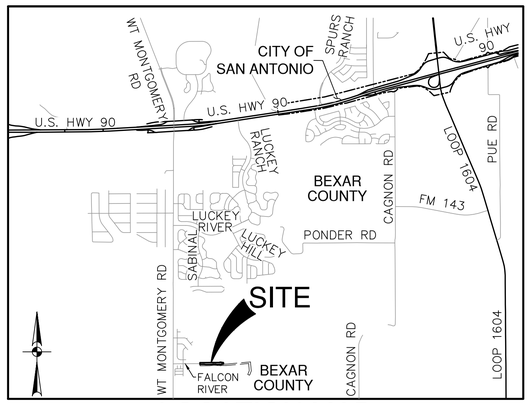
STRAUS TRACT - SECONDARY ARTERIAL

SAN ANTONIO, TEXAS

CIVIL CONSTRUCTION PLANS



LOCATION MAP

NOT-TO-SCALE

SHEET INDEX

PREPARED FOR:

JEN TEXAS 36 LLC
650 FIFTH AVE. 25TH FLOOR
NEW YORK, NEW YORK 10019

JANUARY 2025

PAPE-DAWSON ENGINEERS

2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000

TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
1-17-25

WATER (SAWS PRESSURE ZONE 8)

DEVELOPER'S NAME: JEN TEXAS 36 LLC
ADDRESS: 650 FIFTH AVE. 25TH FLOOR
CITY: NEW YORK STATE: NEW YORK ZIP: 10019
PHONE# PHONE # FAX#
SAWS BLOCK MAP# 084548 TOTAL EDU'S 0 TOTAL ACREAGE 10.430
TOTAL LINEAR FOOTAGE OF PIPE: 12"-1336 8"-151 PLAT NO. 24-11800322
NUMBER OF LOTS 0 SAWS JOB NO. 24-1132

SHEET C0.00

PLAT NO. 24-11800322 PD JOB NO. 13055-08 STRAUS TRACT - SECONDARY ARTERIAL

Date: Jan 17, 2025, 11:00am User ID: crodriguez
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TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

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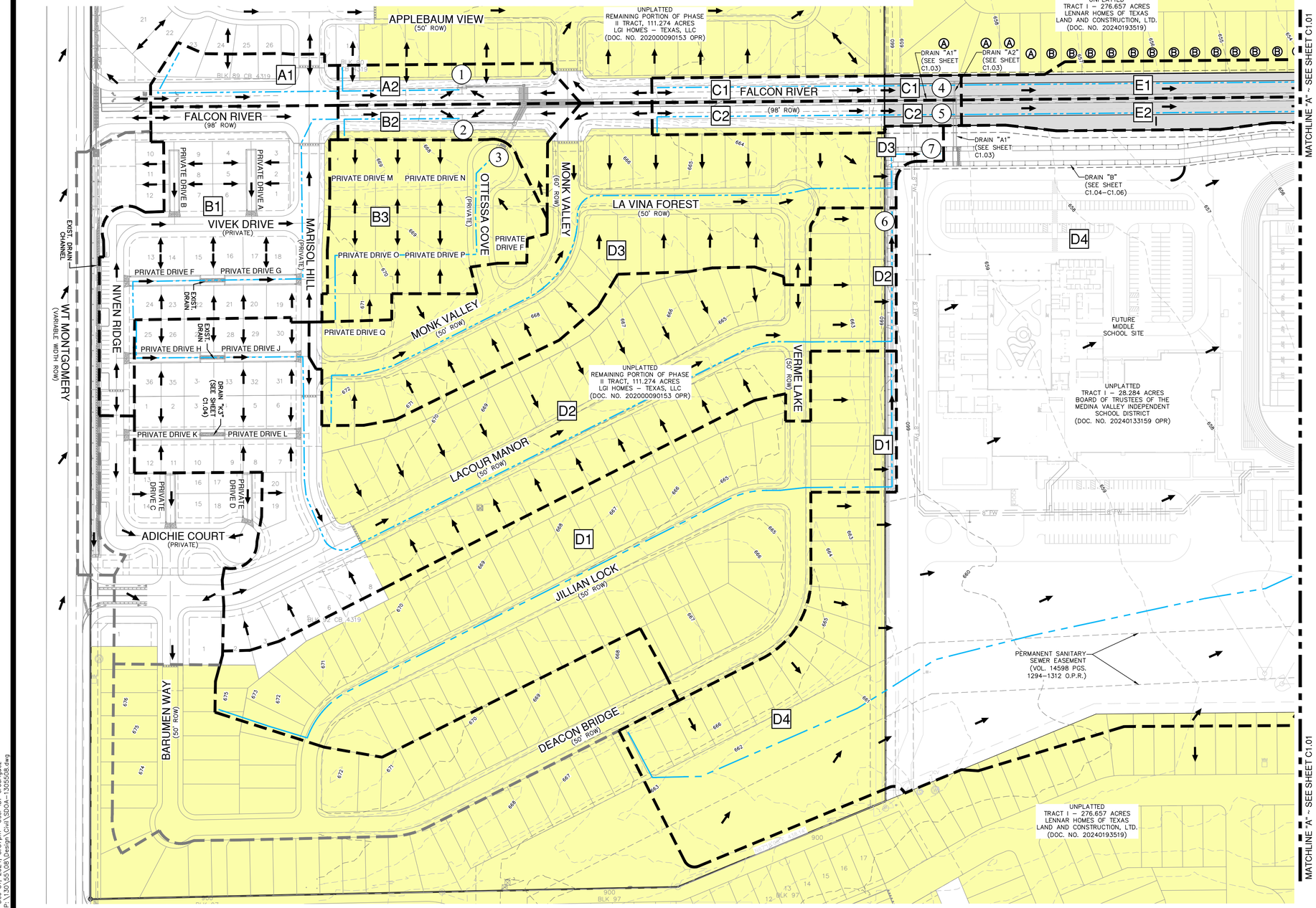

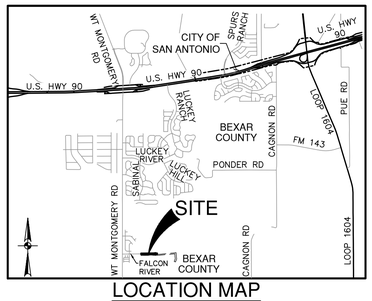

LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 100'

0' 100' 200' 300'

DRAINAGE LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR (690)
- FUTURE UNITS (LUCERO AT LUCKEY RANCH & BLOSSOM RANCH)
- PROPOSED AT14 100-YEAR UD FLOODPLAIN (PAPE-DAWSON FLOOD STUDY) (DECEMBER 2023)
- EXISTING 100-YEAR FEMA DFIRM FLOODPLAIN (FIRM PANEL NO. 48029C0053OF)
- RUNOFF FLOW PATH
- DRAINAGE AREA BOUNDARY
- DIRECTION OF FLOW
- DRAINAGE CALCULATION POINT (11)
- DRAINAGE AREA (A)
- FHA LOT GRADING TYPE (A)

DATE

NO. REVISION

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
12-31-24

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STRAUS TRACT - SECONDARY ARTERIAL

SAN ANTONIO, TEXAS

OVERALL DRAINAGE PLAN

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER CB
CHECKED JA DRAWN CB
SHEET C1.00

Date: Dec. 31, 2024, 3:57pm User ID: crodriguez
File: P:\130\55\08\Design\Civil\SD0A-13055108.dwg

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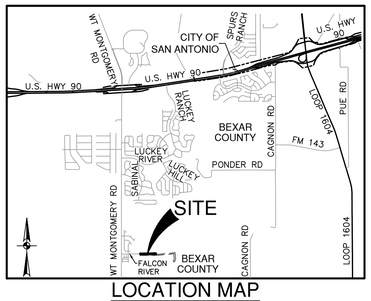

LOCATION MAP

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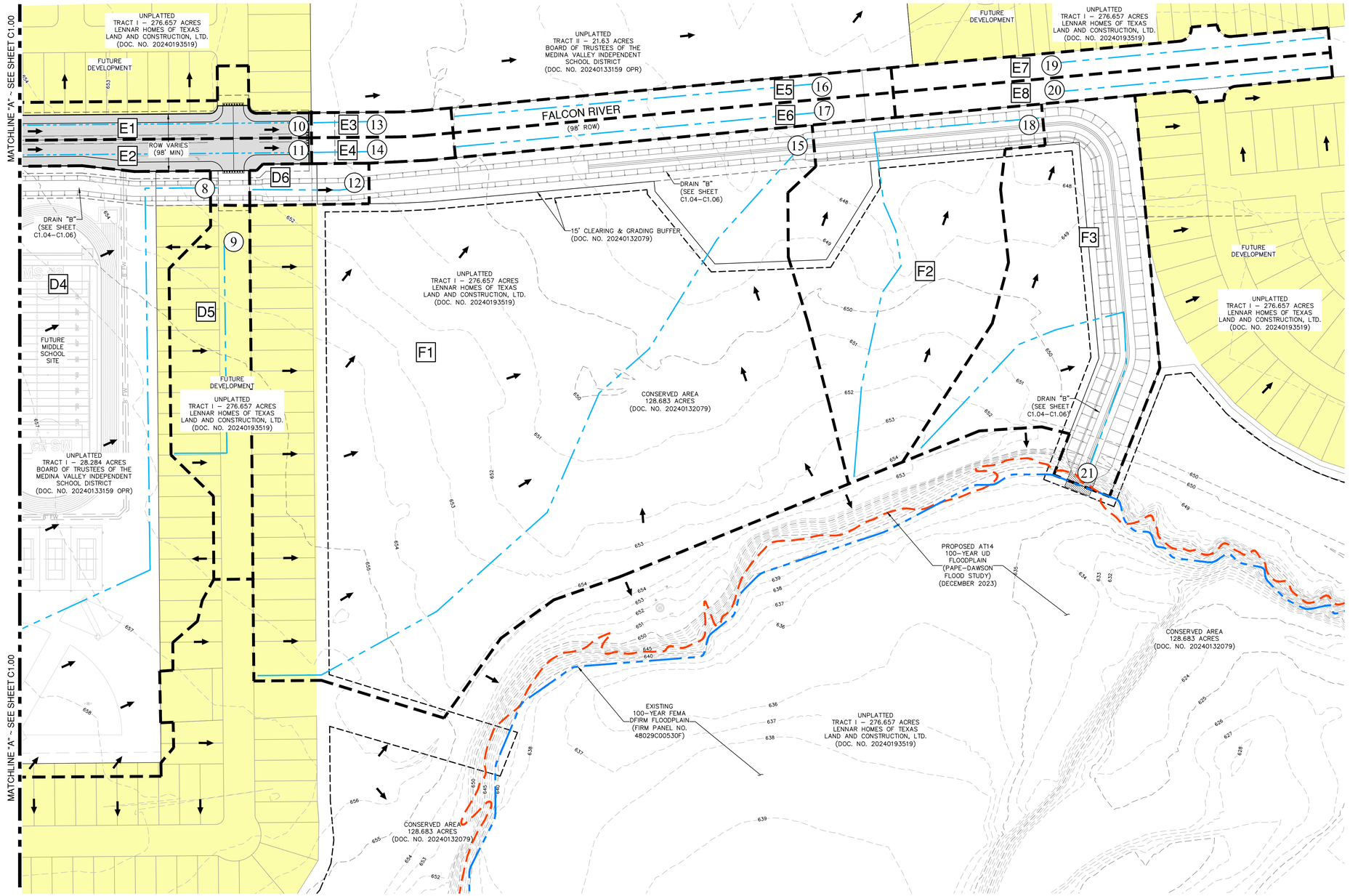

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OVERALL DRAINAGE PLAN

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER CB
CHECKED JA DRAWN CB
SHEET C1.01

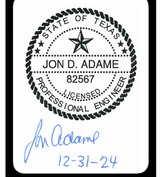
BY-PASS FLOW TABLE

POINT	STRUCTURE	WATERSHED	TOTAL FLOW			FLOW ACCEPTED			FLOW BY-PASS			WATERSHED ACCEPTING BY-PASS FLOW
			Q_5	Q_{25}	Q_{100}	Q_5	Q_{25}	Q_{100}	Q_5	Q_{25}	Q_{100}	
			CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	
4	(1)-20' CURB INLET ON GRADE	C1	4.74	**6.57**	8.19	4.74	**6.57**	8.19	0.00	**0.00**	0.00	E1
5	(1)-20' CURB INLET ON GRADE	C2	4.88	**6.70**	8.30	4.88	**6.70**	8.30	0.00	**0.00**	0.00	E2

HYDROLOGY SUMMARY TABLE

POINT	STRUCTURE	WATERSHED	TOTAL AREA (ACRES)	COMPOSITE C VALUE	OVERLAND FLOW		SHALLOW		CHANNEL FLOW (6 FPS)		TIME OF CONCENTRATION	INTENSITY			FLOW			REF BYPASS FLOW CALCS	POINT
					LENGTH	TRAVEL TIME	LENGTH	TRAVEL TIME	LENGTH	TRAVEL TIME		I_5	I_{25}	I_{100}	Q_5	Q_{25}	Q_{100}		
					FEET	MINUTES	FEET	MINUTES	FEET	MINUTES	MINUTES	IN/HR	IN/HR	IN/HR	CFS	CFS	CFS		
	STREET	A1	0.83	0.67	80	7.0	330	4.0	0	0	11	6.02	8.27	10.25	3.35	**4.60**	5.70	**NO**	
	STREET	A2	0.79	0.95	40	4.0	225	3.0	0	0	7	7.10	9.82	12.22	5.33	**7.37**	9.17	**NO**	
1	CURB INLET (IN SUMP)	A1 + A2	1.62	REFERENCE STORM WATER MANAGEMENT REPORT FOR HYDRAULIC CALCULATIONS											7.47	**10.29**	12.79	**NO**	1
	STREET	B1	4.00	0.75	100	11.0	525	5.0	0	0	16	5.62	7.69	9.52	16.86	**23.07**	28.56	**NO**	0
	STREET	B2	0.84	0.95	25	3.0	295	2.0	0	0	5	7.84	10.91	13.63	6.26	**8.71**	10.88	**NO**	0
2	CURB INLET (IN SUMP)	B1 + B2	4.84	REFERENCE STORM WATER MANAGEMENT REPORT FOR HYDRAULIC CALCULATIONS											16.86	**23.07**	28.56	**NO**	2
3	CURB INLET (IN SUMP)	B3	2.72	0.75	100	11.0	525	5.0	0	0	16	5.11	6.99	8.65	10.43	**14.25**	17.64	**NO**	3
4	CURB INLET (ON-GRADE)	C1	0.62	0.95	0	0.0	580	6.0	0	0	6	8.05	11.15	13.90	4.74	**6.57**	8.19	**YES**	4
5	CURB INLET (ON-GRADE)	C2	0.82	0.95	30	4.0	580	6.0	0	0	10	6.26	8.60	10.65	4.88	**6.70**	8.30	**YES**	5
	CHANNEL	D1	10.03	0.67	100	10.0	1190	12.0	325	1.0	23	4.26	5.82	7.21	28.63	**39.12**	48.43	**NO**	
	CHANNEL	D2	11.57	0.70	65	8.0	1790	15.0	425	2	25	4.07	5.57	6.90	32.99	**45.10**	55.86	**NO**	
	CHANNEL	D3	6.54	0.67	90	9.0	1090	10.0	295	2	21	4.47	6.10	7.55	19.58	**26.75**	33.10	**NO**	
	CHANNEL	D4	34.03	0.83	100	9.0	1580	23.0	875	3	35	3.37	4.62	5.74	95.05	**130.47**	162.02	**NO**	
6	CHANNEL	D1 + D2	21.60	REFERENCE STORM WATER MANAGEMENT REPORT FOR HYDRAULIC CALCULATIONS											59.13	**80.82**	100.08	**NO**	6
7	CHANNEL	D1 + D2 + D3	28.14	REFERENCE STORM WATER MANAGEMENT REPORT FOR HYDRAULIC CALCULATIONS											76.70	**104.81**	129.78	**NO**	7
8	CHANNEL	A1 + A2 + B1 + B2 + B3 + C1(ACCEPT) + C2(ACCEPT) + D1 + D2 + D3 + D4	72.79	REFERENCE STORM WATER MANAGEMENT REPORT FOR HYDRAULIC CALCULATIONS											216.13	**296.16**	**367.28**	**YES**	8
9	CHANNEL	D5	2.05	0.67	95	9.5	405	4.5	0	0	14	5.44	7.43	9.20	7.47	**10.21**	12.64	**NO**	9
	CHANNEL	D6	0.41	0.55	0	0.0	216	3.0	0	0	3	8.78	12.37	15.57	1.98	**2.79**	3.51	**NO**	
	STREET	E1	1.91	0.95	0	0.0	1180	12.0	0	0	12	5.81	7.96	9.86	10.55	**14.45**	17.90	**NO**	
	STREET	E2	1.67	0.95	0	0.0	1180	12.0	0	0	12	5.82	7.97	9.86	9.23	**12.64**	15.65	**NO**	
10	STREET	C1(BYPASS) + E1	1.91	REFERENCE STORM WATER MANAGEMENT REPORT FOR HYDRAULIC CALCULATIONS											10.55	**14.45**	17.90	**NO**	10
11	STREET	C2(BYPASS) + E2	1.67	REFERENCE STORM WATER MANAGEMENT REPORT FOR HYDRAULIC CALCULATIONS											9.23	**12.64**	15.65	**NO**	11
12	CHANNEL	A1 + A2 + B1 + B2 + B3 + C1(ACCEPT) + C2(ACCEPT) + D1 + D2 + D3 + D4 + D5	75.25	REFERENCE STORM WATER MANAGEMENT REPORT FOR HYDRAULIC CALCULATIONS											225.58	**309.16**	383.43	**NO**	12
	STREET	E3	0.30	0.95	0	0.0	125	1.0	0	0	1	10.04	14.39	0.00	2.86	**4.10**	0.00	**NO**	0
	STREET	E4	0.31	0.95	0	0.0	125	1.0	0	0	1	10.02	14.40	0.00	2.95	**4.24**	0.00	**NO**	0
13	CURB INLET (IN SUMP)	C1(BYPASS) + E1 + E3	2.21	REFERENCE STORM WATER MANAGEMENT REPORT FOR HYDRAULIC CALCULATIONS											10.55	**14.45**	17.90	**NO**	
14	CURB INLET (IN SUMP)	C2(BYPASS) + E2 + E4	1.98	REFERENCE STORM WATER MANAGEMENT REPORT FOR HYDRAULIC CALCULATIONS											9.23	**12.64**	15.65	**NO**	
	CHANNEL	F1	21.97	0.55	100	15.5	1450	21.0	0	0	37	3.26	4.47	5.56	39.35	**54.06**	67.17	**NO**	
15	CHANNEL	A1 + A2 + B1 + B2 + B3 + C1(ACCEPT) + C2(ACCEPT) + D1 + D2 + D3 + D4 + D5 + E3 + E4 + F1	97.83	REFERENCE STORM WATER MANAGEMENT REPORT FOR HYDRAULIC CALCULATIONS											284.71	**390.31**	484.15	**NO**	15
16	CURB INLET (IN SUMP)	E5	0.94	0.95	0	0.0	710	8.0	0	0	8	6.80	9.36	0.00	6.07	**8.36**	0.00	**NO**	16
17	CURB INLET (IN SUMP)	E6	0.94	0.95	0	0.0	710	8.0	0	0	8	6.80	9.36	0.00	6.07	**8.36**	0.00	**NO**	17
	CHANNEL	F2	5.21	0.55	100	15.5	585	8.5	315	1	25	4.07	5.57	6.90	11.67	**15.96**	19.76	**NO**	
18	CHANNEL	A1 + A2 + B1 + B2 + B3 + C1(ACCEPT) + C2(ACCEPT) + D1 + D2 + D3 + D4 + D5 + E3 + E4 + E5 + E6 + F1 + F2	104.92	REFERENCE STORM WATER MANAGEMENT REPORT FOR HYDRAULIC CALCULATIONS											308.52	**422.99**	503.91	**NO**	18
19	CURB INLET (IN SUMP)	E7	0.96	0.95	0	0.0	520	6.0	0	0	6	7.46	10.31	0.00	6.80	**9.40**	0.00	**NO**	19
20	CURB INLET (IN SUMP)	E8	0.96	0.95	0	0.0	520	6.0	0	0	6	7.46	10.31	0.00	6.80	**9.40**	0.00	**NO**	20
	CHANNEL	F3	4.69	0.55	100	15.5	385	5.5	340	1	22	4.36	5.96	7.38	11.25	**15.37**	19.03	**NO**	
21	CHANNEL	A1 + A2 + B1 + B2 + B3 + C1(ACCEPT) + C2(ACCEPT) + D1 + D2 + D3 + D4 + D5 + E3 + E4 + E5 + E6 + E7 + E8 + F1 + F2 + F3	111.53	REFERENCE STORM WATER MANAGEMENT REPORT FOR HYDRAULIC CALCULATIONS											333.37	**457.16**	522.94	**NO**	21

NO.	REVISION	DATE



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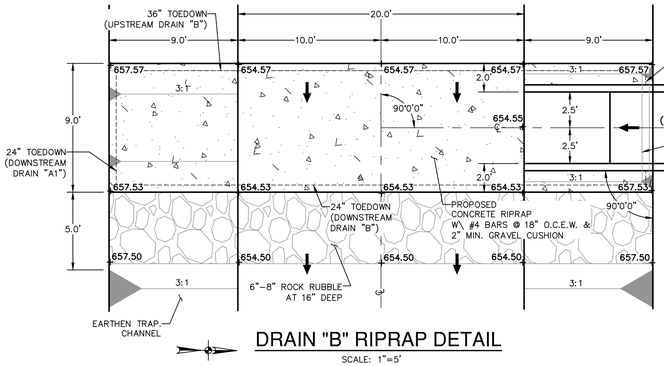


DRAIN "B" RIPRAP DETAIL

SCALE: 1"=5'

HYDRAULIC CALCULATIONS DRAIN "A1-1" & "A2-1"

CURB INLETS ON GRADE EQUATIONS

(EQ. 8.3.1.a) $E_o = \frac{K_w}{K_w + K_o}$

(EQ. 8.3.1.b) $K = \frac{zA^{5/3}}{n^{P^{2/3}}}$

(EQ. 8.3.1.c) $A_w = WS_x(T-\frac{W}{2}) + \frac{1}{2}aW$

(EQ. 8.3.1.d) $P_w = (WS_x + a)^2 + W^2$

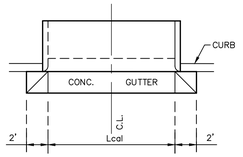
(EQ. 8.3.1.e) $A_o = \frac{1}{2}(T-W)^2$

(EQ. 8.3.1.f) $P_o = T - W$

(EQ. 8.3.1.g) $S_E = S_x + \frac{aE_o}{}$

(EQ. 8.3.1.h) $L_R = zQ^{0.42}S_o^{0.3}(\frac{1}{n S_x})^{0.6}$

CURB INLET "A1-1"	CURB INLET "A2-1"
Q_{25} = 6.70 c.f.s.	Q_{25} = 6.57 c.f.s.
S = 0.006	S = 0.006
S_X = 0.02	S_X = 0.02
n = 0.018	n = 0.018
W = 2'	W = 2'
a = 0.21'	a = 0.21'
$L_{R\ CALC}$ = 16.46'	$L_{R\ CALC}$ = 16.28'
USE 20' CURB INLET OPENING "A1-1" (L_R IS LESS THAN L_o, CARRYOVER= 0 c.f.s.	USE 20' CURB INLET OPENING "A2-1" (L_R IS LESS THAN L_o, CARRYOVER= 0 c.f.s.



TYPICAL DRAINAGE CURB OPENING

NOT-TO-SCALE

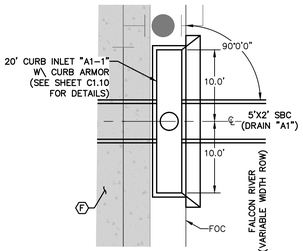
KEY LEGEND:

- (A) VARIABLE WIDTH DRAINAGE EASEMENT (OFF-LOT)
- (B) 14' LANDSCAPE, GAS, ELECTRIC, TELEPHONE AND CABLE TV EASEMENT (OFF-LOT)
- (C) CONCRETE COLLARS (SEE SHEET C1.10 FOR DETAIL)
- (D) 5' LANDSCAPE EASEMENT (OFF-LOT)
- (E) CONTRACTOR TO REMOVE EXISTING HEADWALL/WINGWALLS (SEE THIS SHEET FOR EXISTING HEADWALL DEMOLITION DETAIL)
- (F) 12' MULTI-USE PATH DEVELOPER SIDEWALK
- (G) 6' DEVELOPER SIDEWALK

SCALE: 1"= 20'
0' 20' 40' 60'

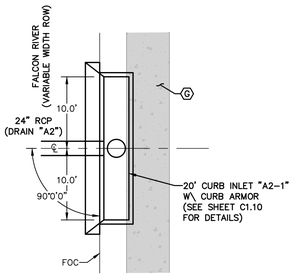
DRAINAGE LEGEND

PROJECT LIMITS
EXISTING CONTOUR 690
PROPOSED WATER W
PROPOSED SEWER SS
PROPOSED STORM DRAIN



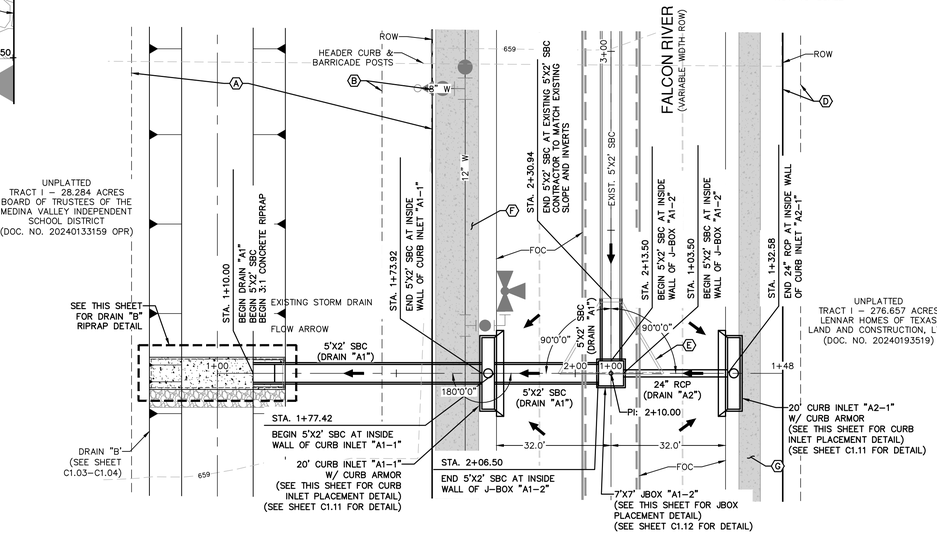
CURB INLET "A1-1" PLACEMENT DETAIL

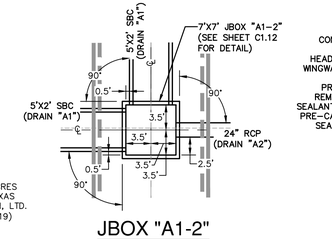
SCALE: 1"=10'



CURB INLET "A2-1" PLACEMENT DETAIL

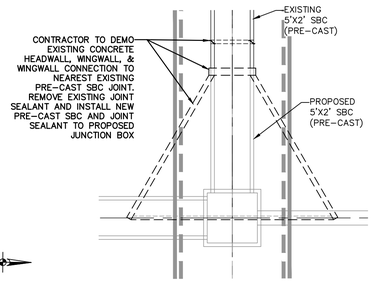
SCALE: 1"=10'





JBOX "A1-2" PLACEMENT DETAIL

SCALE: 1"=10'

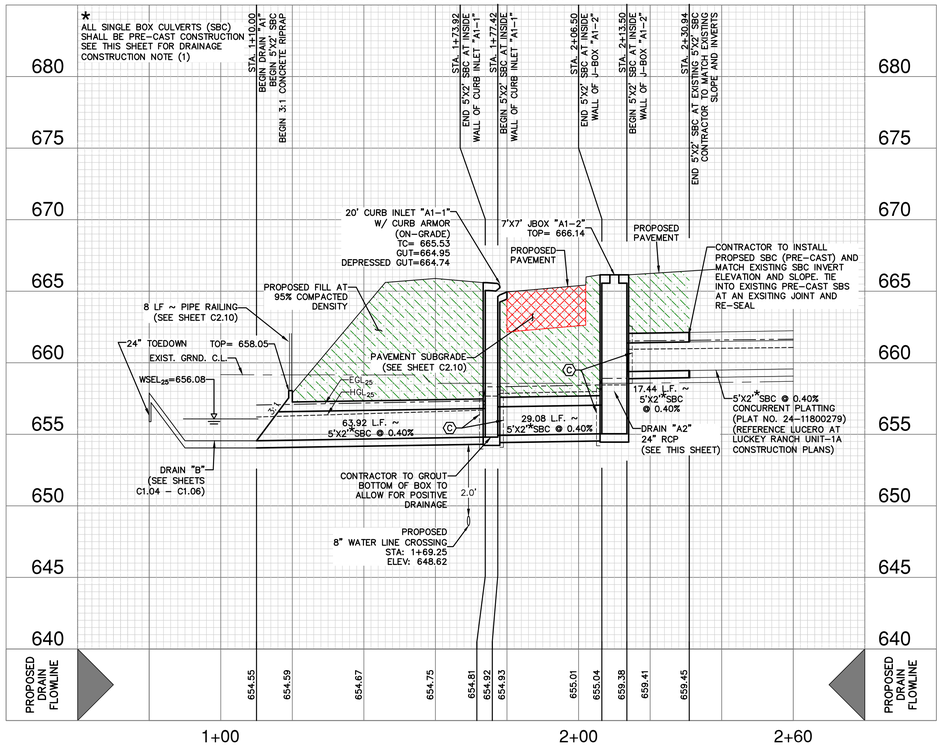


EXISTING HEADWALL DEMOLITION DETAIL

SCALE: 1"=10'

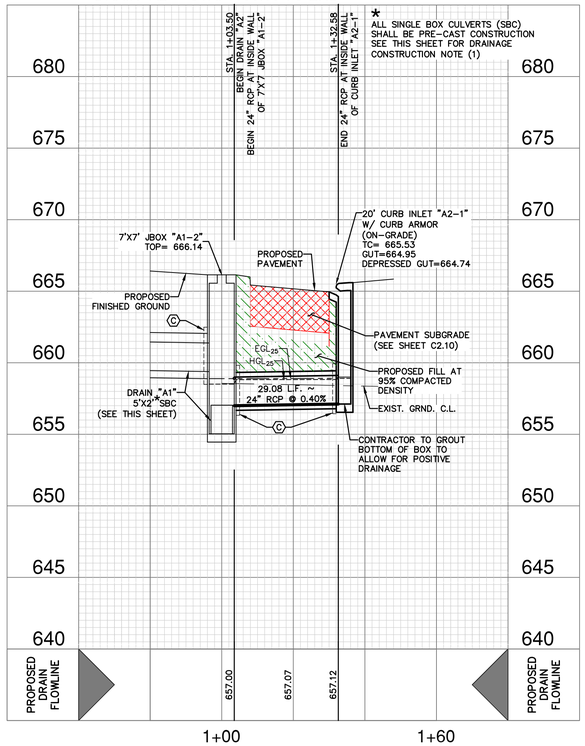
VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'

DRAIN "A1" ~ STA. 1+00.00 TO 2+30.94



VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'

DRAIN "A2" ~ STA. 1+00.00 TO END



DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

DRAINAGE CONSTRUCTION NOTES:

1. **ALL SINGLE BOX CULVERTS (SBC) SHALL BE PRE-CAST CONSTRUCTION.** (SEE SHEETS C1.13 FOR SBC PRE-CAST CONSTRUCTION DETAILS.)

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
1-15-25

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STRAUS TRACT - SECONDARY ARTERIAL

SAN ANTONIO, TEXAS

DRAIN "A1" ~ STA. 1+00.00 TO 2+30.94
DRAIN "A2" ~ STA. 1+00.00 TO END
DRAIN PLAN & PROFILE

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER CB
CHECKED JA DRAWN CB
SHEET C1.03

Date: Jan 15, 2025, 5:09pm User ID: crodriguez
File: P:\130\55\08\Design\Civil\SDA2-13055058.dwg

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

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3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
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CAUTION!!

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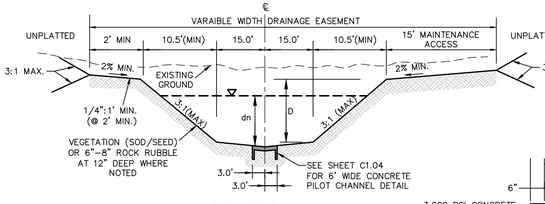
DRAINAGE CONSTRUCTION NOTES:

1. **ALL SINGLE BOX CULVERTS (SBC) SHALL BE PRE-CAST CONSTRUCTION.** (SEE SHEETS C1.13 FOR SBC PRE-CAST CONSTRUCTION DETAILS.)

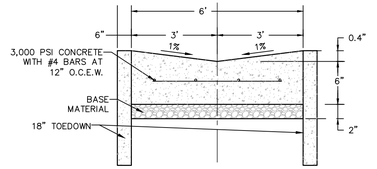
OPEN CHANNEL NOTE:

CONTRACTOR SHALL REFERENCE TABLE 9.3.8.1 – "RETARDATION CLASS FOR LINING MATERIALS" PROVIDED ON SHEET C1.10 AND SUPPLIED RETARDANCE CLASS (RC) FOR CHOICE OF COVER WITHIN OPEN EARTHEN CHANNEL CROSS-SECTIONS.



SECTION "A-A" EARTHEN TRAP. CHANNEL

NOT-TO-SCALE



6' WIDE CONCRETE PILOT CHANNEL DETAIL

NOT-TO-SCALE

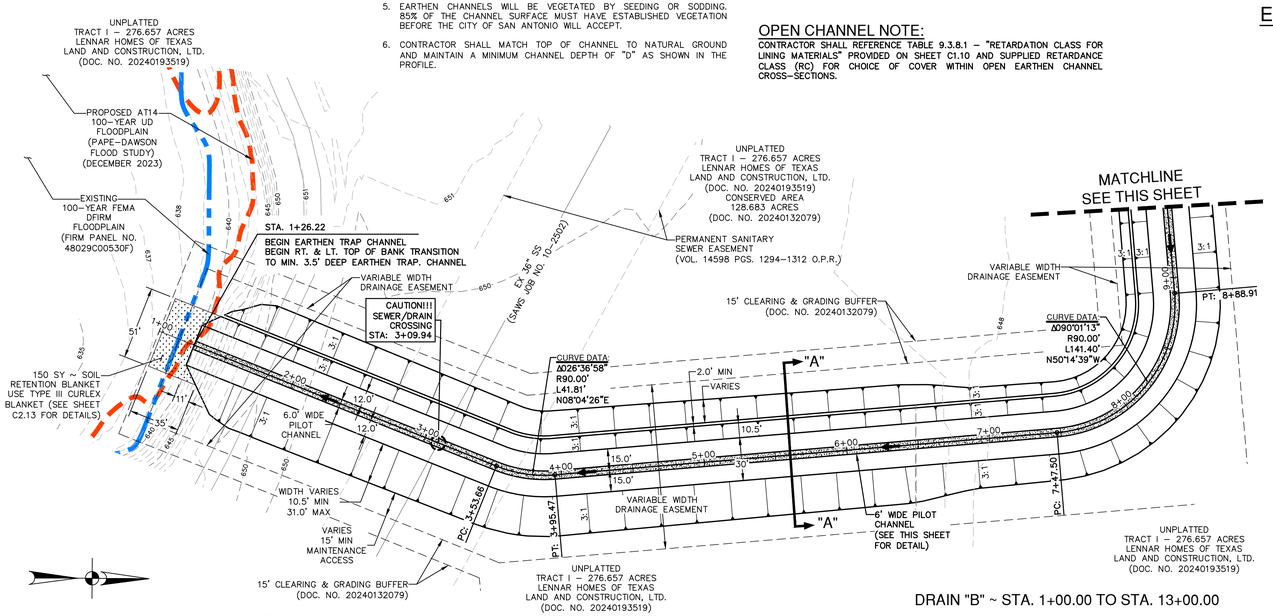
SCALE: 1"= 50'

0' 50' 100' 150'

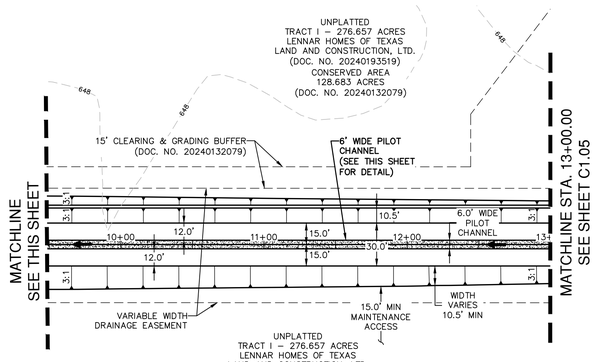
DRAINAGE LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR 690
- PROPOSED WATER W
- PROPOSED SEWER SS
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW

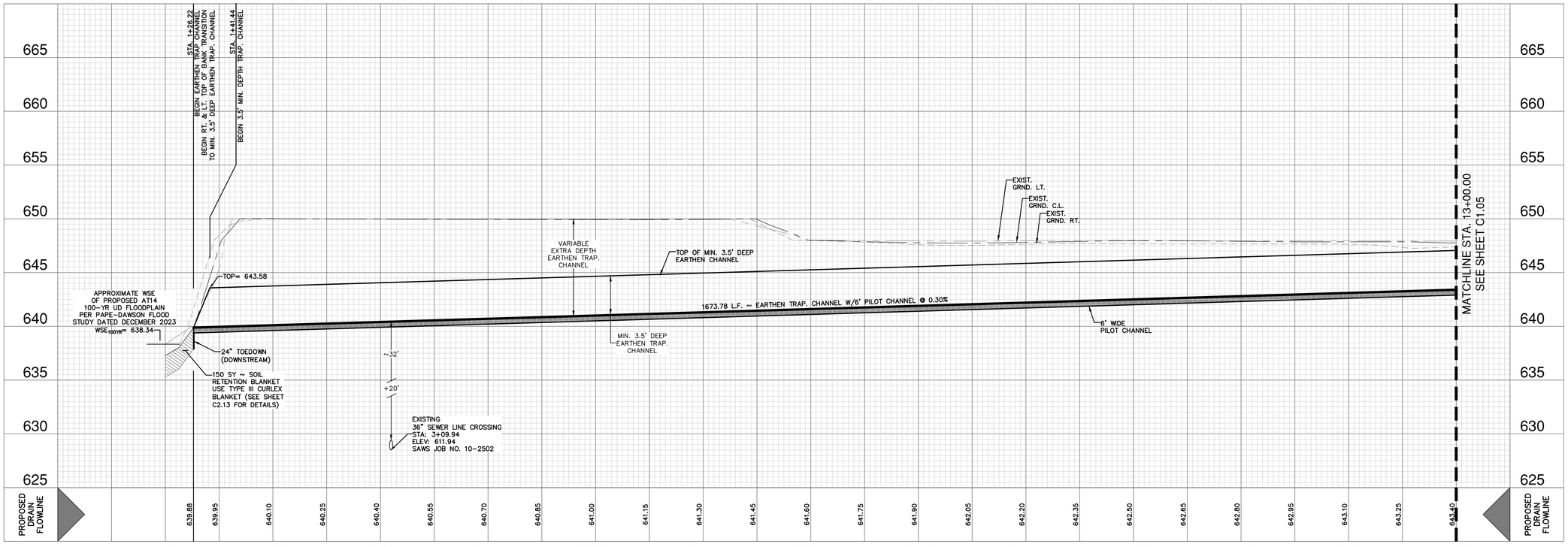
HYDRAULIC CALCULATIONS EARTH TRAP. CHANNEL (SECTION A-A) STA. 1+26.22 TO 9+25.00	HYDRAULIC CALCULATIONS EARTH TRAP. CHANNEL (SECTION A-A) STA. 9+25.00 TO 13+75.85
Q25 = 457.16 CFS	Q25 = 422.99 CFS
Bw = 30'	Bw = 30'
n = 0.035	n = 0.035
S = 0.30%	S = 0.30%
D = 3.50'	D = 3.50'
dn = 2.90'	dn = 2.78'
V = 4.07 fps	V = 3.97 fps
τ_d = 0.43 LB/FT^2 RC= B,C,D	τ_d = 0.42 LB/FT^2 RC= B,C,D



DRAIN "B" ~ STA. 1+00.00 TO STA. 13+00.00



VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



NO. | REVISION | DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED PROFESSIONAL ENGINEER
1-17-25

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

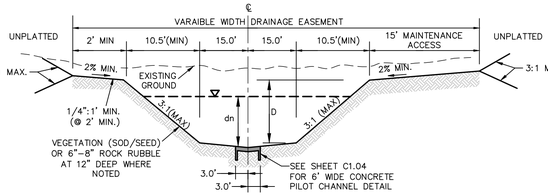
STRAUS TRACT - SECONDARY ARTERIAL

SAN ANTONIO, TEXAS

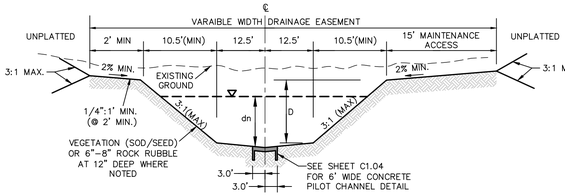
DRAIN "B" ~ STA. 1+00.00 TO STA. 13+00.00
DRAIN PLAN & PROFILE

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER CB
CHECKED JA DRAWN CB
SHEET C1.04

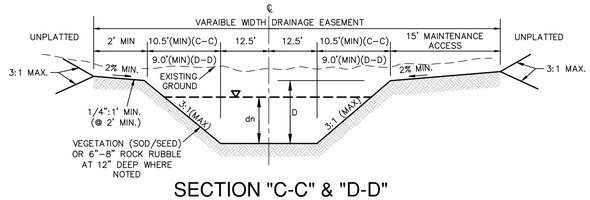
Date: Jan 17, 2025, 11:02am User ID: crodriguez
File: P:\13055\08\Design\Civil\SDA1-13055108.dwg



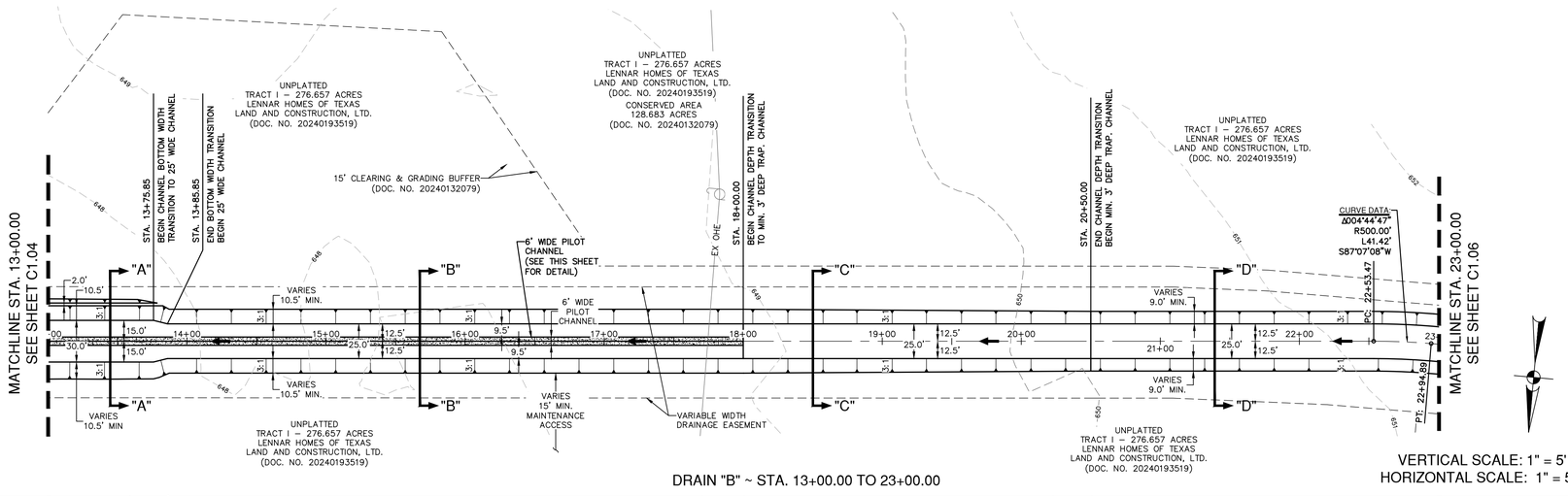
SECTION "A-A"
EARTHEN TRAP. CHANNEL
NOT-TO-SCALE



SECTION "B-B"
EARTHEN TRAP. CHANNEL
NOT-TO-SCALE

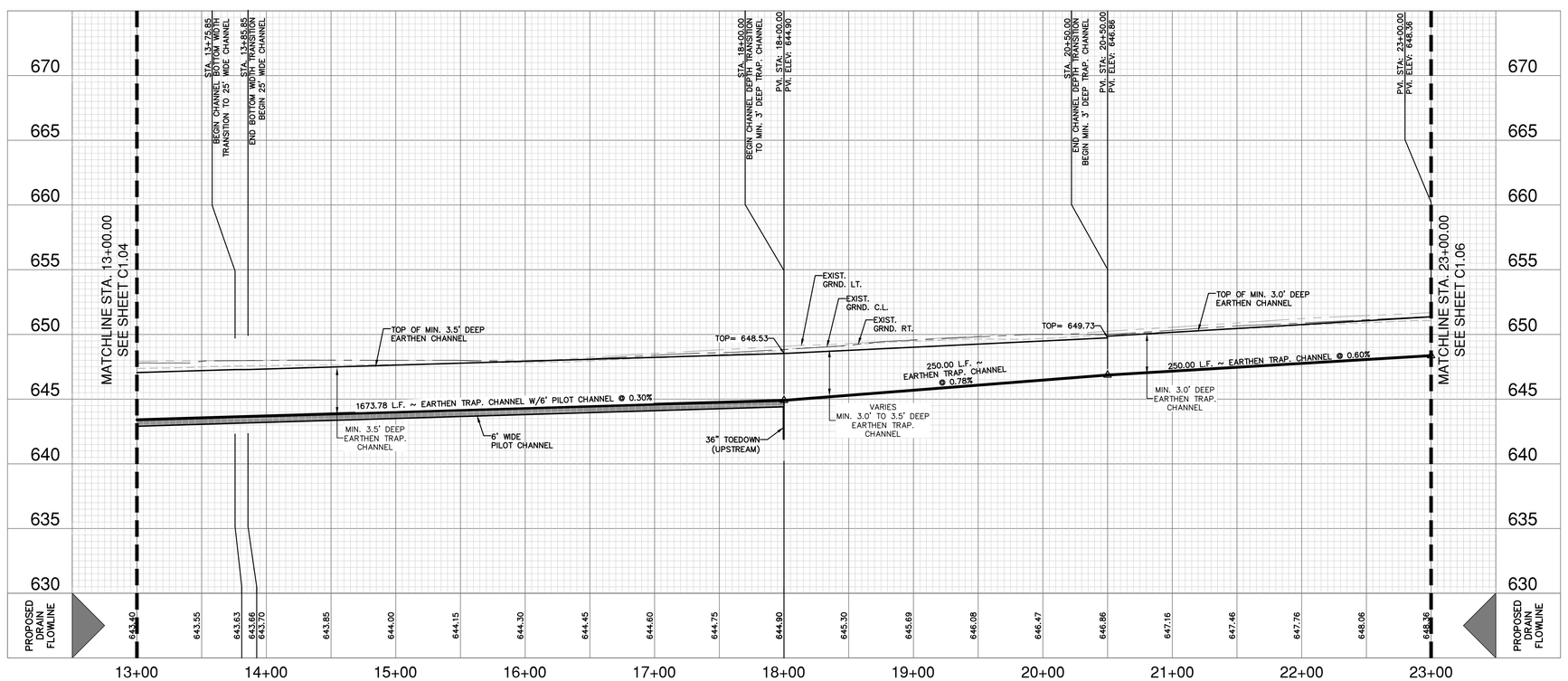


SECTION "C-C" & "D-D"
EARTHEN TRAP. CHANNEL
NOT-TO-SCALE



DRAIN "B" ~ STA. 13+00.00 TO 23+00.00

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



SCALE: 1"= 50'
0' 50' 100' 150'

DRAINAGE LEGEND

PROJECT LIMITS
EXISTING CONTOUR 690
PROPOSED WATER W
PROPOSED SEWER SS
PROPOSED STORM DRAIN
EXISTING STORM DRAIN
FLOW ARROW

HYDRAULIC CALCULATIONS EARTH TRAP. CHANNEL (SECTION A–A) STA. 9+25.00 TO 13+75.85	HYDRAULIC CALCULATIONS EARTH TRAP. CHANNEL (SECTION B–B) STA. 13+75.85 TO 18+00.00
Q25 = 422.99 CFS	Q25 = 390.31 CFS
Bw = 30'	Bw = 25'
n = 0.035	n = 0.035
S = 0.30%	S = 0.30%
D = 3.50'	D = 3.50'
dn = 2.78'	dn = 2.90'
V = 3.97 fps	V = 3.99 fps
τ_d = 0.42 LB/FT^2 RC= B,C,D	τ_d = 0.42 LB/FT^2 RC= B,C,D
HYDRAULIC CALCULATIONS EARTH TRAP. CHANNEL (SECTION C–C) STA. 18+00.00 TO 20+50.00	**HYDRAULIC CALCULATIONS EARTH TRAP. CHANNEL (SECTION D–D) STA. 20+50.00 TO 23+00.00**
Q25 = 390.31 CFS	Q25 = 390.31 CFS
Bw = 25'	Bw = 25'
n = 0.035	n = 0.035
S = 0.78%	S = 0.60%
D = 3.00'	D = 3.00'
dn = 2.23'	dn = 2.40'
V = 5.42 fps	V = 5.05 fps
τ_d = 0.88 LB/FT^2 RC= B,C	τ_d = 0.72 LB/FT^2 RC= B,C

OPEN CHANNEL NOTE:

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DRAINAGE CONSTRUCTION NOTES:

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DRAINAGE & GRADING NOTES:

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6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1–800–DIG–TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

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STATE OF TEXAS
JON D. ADAME
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STRAUS TRACT - SECONDARY ARTERIAL
SAN ANTONIO, TEXAS

DRAIN "B" ~ STA. 13+00.00 TO 23+00.00
DRAIN PLAN & PROFILE

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER CB
CHECKED JA DRAWN CB
SHEET C1.05

Date: Jan 15, 2025, 5:11pm User ID: crodriguez
File: P:\130\55\08\Design\Civil\SDA1 – 13055108.dwg

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

DRAINAGE CONSTRUCTION NOTES:

1. **ALL SINGLE BOX CULVERTS (SBC) SHALL BE PRE-CAST CONSTRUCTION.** (SEE SHEETS C1.13 FOR SBC PRE-CAST CONSTRUCTION DETAILS.)

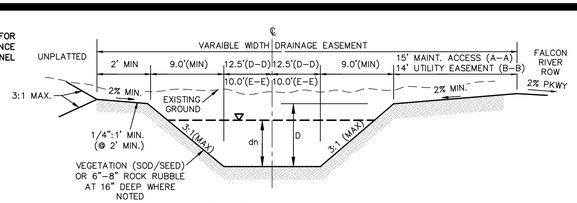
DRAINAGE & GRADING NOTES:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER EXISTING UTILITIES PRIOR TO CONSTRUCTION TO VERIFY SIZE, GRADE, AND LOCATION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
2. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
3. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
4. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
5. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING. 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.
6. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

OPEN CHANNEL NOTE:

CONTRACTOR SHALL REFERENCE TABLE 9.3.8.1 – "RETARDATION CLASS FOR LINING MATERIALS" PROVIDED ON SHEET C1.10 AND SUPPLIED RETARDANCE CLASS (RC) FOR CHOICE OF COVER WITHIN OPEN EARTHEN CHANNEL CROSS-SECTIONS.

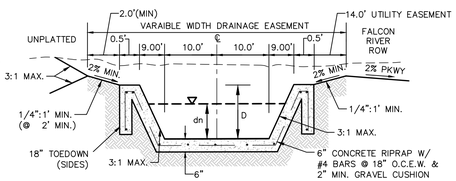
HYDRAULIC CALCULATIONS EARTH TRAP. CHANNEL (SECTION D-D) STA. 23+00.00 TO 24+23.93	HYDRAULIC CALCULATIONS EARTH TRAP. CHANNEL (SECTION E-E) STA. 24+23.93 TO 35+28.35
Q25 = 309.16 CFS	Q25 = 296.16 CFS
Bw = 25'	Bw = 20'
n = 0.035	n = 0.035
S = 0.50%	S = 0.50%
D = 3.00'	D = 3.00'
dn = 2.21'	dn = 2.41'
V = 4.42 fps	V = 4.51 fps
τ_d = 0.56 LB/FT^2 RC= B,C,D	τ_d = 0.58 LB/FT^2 RC= B,C,D



SECTION "D-D" & "E-E" EARTHEN TRAP. CHANNEL

NOT-TO-SCALE

HYDRAULIC CALCULATIONS ROCK TRAP. CHANNEL (SECTION E-E) STA. 35+28.35 TO 35+33.35	HYDRAULIC CALCULATIONS CONC. TRAP. CHANNEL (SECTION F-F) STA. 35+33.35 TO 35+42.35	HYDRAULIC CALCULATIONS EARTH TRAP. CHANNEL (SECTION E-E) STA. 35+42.35 TO END
Q25 = 296.16 CFS	Q25 = 296.16 CFS	Q25 = 104.81 CFS
Bw = 20'	Bw = 20'	Bw = 20'
n = 0.035	n = 0.015	n = 0.035
S = 0.50%	S = 0.50%	S = 0.50%
D = 3.00'	D = 3.00'	D = 3.00'
dn = 2.41'	dn = 1.50'	dn = 1.34'
V = 4.51 fps	V = 8.06 fps	V = 3.26 fps
τ_d = 0.58 LB/FT^2 RC= ROCK, D50=6IN 2.5 LB/FT^2		τ_d = 0.35 LB/FT^2 RC= B,C,D



SECTION "F-F" CONCRETE TRAP. CHANNEL

NOT-TO-SCALE

KEY LEGEND:

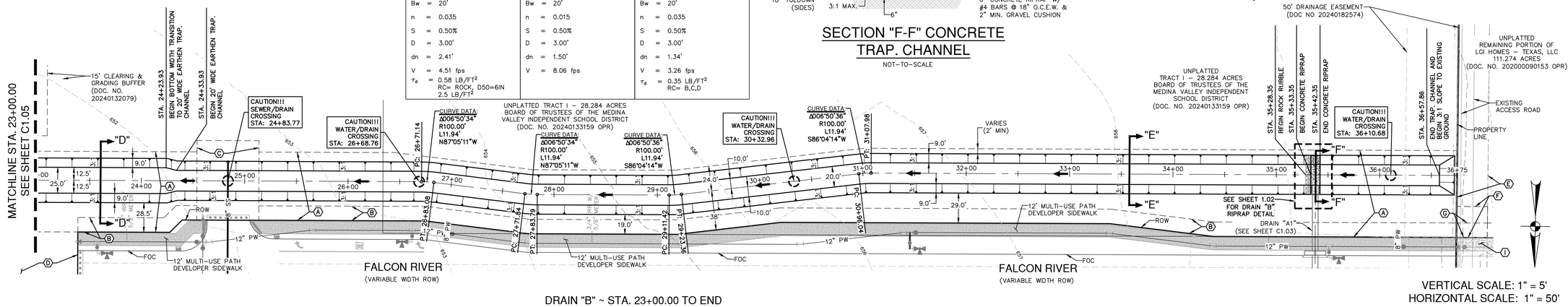
- Ⓐ VARIABLE WIDTH DRAINAGE EASEMENT (OFF-LOT)
- Ⓑ 14' LANDSCAPE, GAS, ELECTRIC, TELEPHONE AND CABLE TV EASEMENT (OFF-LOT)
- Ⓒ 60' ACCESS, SANITARY SEWER, WATER, DRAIN, GAS, ELECTRIC, TELEPHONE AND CABLE TV EASEMENT TO EXPIRE UPON INCORPORATION INTO PLATTED STREET RIGHT-OF-WAY (OFF-LOT)
- Ⓓ 98' ACCESS, SANITARY SEWER, WATER, DRAIN, GAS, ELECTRIC, TELEPHONE AND CABLE TV EASEMENT TO EXPIRE UPON INCORPORATION INTO PLATTED STREET RIGHT-OF-WAY (OFF-LOT)
- Ⓔ ELECTRICAL EASEMENT ACCESS EASEMENT (DOC NO 21040045268, VOL 16948, PG 595 OPR)
- Ⓕ VARIABLE WIDTH SANITARY SEWER EASEMENT CONCURRENT PLATTING (PLAT NO. 24-11800279)
- Ⓖ 14' LANDSCAPE, GAS, ELECTRIC, TELEPHONE AND CABLE TV EASEMENT CONCURRENT PLATTING (PLAT NO. 22-11800189)
- Ⓗ CURRENTLY NOT USED
- Ⓘ 12' MULTI-USE PATH CONCURRENT PLATTING (PLAT NO. 24-11800279) CONCURRENT CONSTRUCTION (REF. LUCERO AT LUCKEY RANCH UNIT 1A CONSTRUCTION PLANS)

SCALE: 1"= 50'

0' 50' 100' 150'

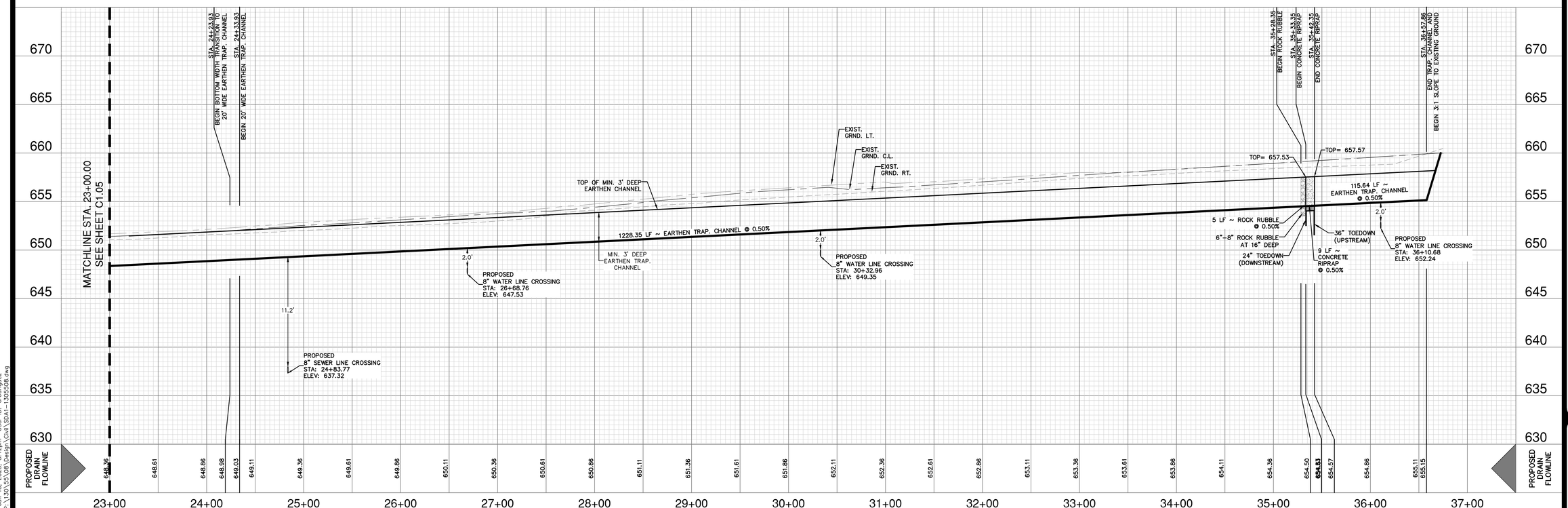
DRAINAGE LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR 690
- PROPOSED WATER W
- PROPOSED SEWER SS
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW



DRAIN "B" ~ STA. 23+00.00 TO END

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STATE OF TEXAS — JON D. ADAME — 82567 — LICENSED PROFESSIONAL ENGINEER

1-15-25

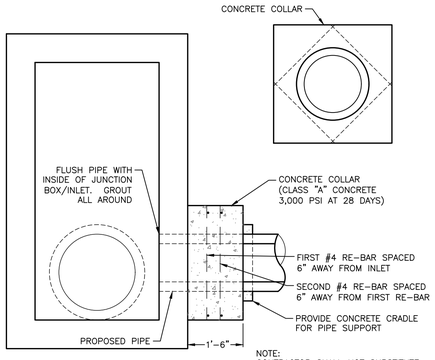
NO.	REVISION	DATE

STRAUS TRACT - SECONDARY ARTERIAL

SAN ANTONIO, TEXAS

DRAIN "B" ~ STA. 23+00.00 TO END
DRAIN PLAN & PROFILE

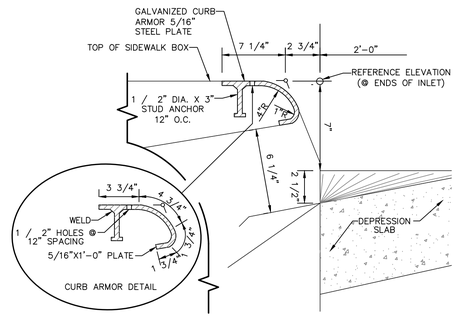
PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER CB
CHECKED JA DRAWN CB
SHEET C1.06



NOTE:
CONTRACTOR SHALL NOT SUBSTITUTE FLOWABLE FILL IN LIEU OF REINFORCED CONCRETE COLLARS.

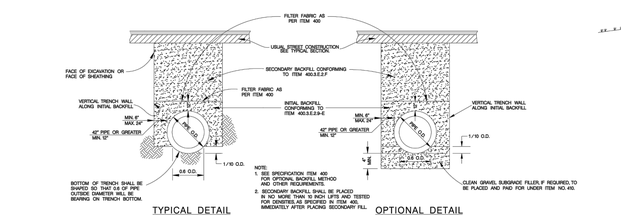
CONCRETE COLLAR DETAIL

NOT-TO-SCALE



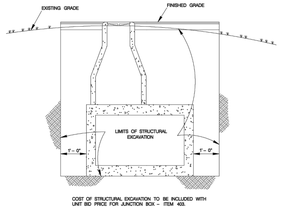
CURB ARMOR DETAIL

NOT-TO-SCALE



TYPICAL DETAIL — OPTIONAL DETAIL

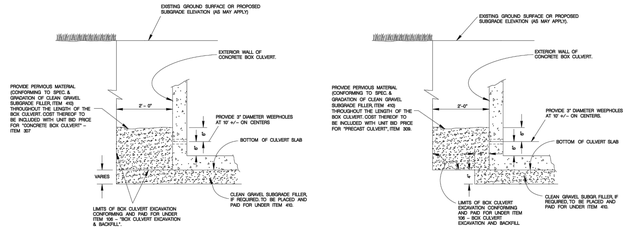
PIPE BEDDING & BACKFILL DETAILS



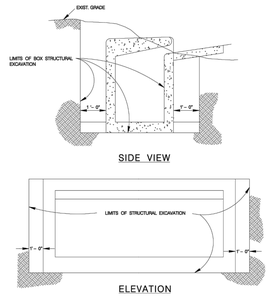
COST OF STRUCTURAL EXCAVATION TO BE INCLUDED WITH UNIT BID PRICE FOR JUNCTION BOX - ITEM 403.

STRUCTURAL EXCAVATION AT JUNCTION BOXES

NO SCALE



CONCRETE BOX CULVERT



COST OF STRUCTURAL EXCAVATION TO BE INCLUDED WITH UNIT BID PRICE FOR INLETS - ITEM 403.

STRUCTURAL EXCAVATIONS AT DRAINAGE INLETS

NO SCALE

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

PIPE BEDDING & MISCELLANEOUS DRAINAGE DETAILS

% SUBMITTAL PROJECT NO.: DATE:
DRWN. BY: DSGN. BY: CHKD. BY: SHEET NO.: OF

Table 9.3.8.1 - Retardation Class for Lining Materials
(Source TXDOT - Hydraulic Design Manual, Chapter 7, Section 3 - Roadside Channel Design

Retardance Class	Permissable Shear Stress (t) (lbs./sq.ft.)	Cover	Condition
B	2.1	Bermuda grass	Good stand, tall (average 12 in. or 305 mm)
		Native grass mixture little bluestem, bluestem, blue gamma, other short and long stem midwest grasses	Good stand, unmowed
		Lespedeza sericea	Good stand, not woody, tall (Average 19 in. or 480mm)
		Alfalfa	Good stand, uncut (Average 11in. or 280mm)
		Blue gamma	Good stand, uncut (Average 11in. or 280mm)
		Crabgrass	Fair stand, uncut (10-to48 in. or 55 -to- 1220 mm)
C	1.1	Bermuda grass	Good stand, mowed (averaage 6 in. or 150 mm)
		Common lespedeza	Good Stand, uncut (average 11 in . Or 280 mm)
		Grass-legume mixture: summer (orchard grass redtop, Italian ryegrass, and common Lespedeza)	Good Stand, uncut (6-8 in. or 150-200 mm)
		Centipede grass	Very dense cover (average 6 in. or 150 mm)
		Kentucky bluegrass	Good stand, headed (6-12 in. or 150 - 305 mm)
D	0.6	Bermuda grass	Good stand, cut to 2.5 in. or 65 mm
		Common lespedeza	Excellent stand, uncut (average 4.5 in. or 115 mm)
		Buffalo grass	Good stand, uncut (3-6 in. or 75-150 mm)
		Grass-legume mixture: fall, spring (orchard grass Italian ryegrass, and common lespedeza	Good stand, uncut (4-5 in. or 100-125 mm)
		Lespedeza sericea	After cutting to 2 in. or 50 mm (very good before cutting)
E	0.35	Bermuda grass	Good stand, cut to 1.5 in. or 40 mm
		Bermuda grass	Burned Stubble
	2.5	Rock D50 = 6 in. or 150 mm	
	5.0	Rock D50 = 12 in. or 300 mm	

NO. | REVISION | DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED PROFESSIONAL ENGINEER
12-31-24

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STRAUS TRACT - SECONDARY ARTERIAL
SAN ANTONIO, TEXAS

DRAIN DETAILS

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER –
CHECKED – DRAWN –
SHEET C1.10

Date: Dec 31, 2024, 4:03pm User ID: crodriguez
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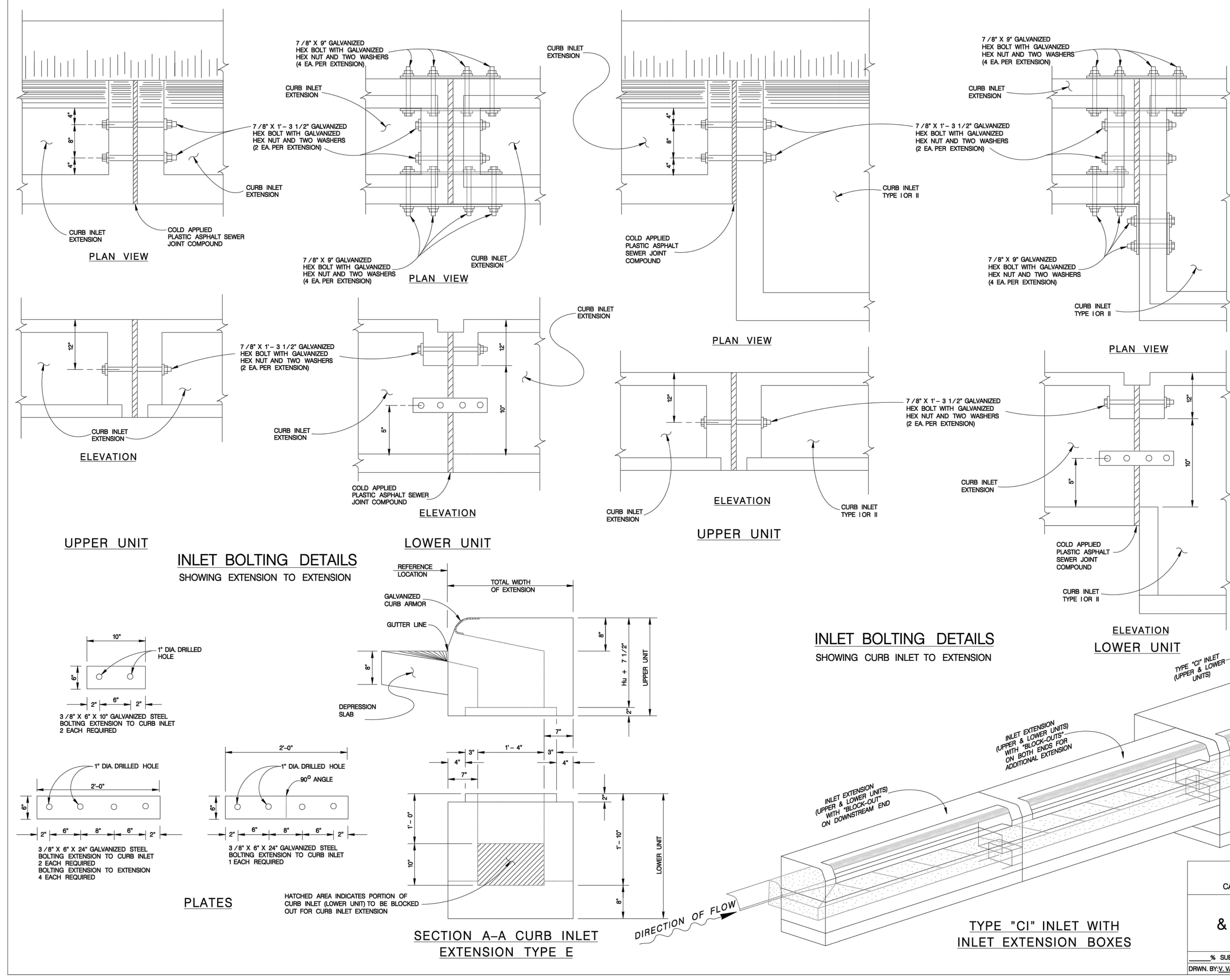


UPPER UNIT EXTENSION (FOR Hu = 11")					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	15' – 2"	41
B	3	#4	—	14' – 2"	28
C	3	#4	11"	13' – 2"	26
D	3	#4	6"	10' – 10"	22
E	8	#4	11"	1 '– 2"	6
F	21	#6	6"	2' – 0"	63
G	22	#6	6"	3' – 4"	110
H	4	#4	—	10' – 10"	29
J	12	#4	12"	3' – 6"	28
L	4	#4	—	2' – 0"	5
M	3	#4	—	14' – 8"	29
REINFORCING STEEL				LBS.	387
CLASS "A" CONCRETE				C.Y.	1.0

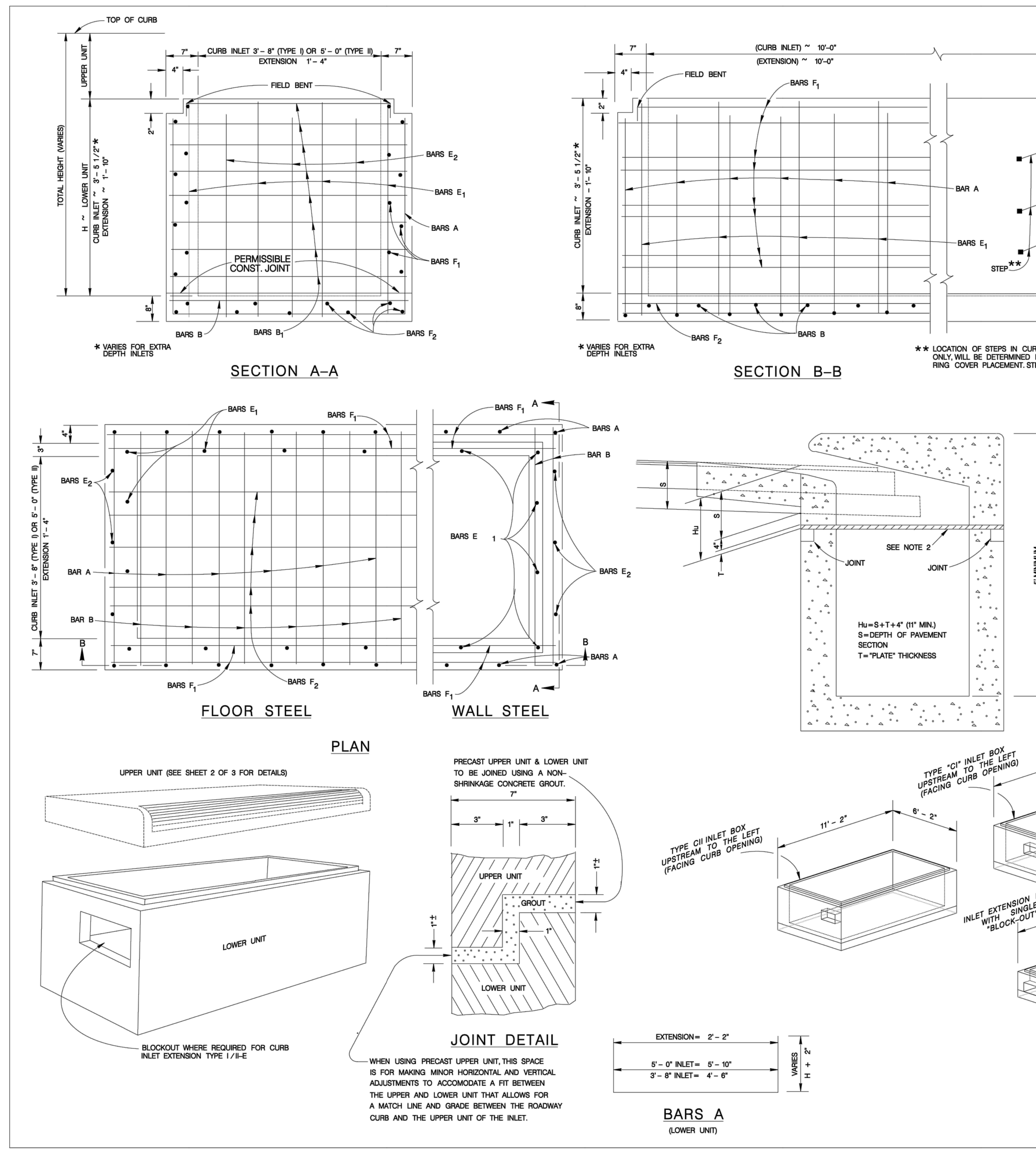
LOWER UNIT EXTENSION					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	12	#4	12"	6' – 2"	49
B	11	#4	12"	2' – 2"	16
B_1	3	#4	12"	2' – 2"	4
E_1	18	#4	18" ±	2' – 3"	27
E_2	4	#4	18" ±	2' – 1"	6
F_1	16	#4	12" ±	10' – 10"	116
F_2	5	#4	—	10' – 10"	36
REINFORCING STEEL				LBS.	254
CLASS. "A" CONCRETE				C.Y.	1.4

GENERAL NOTES

1. WHEN INLET EXTENSIONS ARE REQUIRED FOR ON GRADE INLETS THE EXTENSION(S) SHALL BE PLACED ON THE UPSTREAM END OF THE INLET.
2. FOR CURB INLET EXTENSION REINFORCING STEEL, NOTES & VARIOUS OTHER APPLICABLE DETAILS NOT FOUND ON THIS SHEET, REFER TO SHEETS 1 & 2.

MAY 2009
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT
TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS
SHEET 3 OF 3

___% SUBMITTAL	PROJECT NO.:		DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY: L.E. MALTOS, P.E.	CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO.:___OF___



** LOCATION OF STEPS IN CURB INLET (LOWER UNIT) ONLY, WILL BE DETERMINED BY THE LOCATION OF RING COVER PLACEMENT. STEPS @ 15" O.C.

REINFORCING STEEL

LOWER UNIT 10' X 3' – 8" (TYPE I)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	4'–6"
B_1	VARIES	#4	12"	4'–6"
E_1	20	#4	18" ±	VARIES
E_2	6	#4	18" ±	VARIES
F_1	VARIES	#4	12" ±	10'–10"
F_2	9	#4	—	10'–10"

LOWER UNIT 10' X 5' – 0" (TYPE II)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	5'–10"
B_1	VARIES	#4	12"	5'–10"
E_1	22	#4	18" ±	VARIES
E_2	8	#4	18" ±	VARIES
F_1	VARIES	#4	12" ±	10'–10"
F_2	11	#4	—	10'–10"

GENERAL NOTES

1. 5' INLETS AND 5' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE E (IL–C).
2. TYPE C–II INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS IN–LINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
3. QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
4. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
5. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
6. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 1 1/2".
7. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A–615, GRADE 60 REQUIREMENTS.
8. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3 /4".
9. DEPRESSION SLAB SHALL RECEIVE A WOOD FLOAT FINISH.
10. FACE OF INLET TO CONFORM TO FACE OF CURB LINE.
11. ALL BARS INTERCEPTING MANHOLE RING & COVER SHALL BE CUT OR BENT.
12. PAYMENT FOR ALL EXCAVATION, BACK–FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER, CURB ARMOR AND STEPS SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".
13. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
14. GALVANIZED BOLTS, NUTS, WASHERS, PLATES AND GASKETS ARE SUBSIDIARY TO INLETS.
15. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE MEANS TO LIFT AND PLACE THE INLETS, WHEN USING PRECAST UNITS.
16. ALL BARS AT PIPE BLOCKOUT LOCATIONS SHALL BE CUT OR BEND.
17. ALL LOWER UNITS SHALL RECEIVE INVERT MORTAR SHAPING.
18. PIPE BLOCKOUTS IN INLET WALLS SHOULD NOT EXCEED 3" BEYOND THE OUTER SHELL OF THE PIPE, TAKING INTO ACCOUNT THE SKEW OF THE PIPE AS NECESSARY. CONSTRUCTION JOINT MAY BE RAISED A MAXIMUM OF 6".

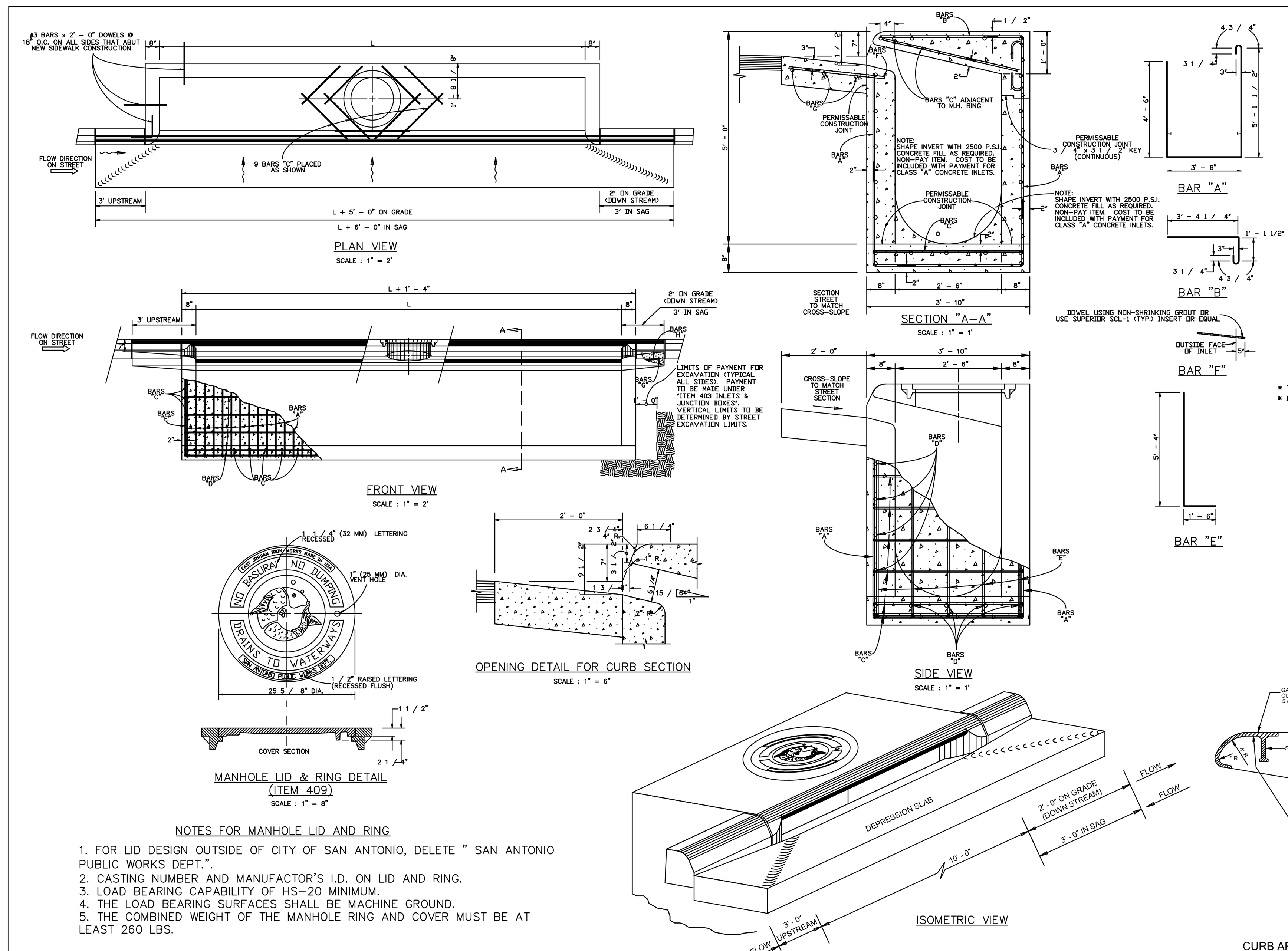
PHASE CONSTRUCTION

NOTES FOR PHASE CONSTRUCTION (WHEN DIRECTED BY THE ENGINEER):

1. THE CURB INLET AND EXTENSION SHALL BE CONSTRUCTED TO A DEPTH "Hu" BELOW THE INLET AND EXTENSION GUTTER LINE ELEVATION.
2. CAP THE CURB INLET AND EXTENSION WITH A STEEL PLATE APPROVED BY THE ENGINEER AND CONSTRUCT THE ROADWAY OVER THE PLATE.
3. AFTER THE ROADWAY IS COMPLETED, BUT PRIOR TO THE FINAL HMAC OVERLAY, SAW CUT THE PAVEMENT, REMOVE THE PLATE AND COMPLETE THE UPPER PORTION OF THE CURB INLET AND /OR EXTENSION.

MAY 2009
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT
TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS
SHEET 1 OF 3

___% SUBMITTAL	PROJECT NO.:		DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY: L.E. MALTOS, P.E.	CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO.:___OF___



L	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=10' – 0"	A	27	4	5" O.C.	13' – 9 1/2"	249
	B	27	4	5" O.C.	5' – 1 3/4"	93
	C	37	4	9" O.C.	3' – 6"	87
	D	22	4	10" O.C.	11' – 1"	163
	E	10	4	10 1/2" O.C.	6' – 10"	46
	F	12	5	12" O.C.	2' – 3"	27
	G	3	4	12" O.C.	14' – 8"	30
	H	5	5	12" O.C.	1' – 8"	9

* CONCRETE TOTAL=5.75 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=704 LBS.

L	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=15' – 0"	A	39	4	5" O.C.	13' – 9 1/2"	359
	B	39	4	5" O.C.	5' – 1 3/4"	134
	C	43	4	9" O.C.	3' – 6"	101
	D	22	4	10" O.C.	16' – 1"	236
	E	10	4	10 1/2" O.C.	6' – 10"	46
	F	17	5	12" O.C.	2' – 3"	38
	G	3	4	12" O.C.	19' – 8"	40
	H	5	5	12" O.C.	1' – 8"	9

* CONCRETE TOTAL=7.97 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=963 LBS.

L	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=20' – 0"	A	51	4	5" O.C.	13' – 9 1/2"	470
	B	51	4	5" O.C.	5' – 1 3/4"	175
	C	50	4	9" O.C.	3' – 6"	117
	D	22	4	10" O.C.	21' – 1"	310
	E	10	4	10 1/2" O.C.	6' – 10"	46
	F	22	5	12" O.C.	2' – 3"	50
	G	3	4	12" O.C.	24' – 8"	50
	H	5	5	12" O.C.	1' – 8"	9

* CONCRETE TOTAL=10.19 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=1227 LBS.

L	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=25' – 0"	A	63	4	5" O.C.	13' – 9 1/2"	580
	B	63	4	5" O.C.	5' – 1 3/4"	217
	C	57	4	9" O.C.	3' – 6"	133
	D	22	4	10" O.C.	26' – 1"	383
	E	10	4	10 1/2" O.C.	6' – 10"	46
	F	27	5	12" O.C.	2' – 3"	61
	G	3	4	12" O.C.	24' – 8"	60
	H	5	5	12" O.C.	1' – 8"	9

* CONCRETE TOTAL=12.41 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=1489 LBS.

* THESE FIGURES DO NOT EXCLUDE CONCRETE & STEEL INTERCEPTED BY MANHOLE AND REINFORCED CONC. PIPE.
* INCLUDES CONCRETE GUTTER FOR ON GRADE INLET. REDUCE BY .05 C.Y. FOR INLETS IN SUMP.

GENERAL NOTES:

1. ALL BARS INTERCEPTING MANHOLE RING & REINFORCING CONCRETE PIPE SHALL BE FIELD CUT.
2. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER BARS.
4. ALL EXPOSED CORNERS SHALL BE CHAMFERED TO 3 / 4"
5. CONSTRUCTION JOINT SHOWN AT FLOWLINE MAY BE RAISED A MAXIMUM OF 6" AT THE. CONTRACTOR'S DISCRETION. ADJUST LENGTH OF VERTICAL STEEL AS REQUIRED.
6. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A–615, GRADE 60 REQUIREMENTS.
7. INVERT OF DROP INLET TO BE SHAPED WITH CONCRETE FILL TO AFFECT DRAINAGE TO OUTLET PIPE.
8. DELETE 4 "C" BARS FROM SCHEDULE QUANTITIES IF MANHOLE RING AND COVER ARE PLACED AT END OF INLET.
9. CAST IRON MANHOLE RING AND COVER TO BE PLACED NEXT TO OUTLET PIPE, EXCEPT FOR VERTICAL OUTLET PIPE IN WHICH CASE MANHOLE RING AND COVER WILL BE OFFSET.
10. PAYMENT FOR ALL EXCAVATION, BACK FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 "STORM SEWER JUNCTION BOXES AND INLETS".

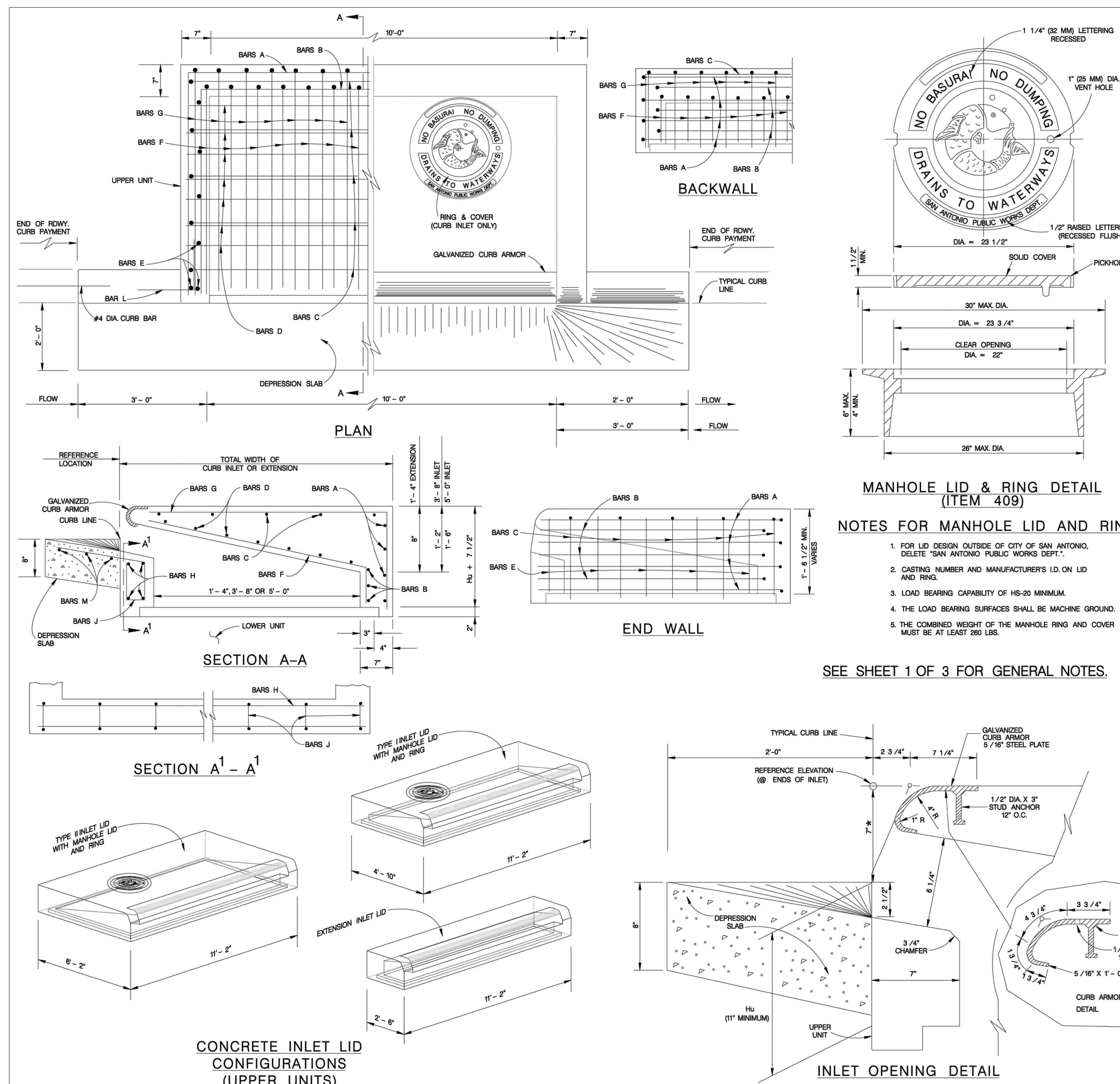
NOTES FOR MANHOLE LID AND RING

1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE " SAN ANTONIO PUBLIC WORKS DEPT.".
2. CASTING NUMBER AND MANUFACTOR'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS–20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.

CURB INLET DETAILS
N.T.S.

STANDARD PLANS
CITY OF SAN ANTONIO, TEXAS
DEPARTMENT OF PUBLIC WORKS
TYPE "C" INLET STANDARDS

DRAWN BY: V. VASQUEZ
CHECKED BY: MAT HARDY, P.E.
SCALE: SEE ABOVE



NOTES FOR MANHOLE LID AND RING

SEE SHEET 1 OF 3 FOR GENERAL NOTES.

REINFORCING STEEL (FOR Hu=11")

UPPER UNIT 10' X 3'–8" (TYPE I)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	19'–10"	53
B	3	#4	—	18'–10"	38
C	5	#4	11"	13'–2"	44
D	7	#4	6"	10'–10"	51
E	12	#4	11"	1'–2"	9
F	21	#6	6"	4'–8"	147
G	22	#6	6"	5'–8"	187
H	4	#4	—	10'–10"	29
J	12	#4	12"	3'–6"	28
L	4	#4	—	2'–0"	5
M	3	#4	—	14'–8"	29
TOTAL WEIGHT					620 LBS.

UPPER UNIT 10' X 5' (TYPE II)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	22'–6"	60
B	3	#4	—	21'–6"	43
C	7	#4	11"	13'–2"	62
D	11	#4	6"	10'–10"	80
E	16	#4	11"	1'–2"	13
F	21	#6	6"	5'–8"	179
G	22	#6	6"	7'–0"	231
H	4	#4	—	10'–10"	29
J	12	#4	12"	3'–6"	28
L	4	#4	—	2'–0"	5
M	3	#4	—	14'–8"	29
TOTAL WEIGHT					759 LBS.

CLASS "A" CONCRETE QUANTITIES (FOR Hu = 11")

DEPRESSION SLAB	C.Y.
10' INLET	0.7
10' EXTENSION	0.7

UPPER UNIT (ONLY)	C.Y.
10' X 3'–8" CURB INLET	1.9
10' X 5'–0" CURB INLET	2.7
10' EXTENSION	1.0

BARS A (UPPER UNIT) — BARS B (UPPER UNIT) — BAR C (UPPER UNIT) — BAR F (UPPER UNIT) — BAR G (UPPER UNIT) — BAR J (UPPER UNIT) — BAR L (UPPER UNIT)

MAY 2009
CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT
TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS
SHEET 2 OF 3

___% SUBMITTAL	PROJECT NO.:		DATE:
DRWN. BY: V. VASQUEZ	DSGN. BY: L.E. MALTOS, P.E.	CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO.:___OF___

*ALL CURB INLETS TO BE INSTALLED WITH CURB ARMOR
(SEE SHEET C1.10 FOR CURB ARMOR DETAILS)

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
12-31-24

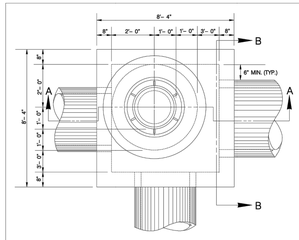
PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STRAUS TRACT - SECONDARY ARTERIAL
SAN ANTONIO, TEXAS

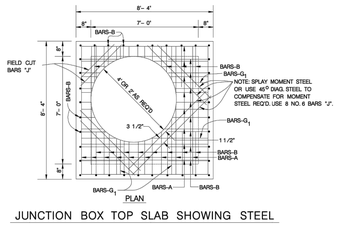
DRAIN DETAILS

PLAT NO. 24-11800322
JOB NO. 13055–08
DATE NOVEMBER 2024
DESIGNER –
CHECKED – DRAWN –
SHEET C1.11

Date: Dec 31, 2024, 4:04pm User ID: crodriguez
File: P:\130\55\08\Design\Civil\SD0T-1305508.dwg

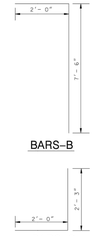


PLAN



PLAN

JUNCTION BOX TOP SLAB SHOWING STEEL



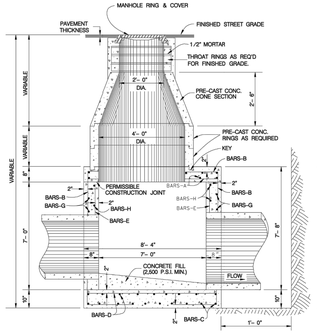
SCHEDULE FOR REINFORCING STEEL

SHAPE	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
STRAIGHT	A	24	4	9" O.C.	8'- 1"	130
	B	48	5	8" O.C.	9'- 6"	476
	C	48	5	8" O.C.	4'- 3"	213
STRAIGHT	D	24	4	9" O.C.	8'- 1"	130
STRAIGHT	E	28	3	12" O.C.	6'- 11"	73
STRAIGHT	G	28	4	12" O.C.	8'- 6"	151
STRAIGHT	G_1	9	4	AS SHOWN	8'- 1"	43
STRAIGHT	H	32	3	12" O.C.	7'- 5"	89
STRAIGHT	J	8	6	3 1/2" O.C.	4'- 11"	59
					TOTAL	1,364 LBS.

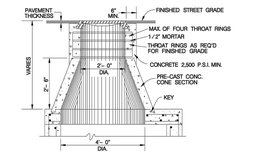
CLASS "A" CONCRETE - 9.16 C.U. YDS.
(DOES NOT EXCLUDE MANHOLE OPENINGS OR PIPE OPENING)

★ NOTE: BAR SIZE AND SPACING BASED ON SPANS AS SHOWN - ANY REVISIONS TO THESE SPANS SHALL INCLUDE A RE-DESIGN ON STEEL REQD.

1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A" 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM A-15, THE DEFORMATION SHALL CONFORM TO ASTM A-305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
5. ALL BARS INTERCEPTING MANHOLE OPENING AND REINFORCED CONCRETE PIPE SHALL BE FIELD-CUT.
6. WHERE LAPPING OF BARS IS REQUIRED, A MINIMUM LAP OF 33 DIAMETERS SHALL BE USED.
7. INVERT OF JUNCTION BOX TO BE SHAPED WITH CONCRETE FILL (2,500 P.S.I. MIN.) TO EFFECT DRAINAGE TO OUTLET PIPE. COST SUBSIDIARY TO CLASS "A" CONCRETE (JUNCTION BOXES).
8. PAYMENT FOR ALL EXCAVATION, BACKFILLING, CONCRETE, REINFORCING STEEL, VERTICAL STACK, RING AND COVER SHALL BE INCLUDED IN THE UNIT COST OF ITEM 403 - "STORM SEWER JUNCTION BOXES AND INLETS".

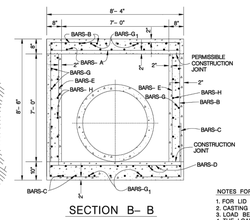


SECTION A-A

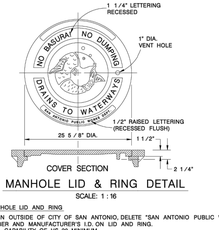


VARIATION OF VERTICAL STACK

VERTICAL STACK DESIGN SHALL BE GOVERNED BY THE DEPTH OF THE TOP OF THE JUNCTION BOX BELOW THE FINISHED STREET GRADE.



SECTION B- B

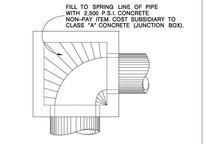


MANHOLE LID & RING DETAIL

SCALE: 1 : 16

NOTES FOR MANHOLE LID AND RING

1. FOR LID DESIGN OUTSIDE OF CITY OF SAN ANTONIO, DELETE "SAN ANTONIO PUBLIC WORKS DEPT."
2. CASTING NUMBER AND MANUFACTURER'S I.D. ON LID AND RING.
3. LOAD BEARING CAPABILITY OF HS-20 MINIMUM.
4. THE LOAD BEARING SURFACES SHALL BE MACHINE GROUND.
5. THE COMBINED WEIGHT OF THE MANHOLE RING AND COVER MUST BE AT LEAST 260 LBS.



CURVED DEFLECTOR DETAIL

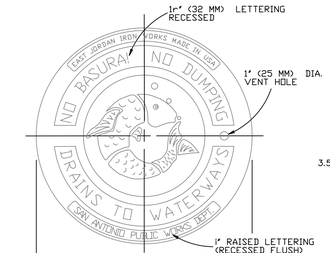
JANUARY 2005

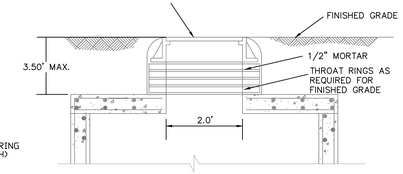
CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

7'x7'x7' JUNCTION BOX STANDARDS

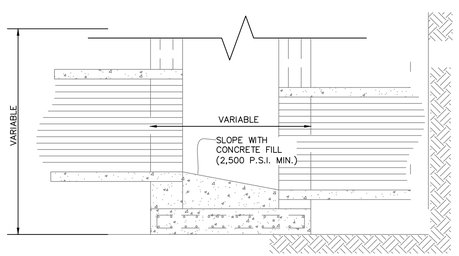
N SUBMITTAL	PROJECT NO.	DATE	
DRAWN BY	DESIGN BY	CHKD. BY	SHEET NO. OF





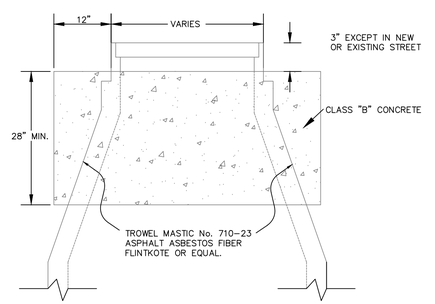
JUNCTION BOX MANHOLE DETAIL

NOT-TO-SCALE



GROUTED INVERT DETAIL

NOT-TO-SCALE



MANHOLE CONE SECTION

NOT-TO-SCALE

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
12-31-24

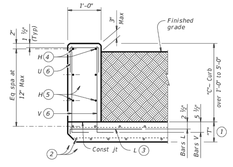
PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100288-00

STRAUS TRACT - SECONDARY ARTERIAL

SAN ANTONIO, TEXAS

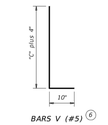
DRAIN DETAILS

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER –
CHECKED – DRAWN –
SHEET C1.12

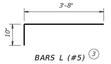


TYPICAL SECTION

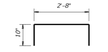
Used for curbs over 1'-0" to 5'-0"



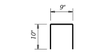
BARS V (#5) (6)
Spaced at 12" Max



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

TABLE OF ESTIMATED CURB QUANTITIES (8)

Curb Height "C"	Conc (CY/LF)	Reinf Steel (lb/LF)
1'-0"	0.037	10.4
1'-4"	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

(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).

CONSTRUCTION NOTES:
Adjust reinforcing steel as necessary to provide 1 ½" cover. For vehicle safety, the 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'-0" 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-CH 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.

Texas Department of Transportation | Bridge Division Standard

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

ECD

File: CD-ECD-20.dgn	ck: GAF	dw: TxDOT	ck: TxDOT	dw: TxDOT	ck: GAF
©TxDOT February 2020	CONT	SECT	JOB		HIGHWAY
REVISIONS	DIST	COUNTY			SHEET NO.

DATE:
FILE:

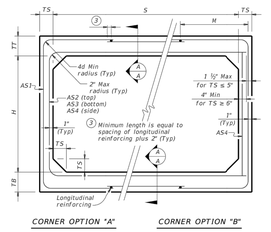
BOX DATA

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)
5	2	8	7	6	< 2	–	0.19	0.27	0.18	0.14	0.19	0.19	0.17	6.0
5	2	6	6	6	2 < 3	44	0.22	0.20	0.16	0.14	–	–	–	5.1
5	2	6	6	6	3 – 5	44	0.16	0.14	0.14	0.14	–	–	–	5.1
5	2	6	6	6	10	36	0.15	0.14	0.14	0.14	–	–	–	5.1
5	2	6	6	6	15	36	0.20	0.18	0.18	0.14	–	–	–	5.1
5	2	6	6	6	20	36	0.26	0.23	0.24	0.14	–	–	–	5.1
5	2	6	6	6	25	36	0.33	0.29	0.29	0.14	–	–	–	5.1
5	2	6	6	6	30	36	0.39	0.34	0.35	0.14	–	–	–	5.1
5	3	8	7	6	< 2	–	0.19	0.31	0.21	0.14	0.19	0.19	0.17	6.6
5	3	6	6	6	2 < 3	45	0.18	0.24	0.19	0.14	–	–	–	5.7
5	3	6	6	6	3 – 5	36	0.14	0.17	0.16	0.14	–	–	–	5.7
5	3	6	6	6	10	36	0.14	0.16	0.17	0.14	–	–	–	5.7
5	3	6	6	6	15	35	0.16	0.21	0.22	0.14	–	–	–	5.7
5	3	6	6	6	20	35	0.21	0.27	0.28	0.14	–	–	–	5.7
5	3	6	6	6	25	35	0.26	0.34	0.34	0.14	–	–	–	5.7
5	3	6	6	6	30	35	0.31	0.41	0.41	0.14	–	–	–	5.7
5	4	8	7	6	< 2	–	0.19	0.33	0.24	0.14	0.19	0.19	0.17	7.2
5	4	6	6	6	2 < 3	45	0.16	0.27	0.22	0.14	–	–	–	6.3
5	4	6	6	6	3 – 5	45	0.14	0.19	0.18	0.14	–	–	–	6.3
5	4	6	6	6	10	36	0.14	0.18	0.18	0.14	–	–	–	6.3
5	4	6	6	6	15	35	0.14	0.23	0.24	0.14	–	–	–	6.3
5	4	6	6	6	20	35	0.17	0.30	0.31	0.14	–	–	–	6.3
5	4	6	6	6	25	35	0.21	0.37	0.38	0.14	–	–	–	6.3
5	4	6	6	6	30	35	0.25	0.44	0.45	0.14	–	–	–	6.3
5	5	8	7	6	< 2	–	0.19	0.35	0.26	0.14	0.19	0.19	0.17	7.8
5	5	6	6	6	2 < 3	45	0.14	0.29	0.24	0.14	–	–	–	6.9
5	5	6	6	6	3 – 5	45	0.14	0.21	0.20	0.14	–	–	–	6.9
5	5	6	6	6	10	45	0.14	0.19	0.20	0.14	–	–	–	6.9
5	5	6	6	6	15	36	0.14	0.24	0.25	0.14	–	–	–	6.9
5	5	6	6	6	20	35	0.15	0.31	0.32	0.14	–	–	–	6.9
5	5	6	6	6	25	35	0.18	0.38	0.39	0.14	–	–	–	6.9
5	5	6	6	6	30	35	0.21	0.46	0.47	0.14	–	–	–	6.9

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

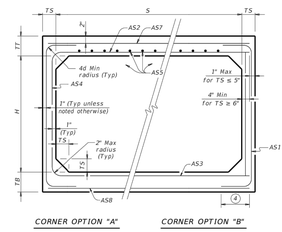
(2) AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.

DATE:
FILE:



CORNER OPTION "A" CORNER OPTION "B"

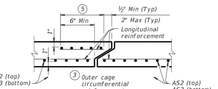
FILL HEIGHT 2 FT AND GREATER



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.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details 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)."

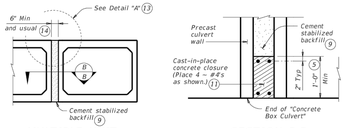
HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 5'-0" SPAN

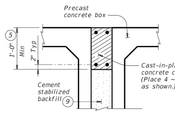
SCP-5

File: CD-SCP05-20.dgn	ck: TxDOT	dw: TxDOT	ck: TxDOT	dw: TxDOT	ck: TxDOT
©TxDOT February 2020	CONT	SECT	JOB		HIGHWAY
REVISIONS	DIST	COUNTY			SHEET NO.

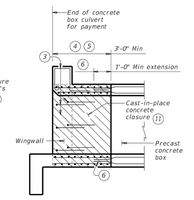


MULTIPLE UNIT PLACEMENT

SECTION B-B



DETAIL "A" (13)



WINGWALL CONNECTION

(Also applies to safety end treatment.)

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-CH) 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.

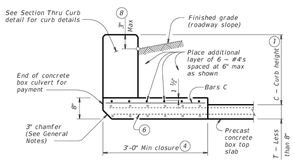
10 All curb concrete and reinforcing is considered part of the box culvert for payment.

11 Any additional concrete and reinforcing required for the closures will be considered subsidiary to the box culvert for payment.

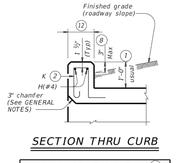
12 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elsewhere in the plans.

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.

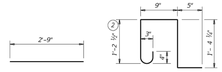


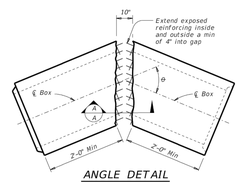
SECTION THRU TOP SLABS LESS THAN 8"



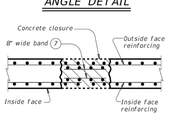
SECTION THRU CURB

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

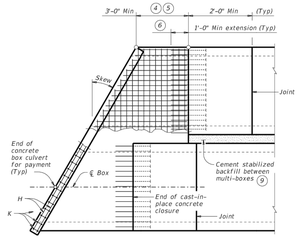




ANGLE DETAIL



SECTION A-A



PLAN OF SKEWED ENDS

(Showing multi-box placement.)

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

File: CD-SCP-MD-20.dgn	ck: GAF	dw: LRW	ck: BWH/TxDOT	ck: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

DATE:
FILE:

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
1-15-25

STRAUS TRACT - SECONDARY ARTERIAL
SAN ANTONIO, TEXAS

DRAIN DETAILS

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER –
CHECKED – DRAWN –
SHEET C1.13

Date: Jan 15, 2025, 5:13pm User ID: crodriguez
File: P:\130\55\08\Design\Civil\SDDT-130558.dwg

STREET NOTES:

1. A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.
2. CONTRACTOR SHALL MATCH EXISTING PAVEMENT AT TIE-IN. IF EXISTING PAVEMENT ELEVATION DIFFERS SIGNIFICANTLY, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.
3. SIDEWALKS SHALL BE CONSTRUCTED 3-FT FROM THE BACK OF CURB FOR ALL 6' SIDEWALKS AND 5' FROM FACE OF CURB FOR ALL 12' MULTI-USE PATHS WHERE THE SIDEWALK IS SHOWN OFFSET. REFER TO STREET DETAIL SHEET FOR SIDEWALK AND RAMP DETAILS.
4. NO PERMANENT STRUCTURES HIGHER THAN 3 FEET, AND LOWER THAN 8 FEET ABOVE THE PAVEMENT, INCLUDING STRUCTURES, WALLS, FENCES, AND VEGETATION, SHALL BE CONSTRUCTED OR ALLOWED WITHIN THE CLEAR VISION EASEMENT. CONTRACTOR SHALL GRADE AREAS WITHIN CLEAR VISION EASEMENTS SUCH THAT THE ELEVATION WITHIN THE CLEAR VISION EASEMENT IS NOT HIGHER THAN 3 FEET ABOVE THE ADJACENT TOP OF PAVEMENT.
5. DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.
6. CHANGES IN THE SIDEWALK LOCATION FOR A MAXIMUM LINEAR DISTANCE OF TWO HUNDRED (200) FEET ARE PERMITTED TO BE APPROVED BY THE FIELD INSPECTOR WITHOUT AMENDING THE STREET PLAN OR UTILITY LAYOUT PER UDC SECTION 35-506 (Q)(6).
7. ALL STRIPING TO BE THERMOPLASTIC

SIDEWALK NOTE:

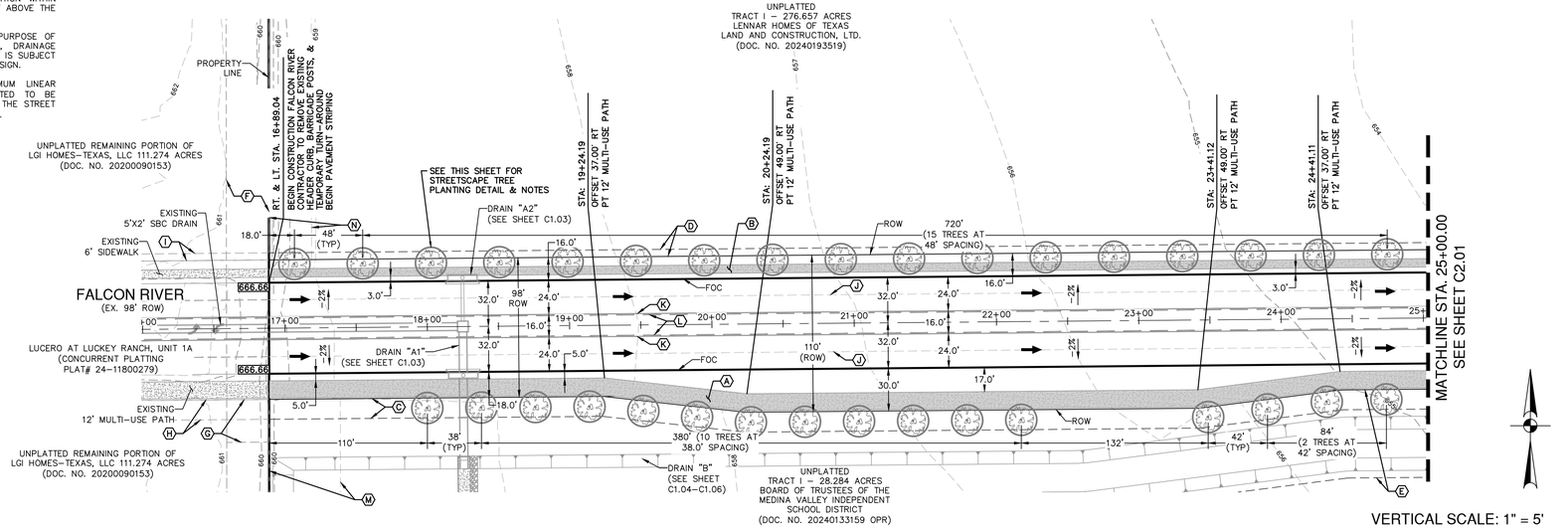
THE CONSTRUCTION OF SIDEWALKS ADJACENT TO ALL 900 SERIES LOTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER AS SHOWN ON THE OVERALL SIGNAGE PLAN (SHEET C3.00). REFER TO SHEET C3.00 FOR LOCATIONS OF SIDEWALK CONSTRUCTION WHERE SIDEWALKS ARE NOT SHOWN

STREET SELECT FILL NOTE:

FILL MATERIAL SHOULD BE NATIVE ON-SITE MATERIAL, FREE OF DELETERIOUS MATERIAL WITH A MINIMUM CBR VALUE OF 2.5 AND A MAXIMUM PLASTICITY INDEX (PI) VALUE OF 50. LIME APPLICATION RATES SHOULD BE RE-EVALUATED AND TESTED FOR SULFATE CONTENT PRIOR TO USE. THE FILL SHOULD BE COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY TxDOT-114-E, WITHING ±2 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT. THE MATERIAL SHOULD BE PLACED AS PER APPLICABLE CITY OF SAN ANTONIO CONSTRUCTION GUIDELINES.

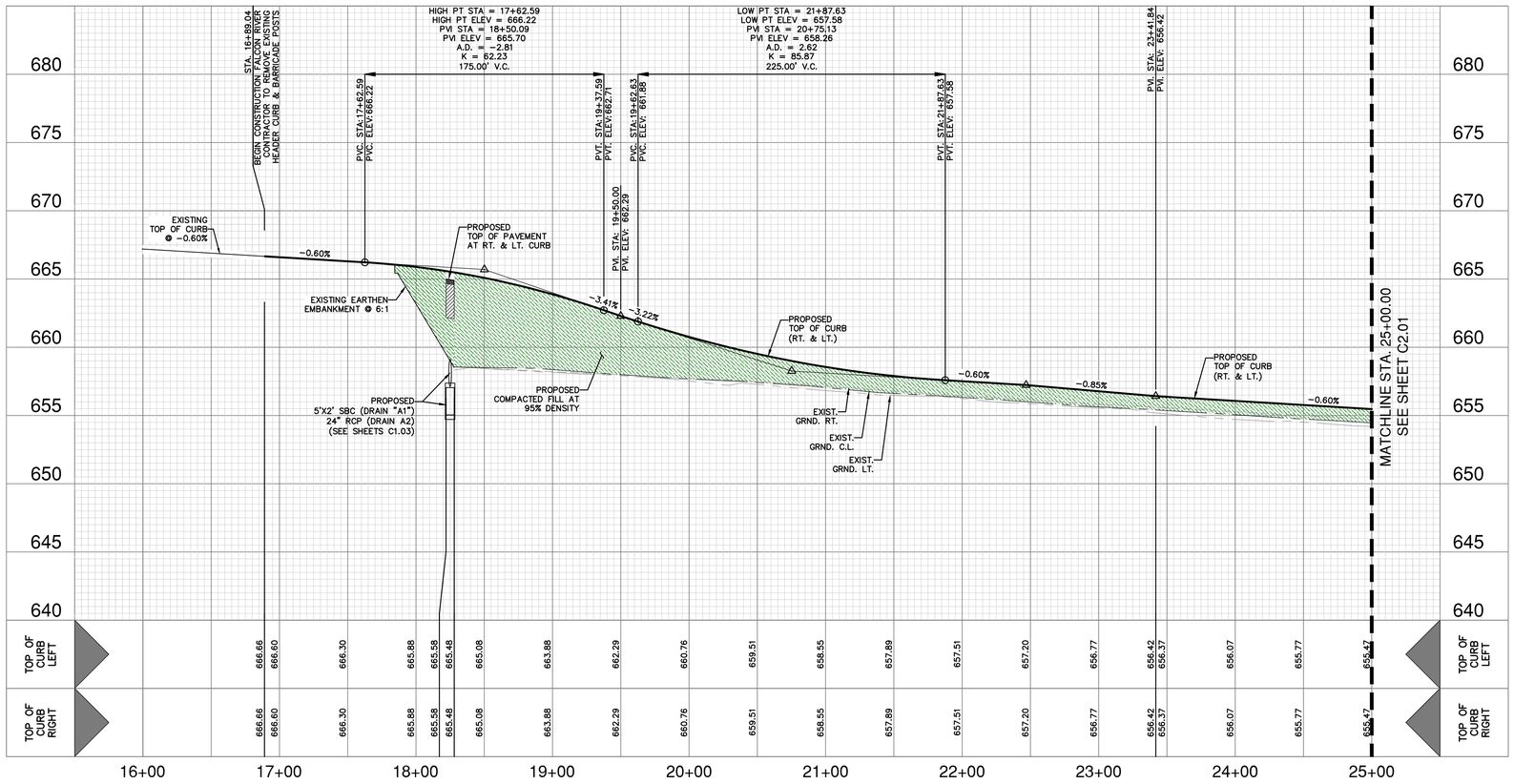
WHEEL CHAIR NOTE:

1. WHEEL CHAIR RAMPS (WCR) TO BE CENTERED ON STATION NOTED BELOW. ELEVATION SHOWN ARE TOP OF CURB AND NOT GUTTER
2. REFERENCE PED-18 DETAIL ON STREET DETAIL SHEET C2.11 FOR TYPE-7 WCR



VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'

FALCON RIVER ~ STA. 16+89.04 TO STA. 25+00.00



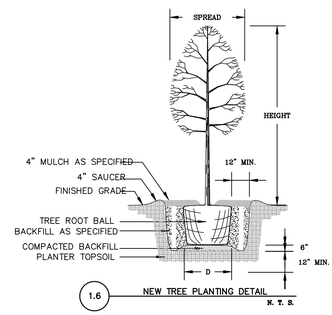
SCALE: 1"= 50'
0' 50' 100' 150'

STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	Ⓘ WCR
TYPE 7 WHEELCHAIR RAMP (SEE PED-18 DETAIL SHEET C2.11)	T-7
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (HOMEBUILDER RESPONSIBILITY)	
SIDEWALK (SEE SHEET C3.00 FOR DEVELOPER RESPONSIBILITY)	
DRIVEWAY	

KEY LEGEND:

- Ⓐ 12' MULTI-USE PATH DEVELOPER SIDEWALK
- Ⓑ 6' DEVELOPER SIDEWALK
- Ⓒ 14' LANDSCAPE, GAS, ELECTRIC, TELEPHONE AND CABLE TV EASEMENT (OFF-LOT)
- Ⓓ 5' LANDSCAPE EASEMENT (OFF-LOT)
- Ⓔ VARIABLE WIDTH DRAINAGE EASEMENT (OFF-LOT)
- Ⓕ ELECTRICAL EASEMENT ACCESS EASEMENT (DOC. NO. 21030215364 OPR) (CORRECTED DOC NO 20140045268, VOL 16948, PG 595 OPR)
- Ⓖ VARIABLE WIDTH SANITARY SEWER EASEMENT (CONCURRENT PLATTING PLAT# 24-11800279)
- Ⓗ EXISTING 14' LANDSCAPE, GAS, ELECTRIC, TELEPHONE AND CABLE TV EASEMENT (CONCURRENT PLATTING PLAT# 24-11800279)
- Ⓘ EXISTING 5' LANDSCAPE EASEMENT (CONCURRENT PLATTING PLAT# 24-11800279)
- Ⓙ 6" DASHED WHITE LINE (THERMOPLASTIC) (2,456 LF) W/ TYPE I-C REFLECTIVE PAVEMENT MARKERS
- Ⓚ 6" SOLID YELLOW LINE (THERMOPLASTIC) (2,456 LF) W/ TYPE II A-A REFLECTIVE PAVEMENT MARKERS
- Ⓛ 6" BROKEN YELLOW LINE (THERMOPLASTIC) (2,456 LF) W/ TYPE II A-A REFLECTIVE PAVEMENT MARKERS
- Ⓜ 50' DRAINAGE ESMT. (DOC NO 20240182574)
- Ⓝ 30' DRAINAGE ESMT. (DOC NO 20240182569)



STREETSCAPE TREE PLANTING NOTES

1. SPECIES OF TREES TO BE DETERMINED BY DEVELOPER'S PROJECT LANDSCAPE ARCHITECT TO CONFORM WITH THE STREETSCAPE PLANTING STANDARDS. LANDSCAPE ARCHITECT MUST OBTAIN APPROVAL OF SPECIES FROM THE CITY ARBORIST PRIOR TO PLANTING.
2. DEVELOPER TO PROVIDE IRRIGATION ON PLANTED STREET TREES FOR A MINIMUM OF 3 YEARS.
3. ALL LANDSCAPING SHALL COMPLY WITH THE CLEAR VISION AREAS DEFINED BY THE LATEST VERSION OF AASHTO's "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS."
4. TYPES OF TREES AND SPACING ARE BASED ON UNDERGROUND ELECTRIC. IF OVERHEAD ELECTRIC IS REQUIRED BY CPS, PLANS WILL BE REVISED TO REFLECT CHANGES IN SIZE, TYPE, AND SPACING OF TREES, PER THE UDC.

**(54)-MEDIUM TREES TO BE PLANTED ALONG MEDIAN & ROW GREEN BELT AS SHOWN ON PLANS.

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
1-15-25

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STRAUS TRACT - SECONDARY ARTERIAL

SAN ANTONIO, TEXAS

FALCON RIVER ~ STA. 16+89.04 TO STA. 25+00.00
STREET PLAN & PROFILE

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER CB
CHECKED JA DRAWN CB
SHEET C2.00

Date: Jan 15, 2025, 5:01pm User ID: crodriguez
File: P:\13055\03\Design\Civil\STA1-13055108.dwg

STREET NOTES:

1. A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.
2. CONTRACTOR SHALL MATCH EXISTING PAVEMENT AT TIE-IN. IF EXISTING PAVEMENT ELEVATION DIFFERS SIGNIFICANTLY, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.
3. SIDEWALKS SHALL BE CONSTRUCTED 3-FT FROM THE BACK OF CURB FOR ALL 6' SIDEWALKS AND 5' FROM FACE OF CURB FOR ALL 12' MULTI-USE PATHS WHERE THE SIDEWALK IS SHOWN OFFSET. REFER TO STREET DETAIL SHEET FOR SIDEWALK AND RAMP DETAILS.
4. NO PERMANENT STRUCTURES HIGHER THAN 3 FEET, AND LOWER THAN 8 FEET ABOVE THE PAVEMENT, INCLUDING STRUCTURES, WALLS, FENCES, AND VEGETATION, SHALL BE CONSTRUCTED OR ALLOWED WITHIN THE CLEAR VISION EASEMENT. CONTRACTOR SHALL GRADE AREAS WITHIN CLEAR VISION EASEMENTS SUCH THAT THE ELEVATION WITHIN THE CLEAR VISION EASEMENT IS NOT HIGHER THAN 3 FEET ABOVE THE ADJACENT TOP OF PAVEMENT.
5. DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.
6. CHANGES IN THE SIDEWALK LOCATION FOR A MAXIMUM LINEAR DISTANCE OF TWO HUNDRED (200) FEET ARE PERMITTED TO BE APPROVED BY THE FIELD INSPECTOR WITHOUT AMENDING THE STREET PLAN OR UTILITY LAYOUT PER UDC SECTION 35-506 (Q)(6).
7. ALL STRIPING TO BE THERMOPLASTIC

SIDEWALK NOTE:

THE CONSTRUCTION OF SIDEWALKS ADJACENT TO ALL 900 SERIES LOTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER AS SHOWN ON THE OVERALL SIGNAGE PLAN (SHEET C3.00). REFER TO SHEET C3.00 FOR LOCATIONS OF SIDEWALK CONSTRUCTION WHERE SIDEWALKS ARE NOT SHOWN

STREET SELECT FILL NOTE:

FILL MATERIAL SHOULD BE NATIVE ON-SITE MATERIAL, FREE OF DELETERIOUS MATERIAL WITH A MINIMUM CBR VALUE OF 2.5 AND A MAXIMUM PLASTICITY INDEX (PI) VALUE OF 50. LIME APPLICATION RATES SHOULD BE RE-EVALUATED AND TESTED FOR SULFATE CONTENT PRIOR TO USE. THE FILL SHOULD BE COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY TxDOT-114-E, WITHING ±2 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT. THE MATERIAL SHOULD BE PLACED AS PER APPLICABLE CITY OF SAN ANTONIO CONSTRUCTION GUIDELINES.

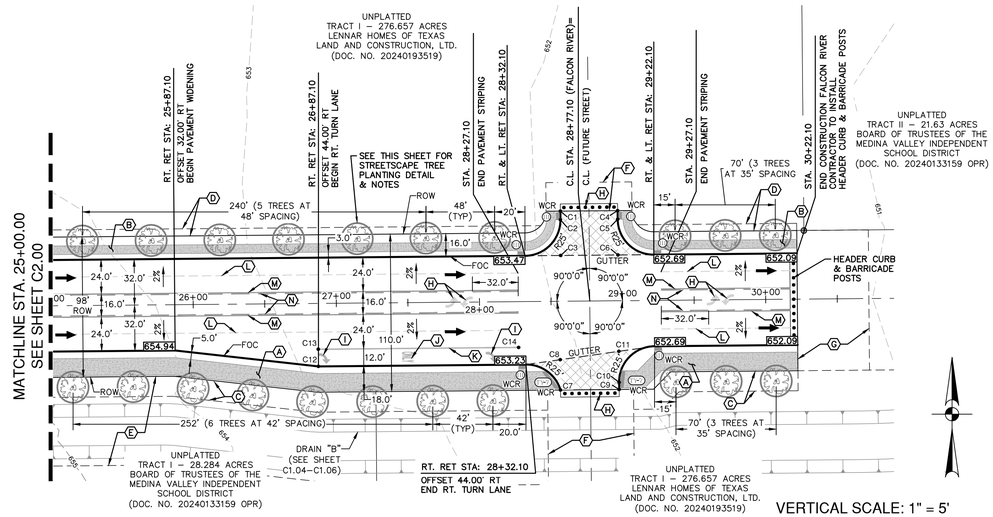
INTERSECTION SPOT ELEVATION & SLOPES

(FALCON RIVER AT FUTURE STREET)

POINT	TC	PVMT	SLOPE	STATION	O/S	SIDE	Desc.
C1	653.88	653.30	-2.00%	28+57.10	63.00	LT	LT CURB
C2	653.76	653.18	-2.00%	28+57.10	57.00	LT	LT CURB RETURN
C3		652.68		28+57.10	32.00	LT	LT GUTTER
C4	653.53	652.95	-2.00%	28+97.10	63.00	LT	LT CURB
C5	653.41	652.83	-2.00%	28+97.10	57.00	LT	LT CURB RETURN
C6		652.33		28+97.10	32.00	LT	LT GUTTER
C7	653.52	652.94	-2.03%	29+56.10	62.00	RT	RT CURB RETURN
C8		652.51		29+56.10	40.80	RT	RT GUTTER
C9	653.38	652.80	-2.00%	28+97.10	62.00	RT	RT CURB
C10	653.28	652.70	-2.03%	28+97.10	57.00	RT	RT CURB RETURN
C11		652.26		28+97.10	35.30	RT	RT GUTTER
C12	654.10	653.52		26+87.10	44.00	RT	RT TURN LANE
C13		653.76		26+87.10	32.00	RT	BEGIN PVMT MRKG
C14		652.92		29+27.10	32.00	RT	END PVMT MRKG

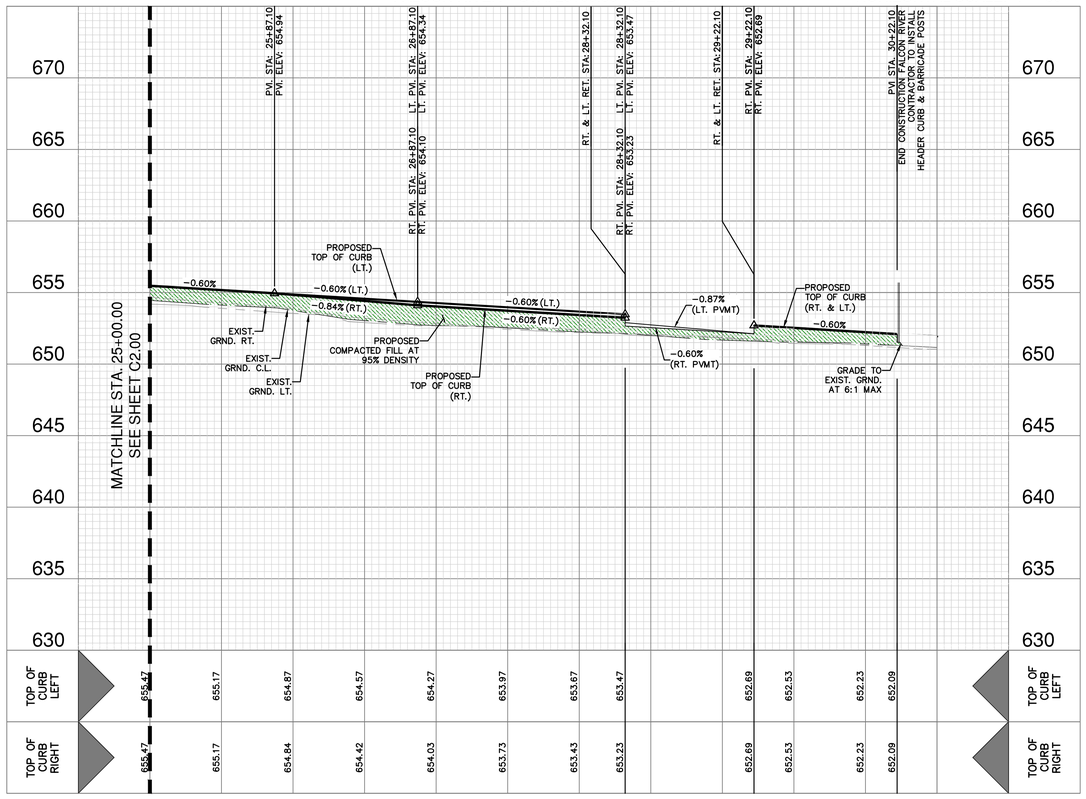
WHEEL CHAIR NOTE:

1. WHEEL CHAIR RAMPS (WCR) TO BE CENTERED ON STATION NOTED BELOW. ELEVATION SHOWN ARE TOP OF CURB AND NOT GUTTER
2. REFERENCE PED-18 DETAIL ON STREET DETAIL SHEET C2.11 FOR TYPE-7 WCR



FALCON RIVER ~ STA. 25+00.00 TO END

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



SCALE: 1"= 50'

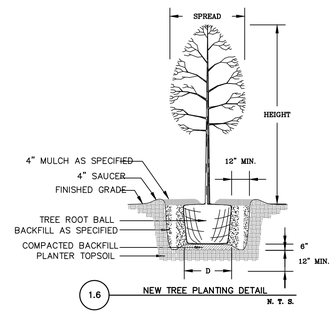
0' 50' 100' 150'

STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	ⓘ WCR
TYPE 7 WHEELCHAIR RAMP (SEE PED-18 DETAIL SHEET C2.11)	
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (HOMEBUILDER RESPONSIBILITY)	
SIDEWALK (SEE SHEET C3.00 FOR DEVELOPER RESPONSIBILITY)	
DRIVEWAY	

KEY LEGEND:

- (A) 12' MULTI-USE PATH DEVELOPER SIDEWALK
- (B) 6' DEVELOPER SIDEWALK
- (C) 14' LANDSCAPE, GAS, ELECTRIC, TELEPHONE AND CABLE TV EASEMENT (OFF-LOT)
- (D) 5' LANDSCAPE EASEMENT (OFF-LOT)
- (E) VARIABLE WIDTH DRAINAGE EASEMENT (OFF-LOT)
- (F) 60' ACCESS, SANITARY SEWER, WATER, DRAIN, GAS, ELECTRIC, TELEPHONE AND CABLE TV EASEMENT TO EXPIRE UPON INCORPORATION INTO PLATTED STREET RIGHT-OF-WAY (OFF-LOT)
- (G) 98' ACCESS, SANITARY SEWER, WATER, DRAIN, GAS, ELECTRIC, TELEPHONE AND CABLE TV EASEMENT TO EXPIRE UPON INCORPORATION INTO PLATTED STREET RIGHT-OF-WAY (OFF-LOT)
- (H) WHITE LEFT TURN ARROW (THERMOPLASTIC) (4 EA)
- (I) WHITE RIGHT TURN ARROW (THERMOPLASTIC) (2 EA)
- (J) WHITE WORD "ONLY" (THERMOPLASTIC) (1 EA)
- (K) 8" SOLID WHITE LINE (THERMOPLASTIC) (140 LF) W/ TYPE I-C REFLECTIVE PAVEMENT MARKERS
- (L) 6" DASHED WHITE LINE (THERMOPLASTIC) (2,456 LF) W/ TYPE I-C REFLECTIVE PAVEMENT MARKERS
- (M) 6" SOLID YELLOW LINE (THERMOPLASTIC) (2,456 LF) W/ TYPE II A-A REFLECTIVE PAVEMENT MARKERS
- (N) 6" BROKEN YELLOW LINE (THERMOPLASTIC) (2,456 LF) W/ TYPE II A-A REFLECTIVE PAVEMENT MARKERS



1.6 NEW TREE PLANTING DETAIL N. T. S.

STREETSCAPE TREE PLANTING NOTES

1. SPECIES OF TREES TO BE DETERMINED BY DEVELOPER'S PROJECT LANDSCAPE ARCHITECT TO CONFORM WITH THE STREETSCAPE PLANTING STANDARDS. LANDSCAPE ARCHITECT MUST OBTAIN APPROVAL OF SPECIES FROM THE CITY ARBORIST PRIOR TO PLANTING.
2. DEVELOPER TO PROVIDE IRRIGATION ON PLANTED STREET TREES FOR A MINIMUM OF 3 YEARS.
3. ALL LANDSCAPING SHALL COMPLY WITH THE CLEAR VISION AREAS DEFINED BY THE LATEST VERSION OF AASHTO's "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS."
4. TYPES OF TREES AND SPACING ARE BASED ON UNDERGROUND ELECTRIC. IF OVERHEAD ELECTRIC IS REQUIRED BY CPS, PLANS WILL BE REVISED TO REFLECT CHANGES IN SIZE, TYPE, AND SPACING OF TREES, PER THE UDC.

**(54)-MEDIUM TREES TO BE PLANTED ALONG MEDIAN & ROW GREEN BELT AS SHOWN ON PLANS.

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
1-15-25

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STRAUS TRACT - SECONDARY ARTERIAL

SAN ANTONIO, TEXAS

FALCON RIVER ~ STA. 25+00.00 TO END
STREET PLAN & PROFILE

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER CB
CHECKED JA DRAWN CB
SHEET C2.01

Date: Jan 15, 2025, 5:01pm User ID: crodriguez
File: P:\130\55\08\Design\Civil\STA1-13055108.dwg

PAVEMENT SECTION DETAIL										
STREET NAME	STATION	TYPE "D" HMAC	TYPE "C" HMAC	TYPE "B" ASPHALT TREATED BASE	FLEXIBLE BASE	LIME STABILIZED SUBGRADE	GEOGRID	STREET TYPE	CBR	SN
FALCON RIVER	16+89.04 TO END	2"	3"	–	19.5"	8.0"	–	SEC. ARTERIAL	2.5	5.57

*STREET TRANSITIONS FROM STREET CLASSIFICATIONS OF DIFFERING PAVEMENT WIDTHS SHALL BE CONSTRUCTED WITH PAVEMENT SECTION OF STREET CLASSIFICATION WITH WIDER PAVEMENT SECTION

GENERAL NOTES:

1. CONTRACTOR SHALL REFERENCE THE PROJECT PAVEMENT DESIGN REPORT **"SUBSURFACE EXPLORATION AND PAVEMENT ANALYSIS, PROPOSED NEW STREETS", STRAUS TRACT – SECONDRARY ARTERIAL, SAN ANTONIO, TEXAS, PREPARED BY INTECH, PROJECT NO. S241259–R2 DATED OCTOBER 14, 2024.**
2. CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEER TO VERIFY THE SUB GRADE CONDITION PRIOR TO PLACING ANY BASE MATERIAL. GEOTECHNICAL ENGINEER SHALL DETERMINE THE SUB GRADE CONDITION AND IF LIME STABILIZATION IS REQUIRED.
3. GEOTECHNICAL ENGINEER SHOULD VERIFY THE STREET SUBGRADE AT THE TIME OF CONSTRUCTION PRIOR TO PLACEMENT OF AGGREGATE BASE.
4. THE FLEXIBLE BASE COURSE SHOULD BE CRUSHED LIMESTONE CONFORMING TO TXDOT STANDARD SPECIFICATIONS, ITEM 247, TYPE A, GRADES 1 OR 2.
5. THE MOISTURE CONTENT OF THE FILL SHOULD BE MAINTAINED WITHIN THE RANGE OF OPTIMUM WATER CONTENT TO 3 PERCENTAGE POINTS ABOVE THE OPTIMUM WATER CONTENT UNTIL PERMANENTLY COVERED.
6. IN THE EVENT THAT THE CLAY FILL USED IS DIFFERENT THAN THE EXISTING SUBGRADE, THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT COULD BE INVALIDATED AND THE DESIGN ENGINEER MUST BE CONSULTED TO DETERMINE IF ADDITIONAL CBR TESTING AND THICKER PAVEMENT SECTIONS ARE REQUIRED.
7. WHERE PAVEMENT SUBGRADE IS LOCATED WITHIN 2–FEET OF THE EXISTING GROUND SURFACE (STRATUM 1 CLAYS), MOISTURE CONDITIONED SUBGRADE WILL BE REQUIRED. GEOTECHNICAL ENGINEER SHOULD VERIFY THE STREET SUBGRADE AT THE TIME OF CONSTRUCTION PRIOR TO PLACEMENT OF AGGREGATE BASE TO DETERMINE WHERE THE MOISTURE CONDITIONED SUBGRADE IS NEEDED. REFERENCE GEOTECHNICAL ENGINEERING REPORT FOR MORE INFORMATION.
8. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL MATERIAL TESTING WITH THE PROJECT GEOTECHNICAL ENGINEER. TESTING SHALL BE PAID FOR BY THE OWNER.
9. FILL MATERIAL SHOULD BE NATIVE ON–SITE MATERIAL, FREE OF DELETERIOUS MATERIAL WITH A MINIMUM CBR VALUE OF **2.5** AND A MAXIMUM PLASTICITY INDEX OF 50. THE GRAVEL SIZE SHOULD NOT EXCEED 3 INCHES IN DIAMETER. LIME OR CEMENT APPLICATION RATES SHOULD BE RE–EVALUATED FOR THE FILL MATERIAL. THE MATERIAL SHOULD BE PLACED AS PER APPLICABLE CITY OR COUNTY GUIDELINES. CONTRACTOR TO VERIFY EXACT SPECIFICATIONS WITH PROJECT GEOTECHNICAL ENGINEERING REPORT.
10. A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN THE BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.

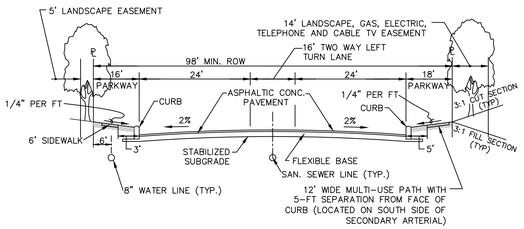
SUBGRADE NOTES:

1. IF THE STREET SUBGRADE PLASTICITY INDEX VALUE IS GREATER THAN **20**, SUBGRADE STABILIZATION IS NEEDED AS PER CITY OF SAN ANTONIO & BEXAR COUNTY REQUIREMENTS.
2. IF THE SUBGRADE PLASTICITY INDEX VALUE IS **20** OR LESS, SUBGRADE STABILIZATION IS NOT NEEDED. THE SUBGRADE SHOULD BE MOISTURE CONDITIONED (COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AT A MINIMUM MOISTURE CONTENT OF OPTIMUM PLUS 2 PERCENT (TEX114E)).
3. THE SUBGRADE SHOULD BE STABILIZED TO A DEPTH OF **8** INCHES USING LIME CONTENT OF **7** PERCENT LIME OF THE DRY UNIT WEIGHT OF THE CLAYS TO BE STABILIZED.
4. THE SUBGRADE SOILS SHOULD BE TESTED FOR SOIL SULFATE CONTENT PRIOR TO STABILIZATION. IF THE SOIL SULFATE CONTENT IS HIGH, AN ALTERNATE PROCEDURE/ RECOMMENDATION WILL BE NEEDED.
5. LIME APPLICATION RATE OF **43** LBS PER SQ YARD FOR **8** INCH DEPTH.
6. APPROVED FILL MATERIAL SHOULD BE USED TO RAISE THE GRADE. THE FILL SHOULD BE FREE OF DELETERIOUS MATERIAL WITH A MINIMUM CBR VALUE OF **2.5**. LIME APPLICATION RATES SHOULD BE RE–EVALUATED AND TESTED FOR SULFATE CONTENT PRIOR TO USE OF THE FILL MATERIAL. THE MATERIAL SHOULD BE PLACED AS PER APPLICABLE CITY OF SAN ANTONIO AND BEXAR COUNTY GUIDELINES.
7. THE SUBGRADE SHOULD BE PROOF ROLLED TO IDENTIFY SOFT AREAS BEFORE STABILIZATION.

LIME NOTES:

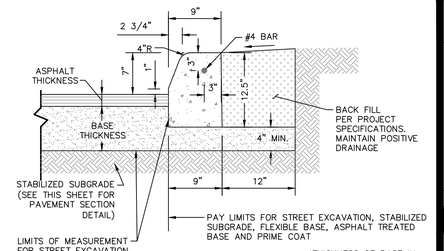
FOR LIME STABILIZATION CONSTRUCTION VERIFICATION THE FOLLOWING SHALL BE CONDUCTED ON THE FIELD:

1. AFTER INITIAL MIXING THE SOIL–LIME MIXTURE SHALL MELLOW FOR A PERIOD OF TWO TO THREE (2–3) DAYS. MAINTAIN MOISTURE DURING MELLOWING.
2. AFTER MELLOWING AND FINAL MIXING, THE PULVERIZATION SHALL BE CHECKED USING THE FOLLOWING CRITERIA (REMOVE NON–SLAKING AGGREGATES RETAINED ON THE ¾ INCH SIEVE FROM THE SAMPLE):
   - MINIMUM PASSING 1½" SIEVE 100
   - MINIMUM PASSING ¾" SIEVE 85
   - MINIMUM PASSING NO. 4 SIEVE 60
3. SAMPLE SOIL–LIME MIXTURE FOR DETERMINATION OF MAXIMUM DRY DENSITY (MDD). IN THE LABORATORY, MOLD SPECIMENS TO 95% OF MDD AT OPTIMUM MOISTURE CONTENT AND VERIFY UCS TO BE AT LEAST 160 PSI IN ACCORDANCE WITH PROCEDURE OUTLINED IN THE BEXAR COUNTY FLEXIBLE PAVEMENT DESIGN CRITERIA GUIDE FOR MIXTURE DESIGN.
4. COMPACT AND CHECK FIELD DENSITY (MINIMUM OF 95% OF MDD REQUIRED).
5. CURE FOR AN ADDITIONAL 2 TO 5 DAYS (TOTAL MELLOWING AND CURING TIME SHOULD TOTAL AT LEAST 5 DAYS).
6. VERIFY DEPTH OF LIME STABILIZED LAYER TO DEPTH AS NOTED ON PLAN TO WITHIN +/– 1.0 INCH.



98' MIN. (SECONDARY ARTERIAL) ROW STREET SECTION

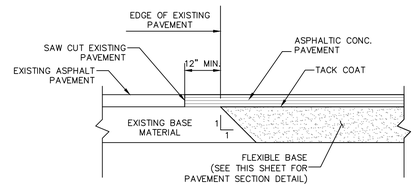
NOT–TO–SCALE



CONCRETE CURB DETAIL

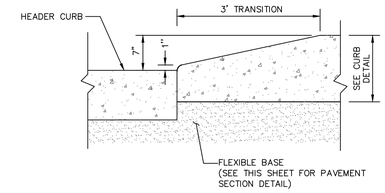
NOT–TO–SCALE

*THICKNESS OF BASE IN OVER EXCAVATION AREA IS EQUAL TO TOTAL PAVEMENT SECTIONS THICKNESS MINUS 5.5", OR 4" MINIMUM



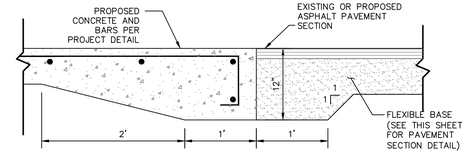
ASPHALT/ASPHALT JUNCTURE DETAIL

NOT–TO–SCALE



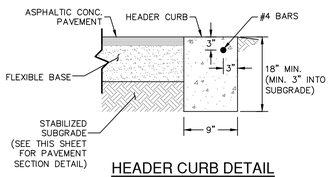
CURB TRANSITION DETAIL
(FROM HEADER CURB TO STANDARD CURB

NOT–TO–SCALE



CONCRETE/ASPHALT JUNCTURE DETAIL

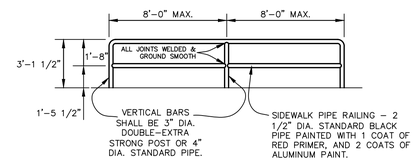
NOT–TO–SCALE



HEADER CURB DETAIL

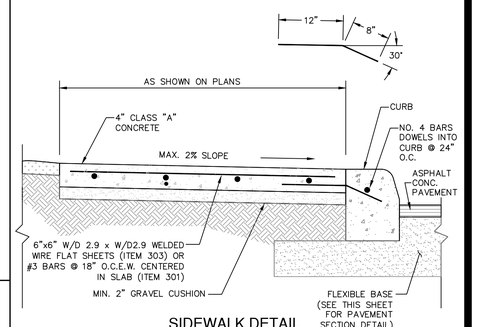
NOT–TO–SCALE

NOTE:
ALL CONSTRUCTION OF PIPE RAILING SHALL FOLLOW THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. PIPE RAILING SHALL BE PAINTED TURKISH COFFEE 6076 FROM SHERWIN WILLIAMS.



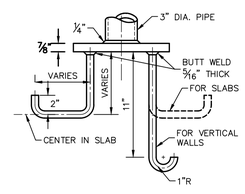
TYPICAL PIPE RAILING ELEVATION

NOT–TO–SCALE



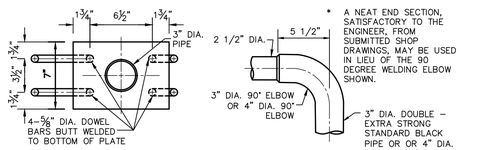
SIDEWALK DETAIL

NOT–TO–SCALE



PIPE ANCHORAGE DETAIL

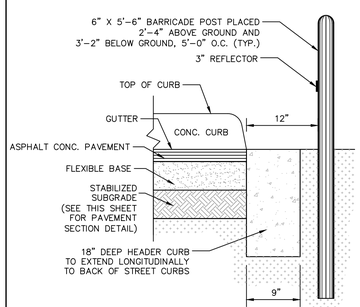
NOT–TO–SCALE



* A NEAT END SECTION, SATISFACTORY TO THE ENGINEER, FROM SUBMITTED SHOP DRAWINGS, MAY BE USED IN LIEU OF THE 90 DEGREE WELDING ELBOW SHOWN.

90° WELDING ELBOWS DETAIL

NOT–TO–SCALE



HEADER CURB & BARRICADE POST DETAIL

NOT–TO–SCALE

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED PROFESSIONAL ENGINEER
1-15-25

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100288-00

STRAUS TRACT - SECONDARY ARTERIAL
SAN ANTONIO, TEXAS

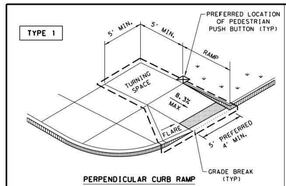
STREET DETAILS

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER CB
CHECKED JA DRAWN CB
SHEET C2.10

Date: Jan 15, 2025, 5:01pm User ID: crodriguez
File: P:\13055\08\Design\Civil\STD-1305508.dwg

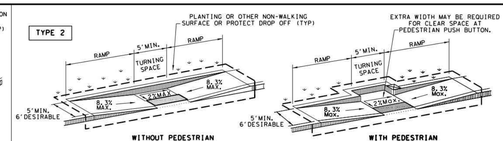
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

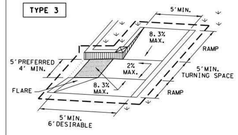


WITHOUT PEDESTRIAN PUSH BUTTON

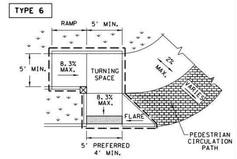
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

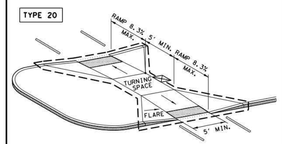


TYPE 6



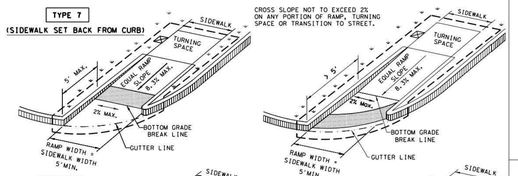
COMBINATION CURB RAMPS

TYPE 20

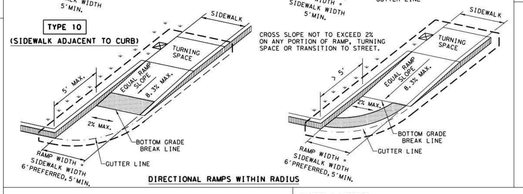


CURB RAMPS AT MEDIAN ISLANDS

TYPE 7
(SIDEWALK SET BACK FROM CURB)

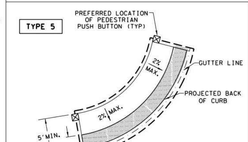


TYPE 10
(SIDEWALK ADJACENT TO CURB)



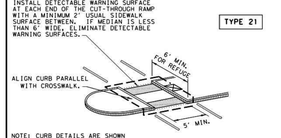
DIRECTIONAL RAMPS WITHIN RADIUS

TYPE 5



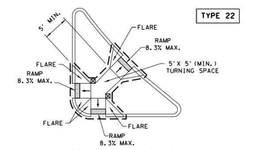
BLENDED TRANSITION
(FLUSH LANDING)

TYPE 21

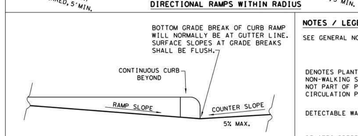


NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN:TxDOT	CK:	DW:	CK:	CK:
©TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					
REVISED 06-2005	DIST		COUNTY		SHEET NO.
REVISED 05-2012					
REVISED 04-2014					

DATE:
FILE:

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicable standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

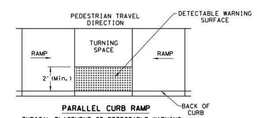
DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

SIDEWALKS

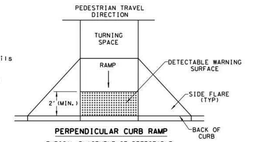
27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.

DETECTABLE WARNING SURFACE DETAILS



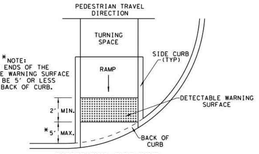
PARALLEL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP

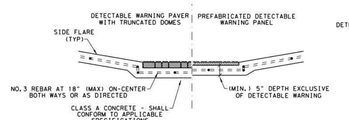
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



*NOTE: BOTH ENDS OF THE DETECTABLE WARNING SURFACE SHALL BE 5' OR LESS FROM BACK OF CURB.

DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

SHEET 2 OF 4

Texas Department of Transportation — Design Division Standard

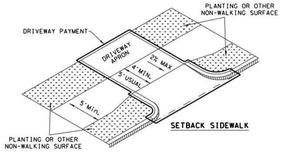
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

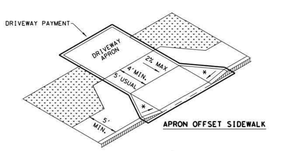
FILE: ped18	DN:TxDOT	CK:	DW:	CK:	CK:
©TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					
REVISED 06-2005	DIST		COUNTY		SHEET NO.
REVISED 05-2012					
REVISED 04-2014					

DATE:
FILE:

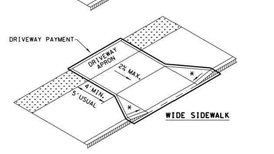
SIDEWALK TREATMENT AT DRIVEWAYS



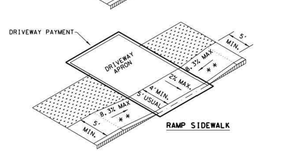
SETBACK SIDEWALK



APRON OFFSET SIDEWALK

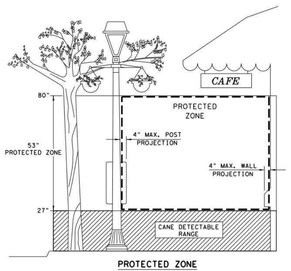


WIDE SIDEWALK



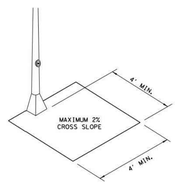
RAMP SIDEWALK

NOTES:
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.
* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%, HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

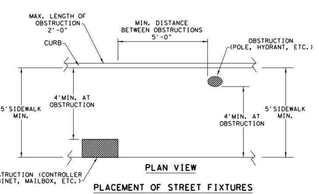


PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



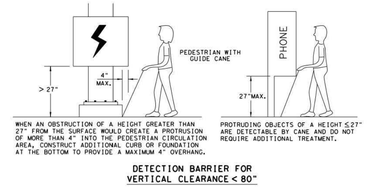
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



PLAN VIEW

PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE, MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

SHEET 3 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

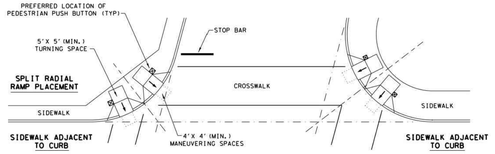
PED-18

FILE: ped18	DN:TxDOT	CK:	DW:	CK:	CK:
©TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					
REVISED 06-2005	DIST		COUNTY		SHEET NO.
REVISED 05-2012					
REVISED 04-2014					

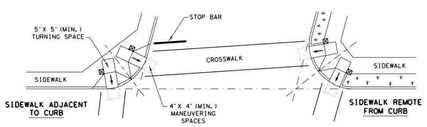
DATE:
FILE:

TYPICAL CROSSING LAYOUTS

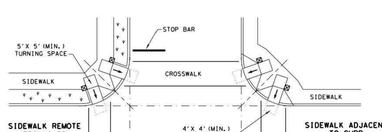
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



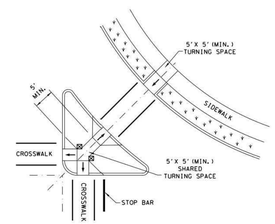
SKEWED INTERSECTION WITH "LARGE" RADIUS



SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION W/FREE RIGHT TURN & ISLAND

MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE.

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE).

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

SHEET 4 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN:TxDOT	CK:	DW:	CK:	CK:
©TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					
REVISED 06-2005	DIST		COUNTY		SHEET NO.
REVISED 05-2012					
REVISED 04-2014					

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED PROFESSIONAL ENGINEER
1-15-25

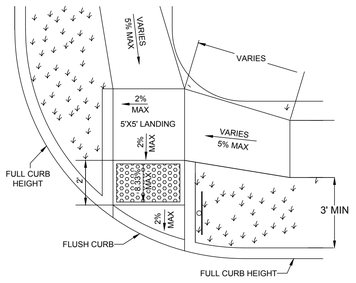
PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX. 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100288-00

STRAUS TRACT - SECONDARY ARTERIAL

SAN ANTONIO, TEXAS

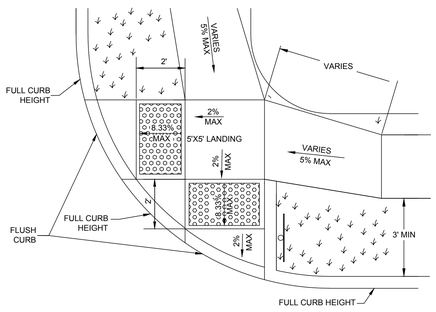
STREET DETAILS

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER CB
CHECKED JA DRAWN CB
SHEET C2.11



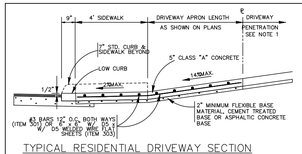
TYPE IV-M SIDEWALK RAMP

SIDEWALK SEPARATED FROM CURB
NOT-TO-SCALE



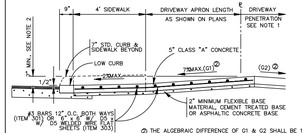
TYPE V-M SIDEWALK RAMP

SIDEWALK SEPARATED FROM CURB
NOT-TO-SCALE



TYPICAL RESIDENTIAL DRIVEWAY SECTION

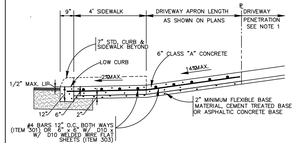
WITH SIDEWALK ABUTTING CURB
ITEM 503.1



② THE ALGEBRAIC DIFFERENCE OF G1 & G2 SHALL BE 14% OR LESS

TYPICAL RESIDENTIAL DRIVEWAY SECTION

WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS ABUTTING CURB
ITEM 503.1



TYPICAL COMMERCIAL DRIVEWAY SECTION

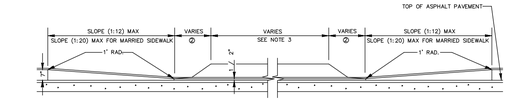
WITH SIDEWALK ABUTTING CURB
ITEM 503.2

CONCRETE DRIVEWAY NOTES

1. DRIVEWAY PENETRATION REFERS TO A PORTION OF THE DRIVEWAY THAT MAY BE NECESSARY TO RECONSTRUCT WITHIN PRIVATE PROPERTY TO COMPLY WITH A MAXIMUM DRIVEWAY SLOPE. THIS PORTION OF THE DRIVEWAY SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS AS MAY APPLY:
   A.) CONCRETE DRIVEWAY PAID FOR UNDER ITEM NO. 503.1 OR 503.2.
   B.) ASPHALTIC CONCRETE DRIVEWAY PAID FOR UNDER ITEM NO. 503.4 AND SHALL INCLUDE A MINIMUM OF 1" ASPHALT TYPE 'D' & 6" FLEXIBLE BASE
   C.) GRAVEL DRIVEWAY PAID FOR UNDER ITEM NO. 503.5 AND SHALL INCLUDE A MINIMUM OF 6" FLEXIBLE BASE
2. 7" MINIMUM HEIGHT WILL NOT NECESSARILY OCCUR AT THE PROPERTY LINE. IT MAY OCCUR WITHIN THE RIGHT OF WAY OR WITHIN THE DRIVEWAY PENETRATION ON PRIVATE PROPERTY.
3. THE PROPOSED DRIVEWAY SHOULD MATCH THE EXISTING WIDTH AT THE PROPERTY LINE BUT UNLESS AUTHORIZED BY THE CITY TRAFFIC ENGINEER, THE WIDTH SHALL BE WITHIN THE FOLLOWING VALUES:

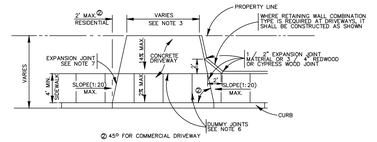
TYPE	MINIMUM	MAXIMUM
RESIDENTIAL	10'	20'
COMMERCIAL – ONE WAY	12'	20'
COMMERCIAL – TWO WAY	24'	30'

4. FOR LOCAL TYPE "A" STREETS, SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 3' FROM THE BACK OF CURB.
5. FOR OTHER THAN LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM WIDTH OF 4' AND SEPARATED A MINIMUM OF 3' FROM THE BACK OF CURB OR, AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.
6. DUMMY JOINTS PARALLEL TO THE CURB SHALL BE PLACED WHERE THE SIDEWALK MEETS THE DRIVEWAY. DUMMY JOINTS PERPENDICULAR TO THE CURB, AND WITHIN THE BOUNDARIES OF THE PARALLEL DUMMY JOINTS, SHALL BE PLACED AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK.
7. A MINIMUM OF TWO ROUND AND SMOOTH DOWEL BARS 3 /8" IN DIAMETER AND 18" IN LENGTH SHALL BE SPACED 18" APART AT EACH EXPANSION JOINT.
8. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 5.00% (1:20) MAXIMUM SLOPE. WHERE SIDEWALKS CROSS DRIVEWAYS, SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.
9. SIDEWALK RAMP SURFACE SHALL BE BRUSH FINISHED.



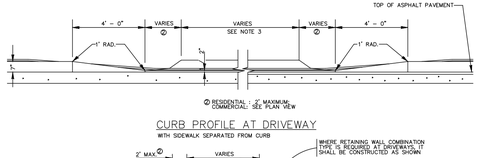
CURB PROFILE AT DRIVEWAY

WITH SIDEWALK ABUTTING CURB



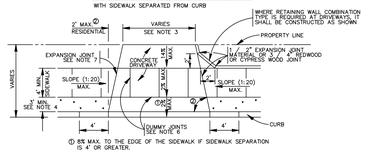
TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK ABUTTING CURB



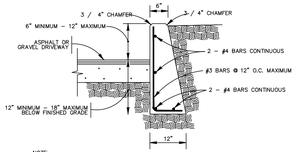
CURB PROFILE AT DRIVEWAY

WITH SIDEWALK SEPARATED FROM CURB



TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK SEPARATED FROM CURB



NOTE:
1. COST OF REINFORCEMENT TO BE INCLUDED IN UNIT COST OF ITEM 307.1.
2. CONCRETE RETAINING WALL COMBINATION TYPE SHALL BE USED FOR CONCRETE DRIVEWAYS.

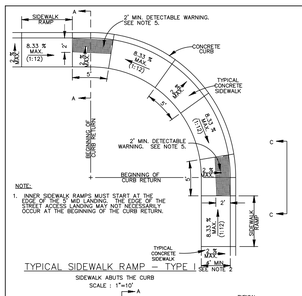
DRIVEWAY – CONCRETE RETAINING WALL

ON COMPACTED SUBGRADE
ITEM 307.1

JANUARY 2024

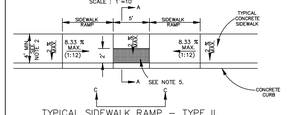
CONCRETE DRIVEWAY STANDARDS

% SUBMITTAL	PROJECT NO.		DATE:
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO. ___ OF ___



TYPICAL SIDEWALK RAMP – TYPE I

SIDEWALK ABUTS THE CURB
SCALE : 1"=10'



TYPICAL SIDEWALK RAMP – TYPE II

USED AT TEE INTERSECTIONS WHERE SIDEWALK ABUTS CURB
SCALE : 1"=10'

GENERAL NOTES

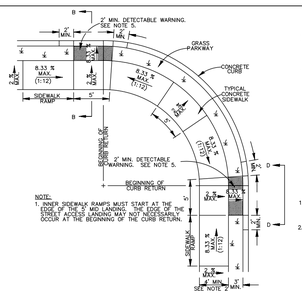
1. WHEN POSSIBLE SIDEWALKS SHOULD BE PLACED NEXT TO THE PROPERTY LINE, ALLOWING A MINIMUM OF 1 FOOT BUFFER. DEVIATION OF THE PATHWAY FROM A STRAIGHT LINE IS ENCOURAGED TO AVOID TREES OR OTHER OBSTRUCTIONS.
2. FOR LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 3' FROM THE BACK OF CURB.
3. FOR OTHER THAN LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND SEPARATED A MINIMUM OF 3' FROM THE BACK OF CURB OR AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.
4. SIDEWALK RAMP LENGTHS PRESENTED IN TABLE 1 ARE GUIDELINES ONLY. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 8.33% (1:12) MAXIMUM SLOPE.
5. ALL CURB-RAMPS OR LANDINGS ADJACENT TO STREETS SHALL HAVE A DETECTABLE WARNING 24 INCHES DEEP (IN THE DIRECTION OF PEDESTRIAN TRAVEL) AND EXTENDING THE FULL WIDTH OF THE CURB RAMP OR LANDING. THE DETECTABLE WARNING SHALL CONSIST OF RAISED TRUNCATED DOMES, ALIGNED IN A GRID PATTERN, HAVING A BASE DIAMETER OF 0.9 INCHES (23 MM) TO 1.4 INCHES (36 MM), A HEIGHT OF 0.2 INCHES (5 MM) AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35 INCHES (60 MM). THE DETECTABLE WARNING SURFACE SHALL BE PAVERS CONFORMING TO TXDOT STANDARD PED-05, PEDESTRIAN FACILITIES.
6. DETECTABLE WARNINGS SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE.
7. SIDEWALK RAMP TYPE V SHALL BE USED ONLY WHERE THERE IS SIGNIFICANT RESTRICTION WITHIN THE PARKWAY TO CONSTRUCT TYPE I OR TYPE III RAMPS.
8. CONSTRUCTION OF ALL WHEELCHAIR RAMPS TO BE INCLUDED UNDER ITEMS "500 – CONCRETE CURB, GUTTER, AND CONCRETE CURB AND GUTTER" AND / OR "502 – CONCRETE SIDEWALKS". RAMP SURFACE SHALL BE BRUSH FINISHED.
9. THESE DETAILS ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS OF WHEELCHAIR RAMPS TO BE SHOWN ON CONSTRUCTION PLANS. CITY CONSTRUCTION INSPECTOR CAN ADJUST LOCATIONS FOR SAFETY OR UTILITY CLEARANCE.
10. SIDEWALKS LESS THAN 5 FEET IN WIDTH SHALL BE PROVIDED WITH A PASSING SPACE AT A MAXIMUM SPACING OF 200 FEET.
11. WHEELCHAIR RAMP SHALL BE CONSTRUCTED WITH 4" CLASS "A" CONCRETE AND 2" MINIMUM GRAVEL, CRUSHED ROCK OR FLEXIBLE BASE MATERIAL.
12. REINFORCING STEEL SHALL BE #3 BARS AT 18" O.C.E.W. OR 6" x 6" – W2.9 x W2.9 WIRE MESH.
13. SIDEWALK GRADES SHALL NOT EXCEED THE GRADE ESTABLISHED FOR THE ADJACENT ROADWAY. ANY SIDEWALK WITH A GRADE THAT IS STEEPER THAN 5% IS CONSIDERED A RAMP AND ANY RAMP THAT IS STEEPER THAN THE EXISTING ROADWAY WILL REQUIRE RAMPS, HANDRAILS AND RESTING PLATFORMS TO BE CONSTRUCTED IN ACCORDANCE WITH ADA AND TAS STANDARDS.
14. SIDEWALK CROSS GRADE SHALL HAVE A MAXIMUM SLOPE OF 2%. LANDINGS SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
15. THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES SHALL BE LESS THAN 11%. THE CHANGE OF GRADE SHALL BE DEFINED AS THE ALGEBRAIC DIFFERENCE OF THE ADJACENT SURFACE SLOPES. IN THE CASE OF A STREET ACCESS RAMP DESIGNED AT THE 8.33% MAXIMUM SLOPE, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN 2.67% (I.E. 8.33%-(-2.67%)=11). IN ADDITION, THE ADJACENT PAVEMENT CROSS SLOPE SHALL BE LESS THAN OR EQUAL TO 5%.
16. IF THE CHANGE OF GRADE BETWEEN ADJACENT SURFACES IS GREATER THAN OR EQUAL TO 11% A LEVELING STRIP, 2 FEET IN LENGTH, SHALL BE PROVIDED TO TRANSITION THE ADJACENT SURFACES.
17. ADA COMPLIANCE IN ALTERATIONS INCLUDE ONLY THAT WORK WITHIN THE LIMITS, BOUNDARIES OR SCOPE

TYPICAL SIDEWALK RAMP – TYPE III

SIDEWALK SEPARATED FROM CURB
SCALE : 1"=10'

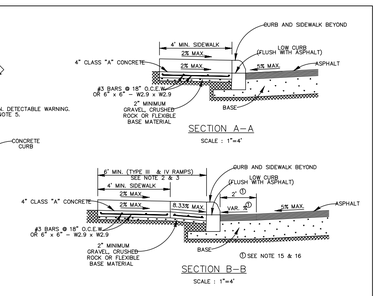
TYPICAL SIDEWALK RAMP – TYPE IV

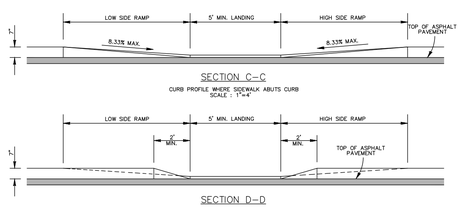
USED AT TEE INTERSECTIONS WHERE SIDEWALK IS SEPARATED FROM CURB
SCALE : 1"=10'

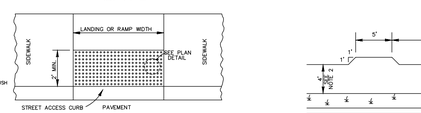


TYPICAL SIDEWALK RAMP – TYPE V

SIDEWALK ABUTS CURB
SCALE : 1"=10'

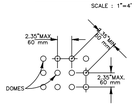




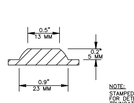


DETECTABLE WARNING SURFACE

SCALE : 1"=4'

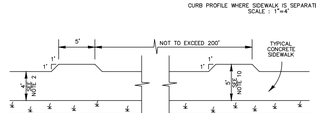


PLAN DETAIL



DOME SECTION

NOTE:
STAMPED CONCRETE TRUNCATED DOMES WILL NOT BE ALLOWED TO BE USED. THE CONTRACTOR SHALL SUBMIT A SAMPLE OF THE DETECTABLE WARNING SURFACE FROM THE LISTED DOME MATERIALS FOR THAT CAN BE INSTALLED ON WHEELCHAIR RAMPS TO THE PROJECT MANAGER FOR APPROVAL AT LEAST 30 DAYS PRIOR TO INSTALLATION.



SIDEWALK PASSING SPACE

SCALE : 1"=10'

TABLE 1 (SEE NOTE 4)		
GUTTER SLOPE	SIDEWALK RAMP LENGTH (1:12)	
	LOW SIDE	HIGH SIDE
1%	5'–6"	7'–2"
2%	5'–0"	8'–4"
3%	4'–8"	10'–0"
4%	4'–2"	12'–6"
5%	3'–10"	16'–8"

MAY 2009

CITY OF SAN ANTONIO

CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

WHEELCHAIR RAMP STANDARDS

PROJECT NO.			DATE:
DSGN BY:		CHKD. BY: R.S. HOSSEINI, P.E.	SHEET NO. ___ OF ___

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
1-15-25

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX. 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100288-00

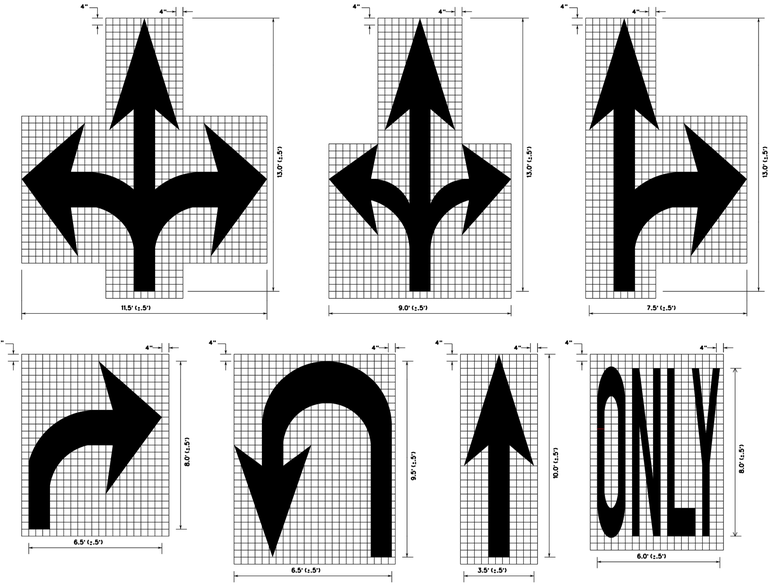
STRAUS TRACT - SECONDARY ARTERIAL

SAN ANTONIO, TEXAS

STREET DETAILS

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER JA
CHECKED JA DRAWN CB
SHEET C2.12

Date: Jan 15, 2025, 5:02pm User ID: crodriguez
File: P:\130\05\08\Design\Civil\STD1-130508.dwg



NOTES:

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.
3. THE LONGITUDINAL SPACE BETWEEN MARKINGS SHOULD BE 30 FEET.
4. MARKINGS CONSIDERED APPROPRIATE FOR USE WHEN WARRANTED INCLUDE THE FOLLOWING:
   - A. REGULATORY
     - STOP
     - RIGHT (LEFT) TURN ONLY
     - 25 MPH
     - SCHOOL ARROWS
   - B. WARNING
     - STOP AHEAD
     - SIGNAL AHEAD
     - SCHOOL
     - SCHOOL X-ING
     - PED X-ING
     - R X R (SEE RCPM DETAIL)
     - OTHER WORDS OR SYMBOLS MAY BE NECESSARY UNDER CERTAIN 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.
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 VI OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
8. SPACING BETWEEN LETTERS SHOULD BE APPROXIMATELY 4 INCHES. THE WIDTH OF LETTERS MAY VARY DEPENDING ON THE WIDTH OF THE TRAVEL LANES.
9. LANE-USE ARROW MARKINGS MAY BE USED TO CONVEY EITHER GUIDANCE OR MANDATORY MESSAGES. 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 ELSEWHERE IN THE PLANS.

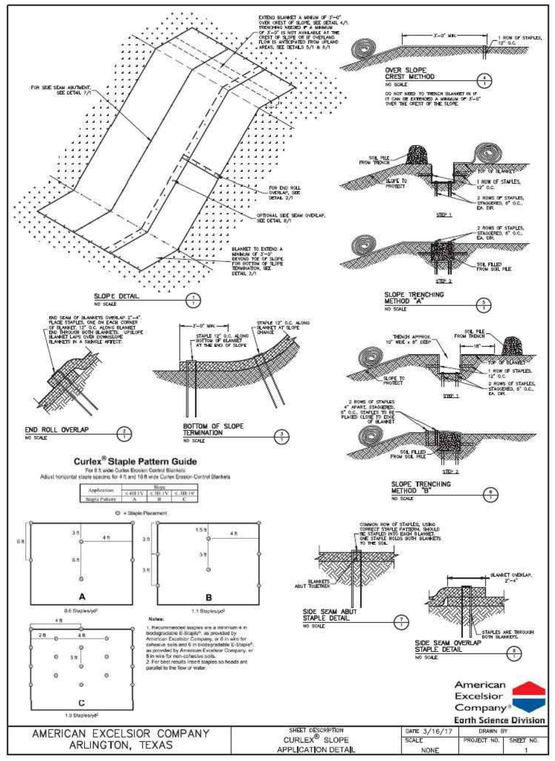
SEPTEMBER 2009

CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS
TRAFFIC ENGINEERING STANDARDS

STANDARD PAVEMENT MARKIN (ARROWS)

SHEET 3 OF 16

NO.	SUBMITTAL	PROJECT NO.	DATE
DRWN. BY:	DSGN. BY:	CHKD. BY:	SHEET NO.



AMERICAN EXCELSIOR COMPANY
ARLINGTON, TEXAS

SHEET DESCRIPTION: CURLEX® SLOPE APPLICATION DETAIL
DATE: 3/16/17 | DRAWN BY:
SCALE: NONE | PROJECT NO.: | SHEET NO.: 1

American Excelsior Company®
Earth Science Division

Prosd Participant in NTPEP and Prosd Member of: ASTM International MEMBER | Erosion Control Technology Council | IECA Member

Product Participant of: QDOR PERFORMANCE VERIFIED

PRODUCT DATA SHEET
CURLEX® ENFORCER®

DESCRIPTION

Curlex Enforcer a biocomposite Turf Reinforcement Mat (TRM) that consists of a specific cut of naturally sood free Great Lakes Aspen curled wood excelsior with 80% six-inch fibers or greater fiber length. It is of consistent thickness with fibers evenly distributed throughout the entire area of the blanket. The top and bottom of each blanket is covered with extra heavy duty black net. Curlex Enforcer is also available as QuickGRASS® (green pigment). Curlex Enforcer shall be manufactured in the U.S.A.

Curlex Enforcer has a design soil loss ratio (event-based RUSLE C factor) of .022 and is typically suitable for slopes up to .5H:1V. Curlex Enforcer is rated for channel flows up to 11 ft/s (3.4 m/s); 3.25 lb/ft² (156 Pa) shear stress unvegetated or 17 ft/s (5.2 m/s); 10.0 lb/ft² (480 Pa) shear stress vegetated.

PHYSICAL PROPERTIES

Curlex Enforcer measurements at time of manufacturing:

Width	8.0 ft (2.4 m)
Length	67.5 ft (20.6 m)
Area	60.0 yd² (50.2 m²)
Weight*	75.0 lb (34.1 kg)
Fiber Count	≈12,000 per yd² (≈14,400 per m²)
Fiber Length (80% min.)	≥6.0 in (≥15.2 cm)
Mass per Unit Area (± 10%)	1.25 lb/yd² (0.68 kg/m²)
Net Openings	0.75 in x 1.0 in (19.1 mm x 25.4 mm)

TYPICAL INDEX VALUES

Index Property	Test Method	Value
Thickness	ASTM D 6525	0.419 in (10.64 mm)
Light Penetration	ASTM D 6567	12.7%
Resiliency	ASTM D 1777/ECTC	55%
Mass per Unit Area	ASTM D 6475	0.98 lb/yd² (0.532 kg/m²)
MD-Tensile Strength Max.	ASTM D 6818	612.0 lb/ft (8.93 kN/m)
TD-Tensile Strength Max.	ASTM D 6818	460.8 lb/ft (6.72 kN/m)
MD-Elongation	ASTM D 6818	19.5%
TD-Elongation	ASTM D 6818	27.3%
Swell	ECTC Procedure	33%
Water Absorption	ASTM D 1117/ECTC	170%
UV Stability	ASTM D 4355 (1,000 hr)	90% minimum
Bench-Scale Rain Splash	ASTM D 7101	SLR = 10.24 @ 2 in/hr [b,c]
Bench-Scale Rain Splash	ASTM D 7101	SLR = 10.51 @ 4 in/hr [b,c]
Bench-Scale Rain Splash	ASTM D 7101	SLR = 10.86 @ 6 in/hr [b,c]
Bench-Scale Shear	ASTM D 7207	3.55 lb/ft² @ 0.5 in soil loss [c]
Germination Improvement	ASTM D 7322	486%

* Weight is based on a dry fiber weight basis at time of manufacture. Baseline moisture content of Great Lakes Aspen excelsior is 22%.

[b] SLR is the Soil Loss Ratio, as reported by NTPEP/AASHTO. * Bench-scale index values should not be used for design purposes.

MADE IN THE U.S.A.

850 Avenue H East | Arlington, Texas 76011
Phone 1-800-777-SOIL | Fax 817-385-3585 | www.Curlex.com

W0516R1116

American Excelsior Company®
Earth Science Division

Curlex® Blankets
Heavy Duty Excelsior Erosion Control Blankets

SUGGESTED SPECIFICATIONS

Choosing the Right Heavy Duty Curlex Product

Heavy Duty Excelsior Blankets are available in various fiber weights and netting combinations to match the appropriate job site requirements. Eighty percent of the Curlex fibers are six-inches or longer with consistent thickness and are evenly distributed over its entire area. Both the top and bottom side of the blankets are covered with black, extruded plastic mesh designed to provide strength beyond the service life of standard blankets. Curlex Excelsior blankets are naturally seed free and do not contain any chemical additives or foreign matter.

Curlex III Specifications

Recommended Use:	Slopes to 1H:1V, channel bottom applications, Shear stress 120 Pa (2.5 lb/ft²) (unvegetated)
Roll Sizes:	40 yd² (4'x90'), 80 yd² (8'x90'), 160 yd² (16'x90')
Weight*:	0.98 lb/yd²
Netting:	Black or FibreNet™, top and bottom
Color:	Natural Aspen or QuickGRASS Green

Curlex Enforcer Specifications

Recommended Use:	Slopes to .5H:1V, channel bottom applications, Shear stress 156 Pa (3.25 lb/ft²) (unvegetated), 480 Pa (10.0 lb/ft²) (vegetated)
Roll Sizes:	60 yd² (8'x 67.5')
Weight*:	1.25 lb/yd²
Netting:	Extra Heavy Duty Black, top and bottom
Color:	Natural Aspen or QuickGRASS Green

Curlex HV Specifications

Recommended Use:	Slopes to .75H:1V, channel bottom applications, Shear stress 156 Pa (3.25 lb/ft²) (unvegetated),
Roll Sizes:	44.4 yd² (8'x 50')
Weight*:	1.62 lb/yd²
Netting	Heavy Duty Black or FibreNet™, top and bottom

*Weight is based on a dry fiber weight basis at time of manufacture. Baseline moisture content of Great Lakes Aspen Excelsior is 22%.

Installation

Before installing Curlex blankets, the seedbed shall be inspected by the Owner's Representative to ensure it has been properly compacted and fine graded to remove any existing rills. It shall be free of obstructions, such as tree roots, projections such as stones, and other foreign objects. Grass seed shall match soil conditions to allow for maximum germination, dense vegetation, and a structural root system. Contractor shall proceed when satisfactory conditions are present. After the area has been properly shaped, seeded, fertilized, and compacted, locate the start of the roll, making sure the roll is facing toward the area to be covered, and then roll out the blanket. Blankets shall be rolled out flat, even, and smooth without stretching the material then anchored to the subgrade.

Slopes: It is recommended that the blankets be installed in the same direction as the water flow; however, on short slopes it may be more practical to install horizontally across the width of the application. If more than one width is required, simply abut the edges together and secure the blankets with a common row of biodegradable staples, steel staples, or stakes. Overlapping of Curlex excelsior blankets is not required or recommended. An exception is waterway slopes.

Channels: Curlex blankets shall be centered to offset a seam in the middle of the waterway. They shall be installed in the same direction as the water flow. The adjoining blankets shall be installed away from the center of channel and concentrated water flow. They shall be secured by a common row of staples. It is usually not necessary to overlap Curlex blankets; however, a 2" shingle type installation shall be used in waterway slopes applications. Curlex blanket installation should continue up the side slopes 3' above the anticipated high water elevation. Flanks exposed to runoff, or sheet flow, must be protected by a check slot or trenched. Curlex blankets shall be trenched at the start of the channel and anchored using a staggered staple pattern at end of roll overlaps and end of roll terminations.

MADE IN THE U.S.A.

If you would like to receive more information or consult with one of our Customer Care Center Specialists, please call us toll free at (888-352-9582)
PDF download specifications available in the Technical Support Library at www.curlex.com

American Excelsior Company®
Earth Science Division

Curlex® Blankets
Heavy Duty Excelsior Erosion Control Blankets

Product Description

Heavy Duty Curlex Blankets, for long-term protection against wind and water erosion, are a natural choice in place of stone or riprap in swales, ditch bottoms, and on long, steep slopes.

Material Characteristics

Curlex III
0.98 lb/yd² of Great Lakes Aspen Excelsior Wood Fibers and two layers of netting designed to provide protection for grass seed and topsoil from wind and water erosion for up to 36 months, while simultaneously promoting ideal growing conditions.

Curlex Enforcer
1.25 lb/yd² of Great Lakes Aspen Excelsior Wood Fibers and two layers of extra heavy duty UV stabilized netting designed to provide permanent service life and reinforcement between established vegetation and root systems on slopes and in channel bottoms. Curlex Enforcer is a biocomposite turf reinforcement mat (TRM).

Curlex High Velocity
1.62 lb/yd² of Great Lakes Aspen Excelsior Wood Fibers and two layers of heavy duty netting designed to provide extended protection for grass seed and topsoil from wind and water erosion for approximately 36+ months, while simultaneously promoting ideal growing conditions on steep, long slopes and/or in channel applications.

Curlex heavy duty excelsior blankets are available individually wrapped or in master packs to allow for mechanical unloading and stacking.

Performance Capabilities

Curlex heavy duty blankets can handle wind and water shear even on steep slopes. These heavy duty blankets provide long-term protection in critical areas where vegetation requires additional time and protection to develop.

Curlex III
Channels — Shear Stress: 120 Pa (2.5 lb/ft²) (unvegetated)
Slopes — Grade: up to 1H:1V

Curlex Enforcer
Channels — Shear Stress: 156 Pa (3.25 lb/ft²) (unvegetated); 480 Pa (10.0 lb/ft²) (vegetated)
Slopes — Grade: up to .50H:1V

Curlex HV
Channels — Shear Stress: 156 Pa (3.25 lb/ft²) (unvegetated)
Slopes — Grade: up to .75H:1V

Typical Applications

Channel bottoms, swales, steep slopes, let down structures, drop structures, and other areas associated with concentrated water flow exceeding the performance capability and service life of a standard biodegradable blanket.

American Excelsior Company®
Earth Science Division
Arlington, Texas (800) 777-SOIL • www.curlex.com

MADE IN THE U.S.A.

NO. | REVISION | DATE

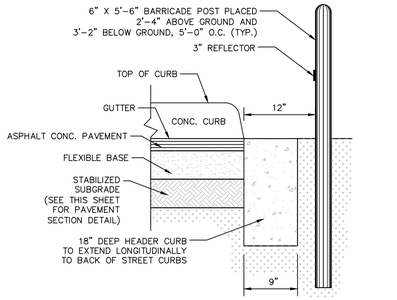
STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
Jon Adame
1-15-25

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100288-00

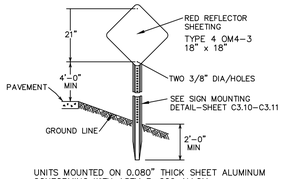
STRAUS TRACT - SECONDARY ARTERIAL
SAN ANTONIO, TEXAS
STREET DETAILS

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER CB
CHECKED JA DRAWN CB
SHEET C2.13

Date: Jan 15, 2025, 5:02pm User ID: crodriguez
File: P:\130\55\08\Design\Civil\STD1-1305508.dwg



HEADER CURB & BARRICADE POST DETAIL
NOT-TO-SCALE



UNITS MOUNTED ON 0.080" THICK SHEET ALUMINUM CONFORMING WITH ASTM B-209 ALLOY 6061-T6.

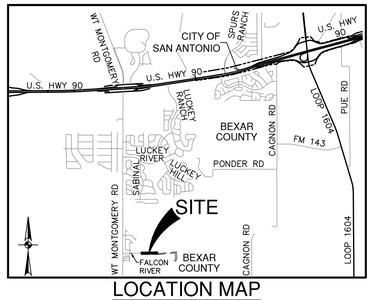
END OF ROAD MARKER DETAIL
NOT-TO-SCALE

SYMBOL		ITEM NUMBER
	UNIT BOUNDARY	–
	TRAFFIC FLOW ARROW	–
	SIDEWALK (HOMEBUILDER RESPONSIBILITY)	–
	SIDEWALK (SITEWORK CONTRACTOR RESPONSIBILITY)	502.1
	PAVEMENT MARKER (TYPE II A-A RPM) BLUE RAISED (NO SEPARATE PAY ITEM)	537.8
	END OF ROAD MARKER OM4-3 (NO SEPARATE PAY ITEM)	531.56
	HEADER CURB W/ BARRICADE POSTS	500.1/510.1
Street Name	STREET SIGN (PUBLIC) BEXAR COUNTY	531.57
STOP	R1-1 (30"X30") R1-1 (36"X36") (FALCON RIVER)	531.3

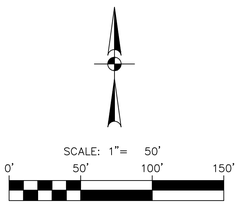
SYMBOL		ITEM NUMBER
ROAD ENDS / 200 FT	W14-1T	531.53
	W16-2AP 24"X12"	531.63
SPEED LIMIT 35	R2-1 30"X36"	531.6
ONLY	R3-5R 30"X36"	531.11
RIGHT LANE MUST TURN RIGHT	R3-7R 30"X30"	531.13

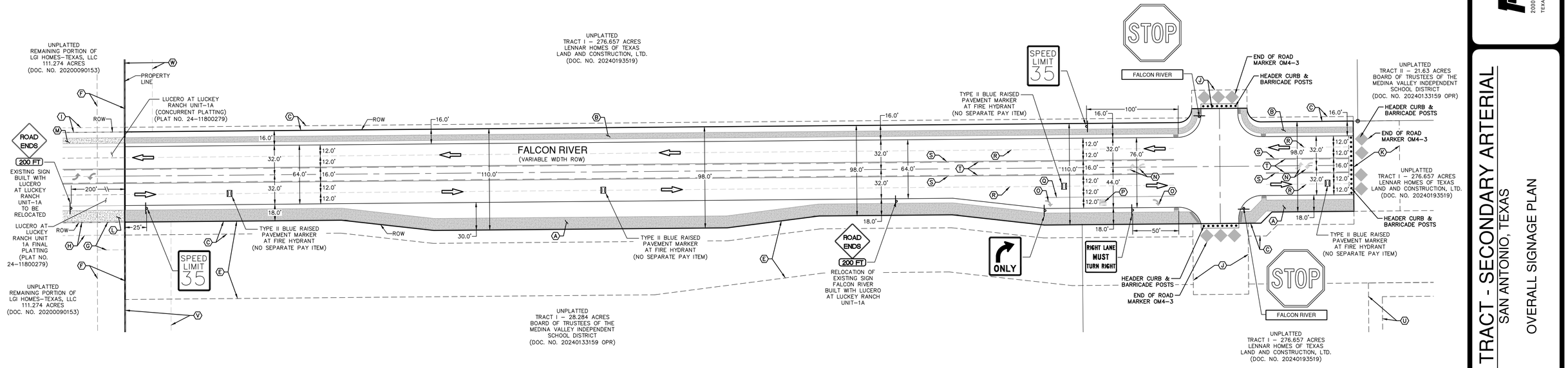
KEY LEGEND:

- (A) 12' MULTI-USE PATH DEVELOPER SIDEWALK
- (B) 6' DEVELOPER SIDEWALK
- (C) 14' LANDSCAPE, GAS, ELECTRIC, TELEPHONE AND CABLE TV EASEMENT (OFF-LOT)
- (D) 5' LANDSCAPE EASEMENT (OFF-LOT)
- (E) VARIABLE WIDTH DRAINAGE EASEMENT (OFF-LOT)
- (F) ELECTRICAL EASEMENT ACCESS EASEMENT (DOC. NO. 21030215364 OPR) (CORRECTED DOC NO 20140045268, VOL 16948, PG 595 OPR)
- (G) VARIABLE WIDTH SANITARY SEWER EASEMENT (CONCURRENT PLATTING PLAT# 24-11800279)
- (H) EXISTING 14' LANDSCAPE, GAS, ELECTRIC, TELEPHONE AND CABLE TV EASEMENT (CONCURRENT PLATTING PLAT# 24-11800279)
- (I) EXISTING 5' LANDSCAPE EASEMENT (CONCURRENT PLATTING PLAT# 24-11800279)
- (J) 60' ACCESS, SANITARY SEWER, WATER, DRAIN, GAS, ELECTRIC, TELEPHONE AND CABLE TV EASEMENT TO EXPIRE UPON INCORPORATION INTO PLATTED STREET RIGHT-OF-WAY (OFF-LOT)
- (K) 98' ACCESS, SANITARY SEWER, WATER, DRAIN, GAS, ELECTRIC, TELEPHONE AND CABLE TV EASEMENT TO EXPIRE UPON INCORPORATION INTO PLATTED STREET RIGHT-OF-WAY (OFF-LOT)
- (L) EXISTING 12' MULTI-USE PATH DEVELOPER SIDEWALK
- (M) EXISTING 6' DEVELOPER SIDEWALK
- (N) WHITE LEFT TURN ARROW (THERMOPLASTIC) (4 EA)
- (O) WHITE RIGHT TURN ARROW (THERMOPLASTIC) (2 EA)
- (P) WHITE WORD "ONLY" (THERMOPLASTIC) (1 EA)
- (Q) 8" SOLID WHITE LINE (THERMOPLASTIC) (140 LF) W/ TYPE I-C REFLECTIVE PAVEMENT MARKERS
- (R) 6" DASHED WHITE LINE (THERMOPLASTIC) (2,456 LF) W/ TYPE I-C REFLECTIVE PAVEMENT MARKERS
- (S) 6" SOLID YELLOW LINE (THERMOPLASTIC) (2,456 LF) W/ TYPE II A-A REFLECTIVE PAVEMENT MARKERS
- (T) 6" BROKEN YELLOW LINE (THERMOPLASTIC) (2,456 LF) W/ TYPE II A-A REFLECTIVE PAVEMENT MARKERS
- (U) 15' CLEARING AND GRADING BUFFER ESMT. (DOC NO 20240132079 OPR)
- (V) 50' DRAINAGE ESMT. (DOC NO 20240182574 OPR)
- (W) 30' DRAINAGE ESMT. (DOC NO 20240182569 OPR)



LOCATION MAP
NOT-TO-SCALE





NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
1-15-25

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STRAUS TRACT - SECONDARY ARTERIAL
SAN ANTONIO, TEXAS

OVERALL SIGNAGE PLAN

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER CB
CHECKED JA DRAWN CB
SHEET C3.00

Date: Jan 15, 2025, 5:02pm User ID: crodriguez
File: P:\130\55\08\Design\Civil\SIGOA-13055O8.dwg

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))
SB0 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

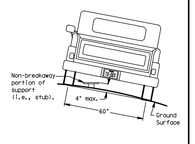
Anchor Type

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
TEXT or ZEXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
MC = 1.12 M/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

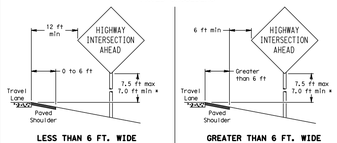
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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



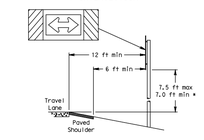
LESS THAN 6 FT. WIDE

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.

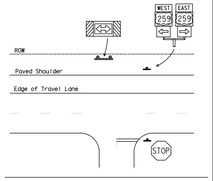
GREATER THAN 6 FT. WIDE

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.

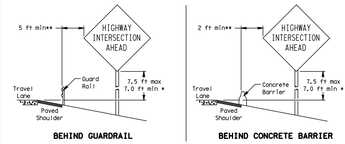
T-INTERSECTION



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.



BEHIND BARRIER



BEHIND GUARDRAIL

BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

* Signs shall be mounted using the following condition that results in the greatest sign elevations

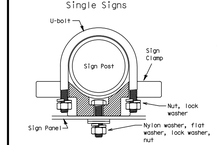
(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(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:
https://www.txdot.gov/publications/traffic.html



TYPICAL SIGN ATTACHMENT DETAIL

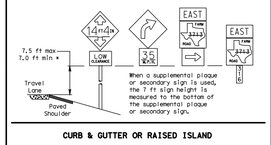
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

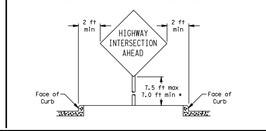
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES

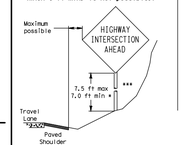


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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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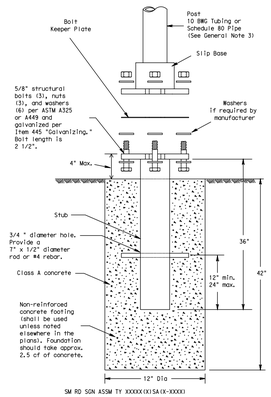
26A

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:

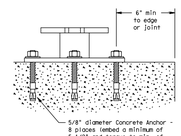
1. Slip base shall be permanently marked to indicate manufacturer, Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   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 followings
   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 pre-coated 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 followings
   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 traveiway (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 traveiway. 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 QMS-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 pol, 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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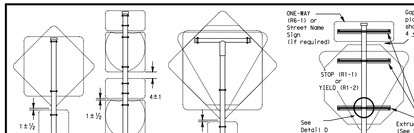
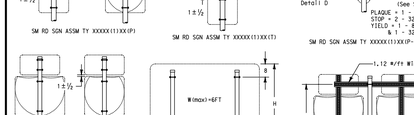
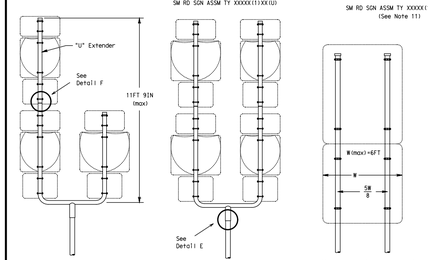
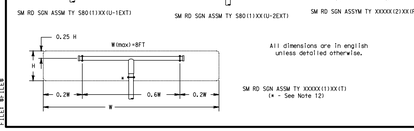
26B



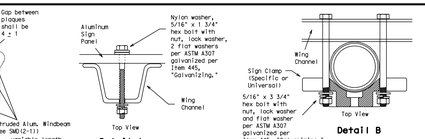






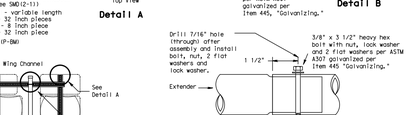
SM RD SGN ASSM TY XXXXX(1)XX(T)
(+ - See Note 12)

All dimensions are in english unless detailed otherwise.



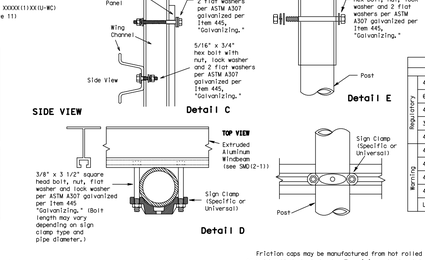
Detail A

Detail B



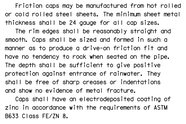
Detail F

Splices shall only be allowed behind the sign substrate.



Detail C

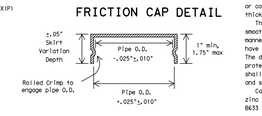
Detail E



Detail D

	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 SB01(1)XX(T)
	48x48-Inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-Inch signs	TY SB01(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)

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.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

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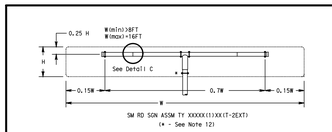
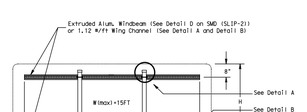
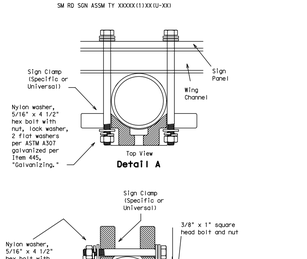
26C



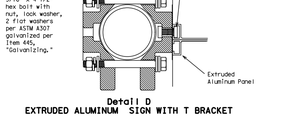
SM RD SGN ASSM TY XXXXX(11)XX(T-2EXT)
(+ - See Note 12)



SM RD SGN ASSM TY XXXXX(11)XX(U-XX)

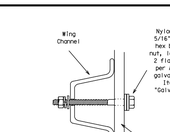


Detail A

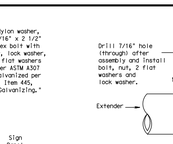


Detail D

EXTRUDED ALUMINUM SIGN WITH T BRACKET

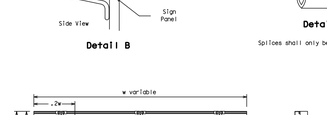


Detail B



Detail C

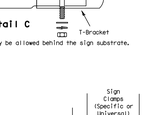
Splices shall only be allowed behind the sign substrate.



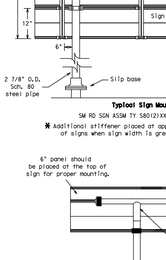
Typical Sign Mount

SM RD SGN ASSM TY SB02(X)XX(P-EXAL)

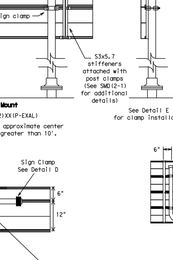
* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.



Detail E



Extruded Aluminum Sign With T Bracket



Use Extruded Alum. Windbeam as stiffeners See SMD (2-11) for additional details

See Detail E for clamp installation

	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 SB01(1)XX(T)
	48x48-Inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-Inch signs	TY SB01(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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26D

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
11-14-24

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STRAUS TRACT - SECONDARY ARTERIAL

SAN ANTONIO, TEXAS

SIGNAGE DETAILS

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER CB
CHECKED JA DRAWN CB
SHEET C3.10

Date: Nov 14, 2024, 9:20pm User ID: JForbis
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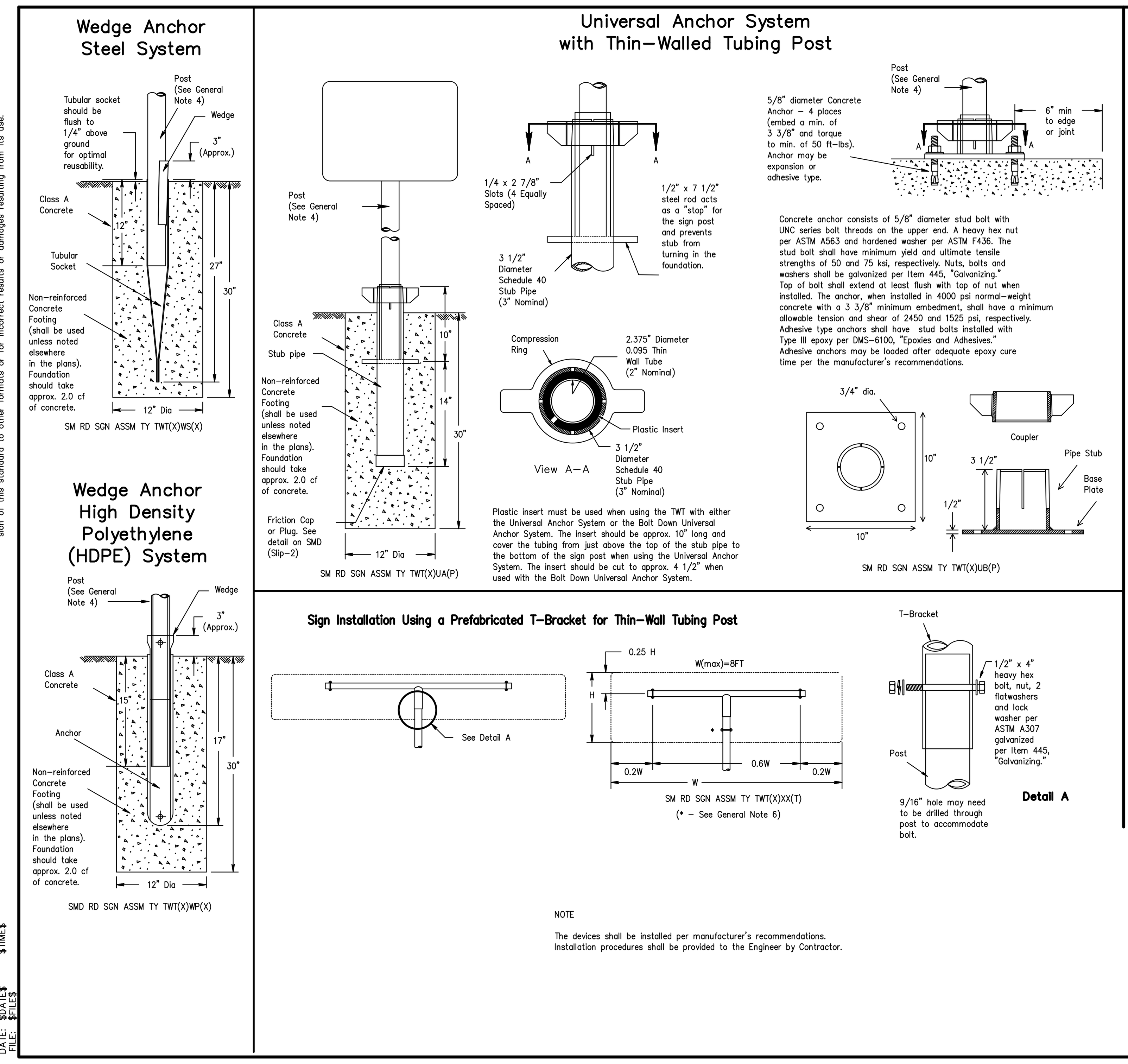

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   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
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
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. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximaely 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

NOTE

The devices shall be installed per manufacturer's recommendations. Installation procedures shall be provided to the Engineer by Contractor.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
WEDGE & UNIVERSAL ANCHOR
WITH THIN WALL TUBING POST
SMD(TWT)-08

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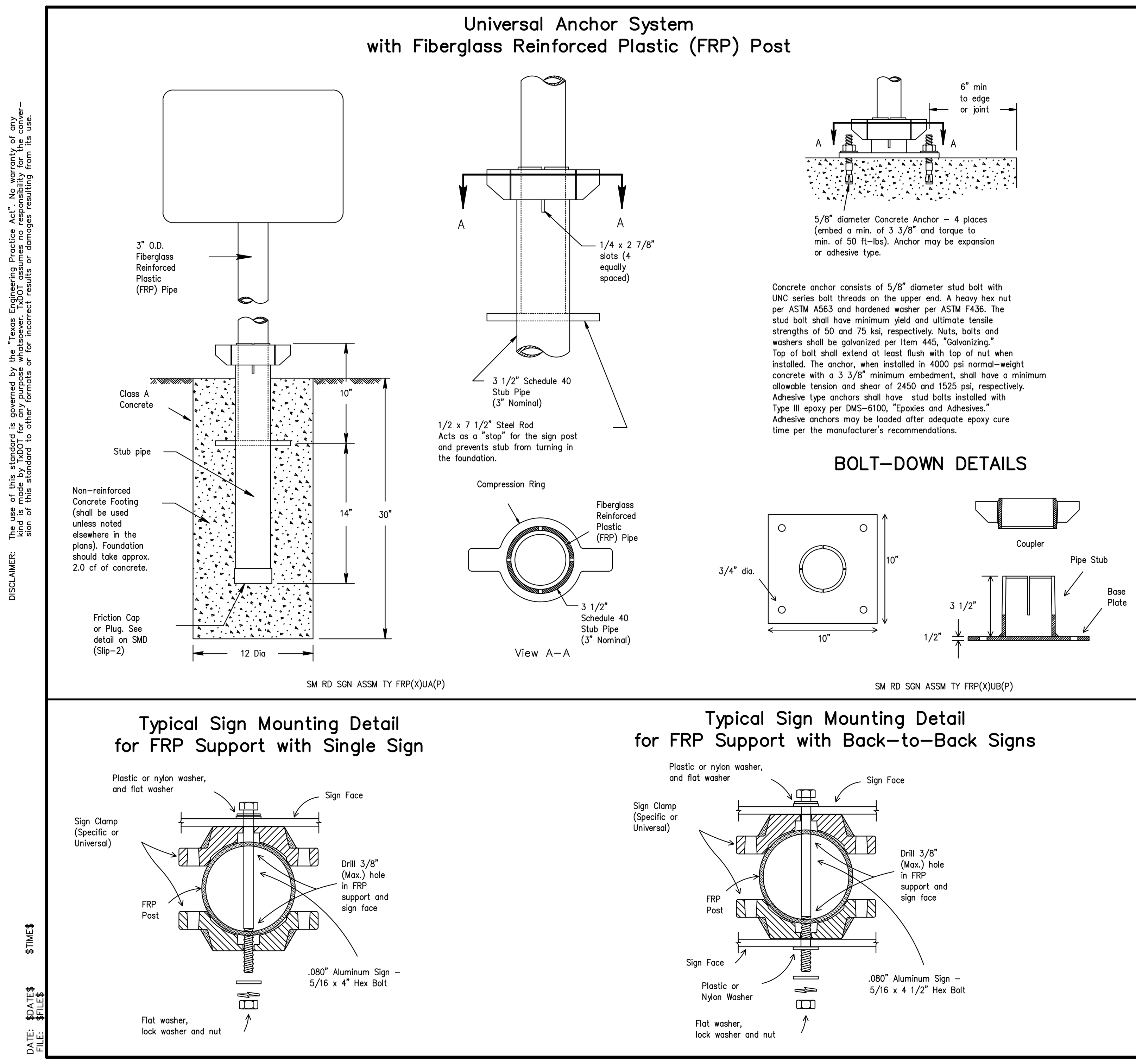


GENERAL NOTES:

1. FRP sign supports for a single type sign support may be used for signs up to and including 16 square feet. Dual post installation may be used for signs up to and including 32 square feet.
2. All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
3. See the Traffic Operations Division website for detailed drawings of sign clamps. The website address is: http://www.txdot.gov/publications/traffic.htm

FRP POST REQUIREMENTS

1. Materials shall conform to the requirements of Departmental Material Specification DMS-4410 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
2. Thickness of FRP sign support is 0.125" + 0.031", - 0.0".
3. FRP sign supports are prequalified by the Traffic Operations Division. Prequalification procedures are obtained by writing:
   Texas Department of Transportation
   Traffic Operations Division
   125 East 11th Street
   Austin, Texas 78701-2483

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
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. Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
4. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post slots shall be above the concrete footing.
5. Attach sign to FRP post.
6. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
7. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
8. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

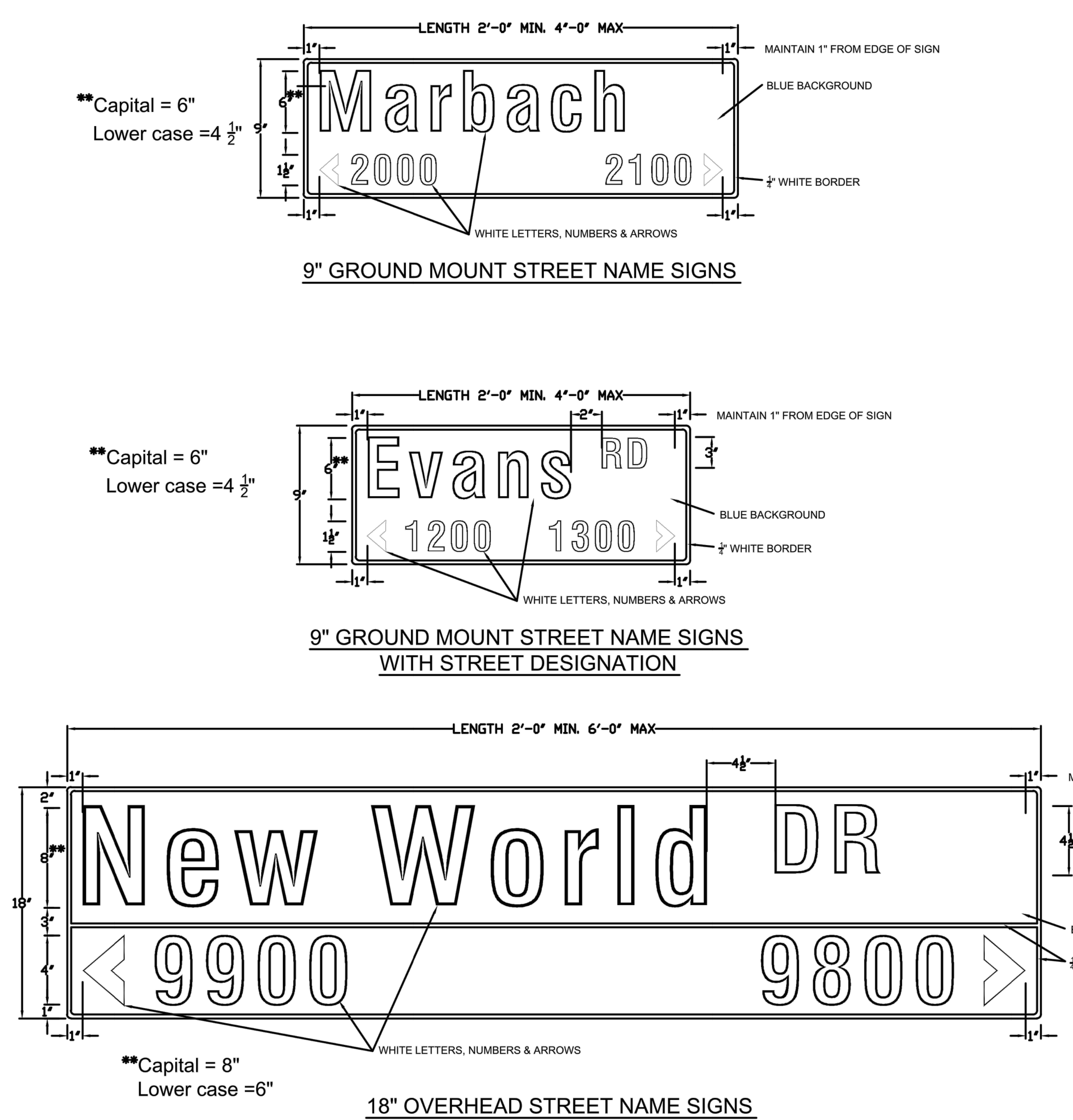
BOLT DOWN SIGN SUPPORT

1. Position base plate with coupler on existing concrete.
2. Drill holes into concrete and insert the 5/8" diameter bolts with wedge anchors, and tighten nuts.
3. Attach sign to FRP post.
4. Insert bottom of sign post into pipe stub.
5. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
6. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

Texas Department of Transportation
Traffic Operations Division

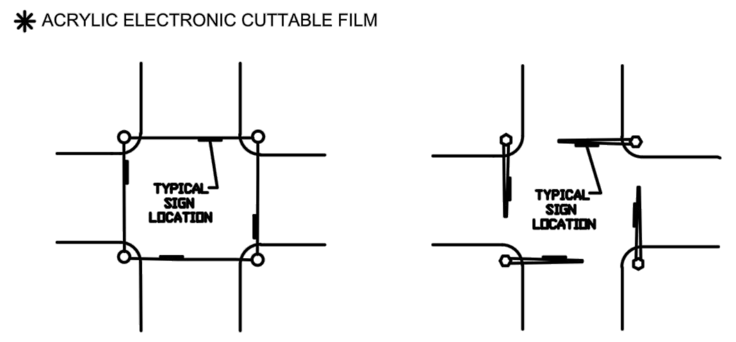
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
UNIVERSAL ANCHOR SYSTEM
WITH FRP POST
SMD(FRP)-08

©TxDOT July 2002



	18" OVERHEAD SIGN	9" GROUND MOUNT SIGNS
HEIGHT	18" (381 mm)	9" (228 mm)
LENGTH	48" (1200 mm) MIN. 72" (1800 mm) MAX. 1' (300mm) INCREMENTS OF LENGTH	24" (600 mm) MIN. 48" (1200 mm) MAX. 6" (150mm) INCREMENTS OF LENGTH
THICKNESS	0.125" (3 mm)	
SUBSTRATE	ALUMINUM ALLOY, 5052-H38 (ASTM B-209 GOLD CHROMATE FINISH	
SIGN FACE MATERIALS	BLUE FILM ✱ OVER DIAMOND GRADE - ASTM Type XI Non-Fluorescent	BLUE FILM ✱ OVER HIGH INTENSITY PRISMATIC- ASTM Type IV
LEGENDS AND SYMBOLS	SERIES D, B OR C IF NAME OTHERWISE EXCEEDS MAXIMUM SIGN LENGTH	
COLOR	WHITE LEGEND ON BLUE BACKGROUND	
LETTER TRACKING	17% (USUAL) 10% (MIN.)	10%

✱ ACRYLIC ELECTRONIC CUTTABLE FILM



SIGN FACE MATERIALS SHALL CONFORM TO:

1. STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS & BRIDGES ON FEDERAL HIGHWAY PROJECTS - FP-03 U.S. CUSTOMARY UNITS SECTION 718
2. GENERAL SERVICES ADMINISTRATION FEDERAL SPECIFICATIONS L-S-300C
3. ASTM D 4956 - 09ε1

Bexar County Public Works
Street Name Sign Details

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
Jon Adame 11-14-24

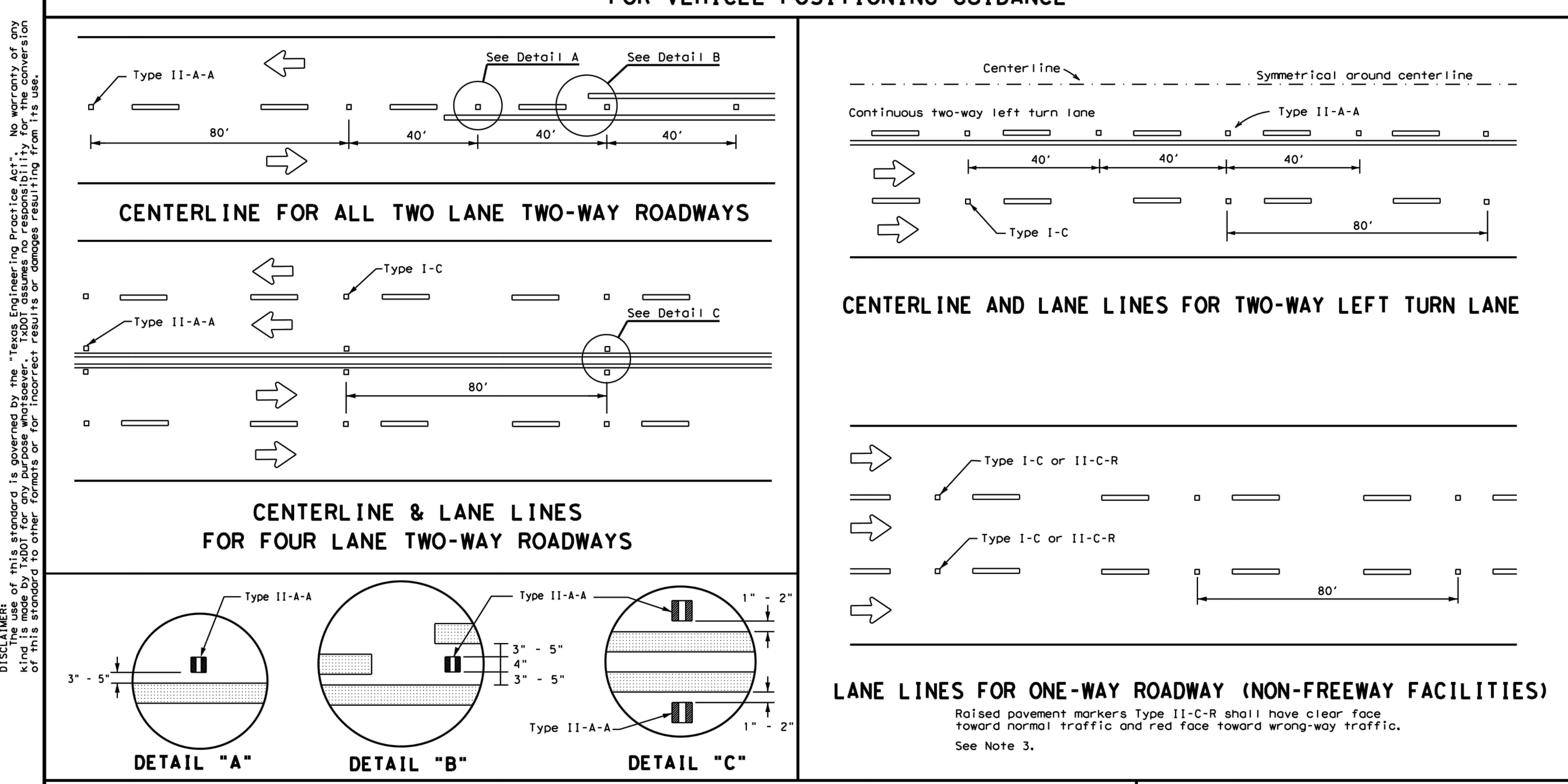
PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STRAUS TRACT - SECONDARY ARTERIAL
SAN ANTONIO, TEXAS

SIGNAGE DETAILS

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER CB
CHECKED JA DRAWN CB
SHEET C3.11

REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS

CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE

LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

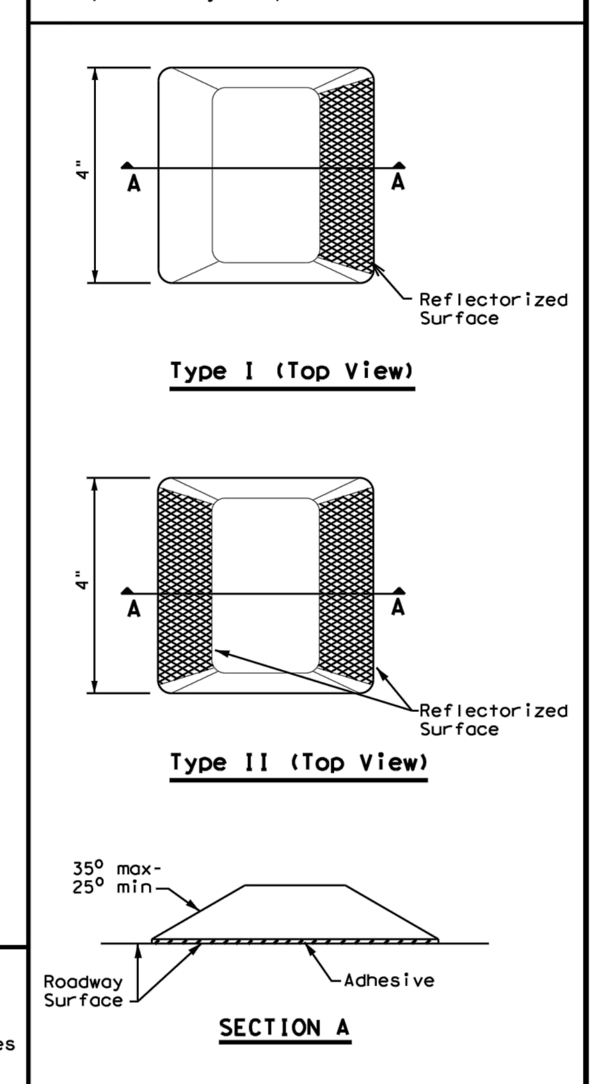
Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

See Note 3.

DETAIL "A" DETAIL "B" DETAIL "C"

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

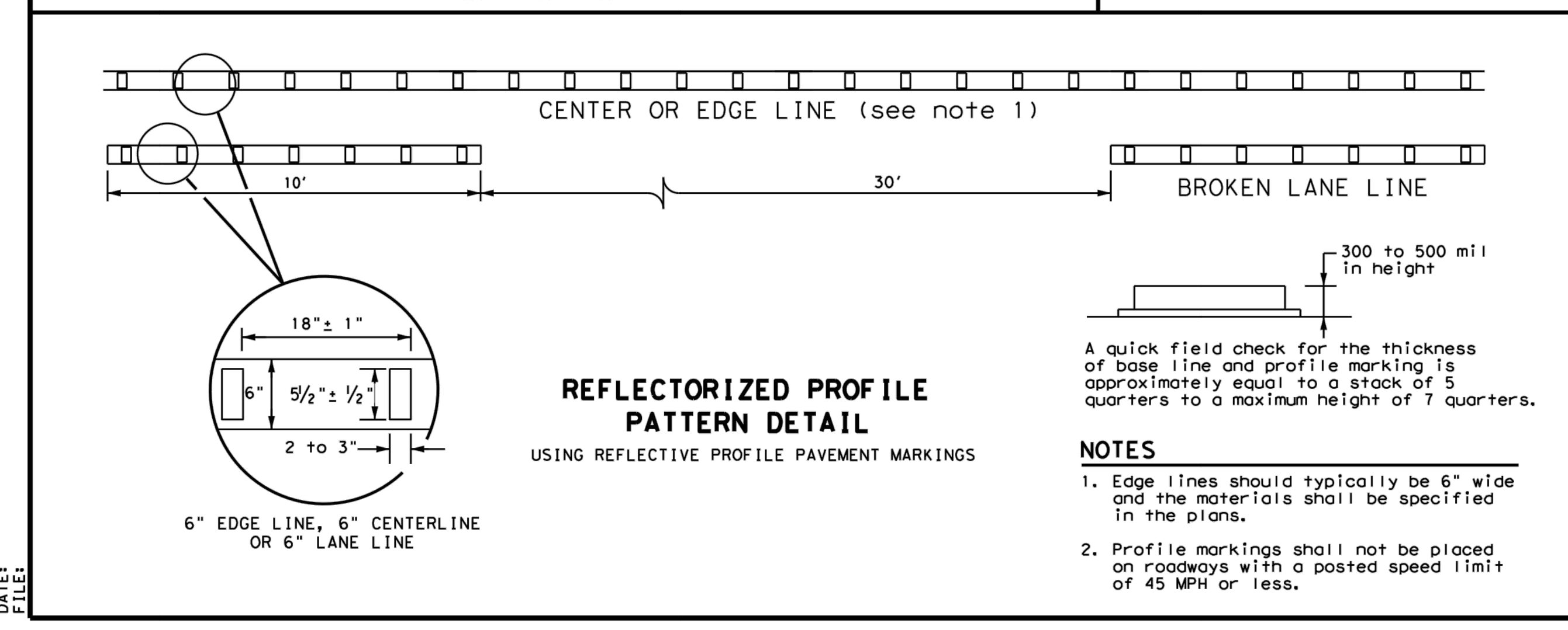


Type I (Top View)

Type II (Top View)

SECTION A

RAISED PAVEMENT MARKERS



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

NOTES

1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

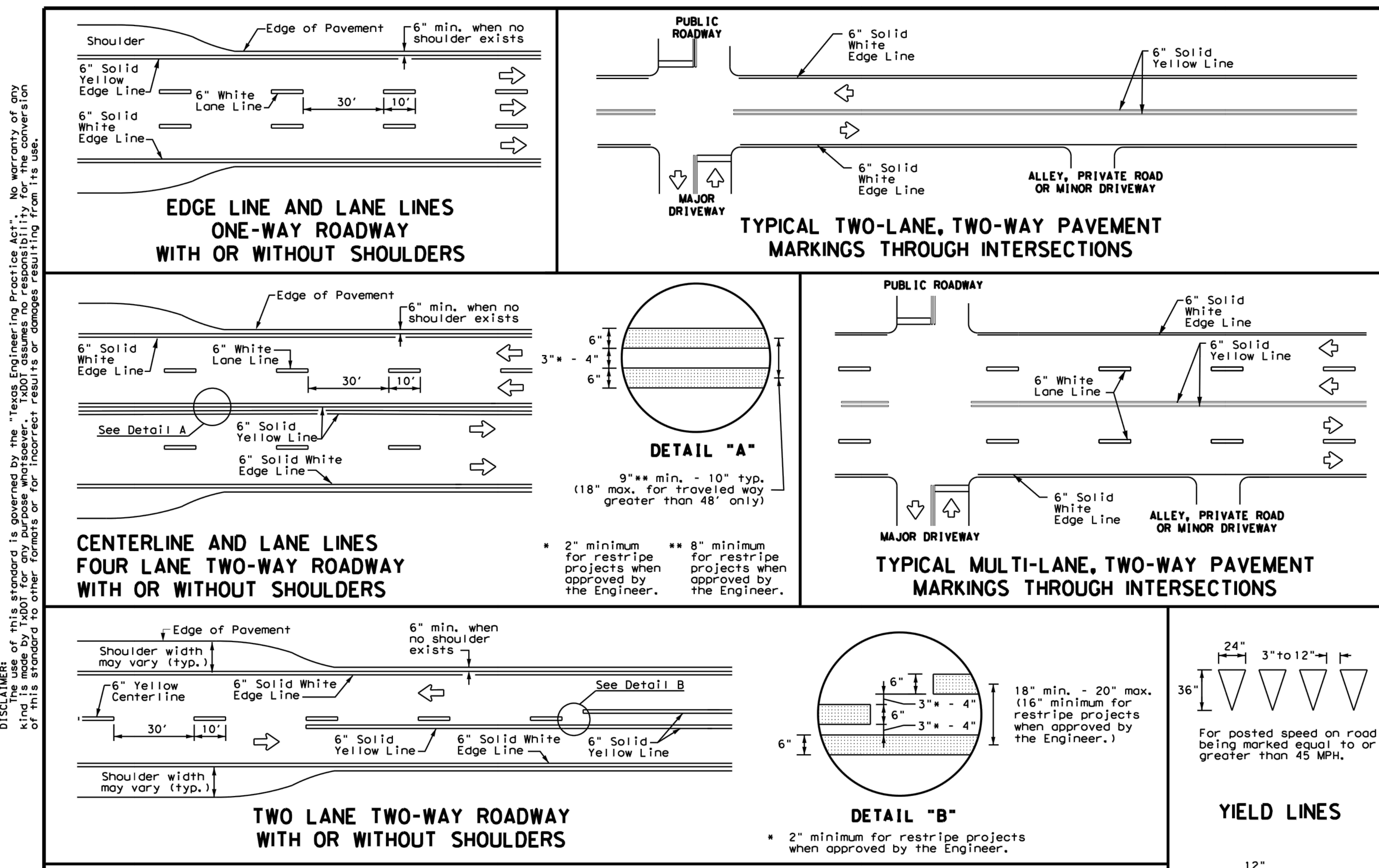
Texas Department of Transportation — Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS

PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-77 8-00 6-20 / 4-92 2-10 12-22 / 5-00 2-12	DIST	COUNTY		SHEET NO.

22B



EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS

TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

DETAIL "A"

TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

DETAIL "B"

* 2" minimum for restripe projects when approved by the Engineer.

YIELD LINES

For posted speed on road being marked equal to or greater than 45 MPH.

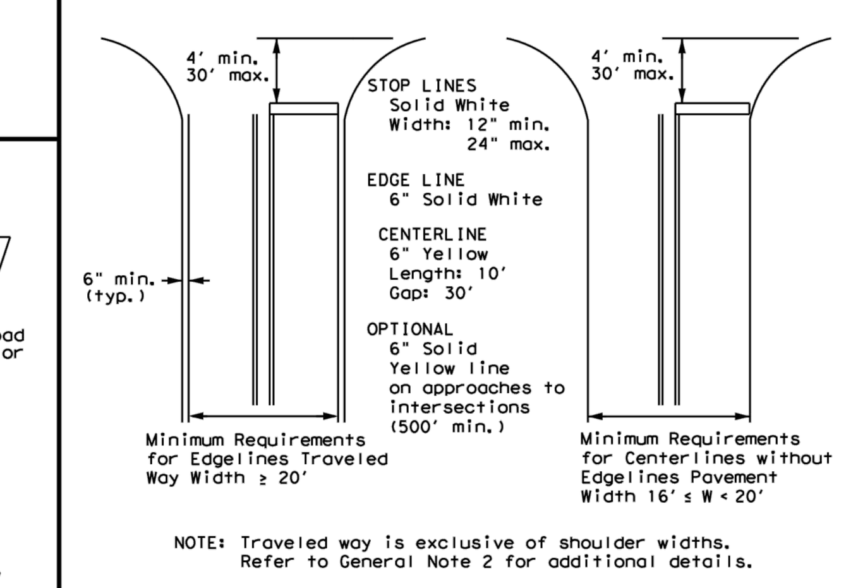
For posted speed on road being marked equal to or less than 40 MPH.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

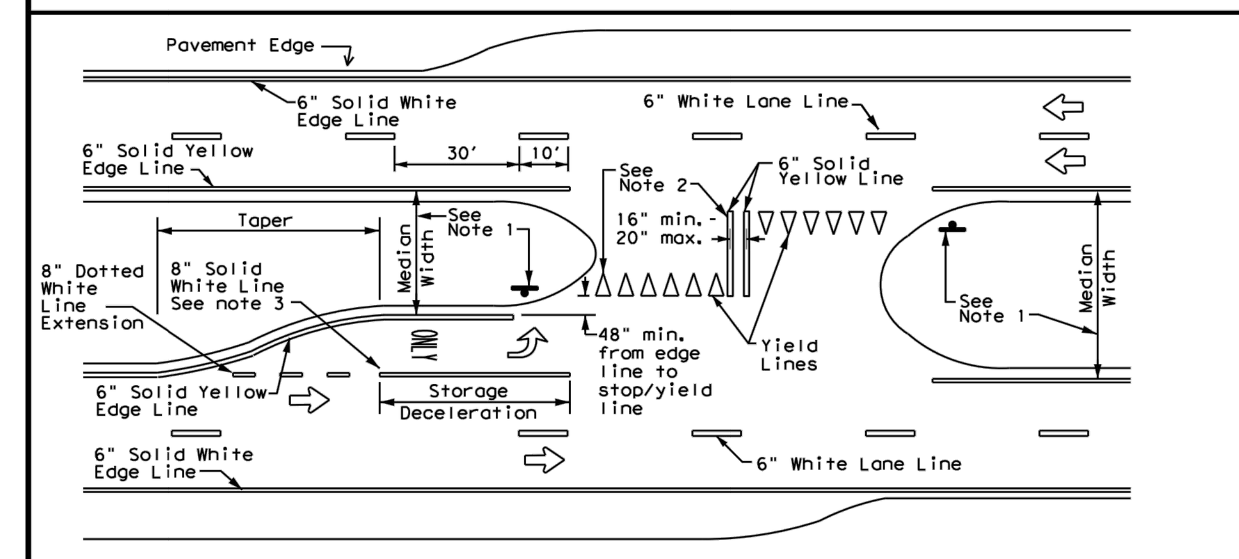


Minimum Requirements for Edgelines Traveled Way Width ≥ 20'

NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

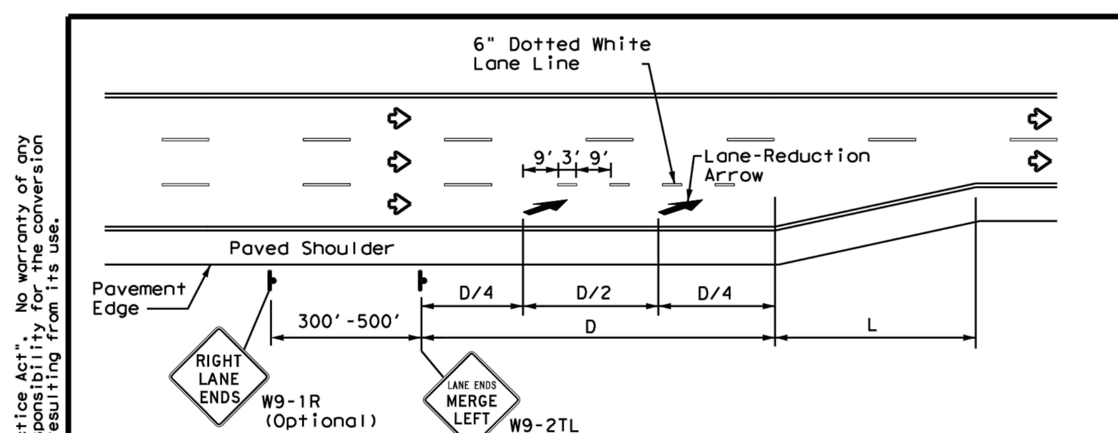
Texas Department of Transportation — Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20 / 8-95 3-03 12-22 / 5-00 2-12	DIST	COUNTY		SHEET NO.

22A



LANE REDUCTION

NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

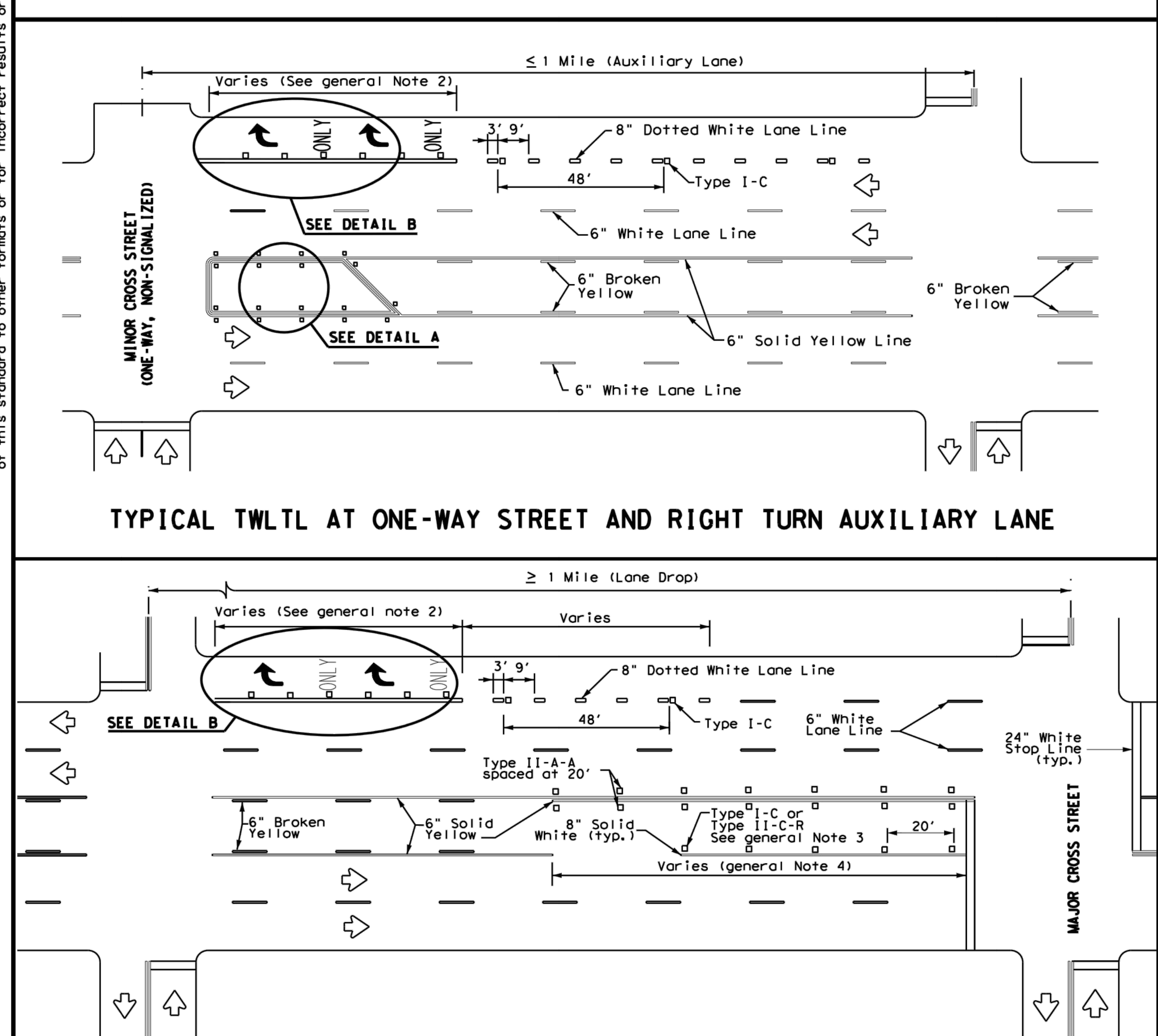
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L = \frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

GENERAL NOTES

1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

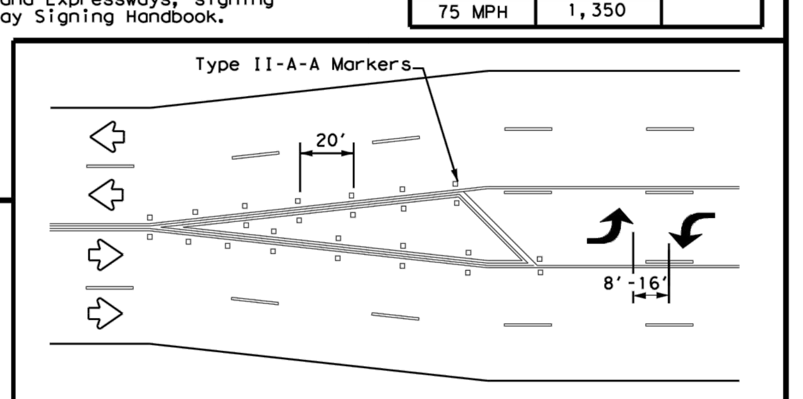
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



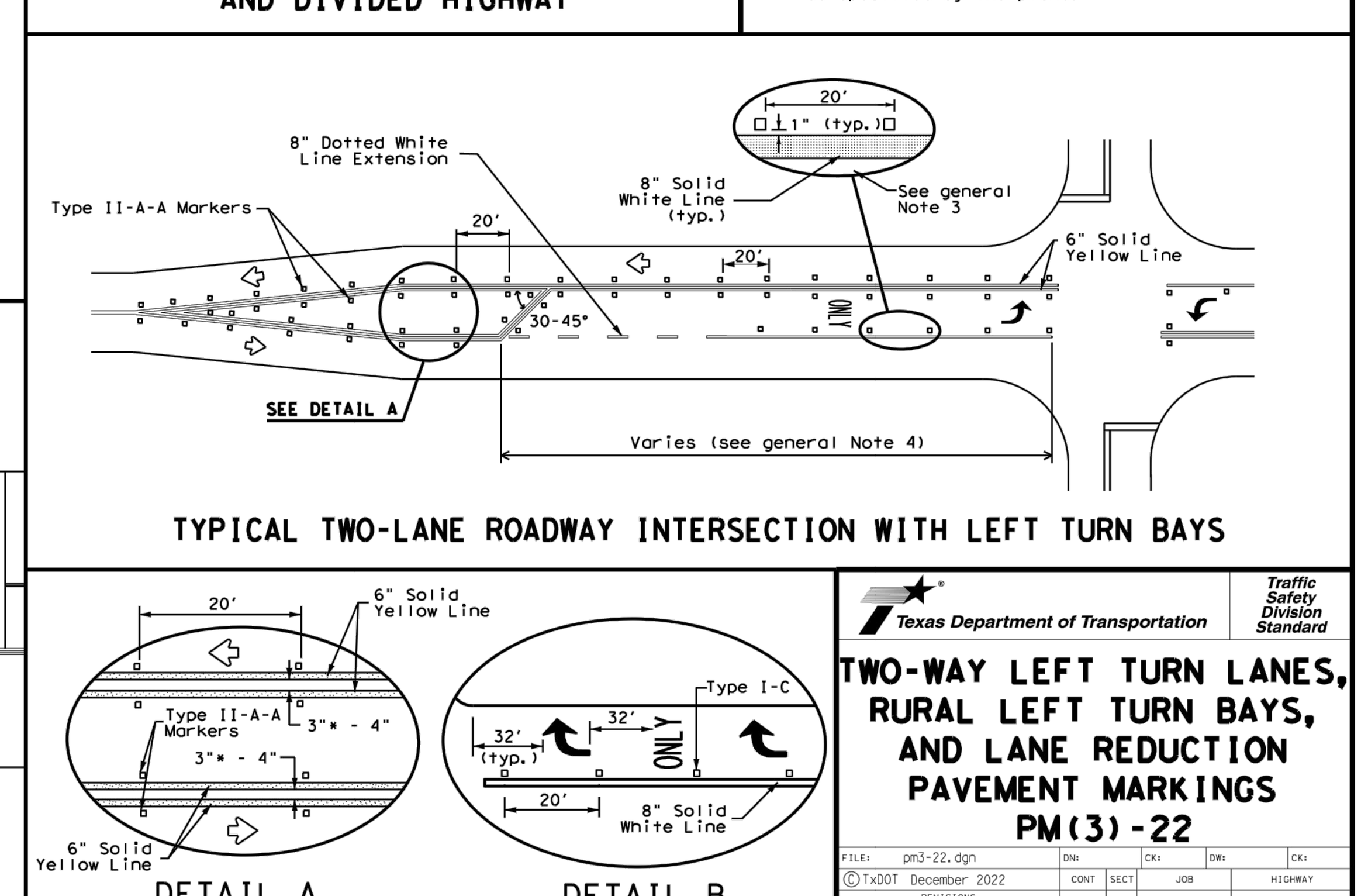
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE

TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS

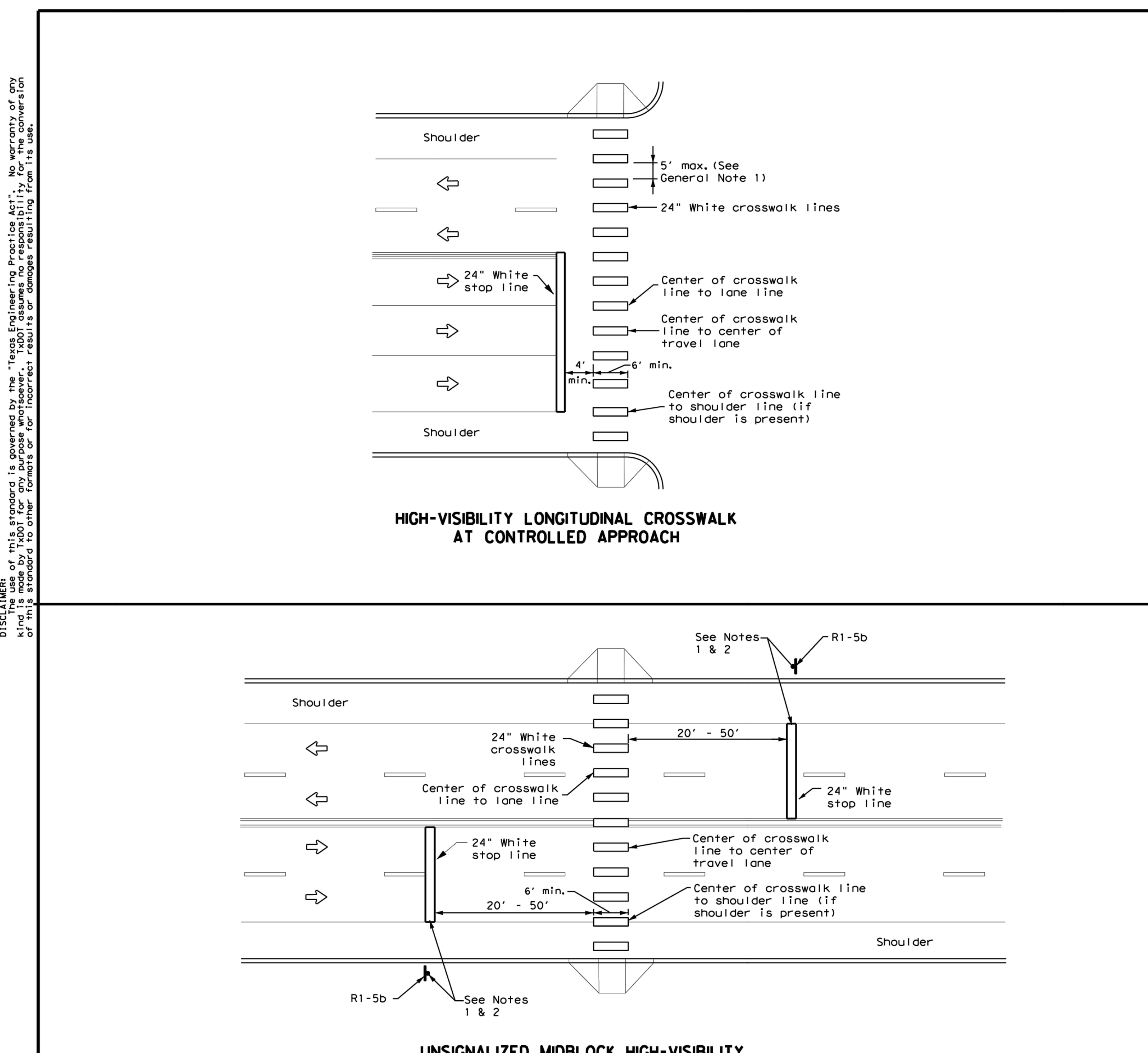
DETAIL A DETAIL B

* 2" minimum allowed for restripe projects when approved by the Engineer.

Texas Department of Transportation — Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS

PM(3)-22



HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

NOTES:

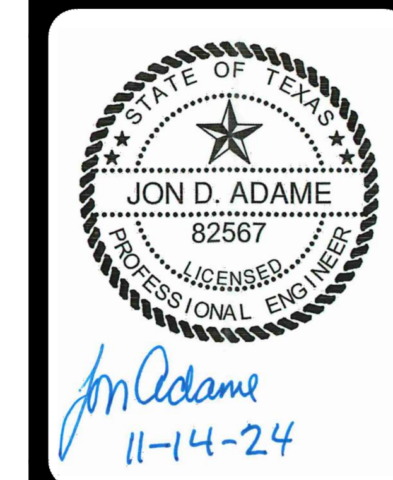
1. Use stop bars with Stop Here For Pedestrians (R1-5b) signs at unsignalized midblock cross walks.
2. Use stop bars with STOP HERE ON RED (R10-6 or R10-6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation — Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

DATE	REVISION	NO.



JON D. ADAME 82567 LICENSED PROFESSIONAL ENGINEER — 11-14-24

PAPE-DAWSON ENGINEERS

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000

TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STRAUS TRACT - SECONDARY ARTERIAL

SAN ANTONIO, TEXAS

SIGNAGE DETAILS

PLAT NO. 24-11800322

JOB NO. 13055-08

DATE NOVEMBER 2024

DESIGNER CB

CHECKED JA DRAWN CB

SHEET C3.12

Date: Nov 14, 2024, 9:19pm User ID: JFarias
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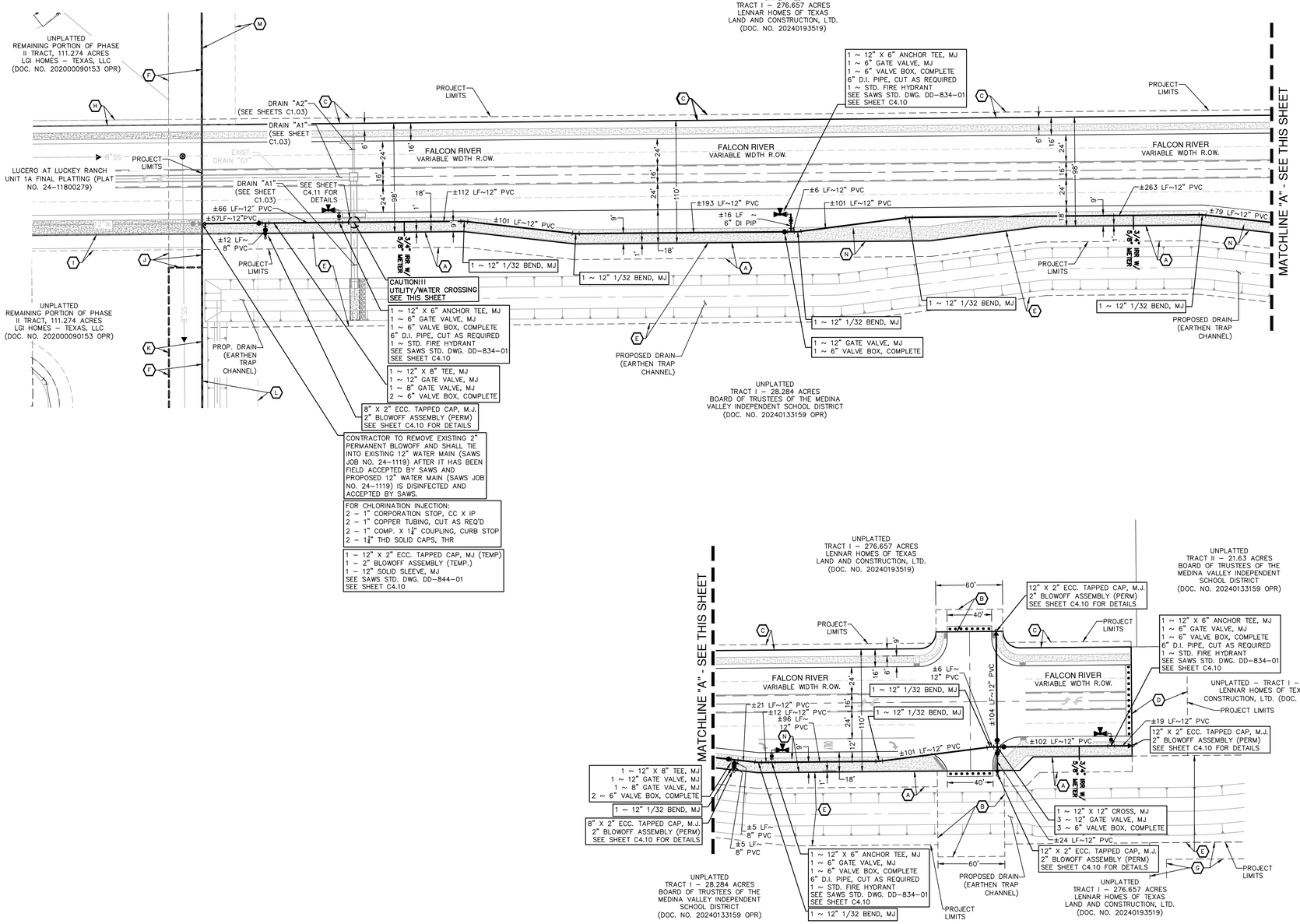
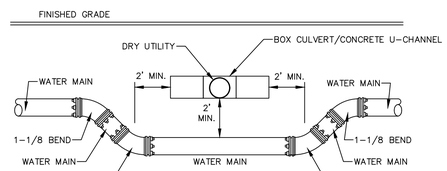
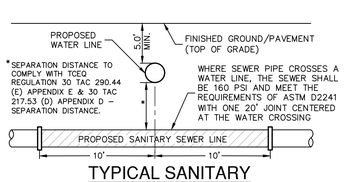




ALL JOINTS ARE FULLY RESTRAINED IN ACCORDANCE WITH SAWS SPECIFICATION TABLE DD–839–06.

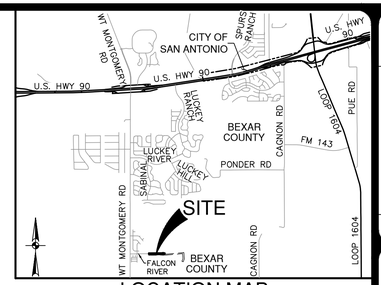
TYPICAL UTILITY/WATER CROSSING DETAIL

NOT–TO–SCALE



TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT–TO–SCALE



LOCATION MAP

NOT–TO–SCALE

SCALE: 1"= 50'

0' 50' 100' 150'

WATER LEGEND

- PROJECT LIMITS
- EXISTING WATER (W)
- EXISTING SEWER (SS)
- PROPOSED SEWER (SS, MANHOLE)
- PROPOSED WATER (FIRE HYDRANT, W)
- PROPOSED JOINT RESTRAINTS (82')
- WATER/SEWER/DRAIN CROSSING

KEY LEGEND:

(A) 14' LANDSCAPE, GAS, ELEC., TEL. AND CATV ESMT. (OFF–LOT)

(B) 60' ACCESS, SAN. SWR., WATER, DRAIN, GAS, ELEC., TEL., AND CATV ESMT. TO EXPIRE UPON INCORPORATION INTO PLATTED STREET RIGHT–OF–WAY (OFF LOT)

(C) 5' LANDSCAPE ESMT. (OFF–LOT)

(D) 98' ACCESS, SAN. SWR., WATER, DRAIN, GAS, ELEC., TEL. AND CATV ESMT. TO EXPIRE UPON INCORPORATION INTO PLATTED STREET RIGHT–OF–WAY (OFF–LOT)

(E) VAR. WIDTH DRAINAGE ESMT. (OFF–LOT)

(F) ELEC. ESMT. ACCESS ESMT. (DOC NO 20140045268 OPR)

(G) 15' CLEARING AND GRADING BUFFER ESMT. (DOC NO 20240132079 OPR)

(H) 5' LANDSCAPE ESMT. LUCERO AT LUCKEY RANCH UNIT 1A FINAL PLATTING (PLAT NO. 24–11800279)

(I) 14' LANDSCAPE, GAS, ELEC., TEL. AND CATV ESMT. LUCERO AT LUCKEY RANCH UNIT 1A FINAL PLATTING (PLAT NO. 24–11800279)

(J) VAR. WIDTH SAN. SWR. ESMT. LUCERO AT LUCKEY RANCH UNIT 1A FINAL PLATTING (PLAT NO. 24–11800279)

(K) VAR. WIDTH SAN. SWR. ESMT. LUCERO AT LUCKEY RANCH UNIT 1 FINAL PLATTING (PLAT NO. 24–11800189)

(L) 50' DRAINAGE ESMT. (DOC NO 20240182574)

(M) 30' DRAINAGE ESMT. (DOC NO 20240182569)

(N) VARIABLE WIDTH COSA/BEXAR COUNTY ROW DEDICATION (0.1404 ACRE)

PRESSURE REDUCING VALVE NOTE:

PRESSURE REDUCING VALVE TO BE INSTALLED ON CUSTOMER'S SIDE OF METER BY HOMEBUILDER.

PRESSURE NOTE:

CONTRACTOR TO VERIFY THAT NO PORTION OF THE TRACT IS BELOW GROUND ELEVATION OF 985 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 985 FEET, THE DEVELOPER OR BUILDER SHALL INSTALL AT EACH LOT, ON THE CUSTOMER'S SIDE OF THE METER, AN APPROVED TYPE PRESSURE REGULATOR IN CONFORMANCE WITH THE PLUMBING CODE OF THE CITY OF SAN ANTONIO. NO DUAL SERVICES ALLOWED FOR ANY LOT(S) IF *PRV IS/ARE REQUIRED FOR SUCH LOT(S), ONLY SINGLE SERVICE CONNECTIONS SHALL BE ALLOWED.
*NOTE: A PRESSURE REGULATOR IS ALSO KNOWN AS A PRESSURE REDUCING VALVE (PRV).

JOINT RESTRAINT NOTE:

CONTRACTOR SHALL INSTALL RETAINER GLANDS AT ALL FITTINGS AND PROVIDE JOINT RESTRAINING HARNESSES OR FIELD LOCK GASKETS AT ALL JOINTS WITHIN THE LENGTH SHOWN. CONTRACTOR SHALL INSURE THAT ALL TEES, BENDS, VALVES, ETC. HAVE A MINIMUM OF 5 FT OF PIPE WITH NO JOINTS ON EACH SIDE OF THE FITTING. JOINT RESTRAINTS AND RETAINER GLANDS SHALL BE CALCULATED BY SAWS APPROVED PROGRAMS. THERE WILL BE NO SEPARATE PAY ITEM FOR RETAINER GLANDS AND OTHER JOINT RESTRAINING HARNESSES AND GASKETS, BUT SHALL BE SUBSIDIARY TO THE UNIT COST PER LINEAL FOOT OF PIPE INSTALLED.

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

FIRE FLOW NOTE:

IN AN EFFORT TO MEET THE CITY OF SAN ANTONIO'S FIRE FLOW REQUIREMENTS FOR THE PROPOSED RESIDENTIAL DEVELOPMENT, THE PUBLIC WATER MAIN SYSTEM HAS BEEN DESIGNED FOR A MINIMUM FIRE FLOW DEMAND OF 1750 GPM AT 25 PSI RESIDUAL PRESSURE. THE FIRE FLOW REQUIREMENTS FOR INDIVIDUAL STRUCTURES WILL BE REVIEWED DURING THE BUILDING PERMIT PROCESS IN ACCORDANCE WITH THE PROCEDURES SET FORTH BY THE CITY OF SAN ANTONIO DIRECTOR OF DEVELOPMENT SERVICES DEPARTMENT AND THE SAN ANTONIO FIRE DEPARTMENT FIRE MARSHAL.

ROW PERMIT NOTE:

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY RIGHTS–OF–WAY.

WATER (SAWS PRESSURE ZONE 8)

DEVELOPER'S NAME: JEN TEXAS 36 LLC
ADDRESS: 650 FIFTH AVE. 25TH FLOOR
CITY: NEW YORK STATE: NEW YORK ZIP: 10019
PHONE# PHONE # FAX#
SAWS BLOCK MAP# 084548 TOTAL EDU'S 0 TOTAL ACREAGE 10.430
TOTAL LINEAR FOOTAGE OF PIPE: 12"–1336 8"–151 PLAT NO. 24–11800322
NUMBER OF LOTS 0 SAWS JOB NO. 24–1132

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
1-17-25

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX. 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

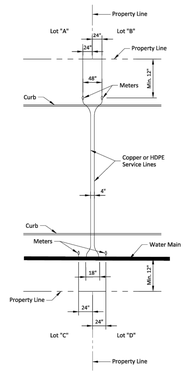
STRAUS TRACT - SECONDARY ARTERIAL

SAN ANTONIO, TEXAS

OVERALL WATER DISTRIBUTION PLAN

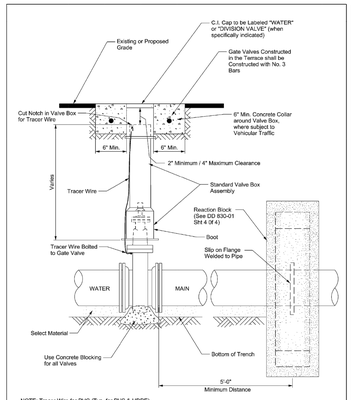
PLAT NO. 24-11800322
JOB NO. 13055-08
DATE JANUARY 20025
DESIGNER AA
CHECKED AS DRAWN GP
SHEET C4.00

Date: Jan 17, 2025, 1:29pm User ID: JFarias
File: P:\130\55\08\Design\Civil\WTOA-13055108.dwg



SINGLE SERVICE LINE - SINGLE METER

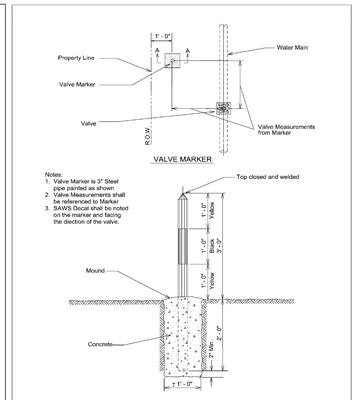
PROPERTY OF	TYPICAL	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	NEW DEVELOPMENT SERVICE ARRANGEMENT	March 2008	December 2018
		DD-824-05	SHEET 1 OF 1



NOTE: Tracer Wire for PVC (Typ. for PVC & HDPE)
NOTE: All Concrete to be 3,000 psi

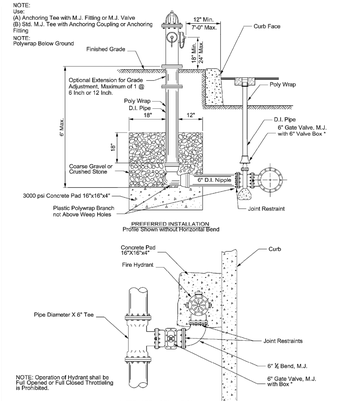
Note: For all work associated with Recycled Water Valves, refer to DD 110-10, Sht. 1 of 1

PROPERTY OF	INSTALLATION OF NON-GEARED GATE VALVE WITH VALVE BOX AND EXTENSION	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		MARCH 2008	AUG 2019
		DD 828-01	SHEET 1 OF 1

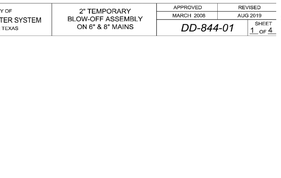


Notes:
1. Valve Marker is 3" Steel pipe painted as shown
2. Valve Measurements shall be referenced to Marker
3. SAWS Decal shall be noted on the marker and facing the direction of the valve.

PROPERTY OF	VALVE MARKER	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		MARCH 2008	AUG 2019
		DD-828-04	SHEET 1 OF 1



PROPERTY OF	FIRE HYDRANT INSTALLATION (JOINT RESTRAINT)	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		MAY 2013	AUG 2019
		DD-834-01	SHEET 1 OF 3



RESTRAINED LENGTH FOR TEES

PIPE SIZE (inch)	BRANCH SIZE (inch)	LENGTH OF RUN (ft.)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	4	0	42	31
6	4	5	7	1
6	4	10	1	1
6	6	0	59	44
6	6	5	35	20
6	6	10	11	1
8	4	0	42	31
8	4	5	1	1
8	6	0	59	44
8	6	5	28	13
8	6	10	1	1
8	8	0	77	58
8	8	5	53	34
8	8	10	30	11
8	8	15	6	1

RESTRAINED LENGTH DESIGN

Restrained length calculations are for P.V.C pipe bedded in compacted granular material extending to the top of the pipe.The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF	RESTRAINED LENGTHS FOR TEES	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		March 2008	AUG 2019
		DD-839-04	SHEET 1 OF 2

RESTRAINED LENGTH FOR TEES (Cont'd)

PIPE SIZE (inch)	BRANCH SIZE (inch)	LENGTH OF RUN (ft.)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
12	4	0	42	31
12	4	5	1	1
12	6	0	59	44
12	6	5	13	1
12	6	10	1	1
12	8	0	77	58
12	8	5	42	23
12	8	10	7	1
12	8	15	1	1
12	12	0	109	82
12	12	5	86	59
12	12	10	63	35
12	12	15	39	12

RESTRAINED LENGTH DESIGN

Restrained length calculations are for P.V.C pipe bedded in compacted granular material extending to the top of the pipe.The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF	RESTRAINED LENGTHS FOR TEES	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		March 2008	AUG 2019
		DD-839-04	SHEET 2 OF 2

L=LENGTH TO BE RESTRAINED

PIPE SIZE (inch)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	59	44
8	77	58
10	93	69
12	109	82

RESTRAINED LENGTH DESIGN

Restrained length calculations are for P.V.C. pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provide for reference. The restrained length shall be designed upon the conditions encountered during the installation.

PROPERTY OF	RESTRAINED LENGTHS FOR DEAD ENDS / INLINE VALVES	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		MARCH 2008	AUG 2019
		DD-839-05	SHEET 1 OF 1

PIPE SIZE (inch)	BEND ANGLE (deg.)	LOW SIDE DEPTH	UPPER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 200 psi	LOWER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 200psi	UPPER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 150 psi	LOWER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 150 psi
6	45	5	24	8	18	6
6	22.5	5	12	4	9	3
6	11.25	5	6	2	4	1
6	45	10	24	5	18	4
6	22.5	10	12	2	9	2
6	11.25	10	6	1	4	1
8	45	5	32	11	24	8
8	22.5	5	15	5	11	4
8	11.25	5	8	3	6	2
8	45	10	32	7	24	5
8	22.5	10	15	3	11	2
8	11.25	10	8	2	6	1
12	45	5	45	16	34	12
12	22.5	5	22	7	16	6
12	11.25	5	11	4	8	3
12	45	10	45	10	34	7
12	22.5	10	22	5	16	3
12	11.25	10	11	2	8	2

RESTRAINED LENGTH DESIGN

Restrained length calculations are for P.V.C. pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF	RESTRAINED LENGTHS VERTICAL OFFSETS	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		MARCH 2008	AUG 2019
		DD-839-06	SHEET 1 OF 1

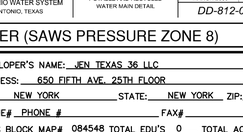
PIPE SIZE (inch)	S.MALL SIZE (inch)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	4	30	23
8	4	55	42
8	6	32	24
12	4	80	60
12	6	80	60
12	8	58	43

RESTRAINED LENGTH DESIGN

Restrained length calculations are for P.V.C. pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note:
These calculations are provided for reference. Th restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF	RESTRAINED LENGTHS FOR REDUCERS	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		MARCH 2008	AUG 2019
		DD-839-07	SHEET 1 OF 1



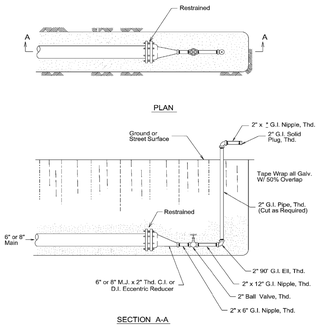
PIPE SIZE (inch)	BEND ANGLE (deg)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	90	23	17
6	45	9	7
6	22.5	5	3
6	11.25	2	2
8	90	30	22
8	45	12	9
8	22.5	6	4
8	11.25	3	2
12	90	43	32
12	45	17	12
12	22.5	8	6
12	11.25	4	3

RESTRAINED LENGTH DESIGN

Restrained length calculations are for P.V.C pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

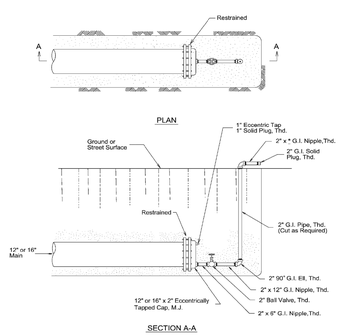
Note:
These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF	STANDARD CHLORINATION INSTALLATION	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		March 2008	AUG 2019
		DD-847-01	SHEET 1 OF 1



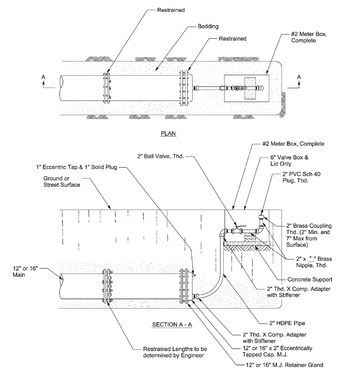
* Cut as required to extend beyond excavation

PROPERTY OF	2" TEMPORARY BLOW-OFF ASSEMBLY ON 6" & 8" MAINS	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		MARCH 2008	AUG 2019
		DD-844-01	SHEET 1 OF 4



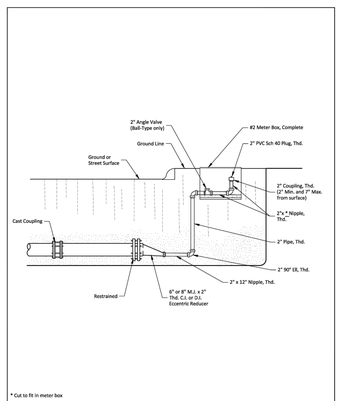
* Cut as required to extend beyond excavation.

PROPERTY OF	2" TEMPORARY BLOW-OFF ASSEMBLY ON 12" & 16" MAINS	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		March 2008	AUG 2019
		DD-844-01	SHEET 2 OF 4

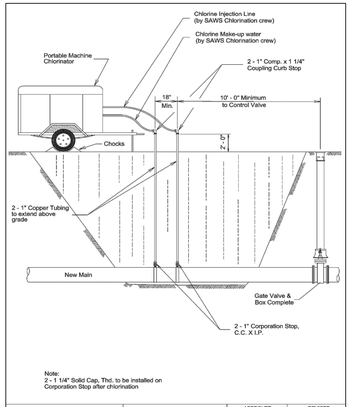


* Length Varies

PROPERTY OF	2" PERMANENT BLOW-OFF ASSEMBLY ON 12" & 16" MAINS	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		MARCH 2008	AUG 2019
		DD-844-02	SHEET 3 OF 4

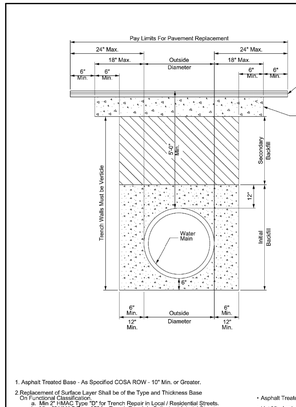


PROPERTY OF	2" PERMANENT BLOW-OFF ASSEMBLY ON 6" & 8" MAINS	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		March 2008	AUG 2019
		DD-844-02	SHEET 3 OF 4



Note:
2 - 1 1/4" Solid Cap, Thd, to be installed on Corporation Stop after chlorination

PROPERTY OF	STANDARD CHLORINATION INSTALLATION	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		March 2008	AUG 2019
		DD-847-01	SHEET 1 OF 1



1. Asphalt Treated Base - As Specified COSA ROW - 10" Min. or Greater.

2 Replacement of Surface Layer Shall be of the Type and Thickness Base On Functional Classification:
a. Min 7" HMAC Type "C" for Trench Repair in Local / Residential Streets.
b. Min. 9" HMAC Type "C" for Trench Rrpair in Collector / Arterial Streets.

* Asphalt Treated Base (ATB)
* Hot Mix Asphalt Concrete (HMAC)

PROPERTY OF	POTABLE AND RECYCLED WATER MAIN DETAIL	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		March 2008	AUG 2019
		DD-812-01	SHEET 4 OF 4

WATER (SAWS PRESSURE ZONE 8)

DEVELOPER'S NAME: JEN TEXAS 36 LLC
ADDRESS: 650 FIFTH AVE, 25TH FLOOR
CITY: NEW YORK STATE: NEW YORK ZIP: 10019
PHONE# PHONE # FAX#
SAWS BLOCK MAP# 084548 TOTAL EDU'S 0 TOTAL ACREAGE 10.430
TOTAL LINEAR FOOTAGE OF PIPE: 8"-151 12"-1336 PLAT NO. 24-11800322
NUMBER OF LOTS 0 SAWS JOB NO. 24-1132

NO.	REVISION	DATE

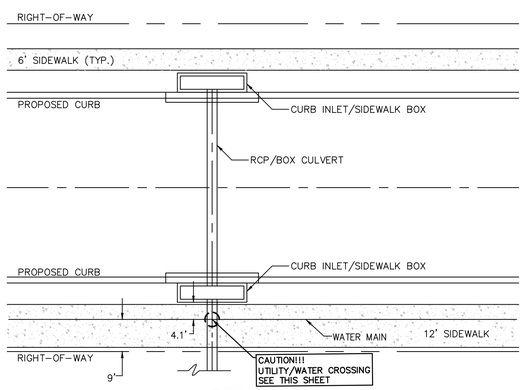
STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
1-17-25

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

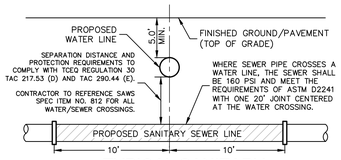
STRAUS TRACT - SECONDARY ARTERIAL
SAN ANTONIO, TEXAS
WATER DISTRIBUTION DETAILS

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE JANUARY 20025
DESIGNER AA
CHECKED AS DRAWN GP
SHEET C4.10

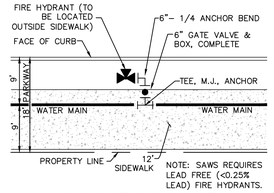
Date: Jan 17, 2025, 1:29pm User ID: JFarias
File: P:\13055\08\Design\Civil\WDT-13055008.dwg



DETAIL "A"
DRAIN/WATER CROSSING DETAILS
NOT-TO-SCALE



TYPICAL SANITARY
SEWER/WATER CROSSING DETAIL
NOT-TO-SCALE



REFER TO SAWS DETAIL DD-834-01

FIRE HYDRANT INSTALLATION
NOT-TO-SCALE

BEXAR COUNTY RIGHT OF WAY PERMIT NOTE

GENERAL REQUIREMENTS

1. A SITE DEVELOPMENT PLAN SHALL BE DRAWN TO SCALE, AND SHALL INDICATE:
   A. DIMENSIONS AND LOCATIONS OF SIDEWALKS, PEDESTRIAN PASSING SPACES, DRIVEWAYS, CURB RAMPS OR MEDIAN CROSSOVERS BEING REQUESTED,
   B. LOCATIONS OF EXISTING AND PROPOSED ROADS OR ROADWAY INTERSECTIONS IF WITHIN 100 FEET OF THE SITE, AND
   C. LOCATIONS OF EXISTING OR PROPOSED STRUCTURES, STORM SEWER INLETS, FIRE HYDRANTS, CURB RAMPS, UTILITY POLES, FENCES AND SERVICE FIXTURES WITHIN 20'OF THE PROPOSED IMPROVEMENT WITHIN THE RIGHT-OF-WAY.
2. ANY WORK IN A FLOODPLAIN WILL REQUIRE A FLOODPLAIN DEVELOPMENT PERMIT.
3. SEPARATE PERMITS ARE REQUIRED FOR TEMPORARY CONSTRUCTION AND PERMANENT ENTRANCES.
4. DRIP IRRIGATION (OR EQUIVALENT) SYSTEMS WILL BE PERMITTED PROVIDED AN APPROVED CITY OF SAN ANTONIO IRRIGATION PERMIT (IN THE ETJ) AND AN APPROVED LICENSE LANDSCAPE AGREEMENT IS SUBMITTED WITH THE APPLICATION. NO OTHER IRRIGATION SYSTEM WILL BE ALLOWED.
5. MONUMENTS OR "SPECIAL" LANDSCAPING WILL NOT BE PERMITTED WITHOUT AN APPROVED LICENSE LANDSCAPE AGREEMENT.
6. ALL UTILITY ROAD CROSSINGS WILL BE BORED A MINIMUM OF 30 INCHES BELOW THE PAVEMENT STRUCTURAL SECTION. WATER JETTING UNDER A STREET WILL NOT BE PERMITTED. CASING WILL BE REQUIRED ON ANY PRESSURIZED UTILITY LINE CROSSING. NO OPEN CUTS WILL BE PERMITTED ON ANY PAVED ROADWAY, CURB, SIDEWALK, OR DRIVEWAY UNLESS UTILITY CONNECTION IS LOCATED WITHIN THE STREET.
7. IF A PARTIAL OR TOTAL ROAD CLOSURE WILL BE NEEDED, A TRAFFIC CONTROL PLAN SHALL BE SUBMITTED WITH THE PERMIT APPLICATION.
8. FOR ALL WORK THAT REQUIRES A PARTIAL ROAD CLOSURE, CONTRACTOR WILL MAINTAIN AT LEAST ONE (1) 12-FOOT TRAFFIC LANE, CONTROLLED WITH FLAGMEN, DURING WORKING HOURS AND OPEN THE ROADWAY UP TO TWO (2) TRAFFIC LANES (24 FT.) DURING ALL NON-WORKING HOURS. CONTRACTOR WILL FURNISH AND MAINTAIN ALL REQUIRED TRAFFIC CONTROL DEVICES, PER TMUTCD AND AS DIRECTED BY THE DESIGN ENGINEER, TO PROPERLY WARN, GUIDE, AND CONTROL TRAFFIC AT ALL TIMES DURING CONSTRUCTION.
9. FOR WORK THAT REQUIRES A TOTAL ROAD CLOSURE, CONTRACTOR MUST NOTIFY BEXAR COUNTY PUBLIC WORKS TRAFFIC SECTION (210-335-6700) AT LEAST 72 HOURS BEFORE CLOSING THE ROAD.
10. NOTIFY THE INSPECTION SECTION AT 210-335-6700 WITH PERMIT NUMBER AT LEAST 24 HOURS BEFORE STARTING THE ACTIVITY. NO INSPECTION SHALL BE MADE WITHOUT A PERMIT.
11. STORAGE OF MATERIALS WITHIN 10 LINEAR FEET OF EDGE OF PAVEMENT WITHOUT APPROPRIATE TRAFFIC SAFETY BARRIER IS PROHIBITED.
12. DRIVEWAY, SIDEWALK AND CURB REPAIRS WILL FOLLOW CURRENT CITY OF SAN ANTONIO SPECIFICATIONS.
13. ALL DISTURBED ADA ROUTES MUST BE BROUGHT UP TO CURRENT ADA STANDARDS. (BRICK PAVERS, SLOPES, ETC.)
14. ALTERNATIVE ADA ACCESSIBLE ROUTES SHALL BE DESIGNATED DURING CONSTRUCTION WHERE AN EXISTING ACCESSIBLE ROUTE IS DISTURBED.
15. WHEN A DRIVEWAY CULVERT IS REQUIRED OR REPLACED, THE MINIMUM PIPE SIZE FOR THE CULVERT SHALL BE 15 INCHES, UNLESS A LARGER DIAMETER PIPE IS REQUIRED AS DETERMINED IN THE FIELD OR DURING THE PERMIT REVIEW (E.G., LARGER PIPE CROSS-SECTIONAL AREA WILL BE REQUIRED IF THE EXISTING CULVERT UPSTREAM OF THE PROPOSED DRIVEWAY IS LARGER THE PROPOSED CULVERT). (SEE CULVERT DETAIL).
16. CONCRETE END TREATMENTS, SAFETY END TREATMENTS AND/OR HEADWALLS, SHALL BE INSTALLED WHERE CULVERTS UNDER ROADWAYS, DRIVEWAYS, OR OTHER STRUCTURES IN THE RIGHT-OF WAY ARE REQUIRED, MODIFIED OR REPLACED. (SEE CULVERT DETAIL).
17. WHERE EXISTING GUARDRAIL IS REMOVED, IT SHALL BE REPLACED ACCORDING TO LATEST VERSION OF TXDOT STANDARDS.
18. TRENCHES EXCAVATED IN PARKWAYS WHERE EXISTING SURFACE GRADE EXCEEDS 5% SHALL REQUIRE CEMENT STABILIZATION OR APPROVED EQUIVALENT. THE CEMENT STABILIZED BASE WILL CONSIST OF A 1½-2 SACK MIX PER CY WITH THE TRENCH BEING OVER EXCAVATED BY AT LEAST ONE FOOT ON EACH SIDE TO A DEPTH OF 6"-8" FOR THE STABILIZED BASE BACKFILL. (SEE CEMENT STABILIZED TRENCH BACKFILL DETAIL).
19. TRENCHES EXCAVATED OUTSIDE OF THE ROADWAY AND WITHIN 2 LINEAR FEET OF THE EDGE OF PAVEMENT SHALL BE BACKFILLED WITH CEMENT STABILIZED AS NOTED ABOVE OR APPROVED EQUIVALENT. (SEE CEMENT STABILIZED TRENCH BACKFILL DETAIL).
20. ALL DAMAGED PAVEMENT SHALL BE RECONSTRUCTED TO EXISTING OR BETTER CONDITION. LIMITS OF RECONSTRUCTION SHALL BE DETERMINED BY THE DEVELOPMENT SERVICES ENGINEER OR INSPECTOR.
21. WHERE ROADWAY MARKINGS ARE ADDED OR REPLACED, THERMOPLASTIC PAVEMENT MARKING MATERIAL SHALL BE USED IN ACCORDANCE WITH THE LATEST TXDOT STANDARDS.
22. PAVEMENT DESIGN FOR AUXILIARY LANES ABUTTING AN EXISTING ROAD SHALL BE MINIMUM 2"HMAC TYPE D (OR TYPE C) AND 12"HMAC TYPE B OR MATCH EXISTING PAVEMENT SECTION (IF KNOWN).
23. IF CRACK SEALING IS REQUIRED, THE SEALANT SHALL BE HOT POUR.
24. IF A CHIP SEAL IS REQUIRED, FOLLOW TXDOT SPEC ITEM 316. USE CRS-2P EMULSION AT A RATE OF 0.30 GAL/SY WITH A GRADE 5T, TRAP ROCK AGGREGATE AT A RATE OF 16.5 #/SY.
25. IF A FOG SEAL IS REQUIRED, [SPECIFIED APPROPRIATE TYPES] AT A RATE SPECIFIED BY THE MANUFACTURER.
26. IF A MAIL BOX IS REPLACED, THE MAIL BOX SHALL COMPLY WITH THE LATEST VERSION OF TXDOT STANDARDS.

TRENCHES

ROADWAY

1. IF A TRENCH CUT IS ALLOWED, TRENCH REPAIRS ON ROADWAYS WITH PAVEMENT OVER 5 YEARS OLD OR HAVE AN OCI LESS THAN 85 WILL REQUIRE MINIMUM PATCH WIDTH OF 10'WITH NO LESS THAN 2'OF PAVEMENT EXTENDING OUTSIDE OPEN CUT EDGE IN ALL DIRECTIONS AT A MINIMUM. INTERSECTIONS, KNUCKLES, CUL-DE-SACS, AND ROADWAY PAVEMENT THAT IS LESS THAN 5 YEARS OLD OR HAS AN OCI GREATER THAN OR EQUAL TO 85 WILL REQUIRE ADDITIONAL PAVEMENT REPLACEMENT. EXISTING ASPHALT TO BE REMOVED SHALL BE SAW CUT, MILLED AND OVERLAYED AS DETERMINED DURING THE PERMIT REVIEW.
2. UNLESS OTHERWISE NOTED IN THE ISSUED PERMIT, TRENCHES ARE TO BE BACK FILLED NO LESS THAN 10"FROM BOTTOM OF FINAL SURFACE TREATMENT WITH FLOWABLE FILL. ABOVE THE FLOWABLE FILL, A MINIMUM 10" TYPE B HMAC AND NO LESS THAN 2"OF HMAC TYPE C ASPHALT BENCHED 1'OUTSIDE TRENCH WILL BE REQUIRED. NEW ROADS MAY REQUIRE 2"HMAC TYPE "D"ASPHALT.
3. CURB REPAIRS THAT DISTURB THE EDGE OF ROADWAY WILL REQUIRE MINIMUM 18"WIDE ASPHALT REPLACEMENT (MINIMUM 2"DEPTH) FROM THE FACE OF CURB. THE REPLACEMENT WILL EXTEND A MINIMUM OF 18"FROM EACH END OF THE CURB REPLACEMENT AREA.
4. FOR ADDITIONAL REPAIR INFORMATION, PLEASE REFER TO GENERAL REQUIREMENTS 20 THROUGH 25.

DRIVEWAY

1. IF A BORE UNDERNEATH AN EXISTING DRIVEWAY IS NOT POSSIBLE, THE ENTIRE DRIVEWAY WILL NEED TO BE REPLACED FROM ROW TO EDGE OF PAVEMENT OR CURB.
2. FOR ADDITIONAL REPAIRS, PLEASE REFER TO TRENCHES -ROADWAY AND GENERAL REQUIREMENTS 12 THROUGH 19.
3. SIDEWALK AND CURB
4. 1) IF A BORE UNDERNEATH AN EXISTING SIDEWALKS OR CURB IS NOT POSSIBLE, THE SIDEWALK AND/OR CURB WILL
5. NEED TO BE REPLACED FROM EXPANSION JOINT TO EXPANSION JOINT.
6. 2) FOR ADDITIONAL REPAIRS, PLEASE REFER TO ROADWAY TRENCHES AND GENERAL REQUIREMENTS 12 THROUGH 19.

EMERGENCY REPAIRS

A REPAIR IS CONSIDERED TO BE AN EMERGENCY IF:

A) REPAIR WILL PROTECT PUBLIC HEALTH OR SAFETY; AND

B) REPAIR MUST BE STARTED BEFORE OBTAINING A ROW PERMIT.

1. SUBMIT A BEXAR COUNTY ROW PERMIT APPLICATION WITHIN 24 HOURS OF THE START OF THE REPAIR. (FAX 335-6713; EMAIL: ROW.PERMIT@BEXAR.ORG)
2. PROVIDE PHOTOGRAPHS, PLAN AND/OR DETAIL OF AREA OF REPAIR IDENTIFYING DESCRIPTION OF WORK (E.G. DRIVEWAY, SIDEWALK, ROADWAY, DRAIN STRUCTURES ETC.)
3. PERMANENT REPAIRS ARE TO BE COMPLETED WITHIN A MONTH OF PERMIT APPLICATION SUBMITTAL AND REQUIRE A BEXAR COUNTY INSPECTOR TO BE PRESENT DURING CONSTRUCTION.

SAWS WATER NOTES

1. PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING MAINS OF ANY SIZE MUST BE COORDINATED WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT LEAST ONE WEEK IN ADVANCE OF THE SHUTDOWN. THE CONTRACTOR MUST ALSO PROVIDE A SEQUENCE OF WORK AS RELATED TO THE TIE-INS; THIS IS AT NO ADDITIONAL COST TO SAWS OR THE PROJECT AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SEQUENCE THE WORK ACCORDINGLY.
   - FOR WATER MAINS 12" OR HIGHER: SAWS EMERGENCY OPERATIONS CENTER (210) 233-2014
2. ASBESTOS CEMENT (AC) PIPE, ALSO KNOWN AS TRANSITE PIPE WHICH IS KNOWN TO CONTAIN ASBESTOS- CONTAINING MATERIAL (ACM), MAY BE LOCATED WITHIN THE PROJECT LIMITS. SPECIAL WASTE MANAGEMENT PROCEDURES AND HEALTH AND SAFETY REQUIREMENTS WILL BE APPLICABLE WHEN REMOVAL AND/OR DISTURBANCE OF THIS PIPE OCCURS. SUCH WORK IS TO BE MADE UNDER SPECIAL SPECIFICATION ITEM NO. 3000, "SPECIAL SPECIFICATION FOR HANDLING ASBESTOS CEMENT PIPE".
3. VALVE REMOVAL: WHERE THE CONTRACTOR IS TO ABANDON A WATER MAIN, THE CONTROL VALVE LOCATED ON THE ABANDONING BRANCH WILL BE REMOVED AND REPLACED WITH A CAP/PLUG. (NSPI)
4. SUITABLE ANCHORAGE/THRUST BLOCKING OR JOINT RESTRAINT SHALL BE PROVIDED AT ALL OF THE FOLLOWING MAIN LOCATIONS: DEAD ENDS, PLUGS, CAPS, TEES, CROSSES, VALVES, AND BENDS, IN ACCORDANCE WITH THE STANDARD DRAWINGS DD-839 SERIES AND ITEM NO. 839, IN THE SAWS STANDARD SPECIFICATIONS FOR CONSTRUCTION.
5. ALL VALVES SHALL READ "OPEN RIGHT".
6. PRVS REQUIRED: CONTRACTOR TO VERIFY THAT NO PORTION OF THE TRACT IS BELOW GROUND ELEVATION OF 745 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 745 FEET, THE DEVELOPER OR BUILDER SHALL INSTALL AT EACH LOT, ON THE CUSTOMER'S SIDE OF THE METER, AN APPROVED TYPE PRESSURE REGULATOR IN CONFORMANCE WITH THE PLUMBING CODE OF THE CITY OF SAN ANTONIO. NO DUAL SERVICES ALLOWED FOR ANY LOT(S) IF *PRV IS/ARE REQUIRED FOR SUCH LOT(S), ONLY SINGLE SERVICE CONNECTIONS SHALL BE ALLOWED. *NOTE: A PRESSURE REGULATOR IS ALSO KNOWN AS A PRESSURE REDUCING VALVE (PRV).
7. PIPE DISINFECTION WITH DRY HTH FOR PROJECTS LESS THAN 800 LINEAR FEET. (ITEM NO. 847.3): MAINS SHALL BE DISINFECTED WITH DRY HTH WHERE SHOWN IN THE CONTRACT DOCUMENTS OR AS DIRECTED BY THE INSPECTOR, AND SHALL NOT EXCEED A TOTAL LENGTH OF 800 FEET. THIS METHOD OF DISINFECTION WILL ALSO BE FOLLOWED FOR MAIN REPAIRS. THE CONTRACTOR SHALL UTILIZE ALL APPROPRIATE SAFETY MEASURE TO PROTECT HIS PERSONNEL DURING DISINFECTION OPERATIONS.
8. BACKFLOW PREVENTION DEVICES:
   - ALL IRRIGATION SERVICES WITHIN RESIDENTIAL AREAS ARE REQUIRED TO HAVE BACKFLOW PREVENTION DEVICES.
   - ALL COMMERCIAL BACKFLOW PREVENTION DEVICES MUST BE APPROVED BY SAWS PRIOR TO INSTALLATION.
9. FINAL CONNECTION TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL THE WATER MAIN HAS BEEN PRESSURE TESTED, CHLORINATED, AND SAWS HAS RELEASED THE MAIN FOR TIE-IN AND USE.
10. DIVISION VALVES: DIVISION VALVES SHOWN ON PLANS OR NOT SHOWN ON PLANS BUT FOUND IN THE FIELD SHALL ONLY BE OPERATED BY SAWS DISTRIBUTION AND COLLECTION STAFF AND ONLY WITH PRIOR WRITTEN APPROVAL OF THE SAWS DIRECTOR OF PRODUCTION AND OPERATIONS AND PROPER COORDINATION WITH ALL SAWS DEPARTMENTS. CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE INSPECTOR A MINIMUM OF TWO WEEKS IN ADVANCE TO START THE COORDINATION PROCESS AND WILL BE INFORMED BY THE INSPECTOR WHEN THE DIVISION VALVE WILL BE OPERATED BY THE SAWS DISTRIBUTION AND COLLECTION STAFF. THE DIVISION VALVE CAN ONLY BE OPERATED BY SAWS DISTRIBUTION AND COLLECTION STAFF MEMBER NOT THE INSPECTOR OR THE CONTRACTOR. OPERATION OF A DIVISION VALVE WITHOUT THE EXPRESS PRIOR WRITTEN APPROVAL OF THE SAWS DISTRIBUTION AND COLLECTION STAFF WILL CONSTITUTE A MATERIAL BREACH OF ANY WRITTEN SAWS CONTRACT OR PERMIT IN ADDITION TO SUBJECTING THE CONTRACTOR TO LIABILITY FOR ANY AND ALL FINES, FEES, OR OTHER DAMAGES, DIRECT OR CONSEQUENTIAL, THAT MAY ARISE FROM OR BE CAUSED BY THE OPERATION OF THE VALVE WITHOUT PRIOR WRITTEN PERMISSION. PLEASE BE INFORMED THAT THE APPROVAL OF THE OPERATION OR OPENING OR CLOSING OF A DIVISION VALVE CAN TAKE SEVERAL WEEKS FOR APPROVAL. DIVISION VALVES WILL ALSO HAVE A VALVE LID LABELED DIVISION VALVE AND A LOCKING MECHANISM INSTALLED WITH A KEY. THE LOCK AND KEY MECHANISM WILL BE PAID FOR BY THE CONTRACTOR BUT WILL BE INSTALLED BY SAWS DISTRIBUTION AND COLLECTION STAFF.

PROJECT WATER NOTES

1. MACHINE CHLORINATION BY THE S.A.W.S.
2. ALL 8", 12" AND 16" PIPE SHALL BE P.V.C. C-900 CLASS 235 DR 18.
3. ALL MAINS SHALL BE HYDROSTATICALLY TESTED BY THE CONTRACTOR, AS PROVIDED FOR IN THE SPECIAL CONDITIONS.
4. THE WATER LINES WILL BE SET FROM THE STREET HUBS BEFORE THIS CONTRACT BEGINS. STREET CUT SHEETS WILL BE SUPPLIED TO THE CONTRACTOR. THERE SHOULD BE NO ADDITIONAL STAKES REQUIRED, AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE SITE AND VERIFY THAT ALL STAKES REQUIRED FOR HIS WORK ARE IN PLACE AT THE TIME THE CONSTRUCTION BEGINS. IF ANY STAKES ARE MISSING THE ENGINEER SHOULD BE NOTIFIED IMMEDIATELY. AFTER CONSTRUCTION BEGINS, ALL CONSTRUCTION STAKES, MARKS, ETC., SHALL BE CAREFULLY PRESERVED BY THE CONTRACTOR, AND IN CASE OF DESTRUCTION OR REMOVAL BY THE CONTRACTOR, HIS EMPLOYEE OR ANY OTHER MEANS, SUCH STAKES, MARKS, ETC., SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
5. THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH ALL THE FINAL MEASUREMENTS, TAPS AND LENGTH OF SERVICE CONNECTIONS.
6. THE LOT CORNERS WILL BE SET BY THE ENGINEER FOR INSTALLATION OF ALL WATER SERVICES. THESE LOT CORNERS SHALL BE CAREFULLY PRESERVED BY THE CONTRACTOR SO THE METER BOXES CAN BE SET IN PHASE II. ANY LOT CORNER DESTROYED OR REMOVED BY THE CONTRACTOR, HIS EMPLOYEES, OR BY ANY OTHER MEANS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
7. STREETS WILL HAVE BEEN EXCAVATED DOWN TO SUBGRADE AND THE PARKWAY WILL BE CUT DOWN TO TOP OF CURB BY THE STREET CONTRACTOR, PRIOR TO CONSTRUCTION OF THE WATER MAINS. IT WILL BE THE UTILITY CONTRACTOR'S RESPONSIBILITY TO PROVIDE A PAD FOR HIS EQUIPMENT.
8. WATER METER BOXES IF APPLICABLE SHALL BE INSTALLED NINE FEET FROM FACE OF CURB TO CENTER OF THE METER BOX.
9. ALL GARBAGE OR SPOIL MATERIAL FROM THIS WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR, AT HIS EXPENSE.
10. FINAL CONNECTION TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL WATER MAIN HAS BEEN PRESSURE TESTED, CHLORINATED AND THE S.A.W.S. RELEASES THE MAIN FOR TIE-IN AND USE.
11. UNIT PRICE BID FOR "STANDARD FIRE HYDRANT ASSEMBLY" SHALL INCLUDE FIRE HYDRANT, 6-INCH GATE VALVE AND 6-INCH VALVE BOX COMPLETE, ANCHOR BEND, AND ALL 6-INCH DI PIPE REQUIRED (DI PIPE REQUIRED SHALL INCLUDE ALL PIPE FROM THE TEE ON THE MAIN LINE TO THE FIRE HYDRANT).
12. WHEN SEWER LINES ARE INSTALLED IN THE VICINITY OF WATER MAINS, SUCH INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE TEXAS NATURAL RESOURCE CONSERVATION COMMISSION "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS" (1988 OR ANY REVISIONS THERETO).
13. A CLEAR SPACE SHALL BE PROVIDED AROUND ALL FIRE HYDRANTS. THIS AREA SHOULD HAVE A MINIMUM DIAMETER OF 3.0' AND BE CLEAN OF VERTICAL OBSTRUCTIONS, VALVES, AND METER BOXES.
14. SAWS REQUIRES LEAD FREE (< 0.25%) FIRE HYDRANTS.
15. UNLESS OTHERWISE NOTED ALL SERVICES SHALL BE 3/4" WITH 5/8" METER.

SAWS CONSTRUCTION NOTES
(LAST REVISED JULY 2017)

SAWS GENERAL SECTION

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE APPROVED BY THE SAN ANTONIO WATER SYSTEM (SAWS) AND COMPLY WITH THE PLANS, SPECIFICATIONS, GENERAL CONDITIONS AND WITH THE FOLLOWING AS APPLICABLE:
   A. CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEM", TEXAS ADMINISTRATIVE CODE (TAC) TITLE 30 PART 1 CHAPTER 217 AND "PUBLIC DRINKING WATER", TAC TITLE 30 PART 1 CHAPTER 290.
   B. CURRENT TXDOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND DRAINAGE".
   C. CURRENT "SAN ANTONIO WATER SYSTEM STANDARD SPECIFICATIONS FOR WATER AND SANITARY SEWER CONSTRUCTION".
   D. CURRENT CITY OF SAN ANTONIO "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION".
   E. CURRENT CITY OF SAN ANTONIO "UTILITY EXCAVATION CRITERIA MANUAL" (UECM).
2. THE CONTRACTOR SHALL NOT PROCEED WITH ANY PIPE INSTALLATION WORK UNTIL THEY OBTAIN A COPY OF THE APPROVED COUNTER PERMIT OR GENERAL CONSTRUCTION PERMIT (GCP) FROM THE CONSULTANT AND HAS BEEN NOTIFIED BY SAWS CONSTRUCTION INSPECTION DIVISON TO PROCEED WITH THE WORK AND HAS ARRANGED A MEETING WITH THE INSPECTOR AND CONSULTANT FOR THE WORK REQUIREMENTS. WORK COMPLETED BY THE CONTRACTOR WITHOUT AN APPROVED COUNTER PERMIT AND/OR A GCP WILL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE EXPENSE OF THE CONTRACTORS AND/OR THE DEVELOPER.
3. THE CONTRACTOR SHALL OBTAIN THE SAWS STANDARD DETAILS FROM THE SAWS WEBSITE, HTTP://WWW.SAWS.ORG/BUSINESS_CENTER/SPECS. UNLESS OTHERWISE NOTED WITHIN THE DESIGN PLANS.
4. THE CONTRACTOR IS TO MAKE ARRANGEMENTS WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT (210) 233-2973, ON NOTIFICATION PROCEDURES THAT WILL BE USED TO NOTIFY AFFECTED HOME RESIDENTS AND/OR PROPERTY OWNERS 48 HOURS PRIOR TO BEGINNING ANY WORK.
5. LOCATION AND DEPTH OF EXISTING UTILITIES AND SERVICE LATERALS SHOWN ON THE PLANS ARE UNDERSTOOD TO BE APPROXIMATE. ACTUAL LOCATIONS AND DEPTHS MUST BE FIELD VERIFIED BY THE CONTRACTOR AT LEAST 1 WEEK PRIOR TO CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION AND TO PROTECT THEM DURING CONSTRUCTION AT NO COST TO SAWS.
6. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES AT LEAST 1-2 WEEKS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT. PLEASE ALLOW UP TO 7 BUSINESS DAYS FOR LOCATES REQUESTING PIPE LOCATION MARKERS ON SAWS FACILITIES. THE FOLLOWING CONTACT INFORMATION ARE SUPPLIED FOR VERIFICATION PURPOSES:
   - SAWS UTILITY LOCATES: HTTP://WWW.SAWS.ORG/SERVICE/LOCATES
   - COSA DRAINAGE (210) 207-0724 OR (210) 207-6026
   - COSA TRAFFIC SIGNAL OPERATIONS (210) 206-8480
   - COSA TRAFFIC SIGNAL DAMAGES (210) 207-3951
   - TEXAS STATE WIDE ONE CALL LOCATOR 1-800-545-6005 OR 811
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, SIDEWALKS, LANDSCAPING AND STRUCTURES TO ITS ORIGINAL OR BETTER CONDITION IF DAMAGES ARE MADE AS A RESULT OF THE PROJECT'S CONSTRUCTION.
8. ALL WORK IN TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) AND/OR BEXAR COUNTY RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT REQUIREMENTS.
9. THE CONTRACTOR SHALL COMPLY WITH CITY OF SAN ANTONIO OR OTHER GOVERNING MUNICIPALITY'S TREE ORDINANCES WHEN EXCAVATING NEAR TREES.
10. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN PERMIT.

    HOLIDAY WORK: CONTRACTORS WILL NOT BE ALLOWED TO PERFORM SAWS WORK ON SAWS RECOGNIZED HOLIDAYS. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.

    WEEKEND WORK: CONTRACTORS ARE REQUIRED TO NOTIFY THE SAWS INSPECTION CONSTRUCTION DEPARTMENT 48 HOURS IN ADVANCE TO REQUEST WEEKEND WORK. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.
11. ANY AND ALL SAWS UTILITY WORK INSTALLED WITHOUT HOLIDAY/WEEKEND APPROVAL WILL BE SUBJECT TO BE UNCOVERED FOR PROPER INSPECTION.
12. COMPACTION NOTE (ITEM 804): THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE 98% COMPACTION REQUIREMENTS ON ALL TRENCH BACKFILL AND FOR PAYING FOR THE TESTS PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED, OR AS INDICATED BY THE SAWS INSPECTOR AND/OR THE TEST ADMINISTRATOR, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
13. A COPY OF ALL TESTING REPORTS SHALL BE FORWARDED TO SAWS CONSTRUCTION INSPECTION DIVISION.

WATER (SAWS PRESSURE ZONE 8)

DEVELOPER'S NAME: JEN TEXAS 36 LLC
ADDRESS: 650 FIFTH AVE, 25TH FLOOR
CITY: NEW YORK STATE: NEW YORK ZIP: 10019
PHONE# PHONE # FAX#
SAWS BLOCK MAP# 084548 TOTAL EDU'S 0 TOTAL ACREAGE 10.430
TOTAL LINEAR FOOTAGE OF PIPE: 12"-1336 8"-151 PLAT NO. 24-11800322
NUMBER OF LOTS 0 SAWS JOB NO. 24-1132

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
1-17-25

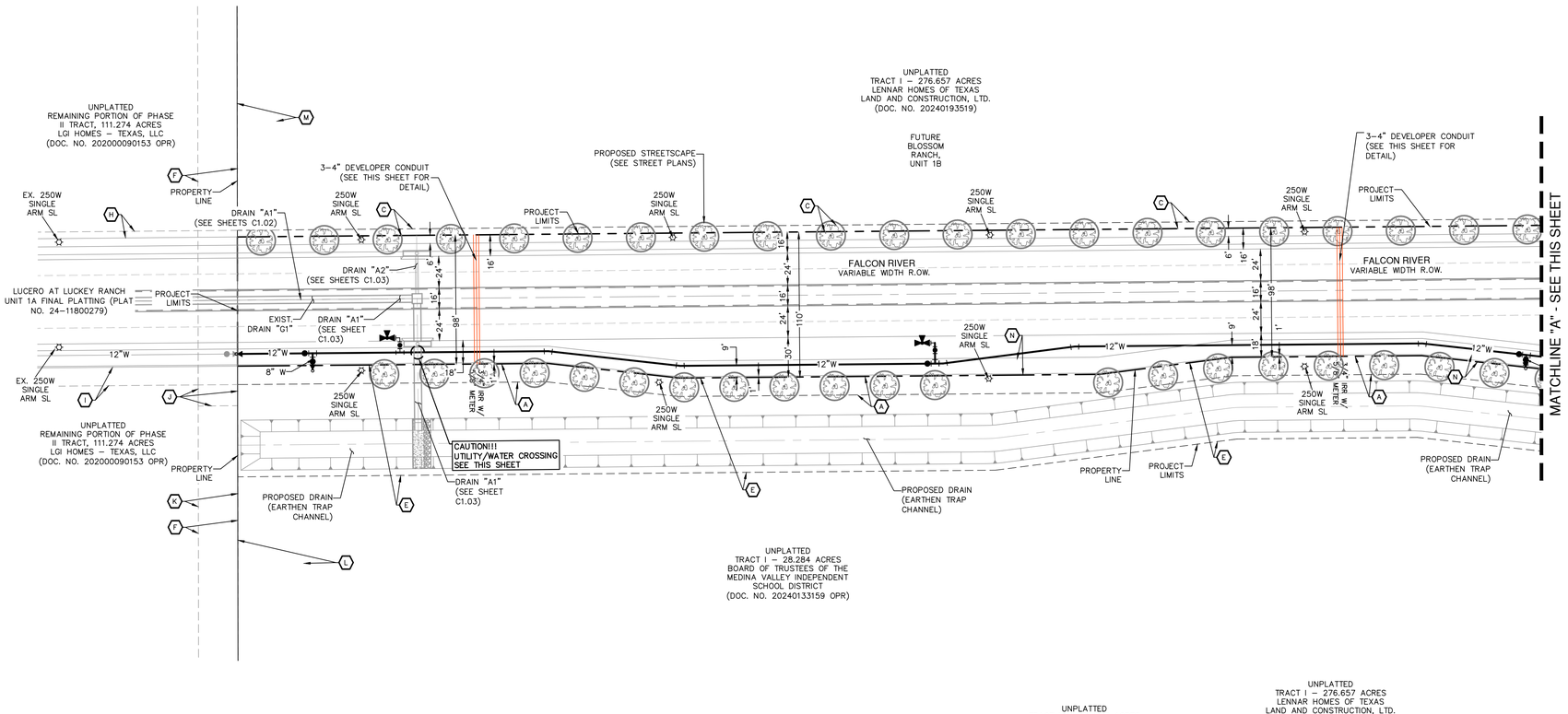
PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

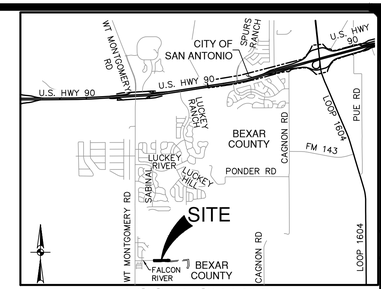
STRAUS TRACT - SECONDARY ARTERIAL
SAN ANTONIO, TEXAS

WATER DISTRIBUTION NOTES

PLAT NO. 24-11800322
JOB NO. 13055-08
DATE JANUARY 20025
DESIGNER AA
CHECKED AS DRAWN GP
SHEET C4.11

Date: Jan 17, 2025, 1:30pm User ID: JForce
File: P:\13055\08\Design\Civil\WTD1-130508.dwg





LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 50'

0' 50' 100' 150'

UTILITY LEGEND

- PROJECT LIMITS
- EXISTING WATER — W —
- EXISTING SEWER — SS —
- PROPOSED SEWER — SS — MANHOLE
- PROPOSED WATER — W — FIRE HYDRANT
- PROPOSED 3/4" SINGLE SERVICE WITH 5/8" METER
- SINGLE IRRIGATION SERVICE — IRR
- SINGLE ARM STREET LIGHT 250W
- WATER/SEWER CROSSING

KEY LEGEND:

(A) 14' LANDSCAPE, GAS, ELEC., TEL. AND CATV ESMT. (OFF-LOT)

(B) 60' ACCESS, SAN. SWR., WATER, DRAIN, GAS, ELEC., TEL., AND CATV ESMT. TO EXPIRE UPON INCORPORATION INTO PLATTED STREET RIGHT-OF-WAY (OFF LOT)

(C) 5' LANDSCAPE ESMT. (OFF-LOT)

(D) 98' ACCESS, SAN. SWR., WATER, DRAIN, GAS, ELEC., TEL. AND CATV ESMT. TO EXPIRE UPON INCORPORATION INTO PLATTED STREET RIGHT-OF-WAY (OFF-LOT)

(E) VAR. WIDTH DRAINAGE ESMT. (OFF-LOT)

(F) ELEC. ESMT. ACCESS ESMT. (DOC NO 20140045268 OPR)

(G) 15' CLEARING AND GRADING BUFFER ESMT. (DOC NO 20240132079 OPR)

(H) 5' LANDSCAPE ESMT. LUCERO AT LUCKEY RANCH UNIT 1A FINAL PLATTING (PLAT NO. 24-11800279)

(I) 14' LANDSCAPE, GAS, ELEC., TEL. AND CATV ESMT. LUCERO AT LUCKEY RANCH UNIT 1A FINAL PLATTING (PLAT NO. 24-11800279)

(J) VAR. WIDTH SAN. SWR. ESMT. LUCERO AT LUCKEY RANCH UNIT 1A FINAL PLATTING (PLAT NO. 24-11800279)

(K) VAR. WIDTH SAN. SWR. ESMT. LUCERO AT LUCKEY RANCH UNIT 1 FINAL PLATTING (PLAT NO. 24-11800189)

(L) 50' DRAINAGE ESMT. (DOC NO 20240182574)

(M) 30' DRAINAGE ESMT. (DOC NO 20240182569)

(N) VARIABLE WIDTH COSA/BEXAR COUNTY ROW DEDICATION (0.1404 ACRE)

CONDUIT NOTES:

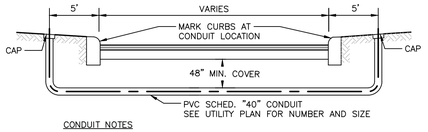
1. CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURB WHERE CONDUITS CROSS THE ROADWAY (BOTH SIDES).
2. CONDUITS SHALL BE PVC WITH MINIMUM BURY OF 36 INCHES BELOW PROPOSED FINISHED GRADE. SCHEDULE 80 TO BE USED FOR CPS CONDUITS, ALL OTHER CONDUITS ARE SCHEDULE 40.
3. ALL CONDUITS SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3 FEET AND CAPPED FOR FUTURE USE.
4. ALL CONDUIT SLEEVES TO BE USED FOR ELECTRIC, GAS, OR TELECOMMUNICATION UTILITY CROSSINGS SHALL BE INSTALLED TO MEET OR EXCEED DESIGN REQUIREMENTS FOR THE UTILITY AGENCY WHICH THEY ARE SERVING, INCLUDING BUT NOT LIMITED TO THE DEPTH, TRENCH PLACEMENT, AND PROXIMITY TO OTHER UTILITIES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFYING AND INSTALLING THE CONDUIT SLEEVES TO MEET THESE SPECIFICATIONS INCLUDING COORDINATING WITH THE UTILITY AGENCY FOR ANY REQUIRED INSPECTIONS

TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

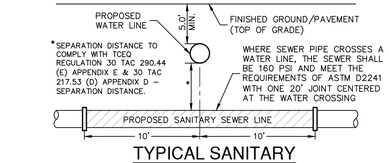


CONDUIT NOTES

1. CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURB WHERE CONDUITS CROSS THE ROADWAY (BOTH SIDES).
2. ALL CONDUIT SHALL BE P.V.C. SCHEDULE 40 WITH MINIMUM BURY OF 30 INCHES.
3. ALL CONDUIT SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3 FEET AND CAPPED FOR FUTURE USE.
4. A NYLON "PULL STRING" SHALL BE LEFT IN PLACE IN ALL CONDUITS AFTER FINAL ACCEPTANCE OF CONDUIT WORK. THE NYLON "PULL STRING" SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100 LBS.

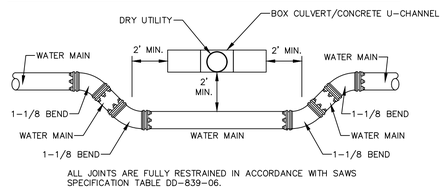
DEVELOPER CONDUIT DETAIL

NOT-TO-SCALE



TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

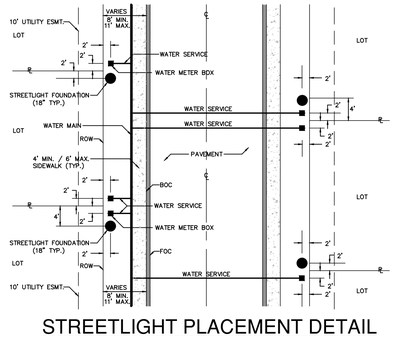
NOT-TO-SCALE



ALL JOINTS ARE FULLY RESTRAINED IN ACCORDANCE WITH SAWS SPECIFICATION TABLE DD-839-06.

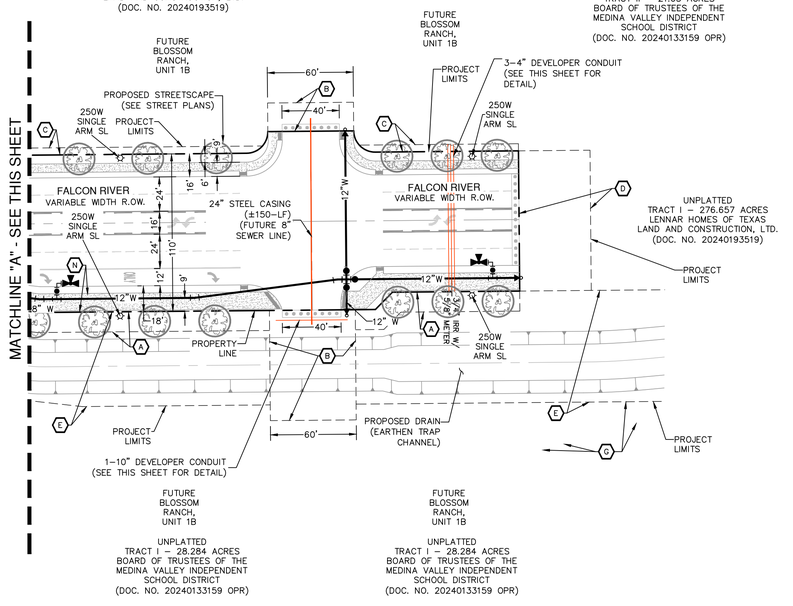
TYPICAL UTILITY/WATER CROSSING DETAIL

NOT-TO-SCALE



STREETLIGHT PLACEMENT DETAIL FOR METER BOX LOCATIONS

NOT-TO-SCALE



FIRE FLOW NOTE:

IN AN EFFORT TO MEET THE CITY OF SAN ANTONIO'S FIRE FLOW REQUIREMENTS FOR THE PROPOSED RESIDENTIAL DEVELOPMENT, THE PUBLIC WATER MAIN SYSTEM HAS BEEN DESIGNED FOR A MINIMUM FIRE FLOW DEMAND OF 1500 GPM AT 25 PSI RESIDUAL PRESSURE. THE FIRE FLOW REQUIREMENTS FOR INDIVIDUAL STRUCTURES WILL BE REVIEWED DURING THE BUILDING PERMIT PROCESS IN ACCORDANCE WITH THE PROCEDURES SET FORTH BY THE CITY OF SAN ANTONIO DIRECTOR OF DEVELOPMENT SERVICES DEPARTMENT AND THE SAN ANTONIO FIRE DEPARTMENT FIRE MARSHAL.

PRESSURE REDUCING VALVE NOTE:

PRESSURE REDUCING VALVE TO BE INSTALLED ON CUSTOMER'S SIDE OF METER BY HOMEBUILDER.

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED
PROFESSIONAL ENGINEER
12-20-24

PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100288-00

STRAUS TRACT - SECONDARY ARTERIAL

SAN ANTONIO, TEXAS

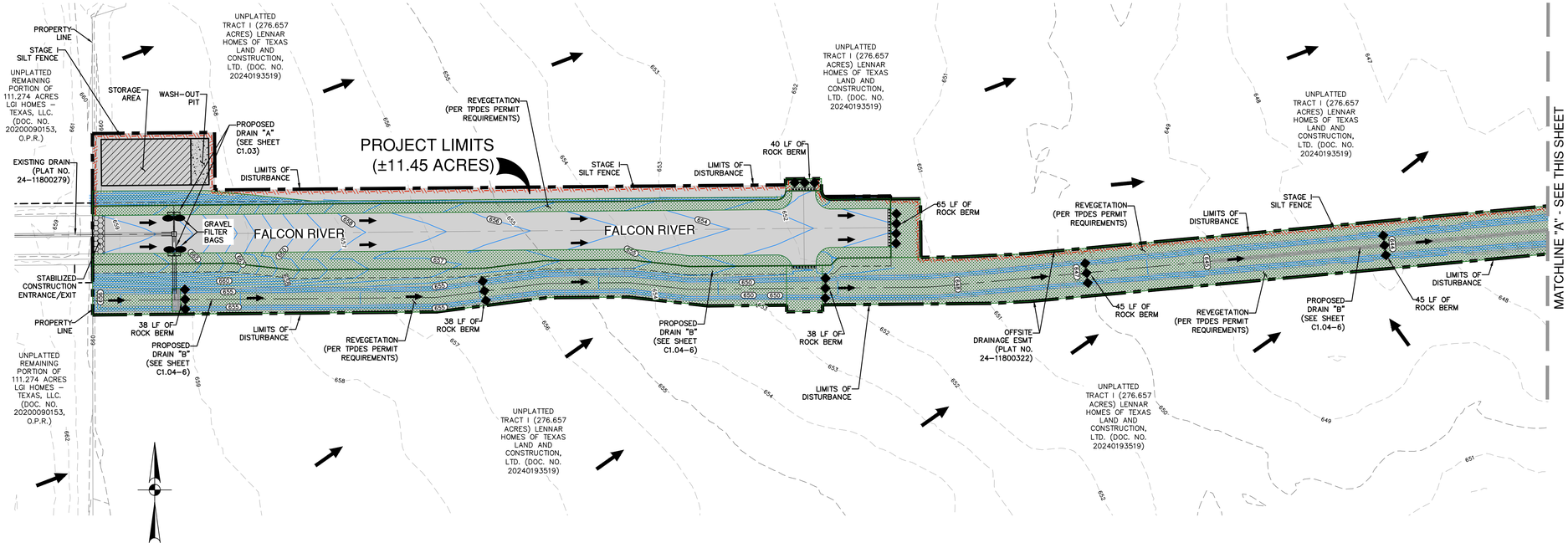
OVERALL UTILIY PLAN

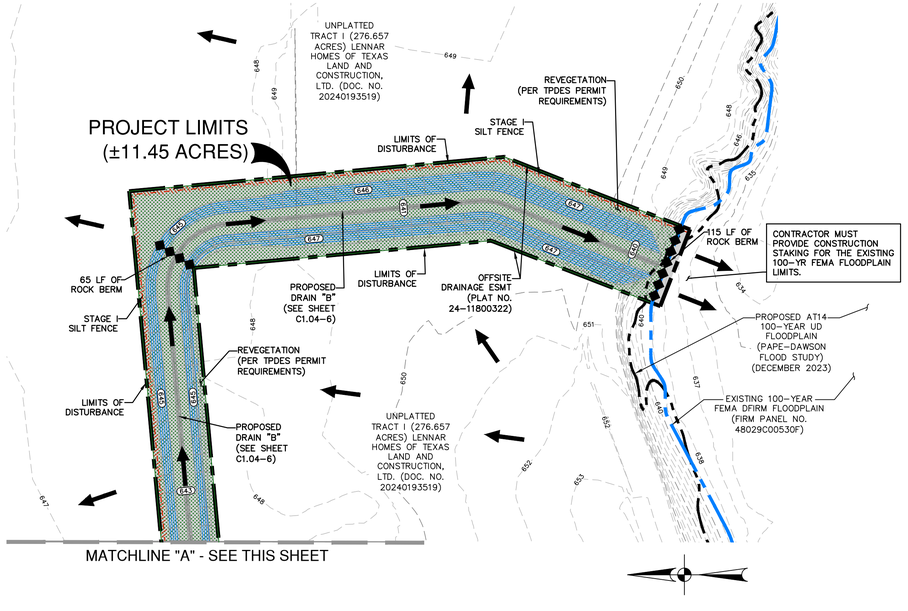
PLAT NO. 24-11800322
JOB NO. 13055-08
DATE NOVEMBER 2024
DESIGNER AA
CHECKED AS DRAWN GP
SHEET C6.00

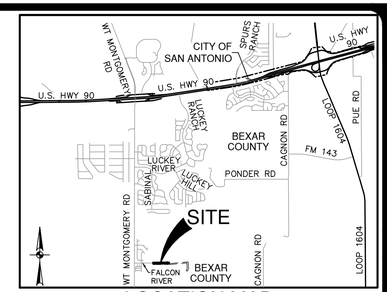
Date: Dec 20, 2024, 5:19pm User ID: crodriguez
File: P:\130\05\08\Design\Civil\UTOA-1305508.dwg

SWP3 MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION







LOCATION MAP
NOT-TO-SCALE

SCALE: 1" = 200'
0' 200' 400' 600'

SWPPP LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR (976)
- PROPOSED CONTOUR (970)
- EX. 100-YR FLOODPLAIN
- PROP. 100-YR FLOODPLAIN
- FLOW ARROW
- SILT FENCE (±4,041 LF)
- ROCK BERM (±489 LF)
- GRAVEL FILTER BAGS
- LIMITS OF DISTURBED AREA (±11.45 AC)
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)
- CONCRETE TRUCK WASH-OUT PIT (FIELD LOCATE)
- AREA TO BE REVEGETATED PER TPDES PERMIT REQUIREMENTS (±40,921 SY)

GENERAL NOTES

1. DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.

2. CONSTRUCTION ENTRANCE/EXIT LOCATION, CONCRETE WASH-OUT PIT, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD TO BE DETERMINED IN THE FIELD.

3. STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.

4. RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.

5. ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.

6. FOR A COMPLETE LISTING OF TEMPORARY STORM WATER POLLUTION PREVENTION CONTROLS REFER TO THE TPDES STORM WATER POLLUTION PREVENTION PLAN.

7. STORM WATER POLLUTION PREVENTION STRUCTURES SHOULD BE CONSTRUCTED WITHIN THE SITE BOUNDARIES. SOME OF THESE FEATURES MAY BE SHOWN OUTSIDE THE SITE BOUNDARIES ON THIS PLAN FOR VISUAL CLARITY.

8. AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENT AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.

9. BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADIENT AREAS.

10. BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED IN ACCORDANCE WITH TPDES REQUIREMENTS.

11. UPON COMPLETION OF THE PROJECT, INCLUDING SITE STABILIZATION, AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES, PAYING SPECIAL ATTENTION TO ROCK BERMS IN DRAINAGE FEATURES.

12. WHERE VEGETATED FILTER STRIPS ARE INDICATED, CONTRACTOR SHALL VERIFY THAT SUFFICIENT VEGETATION EXISTS, OTHERWISE CONTRACTOR SHALL PLACE SILT FENCING IN LIEU OF VEGETATED FILTER STRIP.

13. SHADED AREA DENOTES LIMITS OF DISTURBED AREAS. OTHER AREAS WITHIN THE PROJECT LIMITS, WITH THE EXCEPTION OF A CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD, ARE NOT A PART OF THIS TPDES STORM WATER POLLUTION PREVENTION PLAN (SWP3) AND WILL NOT BE DISTURBED BY CIVIL CONSTRUCTION ACTIVITIES.

15. CPS ENERGY WILL FUNCTION AS A SECONDARY OPERATOR ON THIS PROJECT AND WILL BE INSTALLING ELECTRIC UTILITIES FOR ON-SITE CONSTRUCTION AND OFF-SITE FEED TO THE PROJECT.

16. CONTRACTOR MUST PROVIDE CONSTRUCTION STAKING FOR THE EXISTING 100-YR FEMA FLOODPLAIN LIMITS.

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES-STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 2

NO.	REVISION	DATE

STATE OF TEXAS
JON D. ADAME
82567
LICENSED PROFESSIONAL ENGINEER
12-6-24

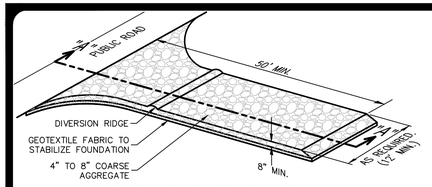
PAPE-DAWSON ENGINEERS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

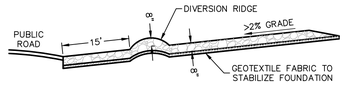
STRAUS TRACT - SECONDARY ARTERIAL
SAN ANTONIO, TEXAS

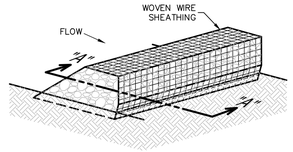
STORM WATER POLLUTION PREVENTION PLAN

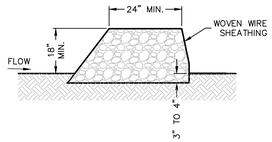
PLAT NO. 24-11800322
JOB NO. 13055-08
DATE SEPTEMBER 2024
DESIGNER AA
CHECKED AS DRAWN AG
SHEET C8.00

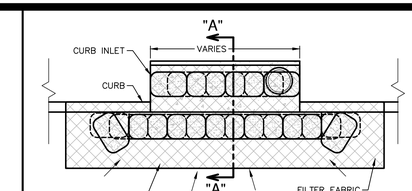
Date: Dec 06, 2024, 3:01pm User ID: crodriguez
File: P:\130\05\08\Design\Civil\SWPP-130508.dwg

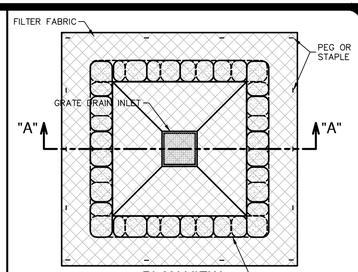


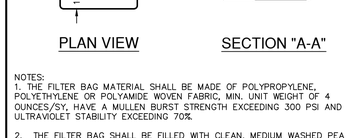


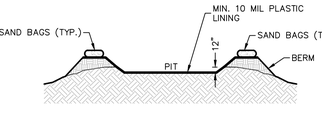


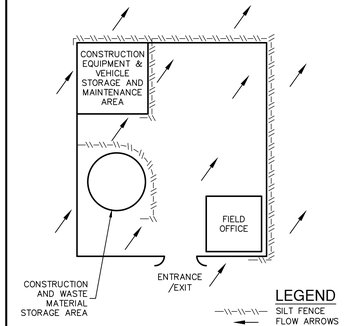


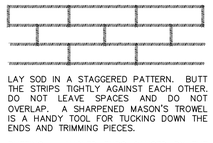


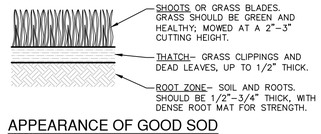


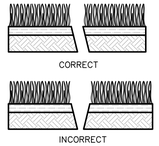


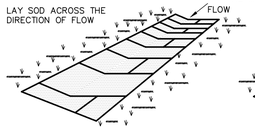


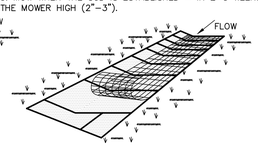


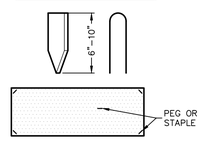


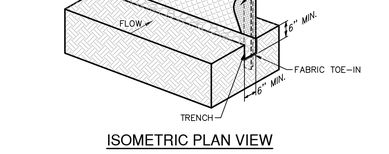












SCHEMATIC OF TEMPORARY CONSTRUCTION ENTRANCE/EXIT

SECTION "A-A" OF A CONSTRUCTION ENTRANCE/EXIT

MATERIALS

1. THE AGGREGATE SHOULD CONSIST OF 4–INCH TO 8–INCH WASHED STONE OVER A STABLE FOUNDATION AS SPECIFIED IN THE PLAN.

2. THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF 8–INCHES.

3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD^2, A MULLEN BURST RATING OF 140 LB/IN^2, AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.

4. IF A WASHING FACILITY IS REQUIRED, A LEVEL AREA WITH A MINIMUM OF 4–INCH DIAMETER WASHED STONE OR COMMERCIAL ROCK SHOULD BE INCLUDED IN THE PLANS. DIVERT WASTEWATER TO A SEDIMENT TRAP OR BASIN.

INSTALLATION

1. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.

2. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.

3. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.

4. IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6–INCHES TO 8–INCHES HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.

5. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.

6. PLACE STONE TO DIMENSIONS AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.

7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.

8. INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

COMMON TROUBLE POINTS

1. INADEQUATE RUNOFF CONTROL–SEDIMENT WASHES ONTO PUBLIC ROAD.

2. STONE TOO SMALL OR GEOTEXTILE FABRIC ABSENT, RESULTS IN MUDDY CONDITION AS STONE IS PRESSED INTO SOIL.

3. PAD TOO SHORT FOR HEAVY CONSTRUCTION TRAFFIC–EXTEND PAD BEYOND THE MINIMUM 50–FOOT LENGTH AS NECESSARY.

4. PAD NOT FLARED SUFFICIENTLY AT ROAD SURFACE, RESULTS IN MUD BEING TRACKED ON TO ROAD AND POSSIBLE DAMAGE TO ROAD.

5. UNSTABLE FOUNDATION – USE GEOTEXTILE FABRIC UNDER PAD AND/OR IMPROVE FOUNDATION DRAINAGE.

INSPECTION AND MAINTENANCE GUIDELINES

1. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

2. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.

3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY.

4. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL

NOT–TO–SCALE

ISOMETRIC PLAN VIEW

SECTION "A-A"

ROCK BERMS

THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW, TO INTERCEPT SEDIMENT–LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE. AS SUCH, ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, GULLIES, ETC.). ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FARTHER UP THE WATERSHED.

INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.

2. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION.

3. REPAIR ANY LOOSE WIRE SHEATHING.

4. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.

5. THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

6. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

MATERIALS

1. THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS.

2. CLEAN, OPEN GRADED 3–INCH TO 5–INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5–INCH TO 8–INCH DIAMETER ROCKS MAY BE USED.

INSTALLATION

1. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS.

2. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.

3. PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM TO A HEIGHT NOT LESS THAN 18".

4. WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.

5. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.

6. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.

COMMON TROUBLE POINTS

1. INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM).

2. BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE).

ROCK BERM DETAIL

NOT–TO–SCALE

PLAN VIEW

SECTION "A-A"

GENERAL NOTES

1. CONTRACTOR TO INSTALL 2"x4"–W1.4xW1.4 WIRE MESH SUPPORTING FILTER FABRIC OVER THE INLET OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR WIRE TIES AT THIS LOCATION. SAND BAGS FILLED WITH WASHED PEA GRAVEL SHOULD BE PLACED ON TOP OF WIRE MESH ON TOP OF THE INLET AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SANDBAGS FILLED WITH WASHED PEA GRAVEL SHOULD ALSO BE PLACED ALONG THE GUTTER AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SAND BAGS TO BE STACKED TO FORM A CONTINUOUS BARRIER AROUND INLETS.

2. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.

INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.

2. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.

3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.

4. INSPECT FILTER FABRIC AND PATCH OR REPLACE IF TORN OR MISSING.

5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

BAGGED GRAVEL CURB INLET PROTECTION DETAIL

NOT–TO–SCALE

PLAN VIEW

SECTION "A-A"

GENERAL NOTES

1. THE SANDBAGS SHOULD BE FILLED WITH WASHED PEA GRAVEL AND STACKED TO FORM A CONTINUOUS BARRIER ABOUT 1 FOOT HIGH AROUND INLETS.

2. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.

INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.

2. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MATTER THAT IT WILL NOT ERODE.

3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.

4. INSPECT FILTER FABRIC AND PATCH OR REPLACE IF TORN OR MISSING.

5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

BAGGED GRAVEL GRATE INLET PROTECTION DETAIL

NOT–TO–SCALE

LAY SOD IN A STAGGERED PATTERN. BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE ENDS AND TRIMMING PIECES.

BUTTING – ANGLED ENDS CAUSED BY THE AUTOMATIC SOD CUTTER MUST BE MATCHED CORRECTLY.

SHOOTS OR GRASS BLADES. GRASS SHOULD BE GREEN AND HEALTHY; MOWED AT A 2"–3" CUTTING HEIGHT.

THATCH– GRASS CLIPPINGS AND DEAD LEAVES, UP TO 1/2" THICK.

ROOT ZONE– SOIL AND ROOTS. SHOULD BE 1/2"–3/4" THICK, WITH DENSE ROOT MAT FOR STRENGTH.

APPEARANCE OF GOOD SOD

NOTES:

1. ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL.

2. WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.

3. MOW WHEN THE SOD IS ESTABLISHED – IN 2–3 WEEKS. SET THE MOWER HIGH (2"–3").

SOD INSTALLATION

IN CRITICAL AREAS, SECURE SOD WITH NETTING. USE STAPLES.

USE PEGS OR STAPLES TO FASTEN SOD FIRMLY – AT THE ENDS OF STRIPS AND IN THE CENTER, OR EVERY 3–4 FEET IF THE STRIPS ARE LONG. WHEN READY TO MOW, DRIVE PEGS OR STAPLES FLUSH WITH THE GROUND.

MATERIALS

1. SOD SHOULD BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4" INCH (± 1/4" INCH) AT THE TIME OF CUTTING. THIS THICKNESS SHOULD EXCLUDE SHOOT GROWTH AND THATCH.

2. PIECES OF SOD SHOULD BE CUT TO THE SUPPLIER'S STANDARD WIDTH AND LENGTH, WITH A MAXIMUM ALLOWABLE DEVIATION IN ANY DIMENSION OF 5%. TORN OR UNEVEN PADS SHOULD NOT BE ACCEPTABLE.

3. STANDARD SIZE SECTIONS OF SOD SHOULD BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED FROM A FIRM GRASP ON ONE END OF THE SECTION.

4. SOD SHOULD BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS.

SITE PREPARATION

1. PRIOR TO SOIL PREPARATION, AREAS TO BE SODDED SHOULD BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLAN.

2. THE SURFACE SHOULD BE CLEARED OF ALL TRASH, DEBRIS AND OF ALL ROOTS, BRUSH, WIRE, GRADE STAKES AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.

3. FERTILIZE ACCORDING TO SOIL TESTS. FERTILIZER NEEDS CAN BE DETERMINED BY A SOIL TESTING LABORATORY OR REGIONAL RECOMMENDATIONS CAN BE MADE BY COUNTY AGRICULTURAL EXTENSION AGENTS. FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 3 INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT. ON SLOPING LAND, THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE CONTOUR.

INSTALLATION IN CHANNELS

1. SOD STRIPS IN WATERWAYS SHOULD BE LAID PERPENDICULAR TO THE DIRECTION OF FLOW. CARE SHOULD BE TAKEN TO BUTT ENDS OF STRIPS TIGHTLY (SEE FIGURE ABOVE).

2. AFTER ROLLING OR TAMPING, SOD SHOULD BE PEGGED OR STAPLED TO RESIST WASHOUT DURING THE ESTABLISHMENT PERIOD. MESH OR OTHER NETTING MAY BE PEGGED OVER THE SOD FOR EXTRA PROTECTION IN CRITICAL AREAS.

GENERAL INSTALLATION (VA. DEPT. OF CONSERVATION, 1992)

1. SOD SHOULD NOT BE CUT OR LAID IN EXCESSIVELY WET OR DRY WEATHER. SOD ALSO SHOULD NOT BE LAID ON SOIL SURFACES THAT ARE FROZEN.

2. DURING PERIODS OF HIGH TEMPERATURE, THE SOIL SHOULD BE LIGHTLY IRRIGATED IMMEDIATELY PRIOR TO LAYING THE SOD, TO COOL THE SOIL AND REDUCE ROOT BURNING AND DIEBACK.

3. THE FIRST ROW OF SOD SHOULD BE LAID IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO AND BUTTING TIGHTLY AGAINST EACH OTHER. LATERAL JOINTS SHOULD BE STAGGERED TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. CARE SHOULD BE EXERCISED TO ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE DRYING OF THE ROOTS (SEE FIGURE ABOVE).

4. ON SLOPES 3:1 OR GREATER, OR WHEREVER EROSION MAY BE A PROBLEM, SOD SHOULD BE LAID WITH STAGGERED JOINTS AND SECURED BY STAPLING OR OTHER APPROVED METHODS. SOD SHOULD BE INSTALLED WITH THE LENGTH PERPENDICULAR TO THE SLOPE (ON CONTOUR).

5. AS SODDING OF CLEARLY DEFINED AREAS IS COMPLETED, SOD SHOULD BE ROLLED OR TAMPED TO PROVIDE FIRM CONTACT BETWEEN ROOTS AND SOIL.

6. AFTER ROLLING, SOD SHOULD BE IRRIGATED TO A DEPTH SUFFICIENT THAT THE UNDERSIDE OF THE SOD PAD AND THE SOIL 4 INCHES BELOW THE SOD IS THOROUGHLY WET.

7. UNTIL SUCH TIME A GOOD ROOT SYSTEM BECOMES DEVELOPED, IN THE ABSENCE OF ADEQUATE RAINFALL, WATERING SHOULD BE PERFORMED AS OFTEN AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF AT LEAST 4 INCHES.

8. THE FIRST MOWING SHOULD NOT BE ATTEMPTED UNTIL THE SOD IS FIRMLY ROOTED, USUALLY 2–3 WEEKS. NOT MORE THAN ONE THIRD OF THE GRASS LEAF SHOULD BE REMOVED AT ANY ONE CUTTING.

INSPECTION AND MAINTENANCE GUIDELINES

1. SOD SHOULD BE INSPECTED WEEKLY AND AFTER EACH RAIN EVENT TO LOCATE AND REPAIR ANY DAMAGE.

2. DAMAGE FROM STORMS OR NORMAL CONSTRUCTION ACTIVITIES SUCH AS TIRE RUTS OR DISTURBANCE OF SWALE STABILIZATION SHOULD BE REPAIRED AS SOON AS PRACTICAL.

SOD INSTALLATION DETAIL

NOT–TO–SCALE

ISOMETRIC PLAN VIEW

SILT FENCE

A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE. WHEN PROPERLY USED, SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT. IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER–BORN SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW.

SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT FENCES ON THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY TIME.

MATERIALS

1. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN2, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NUMBER 30.

2. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y–BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM WEIGHT 1.25 LB/FT, AND BRINDELL HARDNESS EXCEEDING 140.

3. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

INSTALLATION

1. STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POSTS MUST BE EMBEDDED A MINIMUM OF 1–FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.

2. LAY OUT FENCING DOWN–SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE.

3. THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN–SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (E.G., PAVEMENT OR ROCK OUTCROP), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.

4. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

5. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3–FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

6. SILT FENCE SHOULD BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

COMMON TROUBLE POINTS

1. FENCE NOT INSTALLED ALONG THE CONTOUR CAUSING WATER TO CONCENTRATE AND FLOW OVER THE FENCE.

2. FABRIC NOT SEATED SECURELY TO GROUND (RUNOFF PASSING UNDER FENCE).

3. FENCE NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND SIDES).

4. FENCE TREATING TOO LARGE AN AREA, OR EXCESSIVE CHANNEL FLOW (RUNOFF OVERTOPS OR COLLAPSES FENCE).

INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECT ALL FENCING WEEKLY, AND AFTER RAINFALL.

2. REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.

3. REPLACE TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.

4. REPLACE OR REPAIR SECTIONS CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLES. A TRIANGULAR FILTER DIKE MAY BE PREFERABLE TO A SILT FENCE AT COMMON VEHICLE ACCESS POINTS.

5. WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

SILT FENCE DETAIL

NOT–TO–SCALE

PLAN VIEW

SECTION "A-A"

GENERAL NOTES

1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.

2. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.

3. WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.

4. LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES OR WATER BODIES.

5. TEMPORARY CONCRETE WASHOUT FACILITY SHOULD BE CONSTRUCTED WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.

MATERIALS

PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL IN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.

MAINTENANCE

1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.

2. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF.

3. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.

CONCRETE TRUCK WASHOUT PIT DETAIL

NOT–TO–SCALE

PLAN VIEW

SECTION "A-A"

NOTES:

1. THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN. UNIT WEIGHT OF 4 OUNCES/SY, HAVE A MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.

2. THE FILTER BAG SHALL BE FILLED WITH CLEAN, MEDIUM WASHED PEA GRAVEL TO COARSE GRAVEL (0.31 TO 0.75 INCH DIAMETER).

3. SAND SHALL NOT BE USED TO FILL THE FILTER BAGS.

GRAVEL FILTER BAG DETAIL

NOT–TO–SCALE

LEGEND

—\\—\\—\\— SILT FENCE

← FLOW ARROWS

CONSTRUCTION STAGING AREA

NOT–TO–SCALE

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES–STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

EXHIBIT 2

NO.	REVISION	DATE

JON D. ADAME
82567

Jon Adame
12-6-24

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TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

STRAUS TRACT - SECONDARY ARTERIAL
SAN ANTONIO, TEXAS
STORM WATER POLLUTION PREVENTION DETAILS

PLAT NO. 24-11800322
JOB NO. 13055–08
DATE SEPTEMBER 2024
DESIGNER AA
CHECKED AA DRAWN AG
SHEET C8.10

Date: Dec 06, 2024, 3:01pm User ID: crodriguez
File: P:\130\55\08\Design\Civil\SWPP-1305508.dwg