTS
STA 27+00 TO STA 32+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		555
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100'

SCALE IN FEET

LEGEND

- FENCE
- [1] TREE NUMBER
- ZERO CURB CUT

GENERAL NOTES

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
2. FOR DRIVEWAY STATION AND OFFSET DATA SEE DRIVEWAY DETAIL SHEETS.
3. ALL STATIONS ARE FOR ℄ BUFFALO SPEEDWAY UNLESS NOTED OTHERWISE.
4. MARK ALL TREES FOR REMOVAL, PROTECTION, AND PRUNING TREATMENT FOR APPROVAL BY TXDOT ENGINEER, AND CITY OF WEST UNIVERSITY PRIOR TO WORK.

STATE OF TEXAS
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA 32+75 TO STA 38+50

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			556
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	

Tree #	Size & Species	Address	Condition/Comments	Treatment
160	35" Sycamore	N/A	Poor	Remove, No Replacement
161	14" Live Oak	6400 Buffalo Spdwy	Good	Fence, Zero Curb Cut, Root prune for WL excavation
162	14" Live Oak	6400 Buffalo Spdwy	Good	Fence, Zero Curb Cut, Move TS&V North
163	36" Live Oak	6350 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
164	34" Live Oak	6350 Buffalo Spdwy	Good	Fence, Zero Curb Cut, Root Prune for inlet
165	16" Live Oak	6350 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
166	33" Live Oak	6350 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
167	4" Plum	6357 Buffalo Spdwy	Good	Fence
168	12" Live Oak	6357 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
169	34" Live Oak	6339 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
170	20" Live Oak	6339 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
171	26" Live Oak	6339 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
172	19" Live Oak	N/A	Poor	Fence, Zero Curb Cut, Trunk barricade
173	21" Live Oak	N/A	Poor	Fence, Zero Curb Cut, Hand dig ITS Ground box, Trunk barricade
174	34" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Hand dig ITS Ground box, Trunk barricade
175	41" Live Oak	6336 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Root prune for inlet, Trunk barricade.
176	34" Live Oak	6333 Buffalo Spdwy	Good	Fence, Zero Curb Cut, Root prune for inlet
177	26" Live Oak	6333 Buffalo Spdwy	Poor	Fence, Zero Curb Cut
178	15" Magnolia	6323 Buffalo Spdwy	Poor	Fence, Zero Curb Cut
179	17" Magnolia	6323 Buffalo Spdwy	Poor, Split Trunk	Fence, Zero Curb Cut
180	15" Magnolia	6332 Buffalo Spdwy	Good	Fence, Zero Curb Cut
181	8" Water Oak	6332 Buffalo Spdwy	Good	Fence, Zero Curb Cut
182	2" Bald Cypress	6324 Buffalo Spdwy	Fair	Fence
183	36" Live Oak	6324 Buffalo Spdwy	Good	Fence, Zero Curb Cut, Trunk barricade
184	32" Live Oak	6324 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Trunk barricade
185	15" Magnolia	6321 Buffalo Spdwy	Good	Fence, Zero Curb Cut
186	17" Magnolia	6321 Buffalo Spdwy	Good	Fence, Zero Curb Cut
187	10" Red Bud	6319 Buffalo Spdwy	Fair	Fence
188	2" Crape Myrtle	6319 Buffalo Spdwy	Fair	Fence

1 REVISED 03/11/2021

STATE OF TEXAS
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8/25/2020

UPDATED
3/11/2021

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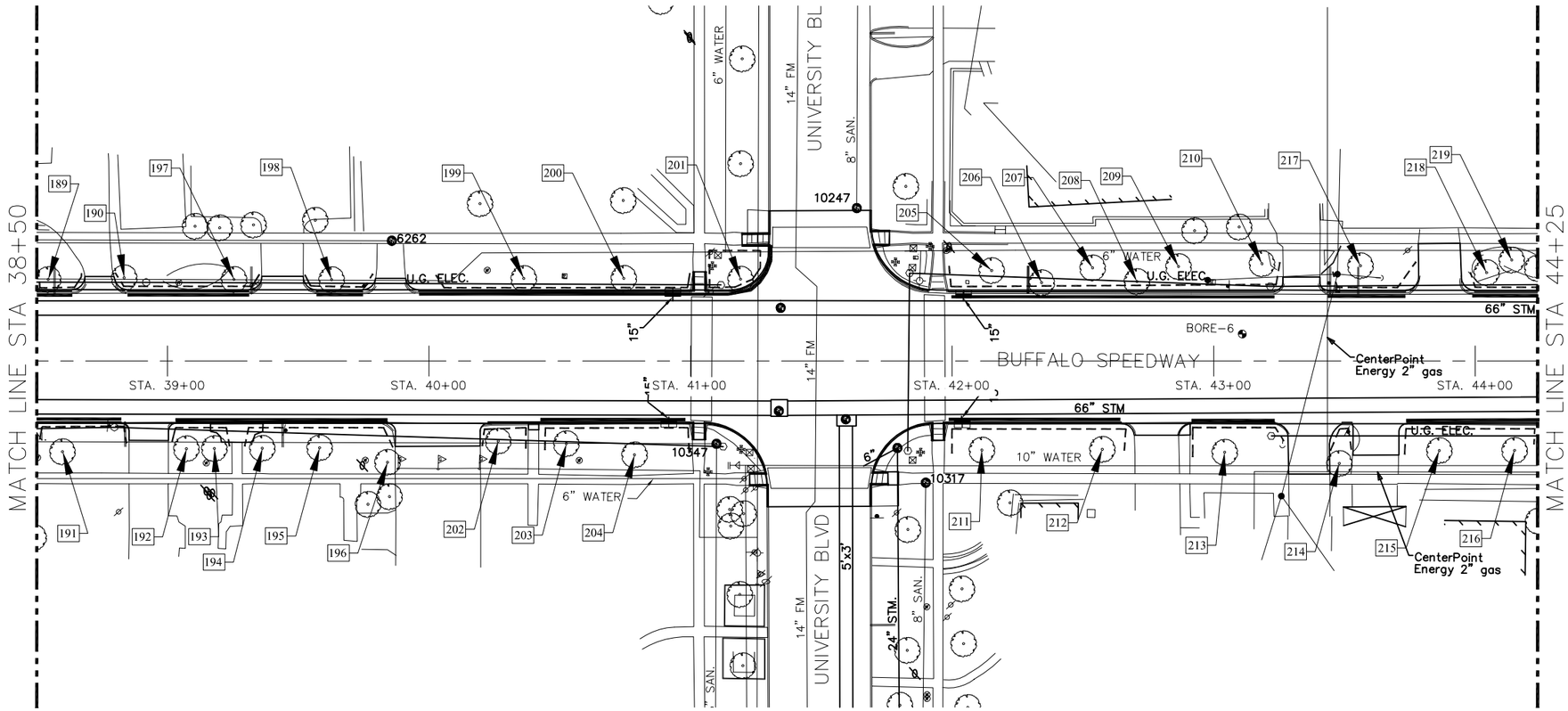
BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

TREE PROTECTION LIST

BUFFALO SPEEDWAY IMPROVEMENTS
STA 32+75 TO STA 38+50

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		557
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100'

SCALE IN FEET

LEGEND

- FENCE
- [1] TREE NUMBER
- ZERO CURB CUT

GENERAL NOTES

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
2. FOR DRIVEWAY STATION AND OFFSET DATA SEE DRIVEWAY DETAIL SHEETS.
3. ALL STATIONS ARE FOR ℄ BUFFALO SPEEDWAY UNLESS NOTED OTHERWISE.
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA 38+50 TO STA 44+25

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		558
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

Tree #	Size & Species	Address	Condition/Comments	Treatment
189	14" Live Oak	6320 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Root prune for inlet, Trunk barricade.
190	34" Live Oak	6320 Buffalo Spdwy	Good	Fence, Zero Curb Cut, Pour/form drive w/o damaging roots 1" and larger, Trunk barricade
191	20" Bald Cypress	6317 Buffalo Spdwy	Good	Fence, Zero Curb Cut
192	8" Shumard Oak	6315 Buffalo Spdwy	Good	Fence, Zero Curb Cut
193	8" Shumard Oak	6315 Buffalo Spdwy	Good	Fence, Zero Curb Cut
194	8" Shumard Oak	6315 Buffalo Spdwy	Good	Fence, Zero Curb Cut
195	15" Magnolia	6311 Buffalo Spdwy	Good	Fence, Zero Curb Cut
196	5" Crape Myrtle	6311 Buffalo Spdwy	Good	Fence
197	28" Live Oak	6316 Buffalo Spdwy	Good	Fence, Zero Curb Cut, Trunk barricade
198	34" Live Oak	6316 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Trunk barricade
199	34" Live Oak	N/A	Good	Fence, Zero Curb Cut, Trunk barricade, Bore ITS line
200	30" Live Oak	N/A	Good	Fence, Zero Curb Cut, Trunk barricade, Bore ITS line
201	36" Live Oak	N/A	Good	Fence Zero Curb Cut, Trunk barricade, Bore ITS line,
202	15" Red Maple	N/A	Good	Fence, Zero Curb Cut
203	6" Tulip Magnolia	N/A	Poor	Fence
204	27" Live Oak	N/A	Good	Fence, Zero Curb Cut
205	21" Live Oak	N/A	Good	Fence, Zero Curb Cut
206	Does Not Exist			
207	17" Live Oak	N/A	Fair	Fence, Zero Curb Cut
208	Does Not Exist			
209	17" Live Oak	N/A	Good	Fence, Zero Curb Cut
210	4" TX Mtn Laurel	N/A	Good	Fence
211	28" Live Oak	N/A	Good	Fence, Zero Curb Cut
212	6" Bur Oak	N/A	Good	Fence, Zero Curb Cut
213	26" Live Oak	N/A	Good	Fence, Zero Curb Cut, Root prune for inlet
214	3" Live Oak	N/A	Fair	Fence
215	25" Pecan	N/A	Poor	Fence, Zero Curb Cut
216	24" Pecan	N/A	Fair	Fence, Zero Curb Cut
217	18" Oak	N/A	Fair	Fence, Zero Curb Cut
218	25" Live Oak	N/A	Fair	Fence, Zero Curb Cut
219	18" Live Oak	N/A	Fair	Fence, Zero Curb Cut

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED
PROFESSIONAL ENGINEER
8/25/2020

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Texas Registered Engineering Firm F–2144

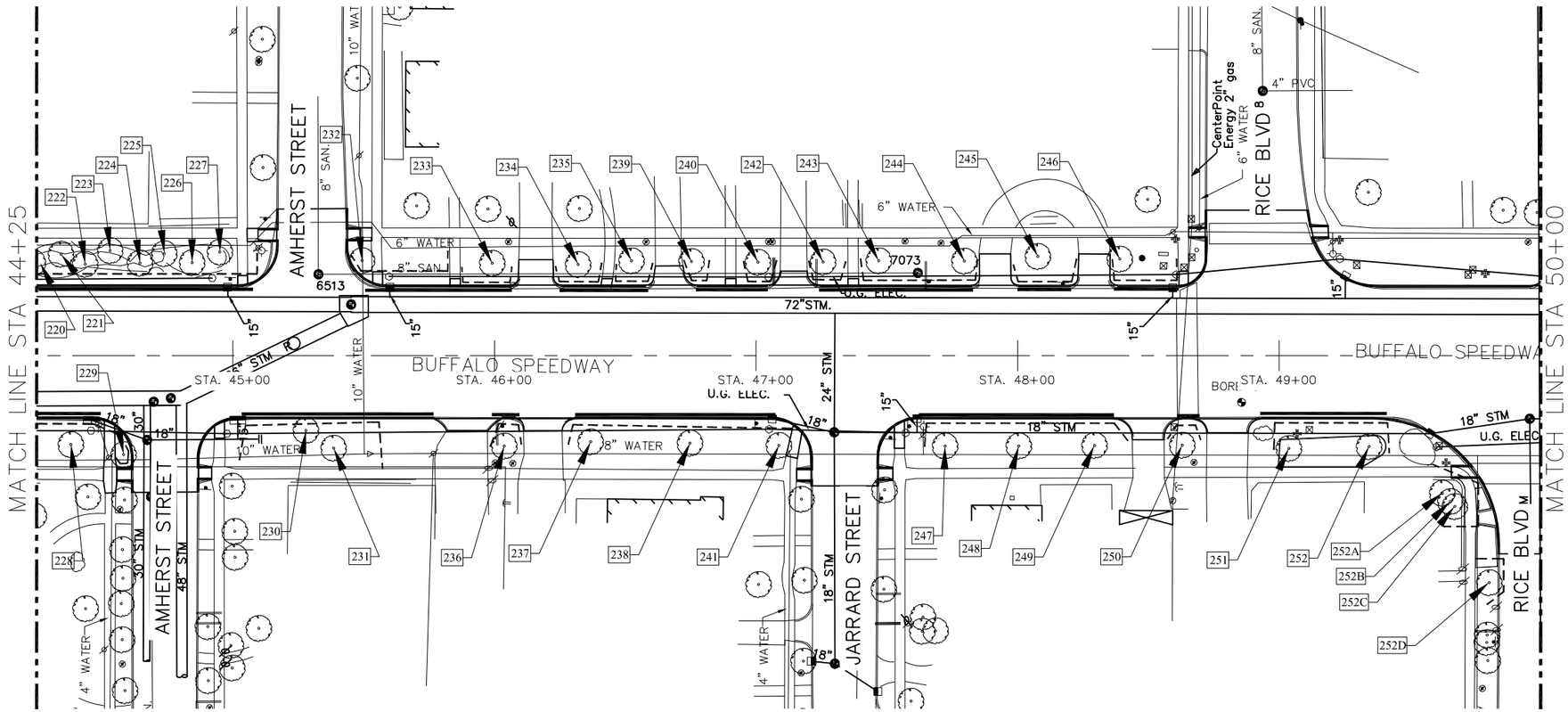
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Eric E. Enos
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713–515–0740

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION LIST

BUFFALO SPEEDWAY IMPROVEMENTS
STA 38+50 TO STA 44+25

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO. (SEE THE TITLE SHEET)			SHEET NO.
6				559
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



0 50' 100'

SCALE IN FEET

LEGEND

- FENCE
- [1] TREE NUMBER
- ZERO CURB CUT

GENERAL NOTES

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
2. FOR DRIVEWAY STATION AND OFFSET DATA SEE DRIVEWAY DETAIL SHEETS.
3. ALL STATIONS ARE FOR ℄ BUFFALO SPEEDWAY UNLESS NOTED OTHERWISE.
4. MARK ALL TREES FOR REMOVAL, PROTECTION, AND PRUNING TREATMENT FOR APPROVAL BY TXDOT ENGINEER, AND CITY OF WEST UNIVERSITY PRIOR TO WORK.

STATE OF TEXAS
MEHRAN BAVARIAN
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA 44+25 TO STA 50+00

SHEET 16 OF 27

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		560
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

Tree #	Size & Species	Address	Condition/Comments	Treatment
220	19" Live Oak	N/A	Fair	Fence, Zero Curb Cut
221	20" Live Oak	N/A	Good	Fence, Zero Curb Cut
222	18" Live Oak	N/A	Good	Fence, Zero Curb Cut
223	18" Live Oak	N/A	Good	Fence, Zero Curb Cut
224	20" Live Oak	N/A	Fair	Fence, Zero Curb Cut
225	12" Live Oak	N/A	Fair	Fence, Zero Curb Cut
226	18" Live Oak	N/A	Good	Fence, Zero Curb Cut
227	24" Live Oak	N/A	Good	Fence, Zero Curb Cut
228	12" Chinese Elm	N/A	Fair	Fence, Zero Curb Cut
229	10" Red Maple	N/A	Fair	Fence, Zero Curb Cut
230	22" Tallow	N/A	Fair	Fence, Zero Curb Cut
231	18" Nutall Oak	N/A	Fair	Fence, Zero Curb Cut
232	25" Live Oak	6122 Buffalo Spdwy	Poor	Remove, Replace 25"
233	24" Live Oak	6122 Buffalo Spdwy	Good	Fence, Zero Curb Cut, Hand dig ITS ground box
234	8" Live Oak	6120 Buffalo Spdwy	Fair,	Fence, Zero Curb Cut
235	18" Live Oak	6120 Buffalo Spdwy	Good	Fence, Zero Curb Cut
236	25" Live Oak	N/A	Good	Fence, Zero Curb Cut, Hand dig tap lead
237	23" Live Oak	N/A	Good	Fence, Zero Curb Cut, Root prune for inlet
238	4" Live Oak	N/A	Fair	Fence
239	9" Live Oak	6118 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
240	19" Live Oak	6118 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
241	12" Silver Maple	N/A	Poor	Fence, Zero Curb Cut
242	19" Live Oak	6116 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
243	22" Live Oak	6116 Buffalo Spdwy	Good	Fence, Zero Curb Cut
244	19" Live Oak	6100 Buffalo Spdwy	Good	Fence, Zero Curb Cut
245	19" Live Oak	6100 Buffalo Spdwy	Good	Fence, Zero Curb Cut, Root prune for inlet
246	17" Live Oak	6100 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
247	24" Live Oak	N/A	Good	Fence, Zero Curb Cut
248	24" Live Oak	N/A	Good	Fence, Zero Curb Cut, Root Prune for inlet
249	20" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Hand dig tap lead
250	24" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Hand dig tap lead
251	28" Live Oak	N/A	Fair	Fence, Zero Curb Cut
252	27" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Root prune for inlet
252A	10" Crape Myrtle		Fair	Fence
252B	10" Crape Myrtle		Fair	Fence
252C	10" Crape Myrtle		Fair	Fence
252D	16" Live Oak	N/A	Good	Fence

1 REVISED 03/11/2021

STATE OF TEXAS
MEHRAN BAVARIAN
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REGISTERED PROFESSIONAL ENGINEER
8/25/2020

UPDATED
3/11/2021

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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

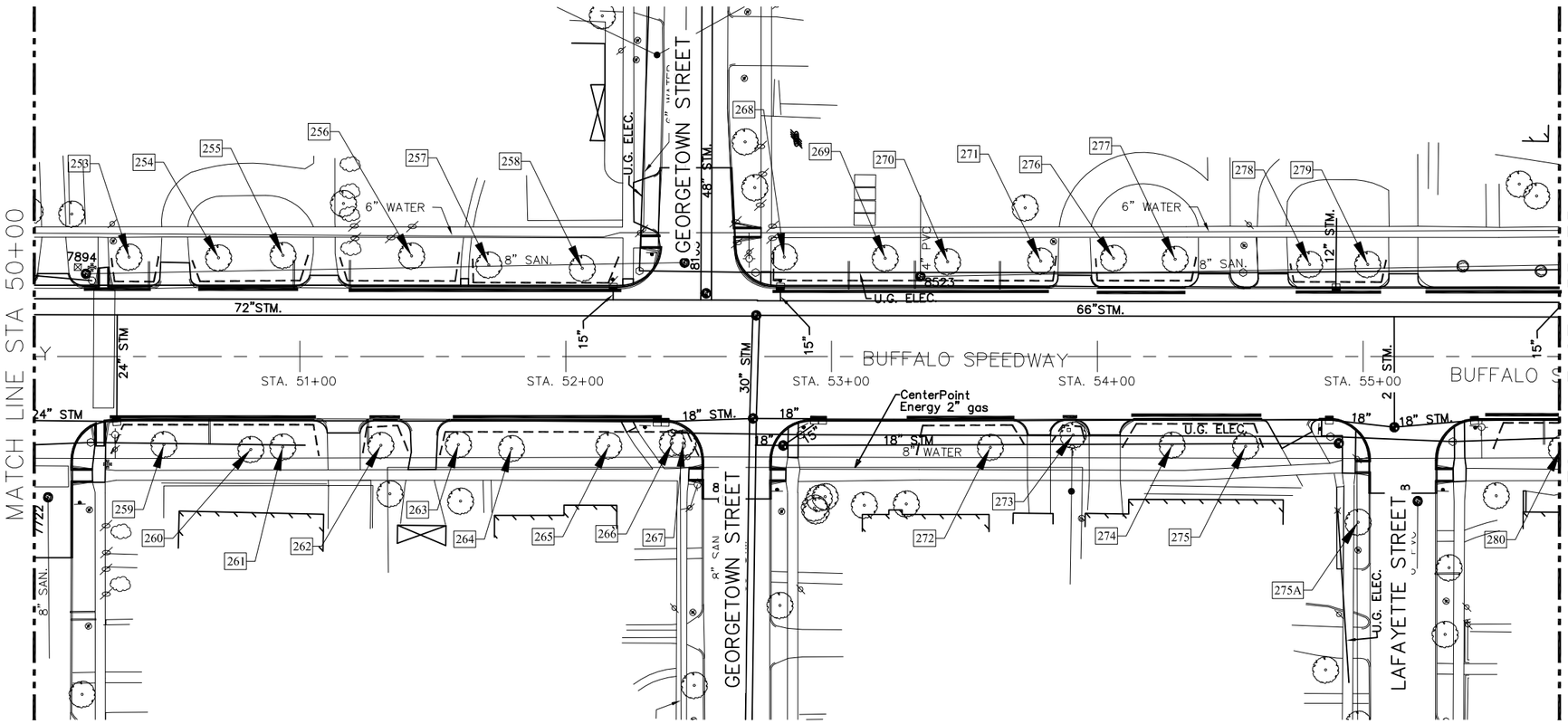
TREE PROTECTION LIST

BUFFALO SPEEDWAY IMPROVEMENTS
STA 44+25 TO STA 50+00

SHEET 17 OF 27

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO. (SEE THE TITLE SHEET)		SHEET NO.
6			561
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100'

SCALE IN FEET

LEGEND

- FENCE
- [1] TREE NUMBER
- ZERO CURB CUT

GENERAL NOTES

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
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3. ALL STATIONS ARE FOR ℄ BUFFALO SPEEDWAY UNLESS NOTED OTHERWISE.
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA 50+00 TO STA 55+75

SHEET 18 OF 27

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		562
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

Tree #	Size & Species	Address	Condition/Comments	Treatment
253	20" Live Oak	6012 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Bore signal conduit
254	19" Live Oak	6012 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
255	25" Live Oak	6012 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
256	22" Live Oak	6012 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
257	16" Tallow	6004 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
258	18" Tallow	6004 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
259	24" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Root prune for inlet and FH connection
260	16" Live Oak	N/A	Fair	Fence, Zero Curb Cut
261	13" Pecan	N/A	Good	Fence, Zero Curb Cut
262	19" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Root prune for inlet
263	15" Tallow	N/A	Fair	Fence, Zero Curb Cut
264	20" Pecan	N/A	Good	Fence, Zero Curb Cut
265	20" Pecan	N/A	Good	Fence, Zero Curb Cut
266	16" Pine	N/A	Fair	Fence, Zero Curb Cut, Root prune for WL excavation
267	18" Pine	N/A	Fair	Fence, Zero Curb Cut, Root prune for WL excavation
268	20" Live Oak	5922 Buffalo Spdway	Fair	Fence, Zero Curb Cut
269	18" Live Oak	5922 Buffalo Spdway	Fair	Fence, Zero Curb Cut
270	20" Live Oak	5922 Buffalo Spdway	Fair	Fence, Zero Curb Cut
271	12" Live Oak	5914 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
272	24" Tallow	N/A	Fair	Fence, Zero Curb Cut
273	17" Tallow	N/A	Fair	Fence, Zero Curb Cut
274	21" Live Oak	N/A	Good	Fence, Zero Curb Cut
275	22" Live Oak	N/A	Fair	Fence, Zero Curb Cut
275A	20" Pecan	N/A	Fair	Fence, Zero Curb Cut, Root Prune @ wet connect west of tree.
276	19" Live Oak	5914 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
277	18" Live Oak	5914 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
278	22" Live Oak	5908 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
279	27" Live Oak	5908 Buffalo Spdwy	Good	Fence Zero Curb Cut
280	20" Water Oak	N/A	Fair	Fence, Zero Curb Cut

1 REVISED 03/11/2021

STATE OF TEXAS
MEHRAN BAVARIAN
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REGISTERED PROFESSIONAL ENGINEER
8/25/2020

UPDATED
3/11/2021

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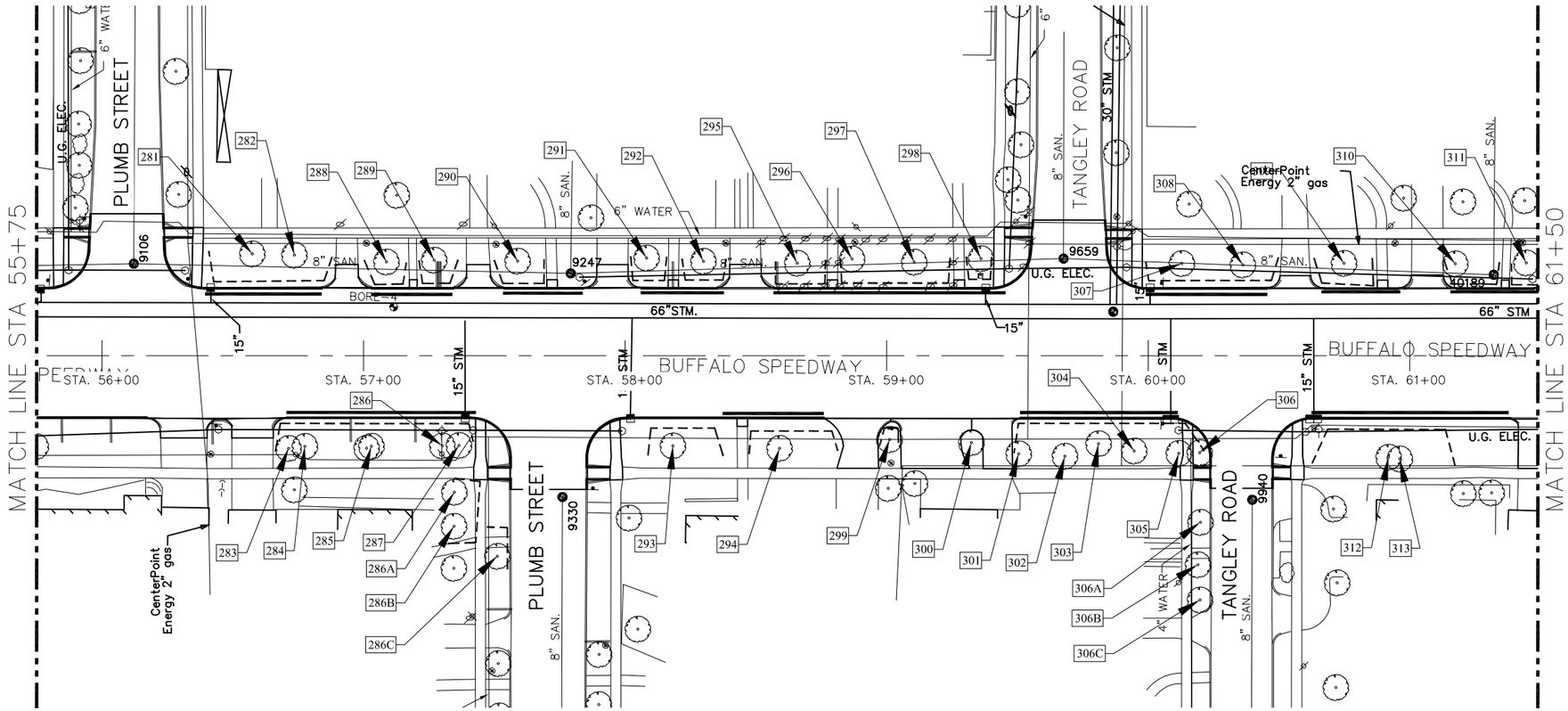
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION LIST

BUFFALO SPEEDWAY IMPROVEMENTS
STA 50+00 TO STA 55+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		563
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100'

SCALE IN FEET

LEGEND

- FENCE
- [1] TREE NUMBER
- ZERO CURB CUT

GENERAL NOTES

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
2. FOR DRIVEWAY STATION AND OFFSET DATA SEE DRIVEWAY DETAIL SHEETS.
3. ALL STATIONS ARE FOR ℄ BUFFALO SPEEDWAY UNLESS NOTED OTHERWISE.
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STATE OF TEXAS
MEHRAN BAVARIAN
48811
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8/25/2020

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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA 55+75 TO STA 61+50

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		564
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

Tree #	Size & Species	Address	Condition/Comments	Treatment
281	20" Ash	5822 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
282	25" Ash	5822 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
283	8" Crape Myrtle	N/A	Good	Fence, Zero Curb Cut
284	8" Crape Myrtle	N/A	Good	Fence, Zero Curb Cut
285	24" Live Oak	N/A	Poor	Fence, Zero Curb Cut
286	10" Crape Myrtle	N/A	Good	Fence, Zero Curb Cut
286A	8" Pear	N/A	Fair	Fence
286B	10" Holly	N/A	Fair	Fence
286C	14" Magnolia	N/A	Fair	Fence, Root prune for WL excavation
287	10" Crape Myrtle	N/A	Good	Fence, Zero Curb Cut
288	15" Crape Myrtle	5814 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
289	15" Crape Myrtle	5814 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
290	22" Live Oak	5814 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
291	24" Live Oak	5810 Buffalo Spdwy	Poor	Fence, Zero Curb Cut
292	23" Live Oak	5810 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
293	10" Crape Myrtle	N/A	Good	Fence
294	32" Live Oak	N/A	Fair	Fence, Zero Curb Cut
295	21" Live Oak	5806 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Hand dig ITS ground box
296	24" Live Oak	5806 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
297	16" Live Oak	5802 Buffalo Spdwy	Good	Fence, Zero Curb Cut
298	8" Live Oak	5802 Buffalo Spdwy	Good	Fence, Zero Curb Cut
299`	11" Live Oak	5803 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
300	15" Pecan	5803 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
301	16" Pecan	5803 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
302	13" Pecan	5803 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
303	17" Tallow	5803 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
304	17" Pecan	5803 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
305	15" Pecan	5803 Buffalo Spdwy	Fair	Remove, Replace 15"
306	15" Pecan	5803 Buffalo Spdwy	Fair	Remove, Replace 15"
306A	8" Pecan	5803 Buffalo Spdwy	Fair	Remove
306B	14" Pecan	5803 Buffalo Spdwy	Fair	Remove
306C	12" Pecan	5803 Buffalo Spdwy	Fair	Remove
307	17" Live Oak	5724 Buffalo Spdwy	Good	Fence, Zero Curb Cut, Root prune for inlet and WL connection
308	19" Live Oak	5724 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Hand dig ITS ground box
309	11" Live Oak	5720 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
310	16" Tallow	5716 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
311	16" Tallow	5716 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
312	22" Magnolia	N/A	Good	Fence, Zero Curb Cut
313	15" Magnolia	N/A	Good	Fence, Zero Curb Cut

STATE OF TEXAS
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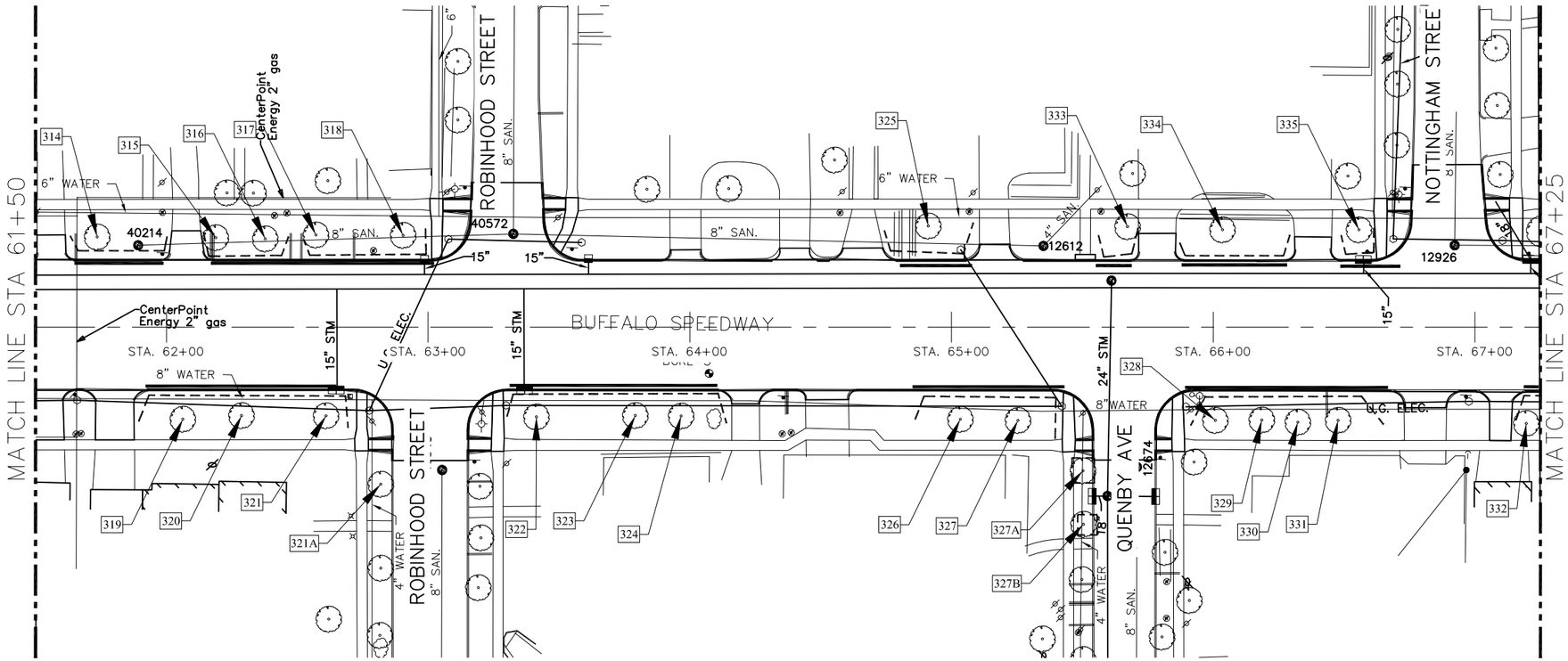
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION LIST

BUFFALO SPEEDWAY IMPROVEMENTS
STA 55+75 TO STA 61+50

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		565
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY





LEGEND

- FENCE
- [1] TREE NUMBER
- ZERO CURB CUT

GENERAL NOTES

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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA 61+50 TO STA 67+25

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		566
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

Tree #	Size & Species	Address	Condition/Comments	Treatment
314	24" Live Oak	5712 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
315	11" Live Oak	5708 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
316	15" Live Oak	5708 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
317	24" Tallow	5702 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
318	22" Tallow	5702 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
319	26" Live Oak	N/A	Fair	Fence, Zero Curb Cut
320	20" Live Oak	N/A	Fair	Fence, Zero Curb Cut
321	21" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Root prune for WL excavation, Pour/form SW w/o damaging roots 1" and larger
321A	26" Water Oak		Fair	Fence, Zero Curb Cut, Root prune for WL connection
322	25" Live Oak	N/A	Good	Fence, Zero Curb Cut
323	19" Magnolia	N/A	Fair	Fence, Zero Curb Cut
324	21" Magnolia	N/A	Fair	Fence, Zero Curb Cut
325	24" Live Oak	5616 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
326	21" Pecan	N/A	Fair	Fence, Zero Curb Cut
327	17" Pecan	N/A	Fair	Fence, Zero Curb Cut, Root prune for FH connection
327A	10" Live Oak	N/A	Good	Fence, Root prune for WL excavation
327B	10" Live Oak	N/A	Good	Fence, Root prune for WL excavation
328	24" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Root prune for inlet
329	28" Tallow	N/A	Fair	Fence, Zero Curb Cut
330	18" Live Oak	N/A	Fair	Fence, Zero Curb Cut
331	24" Crape Myrtle	N/A	Fair	Fence, Zero Curb Cut
332	22" Tallow	N/A	Fair	Fence, Zero Curb Cut
333	24" Live Oak	5612 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Root prune for inlet,
334	24" Live Oak	5612 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
335	23" Live Oak	5604 Buffalo Speedwy	Fair	Fence, Zero Curb Cut

STATE OF TEXAS
MEHRAN BAVARIAN
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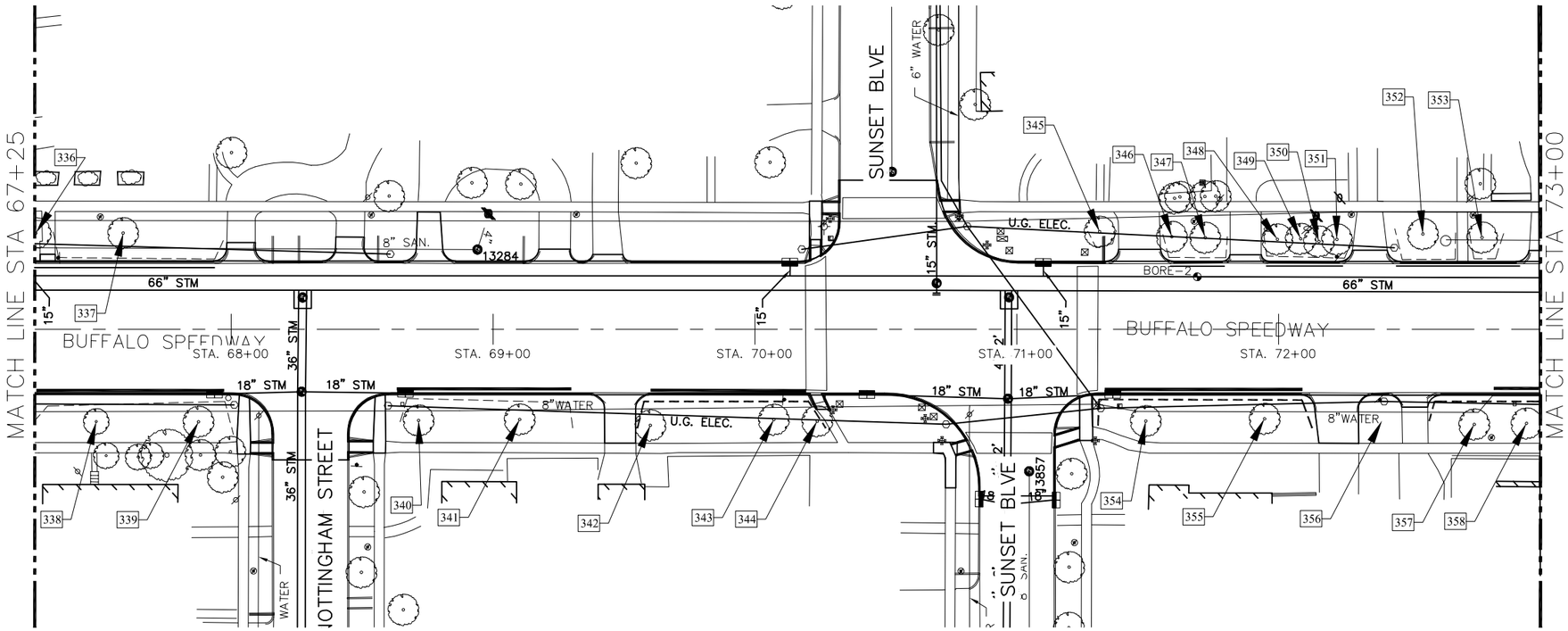
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION LIST

BUFFALO SPEEDWAY IMPROVEMENTS
STA 61+50 TO STA 67+25

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		567
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100'

SCALE IN FEET

LEGEND

- FENCE
- [1] TREE NUMBER
- ZERO CURB CUT

GENERAL NOTES

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3. ALL STATIONS ARE FOR ℄ BUFFALO SPEEDWAY UNLESS NOTED OTHERWISE.
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Tree #	Size & Species	Address	Condition/Comments	Treatment
336	14" Magnolia	N/A	Fair	Fence, Zero Curb Cut
337	12" Magnolia	N/A	Fair	Fence, Zero Curb Cut
338	22" Live Oak	N/A	Fair	Fence, Zero Curb Cut
339	20" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Root prune for inlet and WL connection
340	19" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Root prune for FH connection
341	21" Live Oak	N/A	Fair	Fence, Zero Curb Cut
342	18" Pecan	N/A	Fair	Fence, Zero Curb Cut
343	18" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Root prune for inlet, Bore signal conduit
344	16" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Root prune for inlet, Bore signal conduit
345	18" Live Oak	5422 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
346	15" Live Oak	5422 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
347	12" Crape Myrtle	5422 Buffalo Spdwy	Good	Fence, Zero Curb Cut
348	16" Crape Myrtle	5414 Buffalo Spdwy	Good	Fence, Zero Curb Cut
349	8" Crape Myrtle	5414 Buffalo Spdwy	Good	Fence, Zero Curb Cut
350	8" Crape Myrtle	5414 Buffalo Spdwy	Good	Fence, Zero Curb Cut
351	14" Crape Myrtle	5414 Buffalo Spdwy	Good	Fence, Zero Curb Cut
352	20" Tallow	5410 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
353	8" Tallow	5410 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
354	10" Live Oak	N/A	Fair	Fence, Zero Curb Cut
355	20" Live Oak	N/A	Good	Fence, Zero Curb Cut
356	4" Red Maple	N/A	Fair	Fence
357	4" Live Oak	N/A	Fair	Fence, Hand dig tap lead
358	12" Water Oak	N/A	Fair	Fence Zero Curb Cut

STATE OF TEXAS
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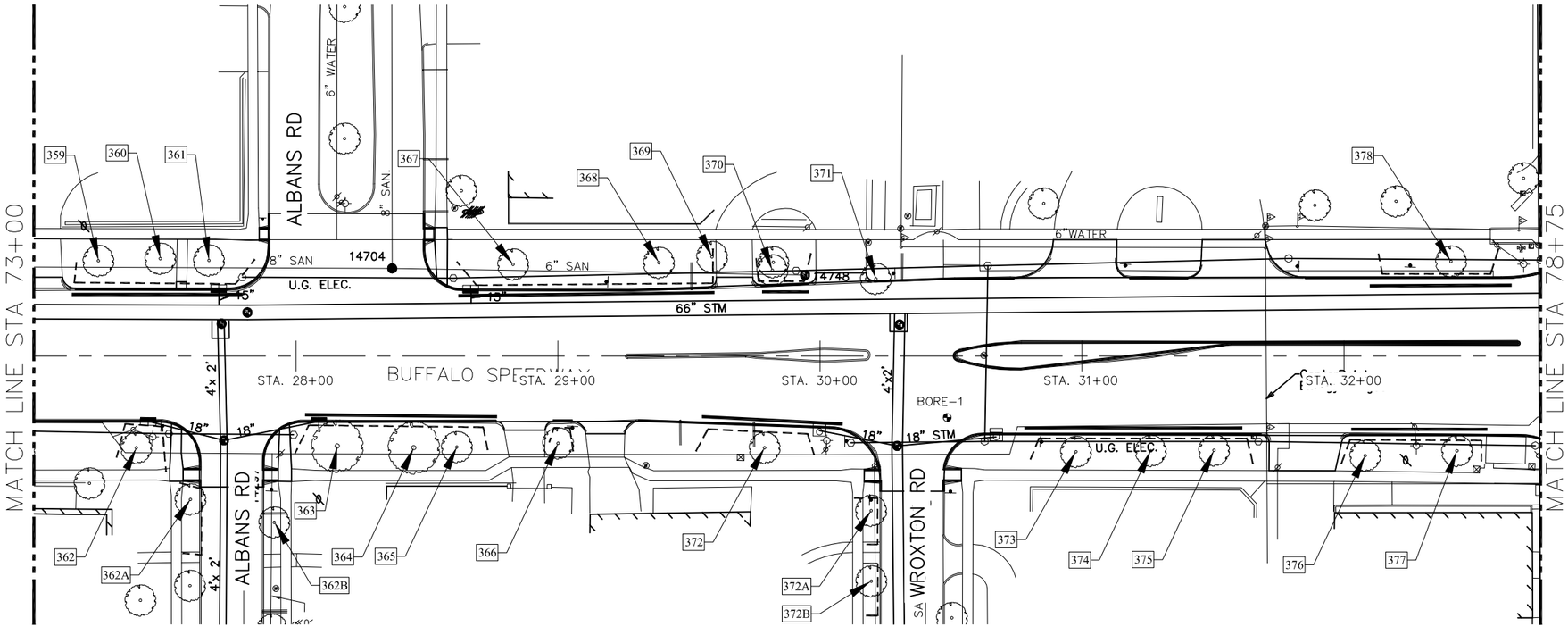
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Consulting Urban Forester
713–515–0740

BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA 67+25 TO STA 73+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			568
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



0 50' 100'

SCALE IN FEET

LEGEND

- FENCE
- [1] TREE NUMBER
- ZERO CURB CUT

GENERAL NOTES

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
2. FOR DRIVEWAY STATION AND OFFSET DATA SEE DRIVEWAY DETAIL SHEETS.
3. ALL STATIONS ARE FOR ℄ BUFFALO SPEEDWAY UNLESS NOTED OTHERWISE.
4. MARK ALL TREES FOR REMOVAL, PROTECTION, AND PRUNING TREATMENT FOR APPROVAL BY TXDOT ENGINEER, AND CITY OF WEST UNIVERSITY PRIOR TO WORK.

STATE OF TEXAS
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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
STA 73+00 TO STA 78+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		569
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

Tree #	Size & Species	Address	Condition/Comments	Treatment
359	26" Live Oak	5402 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
360	17" Live Oak	5402 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
361	26" Live Oak	5402 Buffalo Spdwy	Fair	Fence, Zero Curb Cut, Root prune for inlet
362	6" Live Oak	N/A	Fair	Fence
362A	20" Crape Myrtle		Good	Fence
362B	22" Tallow		Fair	Fence
363	6" Holly	N/A	Good	Fence
364	8" Live Oak	N/A	Fair	Fence
365	22" Pecand	N/A	Good	Fence, Zero Curb Cut
366	5" Holly	N/A	Good	Fence
367	18" Tallow	N/A	Fair	Fence, Zero Curb Cut
368	20" Crape Myrtle	5312 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
369	8" Crape Myrtle	5312 Buffalo Spdwy	Fair	Fence, Zero Curb Cut
370	14" Palm(2)	N/A	Fair	Fence
371	14" Palm	N/A	Fair	Remove
372	32" Tallow	N/A	Fair	Fence, Zero Curb Cut
372A	12" Water Oak		Fair	Fence
372B	14" Live Oak		Good	Fence
373	24" Live Oak	N/A	Good	Fence, Zero Curb Cut
374	17" Live Oak	N/A	Fair	Fence, Zero Curb Cut, Root prune for inlet
375	22" Live Oak	N/A	Fair	Fence
376	8" Live Oak	N/A	Good	Fence, Zero Curb Cut
377	11" Live Oak	N/A	Good	Fence, Zero Curb Cut, Hand dig ITS ground box
378	18" Water Oak	N/A	Fair	Fence, Zero Curb Cut, Hand dig ITS ground box

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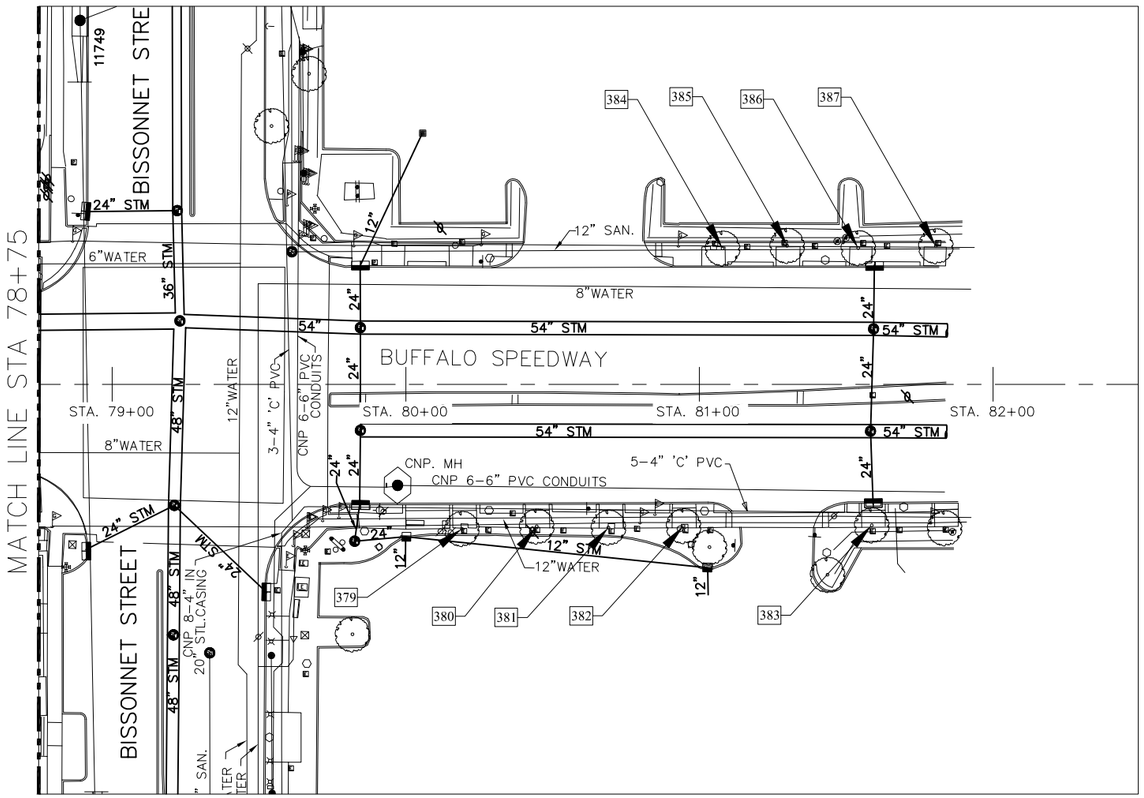
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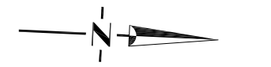
BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION LIST

BUFFALO SPEEDWAY IMPROVEMENTS
STA 73+00 TO STA 78+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		570
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY





LEGEND

FENCE

[1] TREE NUMBER

GENERAL NOTES

1. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS NOTED OTHERWISE.
2. FOR DRIVEWAY STATION AND OFFSET DATA SEE DRIVEWAY DETAIL SHEETS.
3. ALL STATIONS ARE FOR ℄ BUFFALO SPEEDWAY UNLESS NOTED OTHERWISE.
4. MARK ALL TREES FOR REMOVAL, PROTECTION, AND PRUNING TREATMENT FOR APPROVAL BY TXDOT ENGINEER, AND CITY OF WEST UNIVERSITY PRIOR TO WORK.

Tree #	Size & Species	Address	Condition/Comments	Treatment
379	4" Pistache	N/A	Fair	Not Impacted
380	4" Pistache	N/A	Fair	Not Impacted
381	4" Pistache	N/A	Fair	Not Impacted
382	4" Pistache	N/A	Fair	Not Impacted
383	4" Pistache	N/A	Fair	Not Impacted
384	4" Pistache	N/A	Fair	Not Impacted
385	4" Pistache	N/A	Fair	Not Impacted
386	4" Pistache	N/A	Fair	Not Impacted
387	4" Pistache	N/A	Fair	Not Impacted

STATE OF TEXAS
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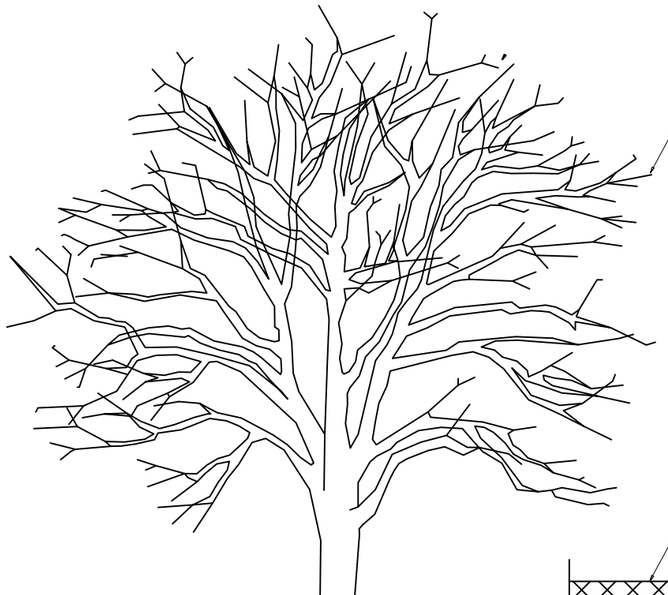
BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

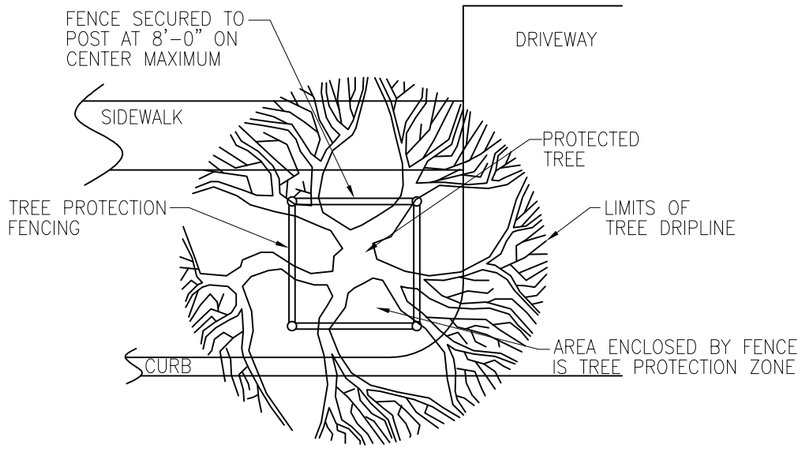
BUFFALO SPEEDWAY IMPROVEMENTS
STA 78+75 TO STA END

SHEET 27 OF 27

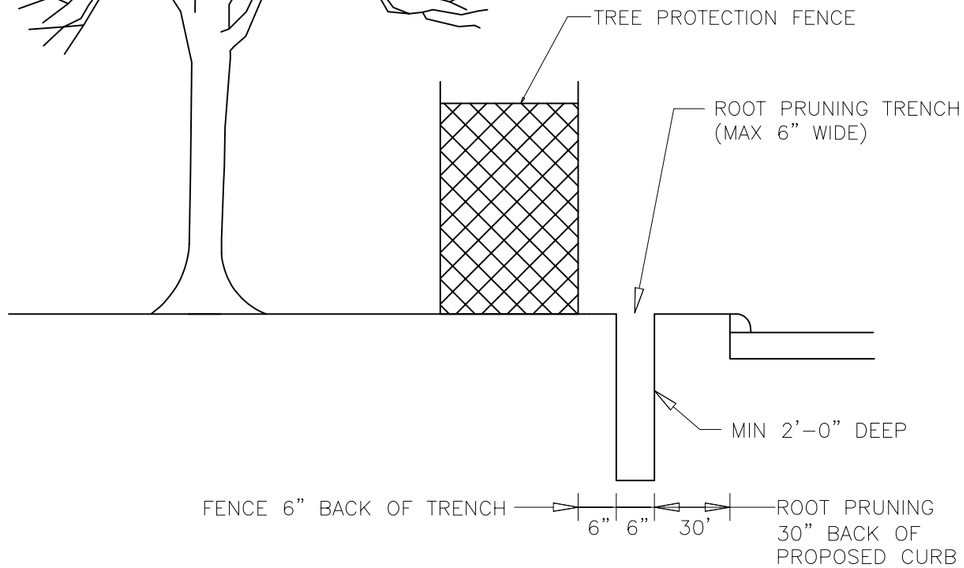
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		571
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



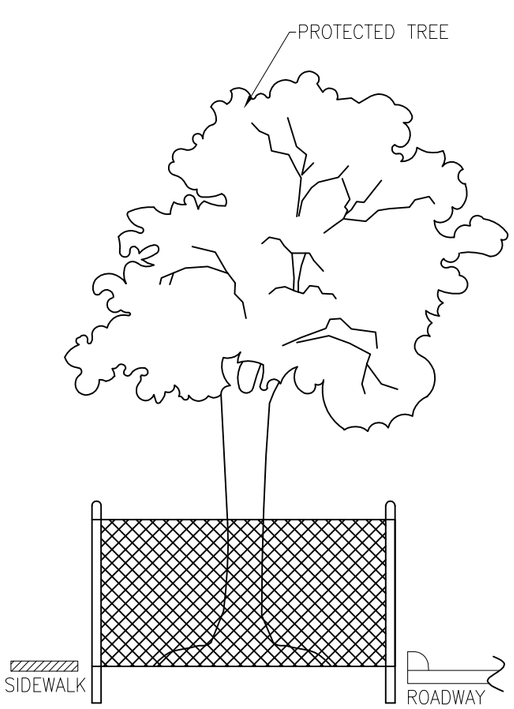


PLAN VIEW-TREE PROTECTION FENCING DETAIL



ROOT PRUNE FOR STREET-CURB & GUTTER - NO OCC

NOT TO SCALE



FRONT VIEW-TREE PROTECTION FENCING DETAIL

STATE OF TEXAS
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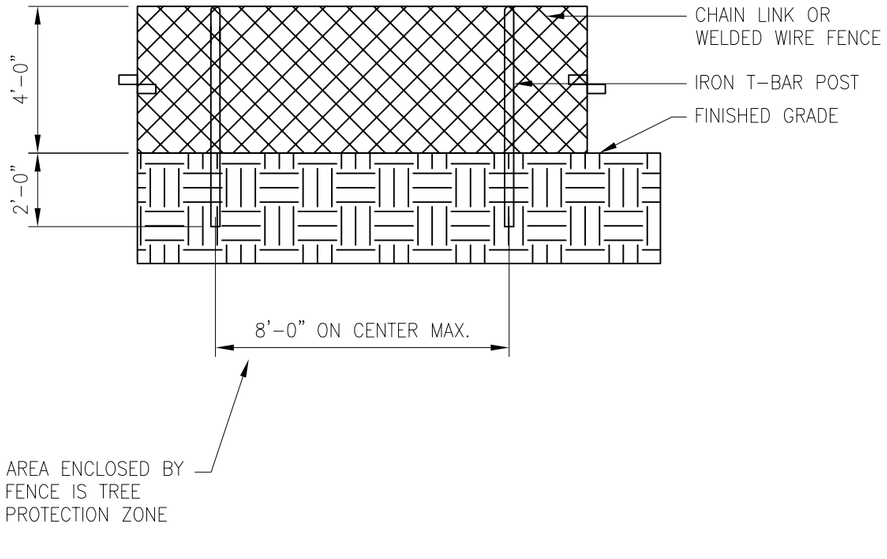
BUFFALO SPEEDWAY RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
TYPICAL DETAILS

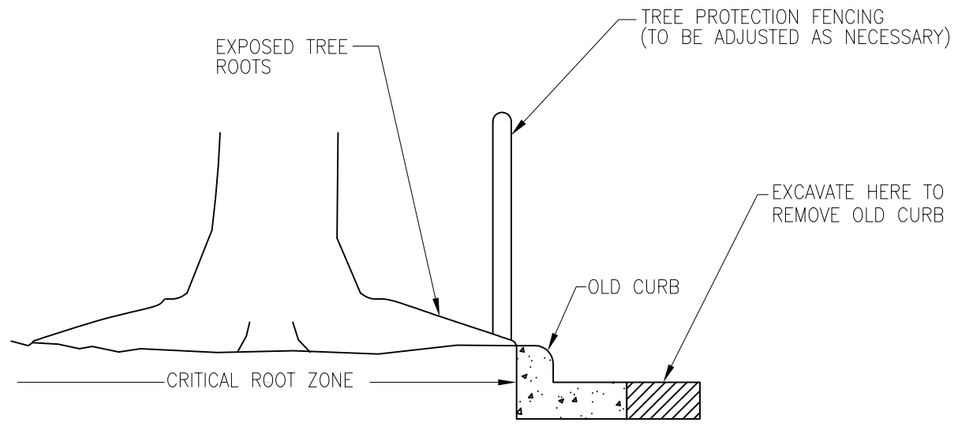
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO. (SEE THE TITLE SHEET)			SHEET NO.
6				572
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



PROTECTIVE CHAIN LINK FENCE

N.T.S.



OLD CURB REMOVAL

N.T.S.

GENERAL TREE PROTECTION NOTES:

1. PROTECT AND ENSURE THE CONTINUED GOOD HEALTH OF EXISTING TREES IDENTIFIED ON THE PLANS OR DIRECTED BY THE ENGINEER. PROTECTIVE MEASURES INCLUDE PROVIDING, INSTALLING, MAINTAINING, AND REMOVING PROTECTIVE FENCES,BOUND WOOD PLANKING, COMPOST, BERM PRUNING, BORING AND WATERING.

PROTECTIVE FENCE

1. CRITICAL ROOT ZONE (CRZ) = 1 FOOT RADIUS PER 1 CALIPER INCH OF TRUNK DIAMETER.
2. PLACE PROTECTIVE FENCE AT THE EDGE OF THE CRITICAL ROOT ZONE OF TREES TO BE PROTECTED. USE 4 FEET HIGH CHAIN LINK FENCE OR APPROVED EQUIVALENT SUPPORTED ON STEEL T-POSTS. USE STEEL T-POSTS MINIMUM OF 6 FEET LONG, SPACED AT INTERVALS SUFFICIENT TO KEEP FENCE PULLED TIGHT. STRETCH SMOOTH GALVANIZED WIRE FROM POST TO POST ACROSS THE TOP OF FENCE AND DRAW TIGHT. ATTACH PLASTIC MESH TO POSTS AND TOP WIRE WITH ALUMINUM TIE WIRE OR NYLON TIES.
3. NO EXCAVATION, GRADING, FILLING, SOIL COMPACTION, PARKING, OR EQUIPMENT STORAGE IS ALLOWED WITHIN THE FENCED AREA.

ROOT ZONE PROTECTION

1. VEHICULAR TRAFFIC, STOCKPILING, OR STORAGE OF MATERIALS, PARKING OF EQUIPMENT, AND REFUELING EQUIPMENT IS PROHIBITED IN PROTECTED AREAS.

BORING, TRENCHING, GRADING, AND PRUNING

1. WHERE SHOWN IN PLANS, UNDERGROUND UTILITIES CROSSING UNDER PROTECTED AREAS WILL BE BORED BENEATH CRITICAL ROOT ZONES. AVOID BORING DIRECTLY BENEATH ROOT FLARE. BORE DEPTH IS 4 FEET BELOW EXISTING GRADE.
2. NO TRENCHING, EXCAVATING, FILLING, OR COMPACTION IS ALLOWED WITHIN THE CRITICAL ROOT ZONE EXCEPT AS SPECIFICALLY IDENTIFIED IN THE PLANS AND APPROVED BY THE ENGINEER.
3. WHEN EXISTING GRADE MUST BE CUT WITHIN THE CRITICAL ROOT ZONE, CONTACT THE ENGINEER PRIOR TO BEGINNING WORK. BEFORE GRADING OR EXCAVATION WORK, SAW CUT ROOTS TO THE DEPTH OF THE PROPOSED DISTURBANCE ALONG THE EDGE OF THE PROPOSED DISTURBANCE BEFORE EXCAVATION IS BEGUN.
4. PRUNE FLUSH WITH SOIL ANY ROOTS EXPOSED BY CONSTRUCTION. BACKFILL ROOT AREAS WITH GOOD QUALITY TOPSOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT TO BE BACKFILLED WITHIN TWO DAYS, THEN COVER WITH A MINIMUM OF SIX INCHES OF EROSION CONTROL COMPOST. EROSION COMPOST IS PAID FOR SEPARATELY UNDER ITEM 161-609 EROSION CONTROL COMPOST.
5. WHEN GRADING WITHIN THE CRITICAL ROOT ZONE, USE HAND OR SMALL EQUIPMENT AND ALTER GRADE NO MORE THAN TWO INCHES. NO SOIL DISTURBANCE IS ALLOWED ON THE ROOT FLARE UNDER ANY CIRCUMSTANCES.

STATE OF TEXAS
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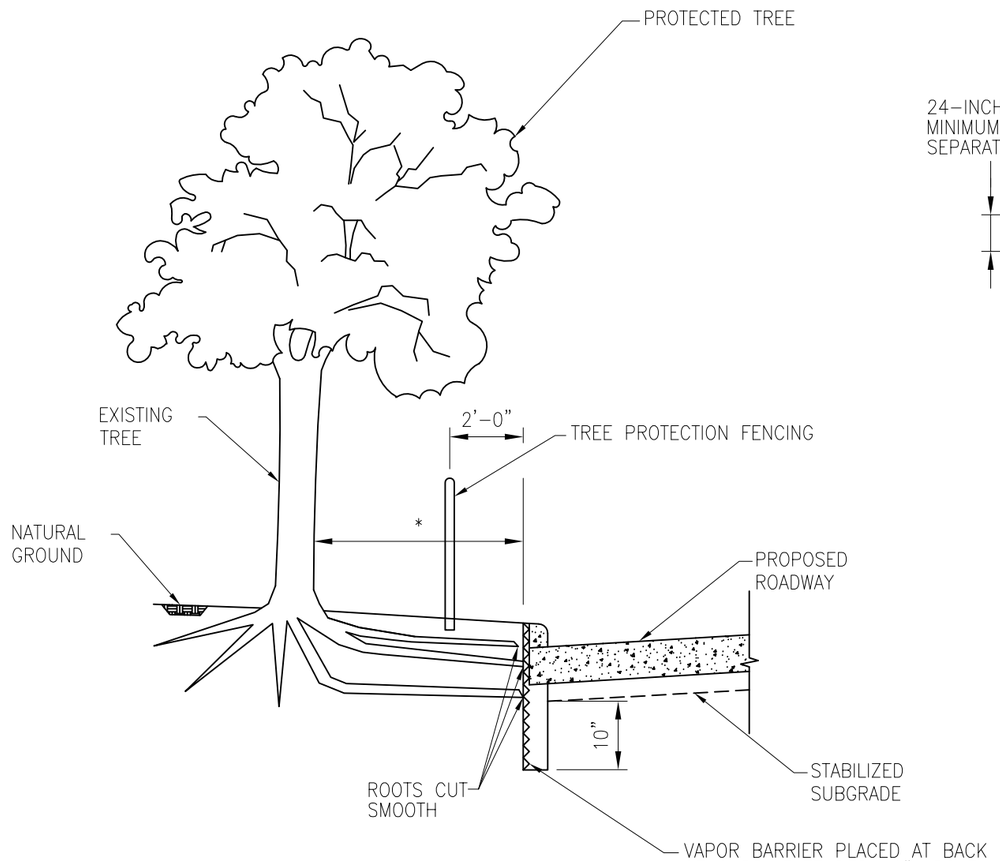
BUFFALO SPEEDWAY RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

TREE PROTECTION
PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
TYPICAL DETAILS

Texas Department of Transportation

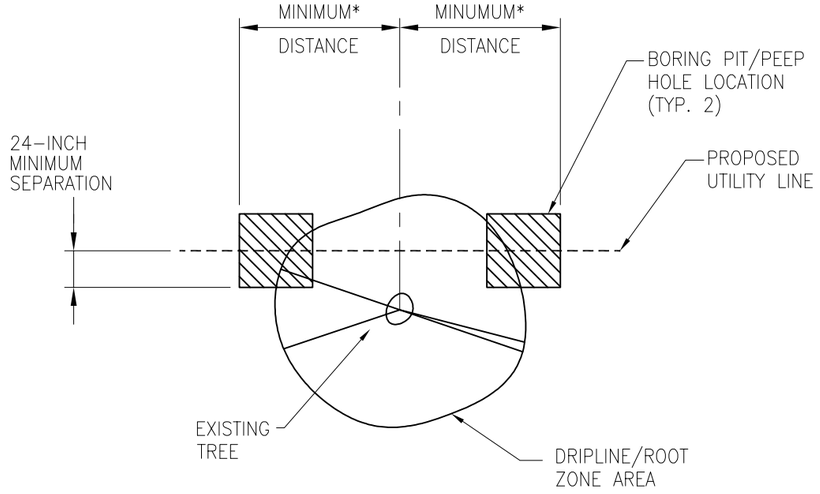
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		573
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



ZERO CURB CUT DETAIL

N.T.S.

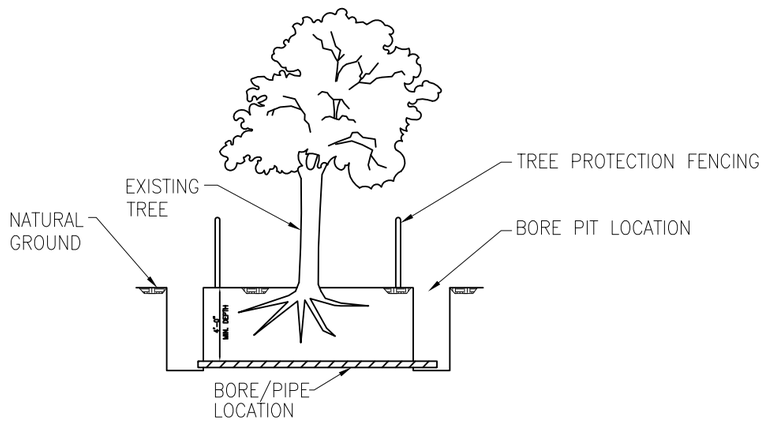
TREE TRUNK DIA. (IN)	* MINIMUM DISTANCE
<6"	3 FEET
6"≤ OR ≤ 20"	.75 FEET PER DIA-INCH
> 20"	CONSULT ARBORIST



PLAN VIEW
BORE PIT LOCATION

N.T.S.

NOTE:
TREE PROTECTION FENCE NOT SHOWN



SECTION VIEW
BORE PIT LOCATION

N.T.S.

STATE OF TEXAS
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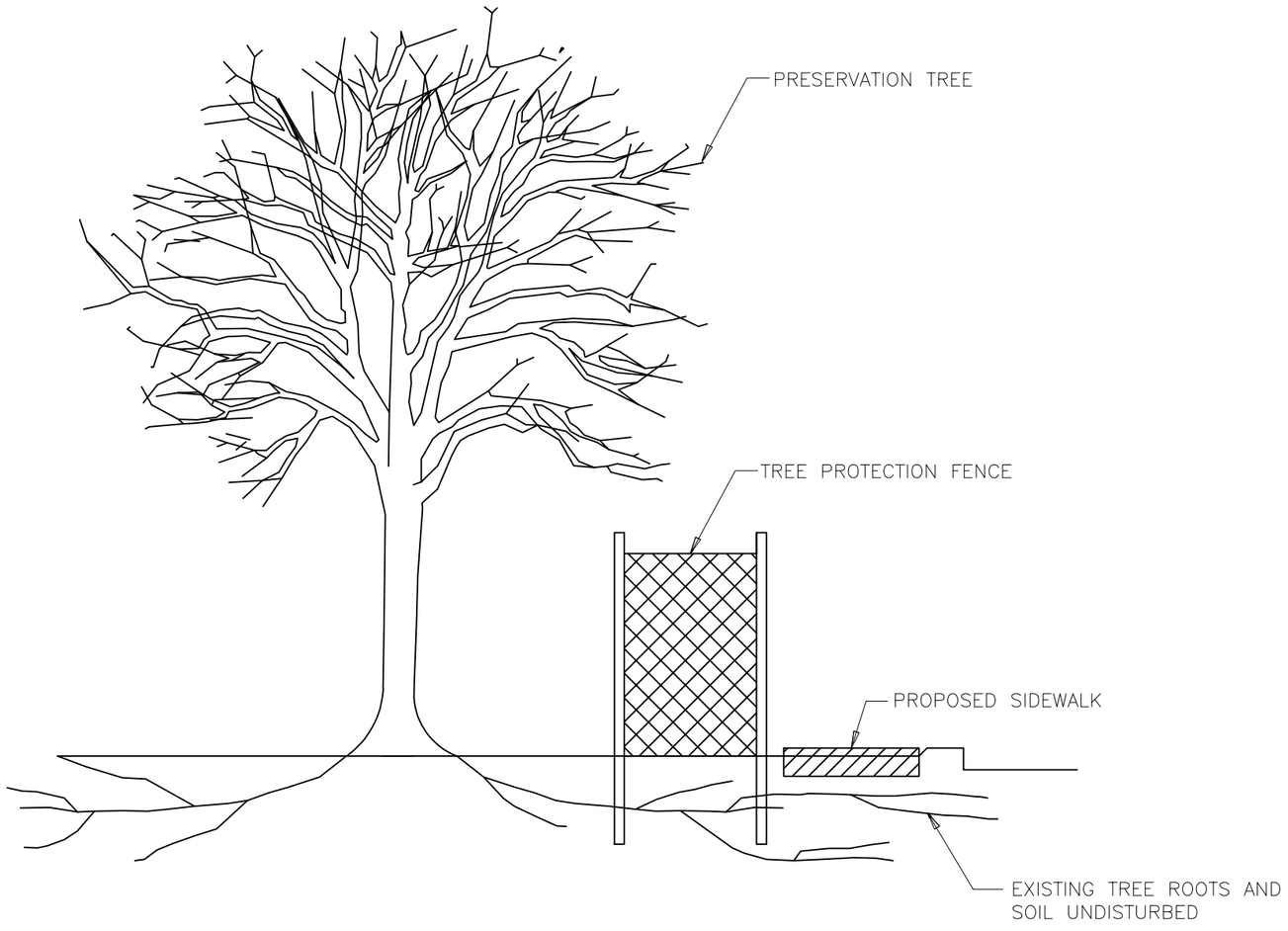
BUFFALO SPEEDWAY RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

TREE PROTECTION
PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
TYPICAL DETAILS

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO. (SEE THE TITLE SHEET)		SHEET NO.
6			574
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



DEMO–FORM–POUR WALK WITHOUT DAMAGE TO ROOTS

NOT TO SCALE

STATE OF TEXAS
MEHRAN BAVARIAN
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8/25/2020

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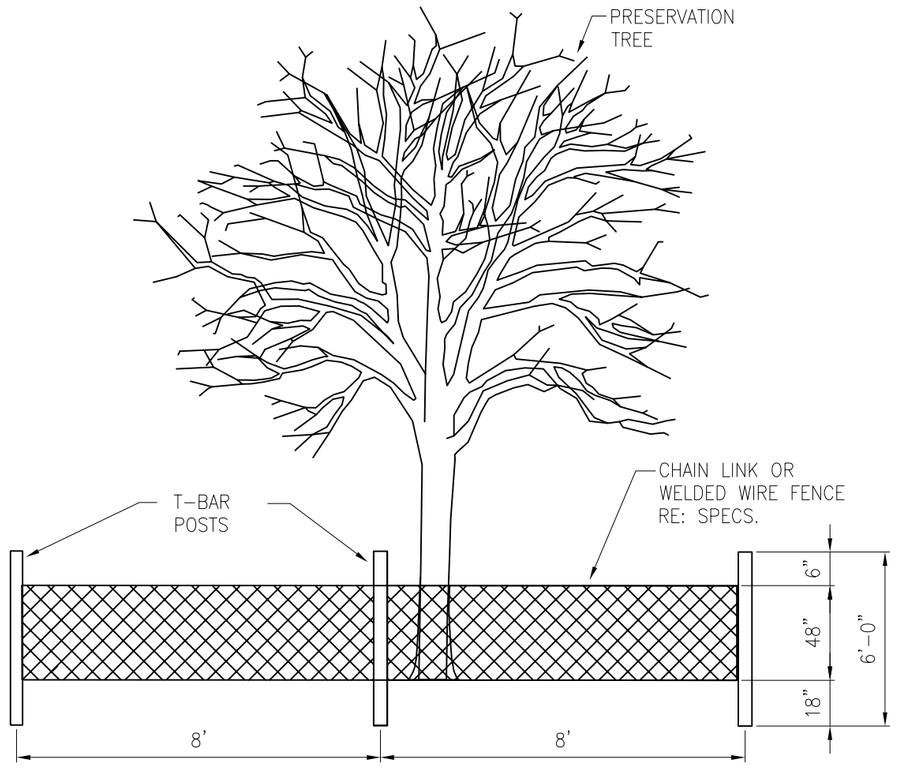
BUFFALO SPEEDWAY RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

TREE PROTECTION
PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
TYPICAL DETAILS

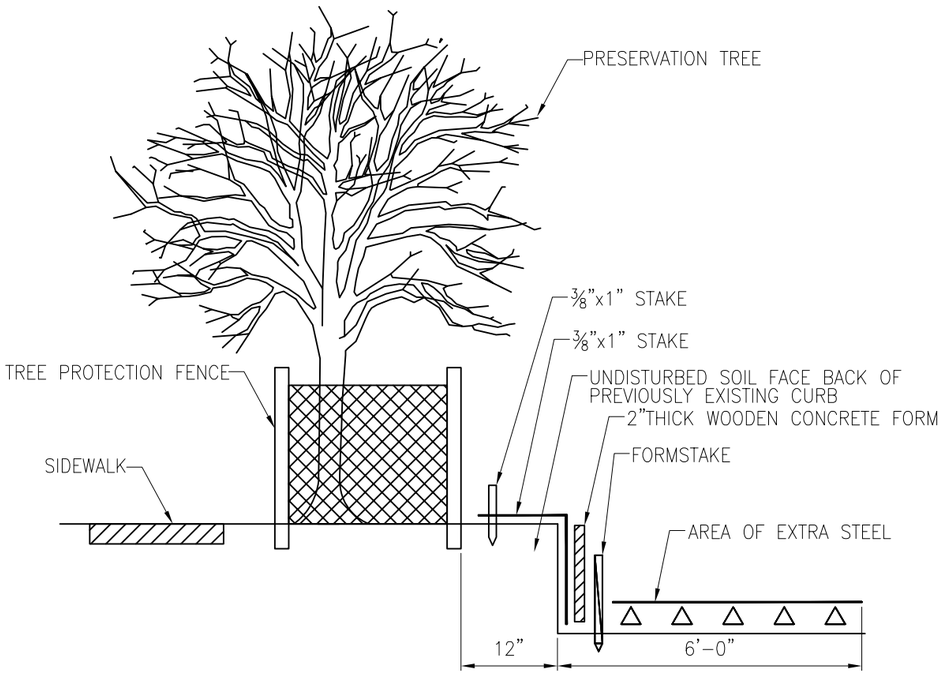
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		575
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



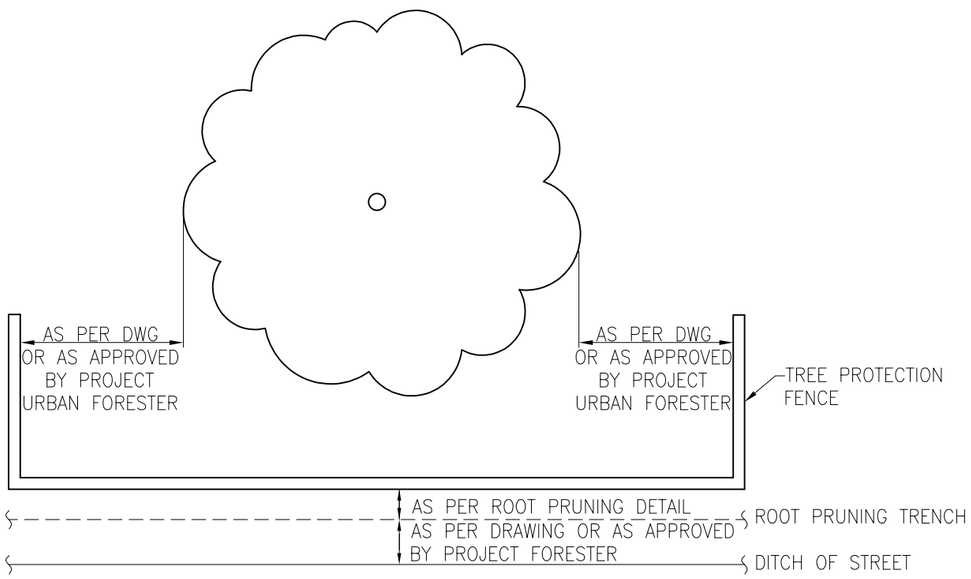
TREE PROTECTION FENCING DETAIL A

NOT TO SCALE



ZERO CURB CUTBACK DETAIL-PROFILE VIEW

NOT TO SCALE



TREE PROTECTION FENCING DETAIL B

NOT TO SCALE

NOTES:

1. ROOTS AND SOIL BACK OF CURB SHALL NOT BE DISTURBED IN DEMOLITION, ROAD BASE PREPARATION, FORMING, OR FINISHING.
2. CURB TO BE HAND FINISHED, ACCESS FOR SLIP CURB MACHINE WILL NOT BE PERMITTED.
3. NO STABILIZATION BACK OF CURB IN AREA OF ZERO CURB CUTBACK.

STATE OF TEXAS
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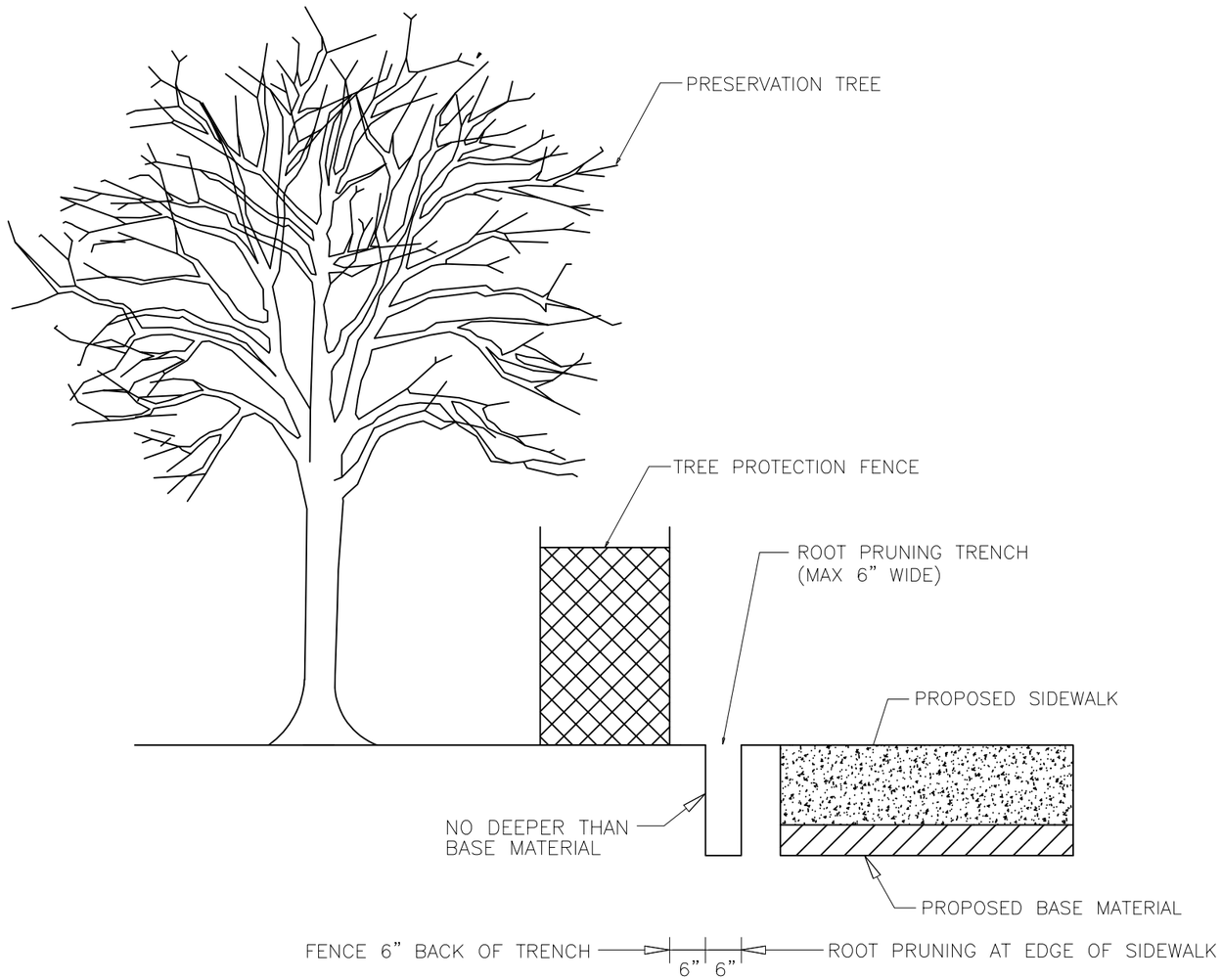
BUFFALO SPEEDWAY RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)

TREE PROTECTION
PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
TYPICAL DETAILS

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO. (SEE THE TITLE SHEET)		SHEET NO.
6			576
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



ROOT PRUNE FOR SIDEWALK

NOT TO SCALE

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED
PROFESSIONAL ENGINEER
8/25/2020

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P.O. Box 57134
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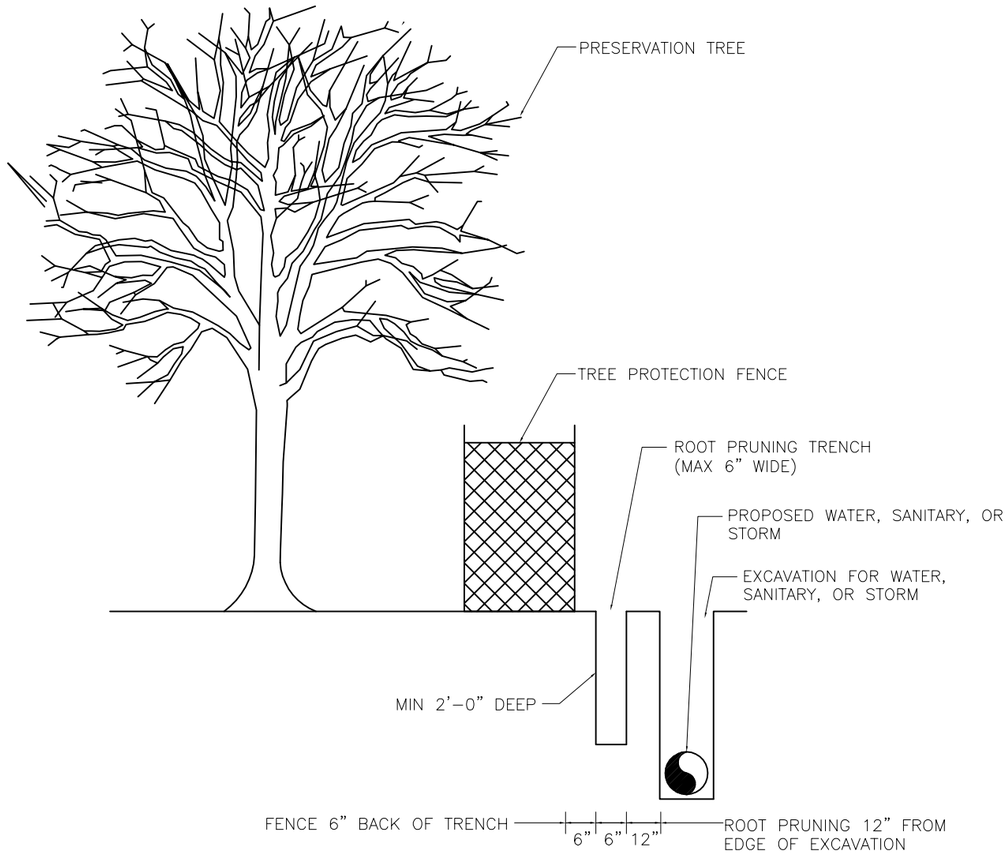
BUFFALO SPEEDWAY RECONSTRUCTION
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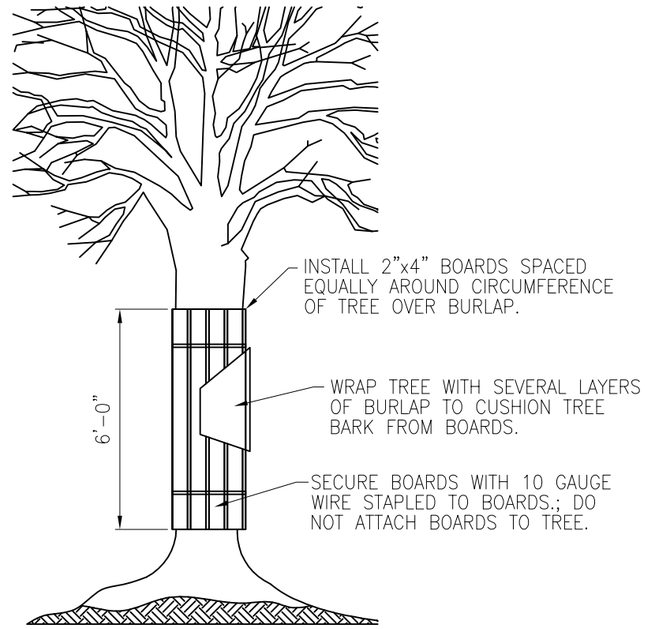
Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO. (SEE THE TITLE SHEET)			SHEET NO.
6				577
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



ROOT PRUNE FOR WATER, SANITARY, OR STORM LINE

NOT TO SCALE



TREE BOARDING

NOT TO SCALE

NOTES:

1. TREE BOARDING TO BE PAID UNDER LANDSCAPE AMENITY (TY1).

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BUFFALO SPEEDWAY IMPROVEMENTS
TYPICAL DETAILS

SHEET 7 OF 7

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		578
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

1.01 PROJECT CONDITIONS

A. Preserve and protect existing trees and plants to remain from foliage, branch, trunk, or root damage that could result from construction operations.

B. Prevent following types of damage:

1. Compaction of root zone by foot or vehicular traffic, or material storage.
2. Trunk damage from equipment operations, material storage, or from nailing or bolting.
3. Trunk and branch damage caused by ropes or guy wires.
4. Root poisoning from spilled solvents, gasoline, paint, and other noxious materials.
5. Branch damage due to improper pruning or trimming.
6. Damage from lack of water due to:
   a. Cutting or altering natural water migration patterns near root zones.
   b. Failure to provide adequate watering.
7. Damage from alteration of soil pH caused by depositing lime, concrete, plaster, or other base materials near root zones.
8. Cutting of roots larger than one inch in diameter.

1.02 DAMAGE ASSESSMENT

A. When trees other than those designated for removal are damaged as a result of construction operations, remove damaged tree and provide required replacement plantings or "Tree Trust Credits" as specified in Chapter 82 of the City of West University Place Code of Ordinances. Chapter 82 requires inch for inch replacement of any tree 6" diameter or larger, with at least one 4" diameter tree in a 100 gallon container included for every 10" in replacement required. (20" damaged tree would require two 4"/100 gallon trees with the 12" balance being 2" diameter/30 gallon trees or larger). Tree Trust Credit rates are $2,500.00 per 4" tree and $250.00/inch for any remaining inches required. Should Tree Trust Credit be purchased for a 20" tree the fee would be two 4" trees at $2,500.00/inch and remaining 12" at $250.00/inch for a total of $8,000.00. Any combination of replacement planting and Tree Trust Credit will comply with requirements of Chapter 82. All necessary replacement planting or Tree Trust Credit plans must be approved by City Forester prior to implementation.

PART 2 P R O D U C T S

2.01 MATERIALS

A. Pruning paint: Black latex, water based paint, free of all petroleum products.

B. Plastic Root/Soil Protection: Clear polyethylene sheeting, minimum 6 mil. thickness.

C. Fertilizer/Root stimulant: Root stimulant shall be a root stimulant that contains at a minimum the following ingredients: Ectomycorrhizal Fungi, VA Mycorrhizal (VAM) Fungi, *Rhizoshpere Bacillus spp.,* Kelp Meal, Humic Acid and Soluble Yucca. Fertilizer shall be Davey AborGreen Pro.

D. Tree Protection Fencing: Chain link or welded wire fencing, 4 feet in height with 6 feet tall "T" posts installed maximum of 8 feet on center as per tree protection plan

E. Sandy Loam Backfill: a loam consisting of less than 7 percent clay, less than 50 percent silt, and between 43 and 50 percent sand.

PART 3 E X E C U T I O N

3.01 PROTECTION OF EXISTING TREES AND SHRUBS

A. Site preparation work and/or construction work shall not begin in any area where tree preservation measures have not been completed and approved by City of West University Place.

B. Protect exposed roots and root zone areas from contamination from stabilization materials and concrete using plastic root/soil protection (polyethylene).

C. Cover exposed roots within 4 hours to reduce damage caused by desiccation. Roots may be covered with soil, mulch, polyethylene, or wet burlap to help protect them from drying.

D. Designate limited areas as concrete washout areas. Locate concrete washout areas away from root zones.

E. Trees scheduled for root pruning are called out specifically in the plans.Trench shall be located 2 ft. from the edge of proposed waterline or sanitary sewer for trees called out for root pruning for water or fittings, or sanitary sewer in the treatment schedule, 2 ft. from edge of proposed storm sewer pipe for trees called out for root pruning for storm in the treatment schedule, 30" back of proposed curb for trees called out for root pruning for street where zero curb cutback is not also called out, at back of proposed curb where zero curb cutback is called out in same location as root pruning, and at edge of sidewalk for trees called out for root pruning for sidewalk. Exact locations shall be approved in the field by the engineer and/or City of West University Place prior to installation. Trenching depth shall be a minimum of 2 ft. deep and a maximum of 6 inches wide for water, fittings, sanitary sewer, storm, and street. Trenching depth shall be to the anticipated bottom of sidewalk and base material for sidewalk root pruning; roots lower than sidewalk shall not be pruned. All roots shall be cut by trencher, chainsaw, or handsaw to the specified depth. Roots shall be cut cleanly, and not ripped, torn, or chopped. Trench shall be backfilled and compacted immediately after trenching. Trench shall be installed prior to any clearing and grubbing, excavation for underground, or any other site work.

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BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)
TREE PROTECTION
PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
TREE PROTECTION NOTES

SHEET 1 OF 4

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO. (SEE THE TITLE SHEET)		SHEET NO.
6			579
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

F. Install tree protection fencing around each tree to be preserved as on the tree protection plan.

1. Each tree to be preserved shall be protected with a tree protection fence. The fencing shall be continuous between posts, shall be pulled taut prior to securing to posts, and shall be firmly attached to the posts with a minimum of 4 wire ties.
2. All tree protection fencing shall be installed prior to site work or construction activity. The fence shall be placed in a continuous alignment as shown on the tree protection plan. In general fences shall be placed 30" back of existing curb or edge of pavement where root pruning or zero curb cutback is not specified, and 6" back of root pruning trench where root pruning is specified and 12" back of curb where zero curb cutback is specified. Exact locations shall be approved by the City of West University Place and/or engineer in the field. The Fences shall be placed to protect roots, trunks, and foliage. The contractor shall not remove or relocate tree protection fencing and shall not operate within the limits shown without direct approval of the City of West University Place. No bore pits, peep holes, service taps, or any excavation shall occur in the area of the tree protection fencing for trees called out with "bore, auger or trenchless" in the Tree Treatment Schedule. The "bore" limits shall be the same as the limits of the tree protection fencing.
3. Storage of equipment or materials will not be allowed inside a fence. Entryways and access into a protected area shall not be provided unless approved by the City of West University Place.
4. Damage to tree fences occurring during the progress of the work shall be repaired immediately at no additional cost to owner. Workmen shall be clearly instructed to exercise caution in performance of work near trees being preserved.
5. Tree protection fencing shall be removed by contractor, at no additional costs, upon completion of all construction activity in each work zone area. Tree protection fencing materials used in the first two work zone areas shall be removed and utilized in subsequent work zone areas. Materials and labor shall be paid for each linear foot of fencing installed in first two work areas. All fencing installed in subsequent work zone areas shall be paid for labor only.
6. Tree protection fencing shall be paid for under item 1004-6001 "TREE PROTECTION".
7. Tree boarding shall be paid for under item 1022-6001 "LANDSCAPE TREATMENT (TY 1)".

G. Boring/Auguring of water lines or sanitary sewer lines

1. Water line or sanitary sewer line shall be bored/augured/horizontally drilled under critical root zone areas of trees designated with auger, bore or trenchless in the tree treatment schedule. The entire area protected with tree protection fencing shall be bored. No bore pits, come through holes, peep holes, push pits, or long or short side service taps shall be allowed in the areas protected by tree protection fencing. The tree protection plan takes into consideration the limits of auguring equipment, there should be room for adequately spaced bore pits, peep holes, come through holes, and push pits. Any changes to the location of the tree protection fencing shall be authorized by the City of West University Place and/or Engineer.

H. Hand digging of Service taps and leads, fire hydrants and fittings

1. Trees called out for Hand dig short side service tap are located in very close proximity to existing short side water meters. Excavating the service tap with machinery would significantly impact the tree. These short side service taps shall be excavated with manual labor to expose any roots 1" in diameter and larger. The first 24" of excavation shall be completed manually to expose the roots. Any root 1" in diameter and larger shall remain undamaged, the roots shall not be cut, nor shall the bark and cambium layer be scraped or damaged. Once the roots are exposed, if there is adequate room to utilize a mini-excavator without damaging the roots, the mini-excavator can be utilized to complete the excavation down to the water line. 1" plywood shall be placed on grade to provide root protection in the area of access of the mini-excavator. If roots 1" diameter or larger are cut or damaged, responsible party will be subject to a citation under the Chapter 82, and may also be required to incur the cost of tree removal and replacement of damaged tree on an inch for inch basis, as required by the City of West University Place.
2. Trees called out for Hand dig short side or long side service lead are located in very close proximity to existing water meters. Excavating the service lead with machinery would significantly impact the tree. Short side leads shall be excavated with manual labor to expose any roots 1" in diameter and larger from the service tap to the meter. Come out holes and excavation required for long side service leads shall be excavated with manual labor to expose roots 1" in diameter and larger, from the come out hole to the meter. In each case, all roots 1" in diameter and larger shall remain undamaged, the roots shall not be cut, nor shall the bark and cambium layer be scraped or damaged. If roots 1" diameter or larger are cut or damaged, responsible party will be subject to a citation under Chapter 82, and may also be required to incur the cost of tree removal and replacement of damaged tree on an inch by inch basis, if required by City of West University Place.
3. Trees called out for Hand dig fire hydrant, tee, or fitting are located in very close proximity to proposed fitting. Excavating the fitting with machinery would significantly impact the tree and be in violation of Chapter 82. Excavation for fire hydrant or fitting shall be completed with manual labor to expose any roots 1" in diameter and larger. In each case, all roots 1" in diameter and larger shall remain undamaged, the roots shall not be cut, nor shall the bark and cambium layer be scraped or damaged. If roots 1" diameter or larger are cut or damaged, responsible party will be subject to a citation under Chapter 82, and may also be required to incur the cost of tree removal and replacement of damaged tree on an inch by inch basis, if required by City of West University Place.
4. Long side service taps shall not be located in an area specified to be bored in the tree protection plan. Should it be absolutely necessary to locate a long side service tap in an area specified to be bored, the excavation shall be completed as specified in paragraph 1 of this section-Hand digging short side service taps.

I. Pruning of Trees

1. Trees shall be pruned in accordance with the most current revision of the American National Standard for tree pruning, ANSI A300 (Part 1) - 2001 Pruning Revision of ANSI A300-1995 Tree, Shrub and Other Woody Plant Maintenance - Standard Practices. Pruning shall be completed by an International Society of Arboriculture Certified Arborist who has received training in proper pruning techniques.
2. Clearance prune designated trees in tree protection plan for public streets, sidewalks, and construction areas. Provide 16 feet of vertical clearance over proposed water lines, sanitary, storm and proposed street construction, from back of curb on one side to back of curb on the other side. Pruning to be installed prior to any construction activity.. Exceptions to 16' of vertical clearance will be made for trees determined to be aboriculturally significant by City of West University Place. Pruning of the trees identified, or not identified and requiring pruning, will be completed with prior approval and supervision of City of West University Place.



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BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)
TREE PROTECTION
PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
TREE PROTECTION NOTES

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		580
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

I. Pruning of Trees

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2. Clearance prune designated trees in tree protection plan for public streets, sidewalks, and construction areas. Provide 16 feet of vertical clearance over proposed water lines, sanitary, storm and proposed street construction, from back of curb on one side to back of curb on the other side. Pruning to be installed prior to any construction activity.. Exceptions to 16' of vertical clearance will be made for trees determined to be aboriculturally significant by City of West University Place. Pruning of the trees identified, or not identified and requiring pruning, will be completed with prior approval and supervision of City of West University Place.
3. All cuts should be made sufficiently close to the parent limb or trunk without cutting into the branch collar or leaving a protruding stub, so that closure can readily start under normal conditions. All lateral cuts shall be made back to a lateral that is at least 1/3 the diameter of the parent limb. Clean cuts shall be made at all times.
4. Trees shall be pruned in a manner that will not destroy or alter the natural shape and character of the tree. All proposed pruning shall be reviewed by and approved by City of West University Place Forester at least 2 days prior to start of pruning work.
5. Apply black latex paint to all fresh wounds on Oak (Quercus) species immediately after each cut is made.
6. Crown Cleaning Pruning of trees designated in the tree protection plan shall include removal of dead, diseased, and/or broken limbs larger than 1" in diameter.
7. Payment for pruning of trees along project corridor shall be subsidiary to Item 100-6002 "PREP ROW".

J. Tree Removal

1. Trees called out to be removed in the tree protection plan, and trees that may be determined to be removed during construction, shall be flagged with orange surveyor's flagging with tree number from tree protection plan clearly marked on flagging for review and approval by City of West University Place Forester prior to removal. A tree removal permit will be issued to contractor prior to tree removal to comply with requirements of Chapter 82.
2. Trees scheduled for removal shall be sawed down and debris hauled from the site the same day. The stump shall be ground to 6" below grade and excess grindings shall be hauled from the site the same day, so that a pile of grindings is not left where the stump was ground. Enough grindings should be left so that an open hole does not remain.
3. Only those trees called out for removal in the tree protection shall be removed, or otherwise damaged. Should it be determined that any additional trees must be removed, a permit must be applied for and approved from the City of West University Place prior to removal.
4. Removal of trees shall be paid for under the various 100 "PREP ROW (TREE)" items shown in the plans.

K. Root Stimulation

1. Deep root stimulate designated trees. Mix fertilizer with wetting agent per label instructions.
2. Stimulate entire root zone area within the dripline of the tree and continue 10 feet beyond the dripline, leaving out areas of anticipated root loss (construction areas) and sidewalks and street pavement.
3. Mixture shall be injected into the top 10 inches of soil under pressure of 150 to 200 psi as soil conditions warrant.
4. Mix in a tank with agitation capability per label instructions. Inject the mixture on a 2.5 ft. square grid at 4 lbs. actual nitrogen per 1,000 sq. ft.

L. Regularly water trees which have received root damage, to eliminate additional stress caused by lack of moisture. Water during periods without adequate rainfall. For example, should 1.0" of rain not be received within a week period, the trees should be thoroughly watered. March through September, water once every two weeks. October through February, water every three weeks. Water thoroughly to saturate the entire root zone area.

M. Chemically treat tree trunks with evidence of borer activity with the appropriate approved insecticide mixed and applied per the manufacturer's product application recommendations. Trees shall be sprayed within 24 hours after observance of borer activity.

N. Grading and filling around trees.

1. Maintain existing grade within the dripline of trees, unless otherwise indicated.
2. Where existing grade around trees is above new finish grade, under supervision of project arborist and City of West University Place, carefully hand excavate within the dripline to make transition to new finish grade.
3. Where existing grade is below new finish grade, place sandy loam soil in a single layer to make the transition to new grade. Do not compact; hand grade to required elevation. Specifically, to areas where proposed curb is higher than existing and backfill will be required and in areas where proposed curb is moving farther away from base of tree.

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BUFFALO SPEEDWAY
RECONSTRUCTION
(HOLCOMBE BLVD. TO BISSONNET)
TREE PROTECTION
PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
TREE PROTECTION NOTES

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		581
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

O. Demolition, Forming and Pouring Sidewalks (Sidewalk on Grade)

1. Demolition of existing sidewalks, located in or adjacent to the limits of tree protection fencing, shall be completed without disturbing, cutting, or otherwise damaging tree roots and soil located beneath them.
2. The new sidewalk shall be formed at or above the elevation of the existing sidewalk, without disturbing, cutting or otherwise damaging tree roots. Every effort has been made to address tree root and sidewalk elevation issues with information available in the field and on plan and profile sheets. The elevation of every tree root was not available, if tree roots are found to be in conflict with proposed sidewalk, project engineer, arborist and City of West University Place shall be consulted as to how to install sidewalks with minimal impacts to adjacent trees.

P. Zero curb cutback & Demolition of existing curbs

1. Disturbance of tree roots or soil behind the existing and/or proposed curb within root zones of trees designated for “zero curb cutback” or “do not disturb soil & roots back of curb” shall be prohibited. If the curb cannot be removed without disturbing soil or damaging roots back of curb when using equipment for demolition, the curb shall be broken using a hand-held jackhammer and removed by hand.
2. The exposed roots and soil shall be covered immediately after demolition with 6 mil polyethylene in order to avoid desiccation, and contamination by the lime used for road bed stabilization. The polyethylene shall be placed so that it covers the vertical face of soil back of curb and laid back onto the grade 12 inches back of curb. The polyethylene should remain in place, across the entire area specified for zero curb cutback or do not disturb soil & roots, from the time the existing curb is demolished until the time when the new curb is formed and backfilled. The polyethylene can be pulled up from the vertical face while the road bed is being graded or mixed, to avoid catching the plastic with machinery, but shall be replaced immediately after equipment has completed. The vertical face shall not be exposed for more than 8 hours in any 24-hour period.
3. There shall be no stabilization back of curb in the zero curb cutback areas, or forming with steel forms. The existing grade and roots back of existing curb shall not be disturbed. This may require forming of the new street with wooden forms with stakes inside forms, which may require leaving the forms in place after the street is poured. Should wooden forms be utilized, the wood shall be at minimum a 2x6. The new curb may require hand finishing, as a slip curb machine may not have adequate clearance without disturbing the roots that are to be protected with the zero curb cutback.
4. Roots extending into the street, or on top of the existing curb, in areas to be paved shall be cut and removed by hand prior to disturbance or removal with equipment. Roots shall be pruned flush with the proposed back of curb. Roots one inch in diameter and larger shall be cut in a manner to provide a smooth, clean cut surface. Cuts shall be made with the appropriate pruning shears or pruning saws. Roots shall not be chopped or broken.
5. In areas where proposed curb may be lower than existing top of curb and tree roots 2” diameter or larger are present, the soil and roots shall not be graded or laid back. The existing elevation shall be maintained and the curb formed to meet elevation or a short elevation difference between roots and top of curb maintained.

Q. Demolition, Forming and Pouring of Drive Way Approaches

1. Demolition of existing driveway approaches located beneath the dripline of any tree shall be completed without disturbing, cutting, or otherwise damaging tree roots and soil located beneath them.
2. The new approach shall be formed at or above the elevation of the existing approach where tree roots 2” diameter or larger are present, without disturbing, cutting or otherwise damaging tree roots. Maximum drive slopes may be needed at bottom of apron to allow forming of drive over tree roots at top of drive. As with sidewalks, the elevation of every tree root was not available in design. If tree roots are found to be in conflict with proposed approach, project engineer, arborist and City of West University Place shall be consulted as to how to install drive way with minimal impacts to adjacent trees.

R. Arborist Qualifications

1. Arborist - Construction Contractor shall employ qualified ISA Certified Arborist acceptable to City of West University Place Urban Forester and Public Works Director to complete all tree care treatments (Tree removal, Clearance pruning, Crown Cleaning Pruning, Root stimulation/fertilization) - (Tree protection fence, Root pruning, Zero Curb Cutback, Hand digging for fittings, and all other treatments are to be installed by Construction contractor as part of the construction process). Certified Arborist shall be normally engaged in the field and have a minimum of 5 years' experience. Qualifications of the selected Certified Arborist shall be submitted for review and approval by the City of West University Place.

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BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET) TREE PROTECTION PLAN

BUFFALO SPEEDWAY IMPROVEMENTS
TREE PROTECTION NOTES

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		582
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

SITE DESCRIPTION

PROJECT LIMITS: THIS PROJECT BEGINS 650 FEET SOUTH OF THE HOLCOMBE BLVD AND BUFFALO SPEEDWAY INTERSECTION AND ENDS JUST BEFORE THE BUFFALO SPEEDWAY AND BISSONET ST. INTERSECTION (STA 0+00.00 TO STA 78+76.21)

PROJECT DESCRIPTION: RECONSTRUCTION OF PAVEMENT, INSTALLATION OF STORM SEWERS AND RELOCATION OF WATER LINES.

MAJOR SOIL DISTURBING ACTIVITIES: INSTALLATION OF STORM SEWER BOX CULVERT

TOTAL PROJECT AREA: 18.10 acres

TOTAL AREA TO BE DISTURBED: 11.57 acres

WEIGHTED RUNOFF COEFFICIENT: (AFTER CONSTRUCTION): 0.62

EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER: THE SOIL PROFILE ALONG THE PROJECT ALIGNMENT IS GENERALLY LAYERED; COHESIVE CLAYS FROM GROUND SURFACE TO DEPTHS OF 6 TO 18 FEET, UNDERLAIN BY COHESIONLESS TO SEMI-COHESIVE SANDS EXTENDING TO THE 25-FT TO 30-FT DEPTHS.

SMALL LOCATIONS OF SHORT GRASS LESS THAN OF VEGETATIVE COVER MOSTLY IMPERVIOUS PAVEMENT WITH TREE LANDSCAPING FOR COMMERCIAL AND RESIDENTIAL ADJACENT PROPERTIES.

NAME OF RECEIVING WATERS: POOR FARM DITCH (HCFCD UNIT D111-000-000) WHICH FLOWS TO BRAYS BAYOU WHICH FLOWS TO GALVESTON BAY.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- ____ TEMPORARY SEEDING
- _X_ PERMANENT PLANTING, SODDING, OR SEEDING
- ____ MULCHING
- ____ SOIL RETENTION BLANKET
- ____ BUFFER ZONES
- ____ PRESERVATION OF NATURAL RESOURCES

OTHER:

STRUCTURAL PRACTICES:

- _X_ SILT FENCES
- ____ HAY BALES
- _X_ ROCK BERMS
- ____ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- ____ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- ____ DIVERSION DIKE AND SWALE COMBINATIONS
- ____ PIPE SLOPE DRAINS
- ____ PAVED FLUMES
- ____ ROCK BEDDING AT CONSTRUCTION EXIT
- _X_ TIMBER MATTING AT CONSTRUCTION EXIT
- ____ CHANNEL LINERS
- ____ SEDIMENT TRAPS
- ____ SEDIMENT BASINS
- ____ STORM INLET SEDIMENT TRAP
- ____ STONE OUTLET STRUCTURES
- ____ CURBS AND GUTTERS
- ____ STORM SEWERS
- ____ VELOCITY CONTROL DEVICES
- _X_ EROSION CONTROL LOGS

OTHER:

NARRATIVE - SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:

STORM WATER MANAGEMENT ACTIVITIES IS PROVIDED ON SW3P PLAN.

STORM WATER MANAGEMENT: THE TRAFFIC CONTROL CONSTRUCTION PHASE IS DEVELOPED IN A MANOR, WHICH ALLOW THE CONTINUAL USE OF THE EXISITNG STORMWATER SYSTEM IN CONJUNCTION WITH THE PROPOSED STORMWATER LINES THROUGHOUT THE CONSTRUCTION PHASE OF THE PROJECT.

OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE: All erosion and sediment controls will be maintained in good working order. If a repair is necessary it will be done at the earliest date possible, but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from heavy equipment. The area adjacent to creeks and drainageways shall have priority followed by devices protecting storm sewer inlets.

INSPECTION: All inspections will be performed by a TxDOT inspector per one of the options below as directed by the Area Engineer
1. At least every 7 calendar days
2. At least every 14 days or after 0.5 inches or more of rainfall
An inspection and maintenance report should be made for each inspection. Based on the inspection results, the controls shall be revised according to the inspection report.

WASTE MATERIALS: The dumpster used to store all waste material will meet all state and local city solid waste management regulations. All trash and construction debris will be deposited in the dumpster. The dumpster will be emptied as necessary or as required by local regulation and the trash will be hauled to a local dump. No construction waste material will be buried on site.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING): In the event of a spill which may be considered hazardous, the Houston District Safety Office shall be contacted immediately at 713-802-5962.

SANITARY WASTE: All Sanitary Waste will be collected from the portable units as necessary or as required by local regulations by a licensed sanitary waste management contractor.

OFFSITE VEHICLE TRACKING:

- _X_ HAUL ROADS DAMPENED FOR DUST CONTROL
- _X_ LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
- _X_ EXCESS DIRT ON ROAD REMOVED DAILY
- _X_ STABILIZED CONSTRUCTION ENTRANCE

OTHER:

REMARKS: Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the sediment that may enter receiving waterways. Disposal areas shall not be located in any waterway, waterbody or streambed. Construction staging areas and vehicle maintenance areas shall be constructed by the contractor in a manner which minimizes the runoff of all pollutants. All waterways shall be cleared as soon as practical of temporary embankments, temporary bridges, matting, falsework, piling, debris, and other obstructions placed during construction operations that are not part of the finished work.

STATE OF TEXAS
SYED S. HAQ P.E.
94660
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

Texas Department of Transportation
Houston District

TxDOT STORM WATER POLLUTION PREVENTION PLAN

SWP3

FILE: STDG1.DGN	DN: TxDot	CK: TxDot	DW: TxDot	CK: TxDot
©TxDOT JANUARY 2007	DIST	FED REG	PROJECT NO.	SHEET
REVISIONS 9/2010 INSPECTION NOTE 9/2013 INSPECTION NOTE 11/2013 SW3P TO SWP3 03/2015 2014 SPECS	12	6	(SEE THE TITLE SHEET)	583
	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	HARRIS	0912	72	360	CS

STD G-1

I. STORMWATER POLLUTION PREVENTION

Texas Pollutant Discharge Elimination System (TPDES) TXR 150000: Stormwater Discharge Permit or Construction General Permit is required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506. Refer to Storm Water Pollution Prevention Plan (SWP3) Houston District standard plan.

No Additional Comments

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS

United States Army Corps of Engineers (USACE) Permit is required for filling, dredging, excavating or other work in water bodies, rivers, creeks, streams, wetlands or wet areas. The Contractor must adhere to all of the terms and general conditions associated with the following permit(s). If additional work not represented in the plans is required, contact the Engineer immediately.

☐ No United States Army Corps (USACE) Permit Required

☒ Work is authorized by the United States Army Corps of Engineers (USACE) under a Nationwide Permit (NWP) without a Pre-Construction Notification (PCN). Project specific permit was not issued by USACE, therefore is not in the plan set. The USACE general conditions are in the “General Notes."

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Nationwide Permit (NWP) with a Pre-Construction Notification (PCN). The project specific permit issued by the United States Army Corps of Engineers (USACE) is included in the plan set. The USACE general conditions are in the “General Notes."

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Individual Permit (IP). The project specific permit issued by the United States Army Corps of Engineers (USACE) is included in the plan set.

☐ Work would be authorized by the United States Army Corps of Engineers (USACE) permit. The project specific permit issued by the USACE will be provided to the contractor.

United States Coast Guard (USCG) Permit is required for projects that involve the construction or modification (including changes to lighting) of a bridge or causeway across a water body determined to be navigable by the United States Coast Guard (USCG) under Section 9 of the Rivers and Harbors Act. If additional work not represented in the plans is required, contact the Engineer immediately.

☒ No United States Coast Guard (USCG) Coordination Required

☐ United States Coast Guard (USCG) Permit

☐ United States Coast Guard (USCG) Exemption

Additional Comments

This project is covered by a USACE NWP 3 without a PCN.

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the area and contact the Engineer immediately.

No Additional Comments

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical. Refer to TxDOT Standard Specifications in order to comply with requirements for invasive species, beneficial landscaping and tree/brush removal.

No Additional Comments

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS

If any of the listed species below are observed, cease work in the area, do not disturb species or habitat and contact the Engineer immediately.

The work may not remove active nests (from bridges, structures, or vegetation adjacent to the roadway, etc.) during nesting season (February 15 to September 30). If removal of structures or vegetation is necessary during the nesting season, the Contractor shall conduct a bird survey no more than 3 days in advance of the clearing/demolish start date. All bird surveys shall be conducted by a Field Biologist and adhere to the guidance document “Avoiding Migratory Birds and Handling Potential Violations” found in the TxDOT Environmental Compliance Toolkits at the time of the survey. (See below for Field Biologist and Ornithologist qualifications)

No Additional Comments

Field Biologist, Ornithologist – a field biologist is defined as an individual qualified to perform field investigations, presence/absence surveys and habitat surveys for protected avian species or species of concern. A mandatory bachelor’s degree in biology or a related science is required. At a minimum, the Field Biologist, Ornithologist, shall have completed and reported a minimum of three presence/absence and habitat surveys for protected avian species in the past five years. A minimum of three projects must have been conducted in Texas. Surveys shall have been performed for documentation of species in accordance with a protocol approved by USFWS or TPWD, or following generally accepted methodologies.

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

Refer to TxDOT Standard Specifications in the event potentially contaminated materials are observed, such as dead or distressed vegetation, trash disposal areas, drums, canisters, barrels, leaching or seepage of substances, unusual smells or odors, or stained soil, cease work in the area and contact the Engineer immediately.

No Additional Comments

VII. OTHER ENVIRONMENTAL ISSUES

Comments:

Notify TxDOT Engineer when activities permitted under the United States Army Corps of Engineers (USACE) Nationwide Permit (NWP) or Individual Permit (IP) has been completed.

DATE: Feb 14, 2020
FILE:

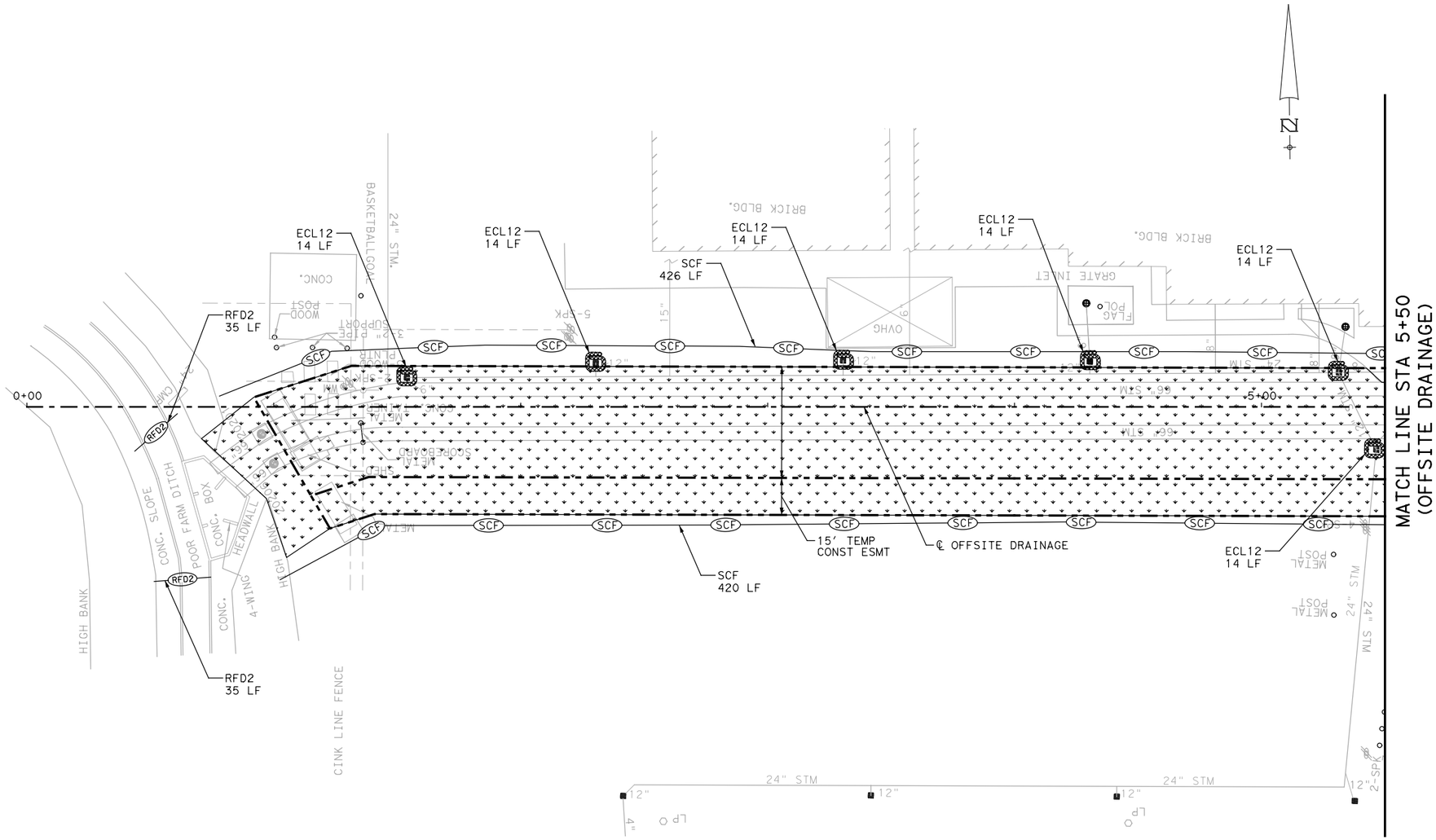
Version 2.1

Texas Department of Transportation | TxDOT Houston District

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: EPIC Sheet.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR
© TxDOT: March 2017	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	72	360	BSW
UPDATED section V. text and added definition (10/17) ADDED USCG and USACE notes in Section VII (04/18)	DIST	COUNTY		SHEET NO.
	12	HARRIS		584



0 50′ 100′

SCALE IN FEET

LEGENDS:

- EROSION CONTROL LOG (12")
- EROSION CONTROL LOG (8")
- RFD2 — ROCK FILTER DAM TY 2
- SCF — SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT TY 3
- PROPOSED INLET
- BLOCK SODDING OR SEEDING
- DIRECTION OF TRAFFIC

NOTES:

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4. QUANTITIES SHOWN ARE APPROXIMATE AND MAY BE ADJUSTED TO MEET FIELD CONDITIONS.

BLOCK SODDING IN THE CHURCH AREA SHOWN FOR INFORMATION ONLY. BLOCK SODING QUANTITY IN THIS AREA IS QUANTIFIED IN THE CHURCH SUMMARY QUANTITY TABLE.

ST. AUGUSTINE GRASS WILL BE USED EXCEPT ON ST. VINCENT DE PAUL CHURCH PROPERTY. ST. VINCENT DE PAUL CHURCH PROPERTY WILL BE SODDED WITH 419 TIFWAY BERMUDA GRASS.

STATE OF TEXAS
SYED S. HAQ P.E.
94660
LICENSED
PROFESSIONAL ENGINEER
8/24/2020

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Texas Registered Engineering Firm F-2144

City of West University Place

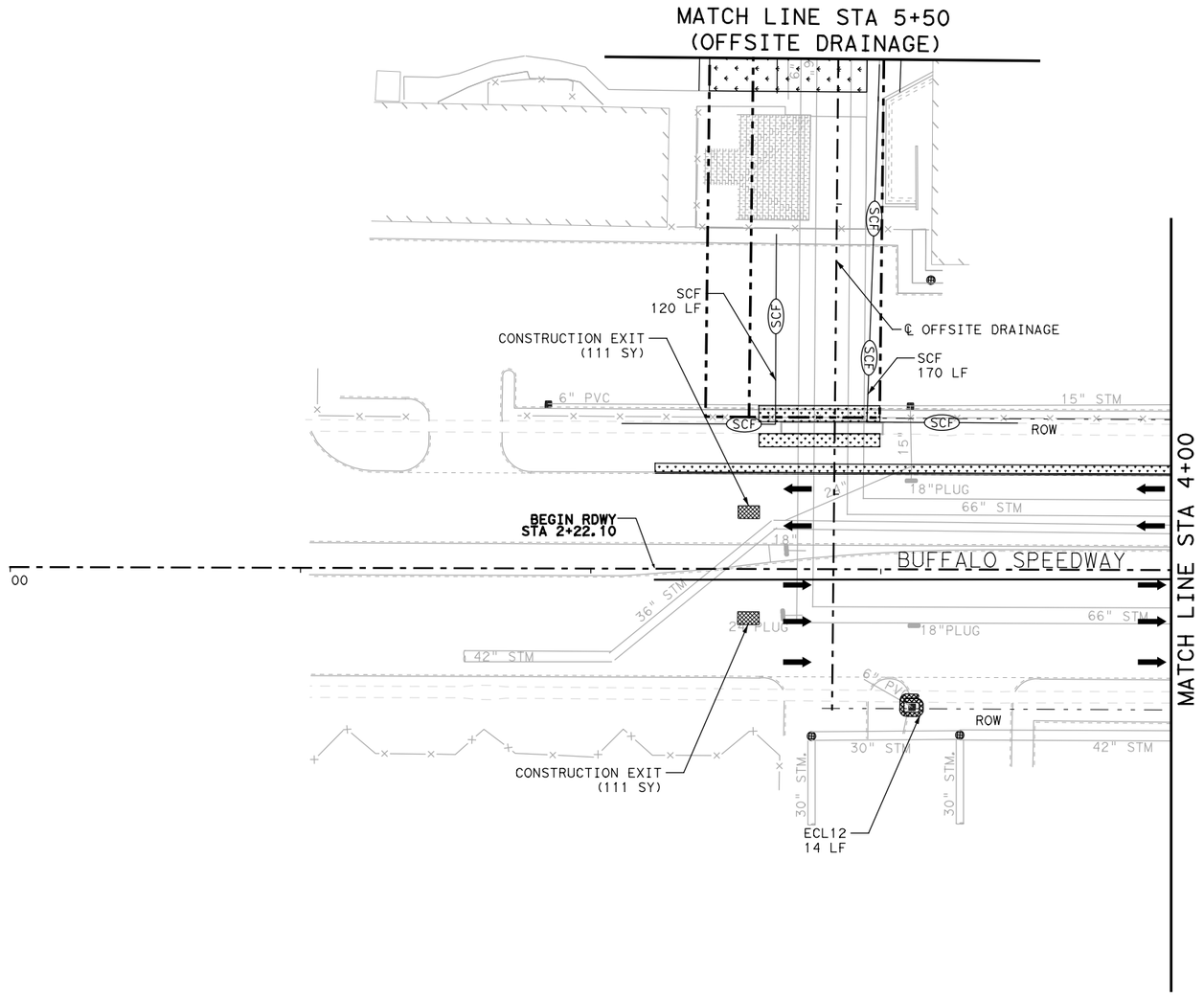
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SW3P PLAN

OFFSITE DRAINAGE
BEGIN TO STA 5+50

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		585
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



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0 50′ 100′

SCALE IN FEET

LEGENDS:

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- EROSION CONTROL LOG (8")
- RFD2 — ROCK FILTER DAM TY 2
- SCF — SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT TY 3
- PROPOSED INLET
- BLOCK SODDING OR SEEDING
- DIRECTION OF TRAFFIC

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8/24/2020

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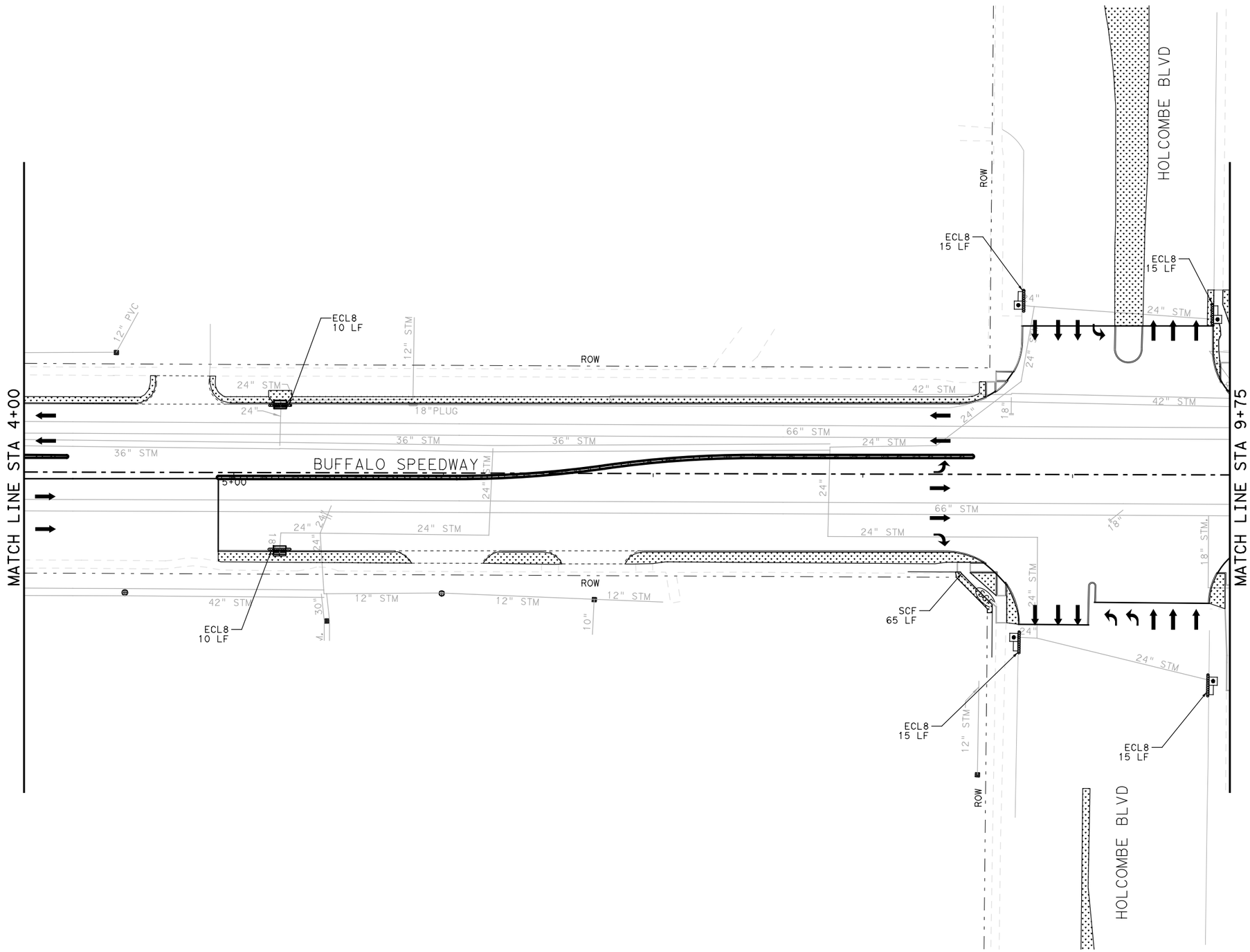
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SW3P PLAN

BEGIN TO STA 4+00

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			586
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



0 50′ 100′

SCALE IN FEET

LEGENDS:

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BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

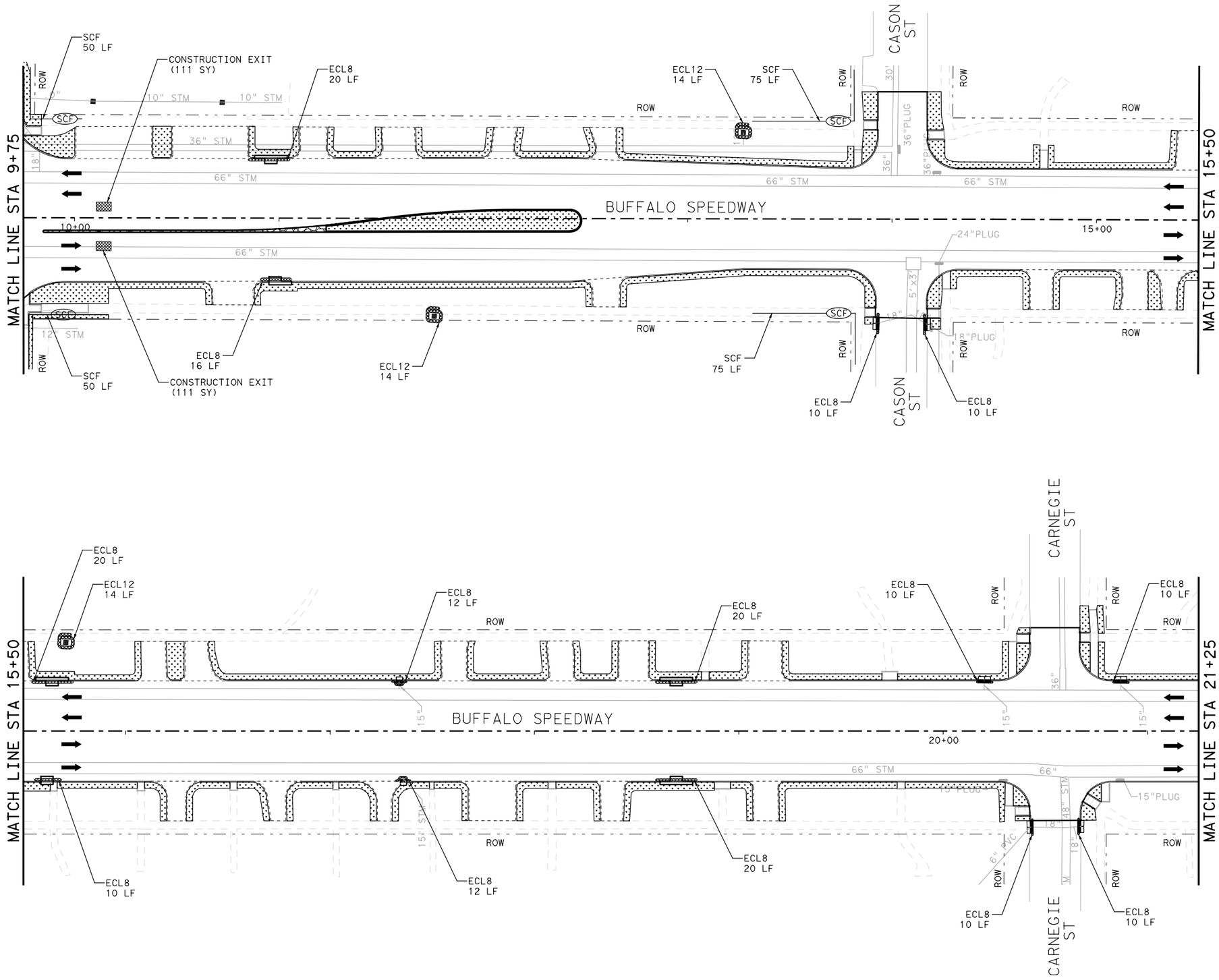
SW3P PLAN

STA 4+00 TO STA 9+75

SHEET 3 OF 9

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			587
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



0 50′ 100′

SCALE IN FEET

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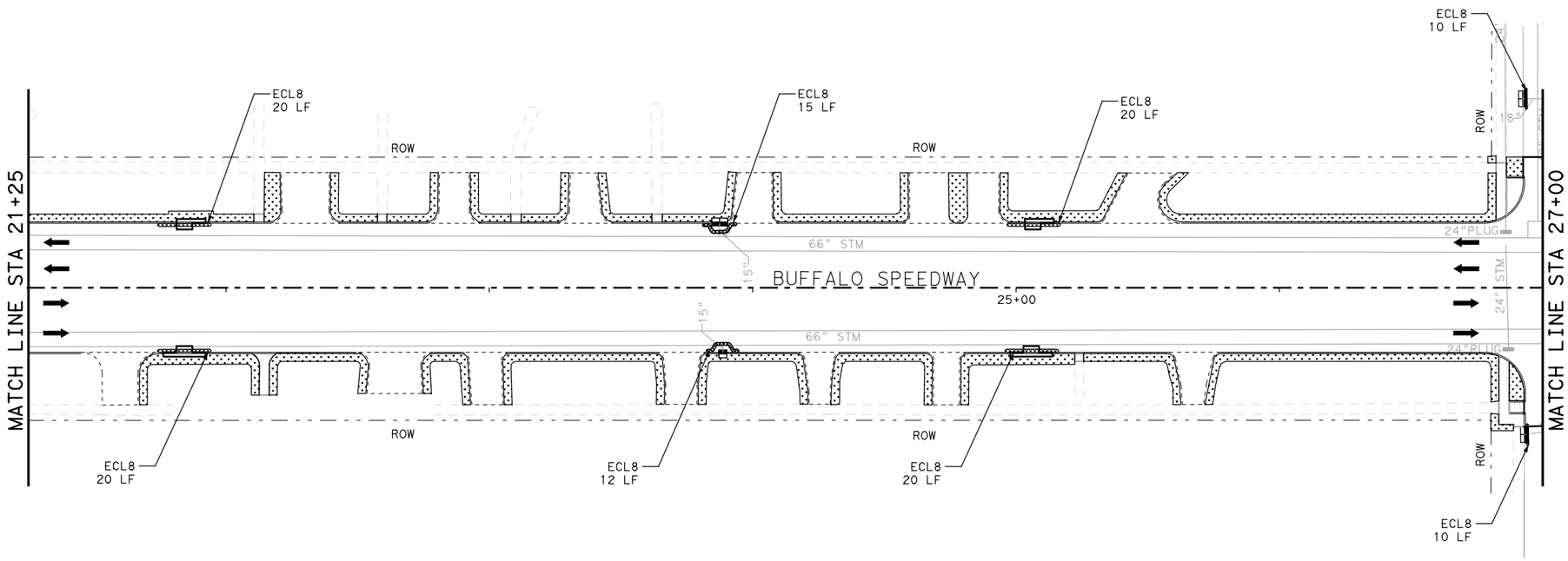
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

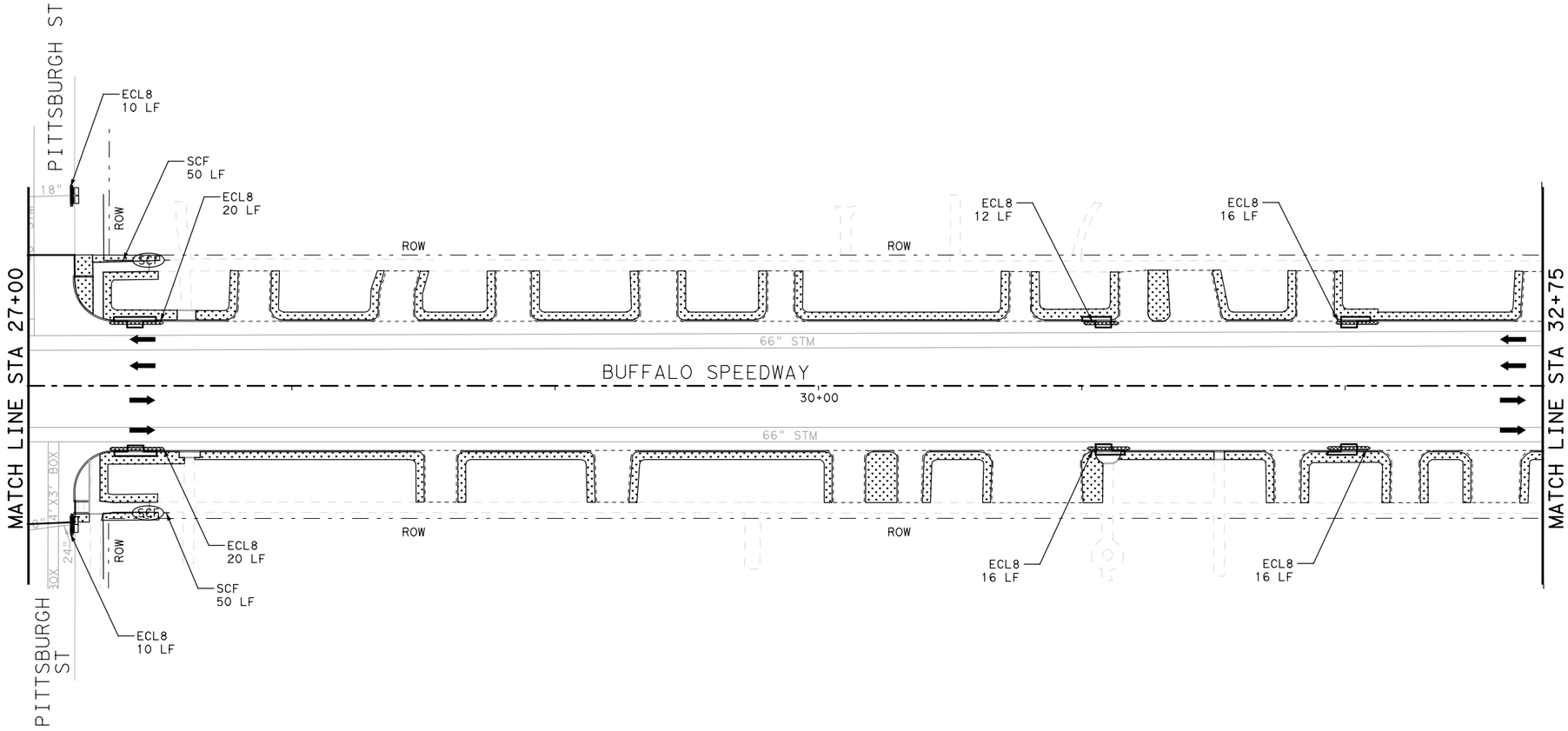
SW3P PLAN

STA 9+75 TO STA 21+25

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		588
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY





0 50′ 100′

SCALE IN FEET

LEGENDS:

- EROSION CONTROL LOG (12")
- EROSION CONTROL LOG (8")
- RFD2 — ROCK FILTER DAM TY 2
- SCF — SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT TY 3
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STATE OF TEXAS
SYED S. HAQ P.E.
94660
LICENSED PROFESSIONAL ENGINEER
8/24/2020

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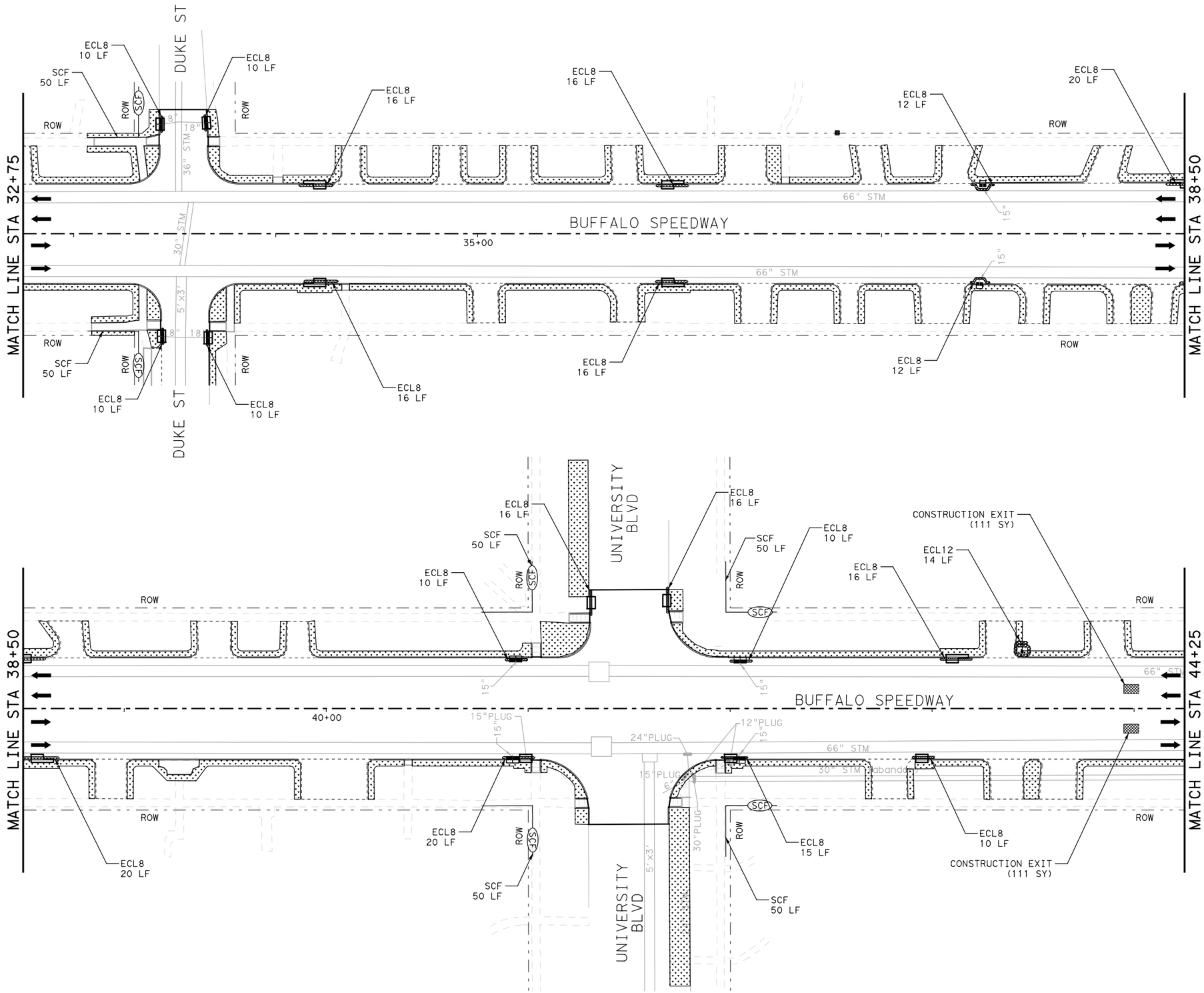
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SW3P PLAN

STA 21+25 TO STA 32+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		589
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50′ 100′

SCALE IN FEET

LEGENDS:

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Texas Registered Engineering Firm F-2144

City of West University Place

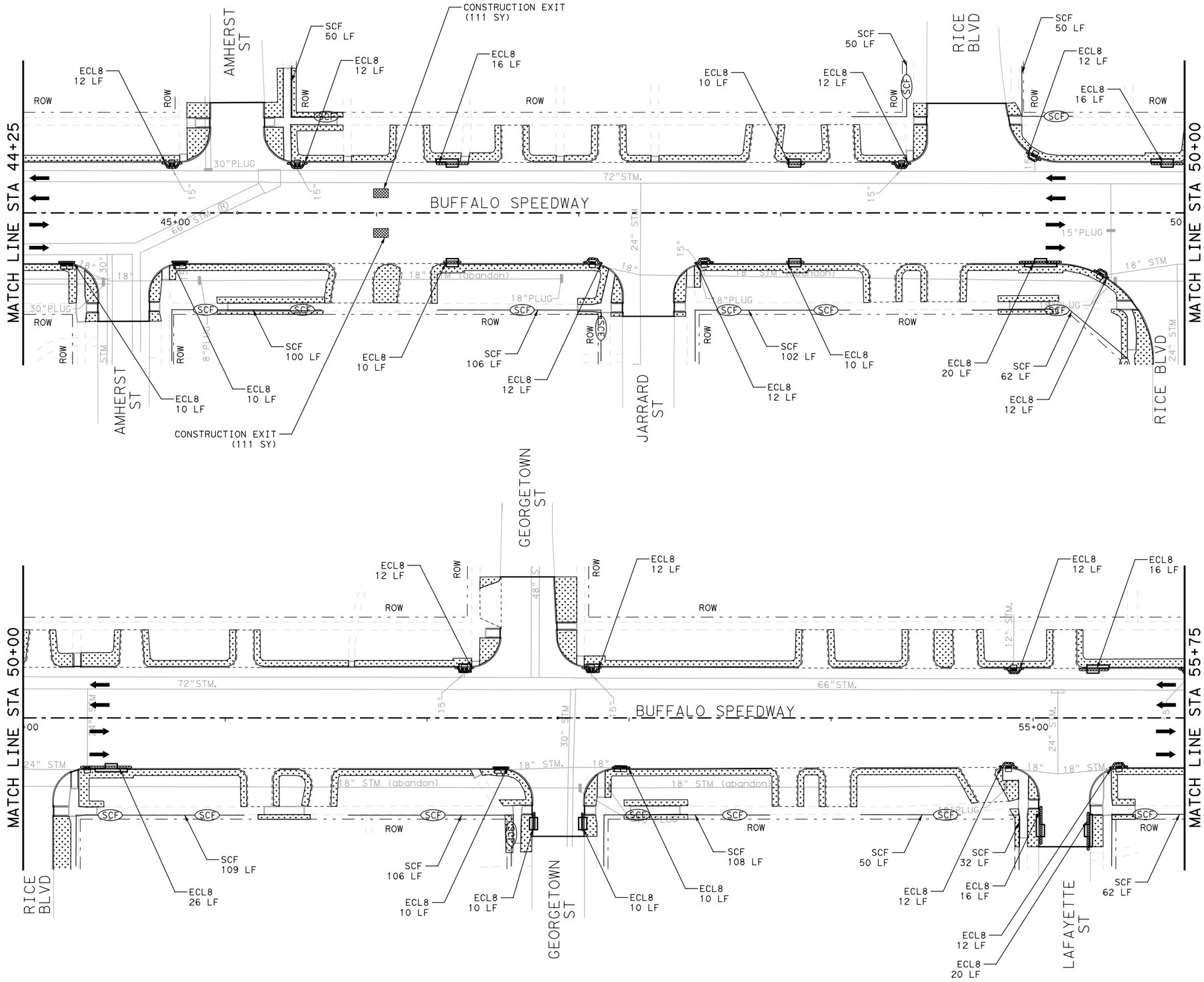
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

SW3P PLAN

STA 32+75 TO STA 44+25

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			590
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



0 50′ 100′

SCALE IN FEET

LEGENDS:

- EROSION CONTROL LOG (12")
- EROSION CONTROL LOG (8")
- RFD2 — ROCK FILTER DAM TY 2
- SCF — SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT TY 3
- PROPOSED INLET
- BLOCK SODDING OR SEEDING
- DIRECTION OF TRAFFIC

NOTES:

1. STORMWATER POLLUTION PREVENTION PLAN (SW3P) SHALL BE IN PLACE PRIOR TO COMMENCING ANY SOIL DISTURBING ACTIVITIES. THE CONTRACTOR SHALL FOLLOW STANDARD ECL-12, ECL(1)-16, ECL(2)-16 EXCEPT AS DIRECTED BY THE ENGINEER.
2. ALL INLET PROTECTION TO REMAIN UNTIL END OF CONSTRUCTION. ROADWAY INLET PROTECTION SHALL BE PHASED SO THAT INLETS ADJACENT TO TRAFFIC REMAIN CLEAR AND FREE FROM PONDING.
3. CONSTRUCTION EXITS SHOWN IN DRAWINGS ARE APPROXIMATE. CONSTRUCTION EXITS AND CONCRETE WASHOUT AREAS WILL BE DETERMINED DURING THE TIME OF CONSTRUCTION. REFER TO STANDARD EC(3)-16 FOR DETAIL.
4. QUANTITIES SHOWN ARE APPROXIMATE AND MAY BE ADJUSTED TO MEET FIELD CONDITIONS.

STATE OF TEXAS
SYED S. HAQ P.E.
94660
LICENSED PROFESSIONAL ENGINEER
8/24/2020

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Texas Registered Engineering Firm F-2144

City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

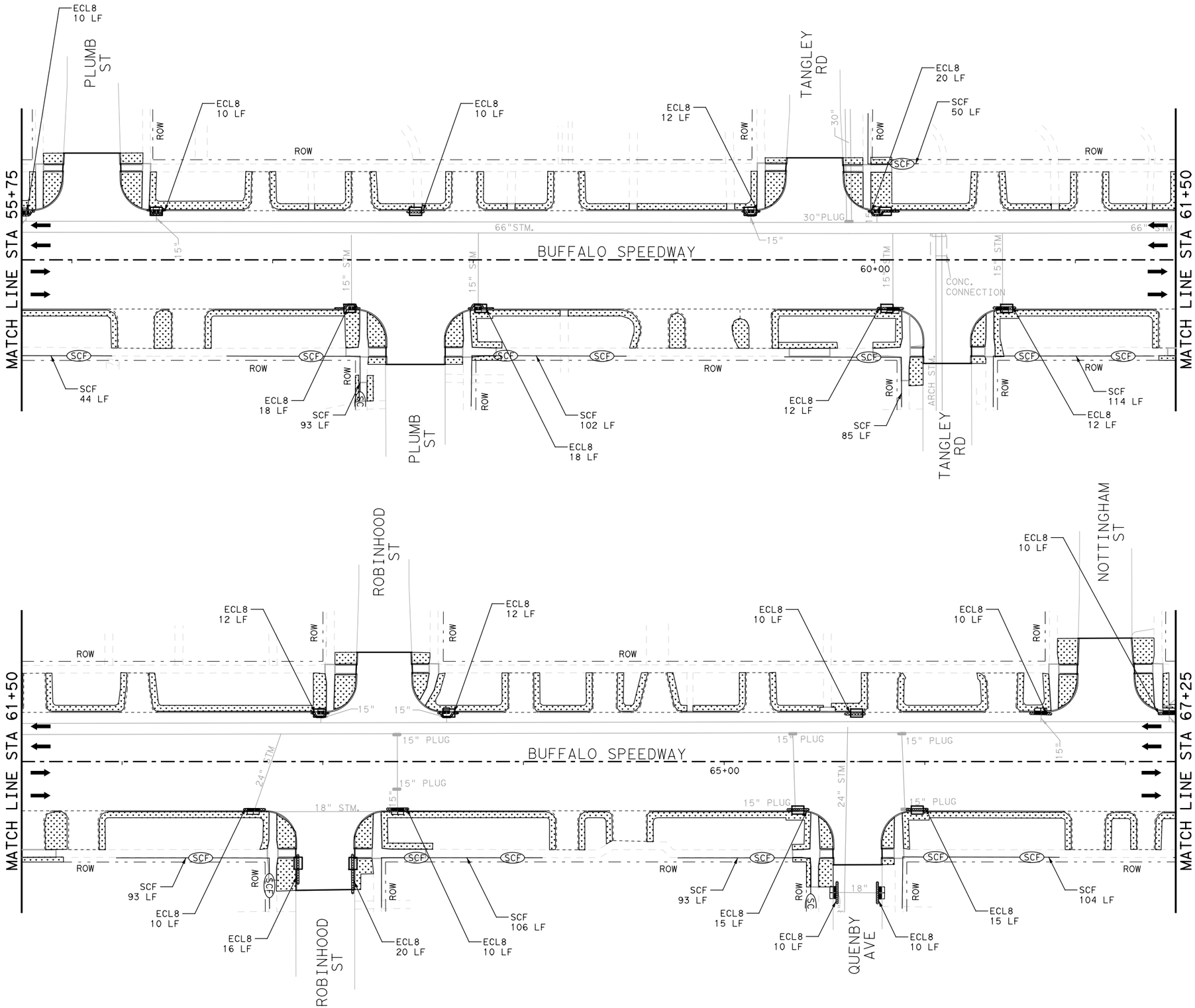
SW3P PLAN

STA 44+25 TO STA 55+75

SHEET 7 OF 9

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		591
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



LEGENDS:

- EROSION CONTROL LOG (12")
- EROSION CONTROL LOG (8")
- ROCK FILTER DAM TY 2
- SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT TY 3
- PROPOSED INLET
- BLOCK SODDING OR SEEDING
- DIRECTION OF TRAFFIC

NOTES:

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BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

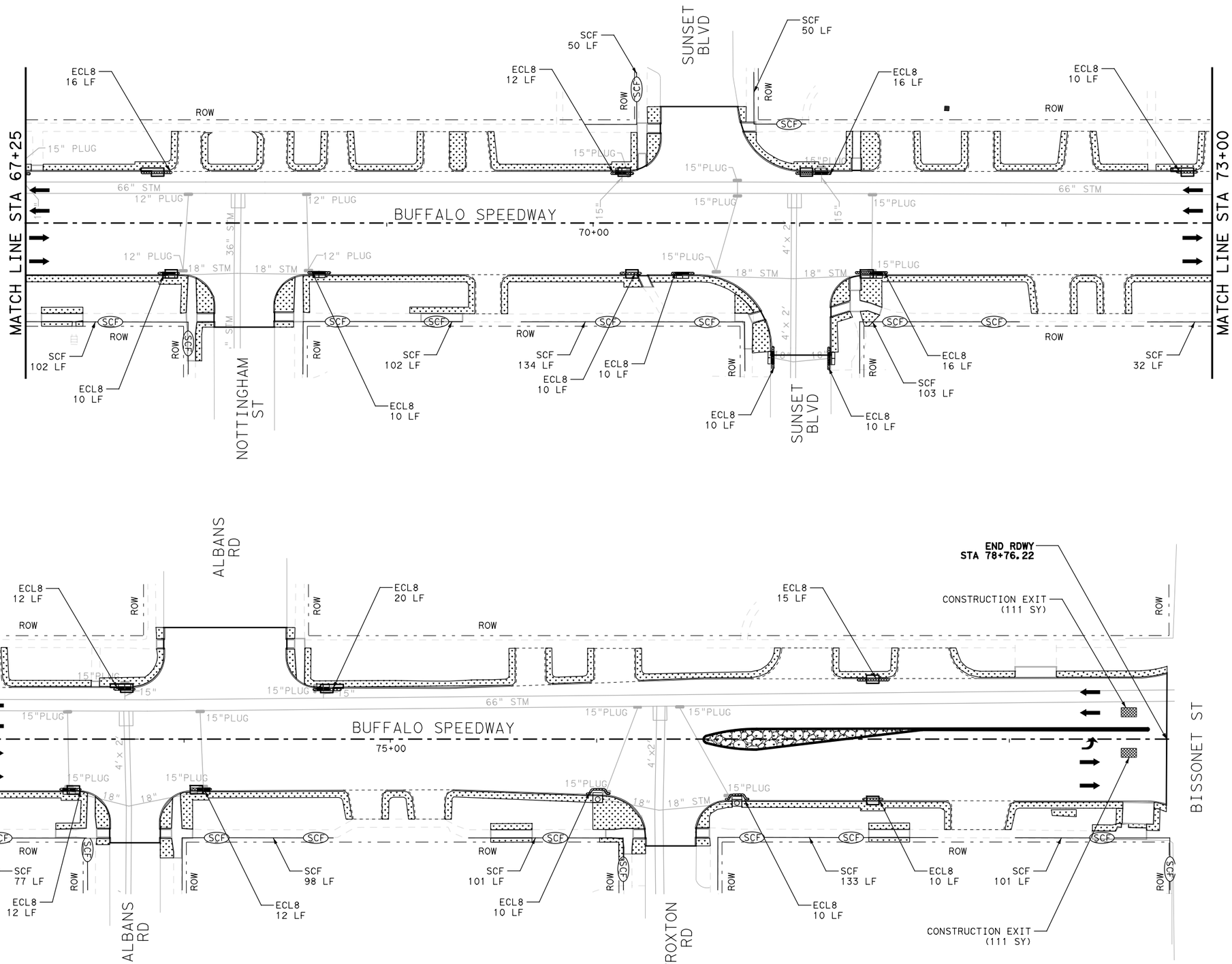
SW3P PLAN

STA 55+75 TO STA 67+25

SHEET 8 OF 9

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			592
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



0 50′ 100′

SCALE IN FEET

LEGENDS:

- EROSION CONTROL LOG (12")
- EROSION CONTROL LOG (8")
- RFD2 — ROCK FILTER DAM TY 2
- SCF — SEDIMENT CONTROL FENCE
- CONSTRUCTION EXIT TY 3
- PROPOSED INLET
- BLOCK SODDING OR SEEDING
- DIRECTION OF TRAFFIC

NOTES:

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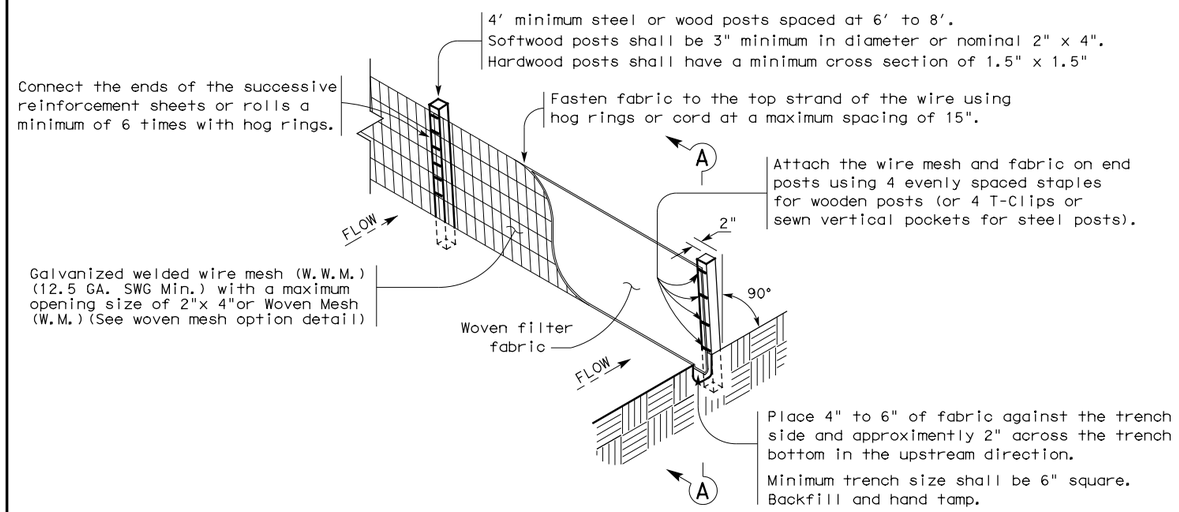
SW3P PLAN

STA 67+25 TO END

Texas Department of Transportation

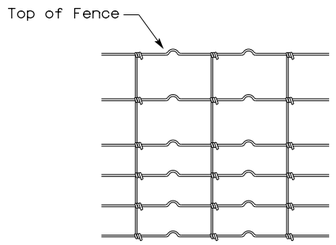
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		593
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

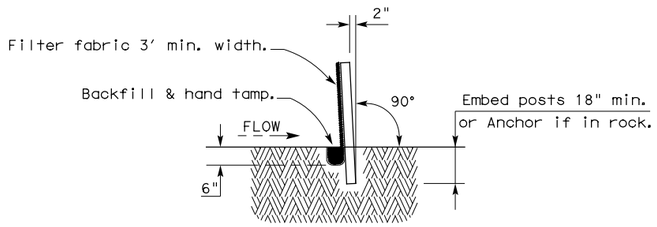
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TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

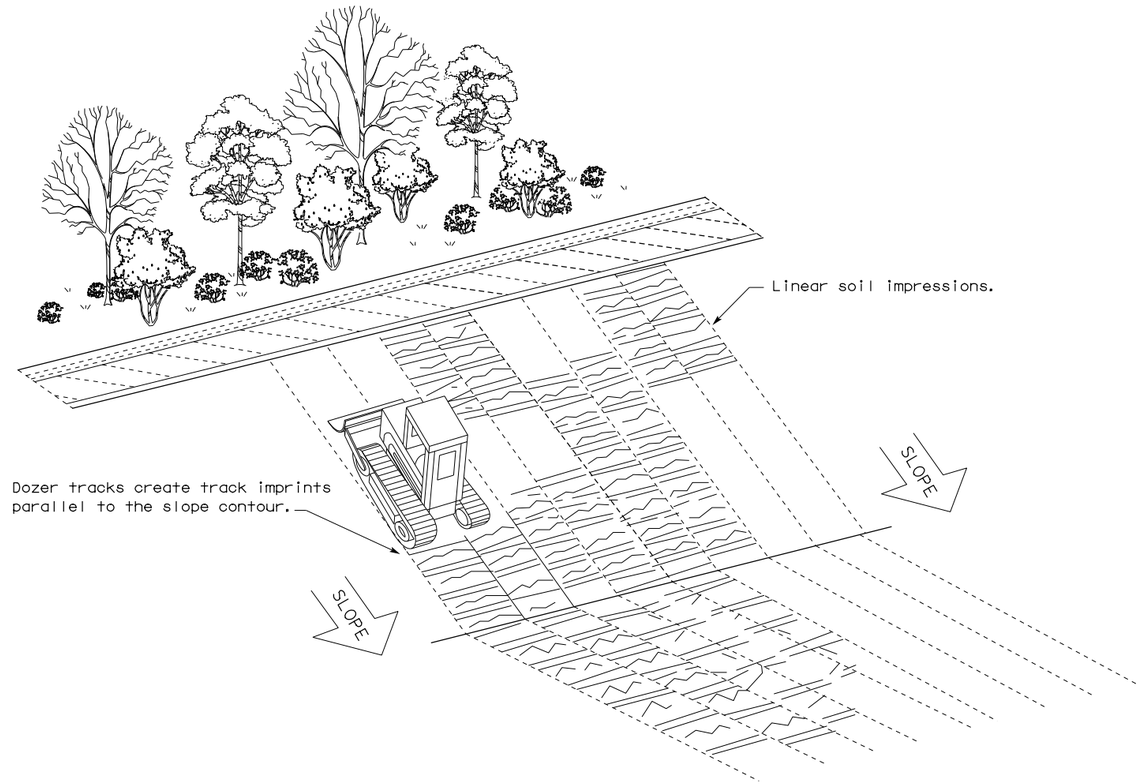
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

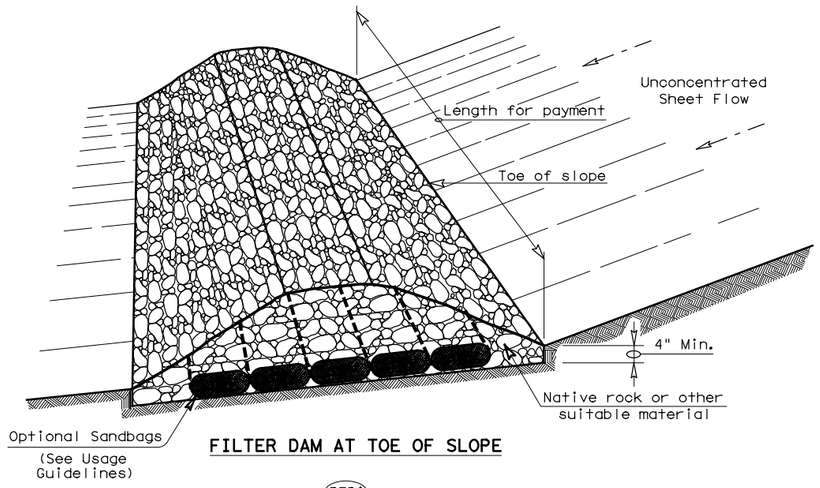
FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	72	290	BSW
	DIST	COUNTY		SHEET NO.
	12	HARRIS		594

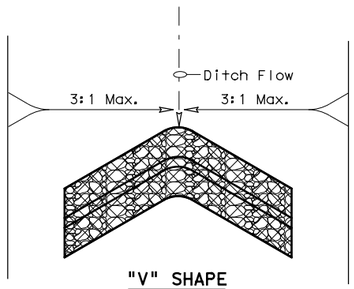
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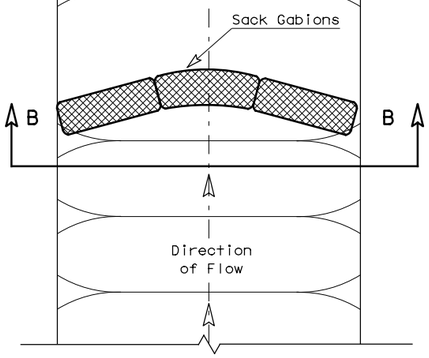


FILTER DAM AT TOE OF SLOPE

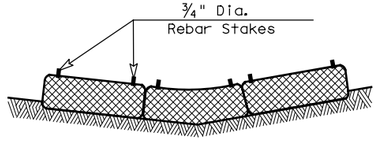
RFD1



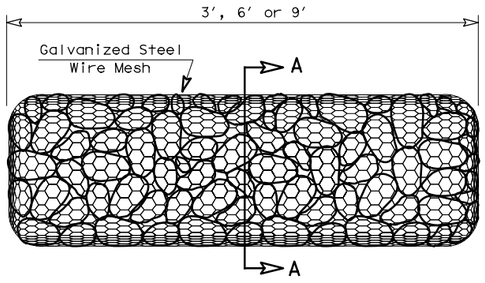
"V" SHAPE
PLAN VIEW



PLAN VIEW

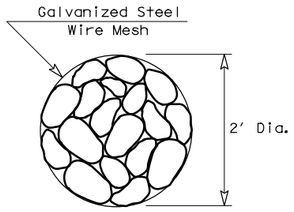


SECTION B-B

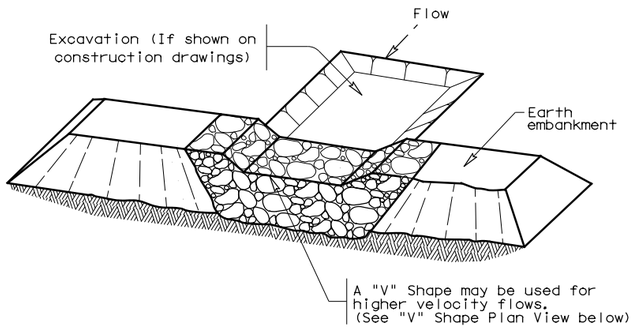


TYPE 4 (SACK GABIONS)

RFD4

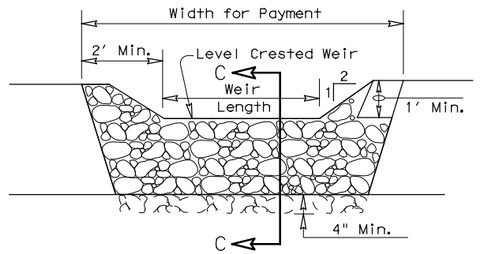


SECTION A-A

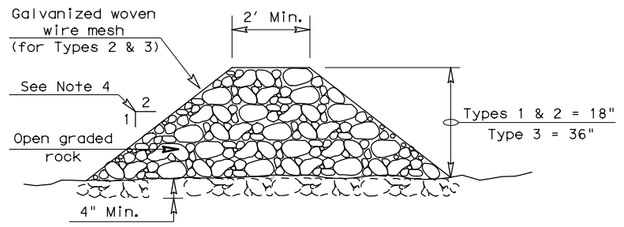


FILTER DAM AT SEDIMENT TRAP

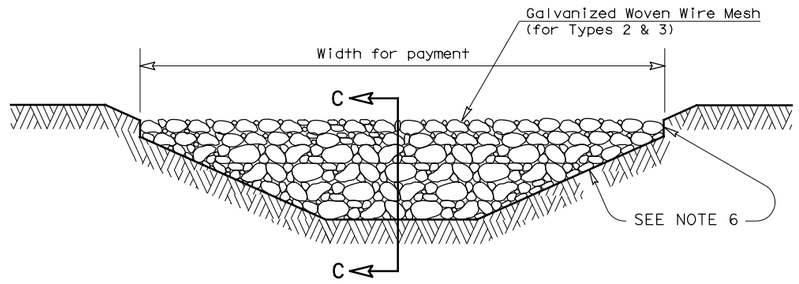
RFD1 — OR — RFD2



PROFILE



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 — OR — RFD2 — OR — RFD3

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam	RFD1
Type 2 Rock Filter Dam	RFD2
Type 3 Rock Filter Dam	RFD3
Type 4 Rock Filter Dam	RFD4

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

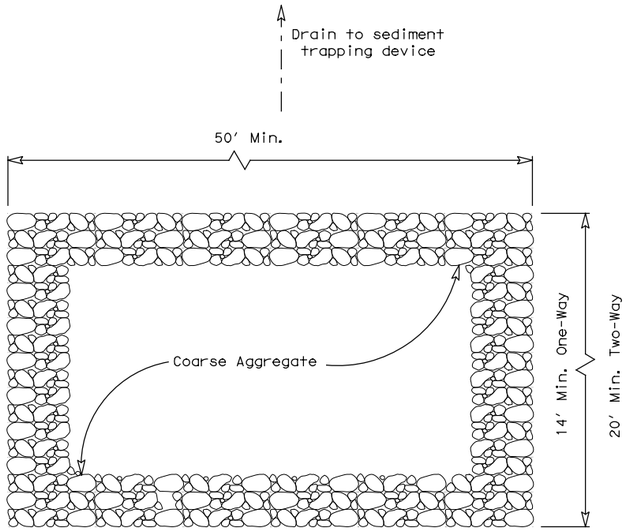
ROCK FILTER DAMS

EC(2)-16

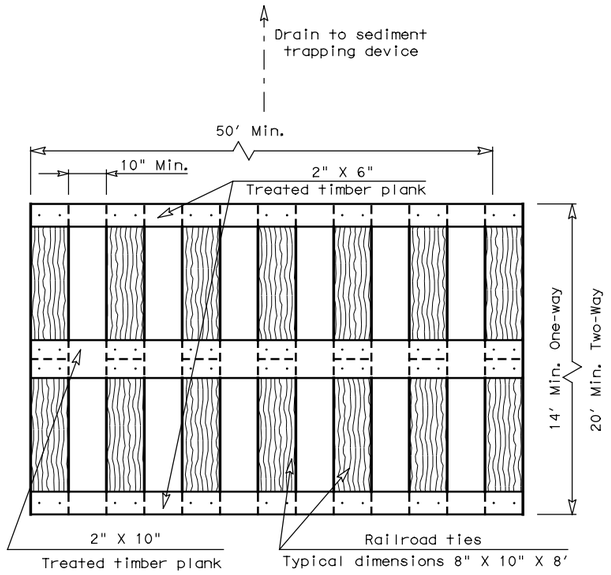
FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS			
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0912	72	290		BSW		
	DIST	COUNTY			SHEET NO.		
	12	HARRIS			595		

DATE: 8/24/2020
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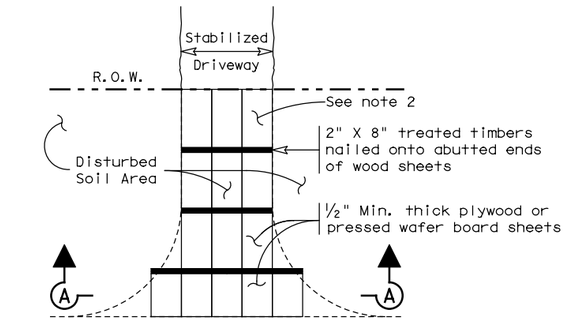
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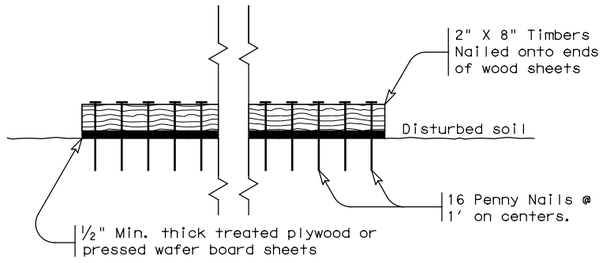
PLAN VIEW



PLAN VIEW



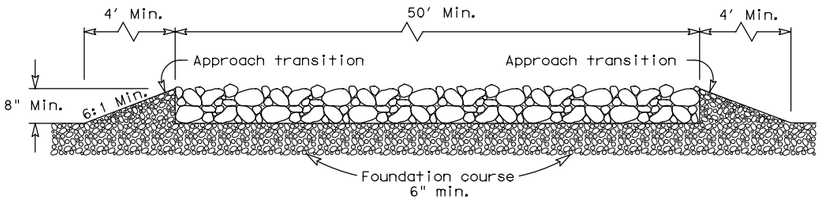
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

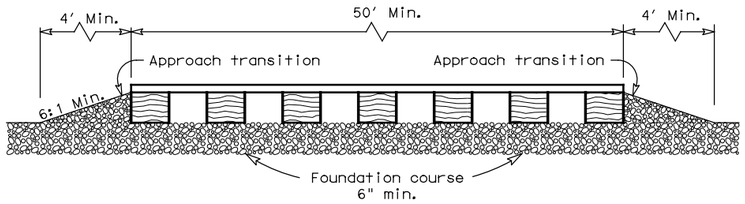
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50′.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50′.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

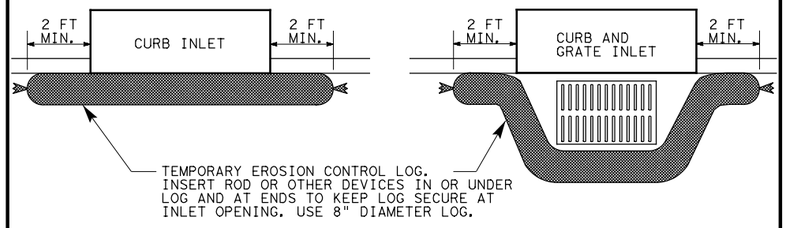
EC(3)-16

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REVISIONS	0912	72	290	BSW
	DIST	COUNTY		SHEET NO.
	12	HARRIS		596

DATE: 8/24/2020
FILE: ec316.dgn

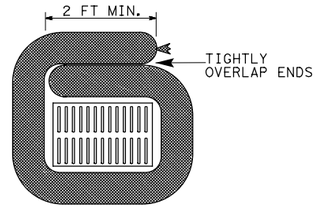
CURB INLETS
8" DIAMETER LOGS

ITEM 506-6040 BIODEG EROSN CONT LOGS (INSTL) (8")



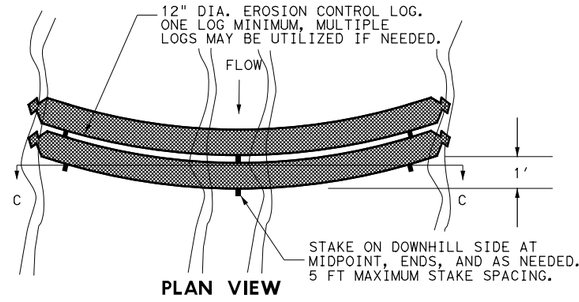
DROP INLETS AND OTHER LOCATIONS
12" DIAMETER LOGS

ITEM 506-6041 BIODEG EROSN CONT LOGS (INSTL)(12")

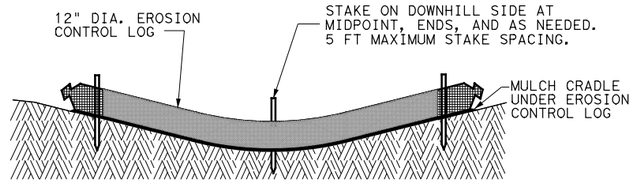


DROP INLET
USE 12" DIAMETER LOG

DROP INLETS

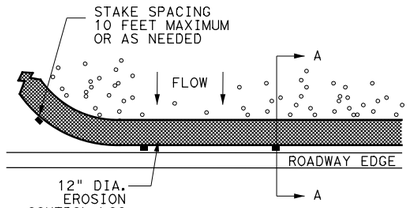


PLAN VIEW

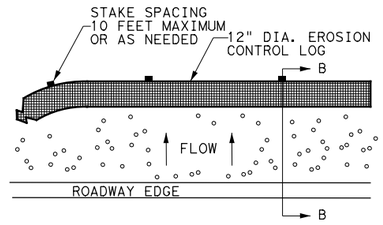


SECTION C-C

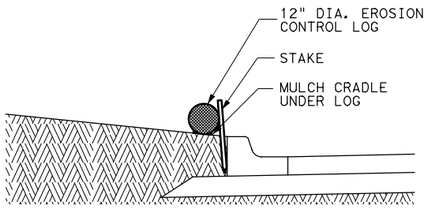
DRAINAGE SWALE OR DITCH



PLAN VIEW

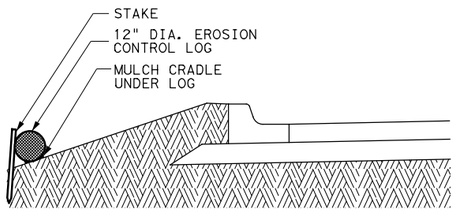


PLAN VIEW



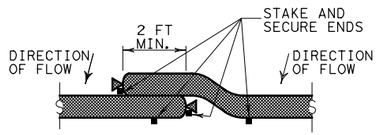
SECTION A-A

SLOPE TO ROADWAY EDGE



SECTION B-B

SLOPE AWAY FROM ROADWAY EDGE



END OF LOG OVERLAP

MATERIAL REQUIREMENTS

FILL:

Use 100% shredded mulch or other non-compost biodegradable material as fill for logs. No compost or fines.

DO NOT USE MATERIAL WHICH PROHIBITS WATER INFILTRATION.

LOG MESH:
Use mesh with 1/4" openings or larger. Mesh must allow water infiltration but also hold fill material in place.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

A sediment trap (erosion control log) may be used to filter sediment out of runoff draining from an unstabilized area.

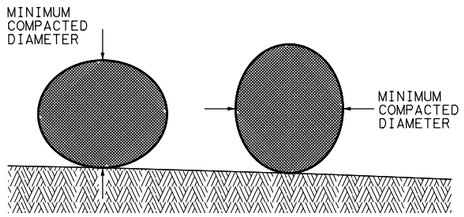
Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Sediment traps should be placed in the following locations:
1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way

The trap should be cleaned when the capacity has been reduced by 1/2 or the sediment has accumulated to a depth of 1', whichever is less.

REQUIRED ITEMS:

- ITEM 506-6040 BIODEG EROSN CONT LOGS (INSTL) (8") LF
- ITEM 506-6041 BIODEG EROSN CONT LOGS (INSTL) (12") LF
- ITEM 506-6043 BIODEG EROSN CONT LOGS (REMOVE) LF



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

Texas Department of Transportation
Houston District

EROSION CONTROL LOG

ECL-12

FILE: STDG4a.DGN	DN: TxDot	CK: TxDot	DW: TxDot	CK: TxDot
© TxDOT 2014	DISTRICT	FED REG	PROJECT NUMBER	SHEET
REVISIONS 3/15 MINOR CORRECTIONS	12	6	(SEE THE TITLE SHEET)	597
	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	HARRIS	0912	72	290	BSW

STD G-4A

TYPE OF WORK — ITEMS AND REQUIREMENTS FOR EACH TYPE OF WORK

SODDING	PERMANENT SEEDING	TEMPORARY SEEDING	Reference Item 161, 162, 164, 166, 168 of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements that are not shown. Use latest Houston District, Special Provisions for those items indicated.		
	✓		**161-6017 COMPOST MANUF TOPSOIL (BIP)(4") SY**	APPLICATION RATE Item 161.2.1. Compost Manufactured Topsoil (CMT)	Item 161.2. Materials. Submit quality control (QC) documentation to the Engineer. Compost producer's STA certification must be dated to meet STA requirements (certification must be within 30 or 90 days per STA requirements). Lab analysis performed by an STA-certified lab must be dated within 30 days before delivery of the compost.
✓			**162-6002 BLOCK SODDING SY**	GRASS SPECIES Item 162.2. Materials. Common Bermuda (Cynodon Dactylon)	Item 162.2.1. Block Sod. Use block palletized or roll type sod. **REMOVE PLASTIC BACKING FROM ROLL TYPE SOD.** Place sod within 48 hours of delivery to site. No exceptions. Place sod with joints alternating on each row to prevent continuous joint lines. Peg sod as needed with wood pegs to hold sod in place. Pegging sod is subsidiary to Item 162.
	✓		**164-6066 DRILL SEEDING(PERM)(WARM OR COOL) SY** Item 164.1. Description Provide and install seeding as shown on District Standard	PLANTING MONTH / SEED MIX March, April, May, June, July, August, September, October: Hulled - Bermudagrass (Cynodon dactylon) - 40.0 lbs PLS/acre; Foxtail Millet (Setaria italica) - 34.0 lbs PLS/acre; Green Sprangletop (Leptochloa dubia) - 4.0 lbs PLS/acre; Sideoats Grama (Bouteloua curtipendula) - 3.2 lbs PLS/acre; Little Bluestem (Schizachyrium scoparium) - 1.4 lbs PLS/acre November, December, January, February: Unhulled - Bermudagrass (Cynodon dactylon) - 40.0 lbs PLS/acre; Oats (Avena sativa) - 72.0 lbs PLS/acre; Green Sprangletop (Leptochloa dubia) - 4.0 lbs PLS/acre; Sideoats Grama (Bouteloua curtipendula) - 3.2 lbs PLS/acre; Little Bluestem (Schizachyrium scoparium) - 1.4 lbs PLS/acre	PLS (Pure Live Seed) Provide documentation of PLS requirements per Item 164.2.1. CONSTRUCTION. Cultivate the area to a depth of 4 inches before placing the seed unless otherwise directed. When performing permanent seeding after an established temporary seeding, cultivate the seedbed to a depth of 4 inches or mow the area before placement of the permanent seed. Plant the seed and place the straw or hay mulch after the area has been completed to lines and grades as shown on the plans. Drill Seeding. Plant seed or seed mixture uniformly over the area shown on the plans at a depth of 1/4 to 1/3 inch using a cultipacker(turfgrass) type seeder. Plant seed along the contour of the slopes. Use broadcast seeding method where site conditions prevent drill seeding method. Broadcast Seeding. Distribute the dry seed or dry seed mixture uniformly over the areas shown on the plans using hand or mechanical distribution on top of soil.
	✓		**164-6052 BROADCAST SEED(PERM)(SPECIAL MIX) SY** Item 164.1. Description Provide and install seeding as shown on District Standard		
		✓	**164-6051 DRILL SEED(TEMP)(WARM OR COOL) SY** Item 164.1. Description Provide and install seeding as shown on District Standard	PLANTING MONTH / SEED MIX March, April, May, June, July, August, September, October: Foxtail Millet (Setaria italica) - 34.0 lbs PLS/acre November, December, January, February: Oats (Avena sativa - 72.0 lbs PLS/acre	
		✓	**164-6009 BROADCAST SEED(TEMP)(WARM) SY** Item 164.1. Description Provide and install seeding as shown on District Standard		
	✓	✓	**162-6003 STRAW OR HAY MULCH SY**	APPLICATION RATE Immediately after planting the seed or seed mixture, apply straw or hay mulch uniformly over the seeded area. Apply straw or hay mulch at 2 tons per acre. Use tacking agent with straw or hay mulch as described on this sheet.	Use straw or hay mulch in conformance with Article 162.2.5, "Mulch." Use biodegradable tacking agents only applied at a rate in accordance with manufacturer's recommendations. Use the following products or an approved equal(see note this sheet): Conweb/Contac Guar Gum, Profile Products Corporation, (307) 655-9565, Ramtec/Procol/Viscol Guar Gum, Ramtec Corporation, (800) 366-1180
✓	✓	✓	**166-6001 FERTILIZER AC** Item 166.2. Materials Use fertilizer as shown on District Standard	APPLICATION RATE Deliver and evenly distribute fertilizer at a rate of 4000 lbs/acre.	Use a **NON-CHEMICAL** fertilizer which meets all the following criteria: (1) BRAND NAME must be registered with the Texas State Chemist as a commercial fertilizer. (2) Meets USEPA guidelines for unrestricted use. (3) Derived from biological sources such as, but not limited to: sewage sludge, manures, vegetation, etc. (4) In granular form and essentially dust free. Submit proof of registration and nutrient source to Engineer. Use the following products or an approved equal(see note this sheet): Sigma, SIGMA AgriScience, 281-851-6749 Sustanite-standard grade, Automation Nation, Inc., 713-675-4999 Milorganite, MMSD, 800-287-9645 Agricultural Organic P/L, Ag Org, INC., 713-523-4396
✓	✓	✓	**168-6001 VEGETATIVE WATERING MG**	APPLICATION RATE Item 168.3 Construction. 6000 gallons/acre per working day X 20 consecutive working days = 120,000 gallons total/acre	Begin watering immediately after installation of seed or sod. Replace, fertilize, and water any seed or sod in poor condition due to the failure to apply the specified amount of water within the time allowed at no expense to the Department.

SEQUENCE OF WORK

BLOCK SOD	PERMANENT SEEDING	TEMPORARY SEEDING
1. FERTILIZER 2. CULTIVATE SOIL (ITEM 162.3) 3. SOD 4. VEGETATIVE WATERING	1. FERTILIZER 2. COMPOST MANUFACTURED TOPSOIL 3. CULTIVATE SOIL (ITEMS 164.3 AND 161.3.1) 4. PERMANENT SEEDING 5. STRAW OR HAY MULCH 6. VEGETATIVE WATERING	1. FERTILIZER 2. CULTIVATE SOIL (PER ITEM 164.3) 3. TEMPORARY SEEDING 4. STRAW OR HAY MULCH 5. VEGETATIVE WATERING

Texas Department of Transportation
© 2014

HOUSTON DISTRICT

FERTILIZER, SEED, SOD, STRAW, COMPOST, AND WATER

SHEET 1 OF 1

REVISIONS	FILE:	FED DIV	STATE	PROJECT NUMBER			SHEET
10/2014 UPDATED TO 2014 SPECS 3/2015 MINOR CORRECTIONS	OCT 2014	6	TEXAS	(SEE THE TITLE SHEET)			598
	ORIGINAL:	DIST	COUNTY	CONTROL	SECT	JOB	HIGHWAY
		12	HARRIS	0912	72	360	BSW

STD K-1

CENTERPOINT ENERGY

CAUTION: UNDERGROUND GAS FACILITIES

THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

> WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713) 945-8036 OR (713-945-8037 (7:00 A.M. TO 4:30 P.M.) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.

>WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.

> WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING.

> FOR EMERGENCIES REGARDING GAS LINES CALL (713) 659-3552 OR (713) 207-4200.

THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

WARNING: OVERHEAD ELECTRICAL LINES

OVERHEAD LINES MAY EXIST ON THE PROPERTY. THE LOCATION OF OVERHEAD LINES HAS NOT BEEN SHOWN ON THESE DRAWINGS AS THE LINES ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE FORBIDS ACTIVITIES THAT OCCUR IN CLOSE PROXIMITY TO HIGH VOLTAGE LINES, SPECIFICALLY:

> ANY ACTIVITY WHERE PERSON OR THINGS MAY COME WITHIN SIX(6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES; AND

> OPERATING A CRANE, DERRICK, POWER SHOVEL, DRILLING RIG, PILE DRIVER, HOISTING EQUIPMENT, OR SIMILAR APPARATUS WITHIN 10 FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES.

PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL CENTERPOINT ENERGY AT (713) 207-2222.

ACTIVITIES ON/OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY
NO APPROVAL TO USE, CROSS OR OCCUPY CENTERPOINT FEE OR EASEMENT PROPERTY IS GIVEN. IF YOU NEED TO USE CENTERPOINT PROPERTY, PLEASE CONTACT OUR SURVEYING & RIGHT OF WAY DIVISION AT (713) 207-6348 OR (713) 207-5769.

AT&T TEXAS/SWBT FACILITIES

1. THE LOCATIONS OF AT&T TEXAS/SWBT FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.
2. THE CONTRACTOR SHALL CALL 1-800-344-8377 (TEXAS 811) A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
3. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.
4. WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT.
5. THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT IN THE AREA.
6. PLEASCONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER ROOSEVELT LEE JR. AT (713)567-4552 OR E-MAIL HIM AT RL7259@ATT.COM, IF CABLE LOCATE REQUEST(S) ARE NOT COMPLETED FOR OUR AT&T TEXAS/SWBT FACILITIES.

_____ Approved
for AT&T Texas/SWBT underground conduit facilities only. Date
Signature vaild for one year.

NOTICE: For your safety, you are required by Texas Law to call 811 at least 48 hours before you dig so that underground lines can be marked. This signature does not fufill you obligation to call 811.
VERIFICATION OF PRIVATE UTILITY LINES
Date
CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification. Signature Valid for six months.
Date
CenterPoint Energy/UNDERGROUND Electrical Facilties Verification ONLY. (This signature verifies exisiting underground facilities - not to be used for conflict verification) Signature Valid for six months.

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

FREESE AND NICHOLS
11200 Broadway Street, Suite 2320
Pearland, Texas 77584
Phone – (832) 456-4700
Fax – (832) 456-4701
Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

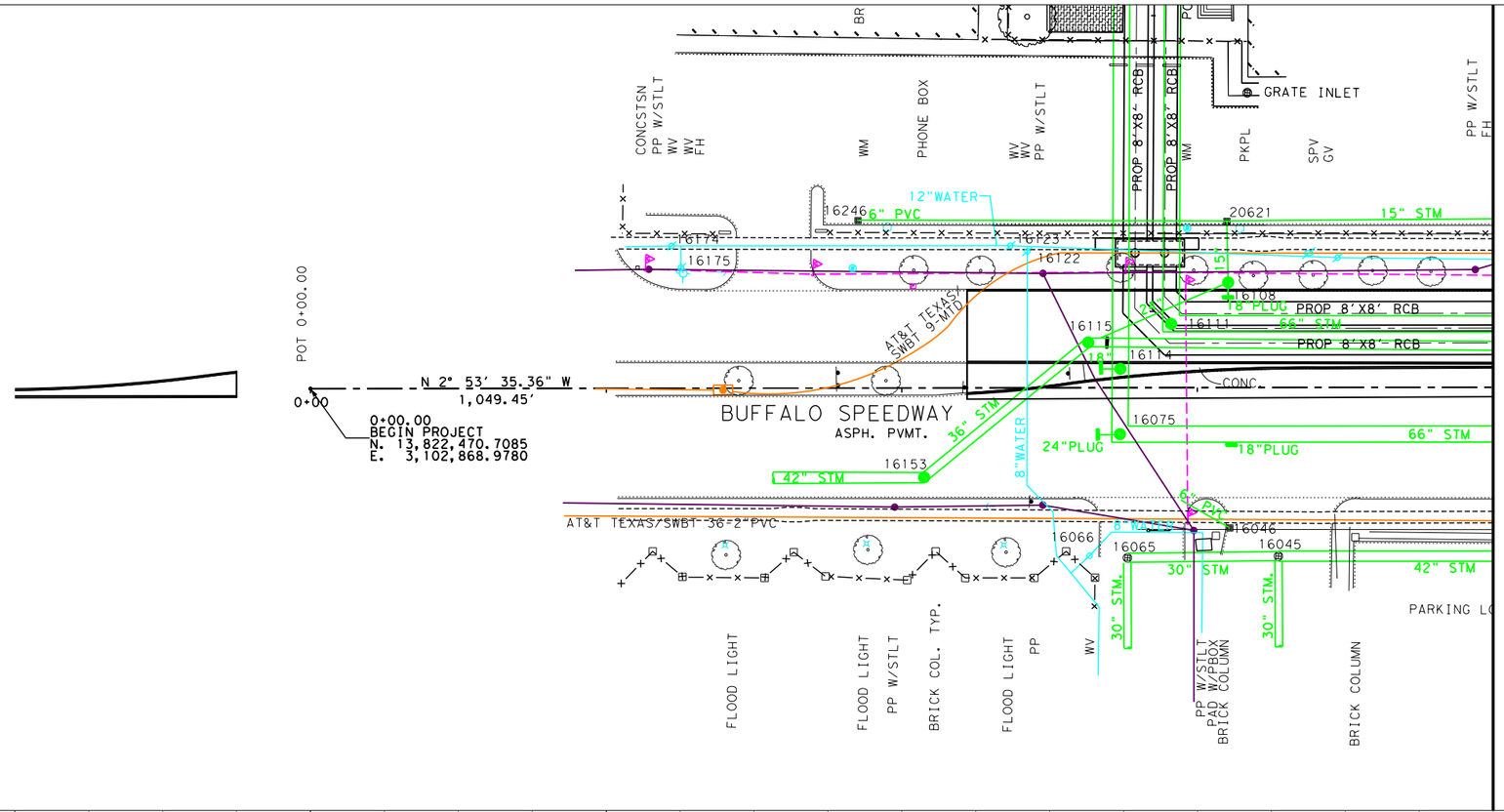
BUFFALO SPEEDWAY RECONSTRUCTION (HOLCOMBE BLVD. TO BISSONNET)

UTILITY GENERAL NOTES

SHEET 1 OF 1

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		599
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



MATCH LINE STA 4+00

0 50' 100'

SCALE IN FEET

UTILITY LEGEND

- STORM SEWER
- AT&T/COMMUNICATIONS
- SANITARY SEWER
- WATER
- OVERHEAD UTILITIES
- UNDERGROUND ELECTRIC
- GAS

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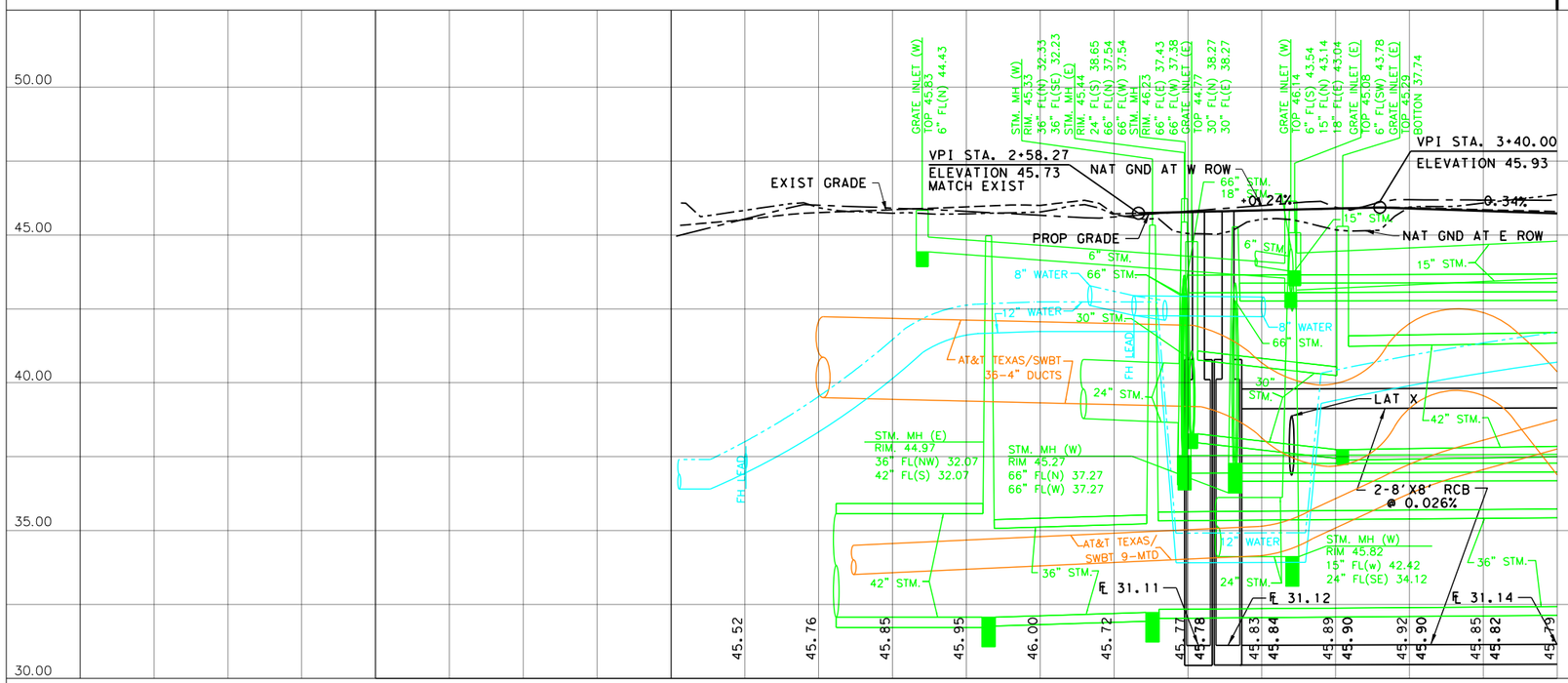
Date

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Approved
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City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

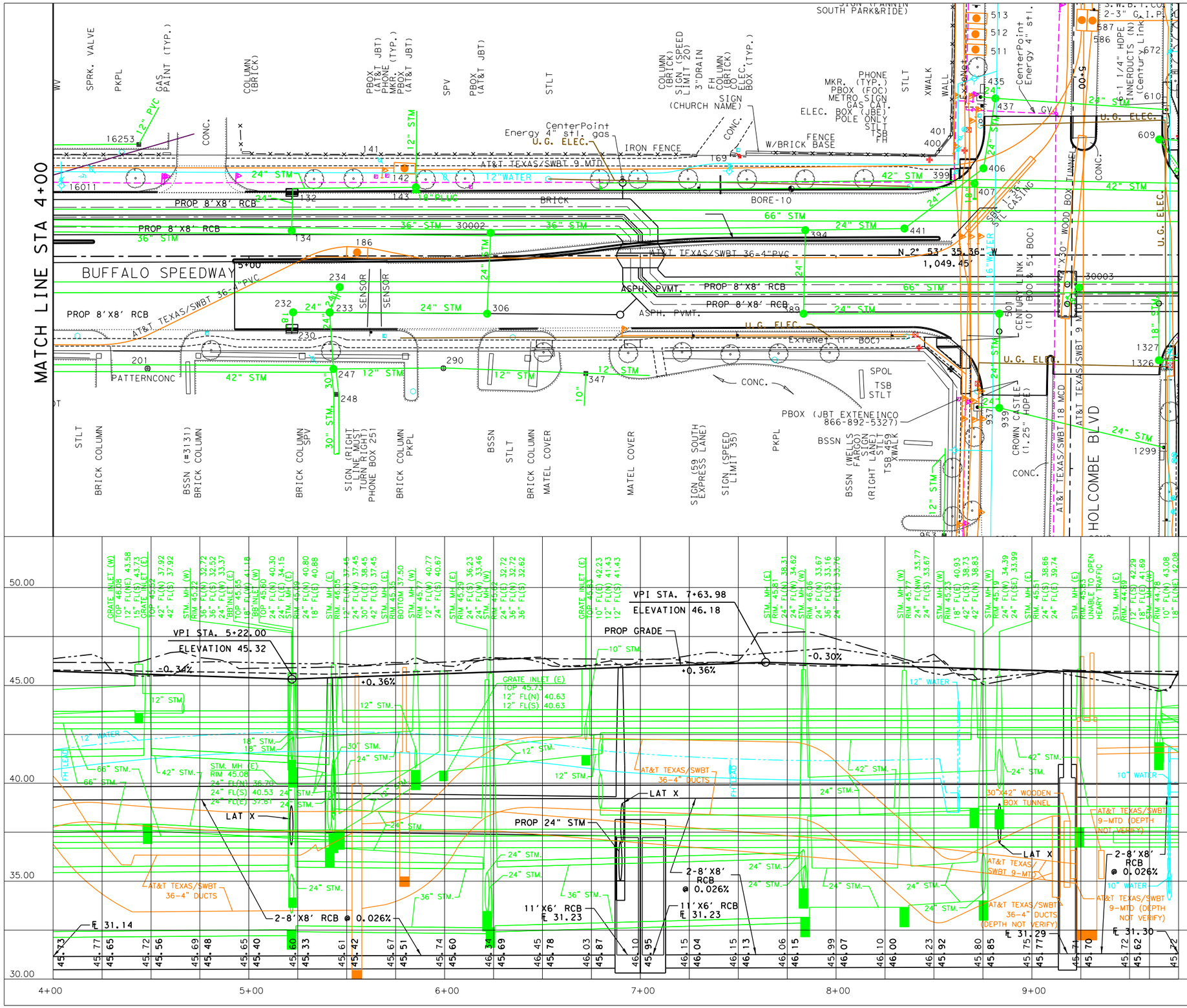
UTILITY COORDINATION PLAN

STA 0+00 TO 4+00

SHEET 1 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
6	(SEE THE TITLE SHEET)			600
STATE	DIST.	COUNTY		
TEXAS	12	HARRIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0912	72	360	BUFFALO SPEEDWAY	



0 50' 100'

SCALE IN FEET

UTILITY LEGEND

- STORM SEWER
- AT&T/COMMUNICATIONS
- SANITARY SEWER
- WATER
- OVERHEAD UTILITIES
- UNDERGROUND ELECTRIC
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City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

UTILITY COORDINATION PLAN

STA 4+00 TO 9+75

SHEET 2 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6	(SEE THE TITLE SHEET)	601

STATE	DIST.	COUNTY
TEXAS	12	HARRIS

CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

MATCH LINE STA 9+75

MATCH LINE STA 15+50

SIGN (SPEED LIMIT 20)

FIBER OPTIC BOX
ELEC. BOX (JBE 6709)
TCB
TSB
STLI
MATEL W/ SOLARPANEL
SPOL
MATEL COVER

BOULDING

TSLP
PHONE BOX
PHONE BOX

3"DRAIN
JBE (MATEL COVER)
STLT

TSBOX

SPV (TYP.)
SPV (TYP.)

BRICK

WATER MKR. (TYP.)
4" DRAIN

FND. 5/8" IR

FND. 3/4" IP
SPK (TYP.)

WM

4" DRAIN

10" STM
1356
1372
10" STM
10" STM
BRICK
CONC.
36" STM
XWALK
TSB
STLT
6" WATER
WALL
U.G. ELEC.
18" STM
1664
30" STM
36" PLUG
U.G. ELEC.
2396
36" STM
1674
36" PLUG
66" STM
66" STM
BUFFALO SPEEDWAY
WM
N 2° 53' 35.36" W
1,049.45'
PROP 8'X8' RCB
PROP 8'X8' RCB
PROP 8'X7' RCB
PROP 8'X7' RCB 15+00
1675
10+00
CONC.
24" PLUG
BORE-9
66" STM
U.G. ELEC.
6" WATER
1668
U.G. ELEC.
1764
1852
1851
1765
1766
1667
1863
1922
XWALK
12" STM
TSB
STLT
METRO SIGN
CONC.
ORNAMENTAL PLANT
OP W/8" STONE
FND. 3/8" IR
BRICK
18"PLUG
4-SPV
5'x3'
24" STM. (abandon)
CASON ST
2045
3-SPV
2-WM
WM
PHONE BOX
WM
TRAFFIC SIGN
1429
ELEC.
PAINT (TYP.)
8"PVC IN CONC.
1' PLASTIC GRATE INLET
2-3"DRAIN
FND 1 1/2" IR
JBE (MATEL COVER)
STLT
WM
4" DRAIN
FH
TR
BOX
ELEC. PVMT
CONC. (1X1)
2-COLUMN
(BRICK)
CO
2-4" DRAIN
WM
CO

UTILITY LEGEND
STORM SEWER
AT&T/COMMUNICATIONS
SANITARY SEWER
WATER
OVERHEAD UTILITIES
UNDERGROUND ELECTRIC
GAS

0 50' 100'
SCALE IN FEET

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8/25/2020

FREESE AND NICHOLS
11200 Broadway Street, Suite 2320
Pearland, Texas 77584
Phone – (832) 456-4700
Fax – (832) 456-4701
Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

UTILITY COORDINATION PLAN

STA 9+75 TO 15+50

Texas Department of Transportation

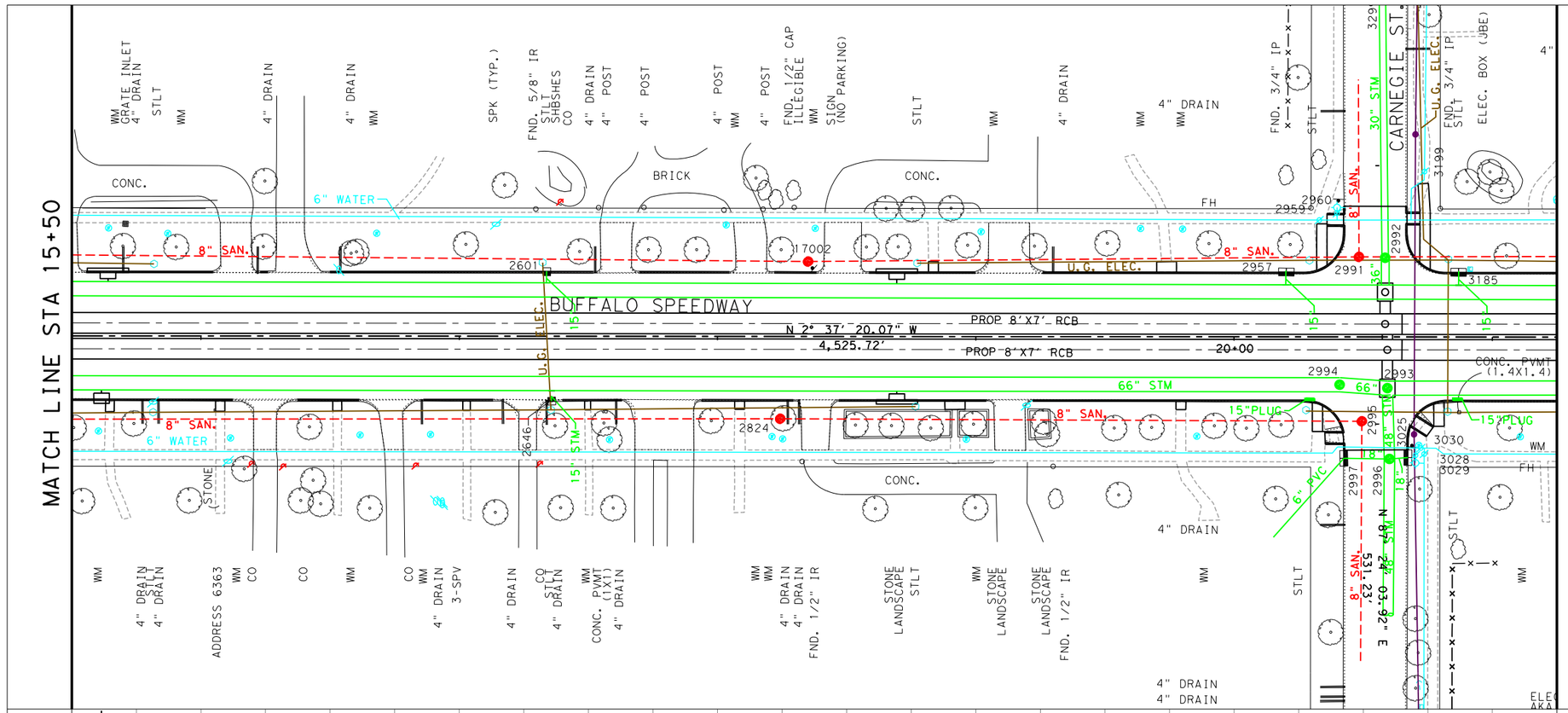
FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		602
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00

STM. MH (W) RIM 44.82 18" FL(E) 40.62 18" FL(SW) 41.22 36" FL(N) 39.12 42" FL(S) 38.82
GRATE INLET (W) TOP 46.67 10" FL(N) 43.47 10" FL(S) 43.47
GRATE INLET (W) TOP 46.27 10" FL(N) 44.22 10" FL(S) 44.22
VPI STA. 11+36.93 ELEVATION 45.06
PROP GRADE
LAT X
LAT X
+0.30%
-0.30%
10" STM.
12" STM.
10" STM.
10" STM.
18" STM.
6" WATER
36" STM.
66" STM.
66" STM.
6" WATER
6" WATER
FH LEAD
2-8'X8' RCB @ 0.026%
LAT X 48" FL 33.30
2-8'X8' RCB @ 0.026%
FL 31.30
GRATE INLET (W) TOP 43.38 18" FL(E) 37.99
EXIST STL WATER LINE SECTION TO REMAIN
STM. MH (W) RIM 45.48 30" FL(W) 37.98 30" FL(E) 37.88 36" FL(S) 40.18
STM. MH (E) RIM 45.47 5'x3' FL(E) 37.99 5'x3' FL(W) 37.99
STM. MH (W) RIM 45.60 66" FL(N) 37.89 66" FL(S) 37.89
STM. MH (W) RIM 45.60 66" FL(N) 37.55 66" FL(S) 37.40 36" FL(E) 40.30
VPI STA. 14+40.78
ELEVATION 45.97
+0.30%
-0.30%
SAN. MH (E) RIM 46.26 8" FL(N) 41.98
SAN. MH (W) RIM 46.88 8" FL(N) 41.68
8" SAN.
5'x3'
FH LEAD
FH LEAD
36" STM.
30" STM.
18" STM.
6" WATER
6" WATER
6" WATER
2-8'X7' RCB @ 0.028%
FLOW REGULATOR STA 14+15
END 2-8'X8' RCB
BEGIN 2-8'X7' RCB
48" RCP
54" RCP
FL 32.42
FL 31.42
FL 32.46

45.55 45.59 45.47 45.55 45.40 45.52 45.32 45.61 45.25 45.73 45.17 46.28 46.10 46.31 46.10 46.37 45.18 46.41 45.25 46.48 45.33 45.97 45.40 45.93 45.48 46.59 45.55 46.54 45.63 46.34 45.70 46.21 45.78 46.08 45.85 46.66 45.93 46.06 45.95 46.06 45.87 46.07 45.80 46.11 45.72 46.16

10+00 11+00 12+00 13+00 14+00 15+00



0 50' 100'

SCALE IN FEET

UTILITY LEGEND

- STORM SEWER
- AT&T/COMMUNICATIONS
- SANITARY SEWER
- WATER
- OVERHEAD UTILITIES
- UNDERGROUND ELECTRIC
- GAS

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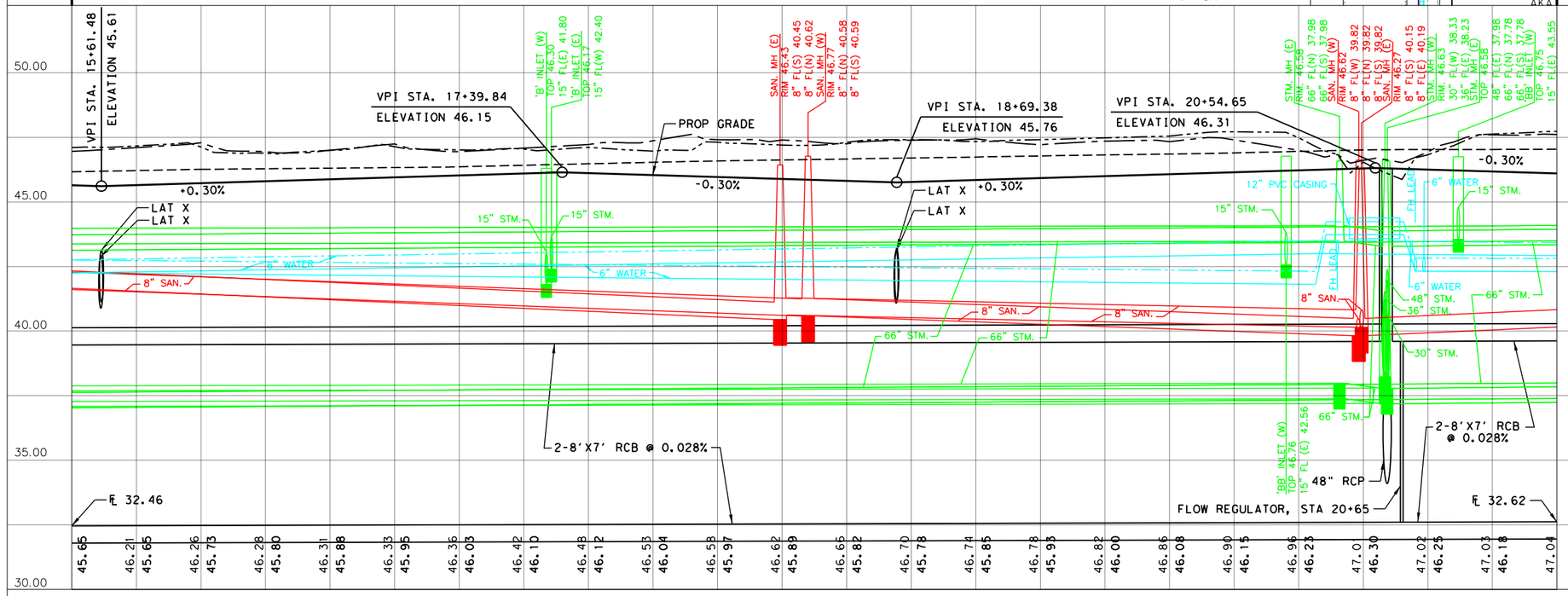
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STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

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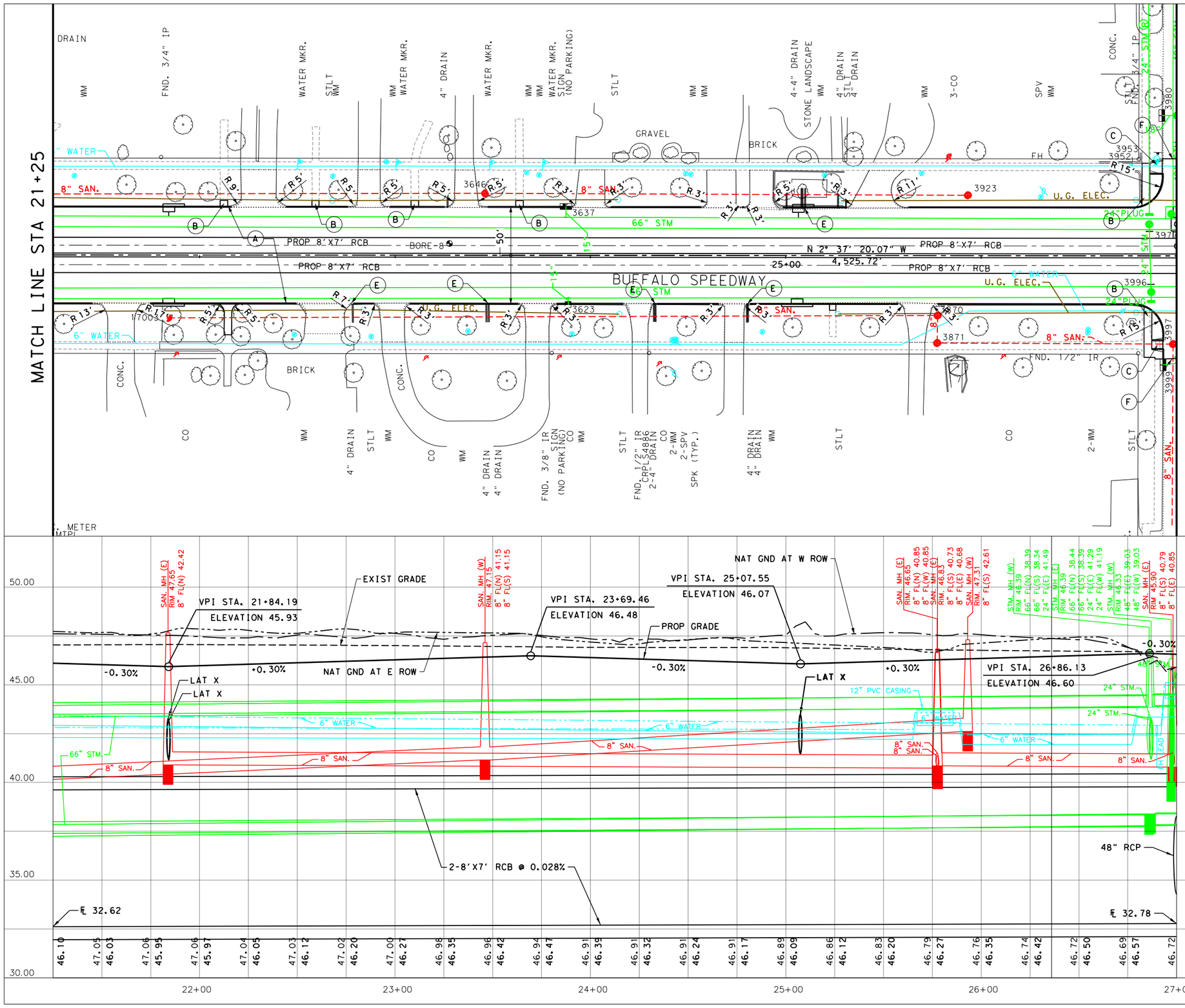
UTILITY COORDINATION PLAN

STA 15+50 TO 21+25

SHEET 4 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		603
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50′ 100′

SCALE IN FEET

UTILITY LEGEND

- STORM SEWER
- AT&T/COMMUNICATIONS
- SANITARY SEWER
- WATER
- OVERHEAD UTILITIES
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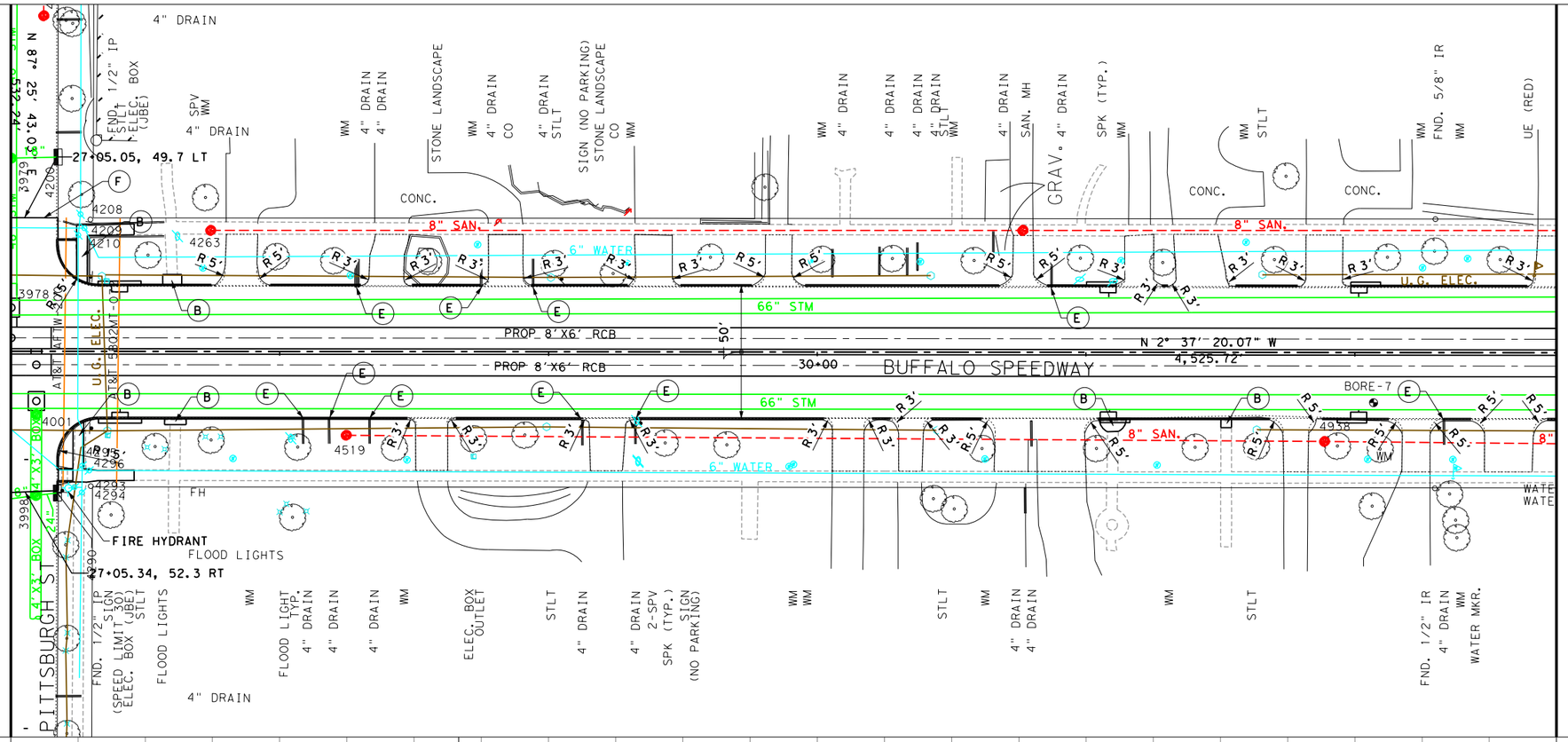
UTILITY COORDINATION PLAN

STA 21+25 TO 27+00

SHEET 5 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		604
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



UTILITY LEGEND

- STORM SEWER
- AT&T/COMMUNICATIONS
- SANITARY SEWER
- WATER
- OVERHEAD UTILITIES
- UNDERGROUND ELECTRIC
- GAS

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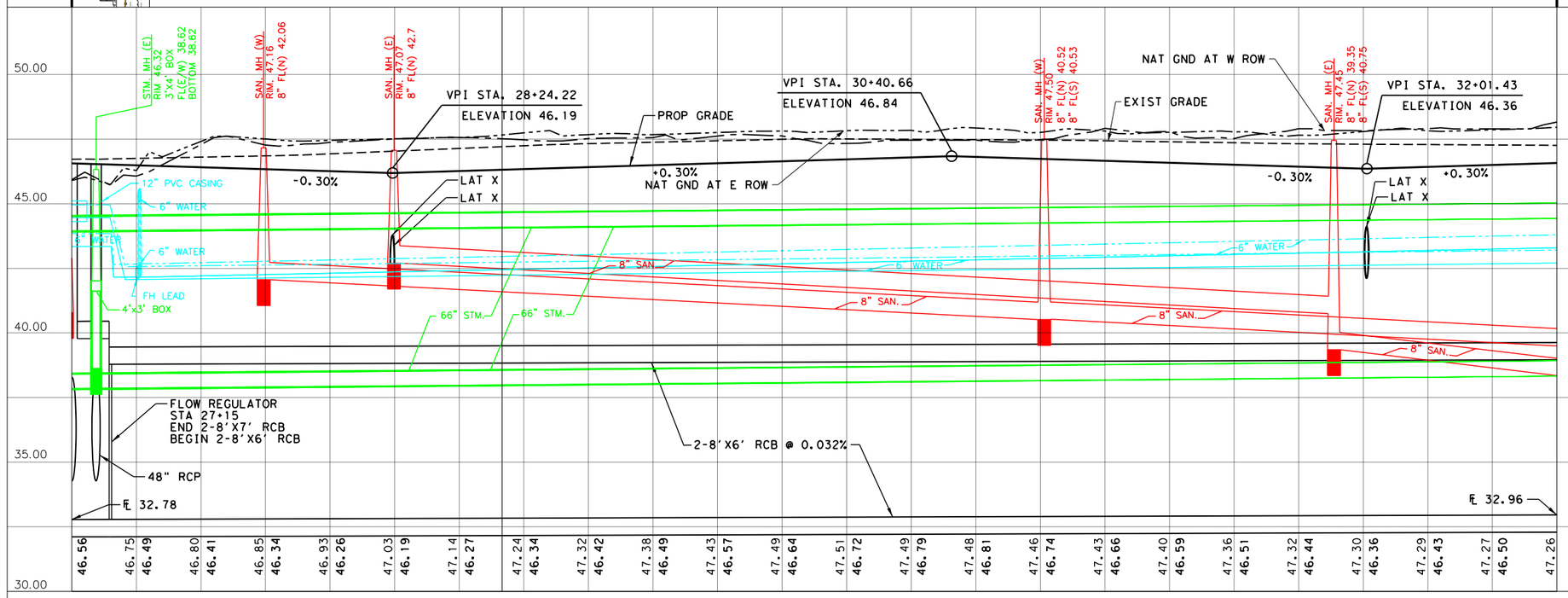
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UTILITY COORDINATION PLAN

STA 27+00 TO 32+75

SHEET 6 OF 15

Texas Department of Transportation

FED.RD DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		605
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

MATCH LINE STA 32+75

MATCH LINE STA 38+50

33+54.46, 49.6 LT

33+55.17, 48.1 RT

38+49.0, 25' LT & RT
END TRANS

36+99.0, 25' LT & RT
BEGIN TRANS

BUFFALO SPEEDWAY

N 2° 37' 20.07" W
4,525.72'

35+00

DUKE ST

BRICK

CONC.

BRICK LANDSCAPE

PROP 8'X6' RCB

PROP 8'X5' RCB

8" SAN.

12" SAN.

6" WATER

66" STM.

36" STM.

30" STM.

5'x3' BOX

4" DRAIN

ELEC. BOX

3-SPV FH

4-4" DRAIN
METAL COVER
4-2" DRAIN

YDLT (ELEC.)

4-2" DRAIN
METAL COVER
2-WM

YDLT (ELEC.)
FND. 5/8" IR
STLT
3-WM

FLOOD LIGHT

SPK (TYP.)
FLOOD LIGHT

SIGN
4" DRAIN

FND. 1/2" IP

FND. 1/2" IR

GRATE INLET
2-4" DRAIN
SAN. MH

'B' INLET (E.)
TOP 47.78
15" FL(W) 43.88

'B' INLET (W)
TOP 47.58
15" FL(E) 43.58

SAN. MH (W)
RIM 47.19
8" FL(N) 37.99
8" FL(S) 39.29

STM. MH (E)
RIM 46.89
66" FL(N) 39.19
66" FL(S) 38.99
5'x3' BOX FL(E) 39.19
30" FL(W) 38.99

STM. MH (W)
RIM 46.80
66" FL(N) 39.10
66" FL(S) 39.00
30" FL(SE) 39.10

SAN. MH (E)
RIM 46.44
8" FL(N) 37.81
8" FL(S) 37.36
12" FL(E) 36.70
12" FL(W) 36.66

SAN. MH (W)
RIM 46.10
8" FL(N) 38.69
8" FL(S) 37.47
12" FL(E) 37.24
12" FL(W) 37.24

SAN. MH (E)
RIM 46.84
8" FL(N) 38.74
8" FL(S) 38.24
8" FL(W) 38.14

SAN. MH (E)
RIM 48.04
8" FL(N) 40.74
8" FL(S) 40.74

SAN. MH (W)
RIM 47.87
8" FL(N) 41.09
8" FL(S) 41.09

VPI STA. 34+21.83
ELEVATION 46.61

VPI STA. 35+95.30
ELEVATION 47.13

VPI STA. 37+09.42
ELEVATION 46.79

VPI STA. 33+54.37
ELEVATION 46.81

NAT GND AT W ROW

NAT GND AT E ROW

EXIST GRADE

PROP GRADE

-0.30%

+0.30%

LAT X

12" PVC CASING

12" PVC FORCE MAIN

6" WATER

FH LEAD

2-8'X6' RCB @ 0.032%

48" RCP

54" RCP

℄ 32.96

℄ 32.99

℄ 34.21

℄ 34.39

FLOW REGULATOR
STA 33+65
END 2-8'X6' RCB
BEGIN 2-8'X5' RCB

2-8'X5' RCB @ 0.037%

50.00
45.00
40.00
35.00
30.00

46.58 47.23 46.65 47.20 46.73 47.17 46.80 47.23 46.75 47.28 46.68 47.32 46.62 47.36 46.70 47.40 46.77 47.43 46.85 47.46 46.92 47.49 47.00 47.53 47.07 47.58 47.12 47.63 47.04 47.68 46.97 47.74 46.89 47.79 46.82 47.85 46.84 47.90 46.91 47.96 46.99 48.02 47.06 48.06 47.14 48.11

33+00 34+00 35+00 36+00 37+00 38+00

0 50' 100'

SCALE IN FEET

UTILITY LEGEND

- STORM SEWER
- AT&T/COMMUNICATIONS
- SANITARY SEWER
- WATER
- OVERHEAD UTILITIES
- UNDERGROUND ELECTRIC
- GAS

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BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

UTILITY COORDINATION PLAN

STA 32+75 TO STA 38+50

SHEET 7 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		606
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY

MATCH LINE STA 38+50

MATCH LINE STA 44+25

0 50′ 100′

SCALE IN FEET

UTILITY LEGEND

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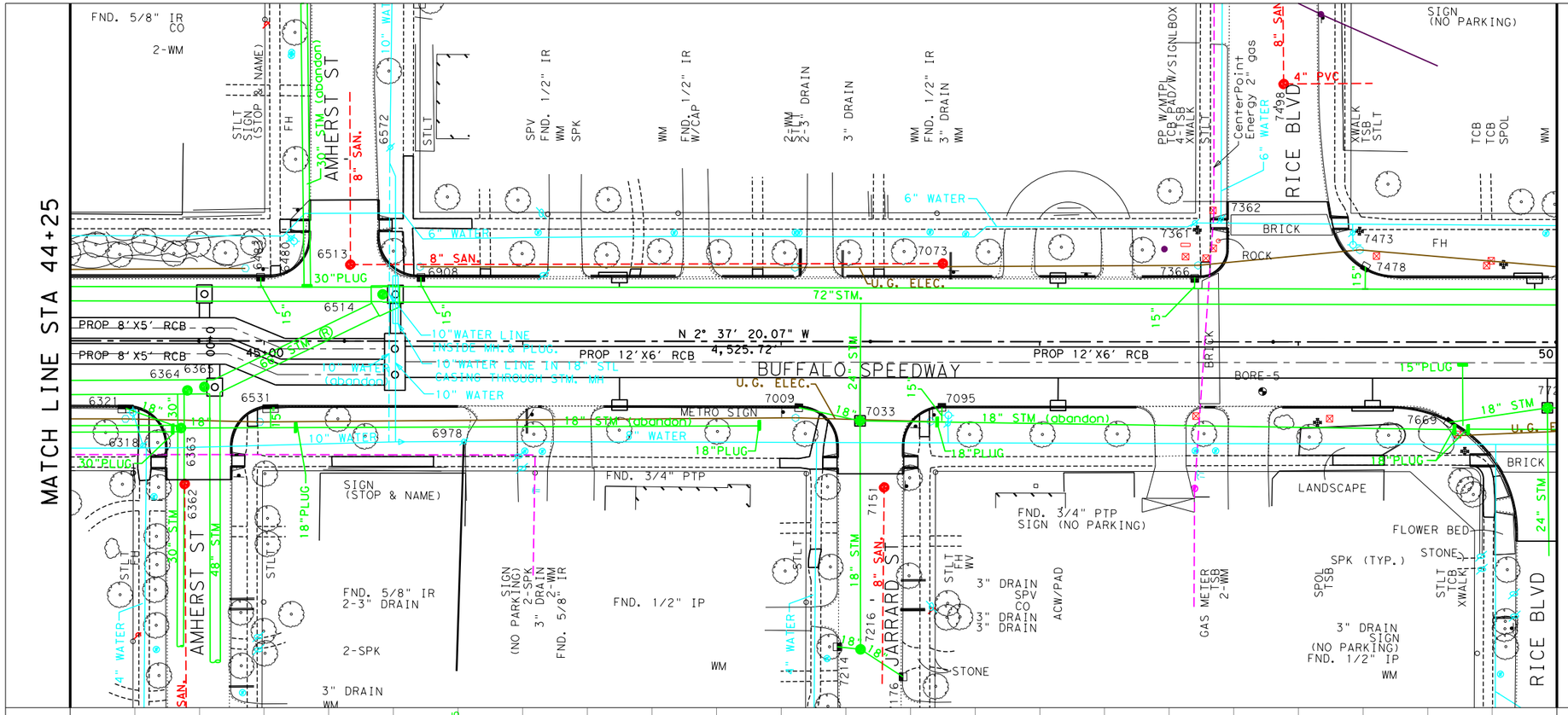
UTILITY COORDINATION PLAN

STA 38+50 TO 44+25

SHEET 8 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		607
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100'

SCALE IN FEET

UTILITY LEGEND

- STORM SEWER
- AT&T/COMMUNICATIONS
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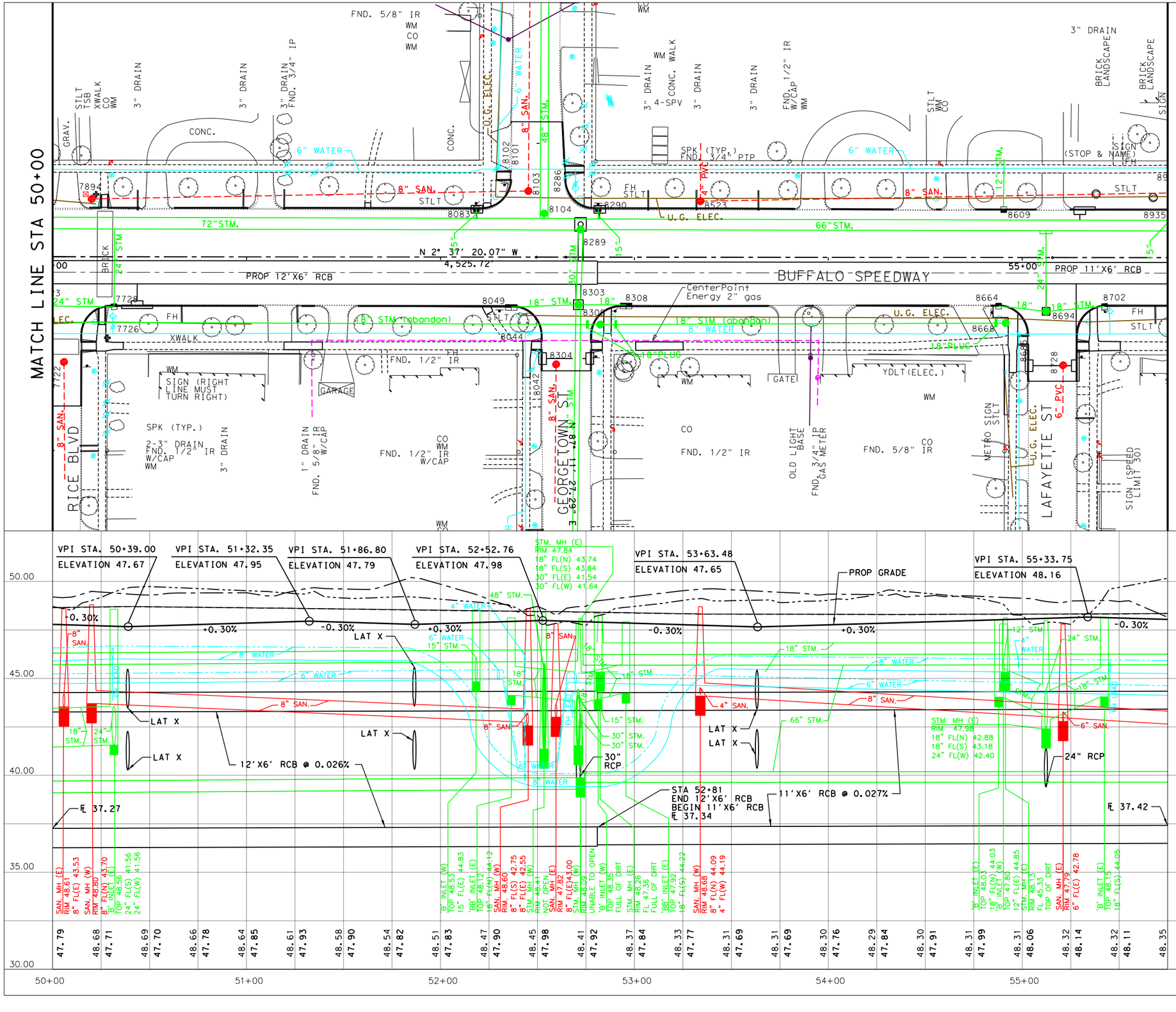
UTILITY COORDINATION PLAN

STA 44+25 TO 50+00

SHEET 9 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		608
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50′ 100′

SCALE IN FEET

UTILITY LEGEND

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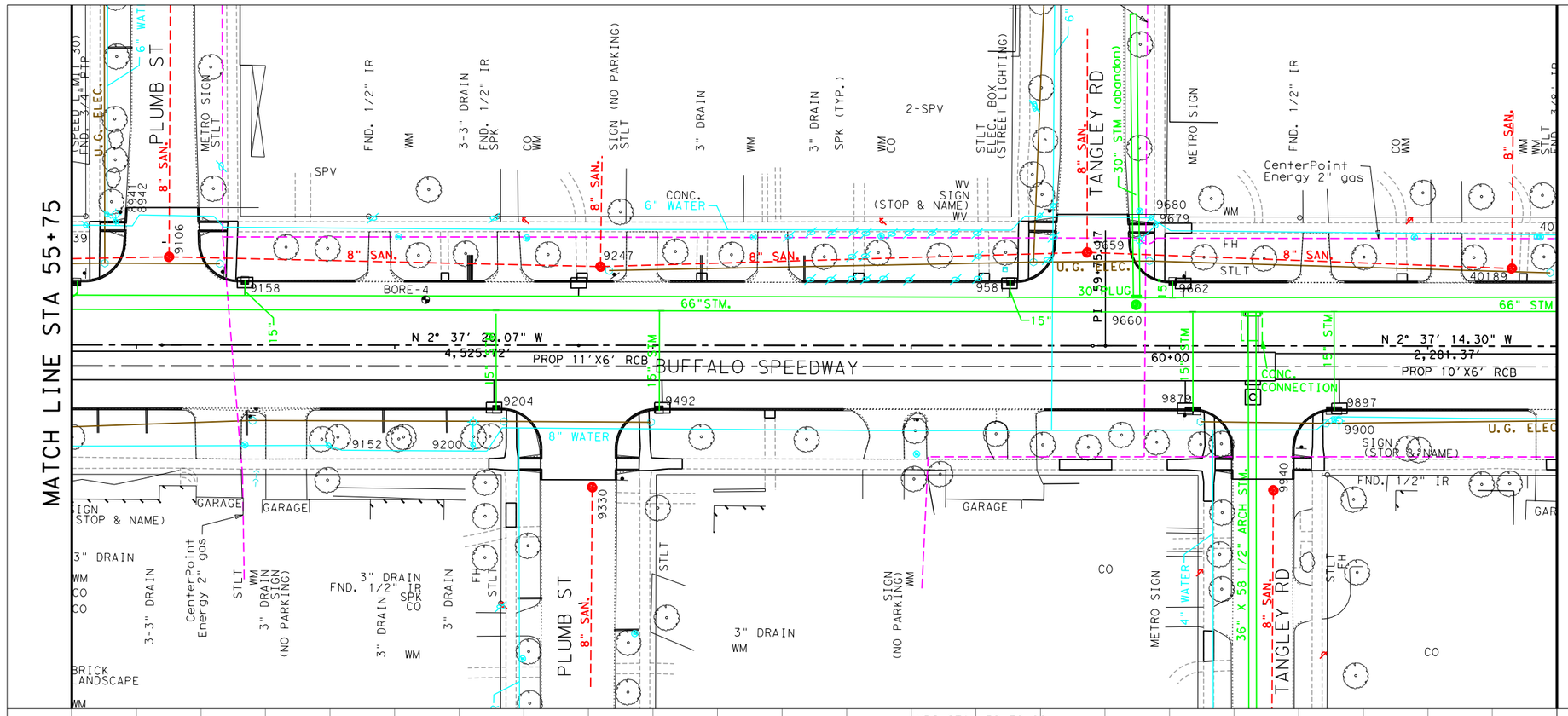
UTILITY COORDINATION PLAN

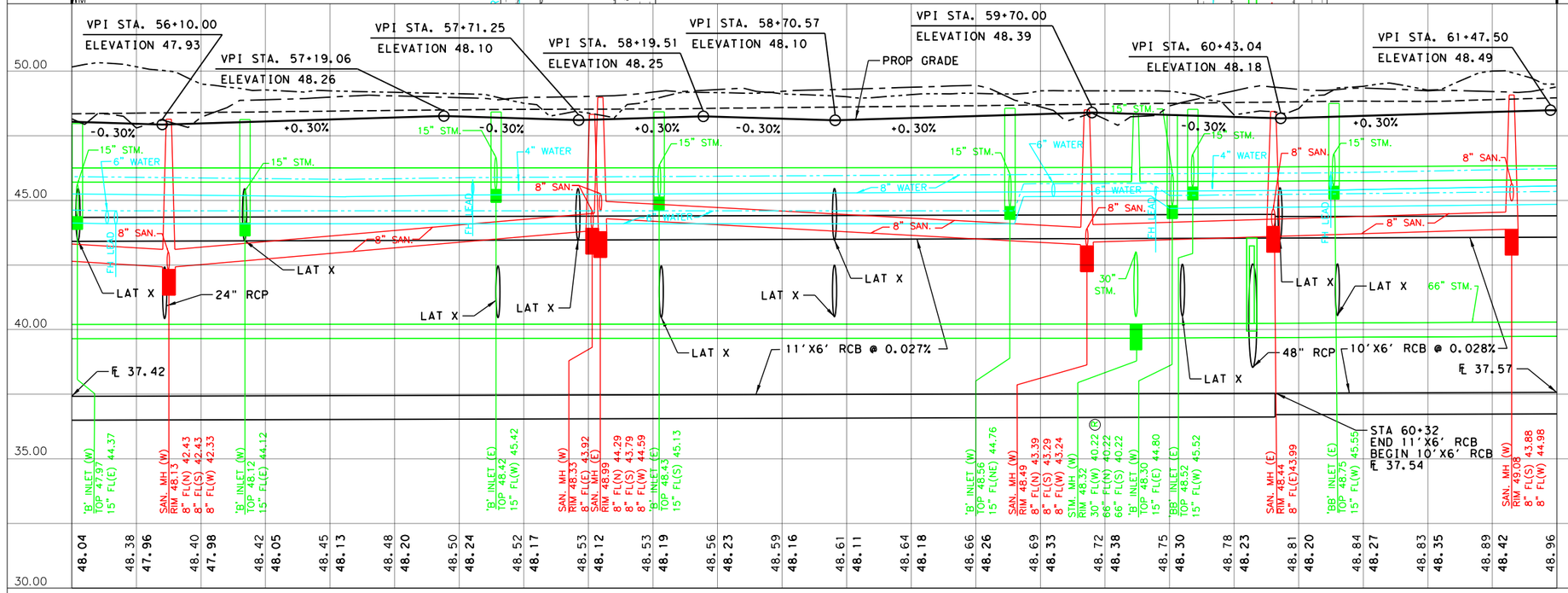
STA 50+00 TO 55+75

SHEET 10 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		609
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY





0 50' 100'

SCALE IN FEET

UTILITY LEGEND

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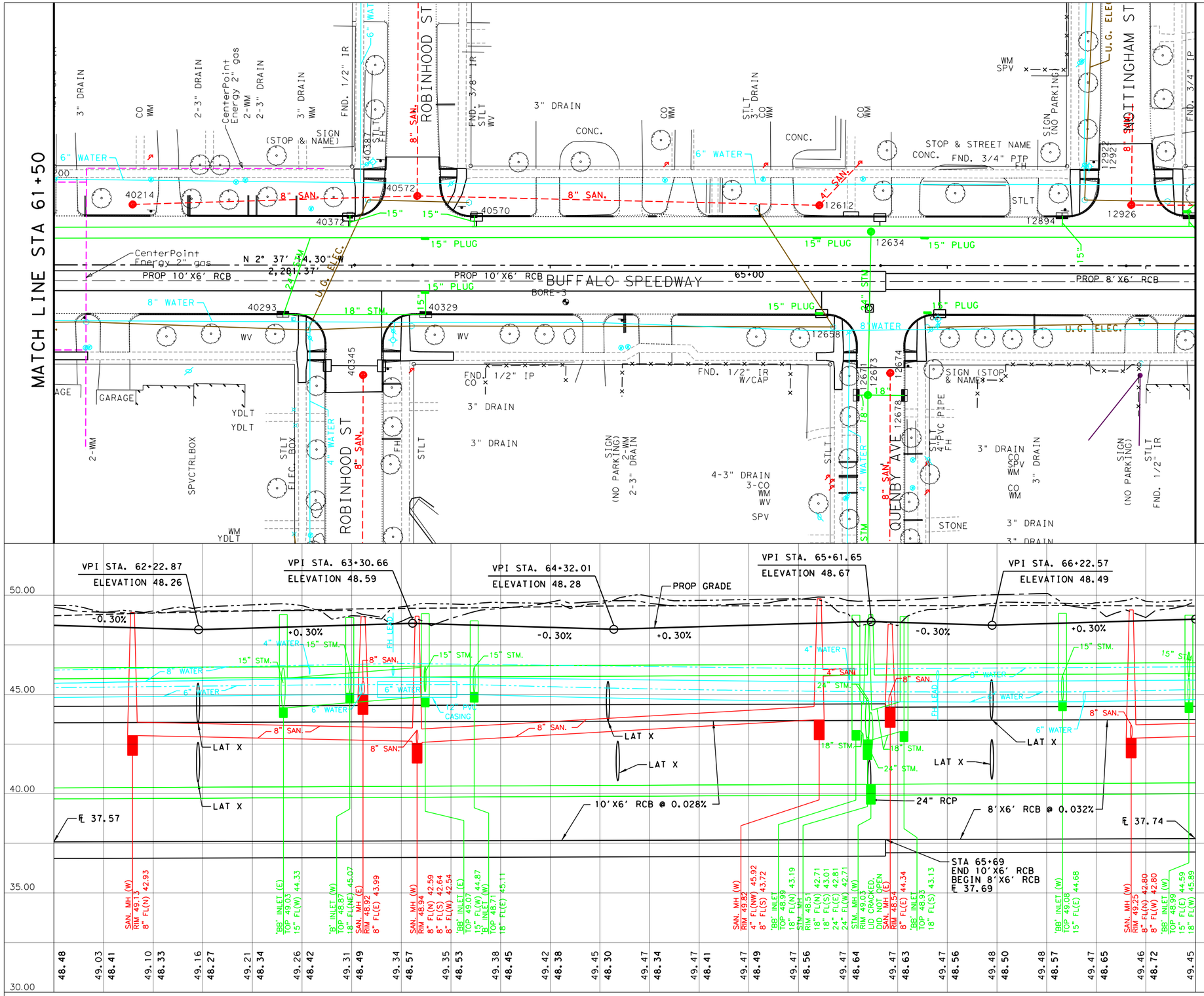
UTILITY COORDINATION PLAN

STA 55+75 TO 61+50

SHEET 11 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		610
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100'

SCALE IN FEET

UTILITY LEGEND

- STORM SEWER
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for AT&T Texas/SWBT underground conduit facilities only. Date
Signature valid for one year.

STATE OF TEXAS
MEHRAN BAVARIAN
48811
REGISTERED PROFESSIONAL ENGINEER
8/25/2020

FREESE AND NICHOLS
11200 Broadway Street, Suite 2320
Pearland, Texas 77584
Phone – (832) 456-4700
Fax – (832) 456-4701
Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

City of West University Place

BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

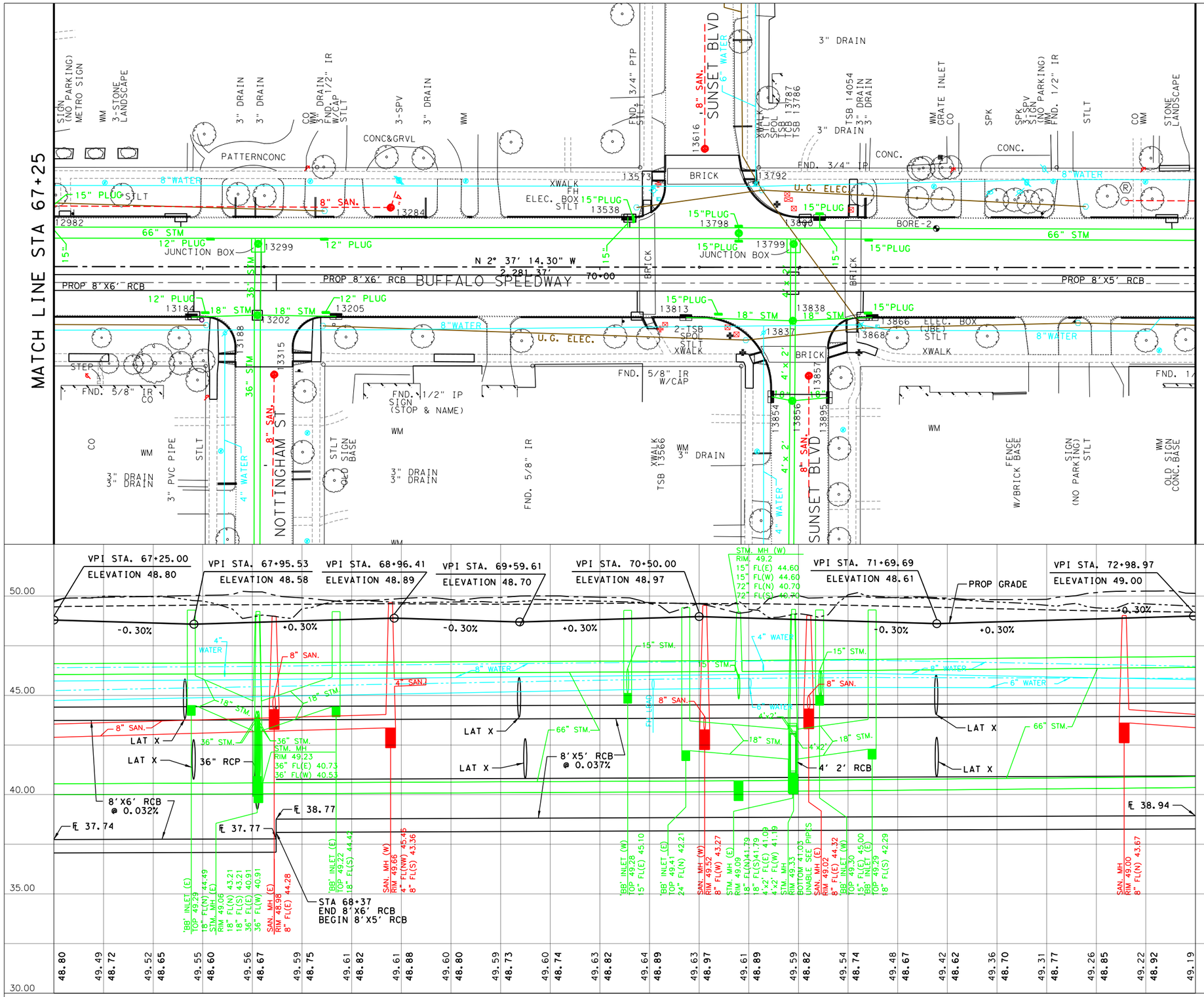
UTILITY COORDINATION PLAN

STA 61+50 TO 67+25

SHEET 12 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		611
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50' 100'

SCALE IN FEET

UTILITY LEGEND

- STORM SEWER
- AT&T/COMMUNICATIONS
- SANITARY SEWER
- WATER
- OVERHEAD UTILITIES
- UNDERGROUND ELECTRIC
- GAS

NOTICE:
For your safety, you are required by Texas Law to call 811 at least 48 hours before you dig so that underground lines can be marked. This signature does not fufill you obligation to call 811.

VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown. (Gas service lines are not shown). This signature not to be used for conflict verification.

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Date

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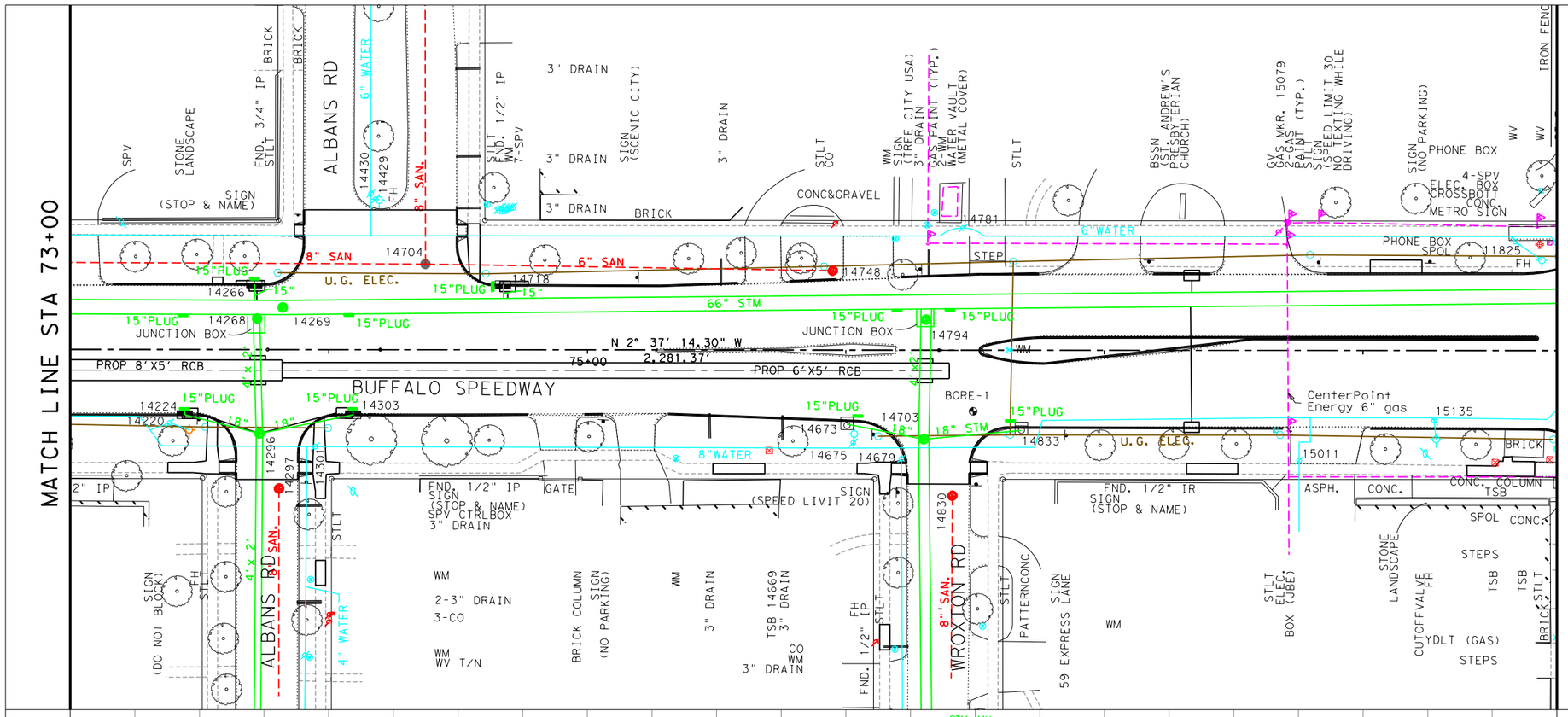
UTILITY COORDINATION PLAN

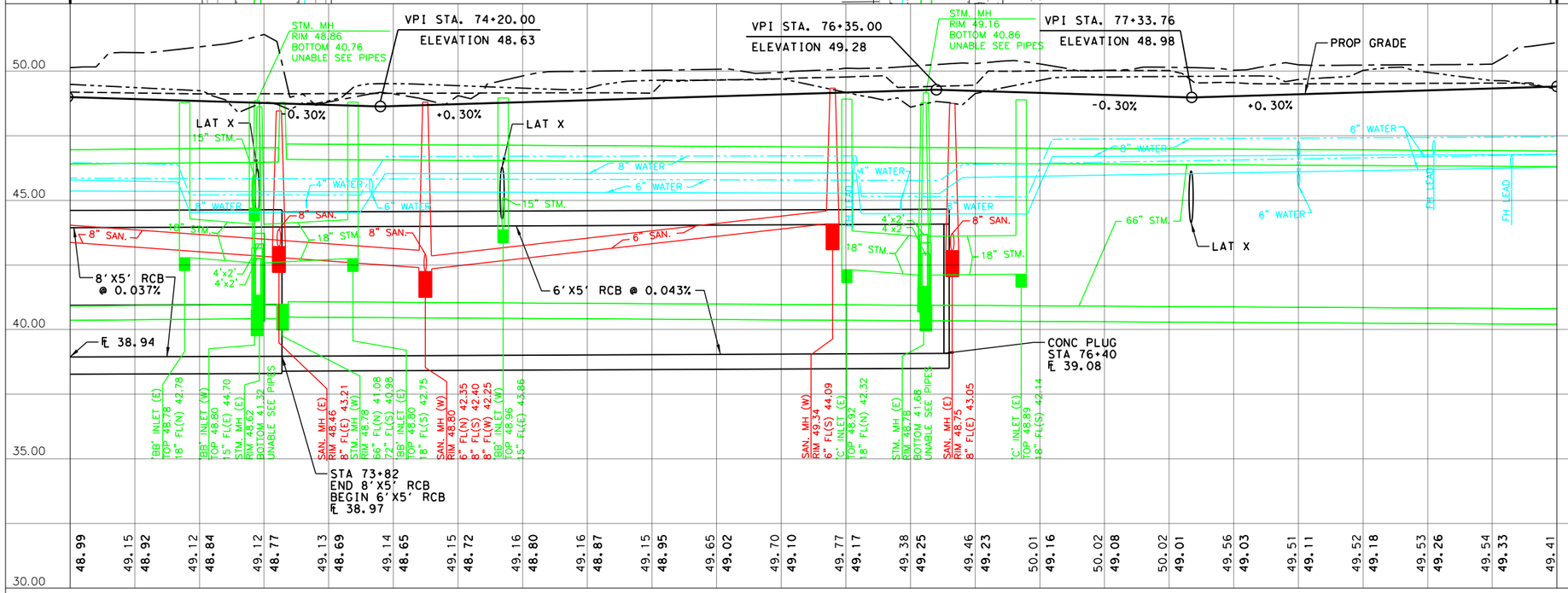
STA 67+25 TO 73+00

SHEET 13 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		612
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY





0 50' 100'

SCALE IN FEET

UTILITY LEGEND

- STORM SEWER
- AT&T/COMMUNICATIONS
- SANITARY SEWER
- WATER
- OVERHEAD UTILITIES
- UNDERGROUND ELECTRIC
- GAS

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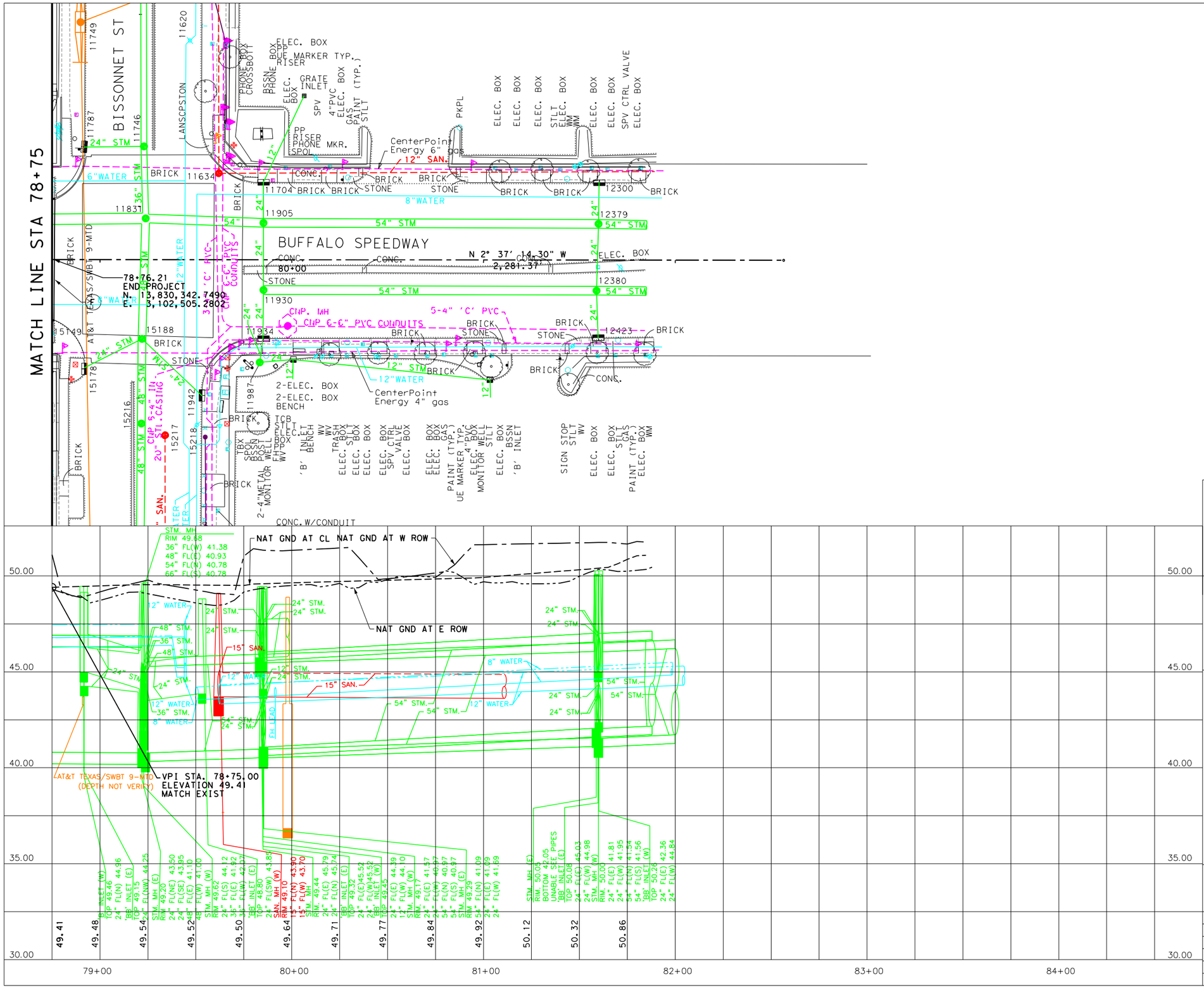
BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

UTILITY COORDINATION PLAN

STA 73+00 TO 78+75

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		613
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY



0 50′ 100′

SCALE IN FEET

UTILITY LEGEND

- STORM SEWER
- AT&T/COMMUNICATIONS
- SANITARY SEWER
- WATER
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BUFFALO SPEEDWAY IMPROVEMENTS (HOLCOMBE BLVD. TO BISSONNET)

UTILITY COORDINATION PLAN

STA 78+75 TO END

SHEET 15 OF 15

Texas Department of Transportation

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6	(SEE THE TITLE SHEET)		614
STATE	DIST.	COUNTY	
TEXAS	12	HARRIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0912	72	360	BUFFALO SPEEDWAY