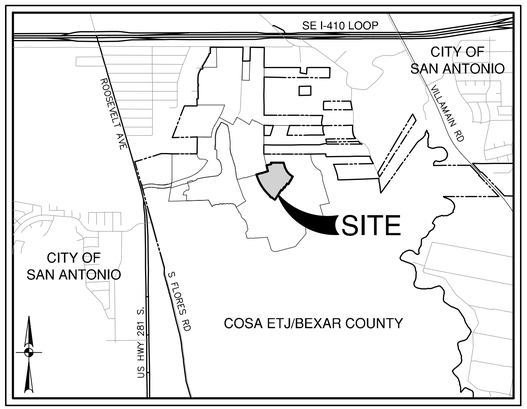
NO.	REVISION DESCRIPTION	DATE
1	REVISED SAWS BLOCK	12/22/23
2	REVISED SHEET # AND ADDED SHEET	01/08/24
3	REVISED SAWS BLOCK	02/01/24

ESPADA TRACT UNIT 15

SAN ANTONIO, TEXAS

CIVIL CONSTRUCTION PLANS



LOCATION MAP

NOT-TO-SCALE

PREPARED FOR:

LENNAR HOMES OF TEXAS
100 NE LOOP 410, STE. 1155
SAN ANTONIO TX, 78216

JULY 2023

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
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
2/1/24

Sheet List Table

Sheet Number	Sheet Title
C0.00	COVER SHEET
C1.00	MASTER DRAINAGE PLAN (ULTIMATE DEVELOPMENT CONDITIONS)
C1.01	MASTER DRAINAGE PLAN (PROPOSED DEVELOPMENT CONDITIONS)
C1.02	DRAIN J1 PLAN & PROFILE (STA. 1+50.00 TO 6+20.00)
C1.03	DRAIN J1 PLAN & PROFILE (STA. 6+20.00 TO 11+00.00)
C1.04	DRAIN J1 PLAN & PROFILE (STA. 11+00.00 TO END)
C1.05	DRAIN P1 PLAN & PROFILE (STA. 1+48.00 TO 6+20.00)
C1.06	DRAIN P1 PLAN & PROFILE (STA. 6+20.00 TO END)
C1.07	DRAIN P2 PLAN & PROFILE (STA 1+20.00 TO 1+25.66)
	DRAIN P3 PLAN & PROFILE (STA 1+20.50 TO 1+41.81)
	DRAIN P4 PLAN & PROFILE (STA 1+20.50 TO 1+25.50)
C1.08	DRAINAGE DETAILS
C1.09	DRAINAGE DETAILS
C2.00	ESPADA RIDGE PLAN & PROFILE (STA. 24+58.12 TO END)
C2.01	PERDIGUERA PLACE PLAN & PROFILE (STA. 2+40.65 TO END)
C2.02	AQUEDUCT CREEK PLAN & PROFILE (STA. 46+19.27 TO END)
C2.03	MINITA CREEK PLAN & PROFILE (STA. 3+09.72 TO END)
C2.04	DOLORES RIDGE PLAN & PROFILE (STA. 1+36.49 TO END)
C2.05	CABRAS RANCHO PLAN & PROFILE (STA. 1+37.73 TO END)
C2.06	TYPICAL STREET DETAILS
C2.07	TYPICAL STREET DETAILS
C2.08	TYPICAL STREET DETAILS
C2.09	TURN LANE PLAN
C3.00	OVERALL SIGNAGE PLAN
C3.01	OVERALL SIGNAGE PLAN
C3.02	TxDOT SIGN MOUNTING DETAILS
C3.03	TxDOT SIGN MOUNTING DETAILS
C3.04	TxDOT SIGN MOUNTING DETAILS
C4.00	OVERALL WATER DISTRIBUTION PLAN
C4.01	OVERALL WATER DISTRIBUTION DETAILS & NOTES
C4.02	OVERALL WATER DISTRIBUTION DETAILS & NOTES
C5.00	OVERALL SANITARY SEWER PLAN
C5.01	OVERALL SANITARY SEWER PLAN
C5.02	OVERALL SANITARY SEWER PLAN
C5.03	SS LINE HH PLAN & PROFILE (STA 2+02.20 TO 12+50.00)
C5.04	SS LINE HH PLAN & PROFILE (STA 12+50.00 TO 23+50.00)
C5.05	SS LINE HH PLAN & PROFILE (STA 23+50.00 TO END)
C5.06	SS LINE P PLAN & PROFILE (STA 1+00.00 TO END)
C5.07	SS LINE Q PLAN & PROFILE (STA 1+00.00 TO END)
C5.08	SS LINE R PLAN & PROFILE (STA 1+00.00 TO END)
C5.09	SS LINE S PLAN & PROFILE (STA 1+00.00 TO END)
C5.10	SS LINE T PLAN & PROFILE (STA 1+00.00 TO END)
	SS LINE U PLAN & PROFILE (STA 1+00.00 TO END)
	SS LINE V PLAN & PROFILE (STA 1+00.00 TO END)
C5.11	SS LINE Y PLAN & PROFILE (STA 1+00.00 TO 12+00.00)
C5.12	SS LINE Y PLAN & PROFILE (STA 12+00.00 TO END)
C5.13	OVERALL SANITARY SEWER DETAILS
C5.14	OVERALL SANITARY SEWER NOTES
C6.00	OVERALL UTILITY PLAN
C6.01	OVERALL UTILITY PLAN
C6.02	OVERALL UTILITY PLAN
C7.00	OVERALL GRADING PLAN
C7.01	OVERALL GRADING PLAN
C7.02	OVERALL GRADING PLAN
C8.00	STORM WATER POLLUTION PREVENTION PLAN
C8.01	STORM WATER POLLUTION PREVENTION PLAN
C8.02	STORM WATER POLLUTION PREVENTION PLAN
C8.03	STORM WATER POLLUTION PREVENTION PLAN DETAILS

WATER (SAWS PRESSURE ZONE 750)

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 139 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 184.34 L.F.-12"PVC, 3858.67 L.F.-8"PVC PLAT NO. 23-11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23-1127

LOWER - EAST SEWERSHED - DOS RIOS/LEON CREEK

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 138 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 2899 L.F.-12"PVC, 5217 L.F.-8"PVC PLAT NO. 23-11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23-1603

1 2 3

SHEET C0.00

Date: July 26, 2023, 1:17 PM — User ID: jonathangraff
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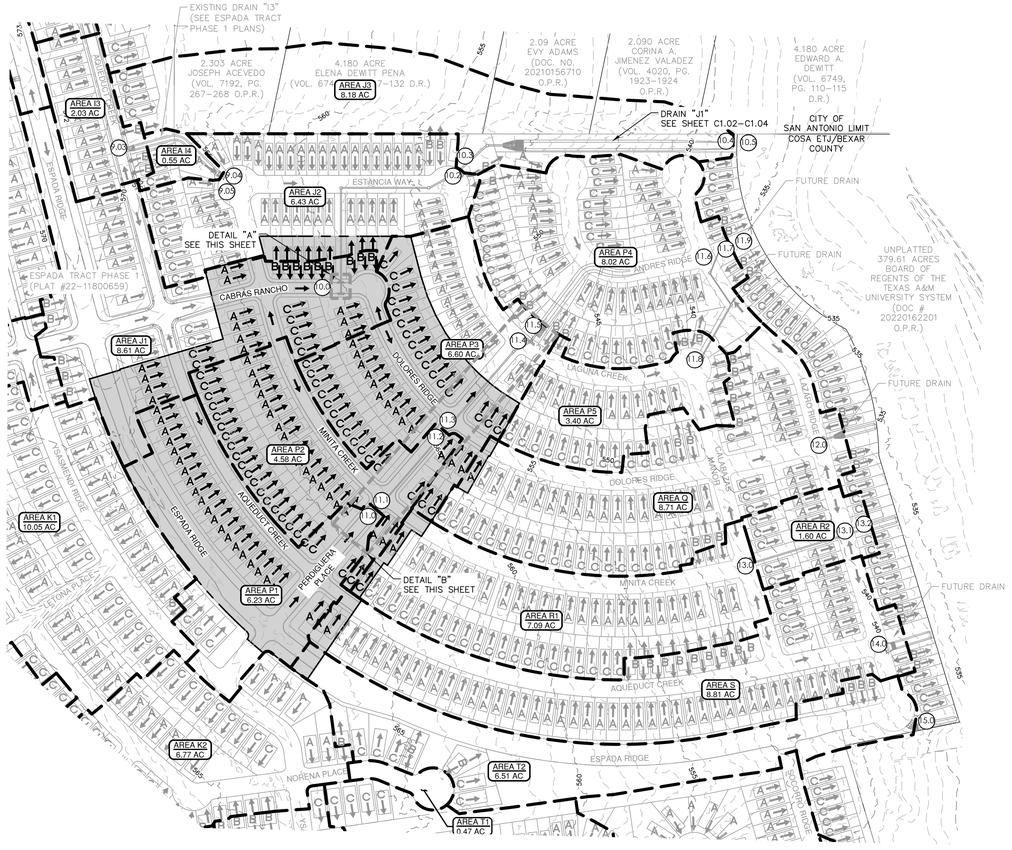
Accumulated Flow Rates

Ref. Point	Desc.		Contributing Flow						Reference Sub-point			
			Upstream Watershed		Upstream Surface Bypass		Upstream Pipe Flow		T	C	B	P
		Return Year	#	$Q_{WATERSHED}$ (cfs)	Surf Byp. Upstream Ref. Point	$Q_{SURF-UP}$ (cfs)	Pipe Upstream Ref. Point	$Q_{PIPE-UP}$ (cfs)	$Q_{INLET-TOTAL}$ (cfs)	$Q_{CAPTURED}$ (cfs)	Q_{BYPASS} (cfs)	Q_{PIPE} (cfs)
9.05	**DRAIN I4**	5	**9.04**	2.5	**9.03**	7.9	**N/A**	0.0	**10.4**	10.4	-	10.4
		25		3.6		10.9		0.0	**14.5**	14.5	-	14.5
		100		4.5		13.6		0.0	**18.1**	18.1		18.1
10.1	**DRIAN J1**	5	**10.0**	37.0	**N/A**	0.0	**N/A**	0.0	**37.0**	18.5	18.5	18.5
		25		51.1		0.0		0.0	**51.1**	25.6	25.6	25.6
		100		63.8		0.0		0.0	**63.8**	31.9	31.9	31.9
10.3	**FUTURE DRIAN J1**	5	**10.2**	25.9	**9.05**	10.4	**10.0**	37.0	**36.3**	36.3	-	73.3
		25		35.8		14.5		51.1	**50.3**	50.3	-	101.4
		100		44.7		18.1		63.8	**62.8**	62.8	-	126.6
10.5	**FUTURE DRIAN J1**	5	**10.4**	28.4	**N/A**	0.0	**10.3**	73.3	**28.4**	28.4	-	101.7
		25		39.1		0.0		101.4	**39.1**	39.1	-	140.5
		100		48.6		0.0		126.6	**48.6**	48.6	-	175.2
11.1	**DRAIN P1**	5	**11.0**	26.8	**N/A**	0.0	**N/A**	0.0	**26.8**	21.2	5.6	21.2
		25		37.0		0.0		0.0	**37.0**	25.8	11.2	25.8
		100		46.1		0.0		0.0	**46.1**	29.2	16.9	29.2
11.3	**DRAIN P1**	5	**11.2**	17.8	**11.1**	5.6	**11.1**	21.2	**23.4**	19.5	3.9	40.7
		25		24.7		11.2		25.8	**35.9**	25.3	10.6	51.1
		100		30.7		16.9		29.2	**47.6**	29.8	17.8	59.0
11.5	**FUTURE DRAIN P1**	5	**11.4**	26.6	**11.3**	3.9	**11.3**	40.7	**30.5**	30.5	-	71.2
		25		36.8		10.6		51.1	**47.4**	47.4	-	98.5
		100		45.9		17.8		59.0	**63.7**	63.7	-	122.7
11.7	**FUTURE DRAIN P1**	5	**11.6**	34.6	**N/A**	0.0	**11.5**	71.2	**34.6**	34.6	-	105.8
		25		48.3		0.0		98.5	**48.3**	48.3	-	146.8
		100		60.3		0.0		122.7	**60.3**	60.3	-	183.0
11.9	**FUTURE DRAIN P1**	5	**N/A**	0.0	**N/A**	0.0	**11.7, 11.8**	119.5	**0.0**	-	-	119.5
		25		0.0		0.0		165.8	**0.0**	-	-	165.8
		100		0.0		0.0		206.6	**0.0**	-	-	206.6
13.2	**DRAIN R1**	5	**13.1**	6.2	**N/A**	0.0	**13.0**	27.6	**6.2**	6.2	-	33.8
		25		8.6		0.0		38.2	**8.6**	8.6	-	46.8
		100		10.7		0.0		47.6	**10.7**	10.7	-	58.3



Master Drainage Plan Calculations

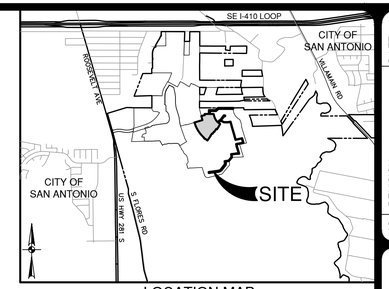
(Ultimate Development)

Ref. Point	Structure / Description	Drainage Areas			Total Flowpath (ft)	Overland/Sheet Flow (Seelye)			Shallow Concentrated Flow - 1**					Channelized Flow**			T_{C-TOT}	Rational Method Q=CIA		
		#	Area (Ac)	C		L_O (FT)	S_O (ft/ft)	T_O* (MIN)	L_{SC} (FT)	Condition**	Slope (ft/ft)	V_{SC} (FPS)	T_{SC}** (MIN)	L_{CH} (FT)	V_{CH} (FPS)	T_{CH}** (MIN)		IDF Curv	CoSA_A14_P4	
																		Return Year	Intensity (in/hr)	Q (cfs)
9.03	Existing Drain I3	I3	2.03	0.77	460	100	0.01	15	30	U	0.01	1.6	0.3	330	6.0	0.9		16	5	5.06	7.9
																		16	25	6.99	10.9
																		16	100	8.71	13.6
9.04	Drain J1	I4	0.55	0.77	130	100	0.03	11	30	U	0.01	1.6	0.3	-	-	-		11	5	6.02	2.5
																		11	25	8.43	3.6
																		11	100	10.54	4.5
9.05	Drain J1	I3+I4	2.58	0.77		(Reference Accumulated Flow Rate Table)												0	5	-	10.4
																		0	25	-	14.5
																		0	100	-	18.1
10.0	Drain J1	J1	8.61	0.82	940	100	0.02	13	20	U	0.01	1.6	0.2	820	6.0	2.3		15	5	5.24	37.0
																		15	25	7.24	51.1
																		15	100	9.03	63.8
10.1	Drain J1	J1	8.61	0.82		(Reference Accumulated Flow Rate Table)												0	5	-	18.5
																		0	25	-	25.6
																		0	100	-	31.9
10.2	Drain J1	J2	6.43	0.77	720	100	0.02	13	95	U	0.02	2.3	0.7	525	6.0	1.5		15	5	5.24	25.9
																		15	25	7.24	35.8
																		15	100	9.03	44.7
10.3	Drain J1	J1+J2	15.04	0.80		(Reference Accumulated Flow Rate Table)												0	5	-	73.3
																		0	25	-	101.4
																		0	100	-	126.6
10.4	Drain J1	J3	8.18	0.77	1,790	100	0.02	13	600	U	0.02	2.3	4.4	1,090	6.0	3.0		20	5	4.51	28.4
																		20	25	6.21	39.1
																		20	100	7.71	48.6
10.5	Drain J1	I3+I4+J1+J2+J3	25.80	0.79		(Reference Accumulated Flow Rate Table)												0	5	-	101.7
																		0	25	-	140.5
																		0	100	-	175.2
11.0	Calculation Point	P1	6.23	0.82	980	100	0.02	13	30	U	0.02	2.3	0.2	850	6.0	2.4		15	5	5.24	26.8
																		15	25	7.24	37.0
																		15	100	9.03	46.1
11.1	Drain P1	P1	6.23	0.82		(Reference Accumulated Flow Rate Table)												0	5	-	21.2
																		0	25	-	25.8
																		0	100	-	29.2
11.2	Calculation Point	P2	4.58	0.77	985	100	0.02	13	145	U	0.01	1.6	1.5	740	6.0	2.1		16	5	5.06	17.8
																		16	25	6.99	24.7
																		16	100	8.71	30.7
11.3	Drian P1	P1+P2	10.81	0.80		(Reference Accumulated Flow Rate Table)												0	5	-	40.7
																		0	25	-	51.1
																		0	100	-	59.0
11.4	Calculation Point	P3	6.60	0.77	855	100	0.02	13	145	U	0.02	2.3	1.1	610	6.0	1.7		15	5	5.24	26.6
																		15	25	7.24	36.8
																		15	100	9.03	45.9
11.5	Drain P1	P1+P2+P3	17.41	0.79		(Reference Accumulated Flow Rate Table)												0	5	-	71.2
																		0	25	-	98.5
																		0	100	-	122.7
11.6	Calculation Point	P4	8.02	0.77	855	100	0.03	11	145	U	0.02	2.3	1.1	610	6.0	1.7		13	5	5.61	34.6
																		13	25	7.82	48.3
																		13	100	9.76	60.3
11.7	Drain P1	P1+P2+P3+P4	25.43	0.78		(Reference Accumulated Flow Rate Table)												0	5	-	105.8
																		0	25	-	146.8
																		0	100	-	183.0
11.8	Drain P5	P5	3.40	0.77	695	100	0.02	13	145	U	0.02	2.3	1.1	450	6.0	1.3		15	5	5.24	13.7
																		15	25	7.24	19.0
																		15	100	9.03	23.6
11.9	Drain P5	P1+P2+P3+P4+P5	28.83	0.78		(Reference Accumulated Flow Rate Table)												0	5	-	119.5
																		0	25	-	165.8
																		0	100	-	206.6
12.0	Drain Q	Q	8.71	0.77	1,225	100	0.02	13	150	U	0.02	2.3	1.1	975	6.0	2.7		16	5	5.06	33.9
																		16	25	6.99	46.9
																		16	100	8.71	58.4
13.0	Drain R1	R1	7.09	0.77	1,255	100	0.02	13	150	U	0.02	2.3	1.1	1,005	6.0	2.8		16	5	5.06	27.6
																		16	25	6.99	38.2
																		16	100	8.71	47.6
13.1	Calculation Point	R2	1.60	0.77	385	100	0.01	15	160	U	0.01	1.6	1.7	125	6.0	0.3		16	5	5.06	6.2
																		16	25	6.99	8.6
																		16	100	8.71	10.7
13.2	Drain R1	R1+R2	8.69	0.77		(Reference Accumulated Flow Rate Table)												0	5	-	33.8
																		0	25	-	46.8
																		0	100	-	58.3
14.0	Drain S	S	8.81	0.77	1,725	100	0.02	13	40	U	0.02	2.3	0.3	1,585	6.0	4.4		17	5	4.91	33.3
																		17	25	6.76	45.9
																		17	100	8.42	57.1

*Seelye Chart or TR-55 Eqn. 3-3
**As Calculated using Mannings or TR-55 Figure 3-1 or 6 ft/s

$$T_o = \frac{(0.007(n \cdot L)^{0.8})}{(P_2^{0.5} \cdot S^{0.4})} * 60 \qquad v = \frac{k}{n} R^{2/3} S_o^{1/2} \qquad k = 1.486\ ft^{1/3}/s$$

S: For Streets: n = 0.018, R = 0.2 (Adapted from Mannings)
P: For Paved: n = 0.025, R = 0.2
U: For Unpaved: n = 0.05, R = 0.4
D: For Default: v = 6 fps

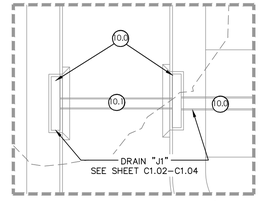


LOCATION MAP
NOT–TO–SCALE

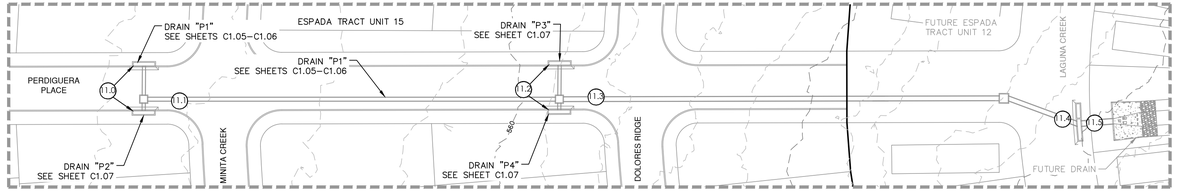
0' 200' 400' 600'
SCALE: 1"= 200'

MASTER DRAINAGE LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR — 690 —
- 100 YR UD FLOODPLAIN
- 100 YR FEMA FLOODPLAIN
- RUNOFF FLOW PATH
- DRAINAGE AREA BOUNDARY
- FHA LOT GRADING TYPE — A,B,C
- PROPOSED DIRECTION OF FLOW
- DRAINAGE CALCULATION POINT — 11
- DRAINAGE AREA — AREA 0.01 AC



DETAIL "A"
SCALE: 1"=20'



DETAIL "B"
SCALE: 1"=50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1002800

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED PROFESSIONAL ENGINEER
11/3/2023

NO.	REVISION	DATE

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

MASTER DRAINAGE PLAN (ULTIMATE DEVELOPMENT CONDITIONS)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C1.00

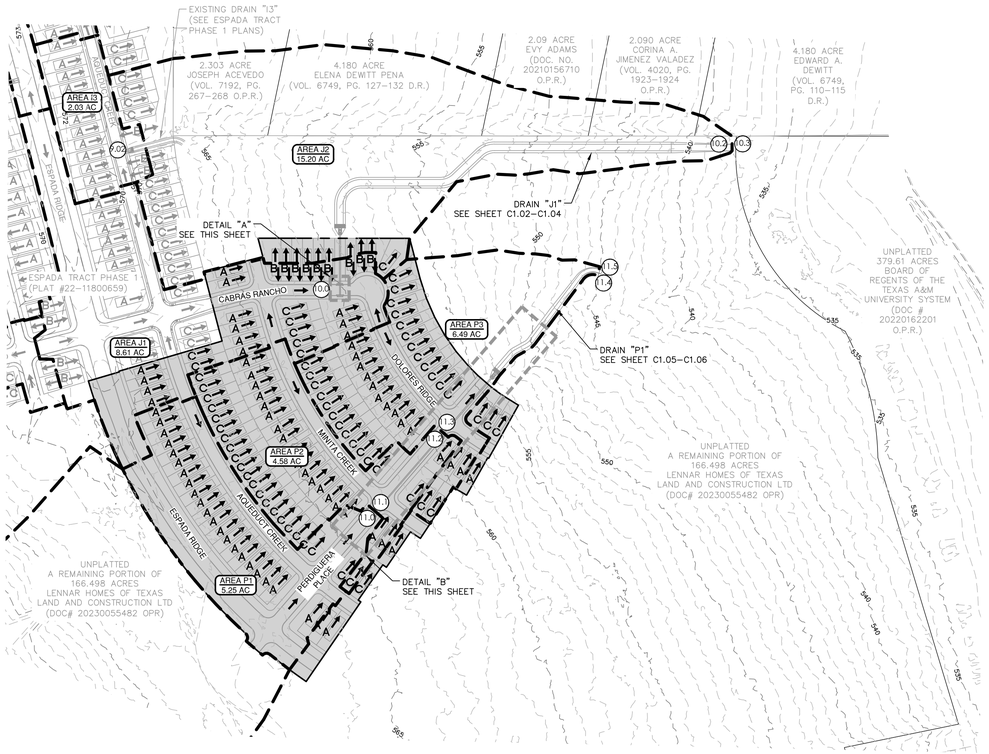
Date: Nov 03, 2023, 1:27pm User ID: tcamacho
File: P:\126\32\14\Design\Civil\00126321 4.dwg

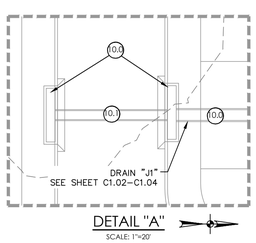
Accumlated Flow Rates

Ref. Point	Desc.	Return Year	Contributing Flow: Upstream Watershed #	Upstream Watershed $Q_{WATERSHED}$ (cfs)	Upstream Surface Bypass: Surf Byp. Upstream Ref. Point	Upstream Surface Bypass $Q_{SURF-UP}$ (cfs)	Upstream Pipe Flow: Pipe Upstream Ref. Point	Upstream Pipe Flow $Q_{PIPE-UP}$ (cfs)	Reference Sub-point T $Q_{INLET-TOTAL}$ (cfs)	C $Q_{CAPTURED}$ (cfs)	B Q_{BYPASS} (cfs)	P Q_{PIPE} (cfs)
10.1	DRIAN J1	5	10.0	37.0	N/A	0.0	N/A	0.0	**37.0**	18.5	18.5	18.5
		25		51.1		0.0		0.0	**51.1**	25.6	25.6	25.6
		100		63.8		0.0		0.0	**63.8**	31.9	31.9	31.9
10.3	DRIAN J1	5	9.02, 10.2	51.1	N/A	0.0	10.0	37.0	**51.1**	51.1	-	88.1
		25		70.4		0.0		51.1	**70.4**	70.4	-	121.5
		100		87.4		0.0		63.8	**87.4**	87.4	-	151.2
11.1	DRAIN P1	5	11.0	22.8	N/A	0.0	N/A	0.0	**22.8**	19.2	3.6	19.2
		25		31.5		0.0		0.0	**31.5**	23.4	8.1	23.4
		100		39.3		0.0		0.0	**39.3**	26.7	12.6	26.7
11.3	DRAIN P1	5	11.2	17.8	11.1	3.6	11.1	19.2	**21.4**	18.3	3.1	37.5
		25		24.7		8.1		23.4	**32.8**	24.1	8.7	47.5
		100		30.7		12.6		26.7	**43.3**	28.2	15.1	54.9
11.5	DRAIN P1	5	11.4	22.3	11.3	3.1	11.3	37.5			-	62.9
		25		30.8		8.7		47.5			-	87.0
		100		38.4		15.1		54.9			-	108.4

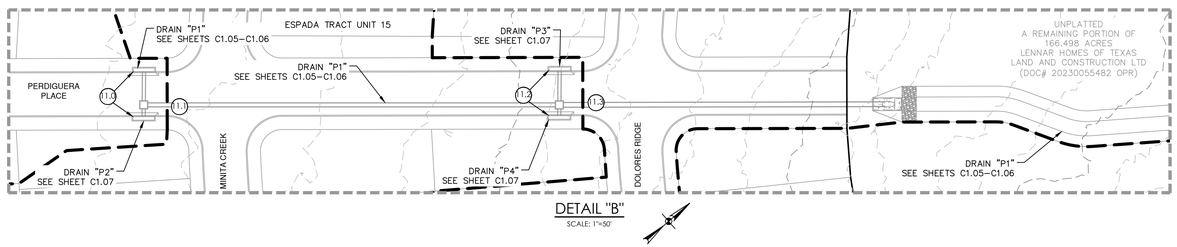
Proposed Conditions Calculations

Ref. Point	Structure / Description	Drainage Areas: #	Area (Ac)	C	Total Flowpath (ft)	Overland/Sheet Flow (Seelye): L_O (FT)	S_O (ft/ft)	T_O* (MIN)	Shallow Concentrated Flow - 1**: L_{SC} (FT)	Condition**	Slope (ft/ft)	V_{SC} (FPS)	T_{SC}** (MIN)	Channelized Flow**: L_{CH} (FT)	V_{CH} (FPS)	T_{CH}** (MIN)	T_{C-TOT}	Rational Method Q=CIA IDF Curv: CoSA_A14_PA4 Return Year	Intensity (in/hr)	Q (cfs)
9.02	Existing Drain I3	I3	2.03	0.77	460	100	0.01	15	30	U	0.01	1.6	0.3	330	6.0	0.9	16	5	5.06	7.9
																	16	25	6.99	10.9
																	16	100	8.71	13.6
10.0	Drain J1	J1	8.61	0.82	940	100	0.02	13	20	U	0.01	1.6	0.2	820	6.0	2.3	15	5	5.24	37.0
																	15	25	7.24	51.1
																	15	100	9.03	63.8
10.1	Drain J1	J1	8.61	0.82	(Reference Accumulated Flow Rate Table)												0	5	-	18.5
																	0	25	-	25.6
																	0	100	-	31.9
10.2	Drain J1	J2	15.20	0.63	1,790	100	0.03	13	600	U	0.02	2.3	4.4	1,090	6.0	3.0	20	5	4.51	43.2
																	20	25	6.21	59.5
																	20	100	7.71	73.8
10.3	Drain J1	I3+J1+J2	25.84	0.70	(Reference Accumulated Flow Rate Table)												0	5	-	88.1
																	0	25	-	121.5
																	0	100	-	151.2
11.0	Calculation Point	P1	5.25	0.83	985	100	0.02	13	30	U	0.02	2.3	0.2	855	6.0	2.4	15	5	5.24	22.8
																	15	25	7.24	31.5
																	15	100	9.03	39.3
11.1	Drain P1	P1	5.25	0.83	(Reference Accumulated Flow Rate Table)												0	5	-	19.2
																	0	25	-	23.4
																	0	100	-	26.7
11.2	Calculation Point	P2	4.58	0.77	985	100	0.02	13	145	U	0.01	1.6	1.5	740	6.0	2.1	16	5	5.06	17.8
																	16	25	6.99	24.7
																	16	100	8.71	30.7
11.3	Drian P1	P1+P2	9.83	0.80	(Reference Accumulated Flow Rate Table)												0	5	-	37.5
																	0	25	-	47.5
																	0	100	-	54.9
11.4	Calculation Point	P3	6.49	0.68	1,140	100	0.02	13	145	U	0.02	2.3	1.1	895	6.0	2.5	16	5	5.06	22.3
																	16	25	6.99	30.8
																	16	100	8.71	38.4
11.5	Drain P1	P1+P2+P3	16.32	0.75	(Reference Accumulated Flow Rate Table)												0	5	-	62.9
																	0	25	-	87.0
																	0	100	-	108.4





DETAIL "A"
SCALE: 1"=20'



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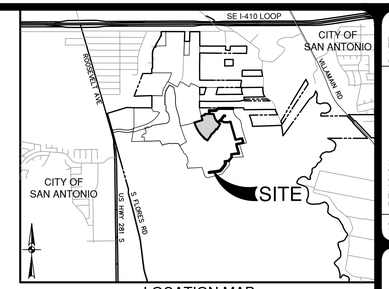
SCALE: 1"=50'



LOCATION MAP
NOT-TO-SCALE

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

MASTER DRAINAGE LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR — 690 —
- 100 YR UD FLOODPLAIN
- 100 YR FEMA FLOODPLAIN
- RUNOFF FLOW PATH
- DRAINAGE AREA BOUNDARY
- FHA LOT GRADING TYPE — A,B,C
- PROPOSED DIRECTION OF FLOW
- DRAINAGE CALCULATION POINT — (11)
- DRAINAGE AREA — AREA 0.01 AC

DATE
NO. REVISION

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED PROFESSIONAL ENGINEER
11/3/2023

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

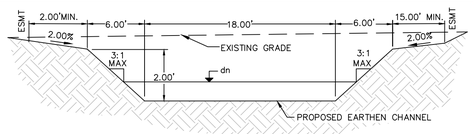
MASTER DRAINAGE PLAN (PROPOSED DEVELOPMENT CONDITIONS)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C1.01

Date: Nov 03, 2023, 1:28pm User ID: tcamacho
File: P:\126\32\14\Design\Civil\001263214-PROP.dwg

HYDRAULIC CALCULATIONS EARTHEN CHANNEL	
STA. 1+50.00 TO 3+20.00	
Q25	= 140.0 CFS
Bw	= 18.00'
n	= 0.035
S	= 0.94%
D	= 2.00'
dn	= 1.40'
V	= 4.50 FPS
τ	= 0.68 LB/FT²

HYDRAULIC CALCULATIONS EARTHEN CHANNEL	
STA. 3+20.00 TO 7+40.00	
Q25	= 140.0 CFS
Bw	= 18.00'
n	= 0.035
S	= 1.55%
D	= 2.00'
dn	= 1.21'
V	= 5.35 FPS
τ	= 0.99 LB/FT²



SECTION "A-A"
NOT-TO-SCALE
STA. 3+20.00 – 13+70.83

TRENCH EXCAVATION SAFETY PROTECTION:

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CAUTION!!

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DRAINAGE & GRADING NOTES:

1. A BEXAR COUNTY ROW 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.
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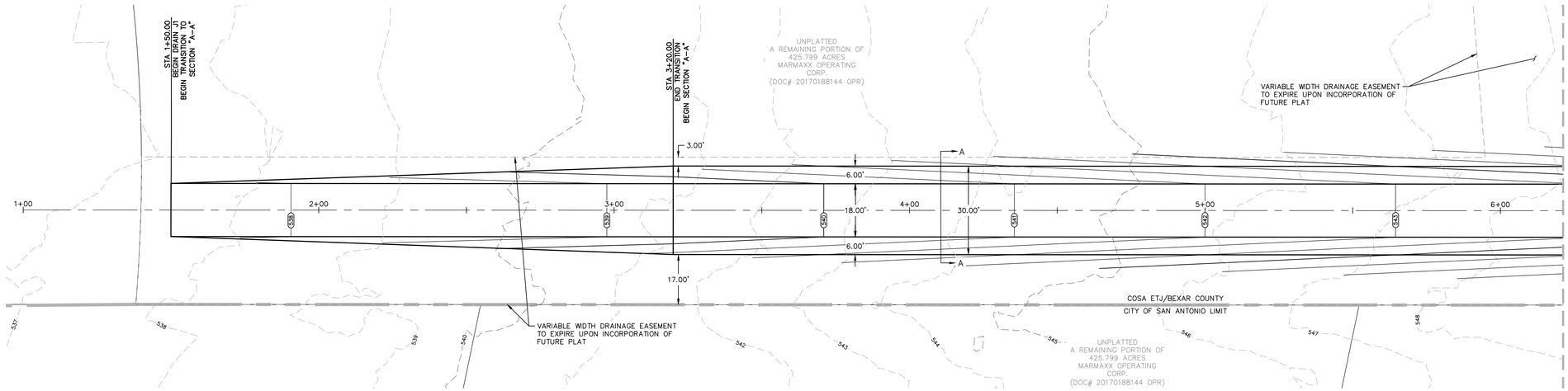
3. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
4. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
5. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
6. 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.
7. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

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

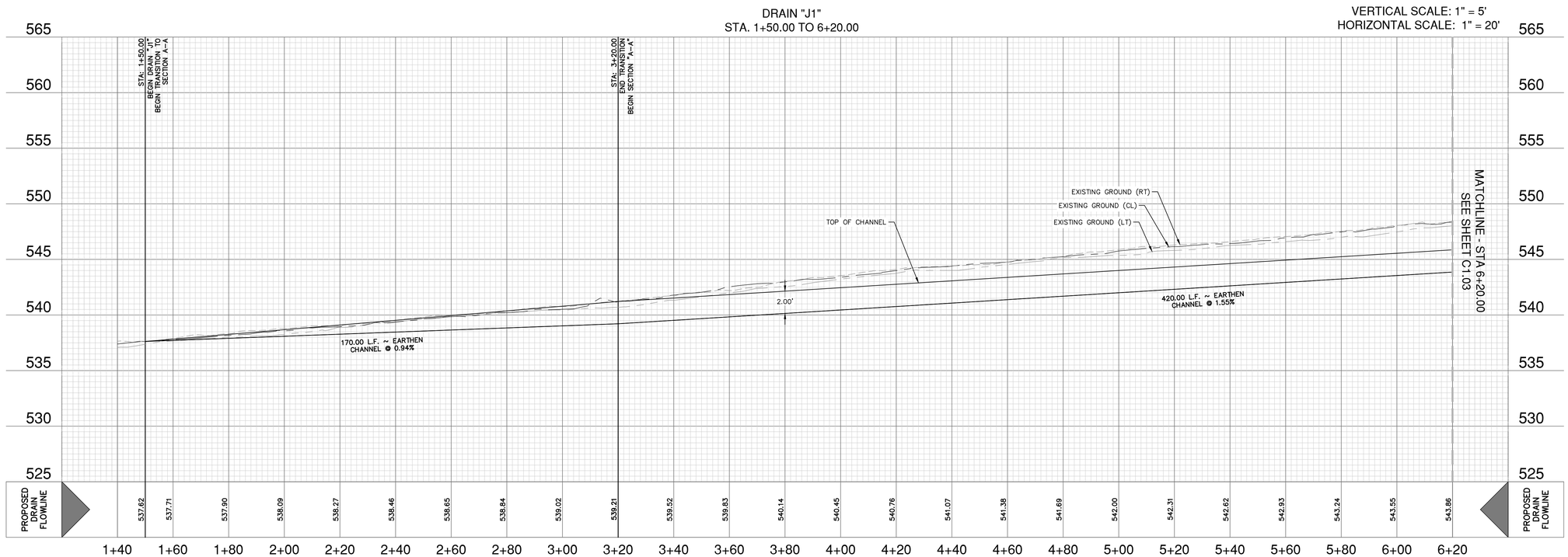
DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690
- PROPOSED CONTOUR — 690
- PROPOSED WATER — W
- PROPOSED SEWER — SS
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW
- EXISTING WELL — W



DRAIN "J1"
STA. 1+50.00 TO 6+20.00

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



NO.	REVISION	DATE

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED PROFESSIONAL ENGINEER
12/2/23

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

DRAIN J1 PLAN & PROFILE (STA. 1+50.00 TO 6+20.00)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C1.02

Date: Dec 05, 2023, 9:52am User ID: tcamacho
File: P:\126\32\14\Design\Civil\DR126324 DRAIN J1.dwg

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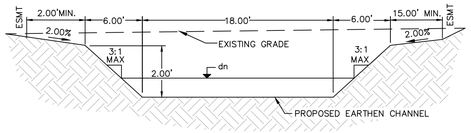
HYDRAULIC CALCULATIONS EARTHEN CHANNEL	HYDRAULIC CALCULATIONS EARTHEN CHANNEL	HYDRAULIC CALCULATIONS EARTHEN CHANNEL
STA. 3+20.00 TO 7+40.00	STA. 7+40.00 TO 10+44.00	STA. 10+44.00 TO 13+70.83
Q25 = 140.0 CFS	Q25 = 121.5 CFS	Q25 = 51.1 CFS
Bw = 18.00'	Bw = 18.00'	Bw = 18.00'
n = 0.035	n = 0.035	n = 0.035
S = 1.55%	S = 1.70%	S = 0.50%
D = 2.00'	D = 2.00'	D = 2.00'
dn = 1.21'	dn = 1.09'	dn = 0.94'
V = 5.35 FPS	V = 5.24 FPS	V = 2.61 FPS
τ = 0.99 LB/FT²	τ = 0.99 LB/FT²	τ = 0.25 LB/FT²



SECTION "A-A"
NOT-TO-SCALE
STA. 3+20.00 – 13+70.83

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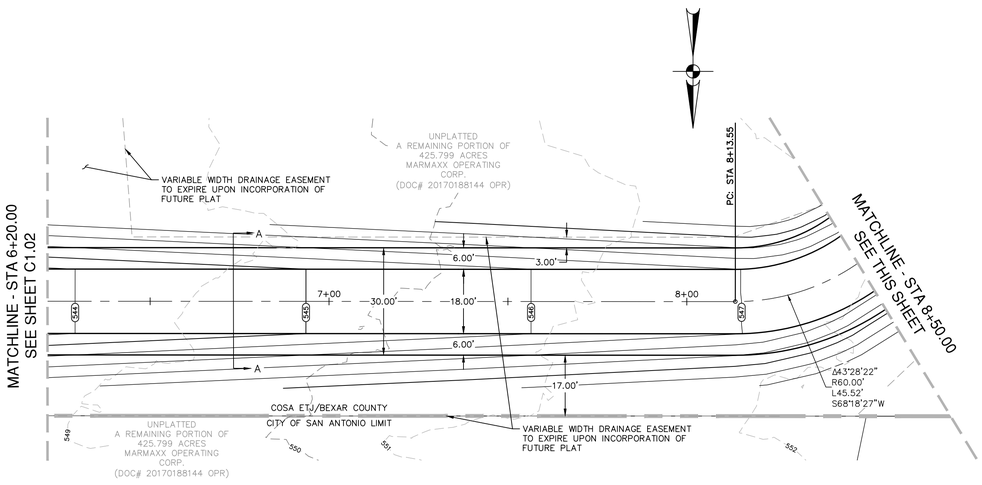
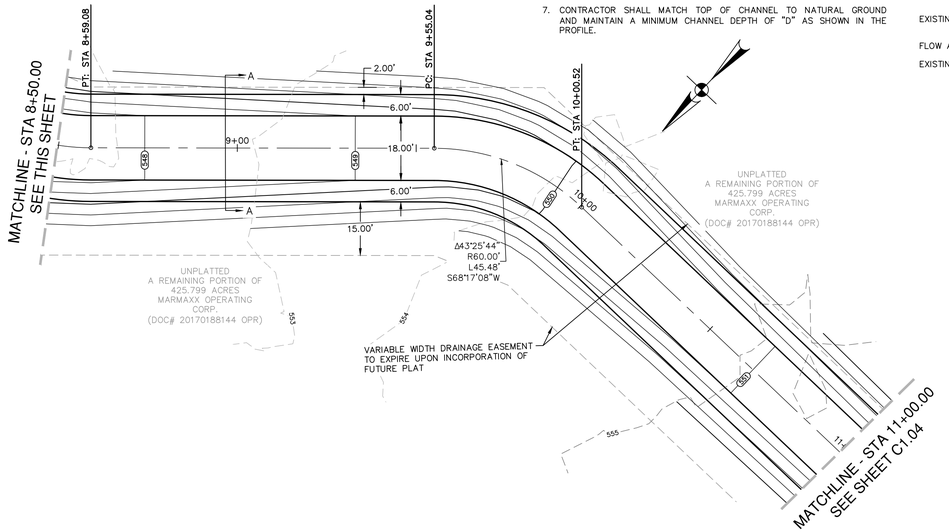
SCALE: 1"= 20'
0' 20' 40' 60'

DRAINAGE LEGEND

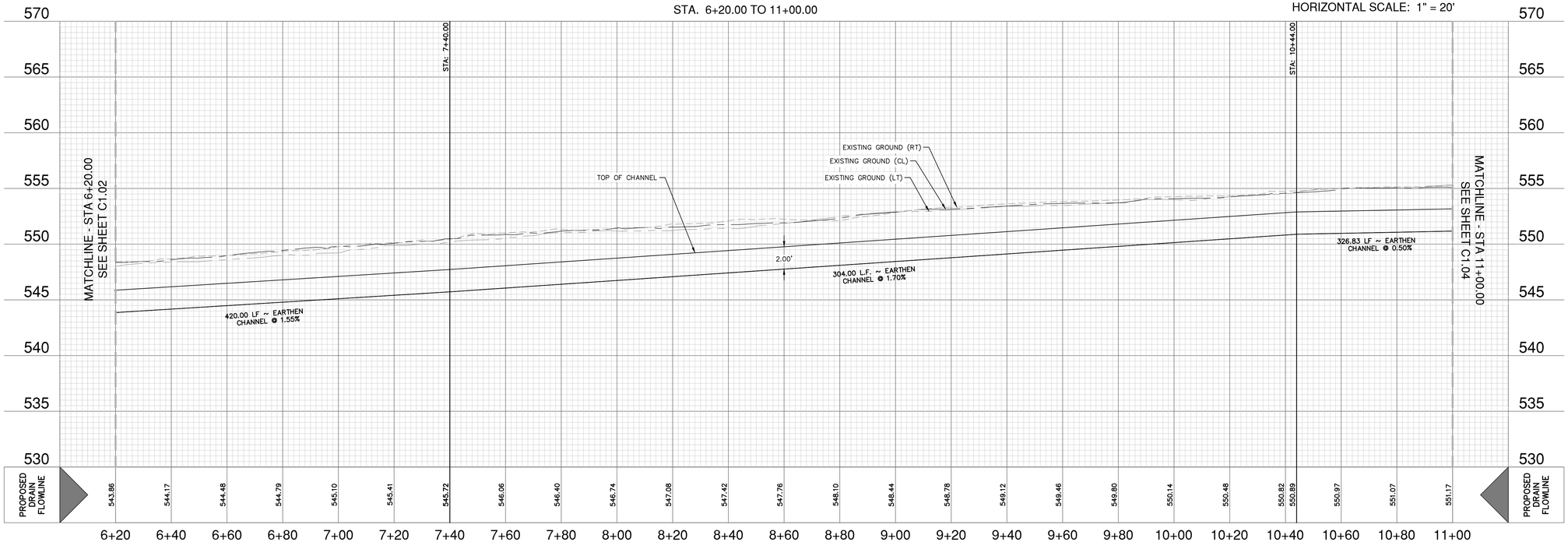
PROJECT LIMITS
100 YR FLOODPLAIN
EXISTING CONTOUR 690
PROPOSED CONTOUR 690
PROPOSED WATER W
PROPOSED SEWER SS
PROPOSED STORM DRAIN
EXISTING STORM DRAIN
FLOW ARROW
EXISTING WELL W





DRAIN "J1"
STA. 6+20.00 TO 11+00.00

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



NO.	REMVISION	DATE

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED
PROFESSIONAL ENGINEER
12/12/23

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

DRAIN J1 PLAN & PROFILE (STA. 6+20.00 TO 11+00.00)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C1.03

Date: Dec 05, 2023, 9:53am User ID: tcamacho
File: P:\126\32\14\Design\Civil\DR126321-4 DRAIN J1.dwg

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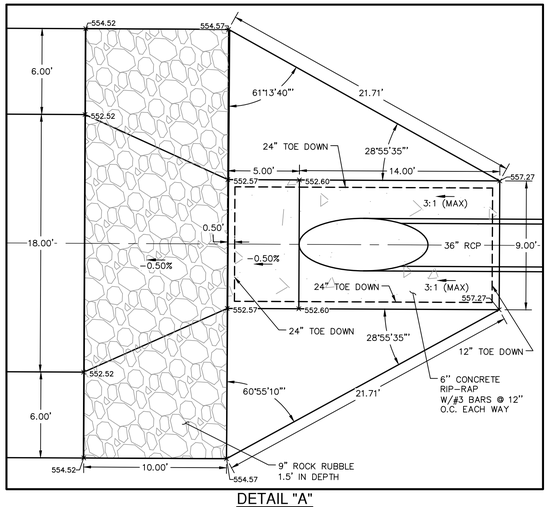
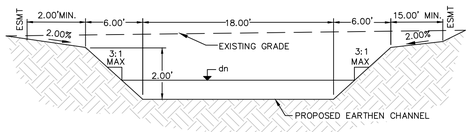


DETAIL "A"

SCALE : 1" = 5'



SECTION "A-A"

NOT-TO-SCALE
STA. 3+20.00 – 13+70.83

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TRENCH EXCAVATION SAFETY PROTECTION:

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CAUTION!!

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

DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690 —
- PROPOSED CONTOUR — 690 —
- PROPOSED WATER — W —
- PROPOSED SEWER — SS —
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW
- EXISTING WELL — W

HYDRAULIC CALCULATIONS–DRAIN "J1" CURB INLETS

TOTAL Q25 FOR THE CURB INLETS IS EQUAL TO 51.10 CFS. TWO INLETS WILL CAPTURE THE TOTAL FLOW. AS A RESULT, TOTAL FLOW HAS BEEN DIVIDED IN HALF TO SIZE EACH INLET. ANALYSIS BELOW SHOWS CALCULATIONS FOR SIZING ONE OF THE TWO INLETS.

Q_{25} = 51.10 CFS (25.60 CFS EACH INLET)

$Q_{25} = CA\sqrt{2gh}$ (ORIFICE FLOW EQN.)

A = L(0.52), h = 0.52, g = 32.2, c = 0.70

$$L = \frac{25.60 \text{ CFS}}{(0.7)\ (0.52)\sqrt{2}\ (32.2)\ (0.52)}$$

L = 12.15 FT USE 1 ~ 15 FT CURB INLET EACH SIDE

CHECK WITH WEIR FORMULA

$$h = \left(\frac{Q}{(CL)}\right)^{2/3} = \left(\frac{25.60}{(3.087)\ (15)}\right)^{2/3} = 0.67 \text{ FT.}$$

h = 0.67 < 0.79 OK

HYDRAULIC CALCULATIONS EARTHEN CHANNEL

STA. 10+44.00 TO 13+70.83

Q25 = 51.1 CFS
Bw = 18.00'
n = 0.035
S = 0.50%
D = 2.00'
dn = 0.94'
V = 2.61 FPS
τ = 0.25 LB/FT²

HYDRAULIC CALCULATIONS ROCK RUBBLE

STA. 13+70.83 TO 13+80.83

Q25 = 51.1 CFS
Bw = 18.00'
n = 0.038
S = 0.50%
D = 2.00'
dn = 0.99'
V = 2.46 FPS
τ = 0.27 LB/FT²

HYDRAULIC CALCULATIONS CONCRETE RIP-RAP

STA. 13+80.83 TO 13+85.83

Q25 = 51.1 CFS
Bw = 18.00'
n = 0.015
S = 0.50%
D = 2.00'
dn = 0.58'
V = 4.46 FPS
τ = 0.16 LB/FT²

STORM DRAIN CALCULATIONS 36" RCP

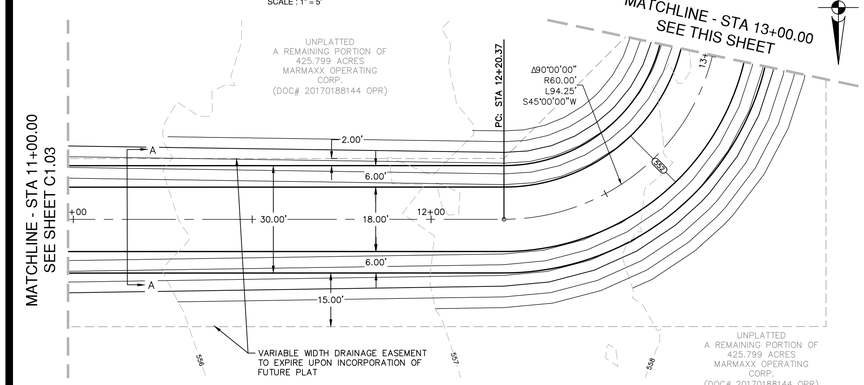
STA: 13+85.83 – STA: 15+36.50

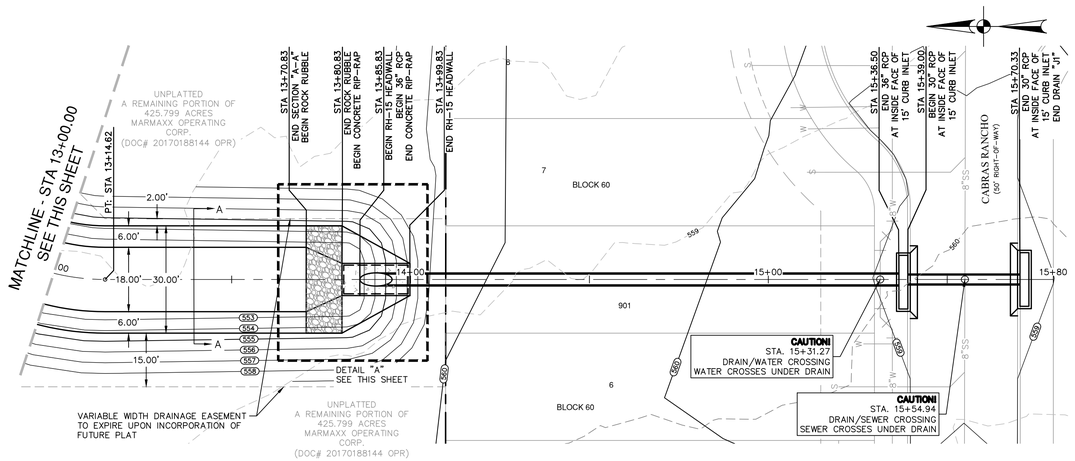
Q_{25} = 51.10 CFS
D_N = 2.66'
S_f = 0.59%
V = 7.71 fps
n = 0.013
D = 3.00'

STORM DRAIN CALCULATIONS 30" RCP

STA: 15+39.00 – STA: 15+70.33

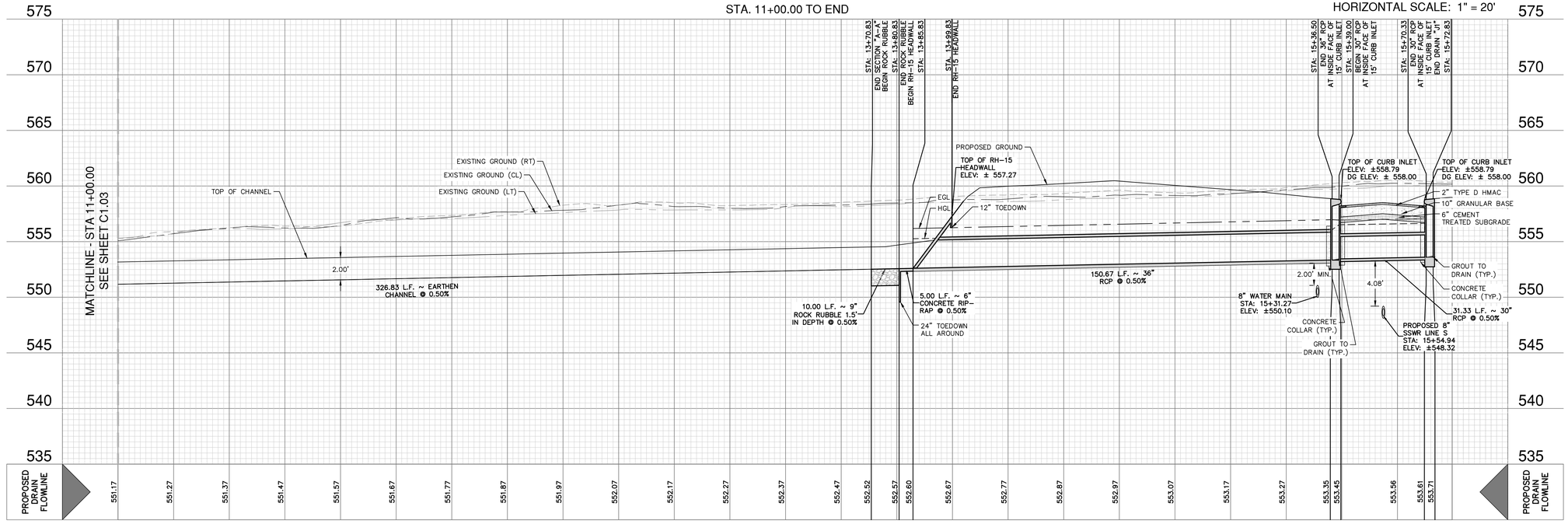
Q_{25} = 25.60 CFS
D_N = 2.50'
S_f = 0.39%
V = 5.22 fps
n = 0.013
D = 2.50'





DRAIN "J1"
STA. 11+00.00 TO END

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



NO.	REVISION	DATE

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED
PROFESSIONAL ENGINEER
12/12/23

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

DRAIN J1 PLAN & PROFILE (STA. 11+00.00 TO END)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C1.04

Date: Dec 05, 2023, 9:53am User ID: tcamacho
File: P:\126\32\14\Design\Civil\DR1263214 DRAIN J1.dwg

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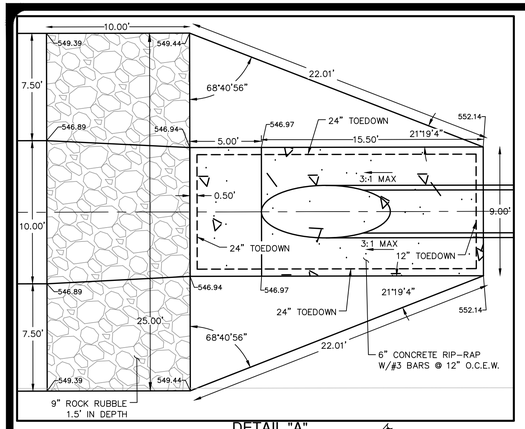

DETAIL "A"

SCALE: 1" = 5'

HYDRAULIC CALCULATIONS EARTHEN CHANNEL
STA. 1+48.00 TO 5+66.21
Q25 = 87.00 CFS
Bw = 10.00'
n = 0.035
S = 0.52%
D = 2.50'
dn = 1.67'
V = 3.47 FPS
τ = 0.40 LB/FT²

HYDRAULIC CALCULATIONS ROCK RUBBLE
STA. 5+66.21 TO 5+76.21
Q25 = 87.00 CFS
Bw = 10.00'
n = 0.038
S = 0.50%
D = 2.50'
dn = 1.76'
V = 3.24 FPS
τ = 0.40 LB/FT²

HYDRAULIC CALCULATIONS CONCRETE RIP-RAP
STA. 5+76.21 TO 5+81.21
Q25 = 87.00 CFS
Bw = 10.00'
n = 0.015
S = 0.50%
D = 2.50'
dn = 1.07'
V = 6.16 FPS
τ = 0.26 LB/FT²

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CAUTION!!

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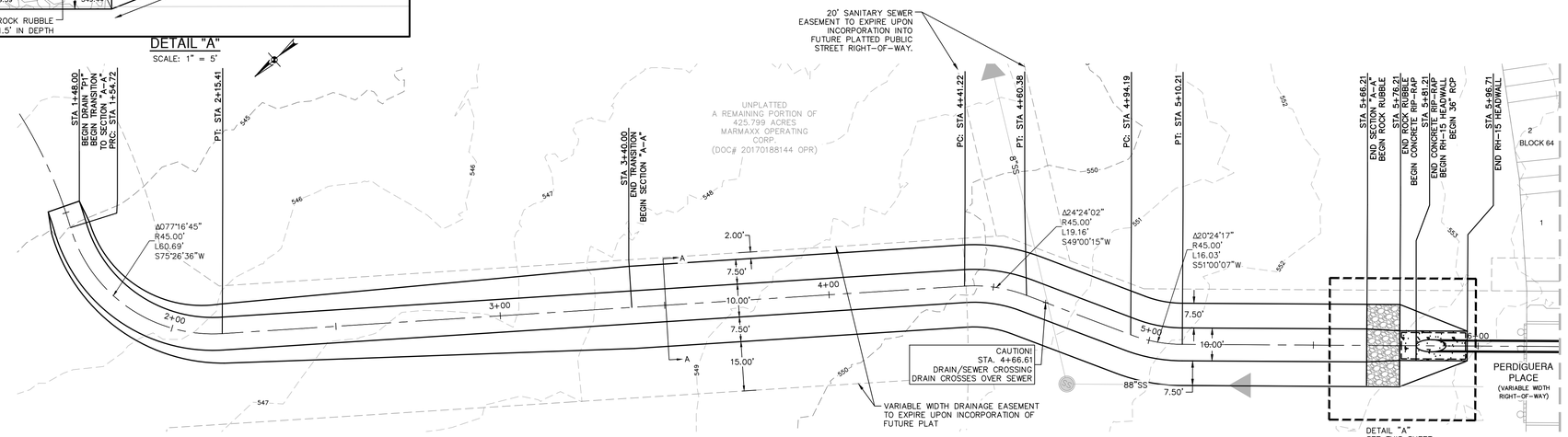
DRAINAGE & GRADING NOTES:

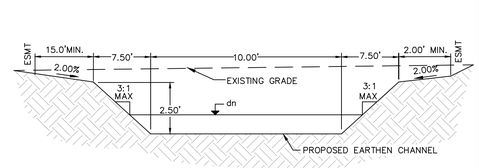
1. A BEXAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.
2. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING 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.
3. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
4. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
5. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
6. 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.
7. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

SCALE: 1"= 20' (0', 20', 40', 60')

DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690 —
- PROPOSED CONTOUR — 690 —
- PROPOSED WATER — W —
- PROPOSED SEWER — SS —
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW



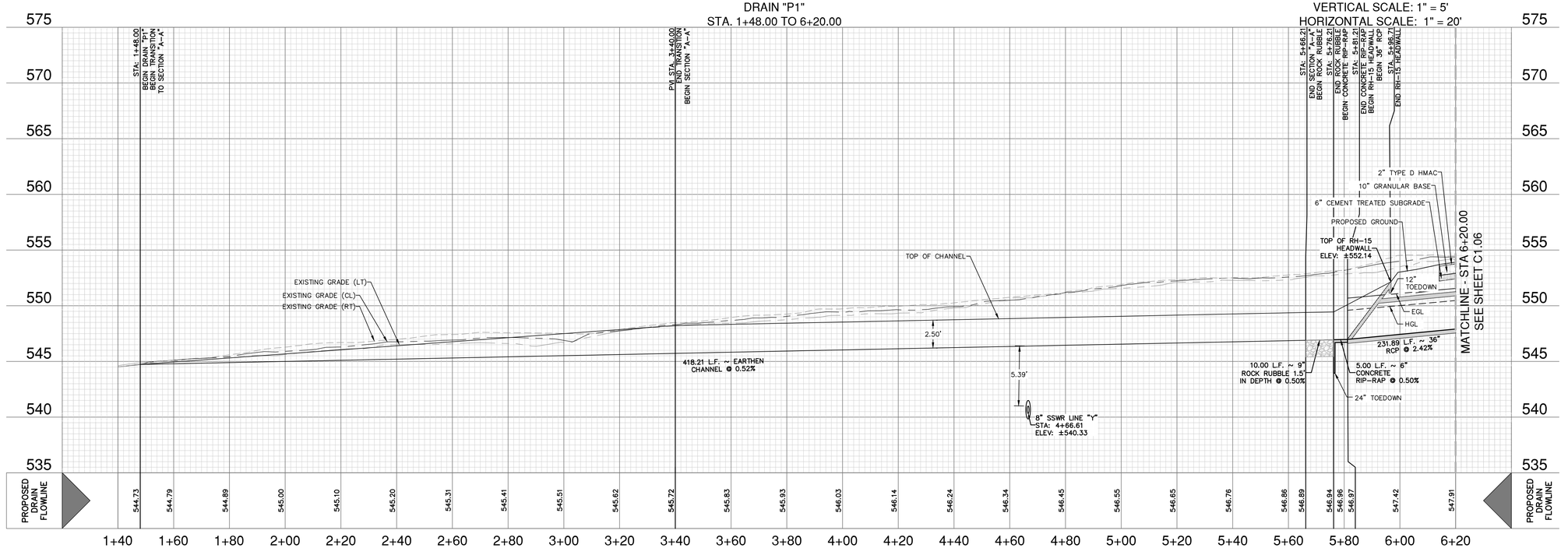


SECTION "A-A"

NOT-TO-SCALE
STA. 3+40.00 – 5+66.21

DRAIN "P1"
STA. 1+48.00 TO 6+20.00

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



NO.	REVISION	DATE

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED PROFESSIONAL ENGINEER
12/12/23

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
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TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15

SAN ANTONIO, TEXAS

DRAIN P1 PLAN & PROFILE
(STA. 1+48.00 TO 6+20.00)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C1.05

Date: Dec 05, 2023, 9:54am User ID: tcamacho
File: P:\12632\14\Design\Civil\DR12632I4 DRAIN P1.dwg

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STORM DRAIN CALCULATIONS 36" RCP STA: 5+81.21 – STA: 8+13.10
Q_{25} = 51.10 CFS
D_N = 2.22'
S_f = 2.42%
V = 9.10 fps
n = 0.013
D = 3.00'

STORM DRAIN CALCULATIONS 30" RCP STA: 8+18.10 – STA: 11+03.50
Q_{25} = 25.8 CFS
D_N = 1.82'
S_f = 1.10%
V = 6.73 fps
n = 0.013
D = 2.50'

STORM DRAIN CALCULATIONS 24" RCP STA: 11+08.50 – STA: 11+29.14
Q_{25} = 12.90 CFS
D_N = 1.23'
S_f = 1.02%
V = 6.37 fps
n = 0.013
D = 2.00'

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4. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
5. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
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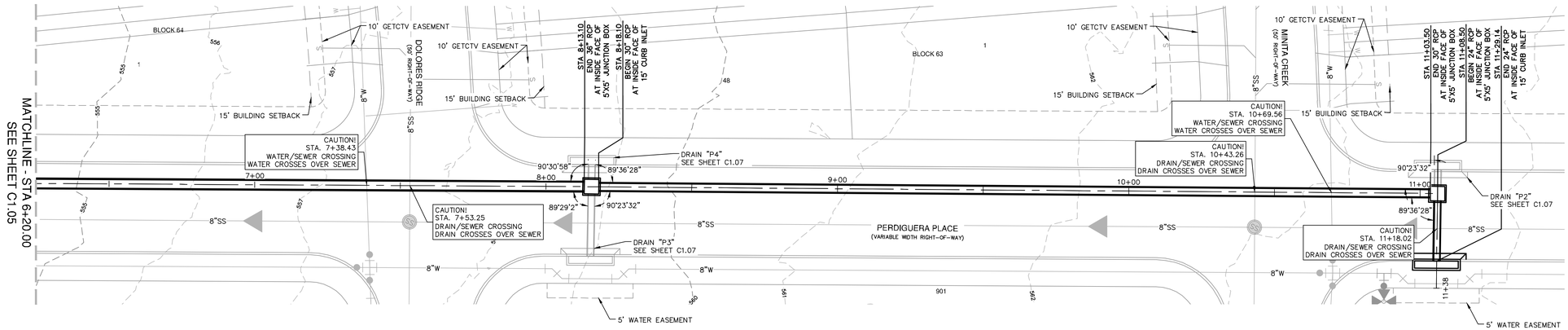
7. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

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

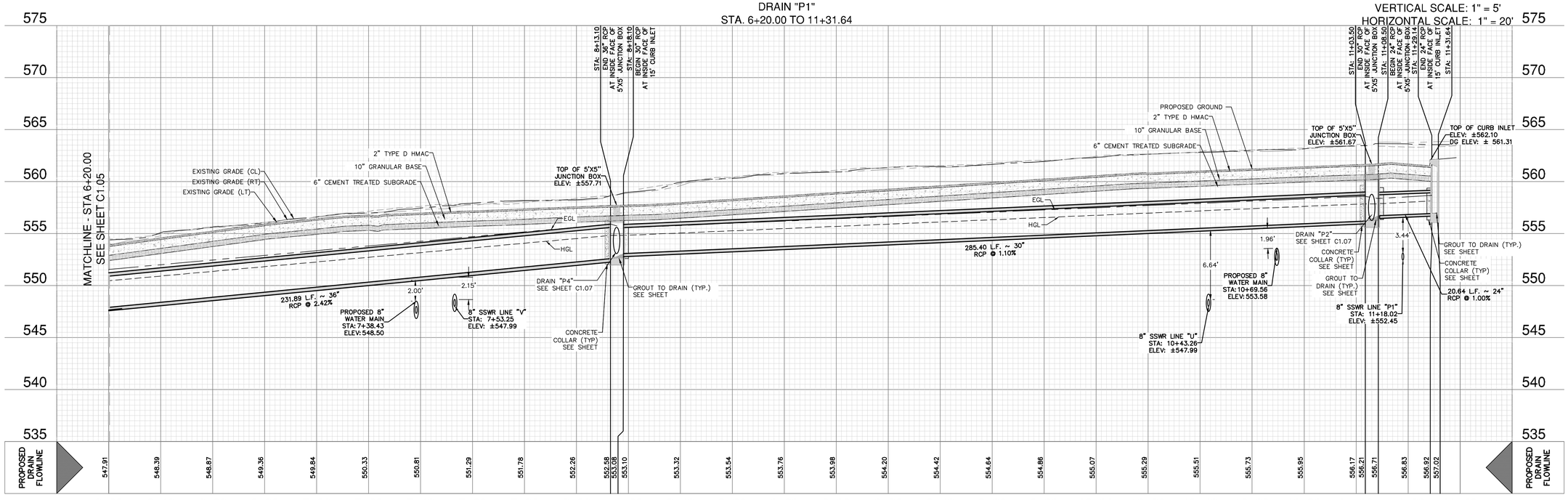
DRAINAGE LEGEND

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



DRAIN "P1"
STA. 6+20.00 TO 11+31.64

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



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

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED
PROFESSIONAL ENGINEER
11/3/2023

NO. | REVISION | DATE

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

DRAIN P1 PLAN & PROFILE
(STA. 6+20.00 TO 11+31.64)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C1.06

Date: Nov 06, 2023, 8:16am User ID: jonathongroff
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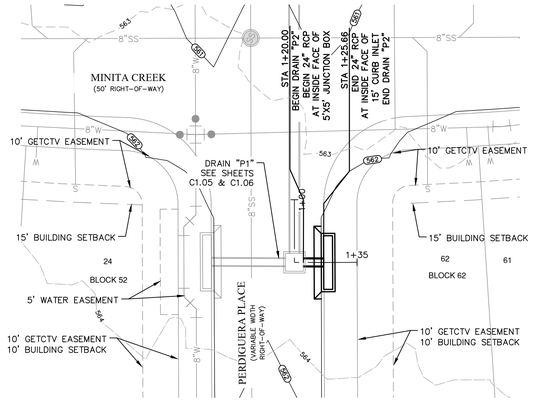
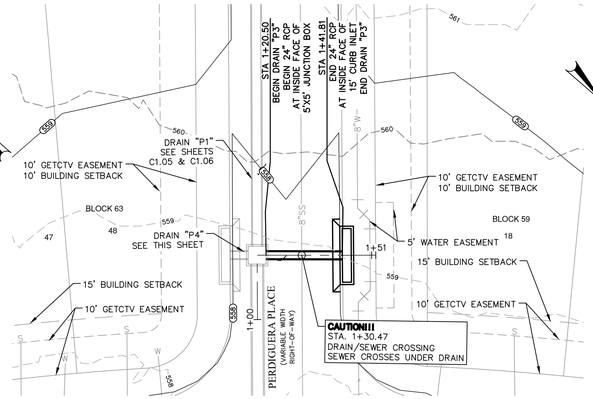
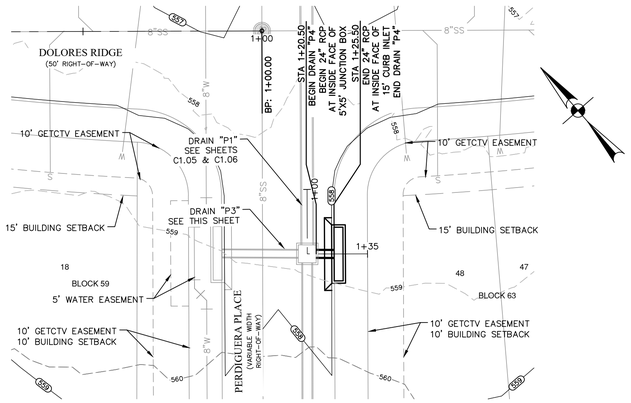




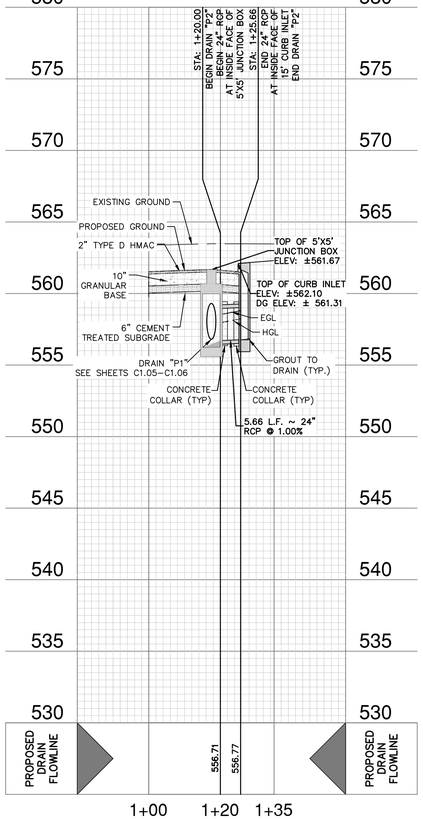


DRAINAGE LEGEND

- PROJECT LIMITS
- 100 YR FLOODPLAIN
- EXISTING CONTOUR — 690
- PROPOSED CONTOUR — 690
- PROPOSED WATER — W
- PROPOSED SEWER — SS
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW ARROW
- EXISTING WELL — W

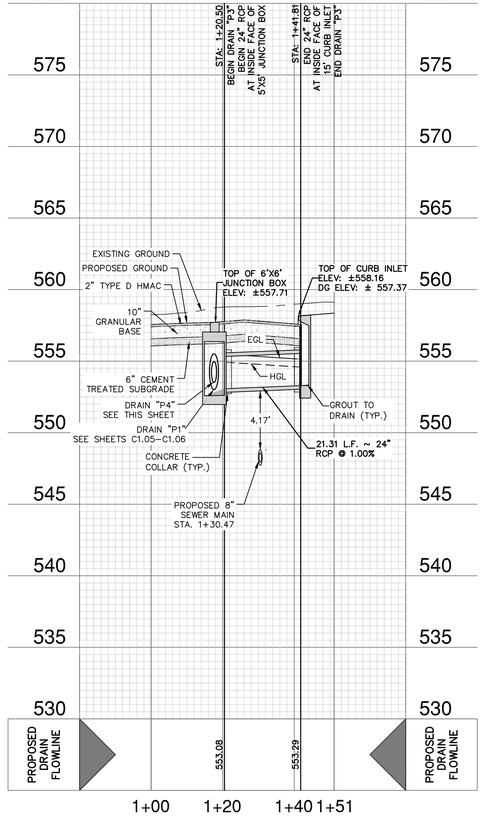
SCALE: 1"= 20'
0' 20' 40' 60'

DRAIN "P2"
STA. 1+20.00 TO 1+25.66
VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'



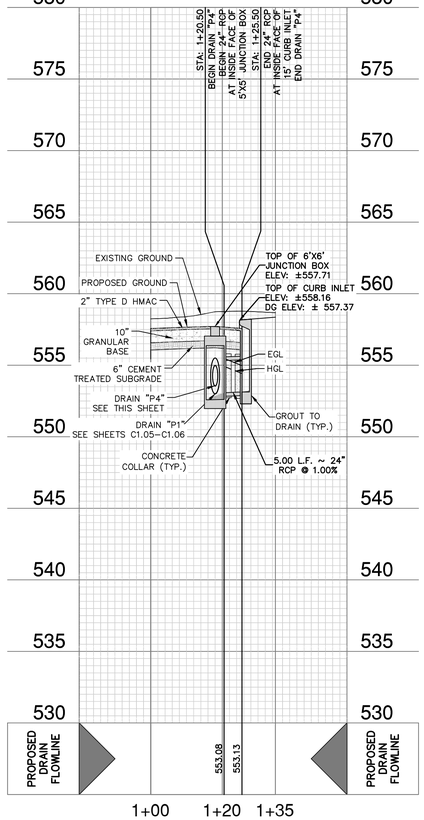
STORM DRAIN CALCULATIONS
24" RCP
STA: 1+20.00 – STA: 1+25.66
Q_{25} = 12.90 CFS
D_N = 1.23'
S_f = 0.33%
V = 6.37 fps
n = 0.013
D = 2.00'

DRAIN "P3"
STA. 1+20.50 TO 1+41.81
VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'



STORM DRAIN CALCULATIONS
24" RCP
STA: 1+20.50 – STA: 1+41.81
Q_{25} = 12.70 CFS
D_N = 1.82'
S_f = 0.32%
V = 4.23 fps
n = 0.013
D = 2.00'

DRAIN "P4"
STA. 1+20.50 TO 1+25.50
VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 20'



STORM DRAIN CALCULATIONS
24" RCP
STA: 1+20.50 – STA: 1+25.50
Q_{25} = 12.70 CFS
D_N = 1.82'
S_f = 0.32%
V = 4.23 fps
n = 0.013
D = 2.00'

DRAINAGE & GRADING NOTES:

1. A BEXAR COUNTY ROW 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. 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.
3. ALL CONCRETE FOR TXDOT DRAINAGE STRUCTURES SHALL MEET TXDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
4. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND WINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
5. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
6. 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.
7. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND AND MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

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.

NO.	REVISION	DATE

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED
PROFESSIONAL ENGINEER
11/3/2023

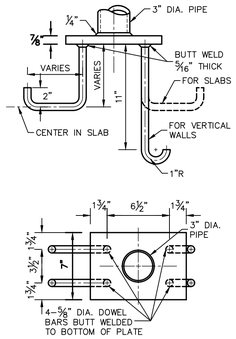
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS
DRAIN P2 PLAN & PROFILE (STA. 1+20.00 TO 1+25.66)
DRAIN P3 PLAN & PROFILE (STA. 1+20.50 TO 1+41.81)
DRAIN P4 PLAN & PROFILE (STA. 1+20.50 TO 1+25.50)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C1.07

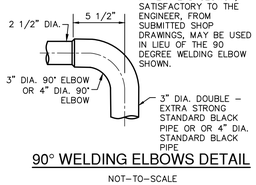
Date: Nov 03, 2023, 1:34pm User ID: tcamacho
Files: P:\126\33\1\Design\Civil\DR126321 4 DRAIN P2-P4.dwg

THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL. AERIAL IMAGERY PROVIDED BY GOOGLE© UNLESS OTHERWISE NOTED. Imagery © 2016,CAPCOG,Digital Globe,Texas Orthoimagery Program, USDA Farm Service Agency.



PIPE ANCHORAGE DETAIL

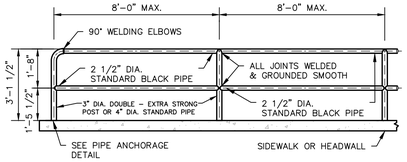
NOT-TO-SCALE



* 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

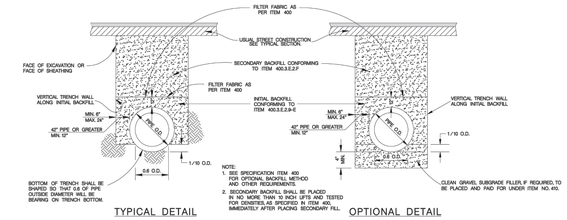
NOT-TO-SCALE



NOTES:
1. FOR CONSTRUCTION WITHIN THE CITY OF SAN ANTONIO ETJ AND/OR BEXAR COUNTY, PIPE SHALL BE STANDARD BLACK PIPE PAINTED WITH 1 COAT OF READ PRIMER AND 2 COATS OF ALUMINUM PAINT

PIPE RAILING DETAIL

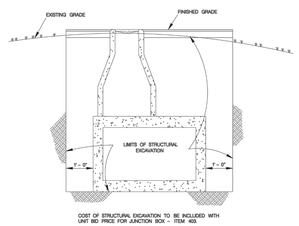
NOT-TO-SCALE



NOTE:
1. SEE SPECIFICATION ITEM 400 FOR OPTIONAL BACKFILL METHOD AND OTHER REQUIREMENTS.
2. SECONDARY BACKFILL SHALL BE PLACED IN NO MORE THAN 10 INCH LIFTS AND TESTED FOR DENSITIES AS SPECIFIED IN ITEM 400, IMMEDIATELY AFTER PLACING SECONDARY FILL.

TYPICAL DETAIL — OPTIONAL DETAIL

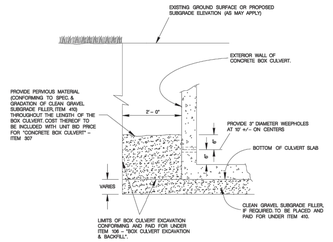
PIPE BEDDING & BACKFILL DETAILS



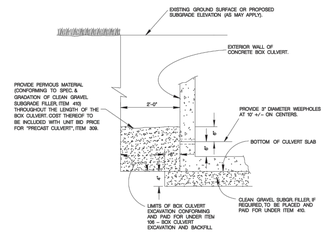
COST OF STRUCTURAL EXCAVATION TO BE INCLUDED WITH UNIT BID PRICE FOR JUNCTION BOX - ITEM 403.

STRUCTURAL EXCAVATION AT JUNCTION BOXES

NO SCALE

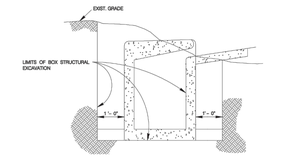


CAST-IN-PLACE BOX CULVERT

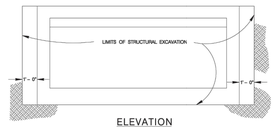


PRECAST BOX CULVERT

CONCRETE BOX CULVERT



SIDE VIEW



ELEVATION

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

STRUCTURAL EXCAVATIONS AT DRAINAGE INLETS

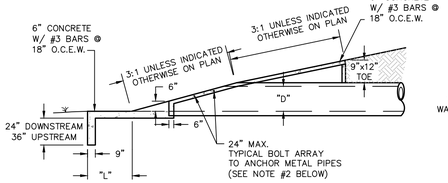
NO SCALE

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

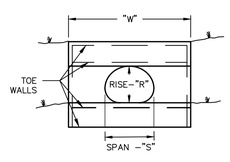
PIPE BEDDING & MISCELLANEOUS DRAINAGE DETAILS

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



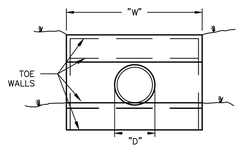
LONGITUDINAL SECTION FOR CIRCULAR & ARCH PIPES

NOT-TO-SCALE



SINGLE C.M.P. ARCH PIPE CULVERT

NOT-TO-SCALE



SINGLE CIRCULAR PIPE CULVERT

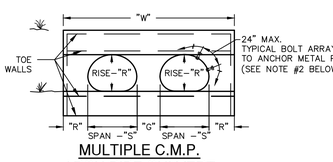
(CMP OR RCP)

NOT-TO-SCALE

DIMENSIONS FOR CIRCULAR (CMP AND RCP) PIPE CULVERT

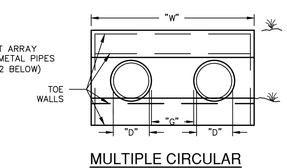
"D" INSIDE DIA. OF PIPE	"L"	"G"		SINGLE	DOUBLE	TRIPLE	QUADRUPLE
		CGM	RCP	"W"			
18"	2'-0"	1'-2"	0'-9"	4'-6"	7'-2"	9'-10"	12'-6"
21"	2'-6"	1'-3"	0'-10"	5'-3"	8'-4"	11'-4"	13'-4"
24"	3'-0"	1'-5"	0'-11"	6'-0"	9'-5"	12'-10"	16'-3"
30"	4'-0"	1'-8"	1'-1"	7'-6"	11'-8"	15'-10"	20'-0"
36"	5'-0"	1'-11"	1'-3"	9'-0"	13'-11"	18'-10"	23'-9"
42"	6'-0"	2'-2"	1'-5"	10'-6"	16'-2"	21'-10"	27'-6"
48"	7'-0"	2'-5"	1'-7"	12'-0"	18'-5"	24'-10"	31'-3"
54"	8'-0"	2'-10"	1'-11"	13'-6"	20'-10"	28'-2"	35'-6"
60"	9'-0"	3'-2"	2'-0"	15'-0"	23'-2"	31'-4"	39'-6"

"G" IS MEASURED BETWEEN THE OTHER SURFACES OF THE PIPES.



MULTIPLE C.M.P. ARCH PIPE CULVERT

NOT-TO-SCALE



MULTIPLE CIRCULAR PIPE CULVERT

(CMP OR RCP)

NOT-TO-SCALE

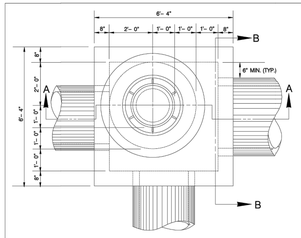
DIMENSIONS FOR C.M.P. ARCH PIPE CULVERTS

DESIGN SIZE	APPROX ARCH DIM. RISE "R"	APPROX ARCH DIM. SPAN "S"	"L"	"G"	SINGLE	DOUBLE	TRIPLE	QUADRUPLE
					"W"			
2	21"	15"	2'-0"	1'-2"	4'-3"	7'-2"	10'-1"	13'-0"
3	28"	20"	3'-0"	1'-5"	5'-8"	9'-5"	13'-2"	16'-11"
4	35"	24"	4'-0"	1'-8"	6'-11"	11'-6"	16'-1"	20'-8"
5	42"	29"	5'-0"	1'-11"	8'-4"	13'-9"	19'-2"	24'-7"
6	49"	33"	6'-0"	2'-2"	9'-7"	15'-10"	22'-1"	28'-4"
7	57"	38"	7'-0"	2'-5"	11'-1"	18'-3"	25'-5"	32'-7"
8	64"	43"	8'-0"	2'-10"	12'-5"	20'-8"	28'-10"	37'-0"
9	71"	47"	9'-0"	3'-2"	13'-9"	22'-10"	31'-11"	41'-0"

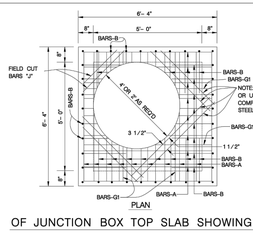
BASED ON 2-2/3" X 1/2" CORRUGATION
"G" IS MEASURED BETWEEN THE OTHER SURFACES OF THE PIPES.

NOTES:
1. CONCRETE SHALL BE CLASS "A" 3000 PSI
2. ALL METAL PIPES (CIRCULAR AND/OR ARCH) SHALL HAVE 5/8" X 6" GALVANIZED BOLTS WITH 2 HEX NUTS AT 24" CENTERS TO ANCHOR THE PIPE TO THE CONCRETE. THIS WILL BE SUBSIDIARY TO THE RIPRAP HEADWALL.
3. FOR CONCRETE ARCH PIPES THE CMP ARCH PIPE CULVERT DIMENSIONS WILL HAVE TO BE ADJUSTED FOR THE PIPE WALL THICKNESS.
4. FOR PIPES LARGER THAN SHOWN, USE THE CLEAR DISTANCE BETWEEN PIPES SHOWN IN TXDOT ITEMS 460 AND/OR 464.
5. IF THE SIDES OF THE HEADWALL IS ADJACENT TO A RIPRAP SLOPE AND IF THE TOP OF THE HEADWALL IS ADJACENT TO THE ROADWAY FOUNDATION OR RIPRAP SLOPE, THE SIDE AND TOP TOE WALLS MAY BE ELIMINATED IF APPROVED BY THE ENGINEER.

RH-15 HEADWALL

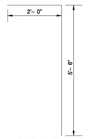


PLAN



PLAN

OF JUNCTION BOX TOP SLAB SHOWING STEEL



BARS-B

BARS-C

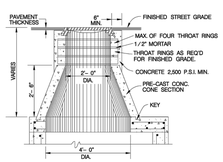
SCHEDULE FOR REINFORCING STEEL

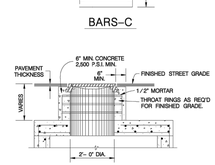
SHAPE	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
STRAIGHT	A	18	4	9" O.C.	6'- 1"	73
	B	36	5	8" O.C.	7'- 8"	282
	C	36	5	8" O.C.	4'- 3"	160
STRAIGHT	D	18	4	9" O.C.	6'- 1"	73
STRAIGHT	E	20	3	12" O.C.	4'- 11"	37
STRAIGHT	G	20	4	12" O.C.	6'- 1"	81
STRAIGHT	G_1	8	4	AS SHOWN	6'- 1"	33
STRAIGHT	H	24	3	12" O.C.	5'- 5"	49
STRAIGHT	J	8	6	3 1/2" O.C.	4'- 11"	59
					TOTAL	847 lbs.

CLASS "A" CONCRETE - 5.03 CU. 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.

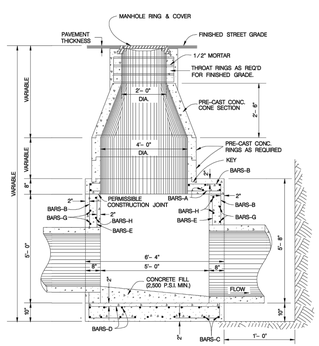
1. CONCRETE FOR STRUCTURE SHALL BE CLASS "A" 3,000 P.S.I. AT 28 DAYS.
2. ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4".
3. REINFORCING STEEL SHALL BE NEW BILLET STEEL, INTERMEDIATE GRADE, ASTM A-15, THE DEFORMATION SHALL CONFORM TO ASTM A-305.
4. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER 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".



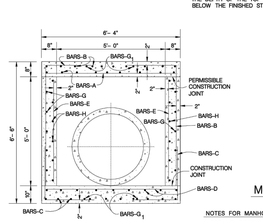


VARIATION OF VERTICAL STACK

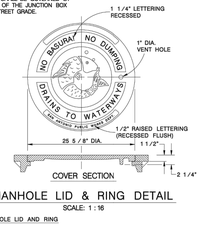
VERTICAL STACK DESIGN SHALL BE GOVERNED BY THE DEPTH OF THE TOP OF THE JUNCTION BOX BELOW THE FINISHED STREET GRADE.



SECTION A-A



SECTION B-B



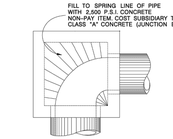
COVER SECTION

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

5'x5'x5' JUNCTION BOX STANDARDS

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

NO. | REVISION | DATE

STATE OF TEXAS
E. EUGENE H. DAWSON III
112792
LICENSED
PROFESSIONAL ENGINEER
11/3/2023

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS
DRAINAGE DETAILS

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C1.08

Date: Nov 06, 2023, 8:29am User ID: jonathangroff
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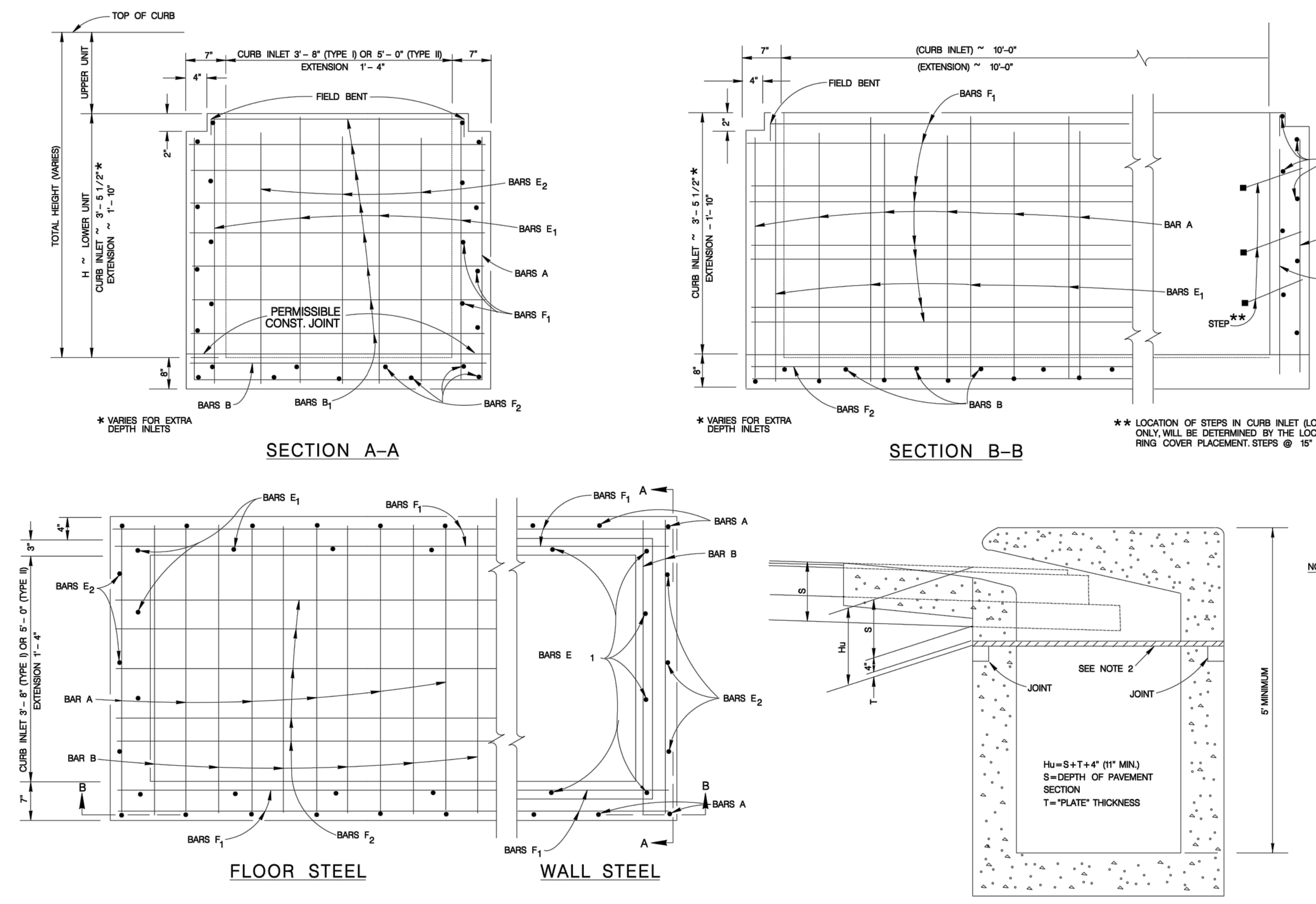


PHASE CONSTRUCTION

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.

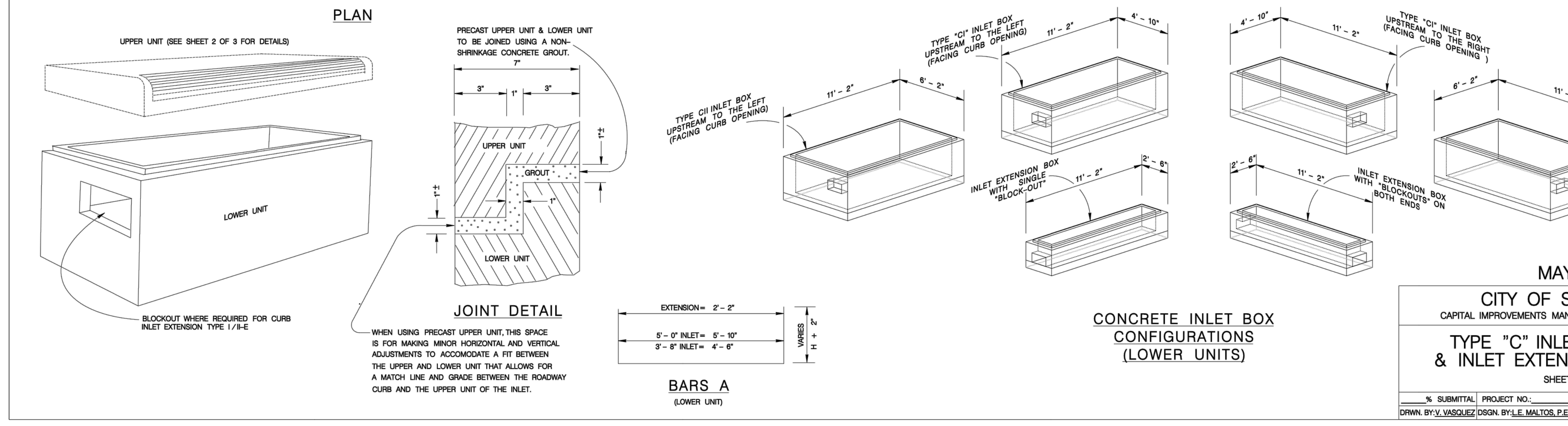
REINFORCING STEEL

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".

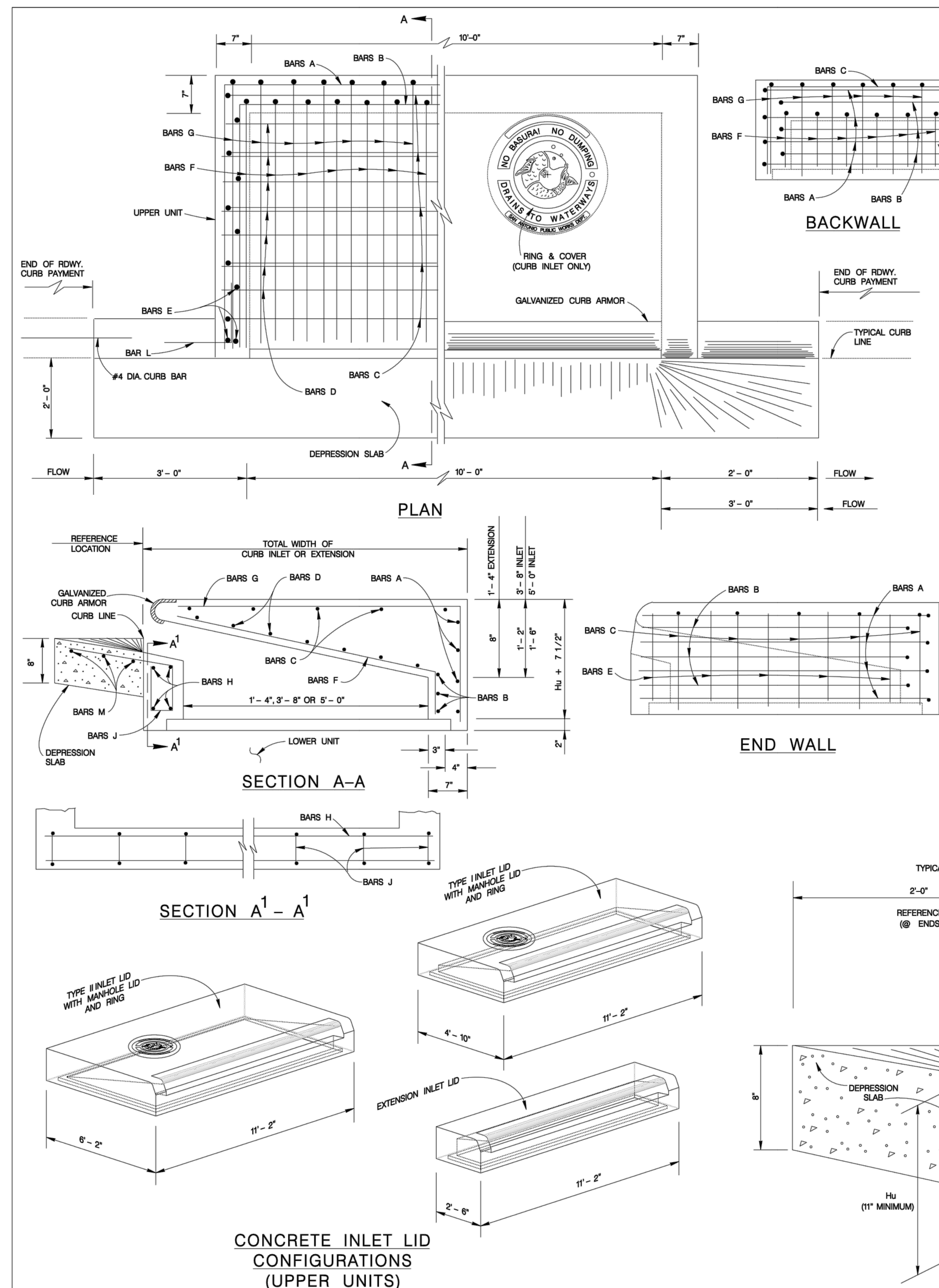


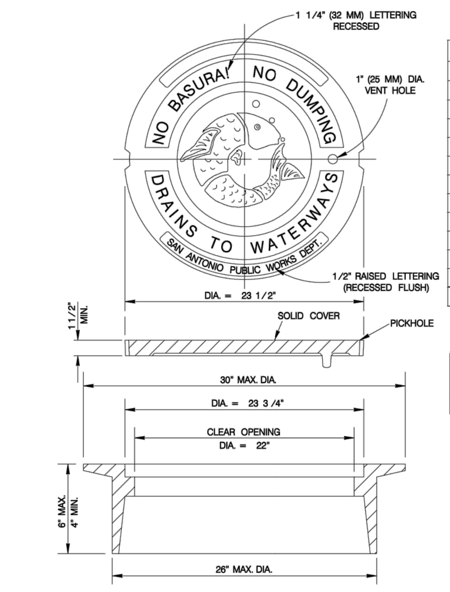
MAY 2009

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____



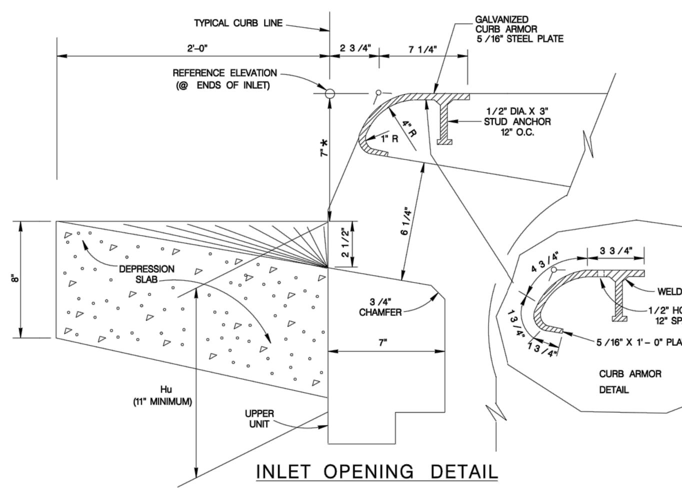


MANHOLE LID & RING DETAIL (ITEM 409)

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.

SEE SHEET 1 OF 3 FOR GENERAL NOTES.



REINFORCING STEEL (FOR Hu = 11")

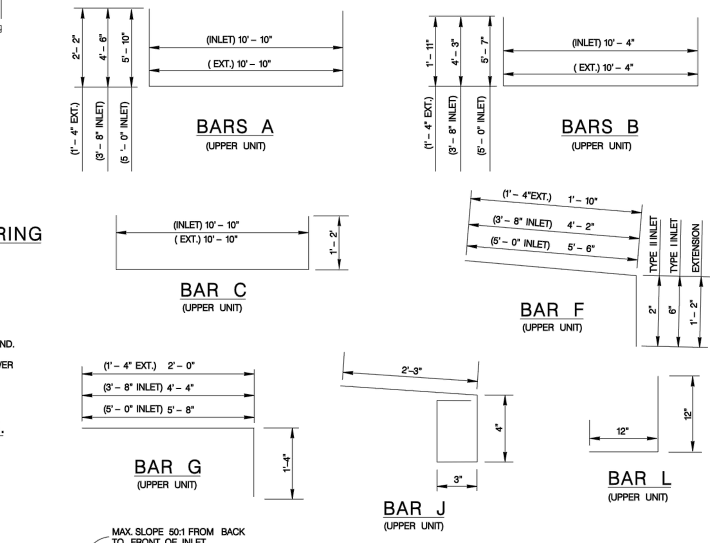
UPPER UNIT 10' X 3'-8" (TYPE I)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	19'-10"	53
B	3	#4	—	18'-10"	38
C	5	#4	11"	13'-2"	44
D	7	#4	6"	10'-10"	51
E	12	#4	11"	1'-2"	9
F	21	#6	6"	4'-8"	147
G	22	#6	6"	5'-8"	187
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT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

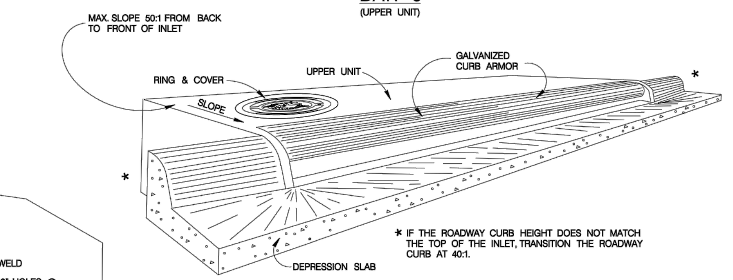
UPPER UNIT 10' X 5' (TYPE II)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	22'-6"	60
B	3	#4	—	21'-6"	43
C	7	#4	11"	13'-2"	62
D	11	#4	6"	10'-10"	80
E	16	#4	11"	1'-2"	13
F	21	#6	6"	5'-8"	179
G	22	#6	6"	7'-0"	231
H	4	#4	—	10'-10"	29
J	12	#4	12"	3'-6"	28
L	4	#4	—	2'-0"	5
M	3	#4	—	14'-8"	29
TOTAL WEIGHT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



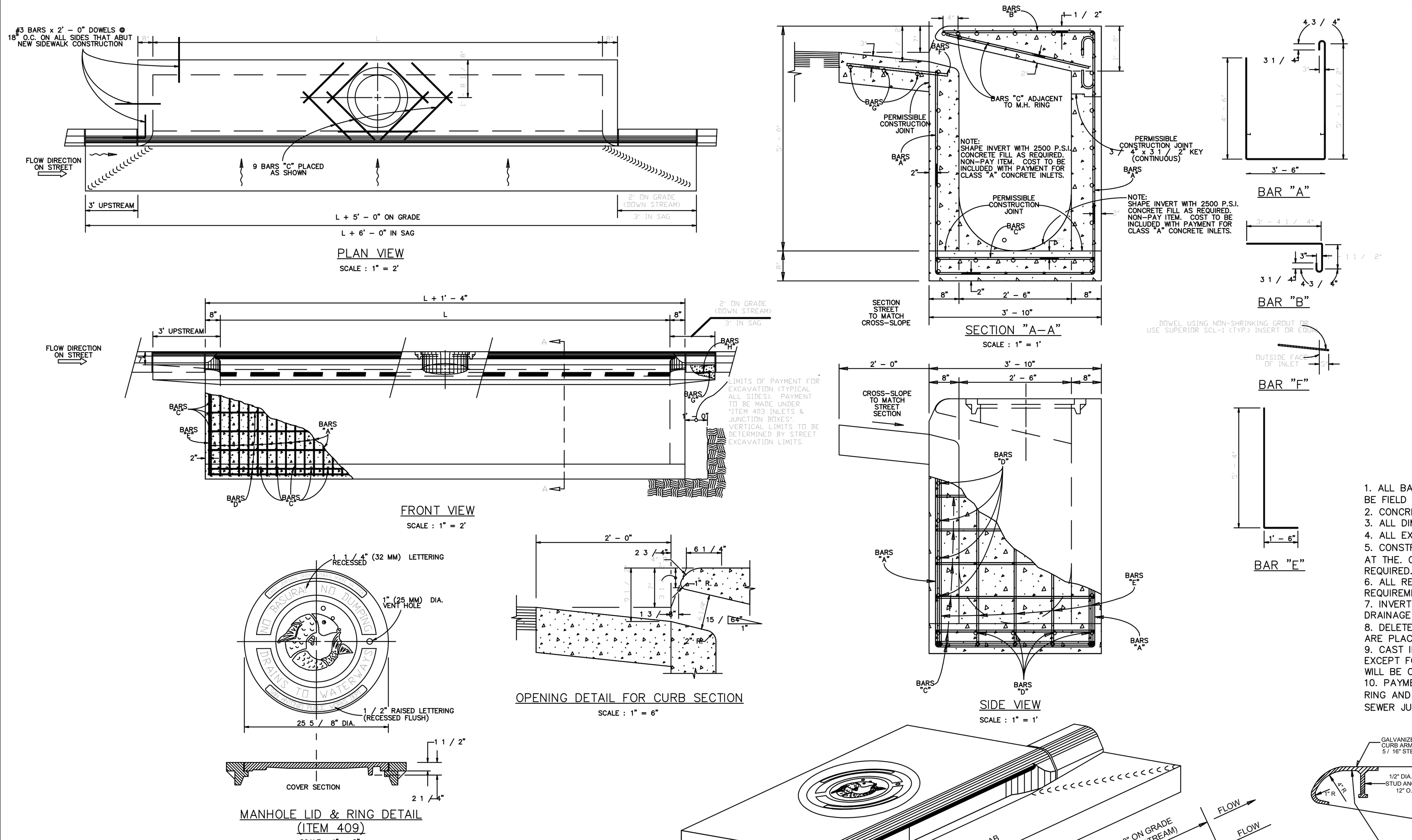


MAY 2009

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____



INLET LENGTH	REINFORCING STEEL SCHEDULE					
	BAR	NO.	SIZE	SPACING	LENGTH	WEIGHT
L=5' – 0"	A	15	4	5" O.C.	13' – 9 1/2"	138
	B	15	6	5" O.C.	5' – 1 3/4"	52
	C	30	6	9" O.C.	3' – 6"	70
	D	22	4	10" O.C.	6' – 1"	89
	E	10	4	10 1/2" O.C.	6' – 10"	46
	F	6	5	12" O.C.	2' – 3"	27
	G	3	4	12" O.C.	9' – 8"	20
	H	5	5	12" O.C.	1' – 8"	9
* CONCRETE TOTAL=3.53 CU. YDS. M.H. CASTING=260 LBS. STEEL TOTAL=438 LBS.						
L=10' – 0"	A	27	4	5" O.C.	13' – 9 1/2"	249
	B	27	6	5" O.C.	5' – 1 3/4"	93
	C	37	6	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=15' – 0"	A	39	4	5" O.C.	13' – 9 1/2"	359
	B	39	6	5" O.C.	5' – 1 3/4"	134
	C	43	6	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=20' – 0"	A	51	4	5" O.C.	13' – 9 1/2"	470
	B	51	6	5" O.C.	5' – 1 3/4"	175
	C	50	6	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.						

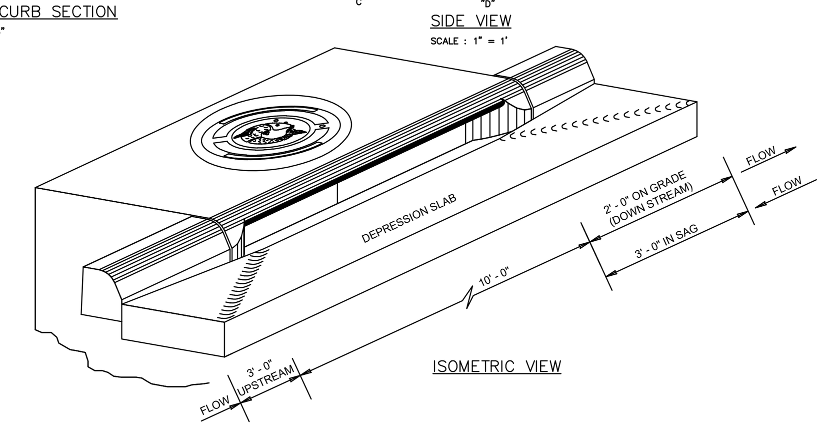
* THESE FIGURES DO NOT EXCLUDE CONCRETE & STEEL INTERCEPTED BY MANHOLE AND REINFORCED CONC. PIPE.
* INCLUDES CONCRETE GUTTER FOR ON GRADE INLET. REDUCE BY .05 C.Y. FOR INLETS IN SUMP.

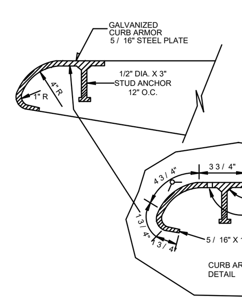
GENERAL NOTES:

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 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.





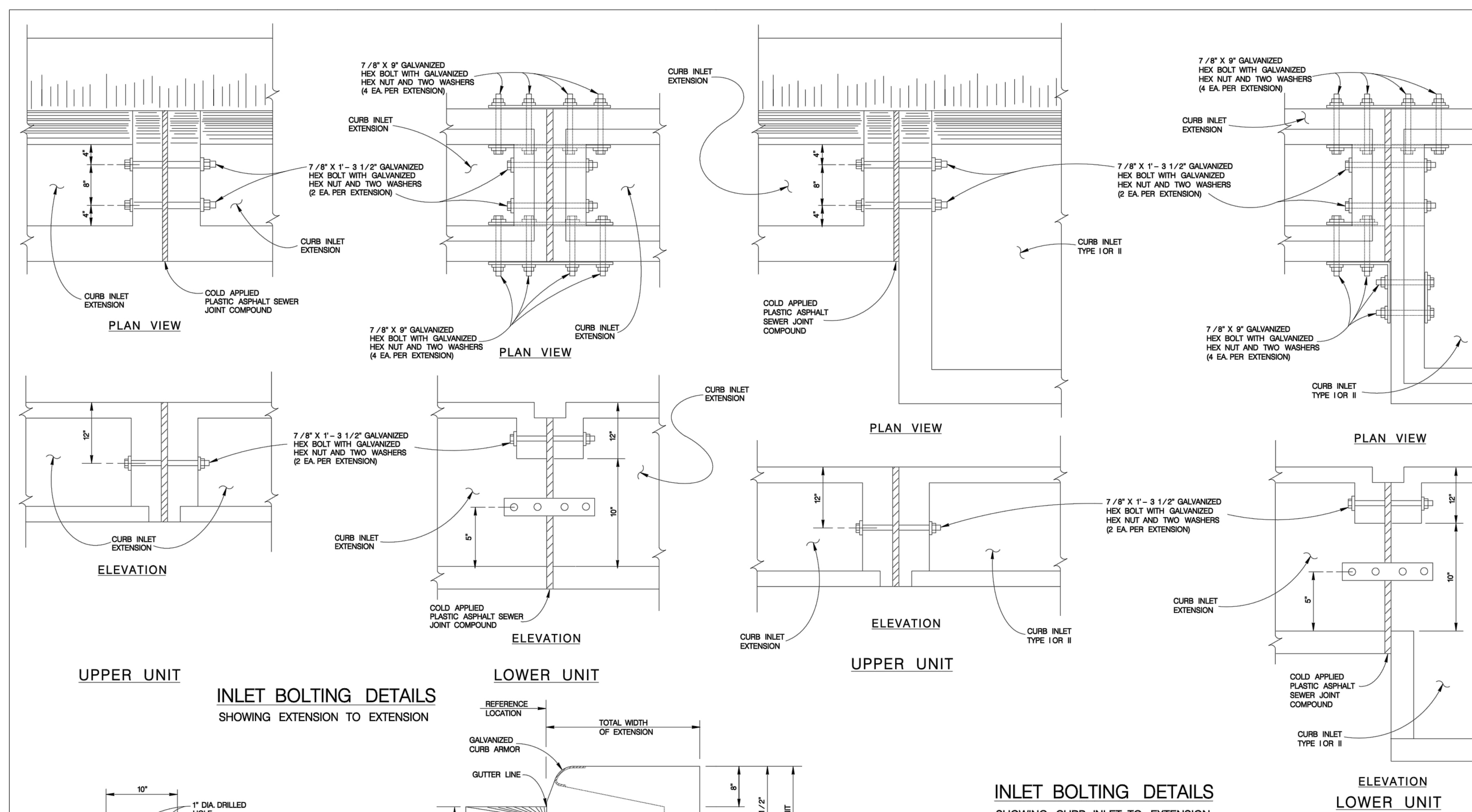
CURB ARMOR DETAIL

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 | DATE | REVISIONS | SCALE: SEE ABOVE
CHECKED BY: NAT HARDY, P.E. | | | DATE:
SHEET:

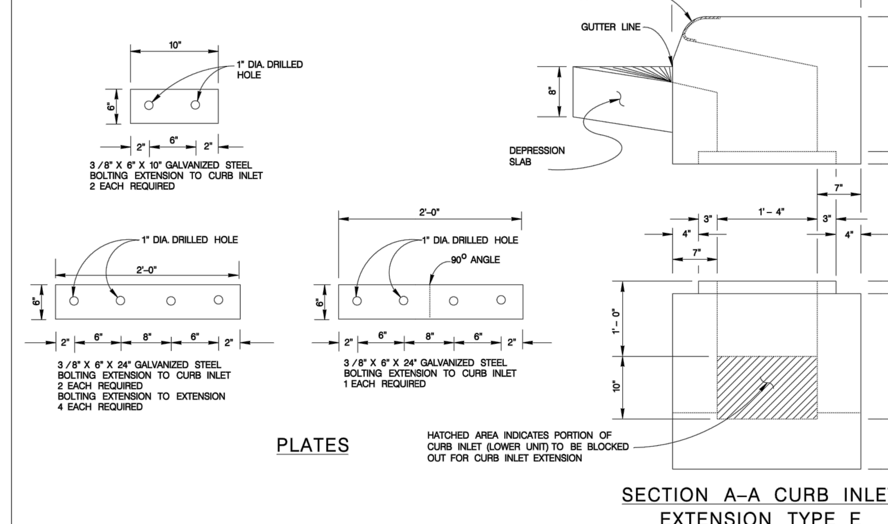


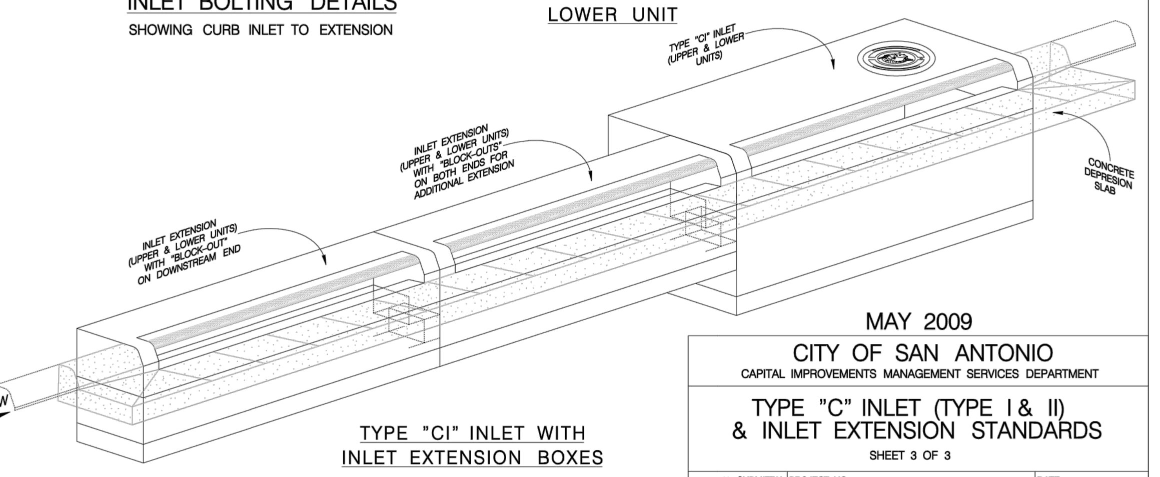
UPPER UNIT EXTENSION (FOR Hu = 11")					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	—	15'- 2"	41
B	3	#4	—	14'- 2"	28
C	3	#4	11"	13'- 2"	26
D	3	#4	6"	10'- 10"	22
E	8	#4	11"	1'- 2"	6
F	21	#6	6"	2'- 0"	63
G	22	#6	6"	3'- 4"	110
H	4	#4	—	10'- 10"	29
J	12	#4	12"	3'- 6"	28
L	4	#4	—	2'- 0"	5
M	3	#4	—	14'- 8"	29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

NO.	REVISION	DATE

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED PROFESSIONAL ENGINEER
11/3/2023

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

DRAINAGE DETAILS

PLAT NO. 23-11800231
JOB NO. 12632–14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C1.09

Date: Nov 03, 2023, 1:34pm User ID: tcamacho
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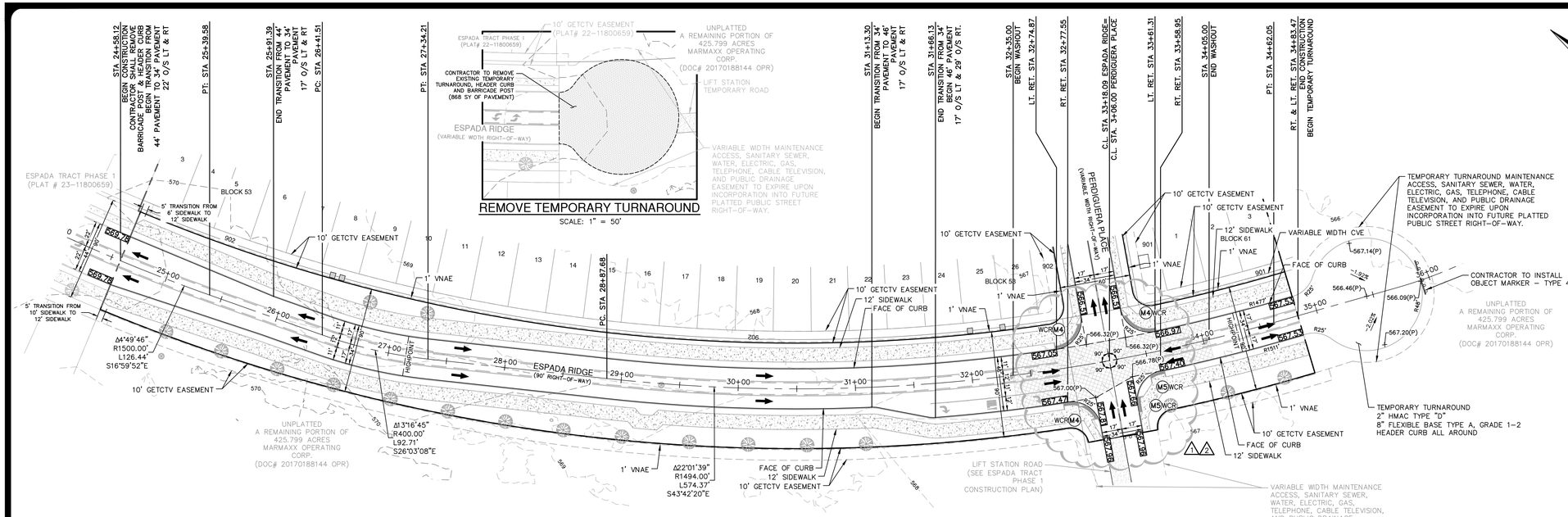
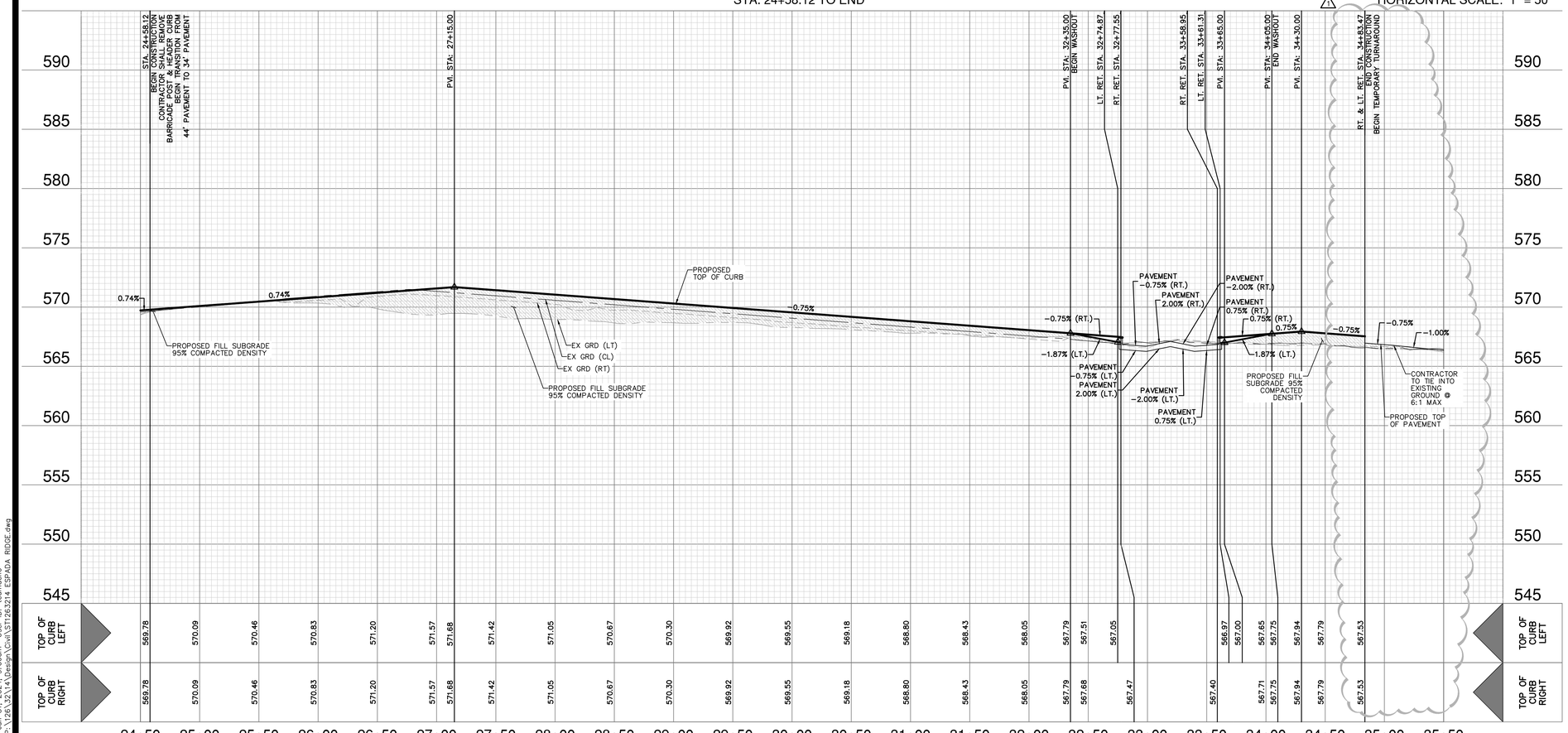


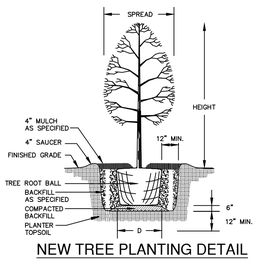
STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
VEHICULAR NON ACCESS EASEMENT	VNAE
CLEAR VISION EASEMENT	CVE
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (HOMEOWNER'S RESPONSIBILITY)	
SIDEWALK (DEVELOPER'S RESPONSIBILITY)	
DRIVEWAY	
EXISTING WELL	

ESPADA RIDGE
STA. 24+58.12 TO END

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





NEW TREE PLANTING DETAIL

STREETSCAPE TREE PLANTING NOTES:

LARGE TREES (PER UDC) TO BE PLANTED EVERY 50 FEET PER DETAIL.

1. SPECIES OF TREES TO BE DETERMINED BY DEVELOPER'S PROJECT LANDSCAPE ARCHITECT TO CONFORM WITH THE STREETSCAPE PLANTING STANDARDS.
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.

STREET NOTES:

1. A BEXAR COUNTY ROW 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 LOCATIONS 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. THE CONSTRUCTION OF SIDEWALKS ADJACENT TO ALL 900 SERIES LOTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER AS SHOWN ON THE OVERALL SIGNAGE PLAN.

NO.	REVISION	DATE
1	REVISED SIDEWALK RAMP, STATIONING AND PROFILE VIEW	01/26/24
2	REVISED SIDEWALK RAMP	01/30/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
1/31/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

ESPADA RIDGE PLAN & PROFILE
(STA. 24+58.12 TO END)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C2.00

Date: Jan 31, 2024, 9:06am User ID: tcamacho
File: P:\126\32\14\Design\Civil\ST126321 4 ESPADA RIDGE.dwg

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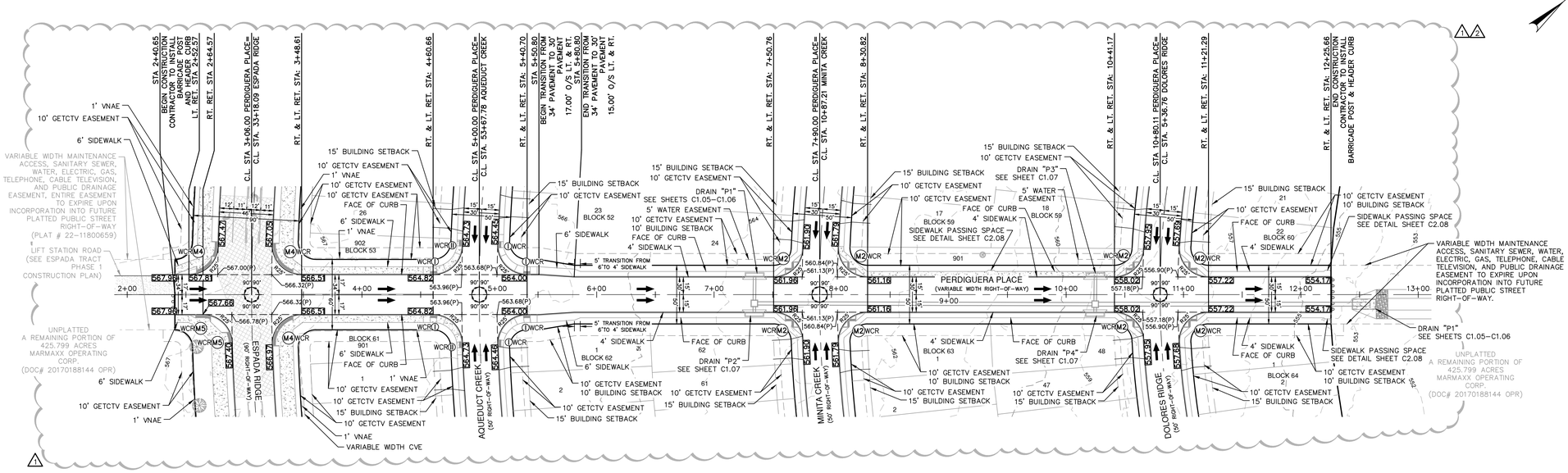
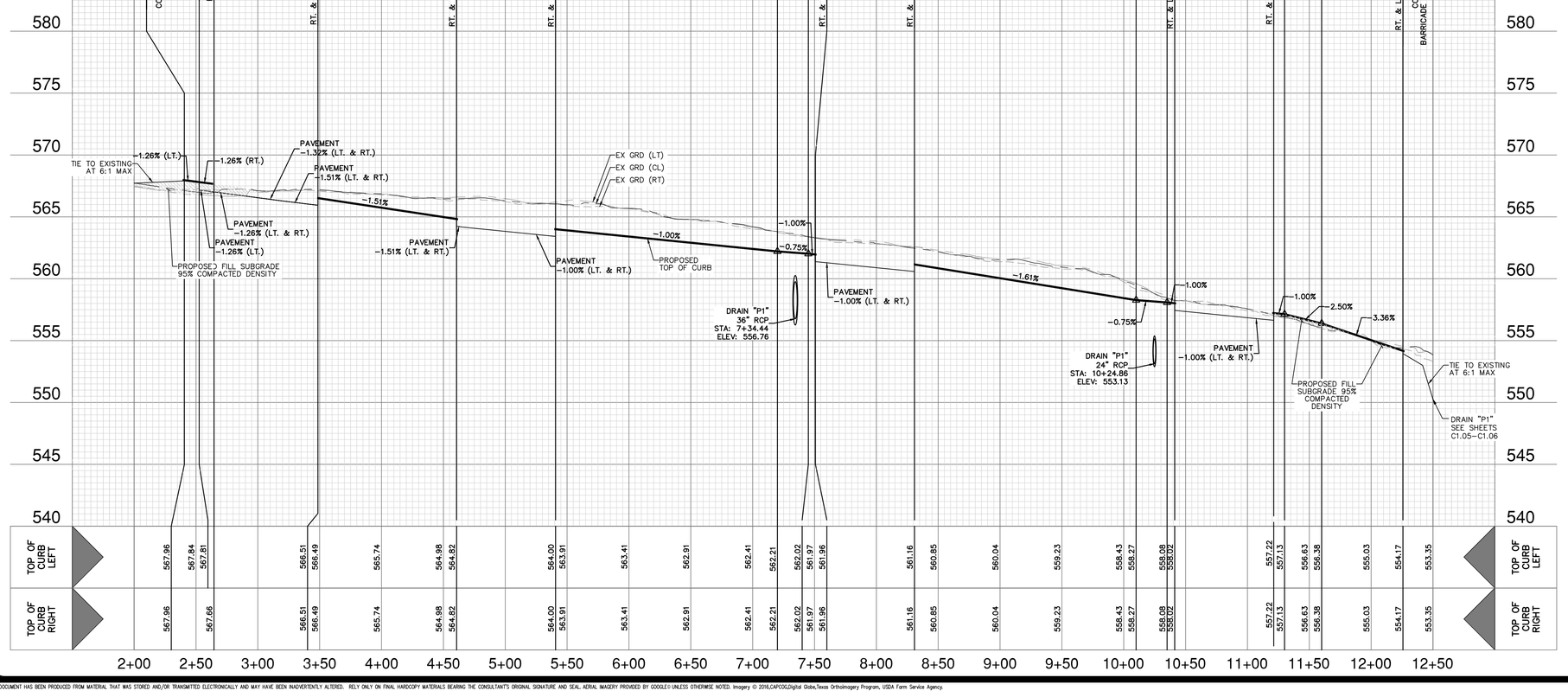


STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
VEHICULAR NON ACCESS EASEMENT	VNAE
CLEAR VISION EASEMENT	CVE
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (HOMEOWNER'S RESPONSIBILITY)	
SIDEWALK (DEVELOPER'S RESPONSIBILITY)	
DRIVEWAY	
EXISTING WELL	

PERDIGUERA PLACE
STA. 2+40.65 TO END

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



STREET NOTES:

1. A BEXAR COUNTY ROW 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 LOCATIONS 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. THE CONSTRUCTION OF SIDEWALKS ADJACENT TO ALL 900 SERIES LOTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER AS SHOWN ON THE OVERALL SIGNAGE PLAN.

NO.	REMSION	DATE
1	REVISED SIDEWALK RAMP	01/26/24
	ADDED BLOCK #	
2	REVISED SIDEWALK RAMP	01/30/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
1/31/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

PERDIGUERA PLACE PLAN & PROFILE
(STA. 2+40.65 TO END)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C2.01

Date: Jan 31, 2024, 9:08am User ID: tcamacho
File: P:\126\32\14\Design\Civil\ST126214 PERDIGUERA PLACE.dwg
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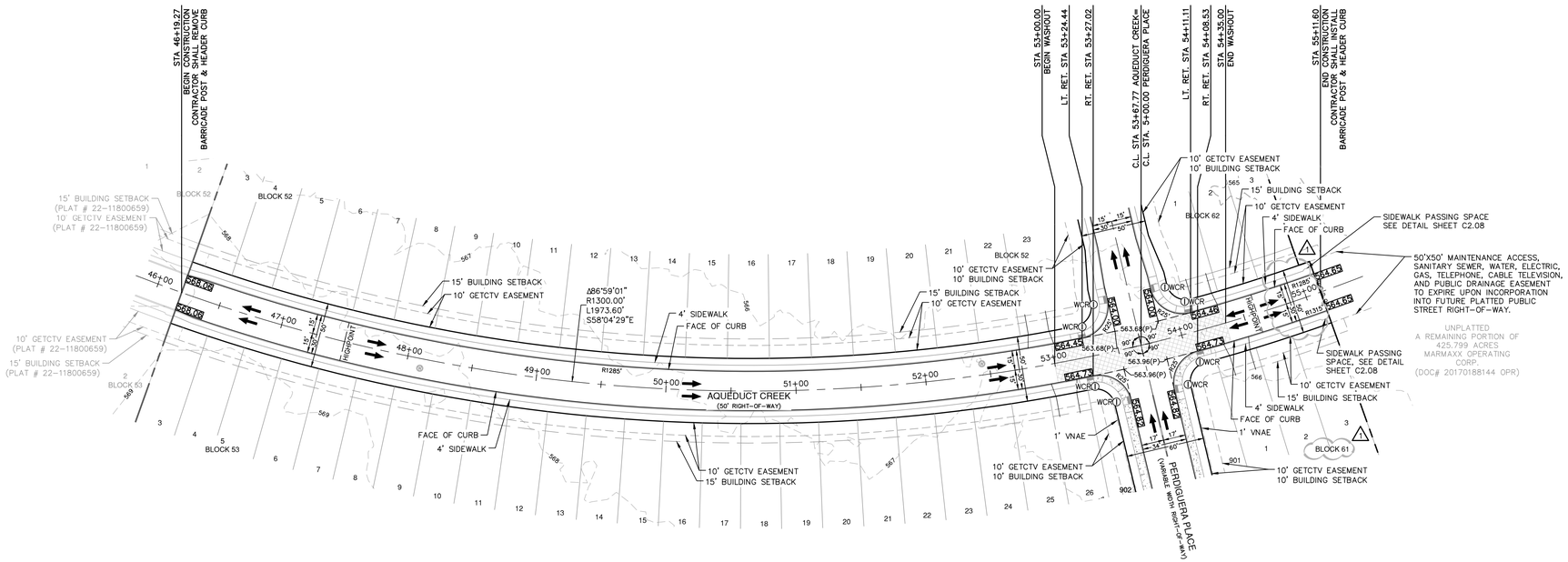
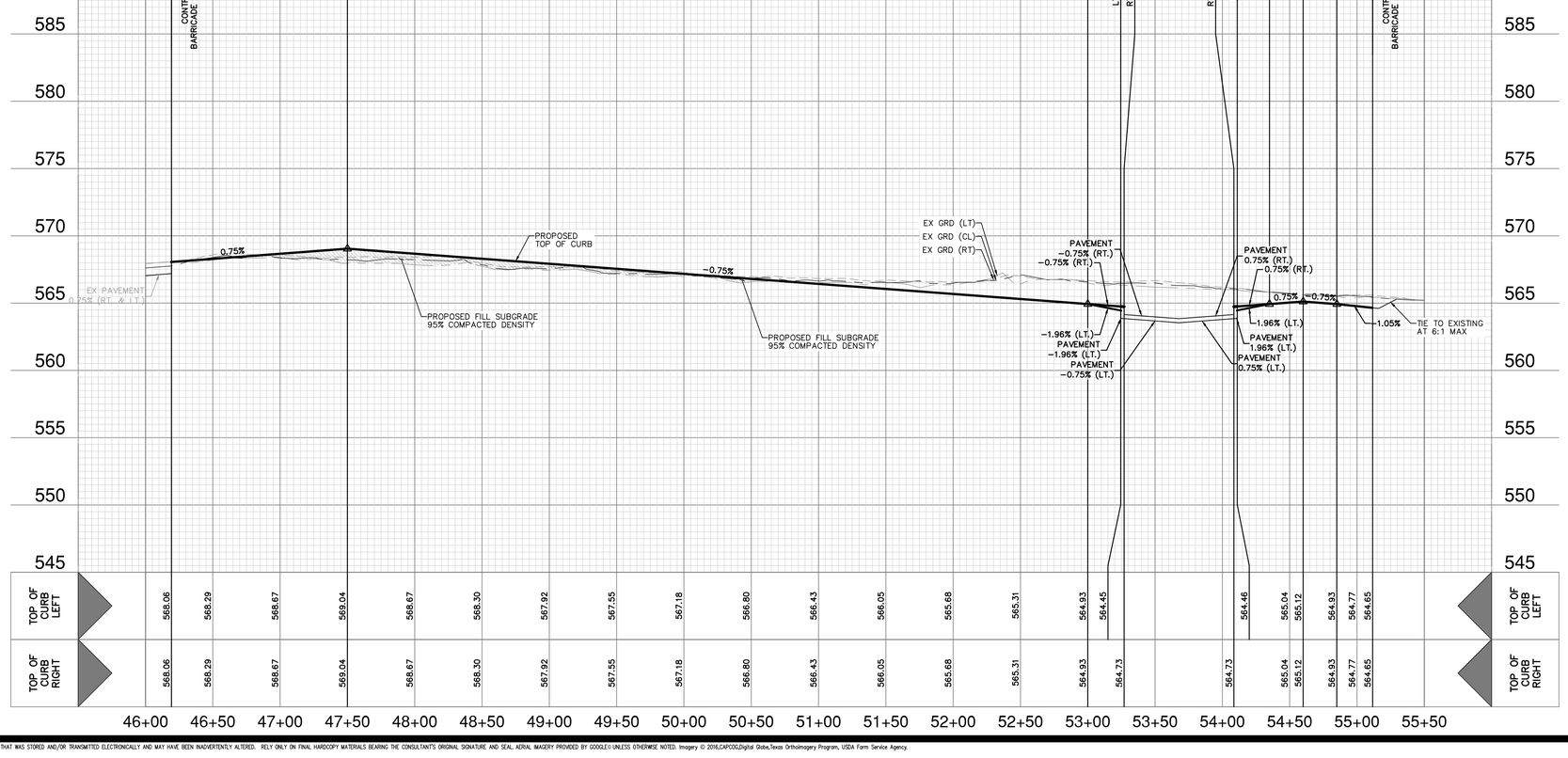


STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
VEHICULAR NON ACCESS EASEMENT	VNAE
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (HOMEOWNER'S RESPONSIBILITY)	
SIDEWALK (DEVELOPER'S RESPONSIBILITY)	
DRIVEWAY	
EXISTING WELL	

AQUEDUCT CREEK
STA. 46+19.27 TO END

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



STREET NOTES:

1. A BEXAR COUNTY ROW 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 LOCATIONS 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. THE CONSTRUCTION OF SIDEWALKS ADJACENT TO ALL 900 SERIES LOTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER AS SHOWN ON THE OVERALL SIGNAGE PLAN.

NO.	REVISION	DATE
1	REVISED UNIT OF MEASUREMENT ADDED BLOCK #	01/30/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
1/31/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

AQUEDUCT CREEK PLAN & PROFILE
(STA. 46+19.27 TO END)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C2.02

Date: Jan 31, 2024, 9:09am User ID: tcamacho
File: P:\126\32114\Design\Civil\ST12632114 AQUEDUCT CREEK.dwg
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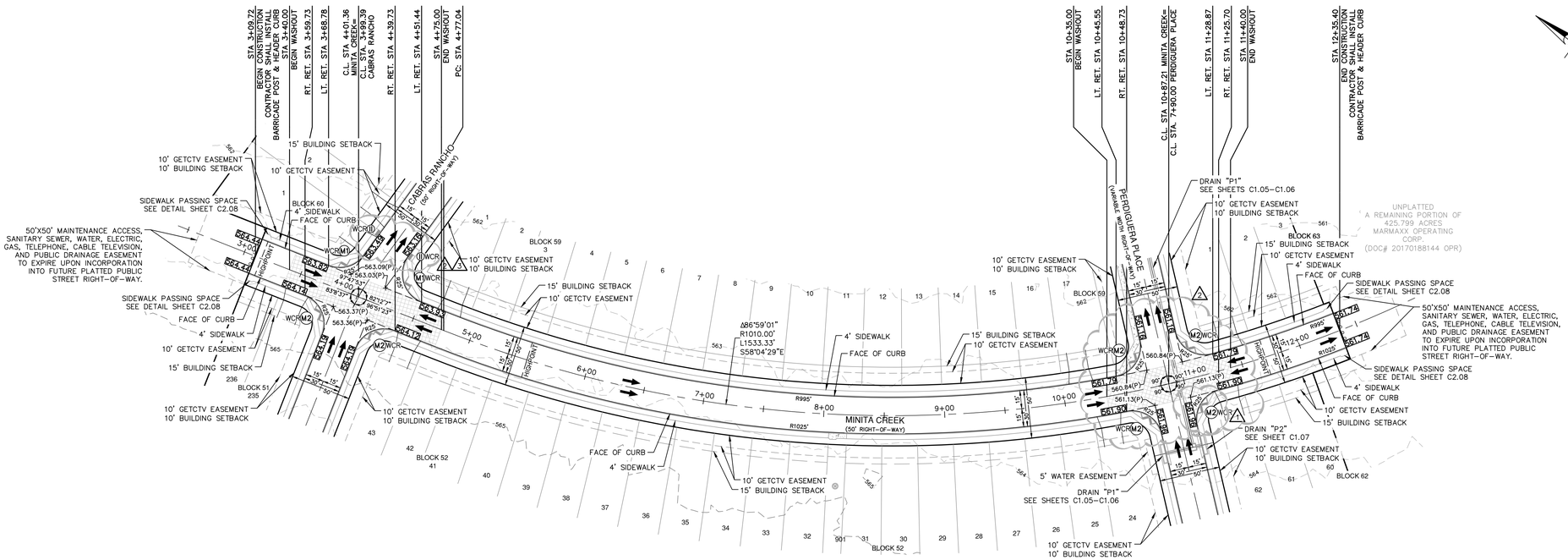
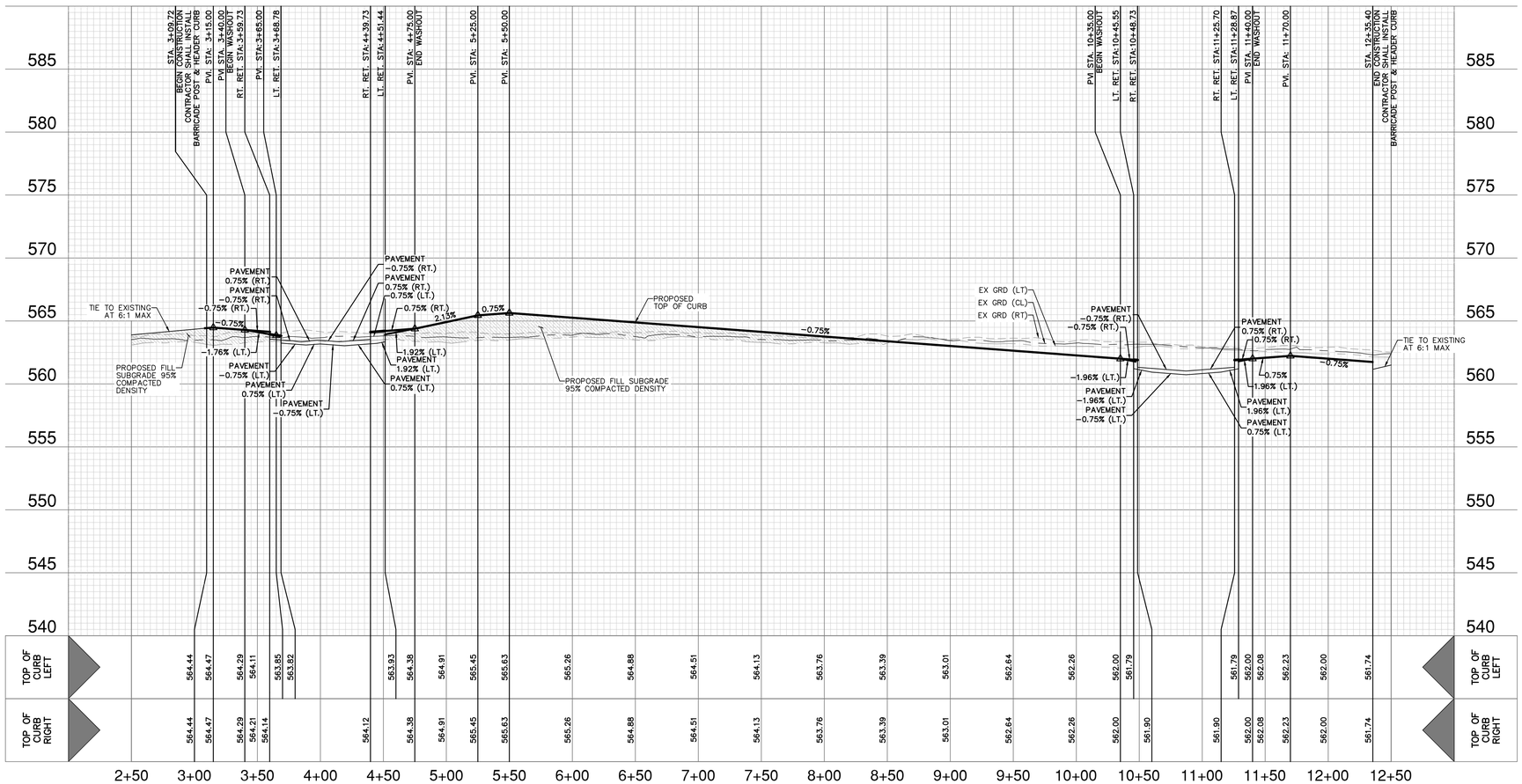


MINITA CREEK
STA. 3+09.72 TO END

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



STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
VEHICULAR NON ACCESS EASEMENT	VNAE
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (HOMEOWNER'S RESPONSIBILITY)	
SIDEWALK (DEVELOPER'S RESPONSIBILITY)	
DRIVEWAY	
EXISTING WELL	

STREET NOTES:

1. A BEXAR COUNTY ROW 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 LOCATIONS 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. THE CONSTRUCTION OF SIDEWALKS ADJACENT TO ALL 900 SERIES LOTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER AS SHOWN ON THE OVERALL SIGNAGE PLAN.

NO.	REVISION	DATE
1	REVISED SIDEWALK	03/06/24
2	REVISED SIDEWALK RAMP	01/30/24
2	REVISED SIDEWALK RAMP TYPE	02/08/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
2/16/24

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

MINITA CREEK PLAN & PROFILE
(STA. 3+09.72 TO END)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C2.03

Date: Feb 06, 2024, 2:17pm User ID: tcamacho
File: P:\126\32\14\Design\Civil\ST126214 MINITA CREEK.dwg

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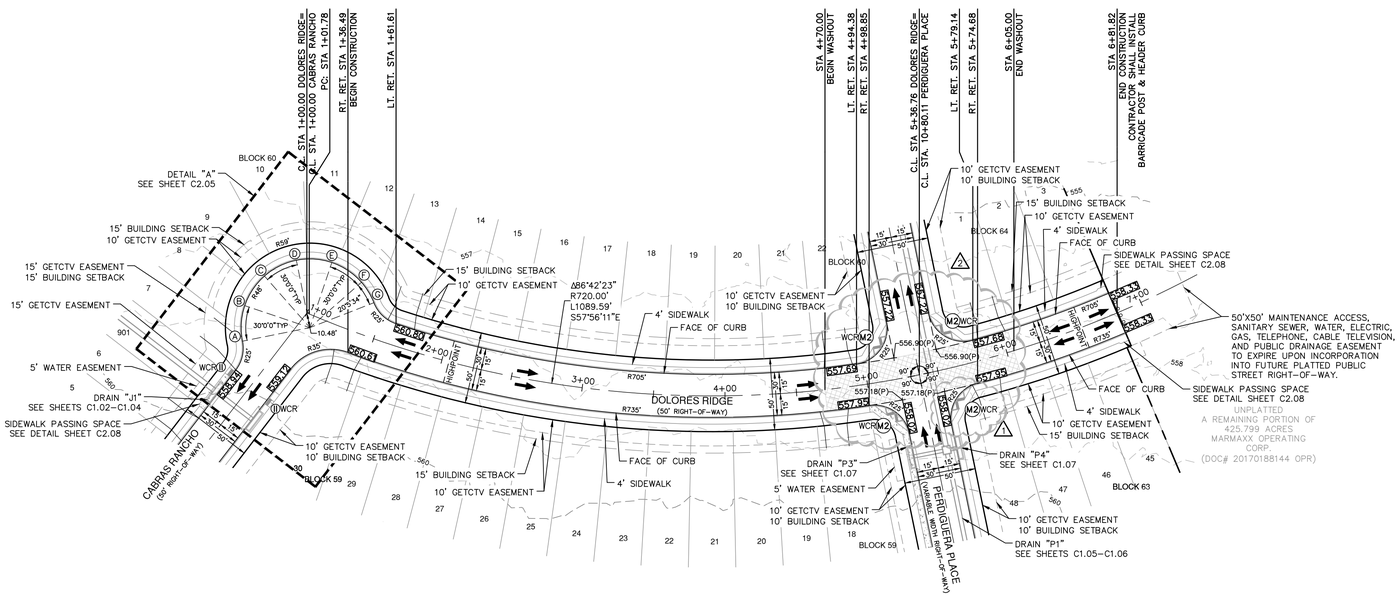
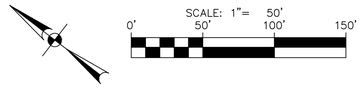


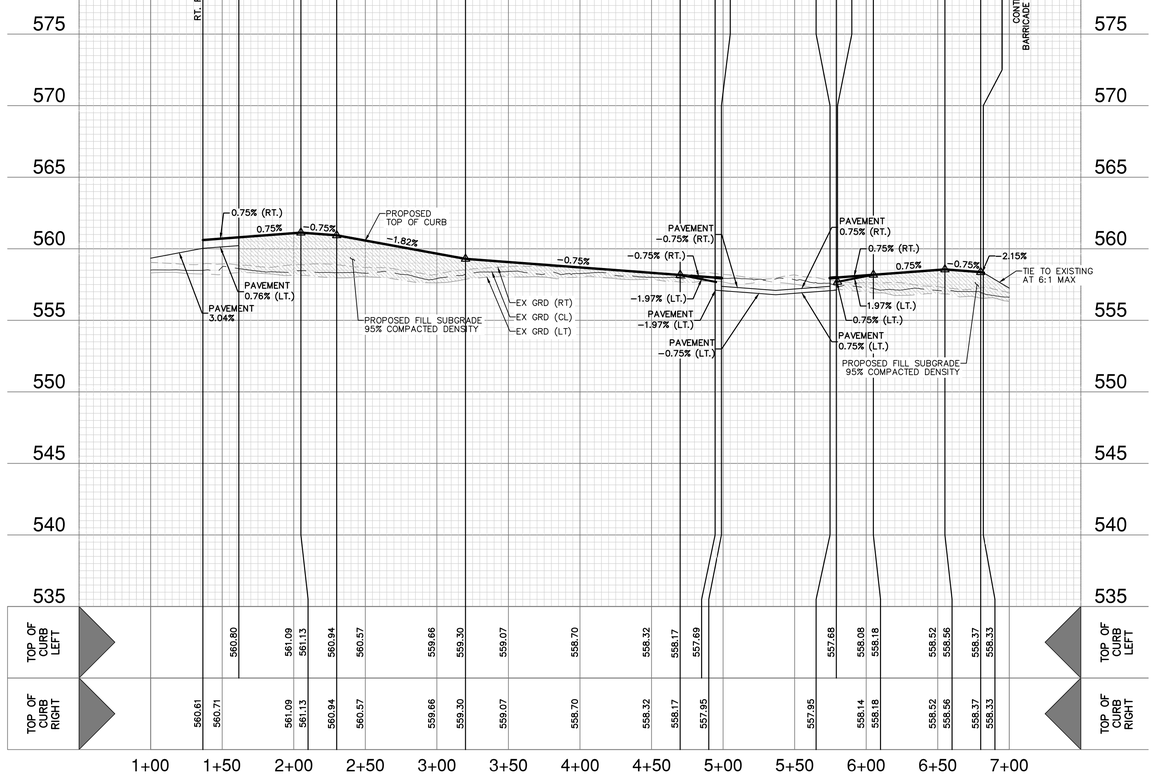


STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
VEHICULAR NON ACCESS EASEMENT	VNAE
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (HOMEOWNER'S RESPONSIBILITY)	
SIDEWALK (DEVELOPER'S RESPONSIBILITY)	
DRIVEWAY	
EXISTING WELL	

DOLORES RIDGE
STA. 1+36.49 TO END

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



STREET NOTES:

1. A BEXAR COUNTY ROW 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 LOCATIONS 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. THE CONSTRUCTION OF SIDEWALKS ADJACENT TO ALL 900 SERIES LOTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER AS SHOWN ON THE OVERALL SIGNAGE PLAN.

NO.	REVISION	DATE
1	REVISED SIDEWALK	07/16/24
2	REVISED SIDEWALK RAMP	01/30/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
1/31/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

DOLORES RIDGE PLAN & PROFILE
(STA. 1+36.49 TO END)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C2.04

Date: Jan 31, 2024, 9:13am User ID: tcamacho
File: P:\126\32\14\Design\Civil\ST12632I4 DOLORES RIDGE.dwg

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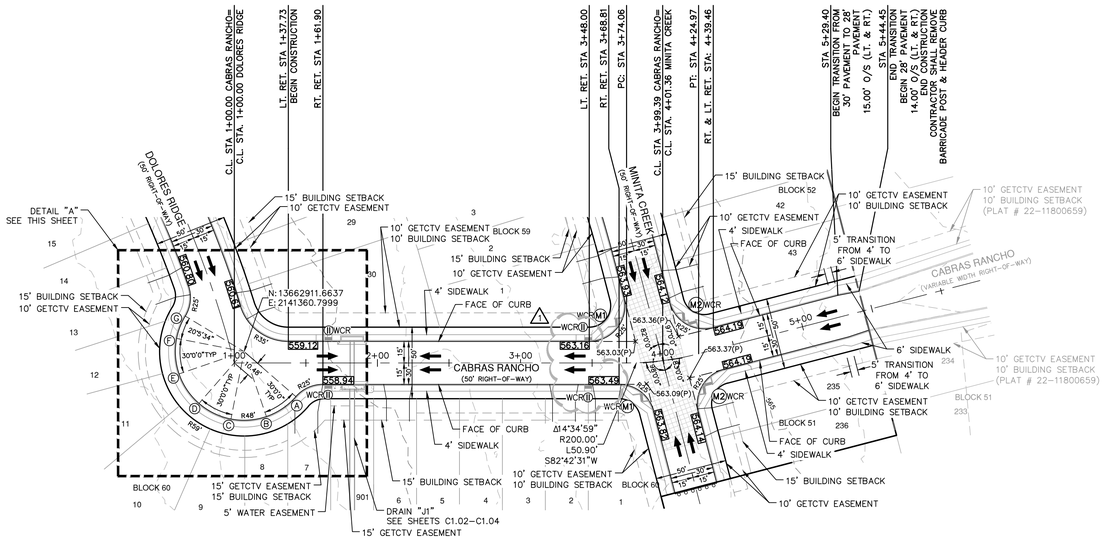
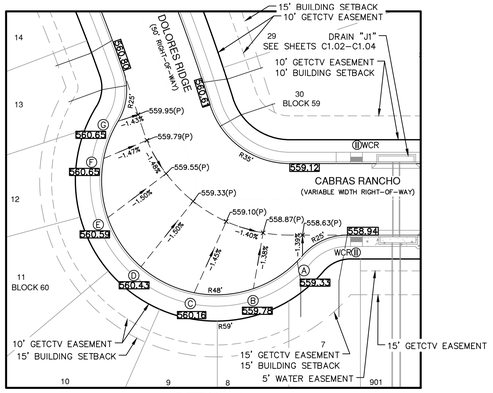
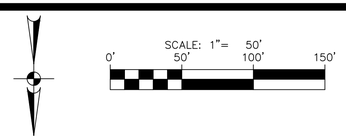




DETAIL "A"
SCALE: 1" = 30'

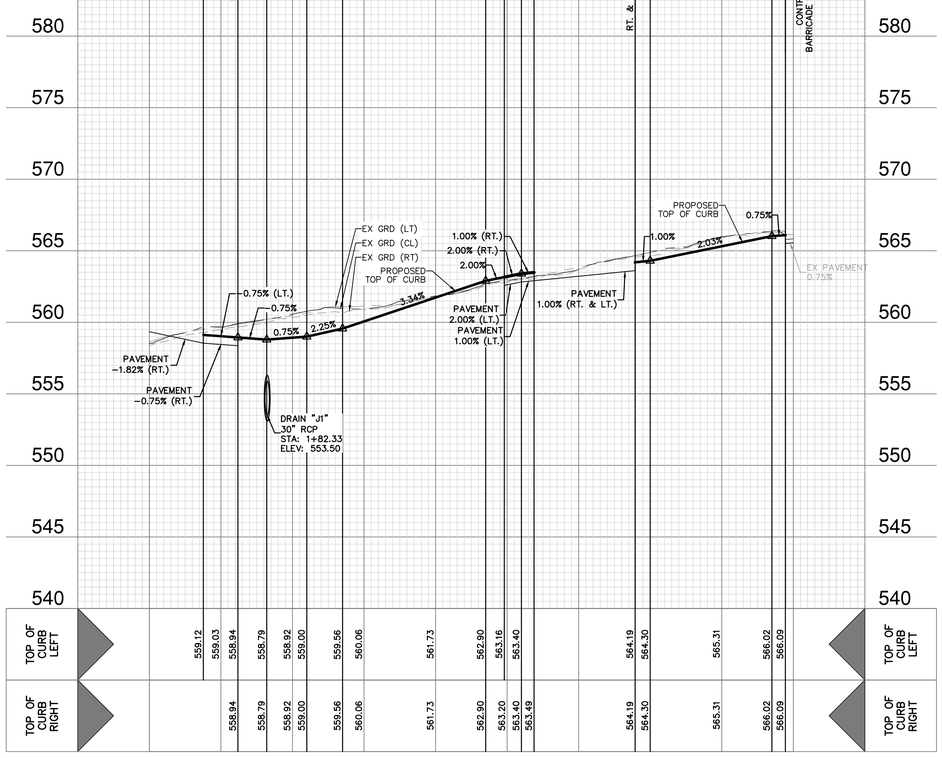


STREET LEGEND

PROJECT LIMITS	
MAINTAIN GUTTER	
EXISTING CONTOUR	970
WHEELCHAIR RAMP	
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
VEHICULAR NON ACCESS EASEMENT	VNAE
DRAINAGE FLOW ARROW	
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (HOMEOWNER'S RESPONSIBILITY)	
SIDEWALK (DEVELOPER'S RESPONSIBILITY)	
DRIVEWAY	
EXISTING WELL	

CABRAS RANCHO
STA. 1+37.73 TO END

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



STREET NOTES:

1. A BEXAR COUNTY ROW 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 LOCATIONS 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. THE CONSTRUCTION OF SIDEWALKS ADJACENT TO ALL 900 SERIES LOTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER AS SHOWN ON THE OVERALL SIGNAGE PLAN.

NO.	REMISION	DATE
1	REVISED SIDEWALK RAMP	01/30/25

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
1/31/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

CABRAS RANCHO PLAN & PROFILE
(STA. 1+37.73 TO END)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C2.05

Date: Jan 31, 2024, 9:14am User ID: tcarnacho
File: P:\126\32\14\Design\Civil\ST1263214 CABRAS RANCHO.dwg

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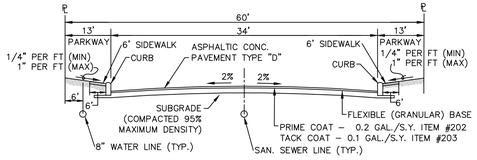
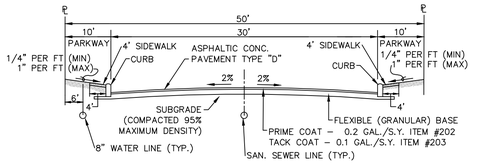
PAVEMENT SECTION DETAIL

STREET NAME	STATION	TYPE "D" HMAC	TYPE "C" HMAC	TYPE "B" HMAC	GRANULAR BASE COURSE	CEMENT TREATED SUBGRADE	GEOGRID (TENSAR TRIAX TX5)	CBR	STRUCTURAL NUMBER	
ESPADA RIDGE	24+58.12 TO END	2"	4"	–	12"	6"	NO	4.0	2(.44) = .88 4(.44) = 1.76 12(.14) = 1.68	4.24
PERDIGUERA PLACE	2+40.65 TO 2+58.57 3+42.60 TO 5+80.80	1.5"	3"	–	15"	6"	NO	4.0	1.5(.44) = .66 3(.44) = 1.32 15(.14) = 2.1	4.08
PERDIGUERA PLACE	5+80.80 TO END	2"	–	–	10"	6"	NO	4.0	2(.44) = .88 10(.14) = 1.4	2.28
AQUEDUCT CREEK	46+19.27 TO END	2"	–	–	10"	6"	NO	4.0	2(.44) = .88 10(.14) = 1.4	2.28
MINITA CREEK	3+09.72 TO END	2"	–	–	10"	6"	NO	4.0	2(.44) = .88 10(.14) = 1.4	2.28
DOLORES RIDGE	1+36.49 TO END	2"	–	–	10"	6"	NO	4.0	2(.44) = .88 10(.14) = 1.4	2.28
CABRAS RANCHO	1+37.73 TO END	2"	–	–	10"	6"	NO	4.0	2(.44) = .88 10(.14) = 1.4	2.28



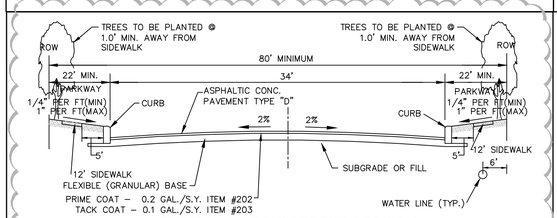
60' (LOCAL TYPE "B") ROW STREET SECTION

NOT–TO–SCALE



50' (LOCAL TYPE "A") ROW STREET SECTION

NOT–TO–SCALE



TYPICAL 80' ROW STREET SECTION (COLLECTOR)

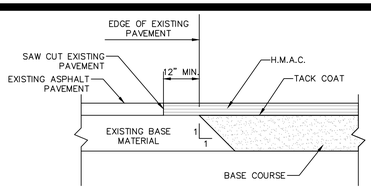
NOT–TO–SCALE

GENERAL NOTES:

1. CONTRACTOR SHALL REFERENCE THE PROJECT PAVEMENT DESIGN REPORT PREPARED BY **TTL** DATED **FEBRUARY 13, 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 CEMENT 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. EACH LIFT OF SOIL SHALL BE MOISTURE CONDITIONED BETWEEN MINUS TWO (–2) AND PLUS THREE (+3) PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT AND COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY.
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. UNDERCUT SOFT, WEAK, AND UNSTABLE SOILS BY EXCAVATING BELOW SUBGRADE LEVEL TO EXPOSE STABLE SOILS. THE EXCAVATED SOIL CAN BE USED TO RESTORE THE EXCAVATION SUBGRADE, PROVIDED THAT THE SOILS ARE RELATIVELY FREE AND CLEAN OF DELETERIOUS MATERIAL OR MATERIALS EXCEEDING 3 INCHES IN MAXIMUM DIMENSION. THE EXCAVATED SOIL, OR IMPORTED FILL SOIL, SHALL BE PLACED IN MAXIMUM 6–INCH COMPACTED LIFTS. EACH LIFT OF SOIL SHALL BE MOISTURE CONDITIONED BETWEEN PLUS OR MINUS TWO (±2) PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT AND COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH THE STANDARD COMPACTION EFFORT (ASTM D 698). IF UNDERCUTTING DEEPER THAN ABOUT 3 FEET IS NEEDED, CONTACT TTL.
8. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL MATERIAL TESTING WITH THE PROJECT GEOTECHNICAL ENGINEER. TESTING SHALL BE PAID FOR BY THE OWNER.
9. SOIL SUBGRADE AREAS REQUIRING FILL PLACEMENT SHOULD BE SCARIFIED TO A DEPTH OF ABOUT EIGHT (8) INCHES AND MOISTURE CONDITIONED BETWEEN PLUS OF MINUS TWO (±2) POINTS OF THE OPTIMUM MOISTURE CONTENT. THE MOISTURE–CONDITIONED SUBGRADE SHOULD THEN BE COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH ASTM D 698. THE SUBGRADE SHOULD BE MOISTURE CONDITIONED JUST PRIOR TO FILL PLACEMENT SO THE SUBGRADE MAINTAINS IT'S COMPACTION MOISTURE LEVELS AND DOES NOT DRY OUT.
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.

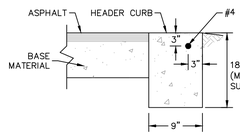
STREET SUBGRADE NOTES:

1. IF THE STREET SUBGRADE PLASTICITY INDEX VALUE IS GREATER THAN 20, SUBGRADE TREATMENT IS NEEDED AS PER CITY OF SAN ANTONIO AND BEXAR COUNTY REQUIREMENTS.
2. IF THE SUBGRADE PLASTICITY INDEX VALUE IS 20 OR LESS. SUBGRADE TREATEMENT 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 TREATED USING A MINIMUM OF 6% PORTLAND CEMENT, BY DRY WEIGHT TO A DEPTH OF 6 INCHES.
4. THE SUBGRADE SOILS SHOULD BE TESTED FOR SOIL SULFATE CONTENT PRIOR TO TREATMENT. IF THE SOIL SULFATE CONTENT IS HIGH, AN ALTERNATE PROCEDURE / RECOMMENDATION WILL BE NEEDED.
5. CEMENT APPLICATION RATE OF 28 LBS PER SQ YARD OF SOIL IS RECOMMENDED.
6. APPROVED FILL MATERIAL SHOULD BE USED TO RAISE THE GRADE. THE FILL SHOULD BE FREE OF DELETERIOUS MATERIAL WITH THE MINIMUM CBR VALUE OF 4.0 AND PI NOT MORE THAN 35. CEMENT 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 OR COUNTY GUIDELINES.
7. THE SUBGRADE SHOULD BE PROOF ROLLED TO IDENTIFY SOFT AREAS BEFORE TREATMENT.



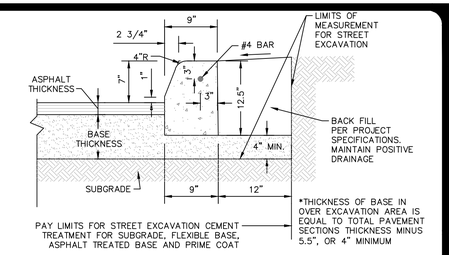
ASPHALT/ASPHALT JUNCTURE DETAIL

NOT–TO–SCALE



HEADER CURB DETAIL

NOT–TO–SCALE



CONCRETE CURB DETAIL

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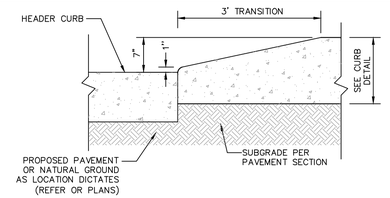
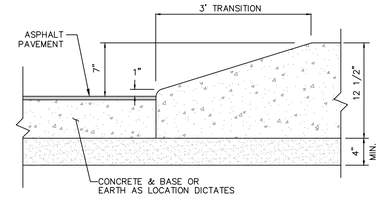


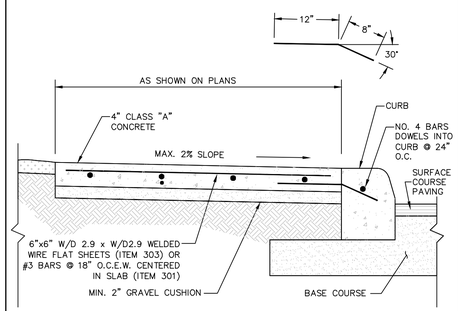
CURB TRANSITION DETAIL
(FROM HEADER CURB TO STANDARD CURB)

NOT–TO–SCALE



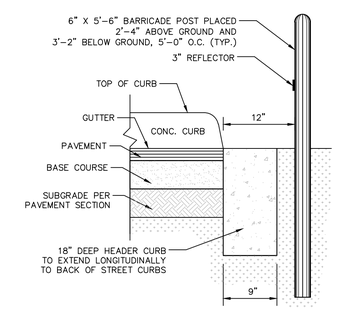
CURB TRANSITION DETAIL
(FROM PAVEMENT TO STANDARD CURB)

NOT–TO–SCALE



SIDEWALK DETAIL

NOT–TO–SCALE



HEADER CURB & BARRICADE POST DETAIL

NOT–TO–SCALE

NO.	REVISION	DATE
1	REVISED COLLECTOR SECTION	02/16/24
2	REVISED GENERAL NOTES	02/21/24

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED
PROFESSIONAL ENGINEER
2/21/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15

SAN ANTONIO, TEXAS

TYPICAL STREET DETAILS

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C2.06

Date: Feb 26, 2024, 10:24am User ID: jonathangroff
File: P:\12632\21\14\Design\Civil\STD\12632114.dwg

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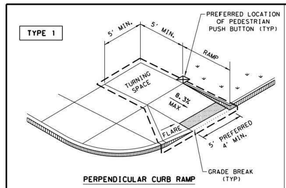
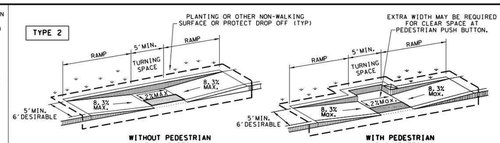
TYPE 1



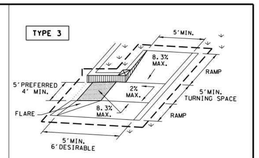
PERPENDICULAR CURB RAMP

TYPE 2

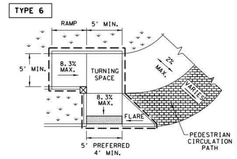


PARALLEL CURB RAMP

TYPE 3

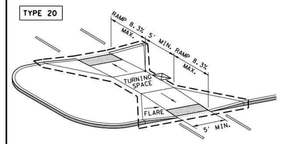


TYPE 6



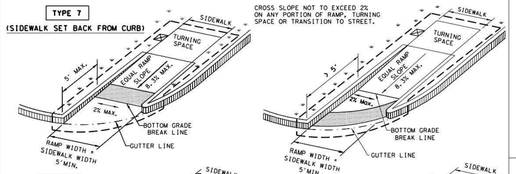
COMBINATION CURB RAMPS

TYPE 20

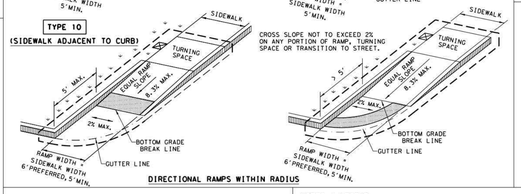


CURB RAMPS AT MEDIAN ISLANDS

TYPE 7
(SIDEWALK SET BACK FROM CURB)

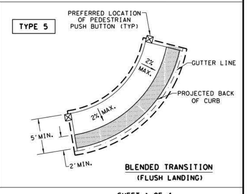


TYPE 10
(SIDEWALK ADJACENT TO CURB)



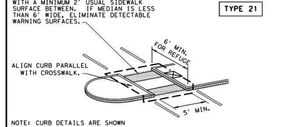
DIRECTIONAL RAMPS WITHIN RADIUS

TYPE 5



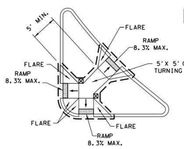
BLENDED TRANSITION
(FLUSH LANDING)

TYPE 21

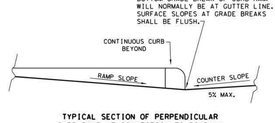


NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

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	DW: TxDOT	CK: WP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9/01/05	DIST	COUNTY		SHEET NO.

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 unpainted 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.

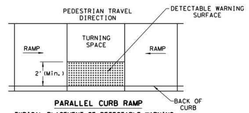
DETECTABLE WARNING PAVERS (IF USED)

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.

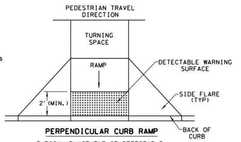
SIDEWALKS

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.

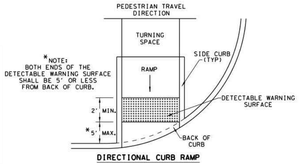
DETECTABLE WARNING SURFACE DETAILS



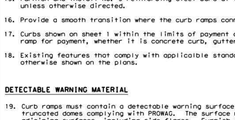
PARALLEL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



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

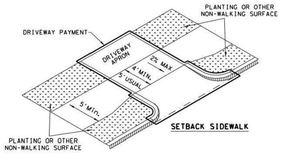
PEDESTRIAN FACILITIES
CURB RAMPS

PED-18

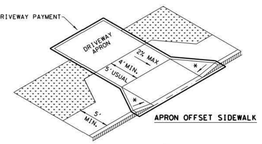
FILE: ped18	DW: TxDOT	CK: WP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9/01/05	DIST	COUNTY		SHEET NO.

DATE:
FILE:

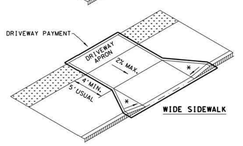
SIDEWALK TREATMENT AT DRIVEWAYS



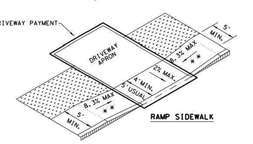
SETBACK SIDEWALK



APRON OFFSET SIDEWALK

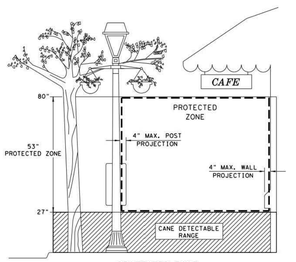


WIDE SIDEWALK



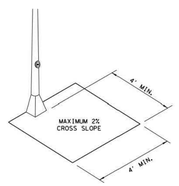
RAMP SIDEWALK

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.

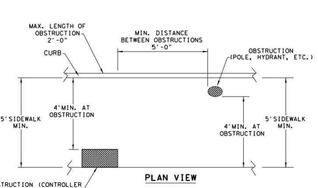


PROTECTED ZONE

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



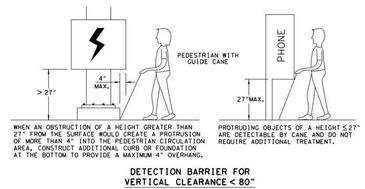
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



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	DW: TxDOT	CK: WP	CK: KM	CK: PK & JG
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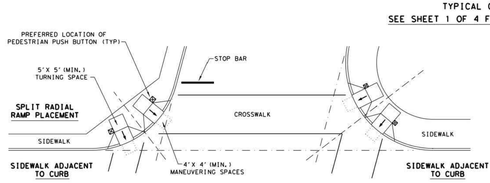
REVISIONS				
9/01/05	DIST	COUNTY		SHEET NO.

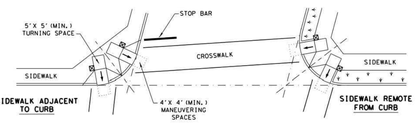
DATE:
FILE:

TYPICAL CROSSING LAYOUTS

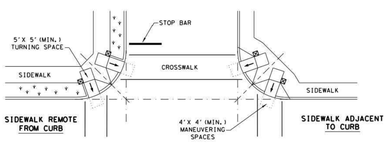
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



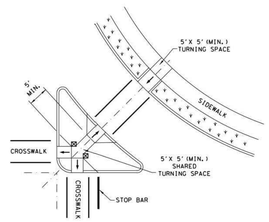
SKEWED INTERSECTION WITH "LARGE" RADIUS



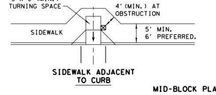
SKEWED INTERSECTION WITH "SMALL" RADIUS



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	DW: TxDOT	CK: WP	CK: KM	CK: PK & JG
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REVISIONS				
9/01/05	DIST	COUNTY		SHEET NO.

NO. REVISION — DATE

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED
PROFESSIONAL ENGINEER
10/10/23

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS
TYPICAL STREET DETAILS

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C2.07

Date: Oct 31, 2023, 9:59am User ID: tcamacho
File: P:\1261\32\14\Design\Civil\STD\1263214.dwg

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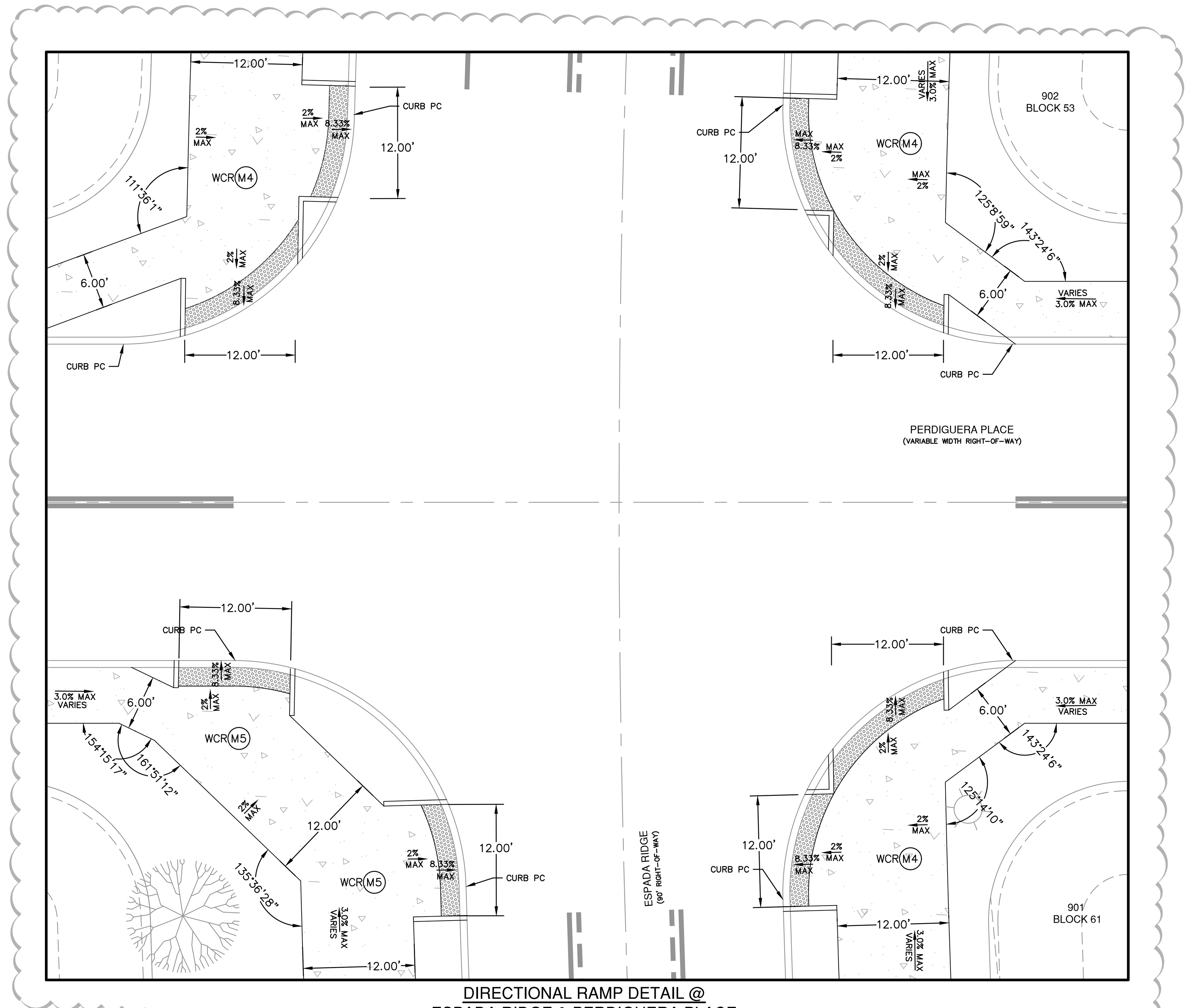
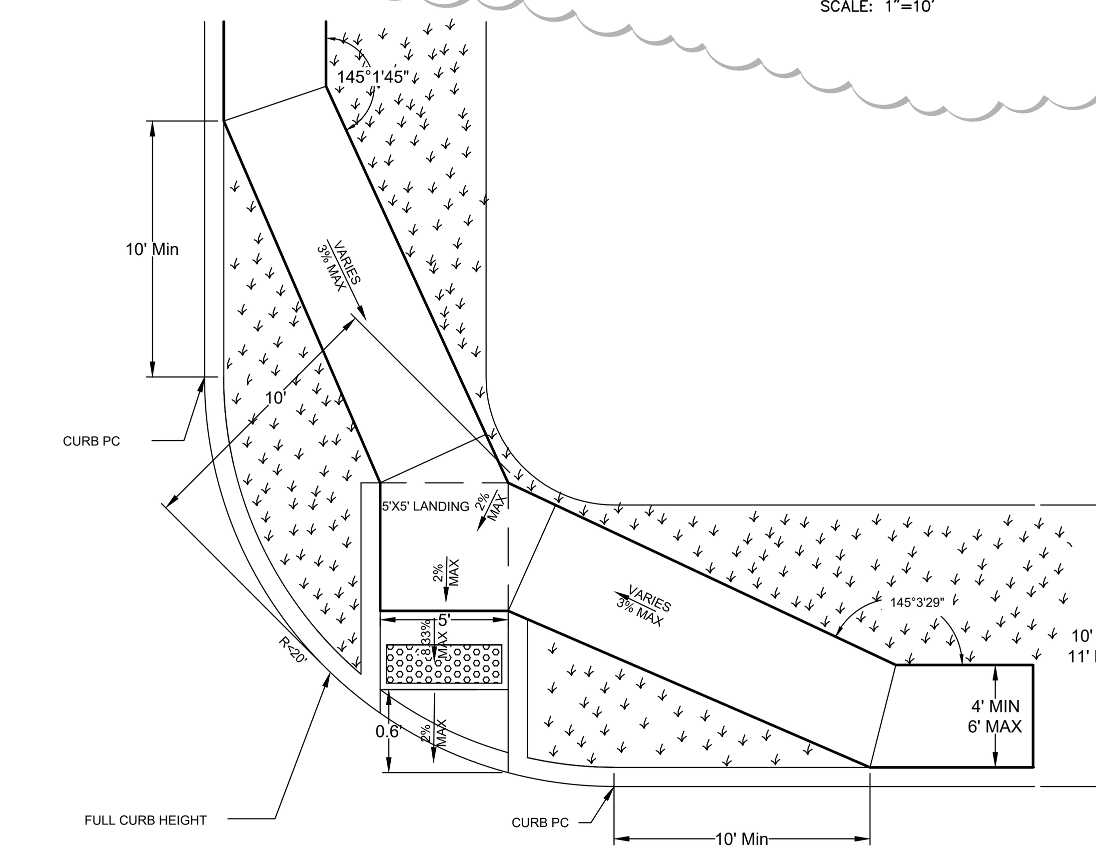


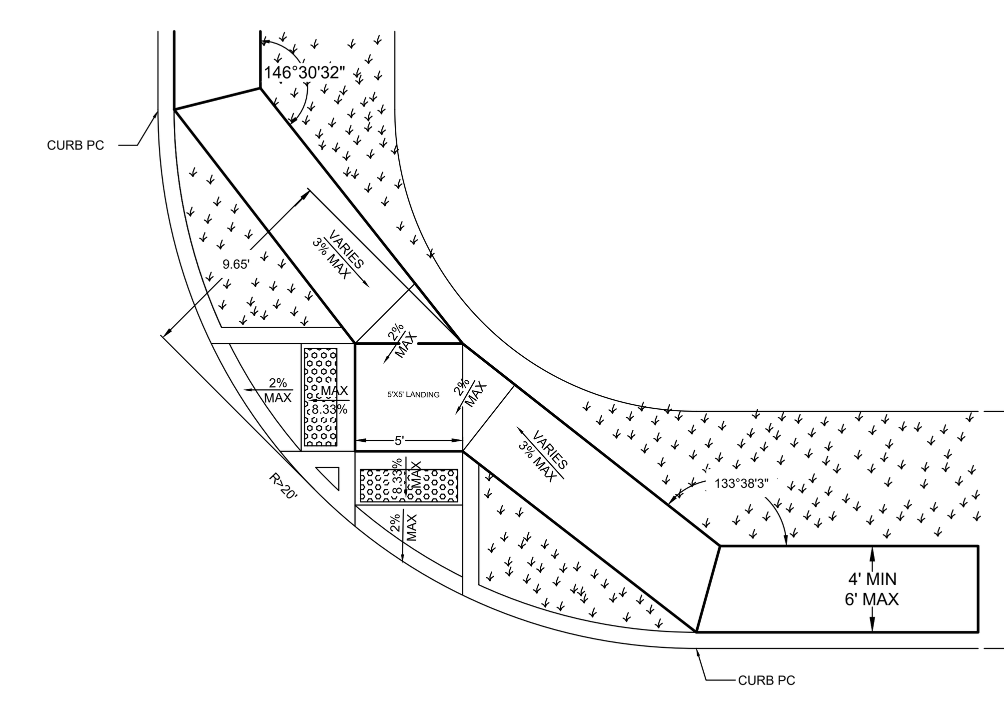
DIRECTIONAL RAMP DETAIL @ ESPADA RIDGE & PERDIGUERA PLACE

SCALE: 1"=10'



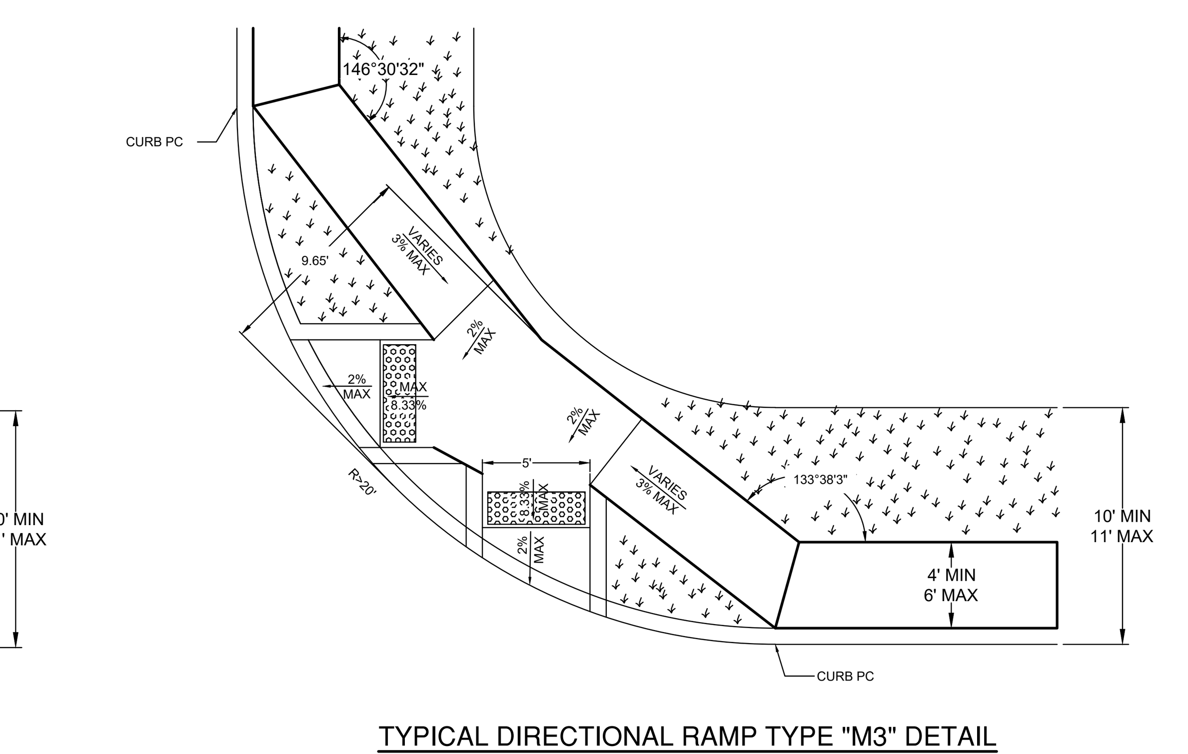
TYPICAL DIRECTIONAL RAMP TYPE "M1" DETAIL

NOT-TO-SCALE



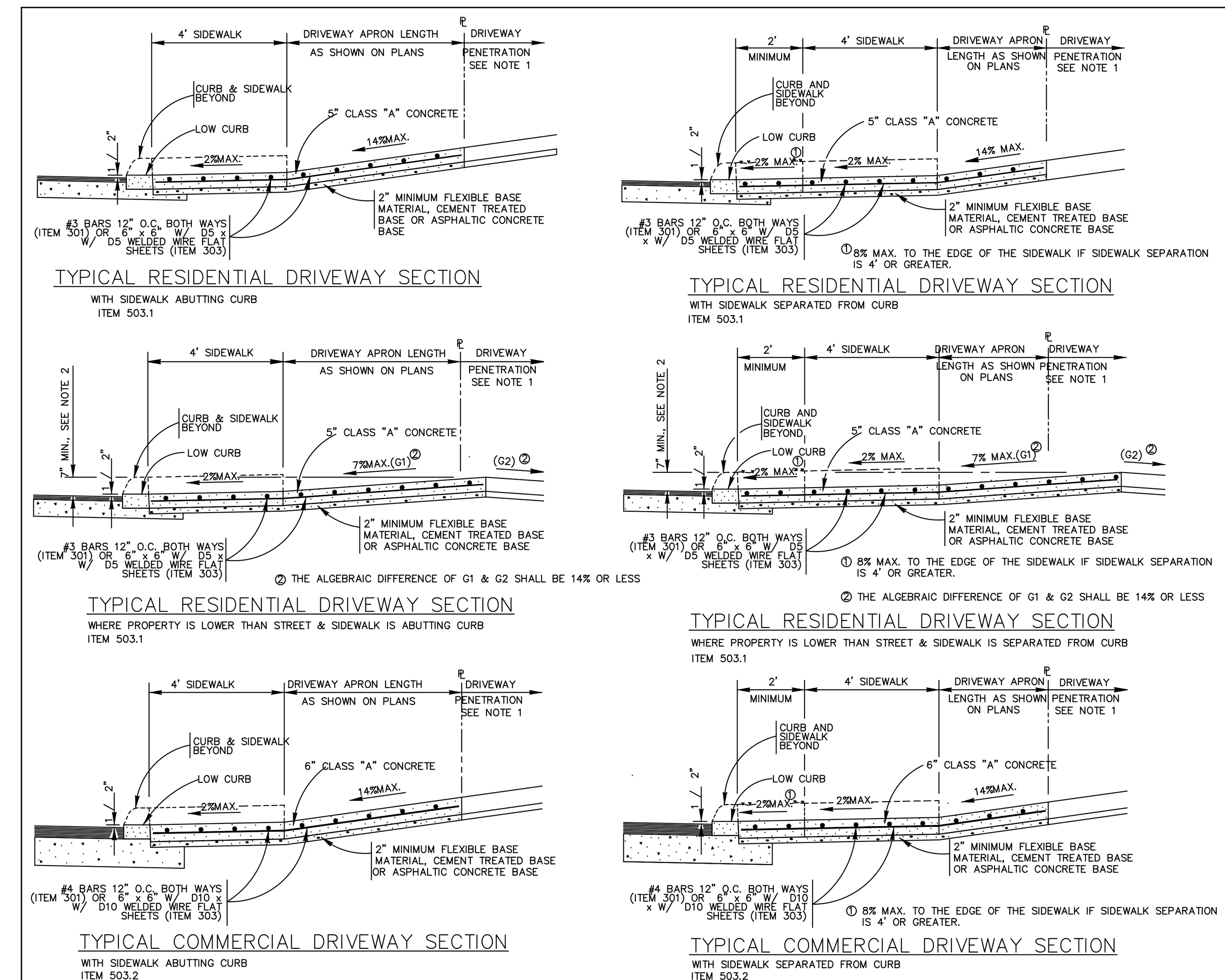
TYPICAL DIRECTIONAL RAMP TYPE "M2" DETAIL

NOT-TO-SCALE



TYPICAL DIRECTIONAL RAMP TYPE "M3" DETAIL

NOT-TO-SCALE



TYPICAL RESIDENTIAL DRIVEWAY SECTION
WITH SIDEWALK ABUTTING CURB
ITEM 503.1

TYPICAL RESIDENTIAL DRIVEWAY SECTION
WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.1

TYPICAL RESIDENTIAL DRIVEWAY SECTION
WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS ABUTTING CURB
ITEM 503.1

TYPICAL RESIDENTIAL DRIVEWAY SECTION
WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS SEPARATED FROM CURB
ITEM 503.1

TYPICAL COMMERCIAL DRIVEWAY SECTION
WITH SIDEWALK ABUTTING CURB
ITEM 503.2

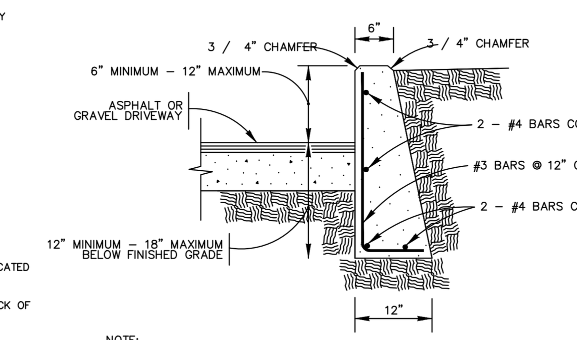
TYPICAL COMMERCIAL DRIVEWAY SECTION
WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.2

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:

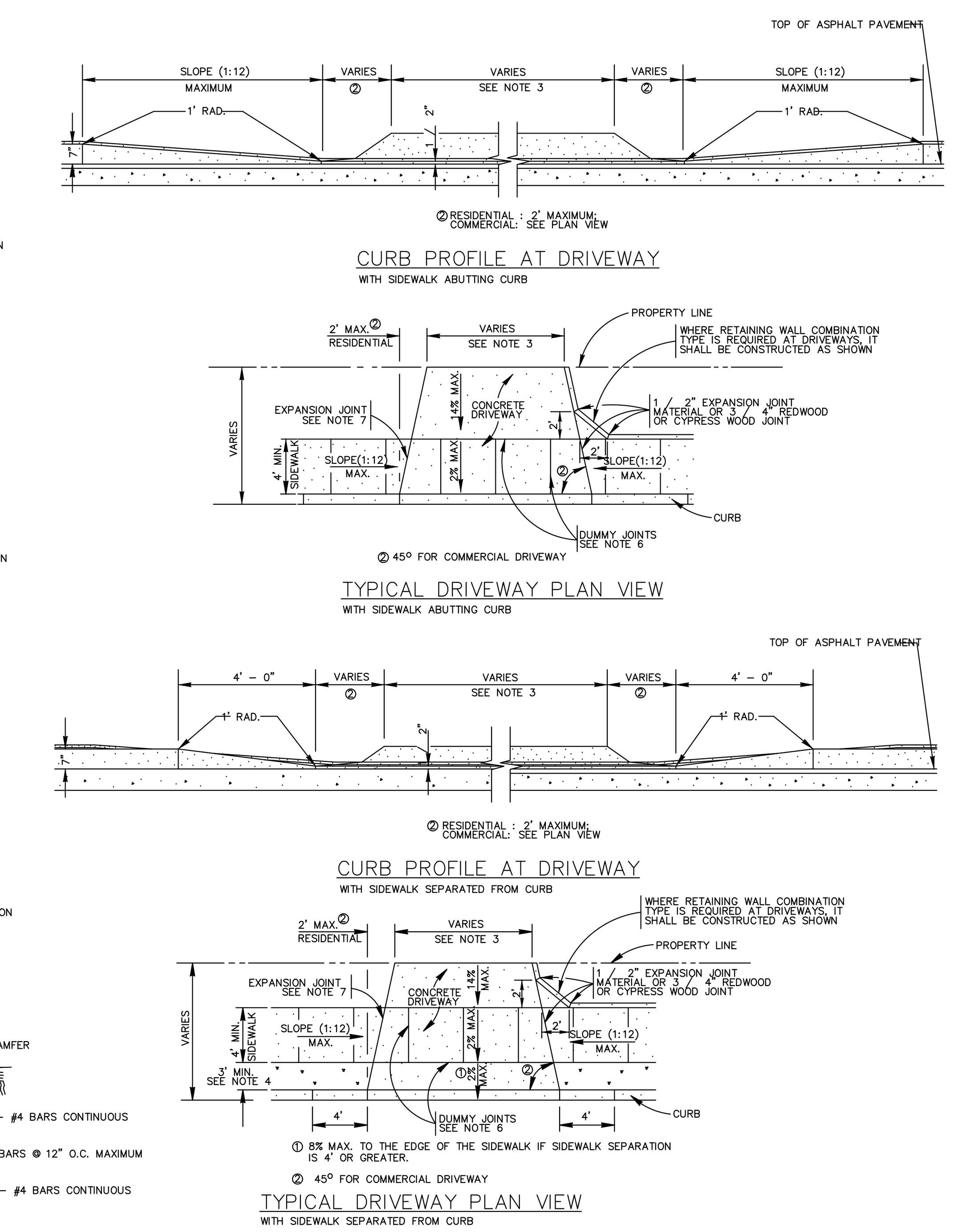
TYPE	MINIMUM	MAXIMUM
RESIDENTIAL	10'	20'
COMMERCIAL – ONE WAY	12'	20'
COMMERCIAL – TWO WAY	24'	30'

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, THE SIDEWALK 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 8.33% (1:12) MAXIMUM SLOPE. WHERE SIDEWALKS CROSS DRIVEWAYS, SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.
9. SIDEWALK RAMP SURFACE SHALL BE BRUSH FINISHED.



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



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

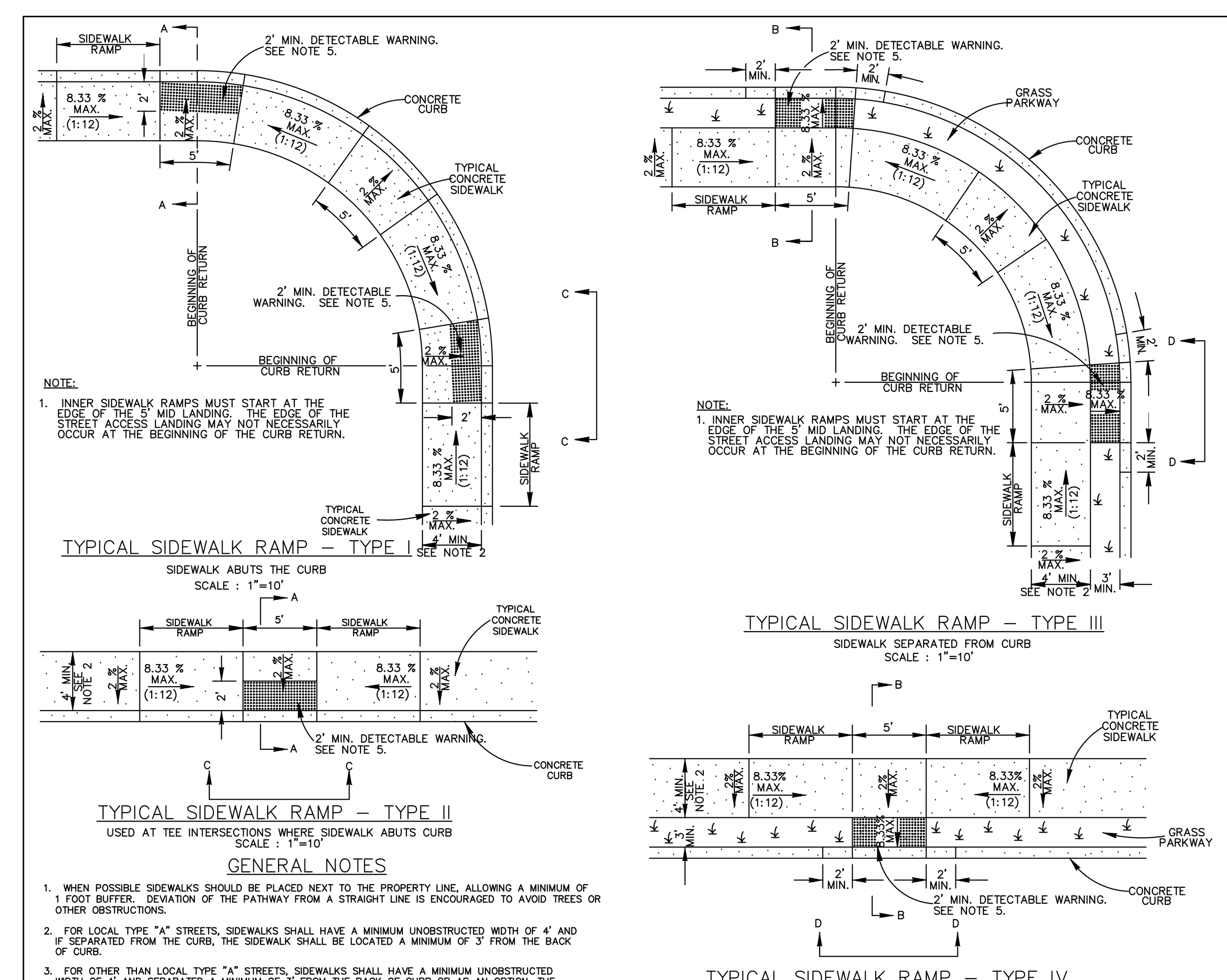
TYPICAL DRIVEWAY PLAN VIEW
WITH SIDEWALK SEPARATED FROM CURB

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

CONCRETE DRIVEWAY STANDARDS

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



NOTE:
1. INNER SIDEWALK RAMPS MUST START AT THE EDGE OF THE 5' MID LANDING. THE EDGE OF THE STREET ACCESS LANDING MAY NOT NECESSARILY OCCUR AT THE BEGINNING OF THE CURB RETURN.

TYPICAL SIDEWALK RAMP – TYPE I
SIDEWALK ABUTS THE CURB
SCALE : 1"=10'

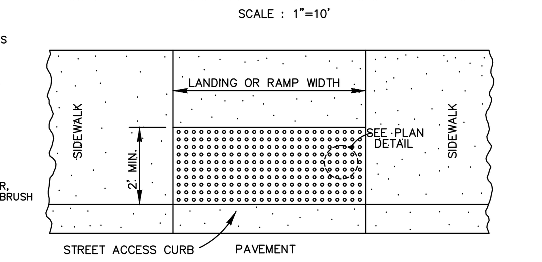
TYPICAL SIDEWALK RAMP – TYPE II
USED AT TEE INTERSECTIONS WHERE SIDEWALK ABUTS CURB
SCALE : 1"=10'

TYPICAL SIDEWALK RAMP – TYPE III
SIDEWALK SEPARATED FROM CURB
SCALE : 1"=10'

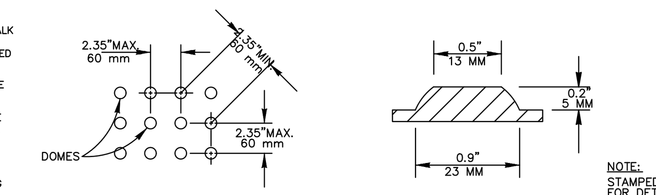
TYPICAL SIDEWALK RAMP – TYPE IV
USED AT TEE INTERSECTIONS WHERE SIDEWALK IS SEPARATED FROM CURB
SCALE : 1"=10'

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 ABUTTING THE CROSSWALK 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 WITH A DIAMETER OF A NOMINAL 0.9 INCHES (23 MM), A HEIGHT OF NOMINAL 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-18, 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 CONSTRUCTION THAT DEVIATES FROM THE NATURAL GRADE OF THE ROADWAY TO CREATE A GRADE 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



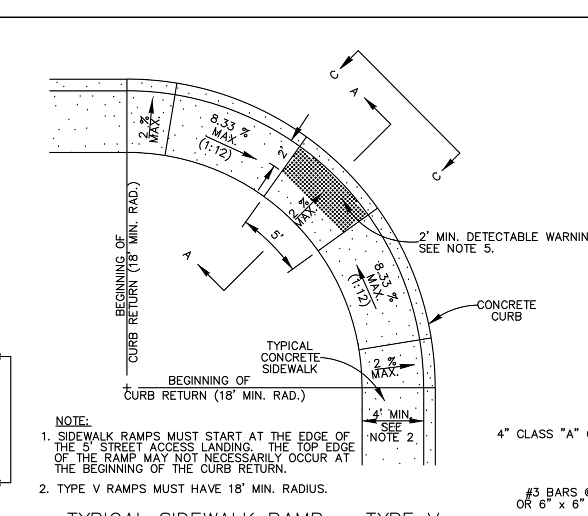
DETECTABLE WARNING SURFACE
SCALE : 1"=4'



PLAN DETAIL

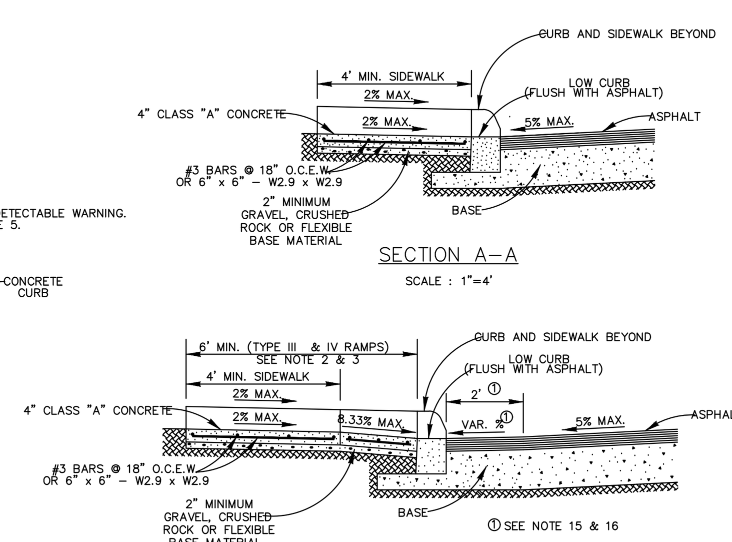
DOME SECTION

NOTE:
STAMPED CONCRETE TRUNCATED DOMES WILL NOT BE ALLOWED TO BE USED FOR DETECTABLE WARNING ON WHEELCHAIR RAMPS. CONTRACTOR MUST SUBMIT TRUNCATED DOME INFORMATION THAT IS TO BE USED ON WHEELCHAIR RAMPS TO THE PROJECT MANAGER FOR APPROVAL AT LEAST 30 DAYS PRIOR TO INSTALLATION.



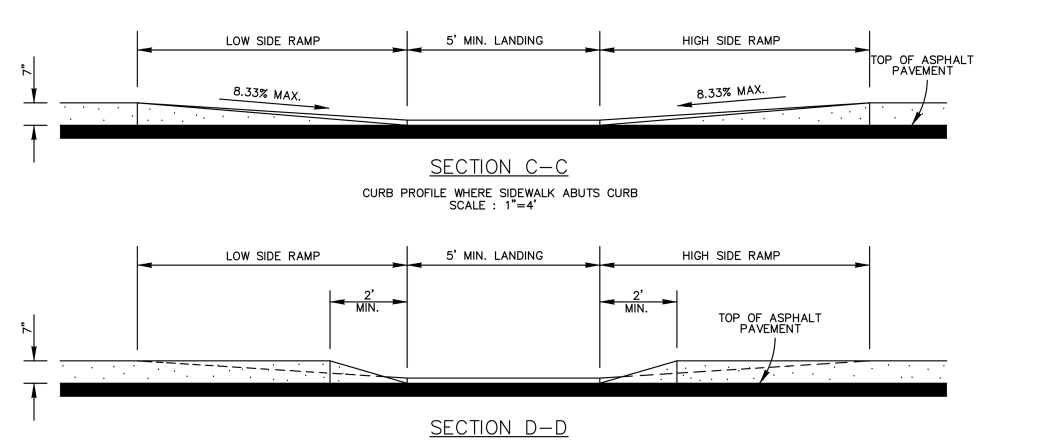
NOTE:
1. SIDEWALK RAMPS MUST START AT THE EDGE OF THE 5' STREET ACCESS LANDING. THE TOP EDGE OF THE RAMP MAY NOT NECESSARILY OCCUR AT THE BEGINNING OF THE CURB RETURN.
2. TYPE V RAMPS MUST HAVE 18' MIN. RADIUS.

TYPICAL SIDEWALK RAMP – TYPE V
SIDEWALK ABUTS CURB
SCALE : 1"=10'



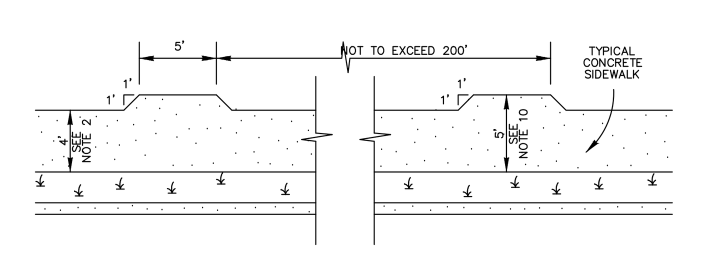
SECTION A–A
SCALE : 1"=4'

SECTION B–B
SCALE : 1"=4'



SECTION C–C
CURB PROFILE WHERE SIDEWALK ABUTS CURB
SCALE : 1"=4'

SECTION D–D
CURB PROFILE WHERE SIDEWALK IS SEPARATED FROM CURB
SCALE : 1"=4'



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'-6"	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
1	ADDED RAMP DETAIL	1/30/25

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
1/31/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS
TYPICAL STREET DETAILS

PLAT NO. 23-11800231
JOB NO. 12632–14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C2.08

Date: Jan 31, 2024, 9:15am User ID: tcamacho
File: P:\126\32\14\Design\Civil\STDT1263214.dwg

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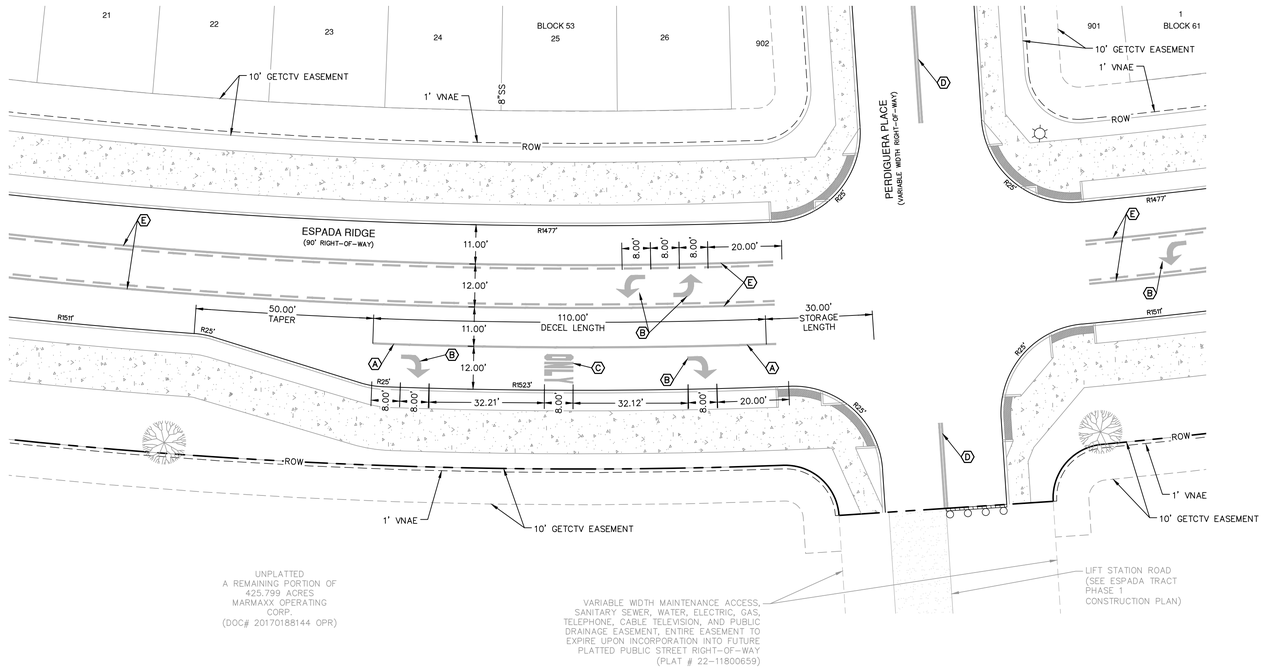

SCALE: 1"= 20'
0' 20' 40' 60'

LEGEND

RIGHT-OF-WAY

FACE OF CURB

EXISTING WELL

1

- (A) WHITE 8" SOLID LINE – THERMOPLASTIC WITH TYPE I-C RPMS
- (B) LEFT & RIGHT WHITE ARROW STANDARD PAVEMENT MARKING – THERMOPLASTIC
- (C) WHITE "ONLY" STANDARD PAVEMENT MARKING – THERMOPLASTIC
- (D) YELLOW DOUBLE 6" SOLID – THERMOPLASTIC WITH TYPE II A-A @ 20' (REFL) PAVEMENT MARKERS
- (E) YELLOW 6" THERMOPLASTIC SOLID (REFL) & YELLOW 6" BROKEN THERMOPLASTIC (REFL) W/ TYPE II A-A @ 40' C-C REFL. PVM'T MARKING

PAVEMENT NOTES:

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THIS SCOPE OF WORK WHERE NOT SPECIFICALLY COVERED IN THE SPECIFICATIONS OR GEOTECHNICAL REPORT SHALL CONFORM TO ALL APPLICABLE CITY, COUNTY OR TXDOT STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION).
2. THE CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING UTILITY AND STORM DRAIN SYSTEMS PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL, OR BETTER, CONDITION ANY DAMAGE DONE TO EXISTING TREES, BUILDINGS, UTILITIES, FENCES, PAVEMENT, CURBS, OR DRIVEWAYS (NO SEPARATE PAY ITEMS).
4. THE CONTRACTOR SHALL VERIFY ELEVATIONS AND LOCATIONS OF EXISTING FACILITIES AND NOTIFY THE ENGINEER OF ANY CONFLICTS PRIOR TO BEGINNING CONSTRUCTION.
5. NO WORK SHALL BE PERFORMED IN A PUBLIC RIGHT-OF-WAY WITHOUT A PERMIT.
6. ALL SIGNS SHALL CONFORM TO MUTCD, LATEST EDITION.
7. THE CONTRACTOR SHALL SAW CUT EXISTING PAVING, CURB, AND SIDEWALKS TO PROVIDE A SMOOTH TRANSITION. NO JAGGED OR IRREGULAR EDGES WILL BE ALLOWED.

BEXAR COUNTY ROW PERMIT NOTE:

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.

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
1	REVISED RPM TYPE	07/30/25

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
1/31/24

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

ESPADA TRACT UNIT 15

SAN ANTONIO, TEXAS

TURN LANE PLAN

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C2.09

Date: Jan 31, 2024, 9:15am User ID: tcamacho
File: P:\126\32\14\Design\Civil\TL263214.dwg

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MATCHLINE - SEE SHEET C3.01

ESPADA TRACT PHASE 1 (PLAT # 23-11800659)

UNPLATTED A REMAINING PORTION OF 425.799 ACRES MARMAXX OPERATING CORP. (DOC# 20170188144 OPR)

VARIABLE WIDTH SANITARY SEWER EASEMENT TO EXPIRE UPON INCORPORATION INTO FUTURE PLATTED PUBLIC STREET RIGHT-OF-WAY (PLAT # 22-11800659)

ESPADA RIDGE (50' RIGHT-OF-WAY)

CABRAS RANCHO (VARIABLE WIDTH RIGHT-OF-WAY)

AQUEDUCT CREEK (50' RIGHT-OF-WAY)

MINITA CREEK (50' RIGHT-OF-WAY)

DOLORES RIDGE (50' RIGHT-OF-WAY)

PERDIGUERA PLACE (VARIABLE WIDTH RIGHT-OF-WAY) 17.00' 112.05' 17.00'

EXISTING Cabras Rancho / Aqueduct Creek

Minita Creek / Cabras Rancho

Dolores Ridge / Cabras Rancho

Espada Ridge / Perdiguera Place

Aqueduct Creek / Perdiguera Place

Minita Creek / Perdiguera Place

Dolores Ridge / Perdiguera Place

ROAD ENDS 500 FT

RIGHT LANE MUST TURN RIGHT

ONLY

10' GETCTV EASEMENT

1' VNAE

15' BUILDING SETBACK

10' BUILDING SETBACK

5' WATER EASEMENT

VARIABLE WIDTH CVE

SIDEWALK PASSING SPACE SEE DETAIL SHEET C2.08

50'X50' MAINTENANCE ACCESS, SANITARY SEWER, WATER, ELECTRIC, GAS, TELEPHONE, CABLE TELEVISION, AND PUBLIC DRAINAGE EASEMENT TO EXPIRE UPON INCORPORATION INTO FUTURE PLATTED PUBLIC STREET RIGHT-OF-WAY.

VARIABLE WIDTH MAINTENANCE ACCESS, SANITARY SEWER, WATER, ELECTRIC, GAS, TELEPHONE, CABLE TELEVISION, AND PUBLIC DRAINAGE EASEMENT, ENTIRE EASEMENT TO EXPIRE UPON INCORPORATION INTO FUTURE PLATTED PUBLIC STREET RIGHT-OF-WAY (PLAT # 22-11800659)

LIFT STATION ROAD (SEE ESPADA TRACT PHASE 1 CONSTRUCTION PLAN)

TEMPORARY TURNAROUND MAINTENANCE ACCESS, SANITARY SEWER, WATER, ELECTRIC, GAS, TELEPHONE, CABLE TELEVISION, AND PUBLIC DRAINAGE EASEMENT TO EXPIRE UPON INCORPORATION INTO FUTURE PLATTED PUBLIC STREET RIGHT-OF-WAY.

DRAIN "P1" SEE SHEETS C1.05–C1.06

DRAIN "P2" SEE SHEET C1.07

DRAIN "P3" SEE SHEET C1.07

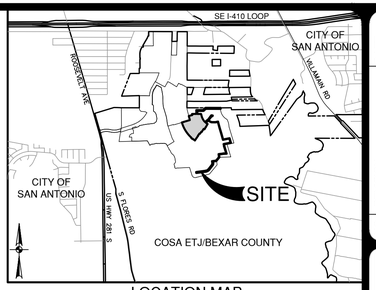
DRAIN "P4" SEE SHEET C1.07

DRAIN "J1" SEE SHEETS C1.02–C1.04

VARIABLE WIDTH DRAINAGE EASEMENT TO EXPIRE UPON INCORPORATION INTO FUTURE PLAT

VARIABLE WIDTH MAINTENANCE ACCESS, SANITARY SEWER, WATER, ELECTRIC, GAS, TELEPHONE, CABLE TELEVISION, AND PUBLIC DRAINAGE EASEMENT TO EXPIRE UPON INCORPORATION INTO FUTURE PLATTED PUBLIC STREET RIGHT-OF-WAY.

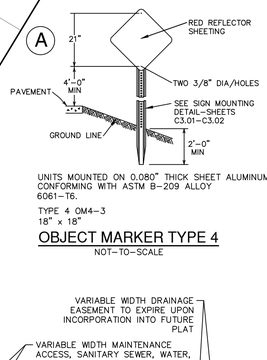
20' SANITARY SEWER EASEMENT TO EXPIRE UPON INCORPORATION INTO FUTURE PLATTED PUBLIC STREET RIGHT-OF-WAY.



LOCATION MAP
NOT-TO-SCALE

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

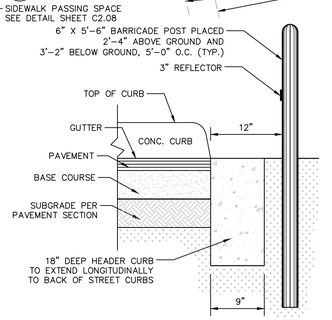
SYMBOL		ITEM NUMBER
	UNIT BOUNDARY	
	CURB INLET	
	PROPOSED DRIVEWAY	
	SIDEWALK (HOMEBUILDER RESPONSIBILITY)	
	SIDEWALK (DEVELOPER'S RESPONSIBILITY)	
	EXISTING WELL	
	TYPE II BLUE RAISED PAVEMENT MARKERS – NO SEPARATE PAY ITEM (N.T.S.)	
	END OF ROAD MARKER OM4–3	
	HEADER CURB W/ BARRICADE POSTS	
CVE	CLEAR VISION EASEMENT	
(A)	WHITE 8" SOLID LINE – THERMOPLASTIC WITH TYPE I–C RPMS	
(B)	LEFT & RIGHT WHITE ARROW STANDARD PAVEMENT MARKING – THERMOPLASTIC	
(C)	WHITE "ONLY" STANDARD PAVEMENT MARKING – THERMOPLASTIC	
(D)	YELLOW DOUBLE 6" SOLID – THERMOPLASTIC WITH TYPE II A–A @ 20' (REFL) PAVEMENT MARKERS	
(E)	YELLOW 6" THERMOPLASTIC SOLID (REFL) & YELLOW 6" BROKEN THERMOPLASTIC (REFL) W/ TYPE II A–A @ 40' C–C REFL. PVM'T MARKING	
Street Name	STREET SIGN	531.57
STOP R1–1 30"X30"		531.3
ROAD ENDS 500 FT W14–1T 36"x36" / W16–2aP 24"x12"		
ONLY R3–5 (30"X36")		
RIGHT LANE MUST TURN RIGHT R3–7 (30"X30")		



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

TYPE 4 OM4-3
18" x 18"

OBJECT MARKER TYPE 4
NOT-TO-SCALE



HEADER CURB & BARRICADE POST DETAIL
NOT-TO-SCALE

BEXAR COUNTY ROW NOTES:

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DRIVEWAY NOTE:

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.

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NO.	REMARK	DATE
1	REVISED SHEET # IN DETAIL, SIGN PLACEMENT, SIDEWALK, DIMENSIONS, SIGN SIZE, LEGEND AND ADDED MATCHLINE	01/30/24
2	REVISED SIDEWALK RAMP	01/30/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED PROFESSIONAL ENGINEER
Bruna Spengler
1/31/24

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

OVERALL SIGNAGE PLAN

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C3.00

Date: Jan 31, 2024, 9:15am User ID: tomacho
File: P:\126\32\14\Design\Civil\SD263214.dwg

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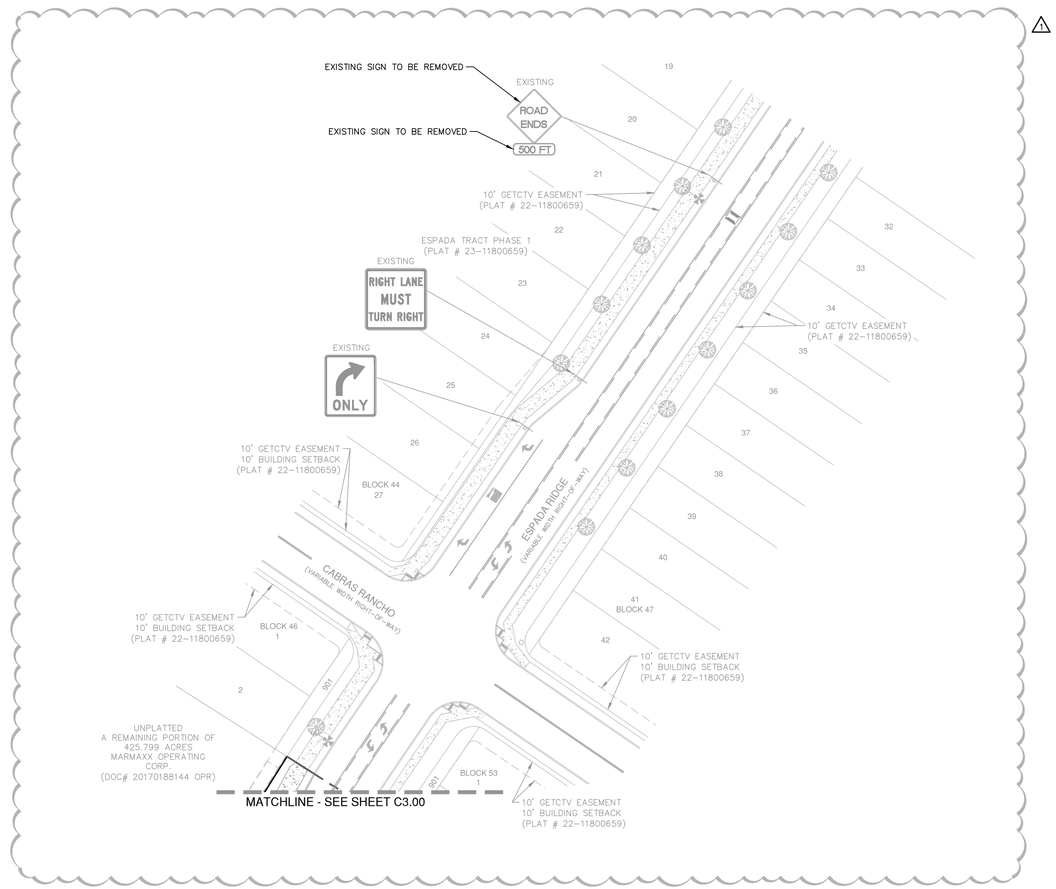

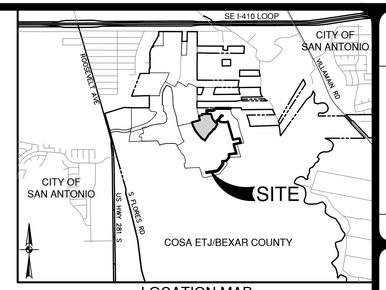

LOCATION MAP
NOT-TO-SCALE

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

SYMBOL		ITEM NUMBER
	UNIT BOUNDARY	
	CURB INLET	
	PROPOSED DRIVEWAY	
	SIDEWALK (HOMEBUILDER RESPONSIBILITY)	
	SIDEWALK (DEVELOPER'S RESPONSIBILITY)	
	EXISTING WELL	
	TYPE II BLUE RAISED PAVEMENT MARKERS – NO SEPARATE PAY ITEM (N.T.S.)	
	END OF ROAD MARKER OM4-3	
	HEADER CURB W/ BARRICADE POSTS	
CVE	CLEAR VISION EASEMENT	
1 (A)	WHITE 8" SOLID LINE – THERMOPLASTIC WITH TYPE I-C RPMS	
(B)	LEFT & RIGHT WHITE ARROW STANDARD PAVEMENT MARKING – THERMOPLASTIC	
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(D)	YELLOW DOUBLE 6" SOLID – THERMOPLASTIC WITH TYPE II A-A @ 20' (REFL) PAVEMENT MARKERS	
(E)	YELLOW 6" THERMOPLASTIC SOLID (REFL) & YELLOW 6" BROKEN THERMOPLASTIC (REFL) W/ TYPE II A-A @ 40' C-C REFL. PVMT MARKING	
Street Name	STREET SIGN	531.57
STOP	R1-1 30"X30"	531.3
ROAD ENDS 500 FT	W14-1T 36"x36" W16-2aP 24"x12"	
ONLY	R3-5 (30"X36") 1	
RIGHT LANE MUST TURN RIGHT	R3-7 (30"X30")	

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NO.	REVISION	DATE
1	ADDED VIEWPORT AND REVISED LEGEND	01/26/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
1/31/24

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

OVERALL SIGNAGE PLAN

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C3.01

Date: Jan 31, 2024, 9:15am User ID: tcamacho
File: P:\726\32\14\Design\Civil\SG12632314.dwg

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DATE: 7/23

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))
SR0 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

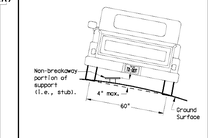
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
MS = Wedge Anchor Steel - (see SMD(TWT))
MP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

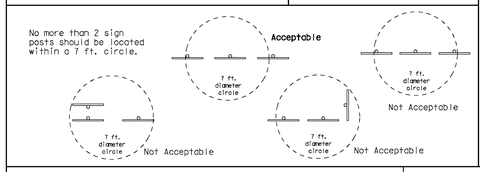
Sign Mounting Designation

P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
(if REQUIRED)
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 K/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT

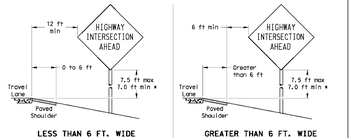


To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).



SIGN LOCATION

PAVED SHOULDERS



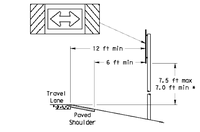
LESS THAN 6 FT. WIDE

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.

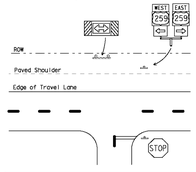
GREATER THAN 6 FT. WIDE

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.

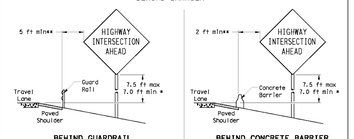
T-INTERSECTION



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 elevation:

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

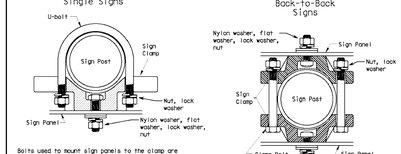
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL



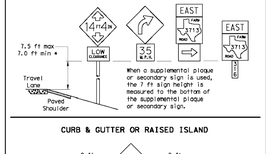
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

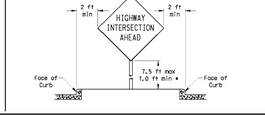
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES

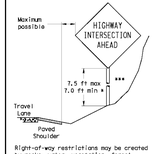


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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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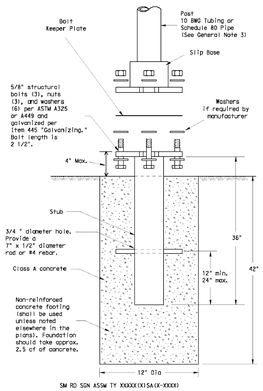
DATE: 7/23

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(1)XX(A-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:

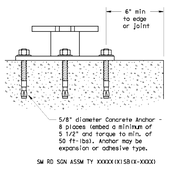
1. Slip base shall be permanently marked to indicate manufacturer, Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   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 0.136"
   Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   Schedule 80 Pipe (2.875" outside diameter)
   0.276" nominal wall thickness
   Steel tubing per ASTM A500 Gr C
   Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the 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, mortar-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 DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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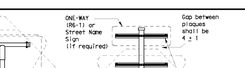
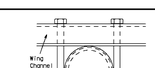
SM RD SGN ASSM TY XXXXX(1)XX(P)



SM RD SGN ASSM TY XXXXX(1)XX(T)

SM RD SGN ASSM TY XXXXX(1)XX(P-BM)

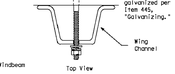
Detail A



Detail B

SM RD SGN ASSM TY XXXXX(1)XX(P)

SM RD SGN ASSM TY XXXXX(1)XX(T)



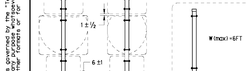
Detail F

Splices shall only be allowed behind the sign substrate.

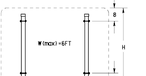
SM RD SGN ASSM TY XXXXX(1)XX(C)

SM RD SGN ASSM TY XXXXX(1)XX(U)

SM RD SGN ASSM TY XXXXX(1)XX(U-WC) (See Note 11)



SM RD SGN ASSM TY SB0(1)XX(U-1EXT)



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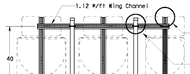

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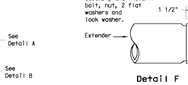
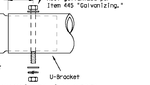


SIDE VIEW

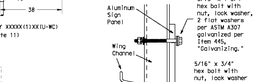
Detail C



Detail E

Detail D

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 plate. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

GENERAL NOTES:

1. Signs shall be supported by one of the following methods:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a sign, the sign shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(CT) TY 10BWG(1)XX(C-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(CT) TY 10BWG(1)XX(C-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(CT) TY 10BWG(1)XX(C-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY SB0(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	60x60-inch signs	TY SB0(1)XX(T)
Warning	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

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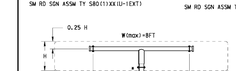
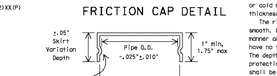
DATE: 7/23

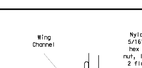


SM RD SGN ASSM TY XXXXX(1)XX(T)
(+ - See Note 12)

All dimensions are in english unless detailed otherwise.



SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(+ - See Note 12)



Detail B

Detail C

Splices shall only be allowed behind the sign substrate.

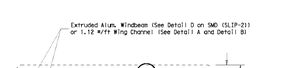
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)

Typical Sign Mount

SM RD SGN ASSM TY SB0(2)XX(P-EXAL)

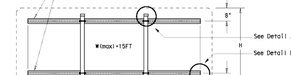
* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

Detail E



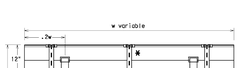
Detail A

See Detail E for clamp installation



Detail D

EXTRUDED ALUMINUM SIGN WITH T BRACKET



Extruded Aluminum Sign With T Bracket

Use Extruded Alum. Windbeam as stifferners See SMD (12-11) for additional details

See Detail E for clamp installation

GENERAL NOTES:

1. Signs shall be supported by one of the following methods:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a sign, the sign shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(CT) TY 10BWG(1)XX(C-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(CT) TY 10BWG(1)XX(C-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(CT) TY 10BWG(1)XX(C-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY SB0(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	60x60-inch signs	TY SB0(1)XX(T)
Warning	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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9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
		DISTRICT		COUNTY	SHEET NO.

267

DATE: 7/23

NO.	REVISION	DATE

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
1/31/24

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

TxDOT SIGN MOUNTING DETAILS

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C3.02

Date: Jan 31, 2024, 9:16am User ID: teamacho
File: P:\12632\324\14\Design\Civil\SD0712632214.dwg
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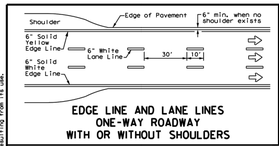
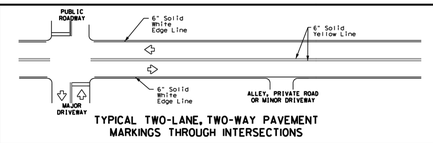
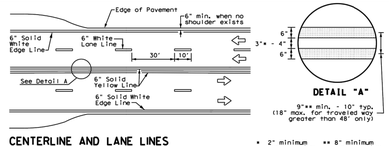
EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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



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

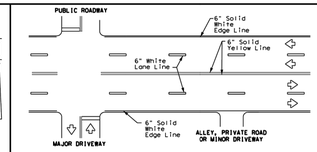


DETAIL "A"

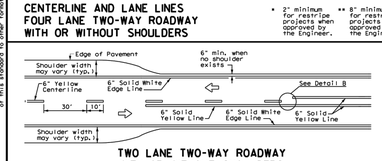
* 2" minimum for restripe projects when approved by the Engineer.

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

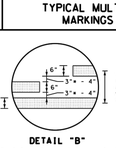
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

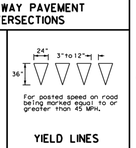


DETAIL "B"

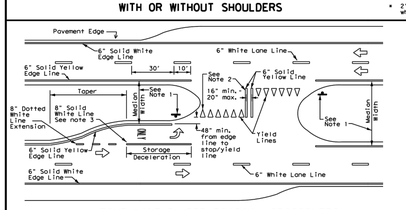


* 2" minimum for restripe projects when approved by the Engineer.

YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS



NOTES

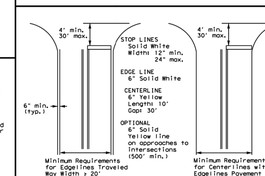
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling 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.

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.



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

Texas Department of Transportation — Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-22

FILE:	pm1-22.dgn	DN:	CK:	DW:	CK:
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11-78 8-00 6-20		DIST	COUNTY		SHEET NO.
8-85 5-03 10-22					
9-98 2-12					

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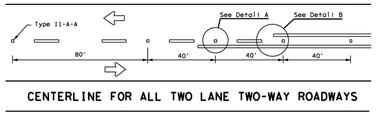
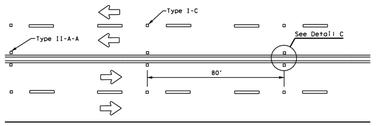
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

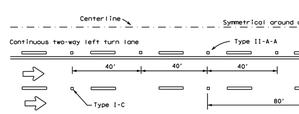
CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



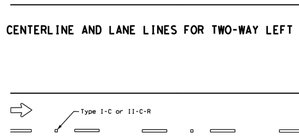
CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS



CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE

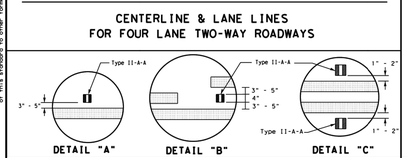


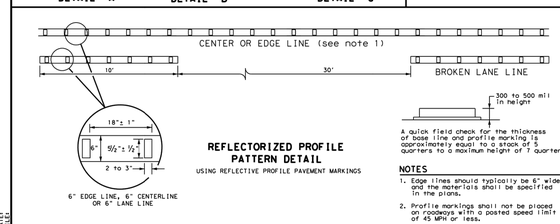
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)



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

See Note 3.





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

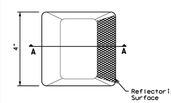
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

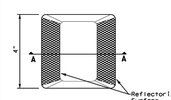
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians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

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

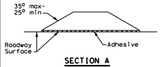
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

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:
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4-77 8-00 6-20		DIST	COUNTY		SHEET NO.
4-92 2-10 12-22					
5-00 2-12					

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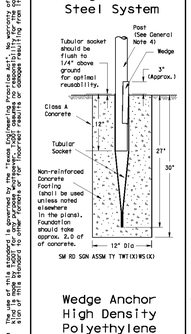
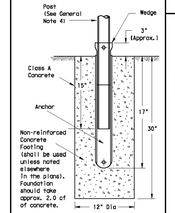
Wedge Anchor Steel System



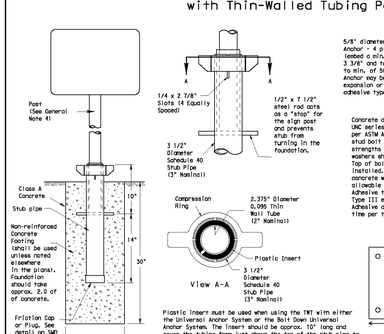
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System



SMD RD SGN ASSM TY TWT(X)WP(X)

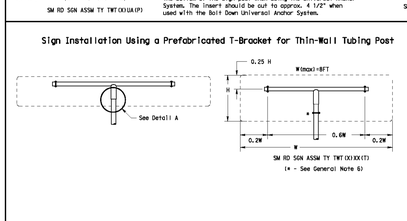
Universal Anchor System with Thin-Walled Tubing Post



SM RD SGN ASSM TY TWT(X)UA(P)

SM RD SGN ASSM TY TWT(X)UB(P)

Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post



SM RD SGN ASSM TY TWT(X)XX(CT)

(+ - See General Note 6)

Plastic Insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The Insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the slip post when using the Universal Anchor System. The Insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

NOTE

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

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 15 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: https://www.txdot.gov/business/producer-list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing 12.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS or 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
   165 minimum elongation in 2"
   Wall thickness tunguard shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.360" 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 meeting ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamps 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 slotted.
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(SGN) 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 approximately 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 slip post.
6. Insert the slip 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(SGN) 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.

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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2 of 2

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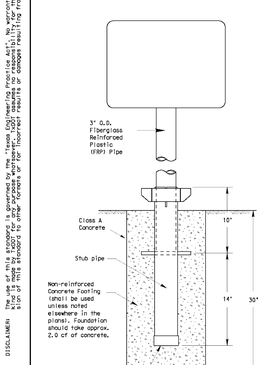
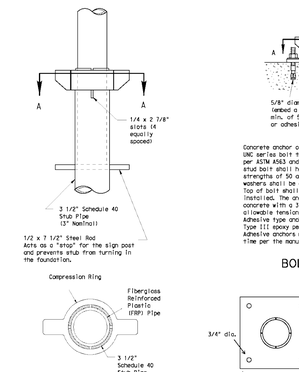
Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post

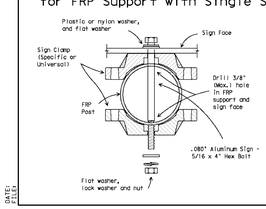


SM RD SGN ASSM TY FRP(X)UA(P)

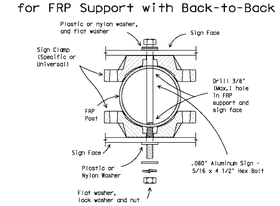


SM RD SGN ASSM TY FRP(X)UB(P)

Typical Sign Mounting Detail for FRP Support with Single Sign



Typical Sign Mounting Detail for FRP Support with Back-to-Back Signs



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: https://www.txdot.gov/publications/traffic.htm

FRP POST REQUIREMENTS

1. Materials shall conform to the requirements of Departmental Material Specification DMS-4610 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", - 0.01".
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(SGN) 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 2022		TxDOT	JULY 2022	TxDOT	JULY 2022	TxDOT	JULY 2022
9-08	REVISIONS	DIST	SECT	JOB		HIGHWAY	
		"ES"		DistCT		SHEET No.	

2 of 2

NO.	REVISION	DATE

STATE OF TEXAS — BRUNA F. SPENGLER — 127547 — LICENSED PROFESSIONAL ENGINEER

Bruna Spengler 1/31/24

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

TxDOT SIGN MOUNTING DETAILS

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C3.03

Date: Jan 31, 2024, 9:16am User ID: teamacho
File: P:\12632\14\Design\Civil\SGD12632214.dwg
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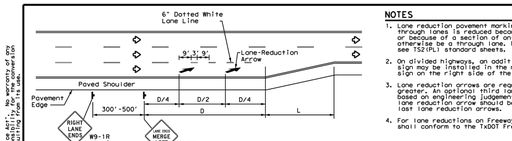


LANE REDUCTION

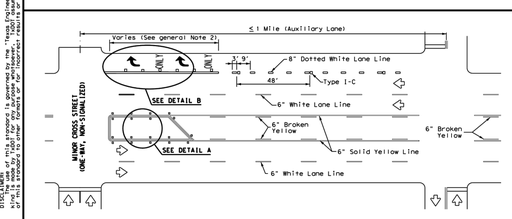
NOTES

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 1521(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.

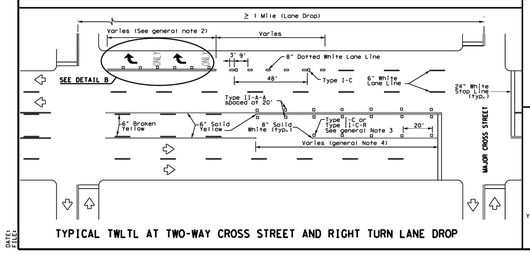
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

GENERAL NOTES

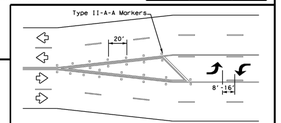
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of sufficient length. Lane use word and arrow markings of words and arrow symbols may be used in other lanes 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 I-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.



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



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

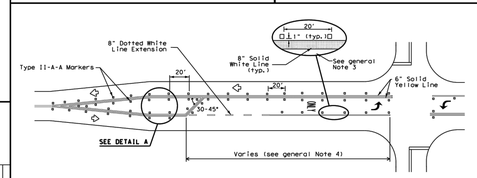


A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

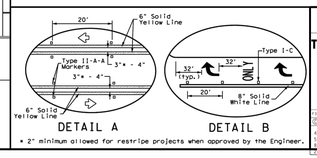
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

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 TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A

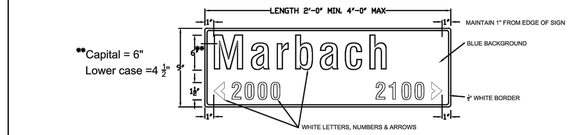
DETAIL B

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

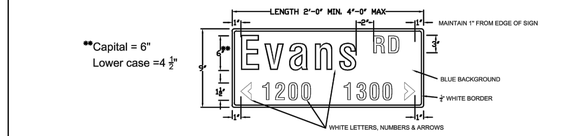
Texas Department of Transportation — Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-22

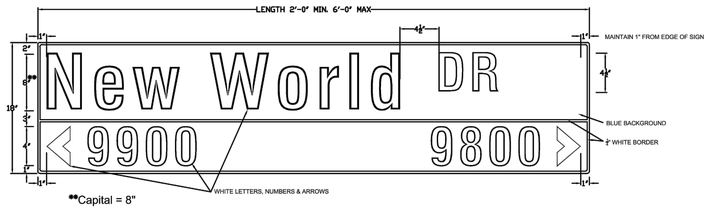
FILE:	pm3-22.dgn	DN:	CK:	DW:	CK:
©TxDOT	December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS					
9-98	5-03				
5-00	2-10 12-22				
8-00	2-12	DIST	COUNTY		SHEET NO.



9" GROUND MOUNT STREET NAME SIGNS



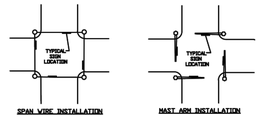
9" GROUND MOUNT STREET NAME SIGNS WITH STREET DESIGNATION



18" OVERHEAD STREET NAME SIGNS

	18" OVERHEAD SIGN	9" GROUND MOUNT SIGNS
HEIGHT	18" (381 mm)	9" (228 mm)
LENGTH	48" (1200 mm) MIN. 72" (1800 mm) MAX. 6" (150mm) 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



SPAN WIRE INSTALLATION

MAST ARM INSTALLATION

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 - 09e1

Bexar County Public Works

Street Name Sign Details

SHEET 1

NO.	REVISION	DATE

STATE OF TEXAS — BRUNA F. SPENGLER — 127547 — LICENSED — PROFESSIONAL ENGINEER

Bruna Spengler 1/31/24

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS
TxDOT SIGN MOUNTING DETAILS

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C3.04

Date: Jan 31, 2024, 10:50am User ID: jonathongroff
File: P:\126\32\14\Design\Civil\SIGDT12632I4.dwg
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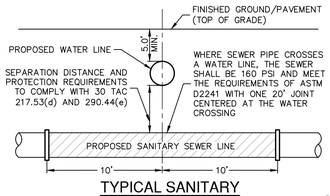
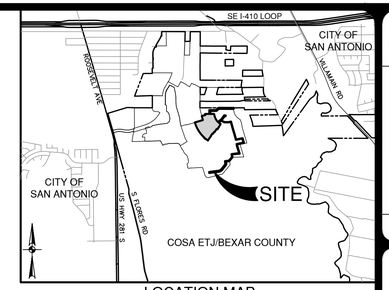


TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE



LOCATION MAP

NOT-TO-SCALE

SCALE: 1"= 50'

0' 50' 100' 150'

WATER LEGEND

PROJECT LIMITS	
EXISTING WATER	FIRE HYDRANT
EXISTING SEWER	MANHOLE
PROPOSED SEWER	
PROPOSED WATER	FIRE HYDRANT
PROPOSED 3/4" SINGLE SERVICE WITH 5/8" METER	
PROPOSED 1" DUAL SERVICE WITH 5/8" METER	
3/4" SINGLE IRRIGATION SERVICE WITH 5/8" METER	IRR
JOINT RESTRAINT	
EXISTING WELL	
VEHICULAR NON ACCESS EASEMENT	VNAE
CLEAR VISION EASEMENT	CVE

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.

ROW PERMIT NOTE:

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

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 (565) FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 565 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.

WATER (SAWS PRESSURE ZONE 750)

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 139 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 184.54 L.F.-8"PVC 3858.67 L.F.-8"PVC PLAT NO. 23-11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23-1127

NO.	REVISION	DATE

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED PROFESSIONAL ENGINEER
12/12/23

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

ESPADA TRACT UNIT 15

SAN ANTONIO, TEXAS

OVERALL WATER DISTRIBUTION PLAN

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C4.00

Date: Dec 05, 2023, 10:04am User ID: tcamacho
File: P:\1263\32\14\Design\Civil\GW263214.dwg

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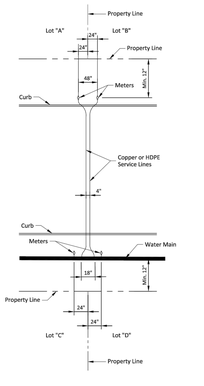
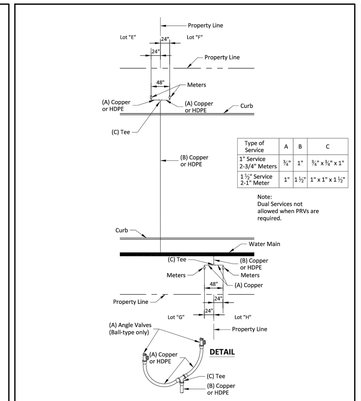


SINGLE SERVICE LINE - SINGLE METER

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 3



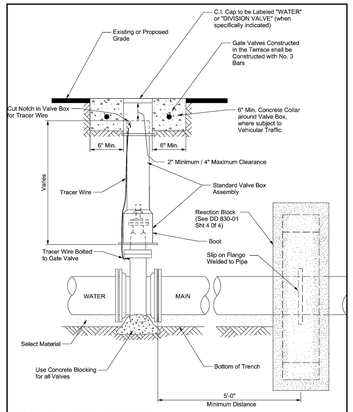
DETAIL

Type of Service	A	B	C
1" Service 2-3/4" Meters	¾"	1"	¾" x ¾" x 1"
1 ½" Service 2-1" Meter	1"	1 ½"	1" x 1" x 1 ½"

Note:
Dual Services not allowed when PRVs are required.

SINGLE SERVICE LINE - DUAL METER

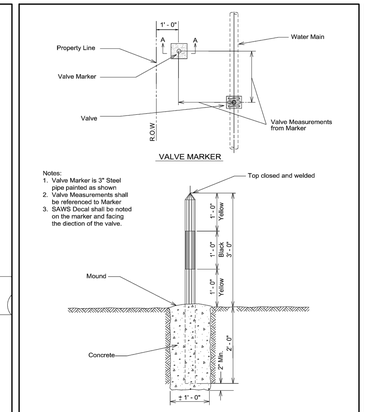
PROPERTY OF	TYPICAL	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	SERVICE ARRANGEMENT	March 2008	December 2018
		DD-824-05	SHEET 2 OF 3



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



VALVE MARKER

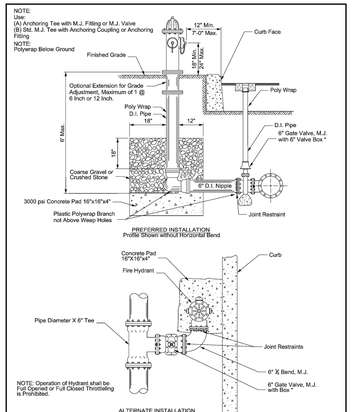
Notes:
1. Valve Marker is 3" Steel pipe painted as shown
2. Valve Measurements shall be referenced to Marker
3. SAWS Decal shall be noted on the marker and facing the diection of the valve.

SECTION A-A

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

NOTE:
Use:
(A) Anchoring Tee with M.J. Fitting or M.J. Valve
(B) Std. M.J. Tee with Anchoring Coupling or Anchoring Fitting

NOTE:
Polywrap Below Ground



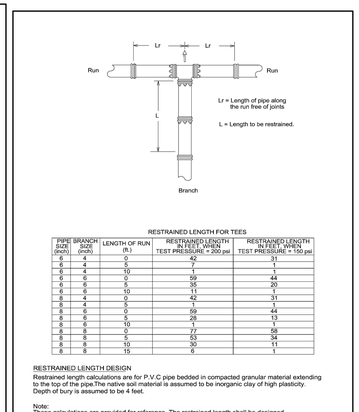
NOTE: Operation of Hydrant shall be Full Opened or Full Closed Throttelling is Prohibited.

* Resilient Seat

PREFERRED INSTALLATION
Profile Shown without Horizontal Bend

ALTERNATE INSTALLATION
Plan View Shown with Bend

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 1



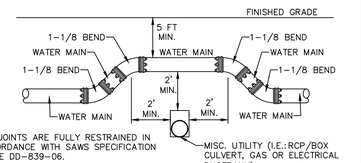
RESTRAINED LENGTH FOR TEES

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	7
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



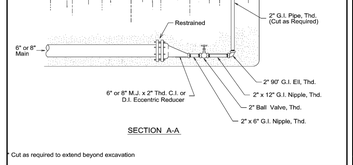
L=LENGTH TO BE RESTRAINED

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 based 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

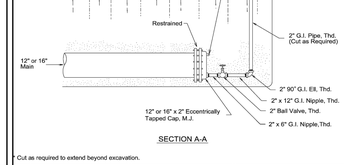


PIPE SIZE (inch)	BEND ANGLE (deg.)	LOW SIDE DEPTH	UPPER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 200 psi	LOWER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 200 psi	UPPER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 150 psi	LOWER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 150 psi
6	45	5	24	5	18	4
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	16	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

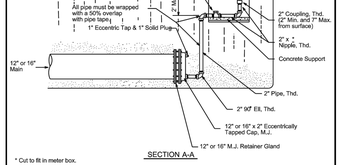


PIPE SIZE (inch)	SMALL SIZE (inch)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	4	30	23
8	4	55	42
8	6	32	24
12	4	80	60
12	6	80	60
12	8	56	43

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

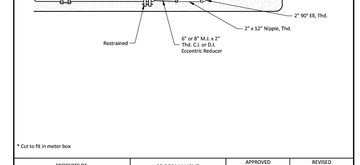


PIPE SIZE (inch)	BEND ANGLE (deg)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	90	23	17
6	45	9	7
6	22.5	5	3
6	11.25	2	2
8	90	30	22
8	45	12	9
8	22.5	6	4
8	11.25	3	2
12	90	43	32
12	45	18	13
12	22.5	8	6
12	11.25	4	3

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	RESTRAINED LENGTHS FOR HORIZONTAL BENDS	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		MARCH 2008	MAY 2013
		DD-839-08	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	18	13
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	RESTRAINED LENGTHS FOR HORIZONTAL BENDS	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		MARCH 2008	AUG 2019
		DD-839-08	SHEET 1 OF 1

REFER TO SAWS DETAIL DET-834-01

FIRE HYDRANT INSTALLATION
NOT-TO-SCALE

REFER TO SAWS DETAIL DD-834-01

FIRE HYDRANT INSTALLATION
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

* 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 3 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	MAY 2013
		DD-844-01	SHEET 4 OF 4

* Cut to fit in meter box.

PROPERTY OF	2" PERMANENT BLOW-OFF ASSEMBLY ON 12" & 16" MAINS	APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS		MARCH 2008	MAY 2013
		DD-844-02	SHEET 5 OF 5

* Cut to fit in meter box

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 5

WATER (SAWS PRESSURE ZONE 750)

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 139 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 184.34 L.F.-12"PVC / 3858.67 L.F.-8"PVC PLAT NO. 23-11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23-1127

DATE

NO.	REVISION

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

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED
PROFESSIONAL ENGINEER
12/12/23

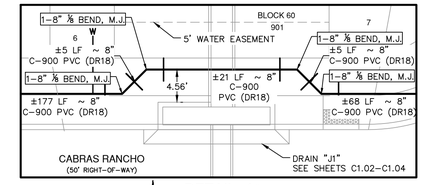
ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

OVERALL WATER DISTRIBUTION DETAILS & NOTES

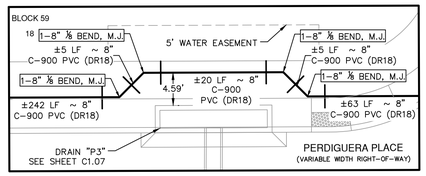
PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C4.01

Date: Dec 05, 2023, 10:05am User ID: tcamacho
File: P:\126\32\14\Design\Civil\GWDT126321d.dwg

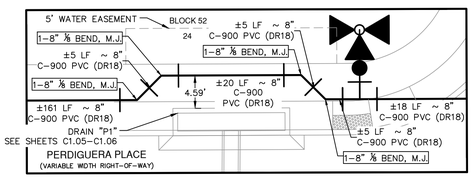
THIS DOCUMENT HAS BEEN PRODUCED FROM MATERIAL THAT WAS STORED AND/OR TRANSMITTED ELECTRONICALLY AND MAY HAVE BEEN INADVERTENTLY ALTERED. RELY ONLY ON FINAL HARDCOPY MATERIALS BEARING THE CONSULTANT'S ORIGINAL SIGNATURE AND SEAL. AERIAL IMAGERY PROVIDED BY GOOGLE© UNLESS OTHERWISE NOTED. Imagery © 2016,CAPCOG,Digital Globe,Texas Orthoimagery Program, USDA Farm Service Agency.



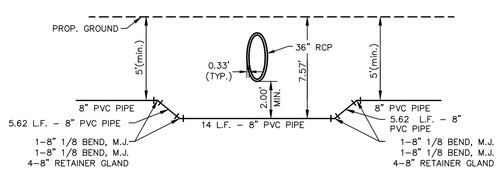
DETAIL "A"
SCALE: 1" = 10'
(SEE SHEET C4.00)



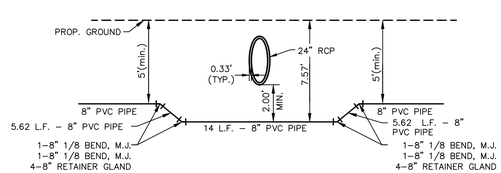
DETAIL "B"
SCALE: 1" = 10'
(SEE SHEET C4.00)



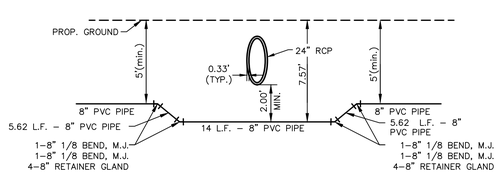
DETAIL "C"
SCALE: 1" = 10'
(SEE SHEET C4.00)



DRAIN/WATER CROSSING DETAIL "D"
NOT TO SCALE
(SEE SHEET C4.00)



DRAIN/WATER CROSSING DETAIL "F"
NOT TO SCALE
(SEE SHEET C4.00)



DRAIN/WATER CROSSING DETAIL "E"
NOT TO SCALE
(SEE SHEET C4.00)

SAWS CONSTRUCTION NOTES
(LAST REVISED JANUARY 2022)

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 DIVISION 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.

11. 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.

    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 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.

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 565 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 565 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.

WATER (SAWS PRESSURE ZONE 750)

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403–6200 FAX# N/A
SAWS BLOCK MAP# 1705&36 TOTAL EDU'S 139 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 184.34 L.F.–12"PVC / 3858.67 L.F.–8"PVC PLAT NO. 23–11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23–1127

NO.	REVISION	DATE

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

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED
PROFESSIONAL ENGINEER
10/10/23

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS
OVERALL WATER DISTRIBUTION DETAILS & NOTES

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C4.02

Date: Oct 27, 2023, 2:11pm User ID: tcamacho
File: P:\126\32\14\Design\Civil\OWDT1263214.dwg

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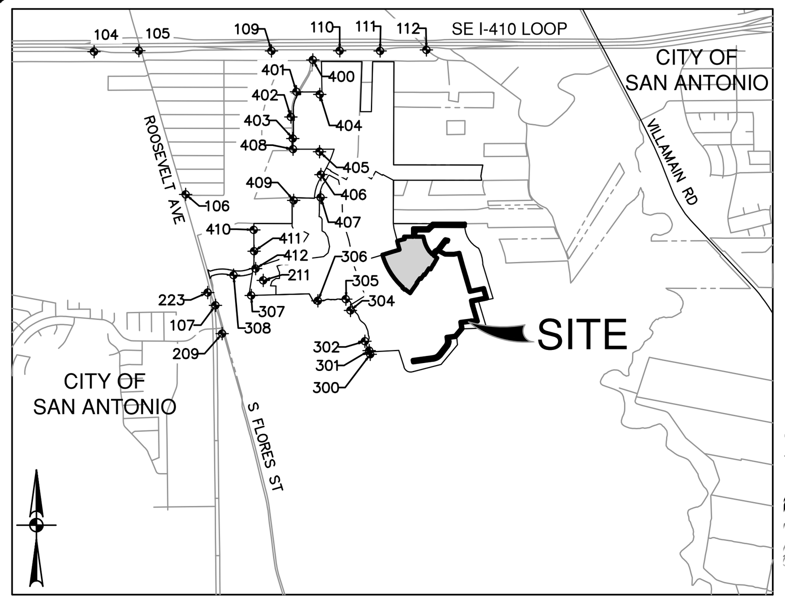
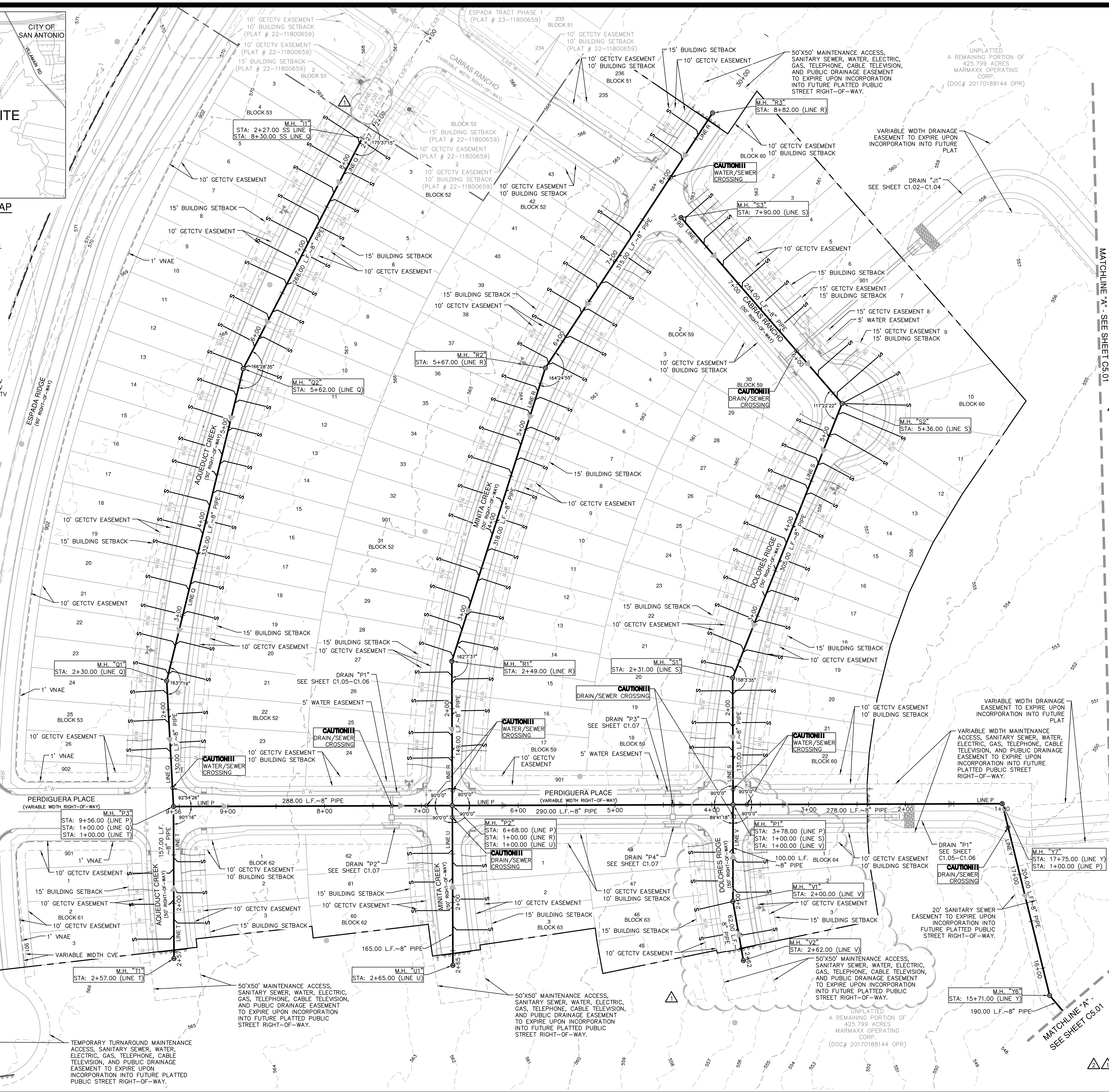


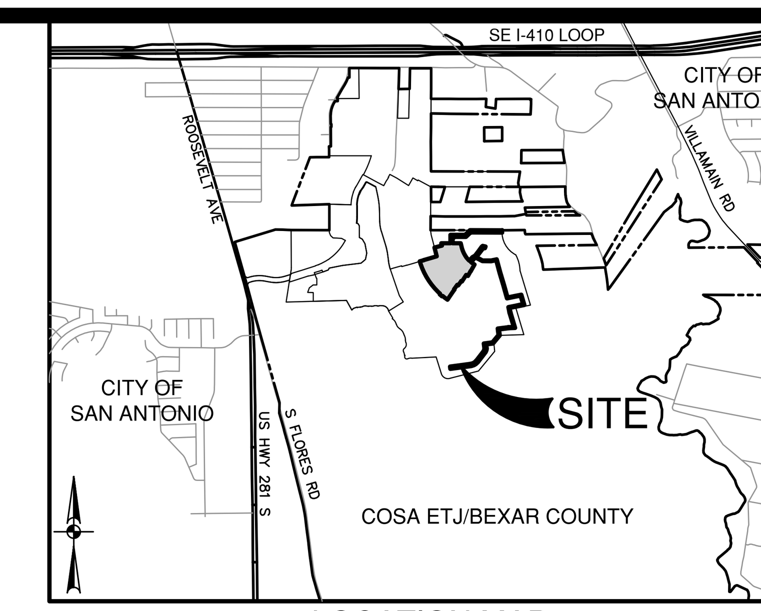
BENCHMARK LOCATION MAP

NOT-TO-SCALE

BENCHMARKS

NUMBER	NORTHING/EASTING		ELEVATION	DESCRIPTION
104	2134239.64	13667131.27		SIGTV
105	2135225.14	13667152.88		SIGTV
106	2136253.51	13663994.19		SIGTV
107	2136910.77	13661555.14		SIGTV
109	2138141.40	13667147.99		SIGTV
110	2139641.31	13667151.22		SIGTV
111	2140529.66	13667147.55		SIGTV
112	2141547.03	13667170.87		SIGTV
209	2137056.40	13660931.88	583.16	SIRCTV
211	2137959.03	13662102.8	573.79	SIRCTV
223	2136739.20	13661836.78	580.77	SIRCTV
300	2140313.48	13660477.95	545.31	SIRCTV
301	2140289.02	13660558.62	545.17	SIRCTV
302	2140195.36	13660766.07	541.92	SIRCTV
304	2139877.28	13661442.05	538.56	SIRCTV
305	2139775.87	13661689.85	540.28	SIRCTV
306	2139161.43	13661654.29	552.08	SIRCTV
307	2137696.58	13661770.81	576.06	SIRCTV
308	2137306.70	13662217.96	575.45	SIRCTV
400	2139049.73	13666948.91	578.74	SIRCTV
401	2138689.77	13666250.38	579.62	SMAGTV
402	2138565.79	13665696.4	577.16	SMAGTV
403	2138610.70	13665224.03	574.46	SMAGWTV
404	2139202.41	13666191.18	576.42	SIRCTV
405	2139197.12	13664932.25	575.39	SIRCTV
406	2139228.36	13664429.15	566.28	SIRCTV
407	2139224.11	13663926.62	556.61	SIRCTV
408	2138615.57	13664987.14	572.67	SIRCTV
409	2138628.71	13663860.6	572.89	SIRCTV
410	2137752.56	13663213.55	568.33	SIRCTV
411	2137759.32	13662745.14	575.58	SIRCTV
412	2137791.62	13662363.23	568.83	SIRCTV





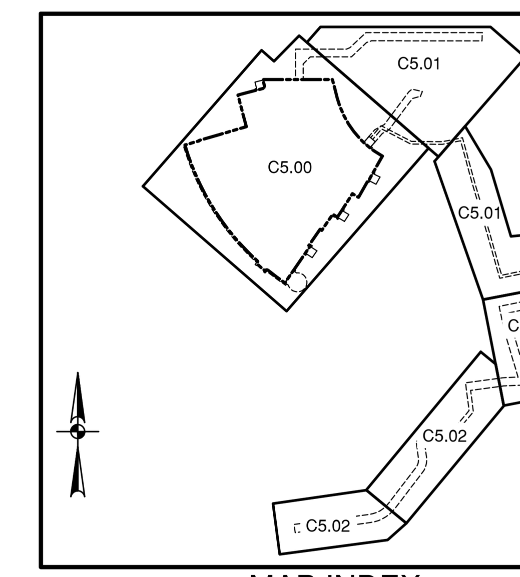
LOCATION MAP

NOT-TO-SCALE

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

SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER
- EXISTING SEWER
- PROPOSED SEWER (MANHOLE)
- PROPOSED WATER (FIRE HYDRANT)
- PROPOSED SEWER LATERAL
- FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX
- EXISTING OIL WELL
- CLEAR VISION EASEMENT — CVE



MAP INDEX

NOT-TO-SCALE

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LOWER - EAST SEWERSHED - DOS RIOS/LEON CREEK

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403–6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 138 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 2899 L.F.~12"PVC 5217 L.F.~8"PVC PLAT NO. 23-11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23–1603

NO.	REVISION	DATE
1	REVISED EX SAWS JOB #, SAWS BLOCK, LEGEND AND SEWER LINE V	12/22/23
2	REVISED SAWS BLOCK	02/01/24

STATE OF TEXAS — BRUNA F. SPENGLER — 127547 — LICENSED PROFESSIONAL ENGINEER
Bruna Spengler 2/1/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS
OVERALL SANITARY SEWER PLAN

PLAT NO. 23-11800231
JOB NO. 12632–14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C5.00

Date: Feb 02, 2024, 9:35am User ID: tcamacho
File: P:\126\32\14\Design\Civil\OS1263214.dwg

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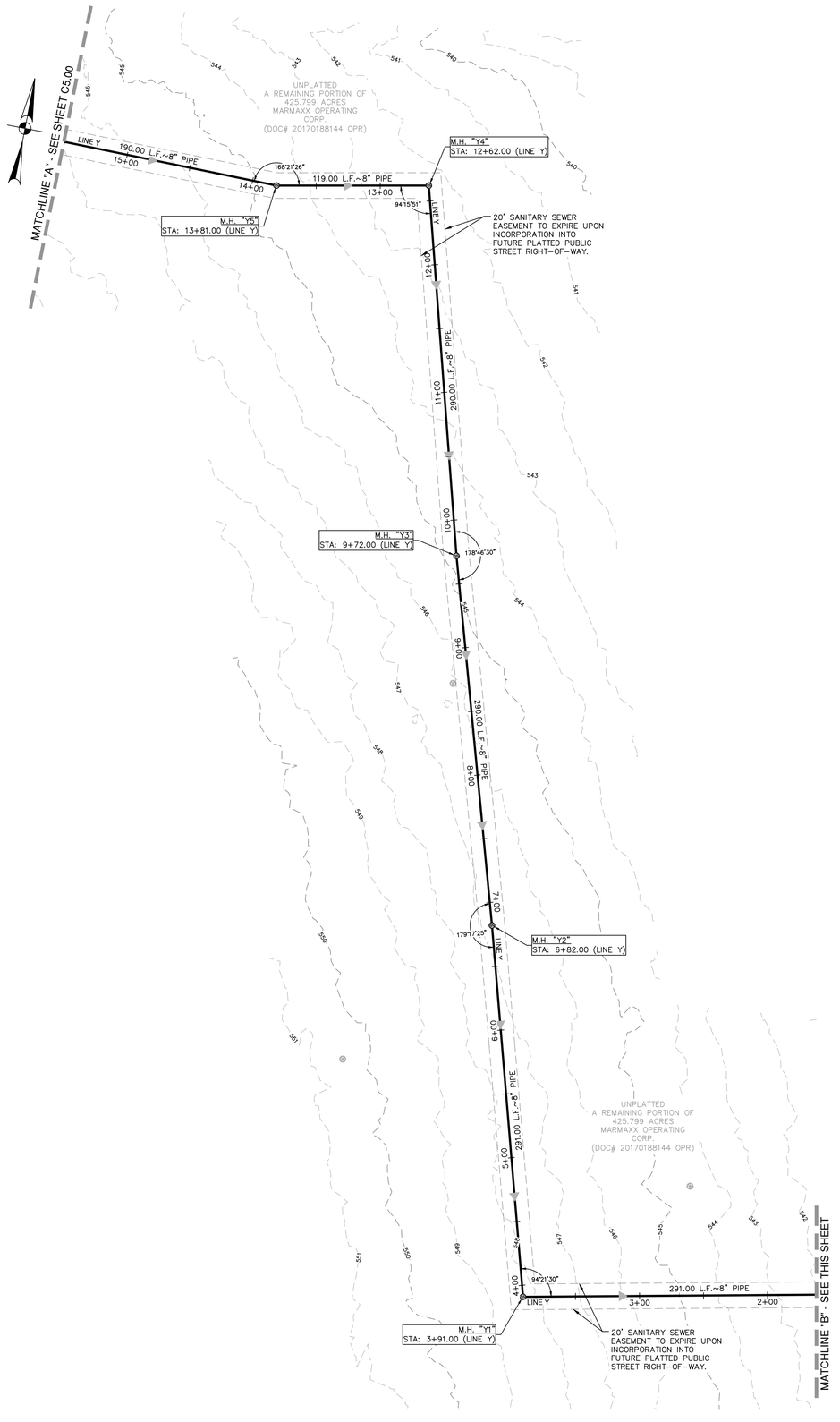

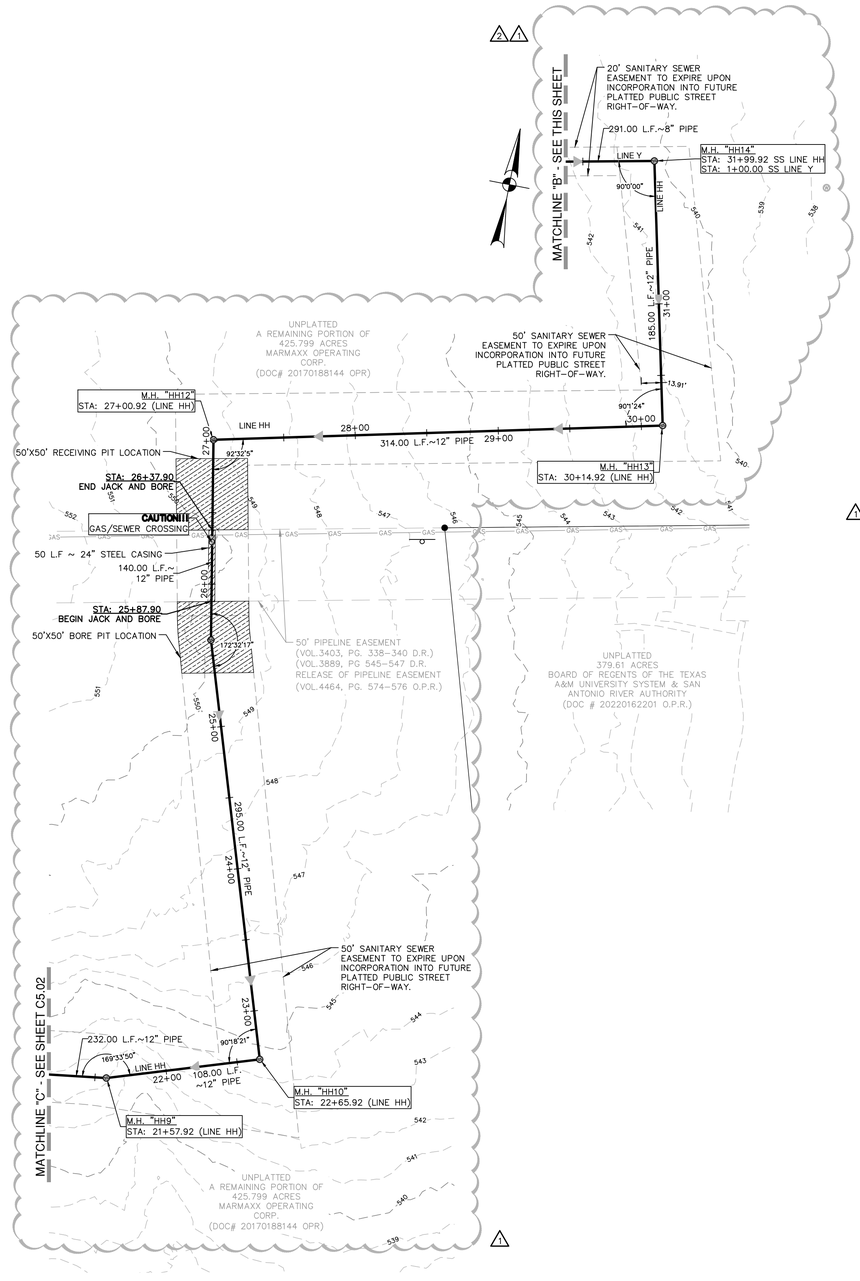

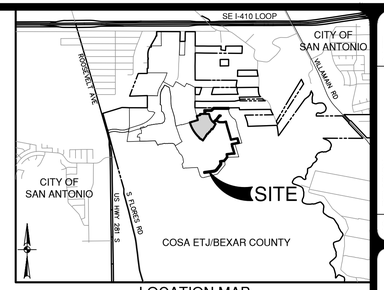

LOCATION MAP
NOT-TO-SCALE

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

SEWER LEGEND

PROJECT LIMITS	
EXISTING WATER	W
EXISTING SEWER	SS, MANHOLE
PROPOSED SEWER	S
PROPOSED WATER	FIRE HYDRANT, W
PROPOSED SEWER LATERAL	S
FINISHED FLOOR ELEVATION FOR SEWER	FF = XXXX.XX
EXISTING OIL WELL	
CLEAR VISION EASEMENT	CVE

CAUTION!!

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LOWER - EAST SEWERSHED - DOS RIOS/LEON CREEK

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 138 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 2899 LF.~12"PVC 5217 LF.~8"PVC PLAT NO. 23-11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23-1603

NO.	REMSION	DATE
1	REVISED SEWER ESMT, SAWS BLOCK AND LEGEND	12/22/23
2	REVISED SS LINE HH AUGNMENT AND SAWS BLOCK	02/01/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
2/1/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

OVERALL SANITARY SEWER PLAN

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C5.01

Date: Feb 02, 2024, 9:35am User ID: tcamacho
File: P:\12632\14\Design\Civil\052632214.dwg
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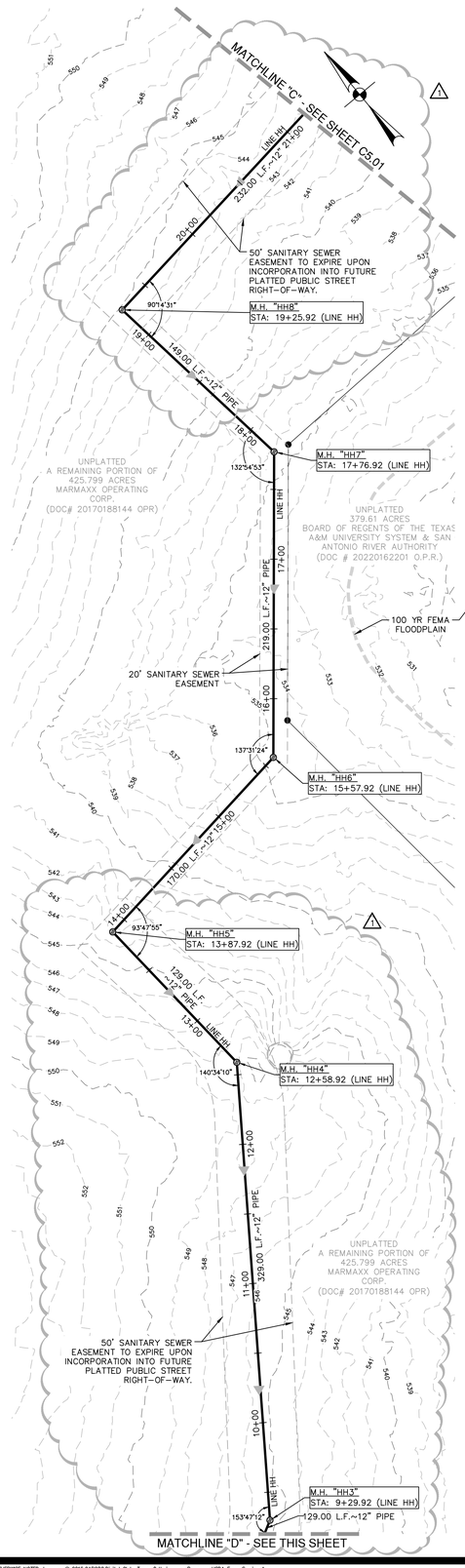

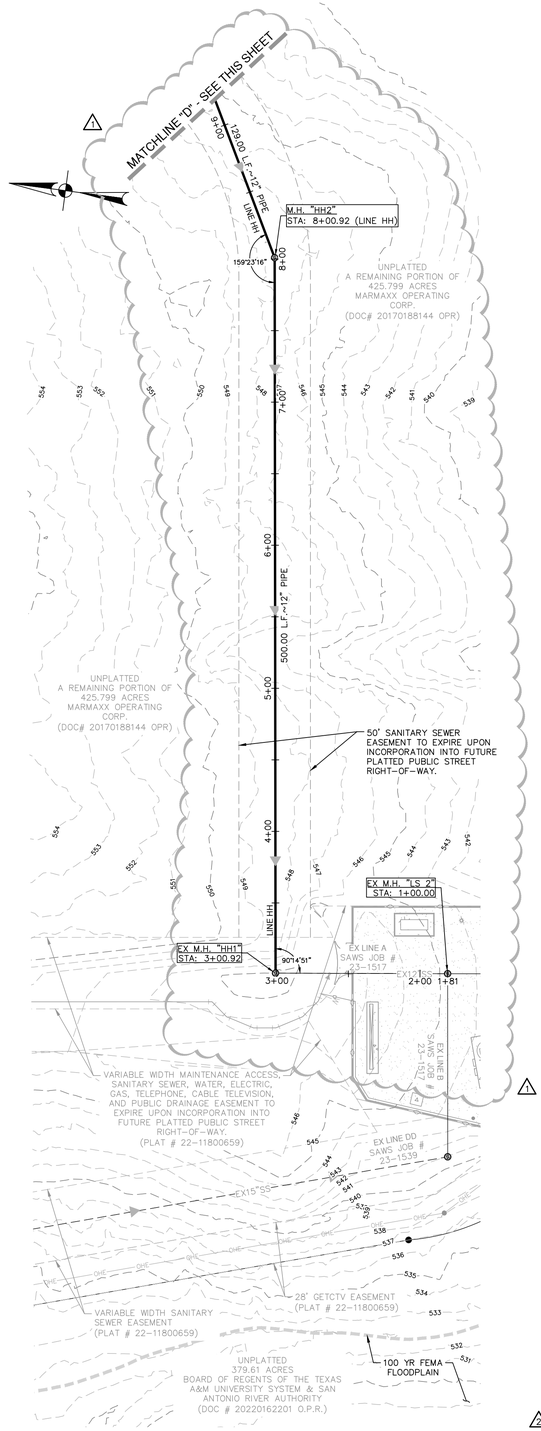

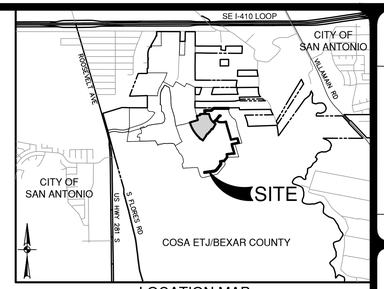

LOCATION MAP
NOT-TO-SCALE

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

SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER — W —
- EXISTING SEWER — SS —
- PROPOSED SEWER — S — MANHOLE
- PROPOSED WATER — W — FIRE HYDRANT
- PROPOSED SEWER LATERAL — S
- FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX
- 1 EXISTING OIL WELL
- CLEAR VISION EASEMENT — CVE

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NUMBER OF LOTS 138 SAWS JOB NO. 23-1603

NO.	REVISION	DATE
1	REVISED SEWER ESMT, SAWS BLOCK AND LEGEND	12/22/23
2	REVISED SAWS BLOCK	02/01/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
2/1/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
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OVERALL SANITARY SEWER PLAN

PLAT NO. 23-11800231
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DESIGNER JG
CHECKED DW DRAWN TC
SHEET C5.02

Date: Feb 02, 2024, 9:35am User ID: tcamacho
File: P:\126\32\14\Design\Civil\GIS\263214.dwg

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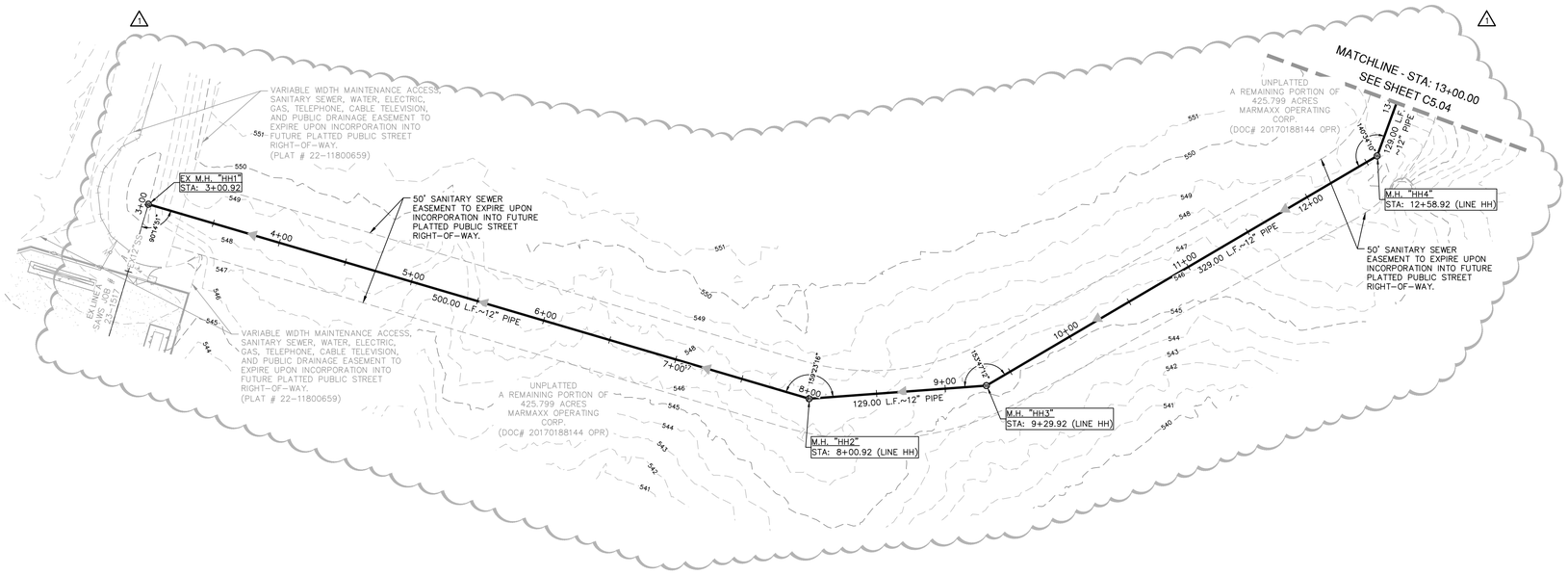
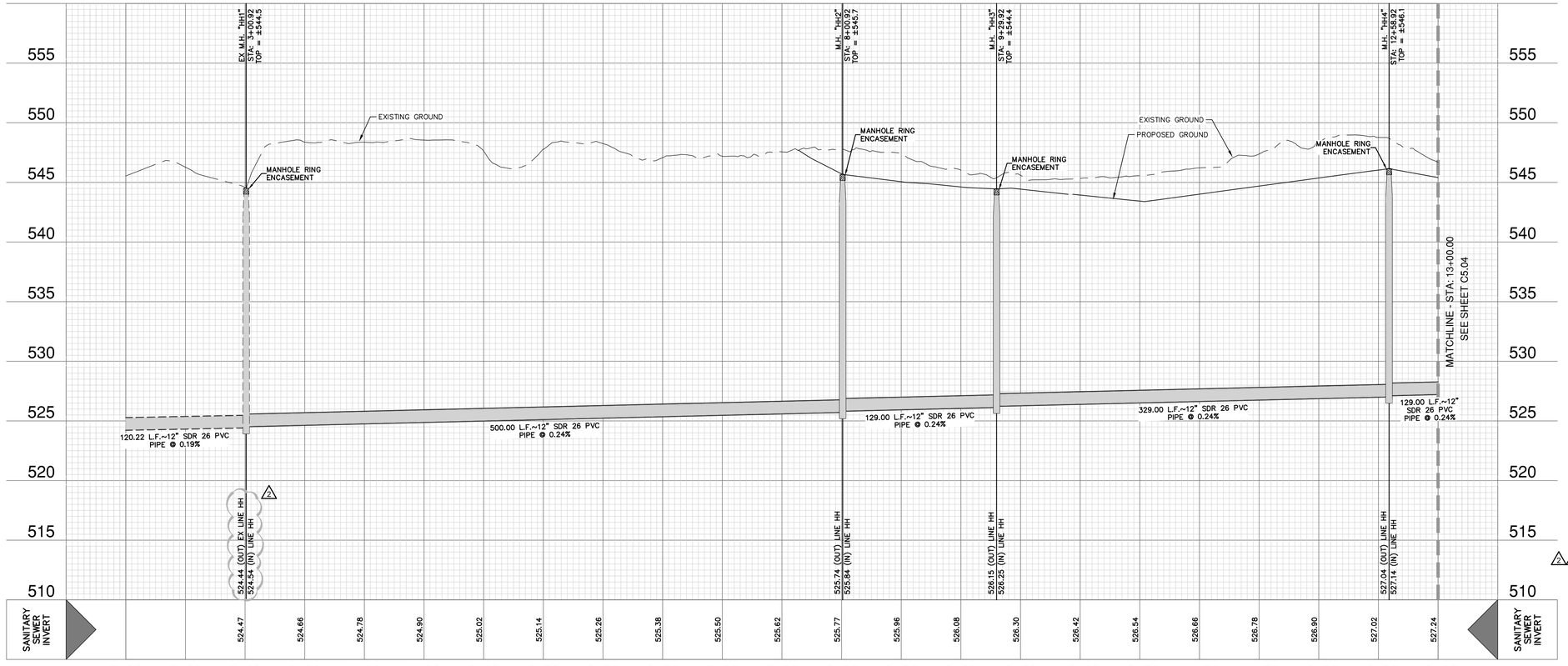
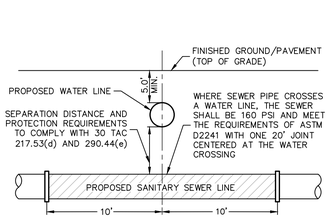


SANITARY SEWER LINE "HH"
STA. 2+20.22 TO 12+50.00

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





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

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:

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2 1 LOWER - EAST SEWERSHED - DOS RIOS/LEON CREEK

DEVELOPER'S NAME:	LENNAR HOMES OF TEXAS
ADDRESS:	100 NE LOOP 410, STE. 1155
CITY:	SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE#	(210) 403-6200 FAX# N/A
SAWS BLOCK MAP#	170536 TOTAL EDU'S 138 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE:	7809 L.F.~12"PVC 5217 L.F.~8"PVC PLAT NO. 23-11800231
NUMBER OF LOTS	138 SAWS JOB NO. 23-1603

NO.	REVISION	DATE
1	REVISED SEWER ESMT, SAWS BLOCK AND LEGEND	12/22/23
2	REVISED INVERT NAME AND SAWS BLOCK	02/01/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
2/1/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

SS LINE HH PLAN & PROFILE (STA 2+02.20 TO 12+50.00)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C5.03

Date: Feb 02, 2024, 9:36am User ID: tcampotho
File: P:\126\32\14\Design\Civil\SS\263214 LINE HH.dwg

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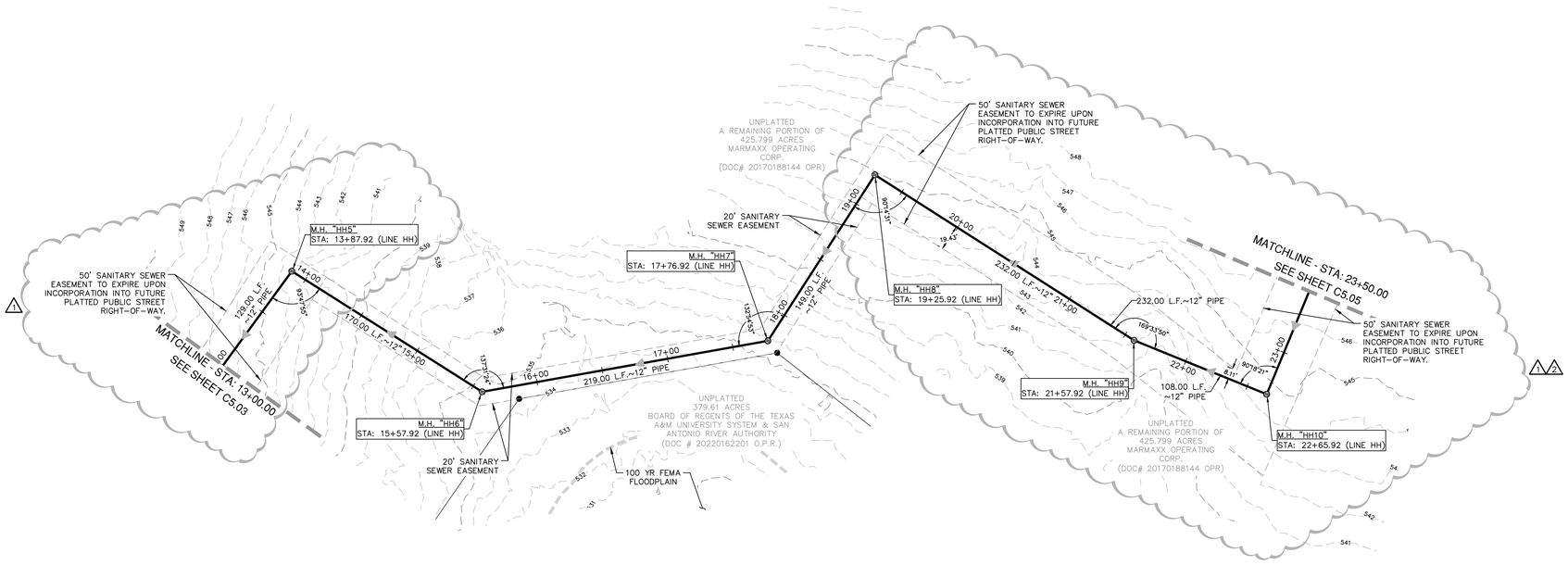
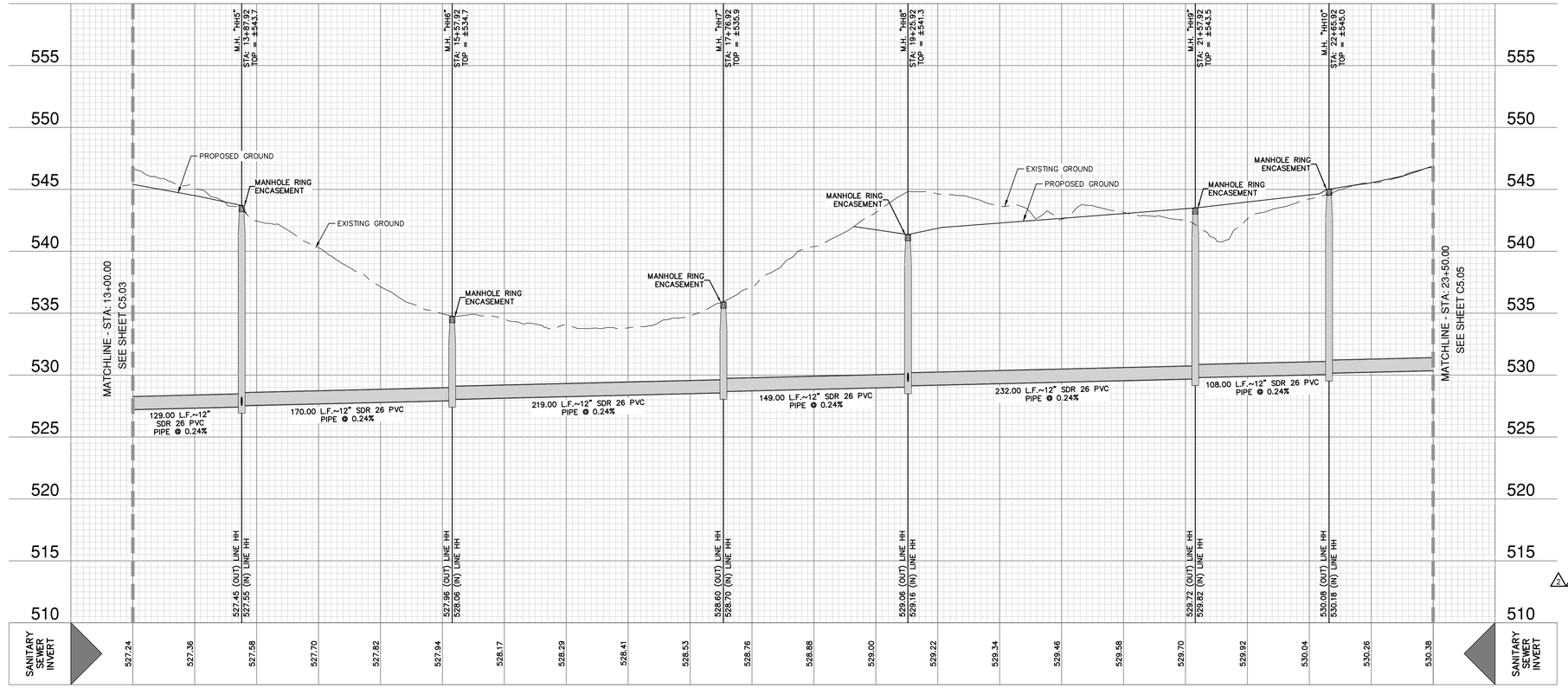
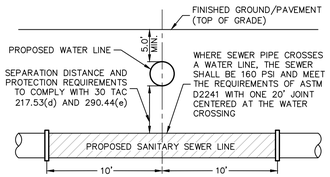


SANITARY SEWER LINE "HH"
STA. 12+50.00 TO 23+50.00

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





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

CAUTION!!

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2 1 LOWER - EAST SEWERSHED - DOS RIOS/LEON CREEK

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 138 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 1809 L.F.~12"PVC / 5217 L.F.~8"PVC PLAT NO. 23-11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23-1603

NO.	REVISION	DATE
1	REVISED SEWER ESMT, SAWS BLOCK AND LEGEND	12/22/23
2	ADD DIMENSIONS AND REVISED SAWS BLOCK	02/01/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED PROFESSIONAL ENGINEER
Bruna Spengler
2/1/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

SS LINE HH PLAN & PROFILE (STA 12+50.00 TO 23+50.00)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C5.04

Date: Feb 02, 2024, 9:37am User ID: tcampos
File: P:\126\32\14\Design\Civil\SS\263214 LINE HH.dwg

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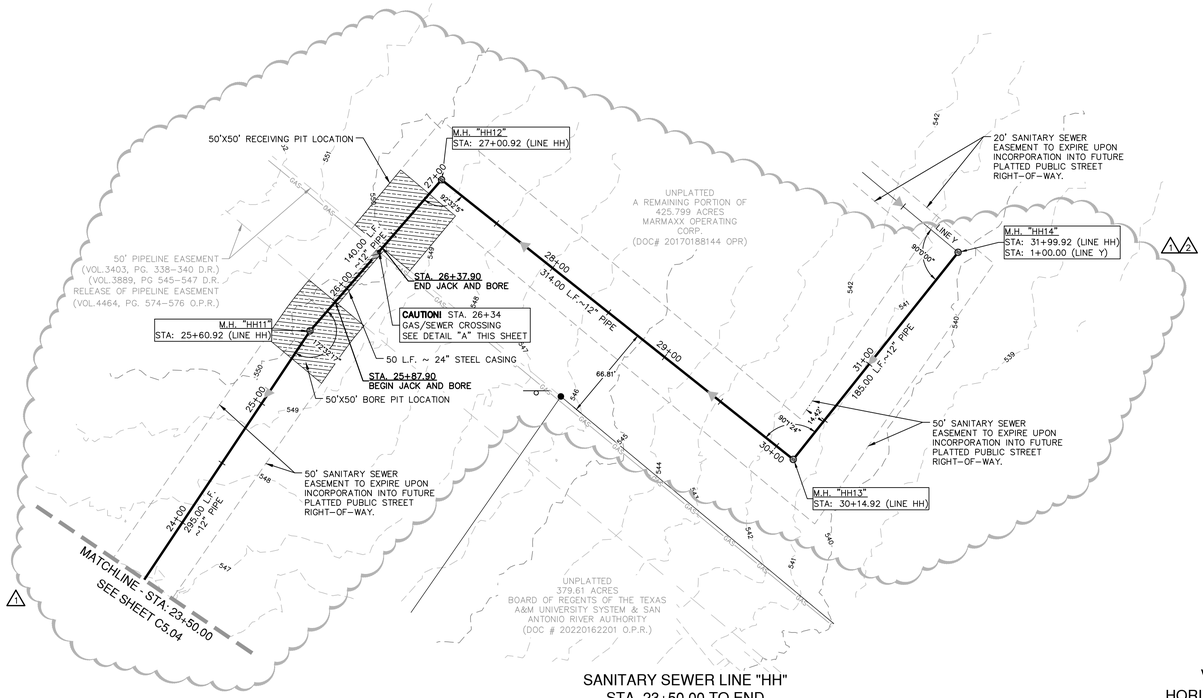
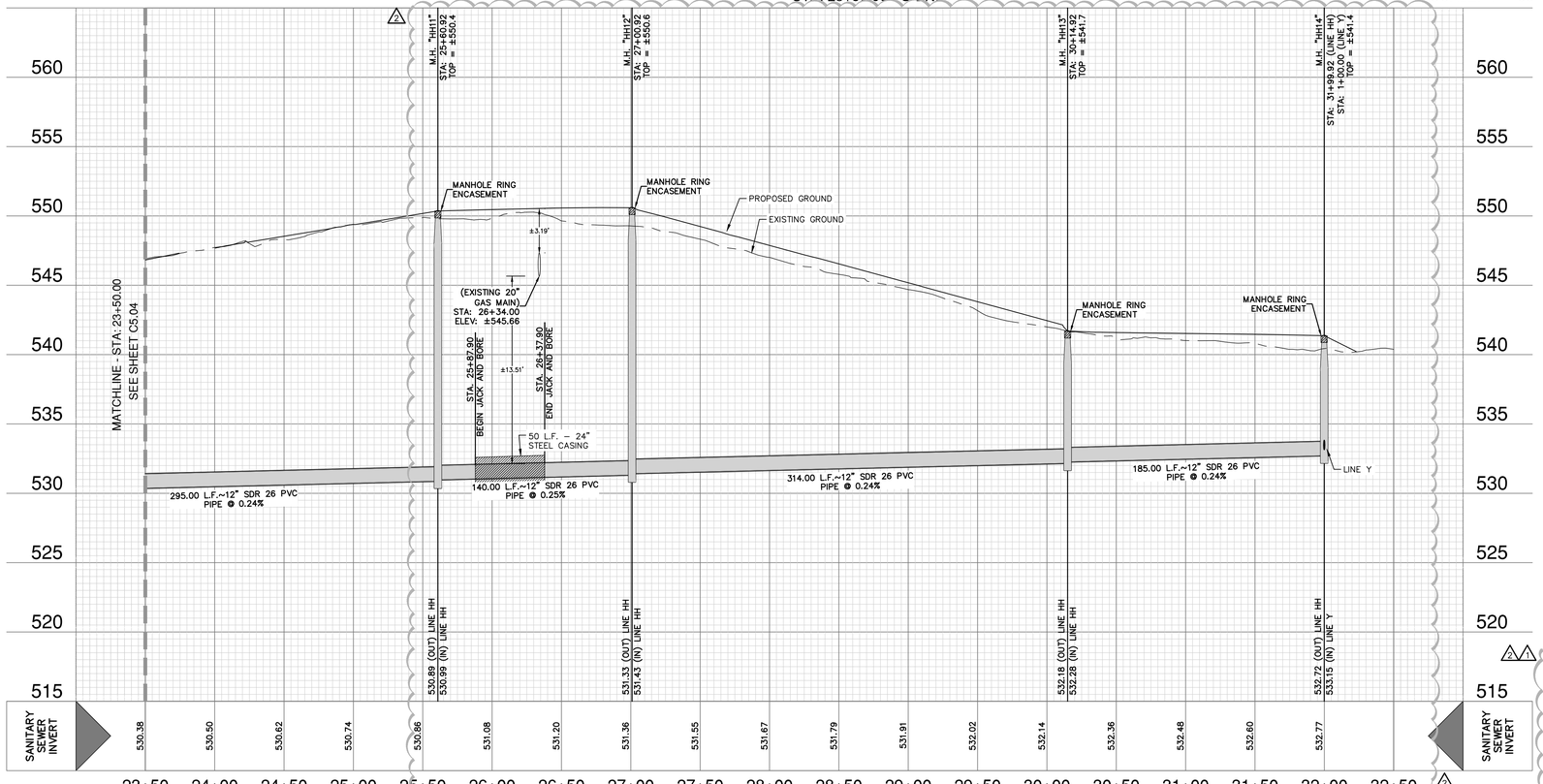
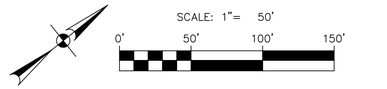


SANITARY SEWER LINE "HH"
STA. 23+50.00 TO END

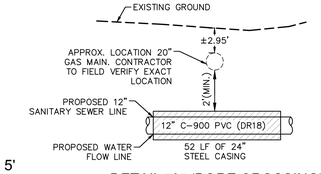
VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



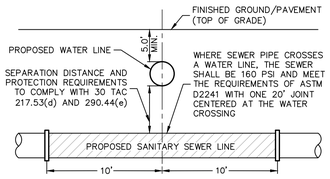


SEWER LEGEND

PROJECT LIMITS
EXISTING WATER
EXISTING SEWER
PROPOSED SEWER
PROPOSED WATER
PROPOSED SEWER LATERAL
FINISHED FLOOR ELEVATION FOR SEWER
EXISTING OIL WELL
MANHOLE
FIRE HYDRANT
FF = XXXX.XX



DETAIL "A" (BORE CROSSING)
NOT-TO-SCALE



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

CAUTION!!

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LOWER - EAST SEWERSHED - DOS RIOS/LEON CREEK

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 138 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 7899 LF.~12"PVC / 5217 LF.~8"PVC PLAT NO. 23-11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23-1603

NO.	REMSION	DATE
1	REVISED SEWER ESMT, SAWS BLOCK AND LEGEND	12/22/23
2	REVISED SS LINE HH ALIGNMENT ADD DIMENSIONS AND REVISED SAWS BLOCK	02/01/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
2/1/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

SS LINE HH PLAN & PROFILE (STA 23+50.00 TO END)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C5.05

Date: Feb 02, 2024, 9:37am User ID: tcampotho
File: P:\126\32\14\Design\Civil\SS\263214 LINE HH.dwg
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SCALE: 1"= 50'

0' 50' 100' 150'

SEWER LEGEND

PROJECT LIMITS

EXISTING WATER

EXISTING SEWER

PROPOSED SEWER — MANHOLE

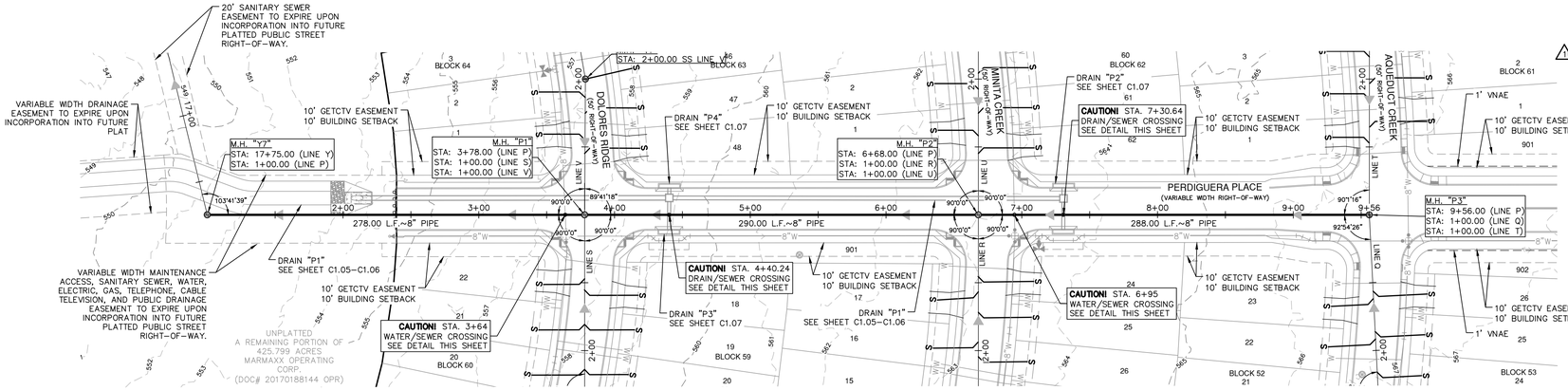
PROPOSED WATER — FIRE HYDRANT

PROPOSED SEWER LATERAL

FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX

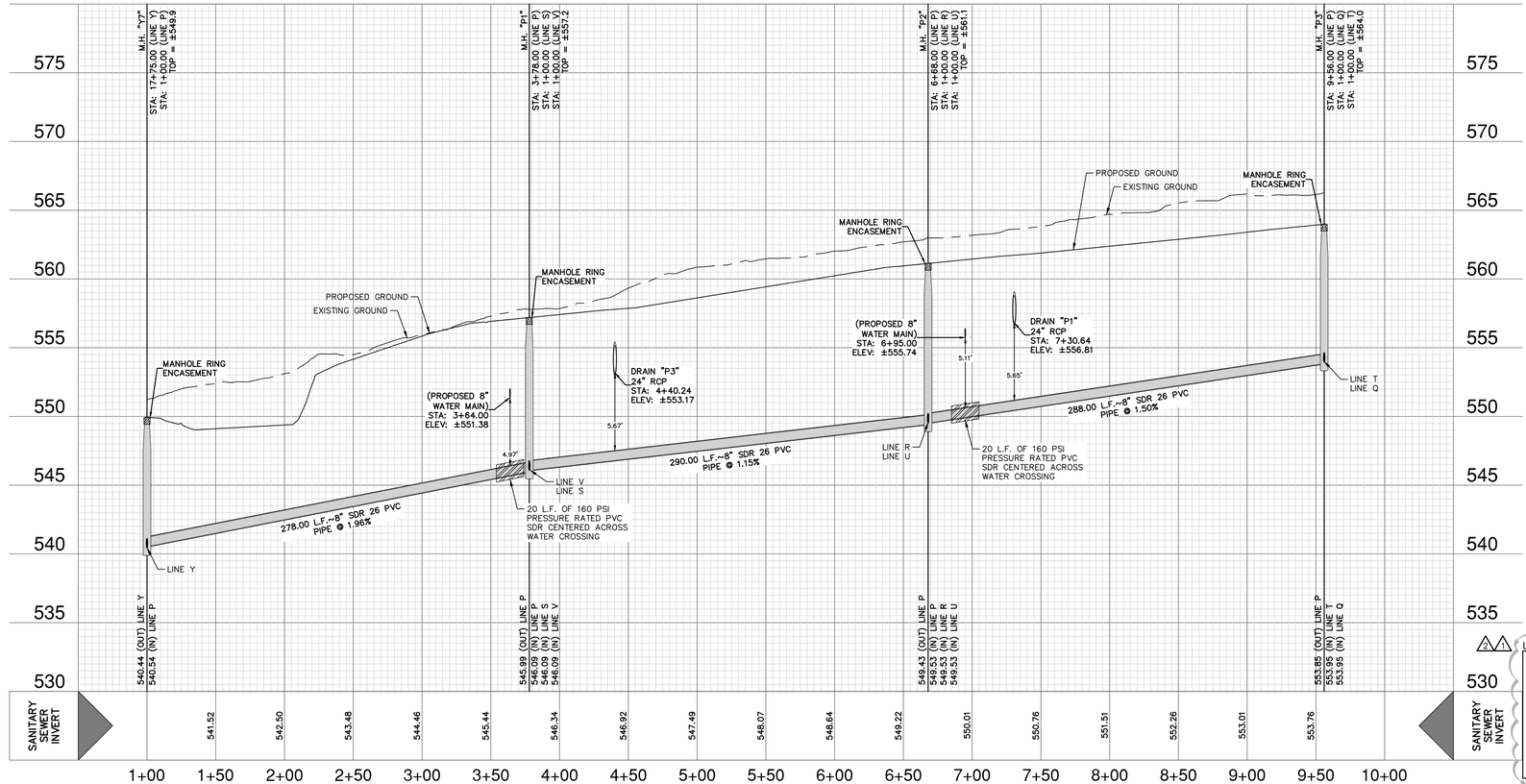
VEHICULAR NON ACCESS EASEMENT — VNAE

1 EXISTING OIL WELL



SANITARY SEWER LINE "P"
STA. 1+00.00 TO END

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



TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

CAUTION!!

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2 3 LOWER - EAST SEWERSHED - DOS RIOS/LEON CREEK

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 138 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 7890 L.F.~12"PVC 5217 L.F.~8"PVC PLAT NO. 23-11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23-1603

NO.	REVISION	DATE
1	REVISED SAWS BLOCK AND LEGEND	12/22/23
2	REVISED SAWS BLOCK	02/01/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
2/1/24

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

SS LINE P PLAN & PROFILE (STA 1+00.00 TO END)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C5.06

Date: Feb 02, 2024, 9:38am User ID: tcampacho
File: P:\1261\321\14\Design\Civil\SS\263214 LINE P.dwg

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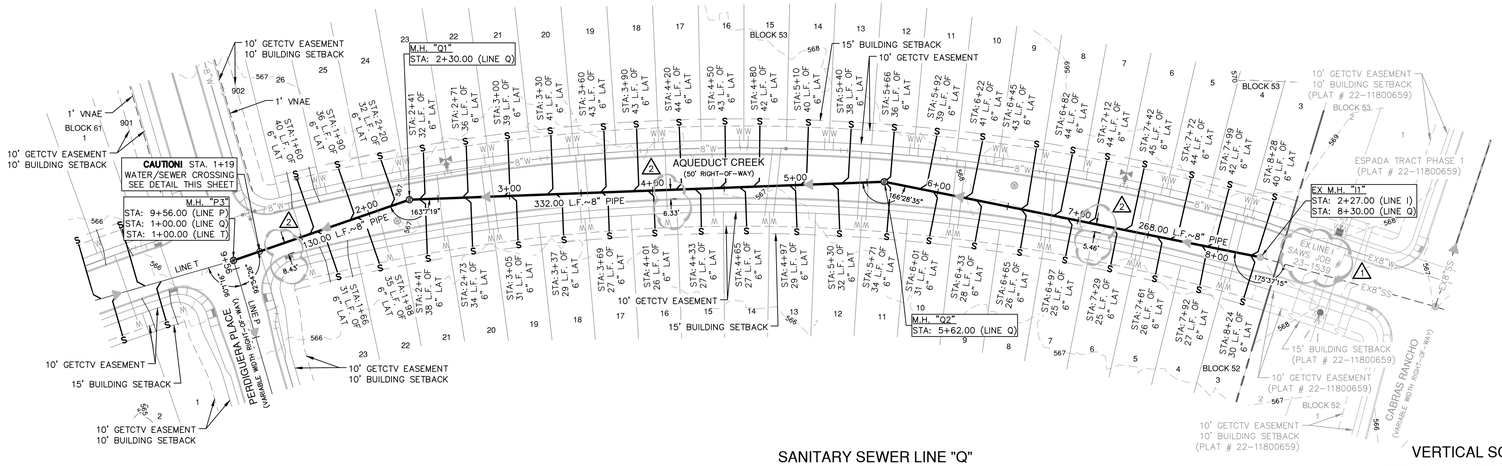
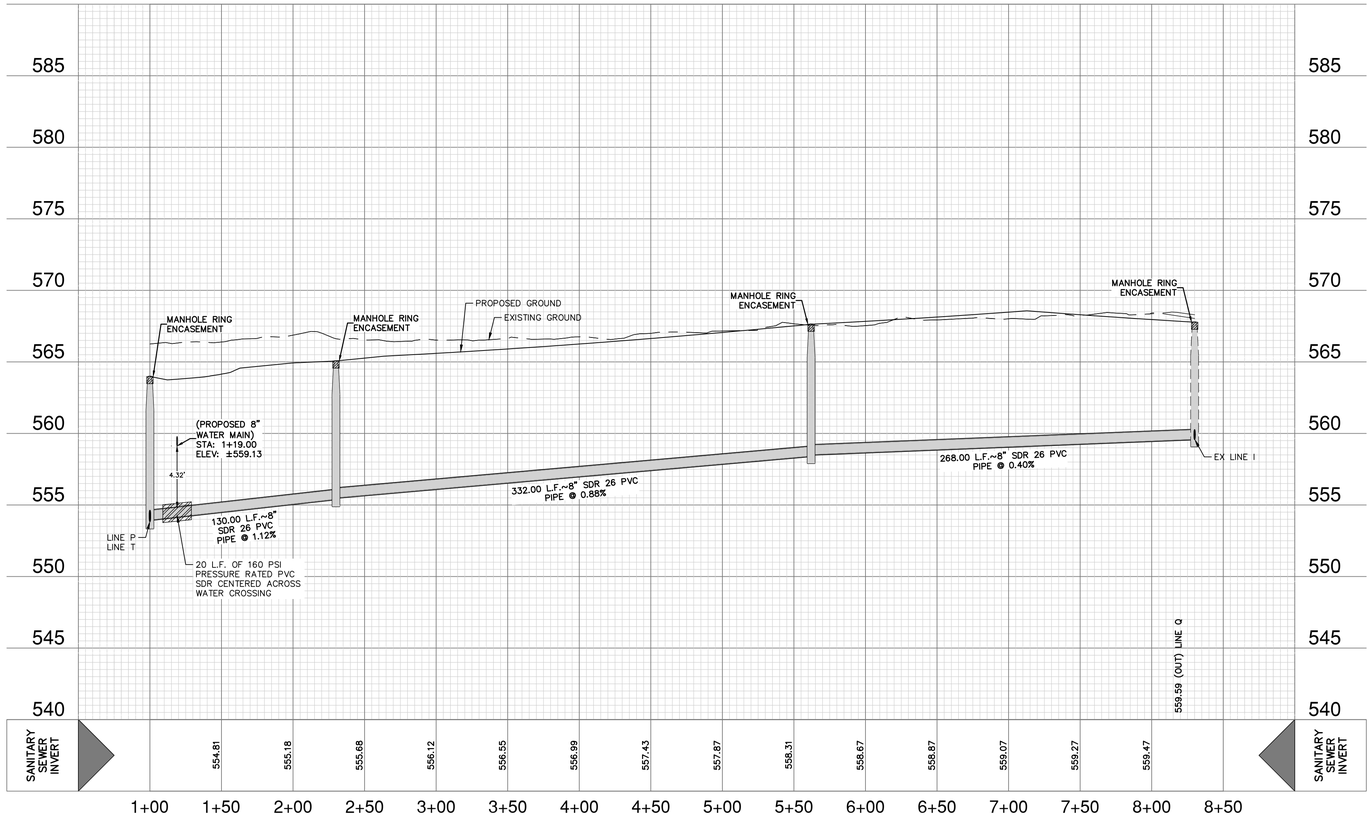


SANITARY SEWER LINE "Q"
STA. 1+00.00 TO END

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

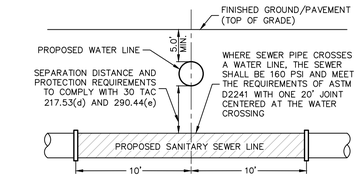


SCALE: 1"= 50'

0' 50' 100' 150'

SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER (W)
- EXISTING SEWER (SS)
- PROPOSED SEWER (MANHOLE, SS)
- PROPOSED WATER (FIRE HYDRANT, W)
- PROPOSED SEWER LATERAL (S)
- FINISHED FLOOR ELEVATION FOR SEWER (FF = XXXX.XX)
- VEHICULAR NON ACCESS EASEMENT (VNAE)
- ⚠1 EXISTING OIL WELL



TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

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.

⚠2 LOWER - EAST SEWERSHED - DOS RIOS/LEON CREEK

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 138 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 5217 L.F.~8"PVC (7890 L.F.~12"PVC) PLAT NO. 23-11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23-1603

NO.	REVISION	DATE
1	REVISED CK, SAWS JOB #, SAWS BLOCK AND LEGEND	12/22/23
2	ADDED DIMENSIONS AND REVISED SAWS BLOCK	02/01/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
2/1/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

SS LINE Q PLAN & PROFILE (STA 1+00.00 TO END)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C5.07

Date: Feb 02, 2024, 9:39am User ID: tcampotho
File: P:\126\32\14\Design\Civil\SS\263214 LINE Q.dwg

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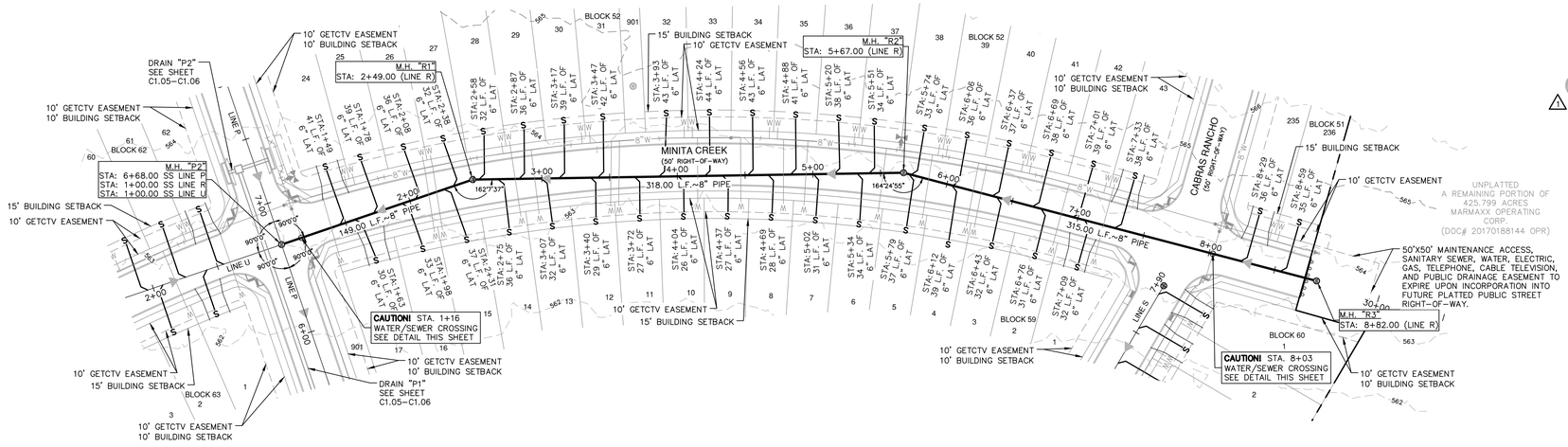
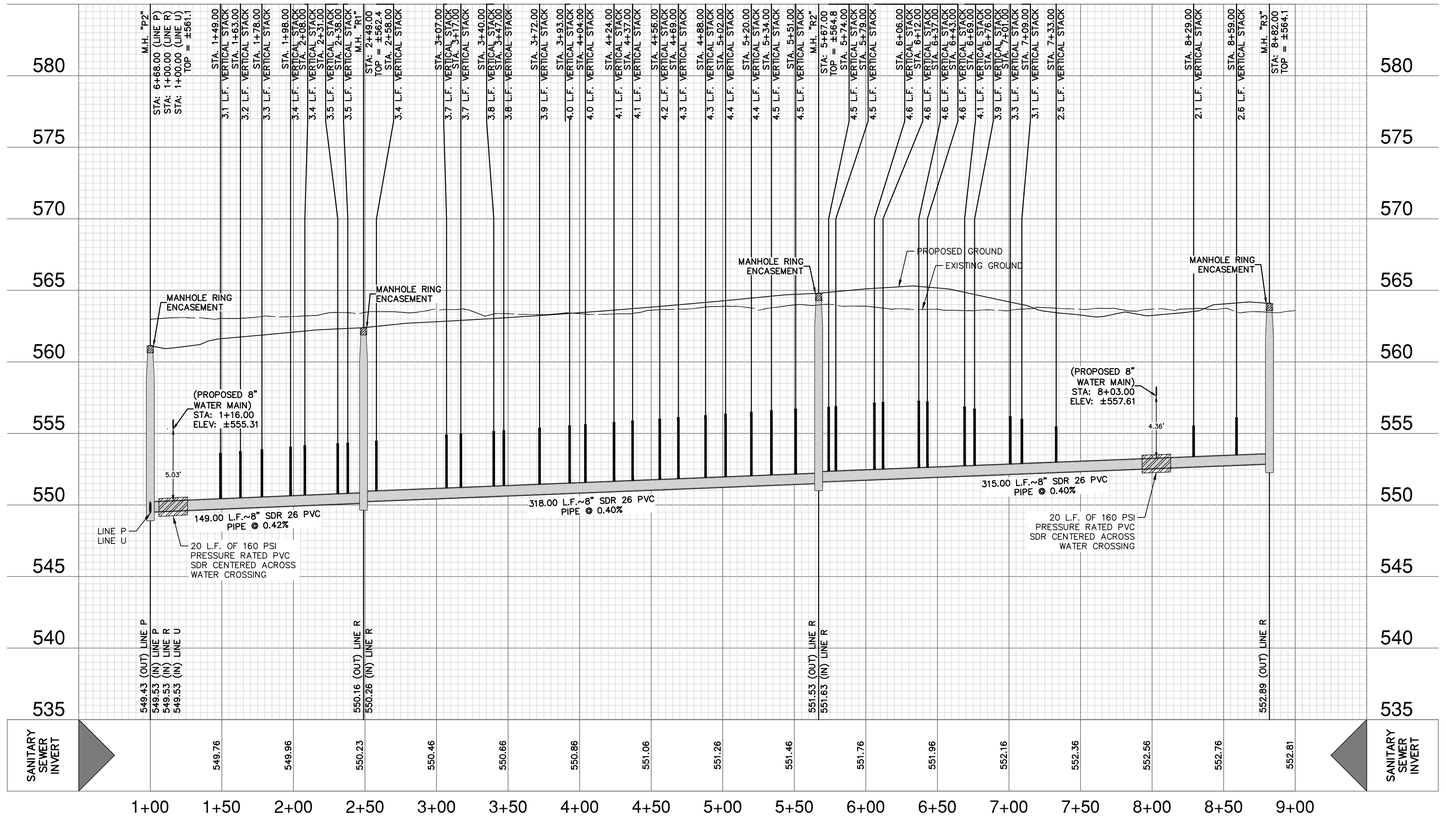


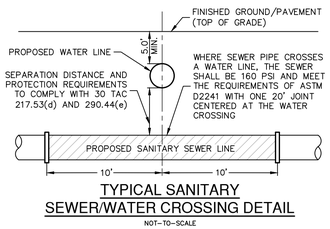
SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER
- EXISTING SEWER
- PROPOSED SEWER (MANHOLE)
- PROPOSED WATER (FIRE HYDRANT)
- PROPOSED SEWER LATERAL
- FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX
- VEHICULAR NON ACCESS EASEMENT — VNAE
- EXISTING OIL WELL

SANITARY SEWER LINE "R"
STA. 1+00.00 TO END

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





TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT–TO–SCALE

CAUTION!!

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2 LOWER - EAST SEWERSHED - DOS RIOS/LEON CREEK

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403–6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 138 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 2899 LF.–12"PVC / 5217 LF.–8"PVC PLAT NO. 23–11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23–1603

NO.	REVISION	DATE
1	REVISED SAWS BLOCK AND LEGEND	12/22/23
2	REVISED SAWS BLOCK	02/01/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
2/1/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

SS LINE R PLAN & PROFILE (STA 1+00.00 TO END)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C5.08

Date: Feb 02, 2024, 9:40am User ID: tomacho
File: P:\126\32\14\Design\Civil\SS\263214 LINE R.dwg

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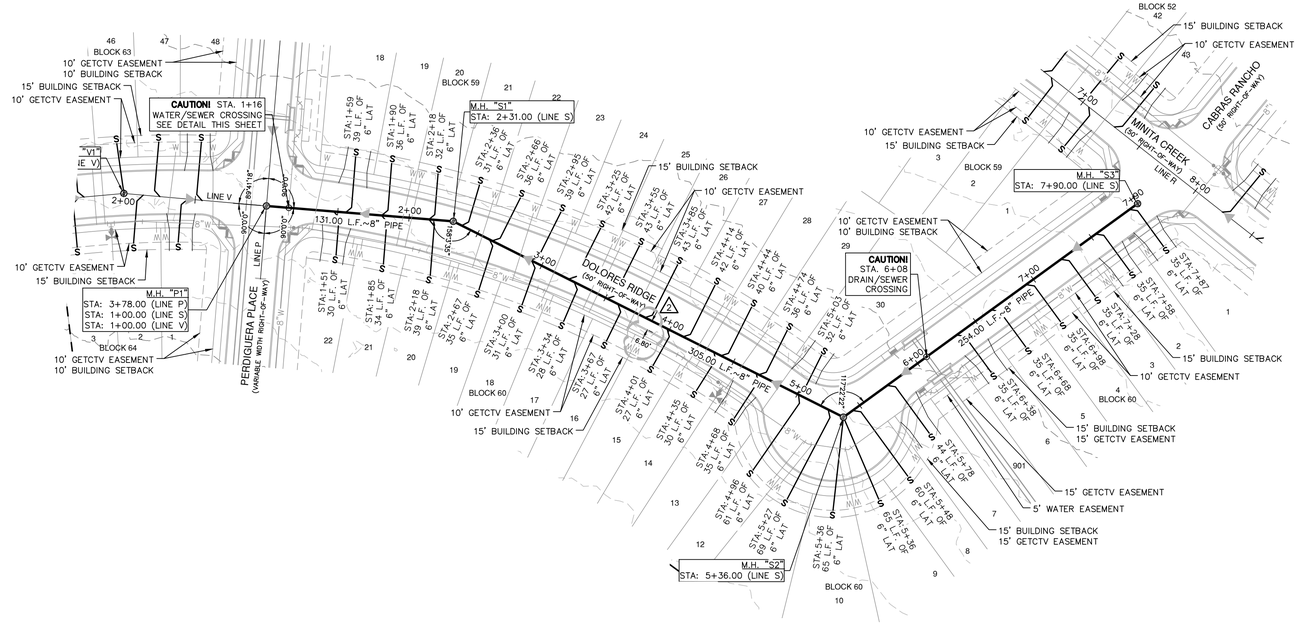


SCALE: 1"= 50'

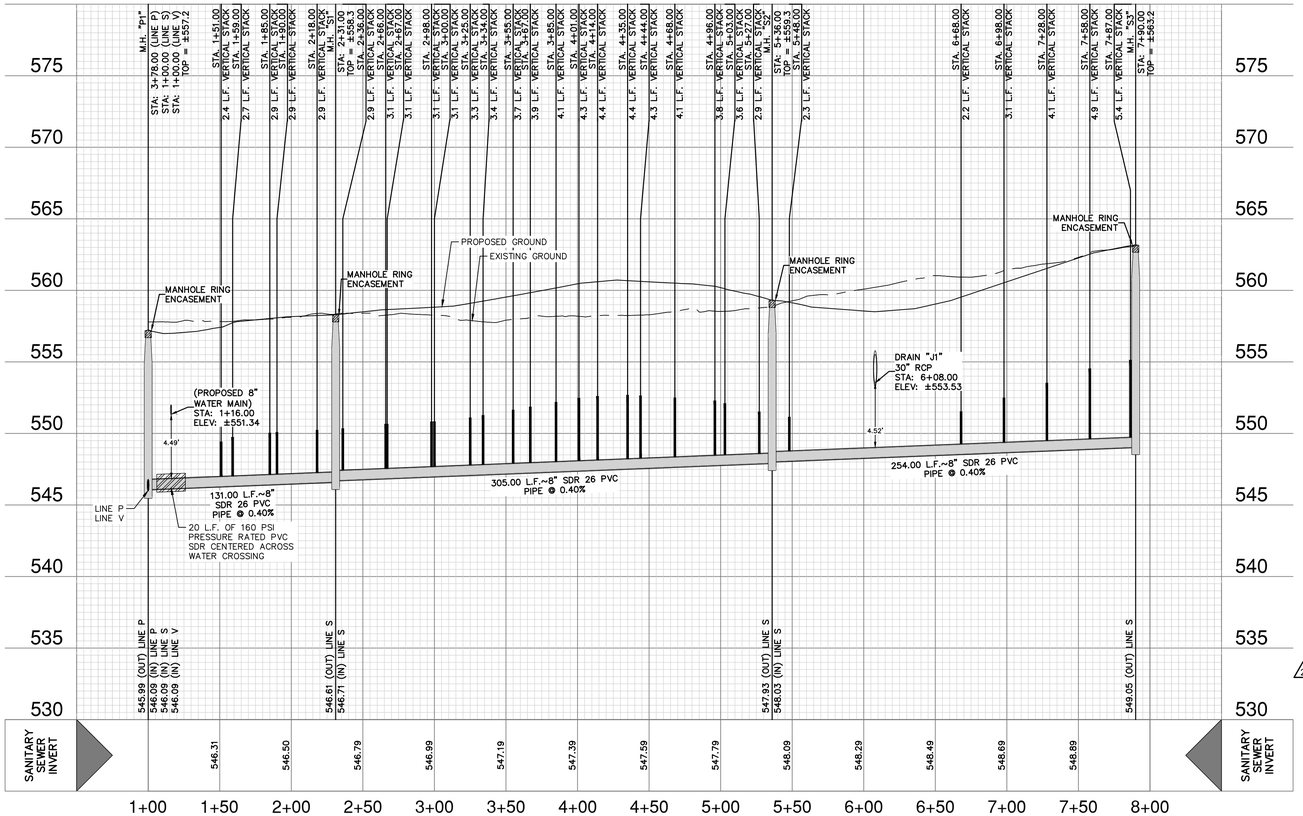
0' 50' 100' 150'

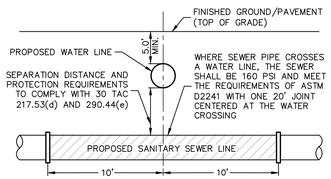
SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER
- EXISTING SEWER
- PROPOSED SEWER
- MANHOLE
- PROPOSED WATER
- FIRE HYDRANT
- PROPOSED SEWER LATERAL
- FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX
- VEHICULAR NON ACCESS EASEMENT — VNAE
- EXISTING OIL WELL

SANITARY SEWER LINE "S"
STA. 1+00.00 TO END

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





TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

CAUTION!!

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2 LOWER - EAST SEWERSHED - DOS RIOS/LEON CREEK

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ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 138 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 2899 LF.~12"PVC 5217 LF.~8"PVC PLAT NO. 23-11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23-1603

NO.	REVISION	DATE
1	REVISED SAWS BLOCK AND LEGEND	12/22/23
2	ADDED DIMENSION AND REVISED SAWS BLOCK	02/01/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
2/1/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

SS LINE S PLAN & PROFILE (STA 1+00.00 TO END)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C5.09

Date: Feb 02, 2024, 9:41am User ID: tcamacho
File: P:\126\32\14\Design\Civil\SS\263214 LINE S.dwg

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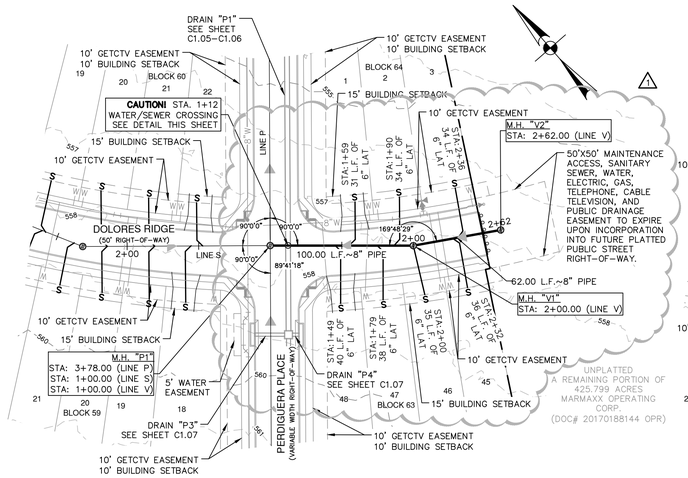
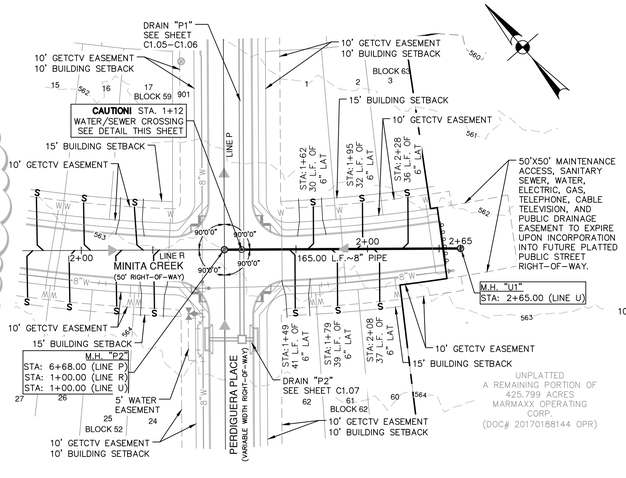
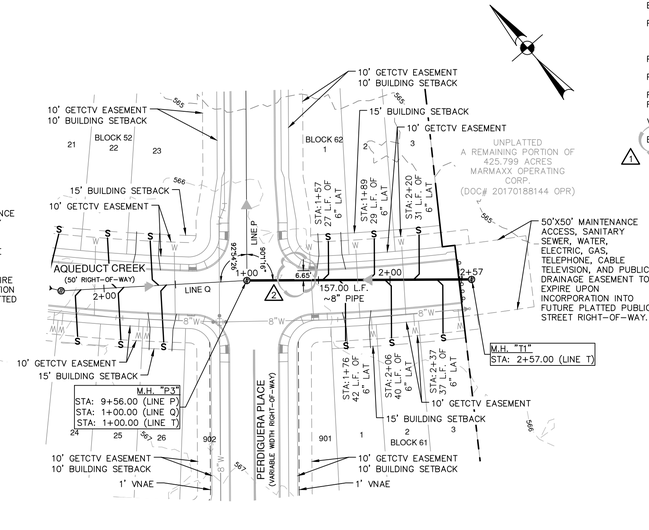






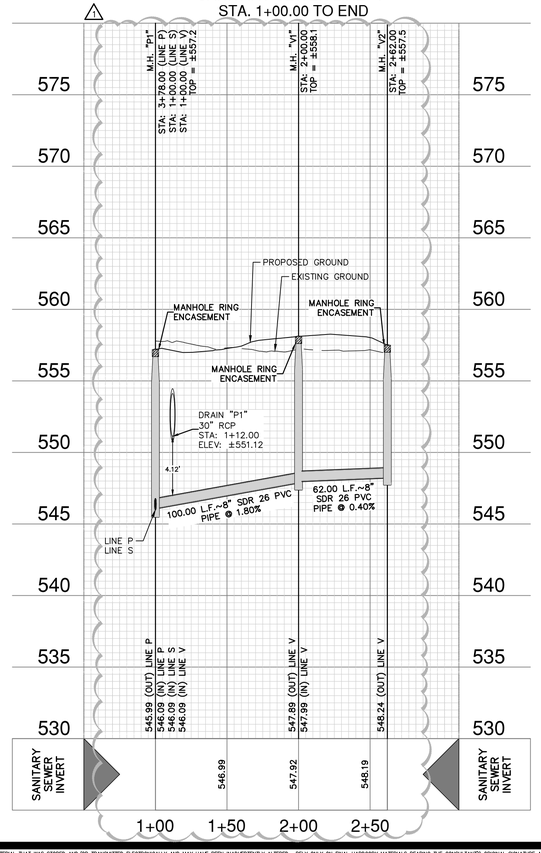
SCALE: 1"= 50'

0' 50' 100' 150'

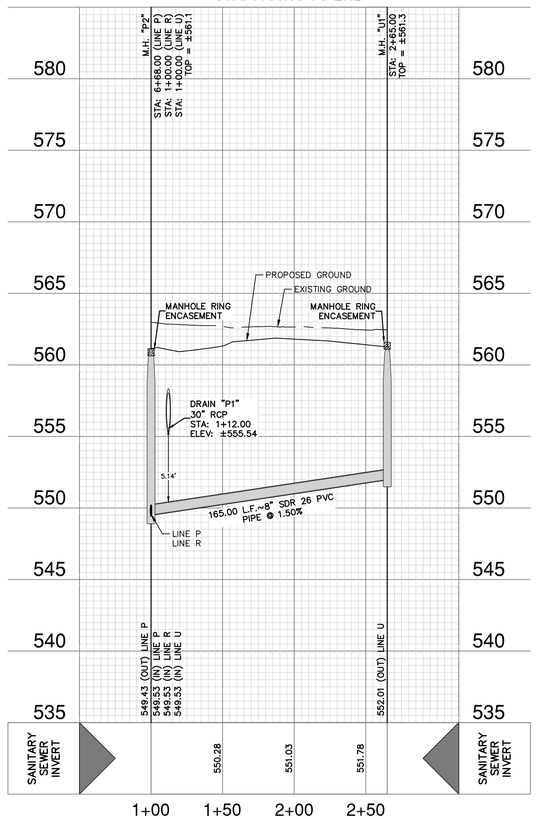
SEWER LEGEND

- PROJECT LIMITS
- EXISTING WATER — W —
- EXISTING SEWER — SS —
- PROPOSED SEWER — SS — MANHOLE
- PROPOSED WATER — W — FIRE HYDRANT
- PROPOSED SEWER LATERAL — S
- FINISHED FLOOR ELEVATION FOR SEWER — FF = XXXX.XX
- VEHICULAR NON ACCESS EASEMENT — VNAE
- EXISTING OIL WELL

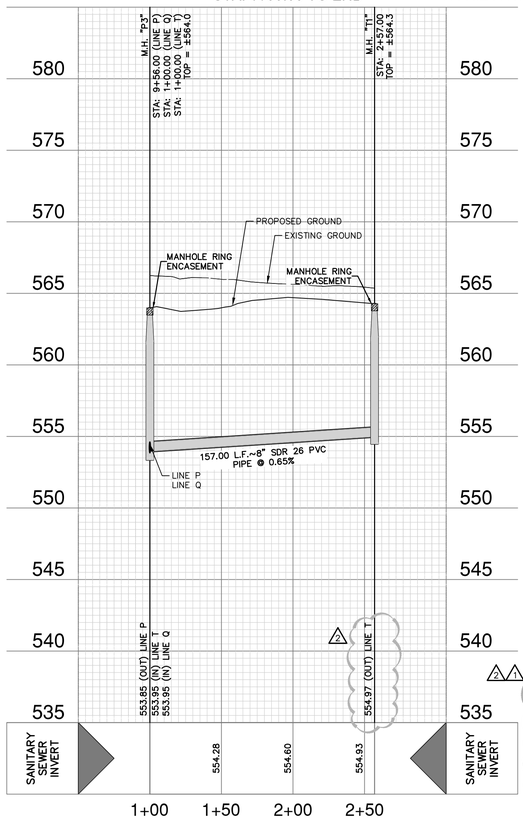
SANITARY SEWER LINE "V" STA. 1+00.00 TO END



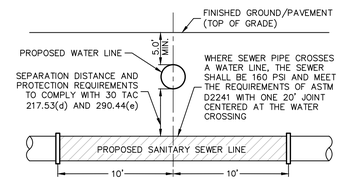
SANITARY SEWER LINE "U" STA. 1+00.00 TO END



SANITARY SEWER LINE "T" STA. 1+00.00 TO END



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



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

CAUTION!!

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LOWER - EAST SEWERSHED - DOS RIOS/LEON CREEK

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 138 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 2899 L.F.~12"PVC 5217 L.F.~8"PVC PLAT NO. 23-11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23-1603

NO.	REMSION	DATE
1	REVISED SEWER LINE V, SAWS BLOCK AND LEGEND	12/22/23
2	ADDED DIMENSION AND REMOVED INVERT AND REVISED SAWS BLOCK	02/01/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
2/1/24

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

ESPADA TRACT UNIT 15

SAN ANTONIO, TEXAS

SS LINE T PLAN & PROFILE (STA 1+00.00 TO END)
SS LINE U PLAN & PROFILE (STA 1+00.00 TO END)
SS LINE V PLAN & PROFILE (STA 1+00.00 TO END)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JC
CHECKED DW DRAWN TC
SHEET C5.10

Date: Feb 02, 2024, 9:42am User ID: tcamacho
File: P:\1261\32\14\Design\Civil\SS\263214 LINE T-LINE U-LINE V.dwg

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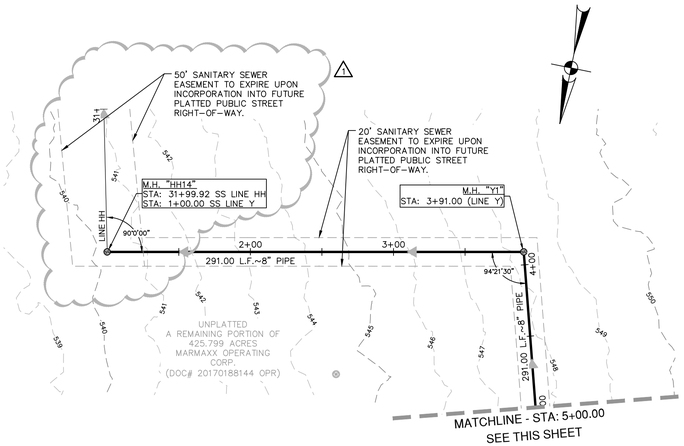
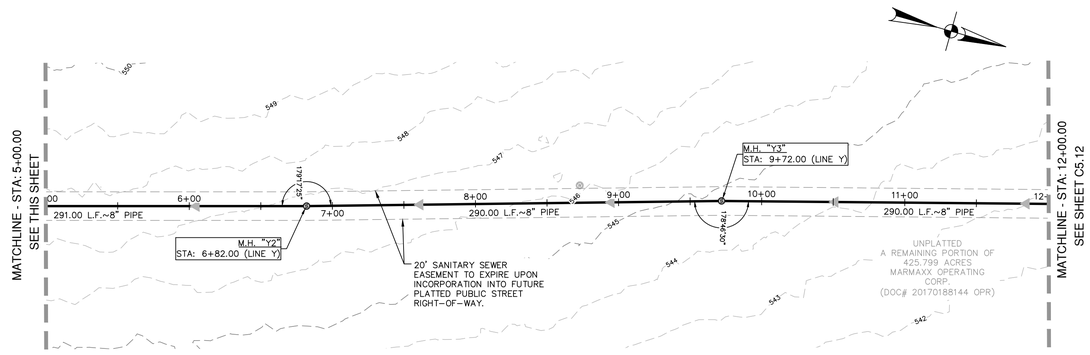




SCALE: 1"= 50'

0' 50' 100' 150'

SEWER LEGEND

PROJECT LIMITS

EXISTING WATER

EXISTING SEWER

PROPOSED SEWER

MANHOLE

PROPOSED WATER

FIRE HYDRANT

PROPOSED SEWER LATERAL

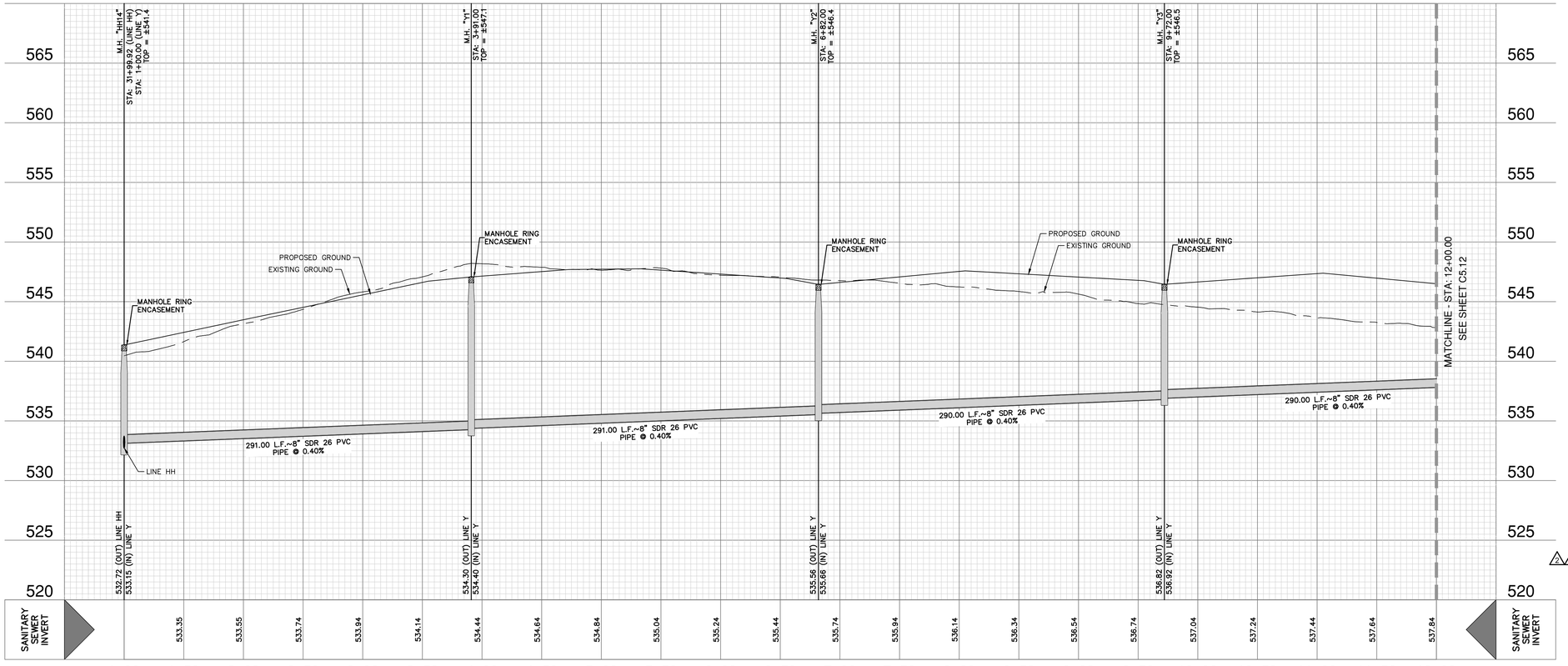
FINISHED FLOOR ELEVATION FOR SEWER

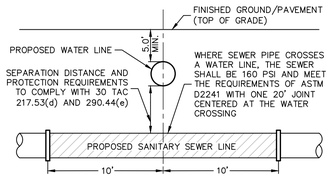
FF = XXXX.XX

EXISTING OIL WELL

SANITARY SEWER LINE "Y"
STA. 1+00.00 TO 12+00.00

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





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

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.

2 1 LOWER - EAST SEWERSHED - DOS RIOS/LEON CREEK

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 138 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 1809 L.F.~12"PVC / 5217 L.F.~8"PVC PLAT NO. 23-11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23-1603

NO.	REVISION	DATE
1	REVISED SEWER ESMT, SAWS BLOCK AND LEGEND	12/22/23
2	REVISED SAWS BLOCK	02/01/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
2/1/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

SS LINE Y PLAN & PROFILE (STA 1+00.00 TO 12+00.00)

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C5.11

Date: Feb 02, 2024, 9:43am User ID: tcampotho
File: P:\126\32\14\Design\Civil\SS\263214 LINE Y.dwg

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SCALE: 1"= 50'

0' 50' 100' 150'

SEWER LEGEND

PROJECT LIMITS

EXISTING WATER

EXISTING SEWER

PROPOSED SEWER

PROPOSED WATER

PROPOSED SEWER LATERAL

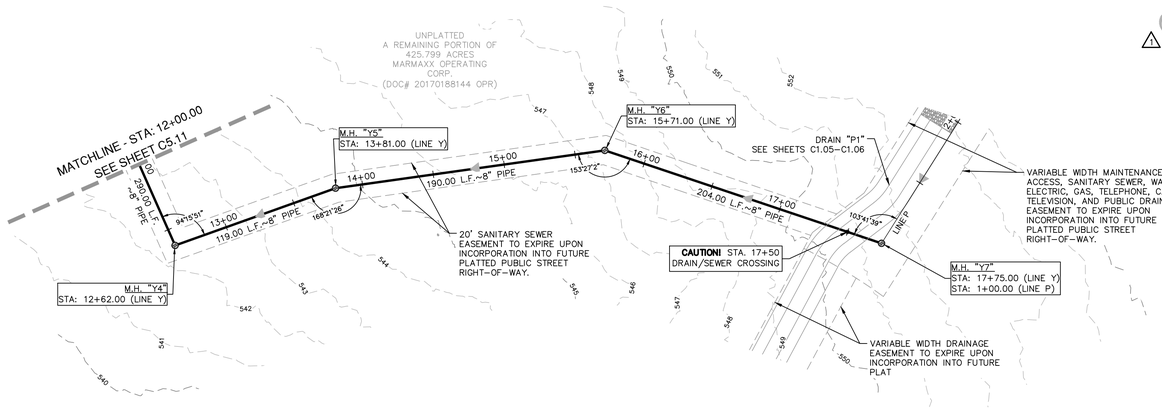
FINISHED FLOOR ELEVATION FOR SEWER

EXISTING OIL WELL

MANHOLE

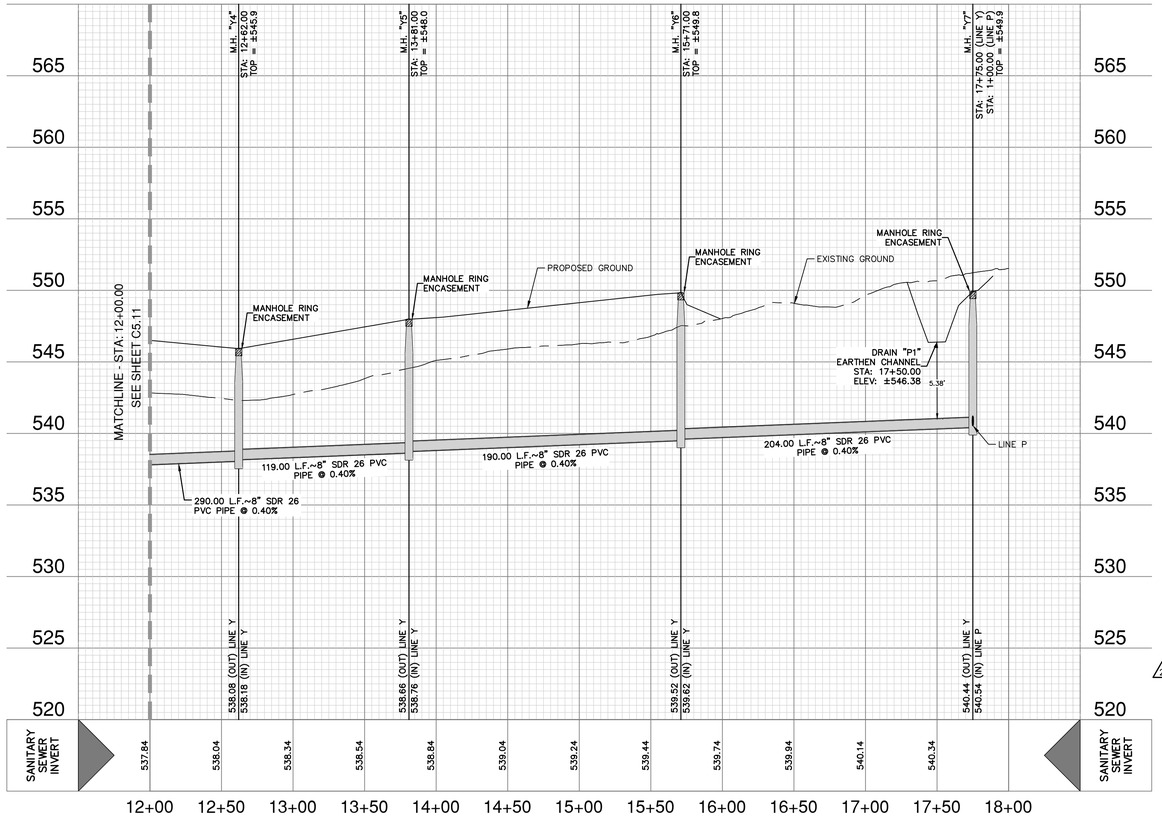
FIRE HYDRANT

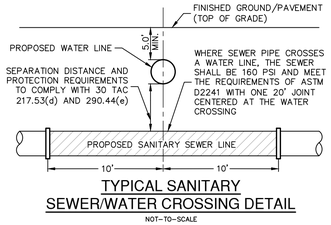
FF = XXXX.XX



SANITARY SEWER LINE "Y"
STA. 12+00.00 TO END

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





TYPICAL SANITARY SEWER/WATER CROSSING DETAIL

NOT-TO-SCALE

CAUTION!!

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ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

SS LINE Y PLAN & PROFILE (STA 12+00.00 TO END)

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JOB NO. 12632-14
DATE JULY 2023
DESIGNER JC
CHECKED DW DRAWN TC
SHEET C5.12

Date: Feb 02, 2024, 9:43am User ID: tcampotho
File: P:\126\32\14\Design\Civil\SS\263214 LINE Y.dwg

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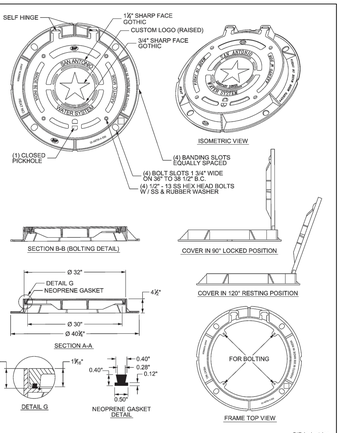
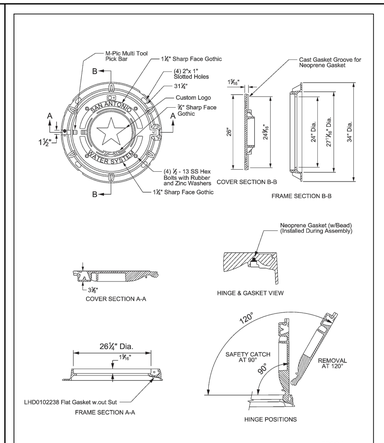


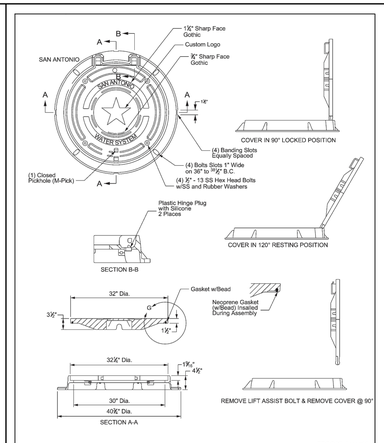
SJP Industries

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	30" MANHOLE RING AND COVER DETAIL		AUG 2019
SAN ANTONIO, TEXAS		DD 852-07	SHEET 1 OF 5



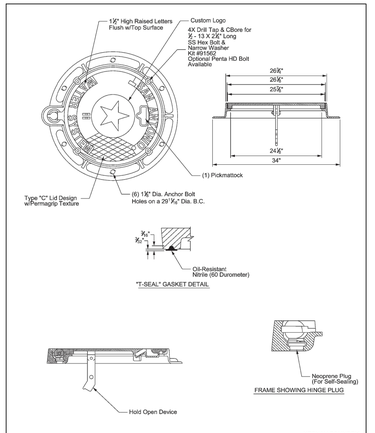
ERGO Assembly

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	MANHOLE RING AND COVER DETAIL	MARCH 2008	AUG 2019
SAN ANTONIO, TEXAS		DD 852-07	SHEET 2 OF 5



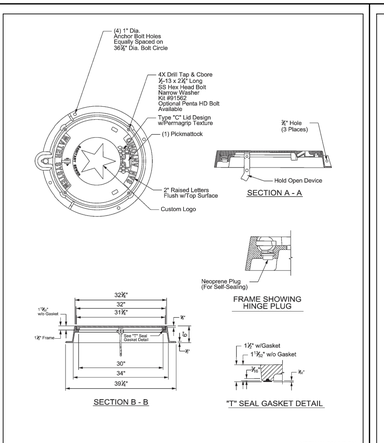
ERGO XL Assembly

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	MANHOLE RING AND COVER DETAIL	MARCH 2008	AUG 2019
SAN ANTONIO, TEXAS		DD 852-07	SHEET 3 OF 5



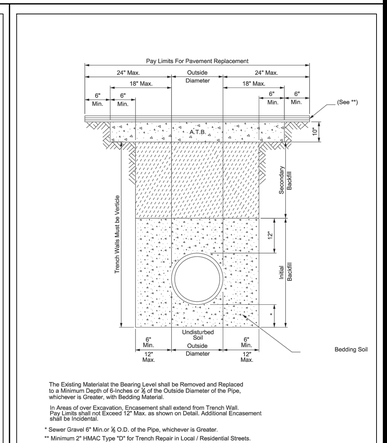
NEENAH FOUNDRY

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	MANHOLE RING AND COVER DETAIL	MARCH 2008	AUG 2019
SAN ANTONIO, TEXAS		DD 852-07	SHEET 4 OF 5



NEENAH FOUNDRY

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	MANHOLE RING AND COVER DETAIL	MARCH 2008	AUG 2019
SAN ANTONIO, TEXAS		DD 852-07	SHEET 5 OF 5

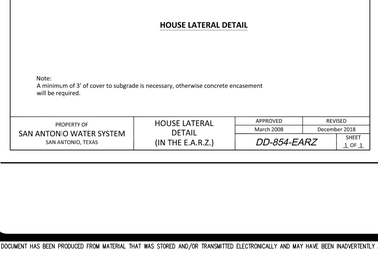


The Existing Materialat the Bearing Level shall be Removed and Replaced to a Minimum Depth of 6-inches or ¼ of the Outside Diameter of the Pipe, whichever is Greater, with Bedding Material.

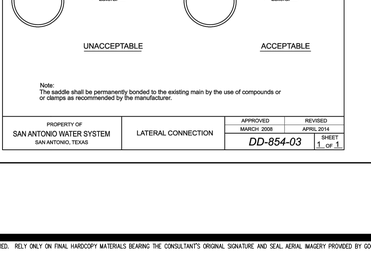
In Areas of over Excavation, Encasement shall extend from Trench Wall. Pay Limits shall not Exceed 12" Max. as shown on Detail. Additional Encasement shall be Incidental.

* Sewer Gravel 6" Min or ¼ O.D. of the Pipe, whichever is Greater.
** Minimum 2" HMAC Type "D" for Trench Repair in Local / Residential Streets.
** Minimum 3" HMAC Type "C" for Trench Repair in Collector / Arterial Streets.

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	SANITARY SEWER PIPE LAID IN TRENCH	MARCH 2008	DEC 2018
SAN ANTONIO, TEXAS		DD-804-01	SHEET 1 OF 1



PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	TRENCH COMPACTION DETAIL	MARCH 2018	DEC 2018
SAN ANTONIO, TEXAS		DD 804-02	SHEET 1 OF 1



Note:
All mandrels must be approved by SAWS Construction Inspections and stamped before use.

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	GO, NO GO DEFLECTION TESTING MANDREL	March 2008	APRIL 2014
SAN ANTONIO, TEXAS		DD-848-01	SHEET 1 OF 2

SIZE	A	B*	MANDREL O.D. PVC (SDR-26)	RING O.D. PVC (SDR-26)
6"	4.0"	4.5"	5.50	4.79
8"	5.5"	6"	7.37	6.66
10"	7.0"	7.5"	9.21	8.50
12"	8.0"	9"	10.96	10.25
15"	10.0"	11"	13.42	12.71
18"	12.0"	13.5"	——	——
21"	14.0"	16"	——	——
24"	16.0"	18"	——	——
27"	18.0"	20"	——	——

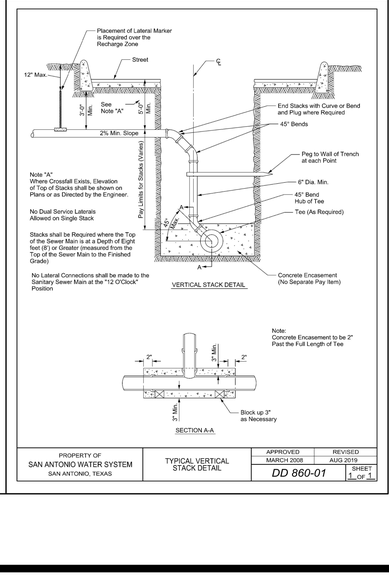
* Minimum Length

CHART

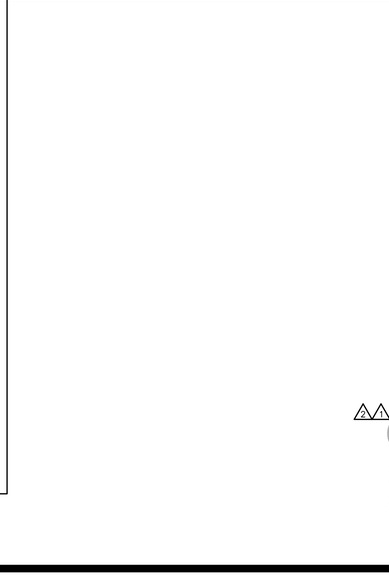
Notes:
PVC pipes and fittings 6" to 15" in diameter shall conform to ASTM D-3034-08.
PVC pipes and fittings 18" to 27" in diameter shall conform to ASTM F-679-08.

This information is provided as a reference. All deflection testing shall be done in accordance with TCEQ Chapter 217.

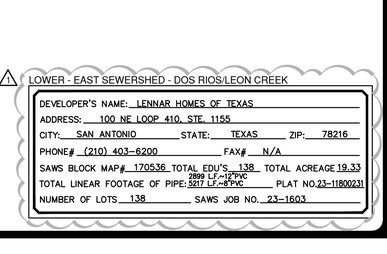
PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	GO, NO GO DEFLECTION TESTING MANDREL CHART	MARCH 2008	APRIL 2014
SAN ANTONIO, TEXAS		DD-848-01	SHEET 2 OF 2



PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	STANDARD PRECAST MANHOLE	MARCH 2008	AUG 2019
SAN ANTONIO, TEXAS		DD-852-01	SHEET 1 OF 2



PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	STANDARD MONOLITHIC MANHOLE	March 2008	AUG 2019
SAN ANTONIO, TEXAS		DD 852-01	SHEET 2 OF 2



NOTE:
1. The Concrete Shall be 4000 PSI Minimum and Reinforced with No. 4 Bars as Shown.
2. The Concrete Shall Extend to Edge of Saw Cut Pavement.
3. Manhole Ring Encasement is Required on all Manholes.
4. Manhole Lid shall Open in the Direction of Traffic or Downstream in Parkway

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	MANHOLE RING ENCASEMENT DETAIL	AUGUST 2009	AUG 2019
SAN ANTONIO, TEXAS		DD 852-03	SHEET 1 OF 2

HOUSE LATERAL DETAIL

Note:
A minimum of 3' of cover to subgrade is necessary, otherwise concrete encasement will be required.

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	HOUSE LATERAL DETAIL (IN THE E.A.R.Z.)	March 2008	December 2018
SAN ANTONIO, TEXAS		DD-854-EARZ	SHEET 1 OF 1

Note:
The saddle shall be permanently bonded to the existing main by the use of compounds or clamps as recommended by the manufacturer.

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	LATERAL CONNECTION	MARCH 2008	APRIL 2014
SAN ANTONIO, TEXAS		DD-854-03	SHEET 1 OF 1

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	TYPICAL CONCRETE DETAILS	MARCH 2008	DEC 2018
SAN ANTONIO, TEXAS		DD 858-02	SHEET 1 OF 1

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM	TYPICAL VERTICAL STACK DETAIL	MARCH 2008	AUG 2019
SAN ANTONIO, TEXAS		DD 860-01	SHEET 1 OF 1

2 LOWER - EAST SEWERSHED - DOS RIOS/LEON CREEK

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 170536 TOTAL EDU'S 138 TOTAL ACREAGE 19.33
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NUMBER OF LOTS 138 SAWS JOB NO. 23-1603

NO.	REVISION	DATE
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2	REVISED SAWS BLOCK	02/01/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
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ESPADA TRACT UNIT 15
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OVERALL SANITARY SEWER DETAILS

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C5.13

Date: Feb 02, 2024, 9:44am User ID: tcamacho
File: P:\12632\14\Design\Civil\GSI\T12632114.dwg

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SAWS CONSTRUCTION NOTES

(LAST REVISED JANUARY 2022)

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 DIVISION 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.

11. 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.

    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 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.

SAWS SEWER NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT NO SANITARY SEWER OVERFLOW (SSO) OCCURS AS A RESULT OF THEIR WORK. ALL CONTRACTOR PERSONNEL RESPONSIBLE FOR SSO PREVENTION AND CONTROL SHALL BE TRAINED ON PROPER RESPONSE. SHOULD AN SSO OCCUR, THE CONTRACTOR SHALL:

   A. IDENTIFY THE SOURCE OF THE SSO AND NOTIFY SAWS EMERGENCY OPERATIONS CENTER (EOC) IMMEDIATELY AT (210) 233-2014. PROVIDE THE ADDRESS OF THE SPILL AND AN ESTIMATED VOLUME OR FLOW.
   B. ATTEMPT TO ELIMINATE THE SOURCE OF THE SSO.
   C. CONTAIN SEWAGE FROM THE SSO TO THE EXTENT OF PREVENTING A POSSIBLE CONTAMINATION OF WATERWAYS.
   D. CLEAN UP SPILL SITE (RETURN CONTAINED SEWAGE TO THE COLLECTION SYSTEM IF POSSIBLE) AND PROPERLY DISPOSE OF CONTAMINATED SOIL/MATERIALS.
   E. CLEAN THE AFFECTED SEWER MAINS AND REMOVE ANY DEBRIS.
   F. MEET ALL POST-SSO REQUIREMENTS AS PER THE EPA CONSENT DECREE, INCLUDING LINE CLEANING AND TELEVISING THE AFFECTED SEWER MAINS (AT SAWS DIRECTION) WITHIN 24 HOURS.

   SHOULD THE CONTRACTOR FAIL TO ADDRESS AN SSO IMMEDIATELY AND TO SAWS SATISFACTION, THEY WILL BE RESPONSIBLE FOR ALL COSTS INCURRED BY SAWS, INCLUDING ANY FINES FROM EPA, TCEQ AND/OR ANY OTHER FEDERAL, STATE OR LOCAL AGENCIES.

   NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE FOR THIS WORK. ALL WORK SHALL BE DONE ACCORDING TO GUIDELINES SET BY THE TCEQ AND SAWS.

2. IF BYPASS PUMPING IS REQUIRED, THE CONTRACTOR SHALL PERFORM SUCH WORK IN ACCORDANCE WITH SAWS STANDARD SPECIFICATION FOR WATER AND SANITARY SEWER CONSTRUCTION, ITEM NO. 864, "BYPASS PUMPING".

3. PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING FORCE MAINS OF ANY SIZE MUST BE COORDINATED WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT (210) 233-2973 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.

4. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241, TAC 217.53 AND TCEQ 290.44(E)(4)(B). CONTRACTOR SHALL CENTER A 20' JOINT OF 160 PSI PRESSURE RATED PVC AT THE PROPOSED WATER CROSSING.

5. ELEVATIONS POSTED FOR TOP OF MANHOLES ARE FOR REFERENCE ONLY: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ALLOWANCES AND ADJUSTMENTS FOR TOP OF MANHOLES TO MATCH THE FINISHED GRADE OF THE PROJECT'S IMPROVEMENTS. (NSPI)

6. SPILLS, OVERFLOWS, OR DISCHARGES OF WASTEWATER: ALL SPILLS, OVERFLOWS, OR DISCHARGES OF WASTEWATER, RECYCLED WATER, PETROLEUM PRODUCTS, OR CHEMICALS MUST BE REPORTED IMMEDIATELY TO THE SAWS INSPECTOR ASSIGNED TO THE COUNTER PERMIT OR GENERAL CONSTRUCTION PERMIT (GCP). THIS REQUIREMENT APPLIES TO EVERY SPILL, OVERFLOW, OR DISCHARGE REGARDLESS OF SIZE.

7. MANHOLE AND ALL PIPE TESTING (INCLUDING THE TV INSPECTION) MUST BE PERFORMED AND PASSED PRIOR TO FINAL FIELD ACCEPTANCE BY SAWS CONSTRUCTION INSPECTION DIVISION, AS PER THE SAWS SPECIFICATIONS FOR WATER AND SANITARY SEWER CONSTRUCTION.

8. ALL PVC PIPE OVER 14 FEET OF COVER SHALL BE EXTRA STRENGTH WITH MINIMUM PIPE STIFFNESS OF 115 PSI.

PROJECT SEWER NOTES

1. ALL RESIDENTIAL SEWER SERVICE LATERALS ARE 6" DIA. AND SHALL BE EXTENDED TO 10' PAST THE PROPERTY LINE AND CAPPED AND SEALED. CONTRACTOR SHALL INSTALL A 2" X 4" STAKE, FOUR (4) FEET LONG, TWO (2) FEET DEEP INTO THE GROUND AT THE END OF EACH SERVICE. NO SEPARATE PAY ITEM.
2. CONTRACTOR TO INSTALL CLEANOUTS AT THE END OF ALL SEWER LATERALS, PER LATERAL DETAIL SHEET C5.30
3. NO VERTICAL STACKS ALLOWED FOR ANY LOTS UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
4. ALL 6" SEWER LATERALS WILL BE SET AT 2% GRADE FROM THE MAIN TO THE PROPERTY LINE.
5. WHEN HORIZONTAL DISTANCE BETWEEN SEWER PIPES AND WATER MAIN IS LESS THAN 9 FOOT OF SEPARATION, SEWER MAIN SHALL BE INSTALLED WITH 150 PSI (MIN) PRESSURE PIPE AND FITTINGS IN ACCORDANCE WITH SAWS CONSTRUCTION CRITERIA FOR CONSTRUCTION OF SEWER MAINS IN THE VICINITY OF WATER MAINS.
6. CONTRACTOR SHALL ENSURE THAT MANHOLES OUTSIDE OF PAVED AREAS ARE SET WITH TOP ELEVATIONS 6" ABOVE FINISHED GRADE WITH CONCRETE RING ENCASEMENT.
7. ALL SEWER PIPES SHALL BE 8" PVC (SDR 26), UNLESS OTHERWISE NOTED.
8. CONTRACTOR IS TO VERIFY EXISTING INVERT OF EXISTING SANITARY SEWER MAINS AND ALERT ENGINEER IMMEDIATELY OF ANY DIFFERENCE FROM INVERT SHOWN ON PLANS.
9. CONTRACTOR SHALL PROTECT ALL EXISTING FENCES. ANY FENCE DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
10. 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.
11. CONCRETE RING ENCASEMENT TO BE INSTALLED ON ALL MANHOLES AND, WITHIN LIMITS OF PAVEMENT, BE INSTALLED TO THE TOP OF THE BASE LAYER WITH A MINIMUM OF 2" OF ASPHALT ON TOP OF THE RING ENCASEMENT.
12. MANHOLE OPENING INCREASED TO 30" AS PER TAC CHAPTER 217.55.
13. ALL SEWER PIPE LATERALS SHALL BE SDR 26 (CLASS 160) PVC PIPE.
14. IF THE GIVEN TOP OF MANHOLE ELEVATION DOES NOT AGREE ON ACTUAL GROUND SURFACE OR FINISH PAVEMENT, THE CONTRACTOR SHALL ADJUST ELEVATIONS SUCH THAT THE TOP OF MANHOLE SHALL BE 0.5' ABOVE EXISTING GROUND, OR FLUSH TO FINISH ASPHALT PAVEMENT.
15. ALL MANHOLES CONSTRUCTED OVER THE EDWARDS AQUIFER RECHARGE ZONE SHOULD BE WATERTIGHT.

2 1 LOWER - EAST SEWERSHED - DOS RIOS/LEON CREEK

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 1705&6 TOTAL EDU'S 138 TOTAL ACREAGE 19.33
TOTAL LINEAR FOOTAGE OF PIPE: 7899 L.F.-12"PVC, 5217 L.F.-8"PVC PLAT NO. 23-11800231
NUMBER OF LOTS 138 SAWS JOB NO. 23-1603

NO.	REVISION	DATE
1	REVISED SEWER BLOCK	02/2/23
2	REVISED SAWS BLOCK	02/01/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
2/1/24

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

ESPADA TRACT UNIT 15

SAN ANTONIO, TEXAS

OVERALL SANITARY SEWER NOTES

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C5.14

Date: Feb 02, 2024, 9:44am User ID: tcamacho
File: P:\126\32\14\Design\Civil\05071126214.dwg
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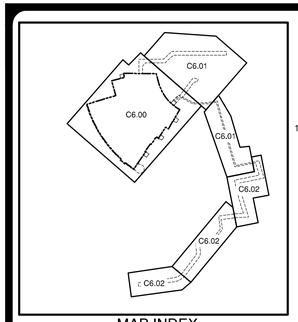
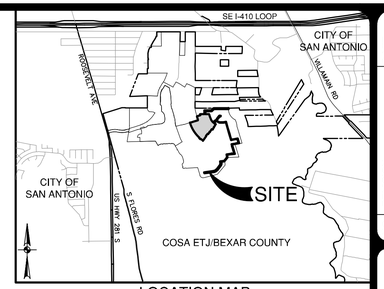


MAP INDEX
NOT-TO-SCALE



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 WYE & LATERAL	
SINGLE WATER SERVICE	
DUAL WATER SERVICE	
STREET LIGHTS	SL
GAS, ELECTRIC, TELEPHONE & CABLE TELEVISION EASEMENT	GETCTV
EXISTING WELL	
SECONDARY PEDESTAL	
TRANSFORMER	
PULL BOX	PB
EXISTING WELL	
VEHICULAR NON ACCESS EASEMENT	VNAE
CLEAR VISION EASEMENT	CVE

CONDUIT NOTES:

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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:

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CAUTION!!

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NO.	REVISION	DATE
1	REVISED SEWER LINE V	12/22/23

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
12/21/23

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS
OVERALL UTILITY PLAN

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C6.00

MATCHLINE "A" - SEE SHEET C6.01

Date: Dec. 26, 2023, 4:43pm User ID: jonathangroff
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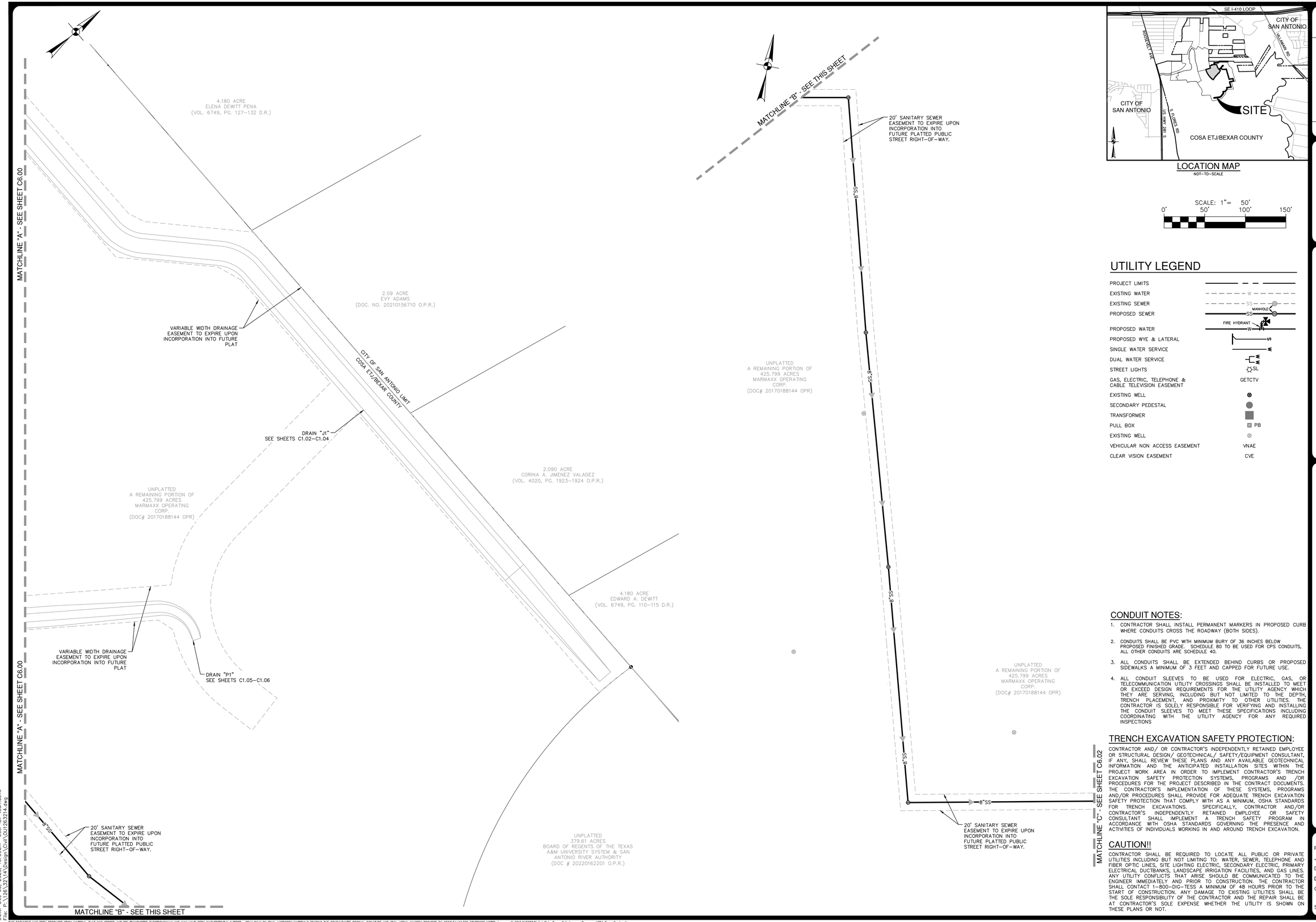

LOCATION MAP
NOT-TO-SCALE

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

UTILITY LEGEND

PROJECT LIMITS	
EXISTING WATER	W
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PROPOSED SEWER	SS
PROPOSED WATER	W, FIRE HYDRANT
PROPOSED WYE & LATERAL	S
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NO.	REVISION	DATE

STATE OF TEXAS
EUGENE H. DAWSON III
112792
LICENSED
PROFESSIONAL ENGINEER
12/12/23

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS
OVERALL UTILITY PLAN

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C6.01

Date: Dec 05, 2023, 10:09am User ID: tcamacho
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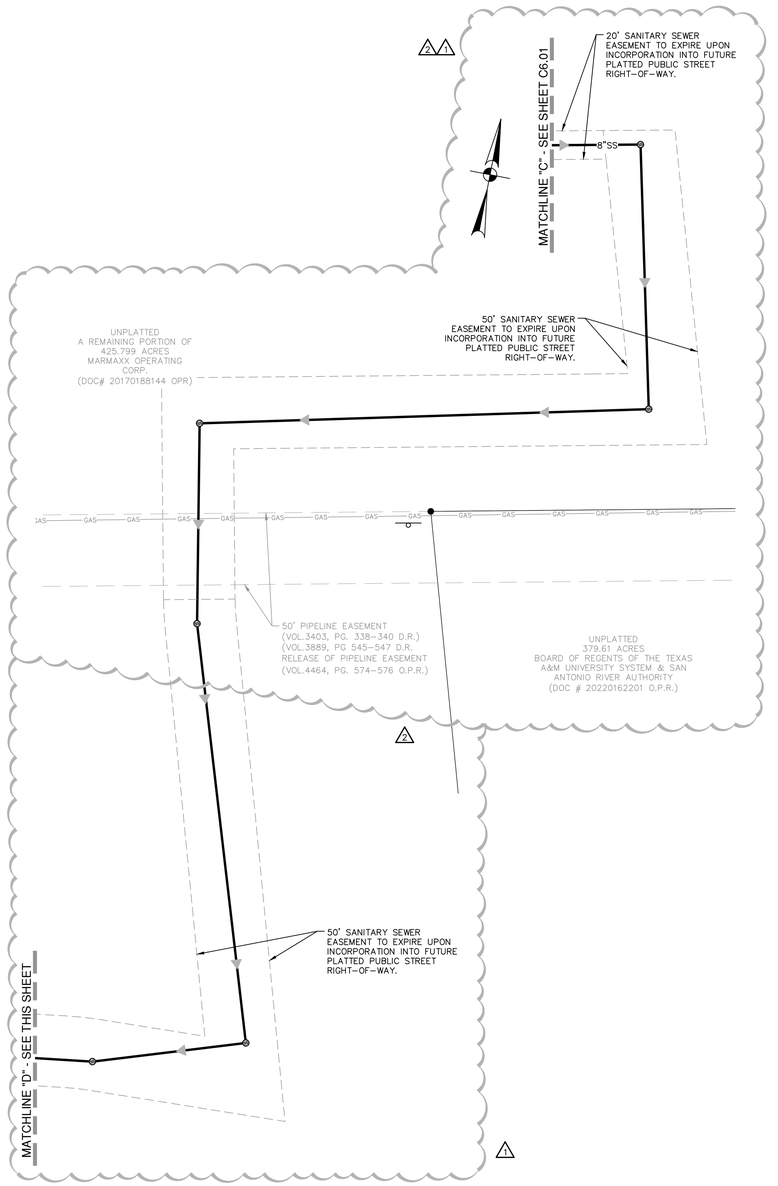

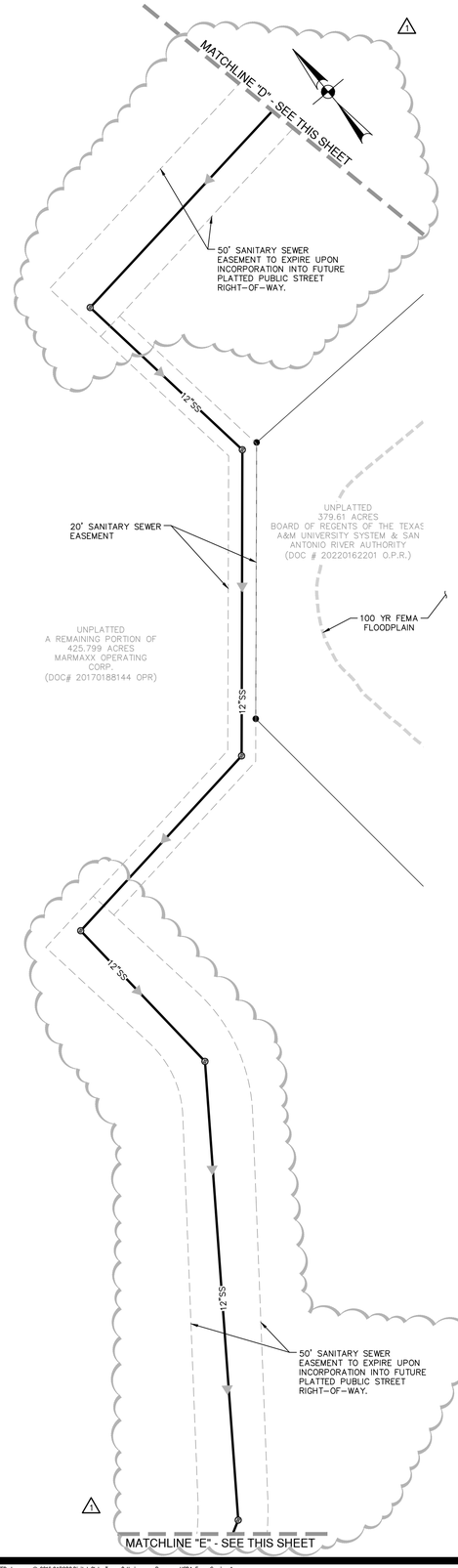

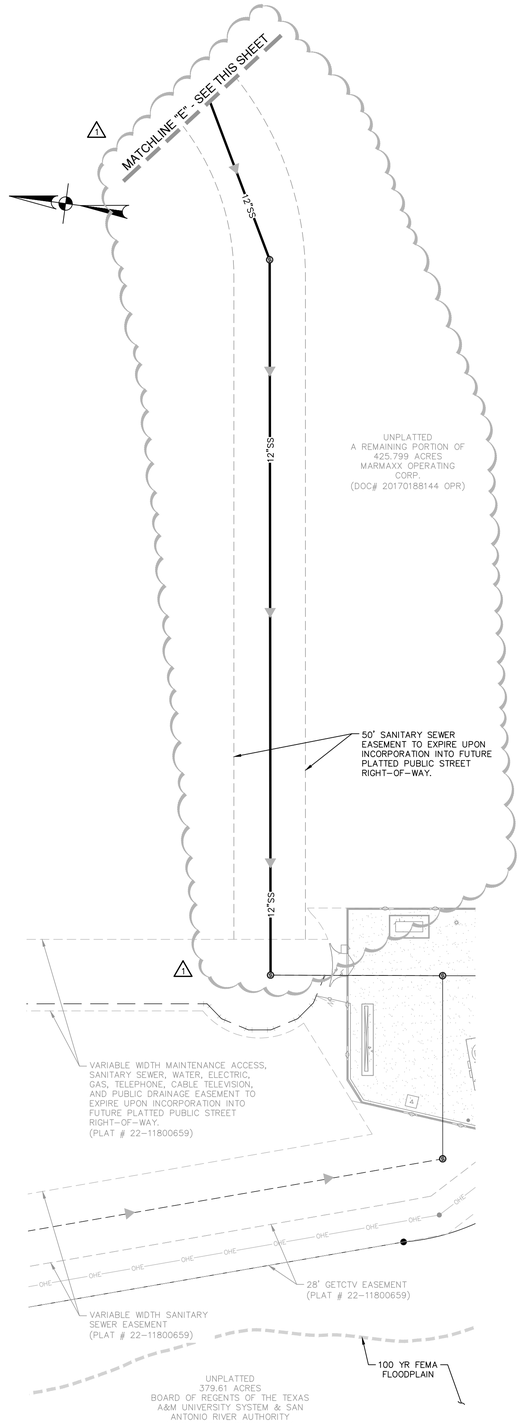

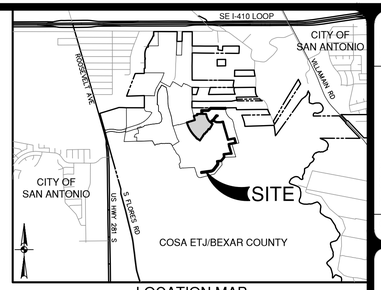

LOCATION MAP
NOT-TO-SCALE

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 WYE & LATERAL	S
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NO.	REVISION	DATE
1	REVISED SEWER ESMT	12/12/23
2	REVISED SEWER ALIGNMENT	02/01/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
2/1/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

OVERALL UTILITY PLAN

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C6.02

Date: Feb 02, 2024, 9:44am User ID: tcamacho
File: P:\126\32\V4\Design\Civil\OU126321 4.dwg
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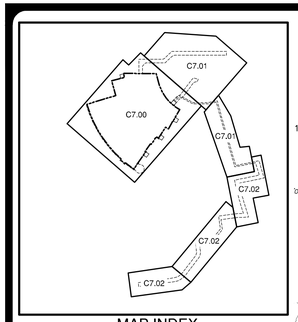

MAP INDEX
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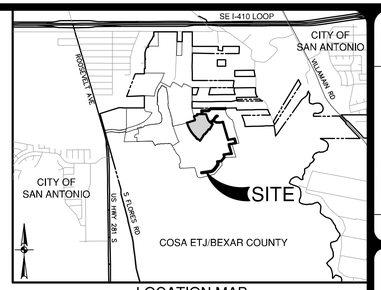

LOCATION MAP
NOT-TO-SCALE

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

MATCHLINE "A" - SEE SHEET C7.01

GRADING LEGEND

PROJECT LIMITS	
100 YR FLOODPLAIN	
EXISTING CONTOUR	976
PROPOSED CONTOUR	970
FLOW ARROW (EXISTING)	
FLOW ARROW (PROPOSED)	
MINIMUM FINISHED FLOOR ELEVATION	FF = XXXX.XX
TREES TO REMAIN	
EXISTING WELL	
CLEAR VISION EASEMENT	CVE

GRADING NOTES:

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THIS SCOPE OF WORK WHERE NOT SPECIFICALLY COVERED IN THE SPECIFICATIONS OR GEOTECHNICAL REPORT SHALL CONFORM TO ALL APPLICABLE CITY, COUNTY AND TXDOT STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION).

2. SITE PREPARATION, GRADING, EXCAVATION AND FILL SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT AND SPECIFICATIONS.

3. ALL SELECT FILL MATERIAL PROVIDED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING AND COMPACTING.

4. ALL ELEVATIONS AND PROPOSED CONTOURS SHOWN ON THIS GRADING PLAN REFLECT FINISHED GRADES. THE THICKNESS OF PAVING, BASE, GRASS, TOPSOIL, AND MULCH MUST BE SUBTRACTED TO OBTAIN SUBGRADE ELEVATIONS.

5. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR CONSTRUCTION OF THIS PROJECT.

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9. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE STABILIZATION. ALL DISTURBED AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND TPDES/SWPPP REQUIREMENTS. REFERENCE THE LANDSCAPE ARCHITECT'S PLAN, IF APPLICABLE.

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12. IN PROPOSED PAVING AREAS, STREET DESIGN PLANS SHALL CONTROL. ALL EARTHEN SLOPES SHALL BE A MAXIMUM OF 3:1 AND A MINIMUM OF 1.0% UNLESS OTHERWISE SHOWN.

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19. NO WORK SHALL BE PERFORMED IN A PUBLIC RIGHT−OF−WAY WITHOUT A PERMIT.

NO.	REVISION	DATE
1	REVISED GRADING	1/16/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
1/16/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
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ESPADA TRACT UNIT 15
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OVERALL GRADING PLAN

PLAT NO. 23-11800231
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DESIGNER JG
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SHEET C7.00

Date: Jan 17, 2024, 10:35am User ID: jonathangroff
File: P:\126\32\14\Design\Civil\GR126321401.dwg

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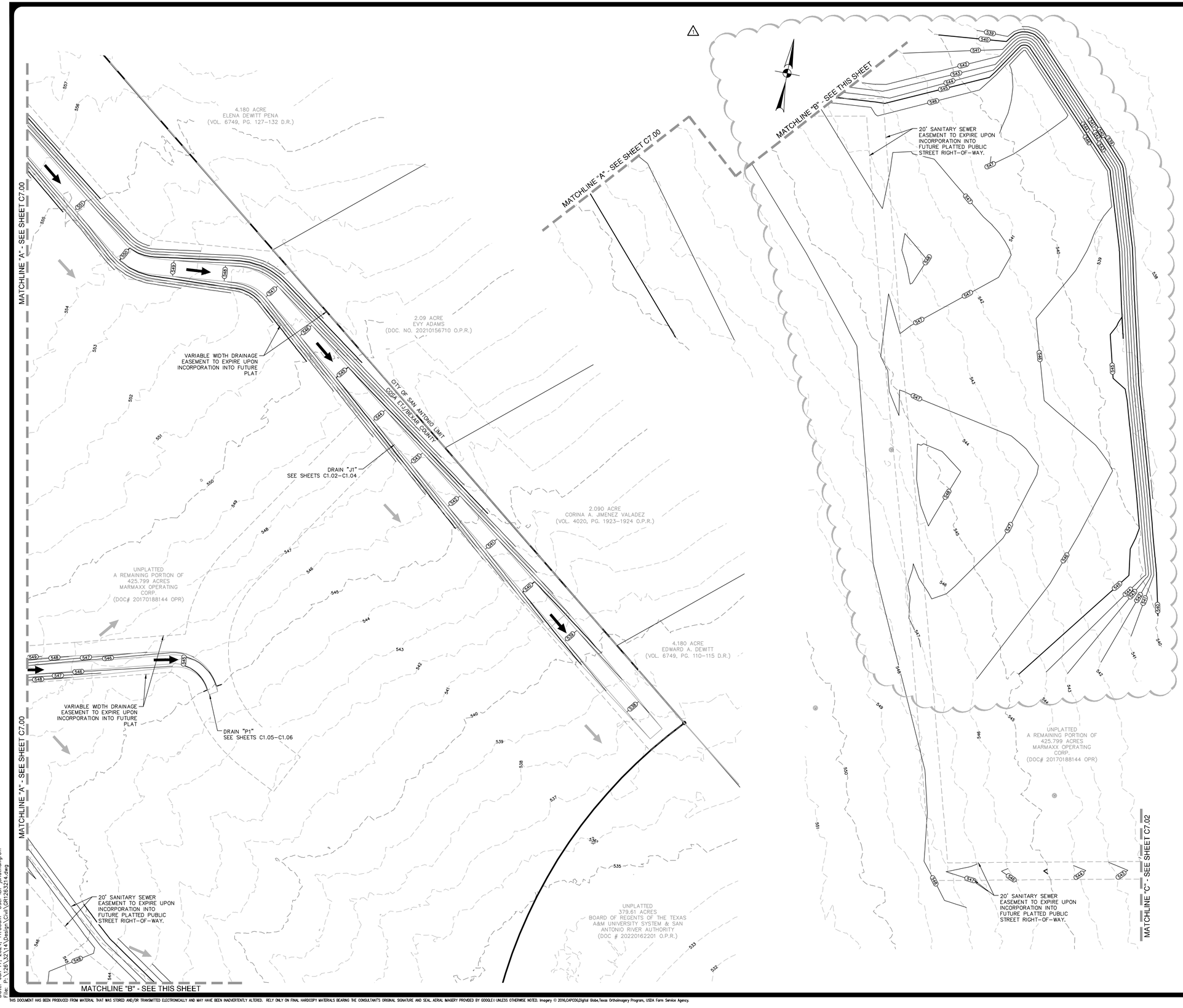

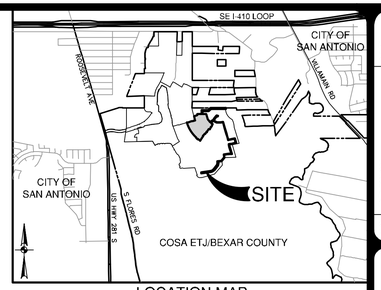

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BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
1/16/24

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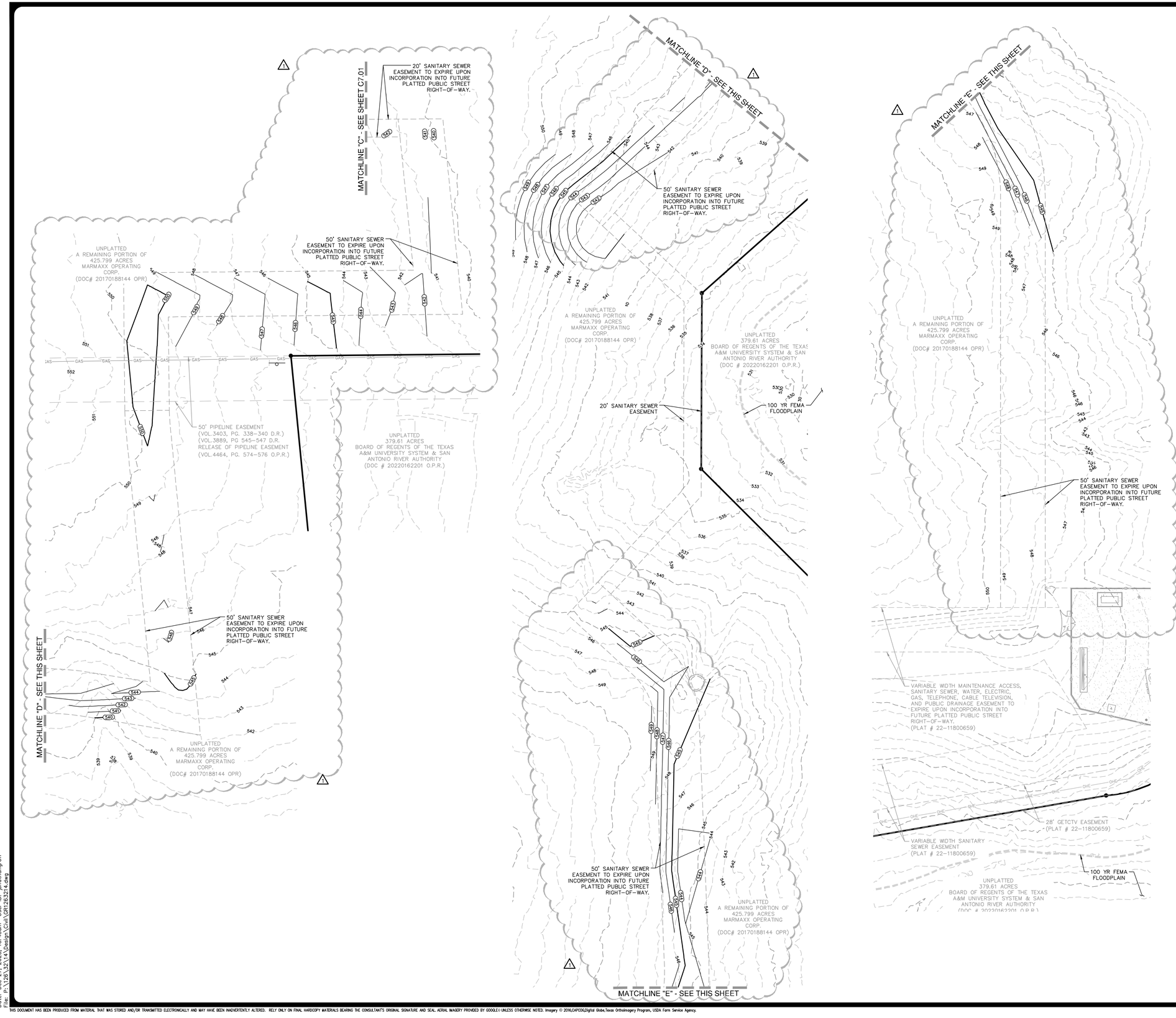

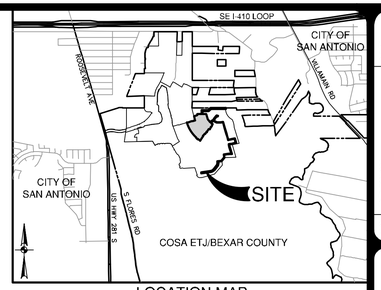

LOCATION MAP
NOT-TO-SCALE

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

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PROJECT LIMITS	
100 YR FLOODPLAIN	
EXISTING CONTOUR	976
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NO.	REVISION	DATE
1	REVISED SEWER ESMT	12/22/23

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED
PROFESSIONAL ENGINEER
Bruna Spengler
12/21/23

PAPE-DAWSON ENGINEERS
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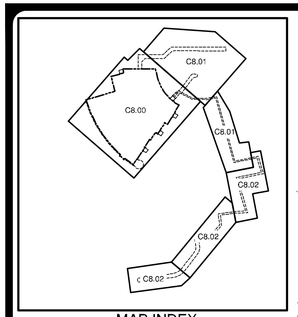

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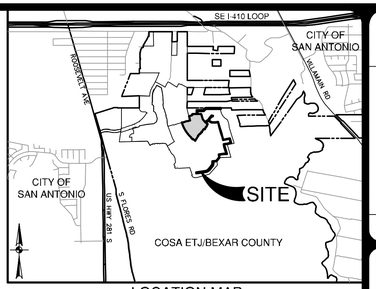

LOCATION MAP
NOT-TO-SCALE

MATCHLINE "A" - SEE SHEET C8.01

SWPPP LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR — 976
- PROPOSED CONTOUR — 970
- CLEAR VISION EASMENT — CVE
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- SILT FENCE
- ROCK BERM (TO BE REMOVED POST CONSTRUCTION)
- GRAVEL FILTER BAGS
- GRAVEL BAG BERM (CAN BE REMOVED ONCE CHANNEL IS STABILIZED OR RIP-RAP IS IN PLACE)
- LIMITS OF DISTURBED AREA
- STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)
- CONCRETE TRUCK WASH-OUT PIT (FIELD LOCATE)
- EARTHEN BERM W/POLYLINER AND SPILLWAY (BERMS ARE TO SPAN ACROSS PROPOSED STREET SECTION APPROX. 28-FEET WIDE FROM CURB TO CURB)
- STREAM CENTERLINE
- VEHICULAR NON ACCESS EASEMENT — VNAE
- EXISTING WELL
- SILT FENCE (PHASE II)

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.

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EXHIBIT 2
1 OF 3

NO.	REMARK	DATE
1	REVISED PROJECT LIMITS	12/7/23
2	REVISED GRADING AND PROJECT LIMITS	1/16/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED PROFESSIONAL ENGINEER
Bruna Spengler
1/16/24

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

STORM WATER POLLUTION PREVENTION PLAN

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C8.00

Date: Jan 17, 2024, 11:09am User ID: jonathangroff
File: P:\126\32\14\Design\Civil\SWPPP\263214.dwg
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SCALE: 1"= 50'
0' 50' 100' 150'

MATCHLINE "A" - SEE SHEET C8.00

MATCHLINE "B" - SEE THIS SHEET

MATCHLINE "C" - SEE SHEET C8.02

4.180 ACRE
ELENA DEWITT PENA
(VOL. 6749, PG. 127–132 D.R.)

CITY OF SAN ANTONIO LIMIT
COSA ETJ/BEXAR COUNTY

2.09 ACRE
EVY ADAMS
(DOC. NO. 20210156710 O.P.R.)

2.090 ACRE
CORINA A. JIMENEZ VALADEZ
(VOL. 4020, PG. 1923–1924 O.P.R.)

4.180 ACRE
EDWARD A. DEWITT
(VOL. 6749, PG. 110–115 D.R.)

UNPLATTED
A REMAINING PORTION OF
425.799 ACRES
MARMAXX OPERATING
CORP.
(DOC# 20170188144 OPR)

UNPLATTED
379.61 ACRES
BOARD OF REGENTS OF THE TEXAS
A&M UNIVERSITY SYSTEM & SAN
ANTONIO RIVER AUTHORITY
(DOC # 20220162201 O.P.R.)

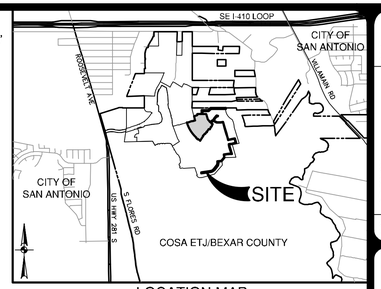
DRAIN "J1"
SEE SHEET C1.02–C1.04

DRAIN "P1"
SEE SHEET C1.05–C1.06

VARIABLE WIDTH DRAINAGE EASEMENT TO EXPIRE UPON INCORPORATION INTO FUTURE PLAT

20' SANITARY SEWER EASEMENT TO EXPIRE UPON INCORPORATION INTO FUTURE PLATTED PUBLIC STREET RIGHT–OF–WAY.

PROJECT LIMITS
(39.66 ACRES)



LOCATION MAP
NOT–TO–SCALE

SWPPP LEGEND

- PROJECT LIMITS
- EXISTING CONTOUR — 976
- PROPOSED CONTOUR — 976
- CLEAR VISION EASMENT — CVE
- FLOW ARROW (EXISTING)
- FLOW ARROW (PROPOSED)
- SILT FENCE
- ROCK BERM (TO BE REMOVED POST CONSTRUCTION)
- GRAVEL FILTER BAGS
- GRAVEL BAG BERM (CAN BE REMOVED ONCE CHANNEL IS STABILIZED OR RIP–RAP IS IN PLACE)
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- STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)
- CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)
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- VEHICULAR NON ACCESS EASEMENT — VNAE
- EXISTING WELL
- SILT FENCE (PHASE II)

GENERAL NOTES

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EXHIBIT 2
2 OF 3

NO.	REVISION	DATE
1	REVISED PROJECT LIMITS	12/22/23
2	REVISED GRADING AND PROJECT LIMITS	1/16/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED PROFESSIONAL ENGINEER
Bruna Spengler
1/16/24

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
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ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS
STORM WATER POLLUTION PREVENTION PLAN

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C8.01

Date: Jan 17, 2024, 2:26pm User ID: jonathangroff
File: P:\126\32\14\Design\Civil\SWPPP\263214.dwg

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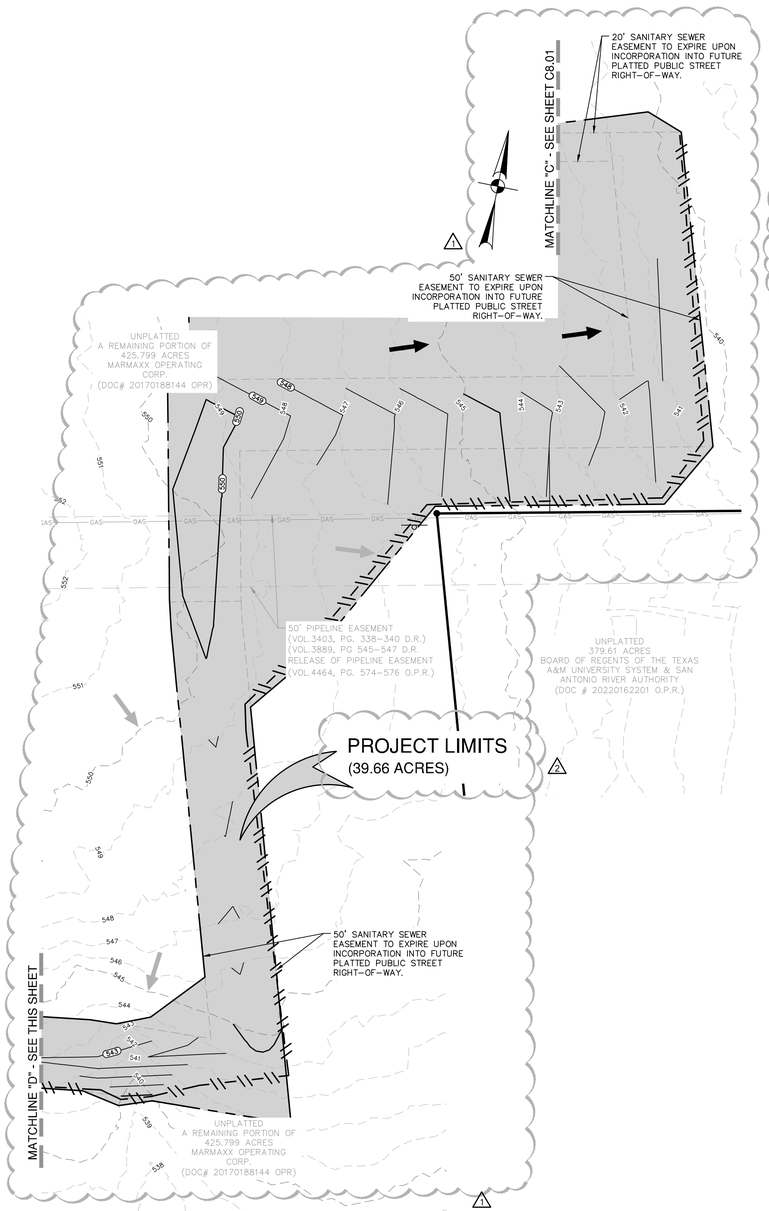

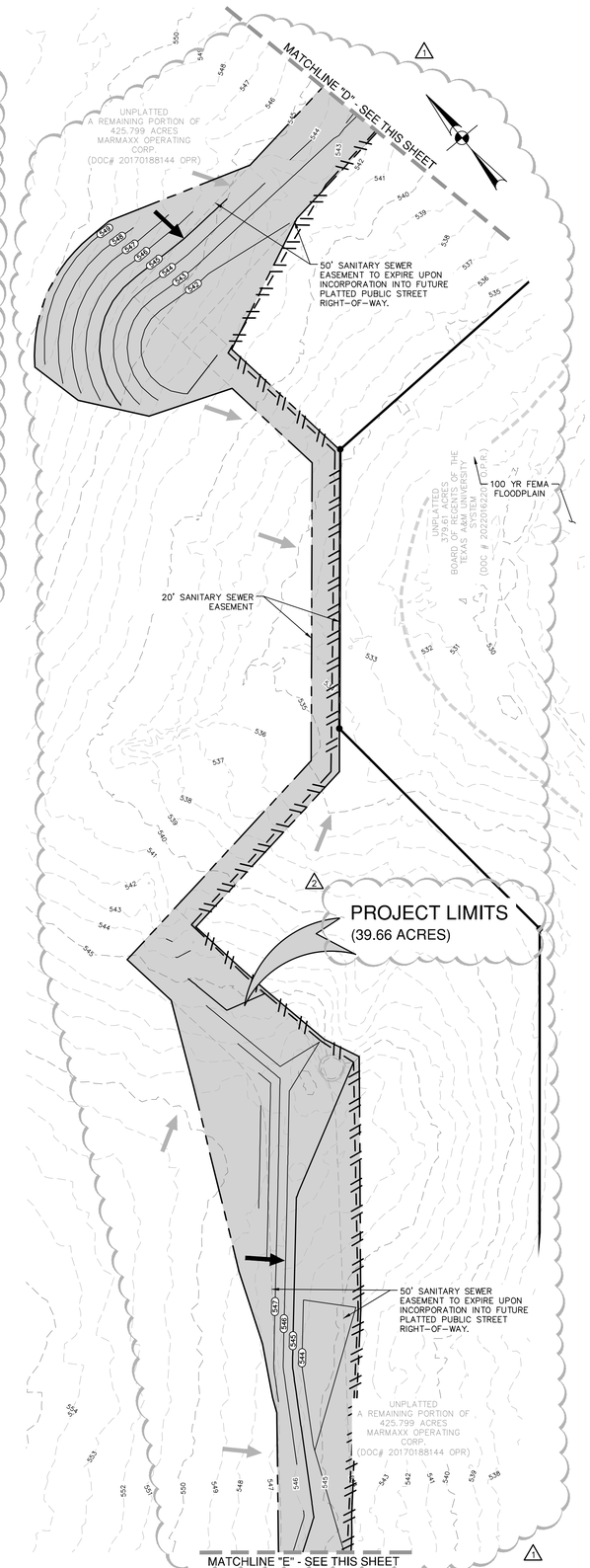

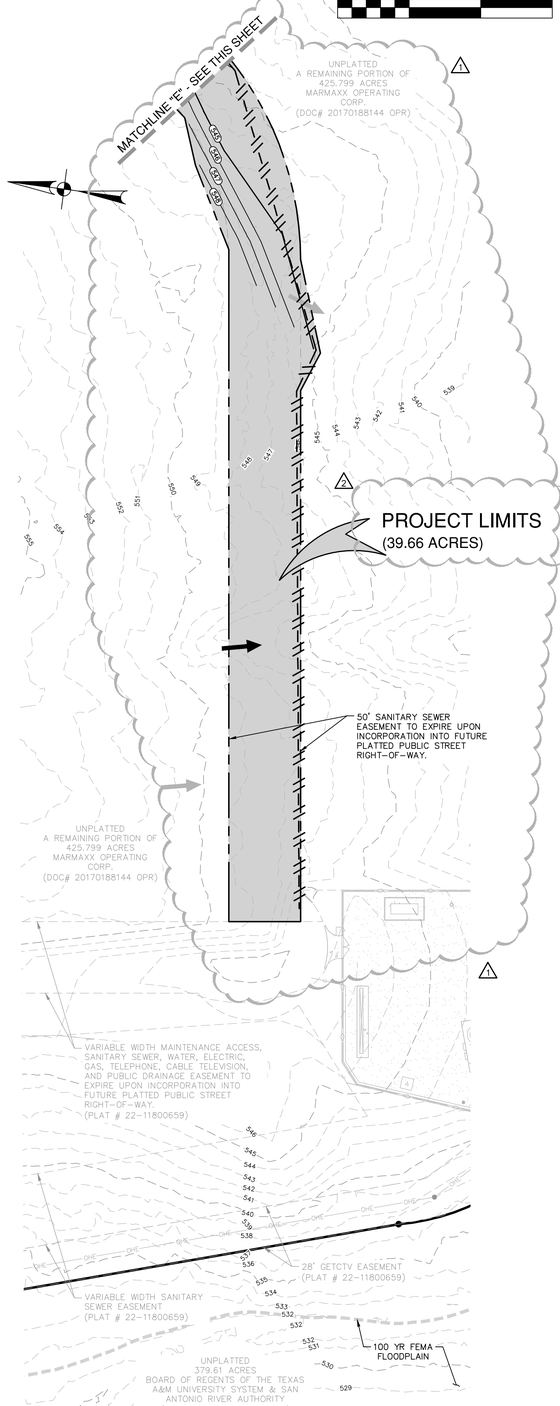

SCALE: 1"= 50'

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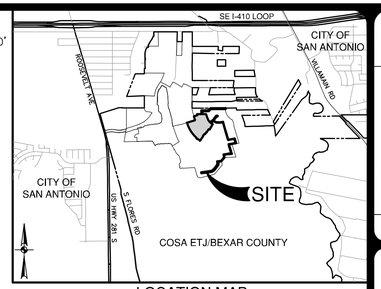

LOCATION MAP
NOT-TO-SCALE

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EXHIBIT 2
3 OF 3

NO.	REVISION	DATE
1	REVISED OWNER ESMT AND PROJECT LIMITS	12/22/23
2	REVISED PROJECT LIMITS	1/16/24

STATE OF TEXAS
BRUNA F. SPENGLER
127547
LICENSED PROFESSIONAL ENGINEER
Bruna Spengler
1/16/24

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

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS

STORM WATER POLLUTION PREVENTION PLAN

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C8.02

Date: Jan 17, 2024, 10:39am User ID: jonathangroff
File: P:\1126\32\14\Design\Civil\SWPPP\263214.dwg

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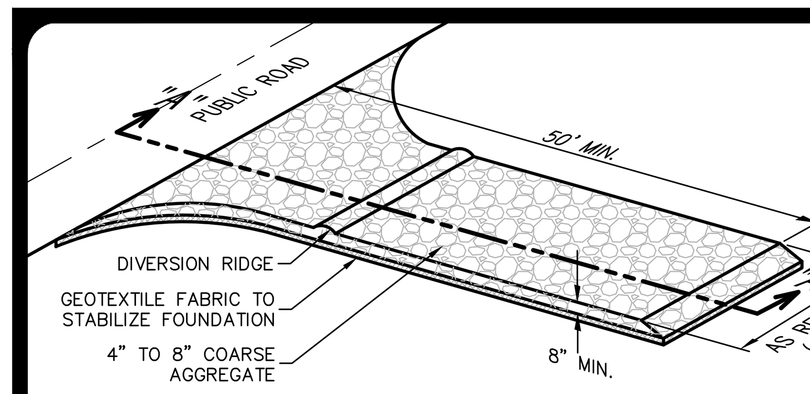
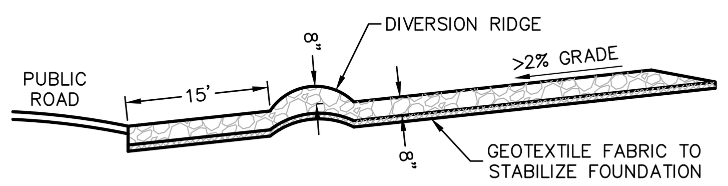


SCHEMATIC OF TEMPORARY CONSTRUCTION ENTRANCE/EXIT



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/YD², A MULLEN BURST RATING OF 140 LB/IN², 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.

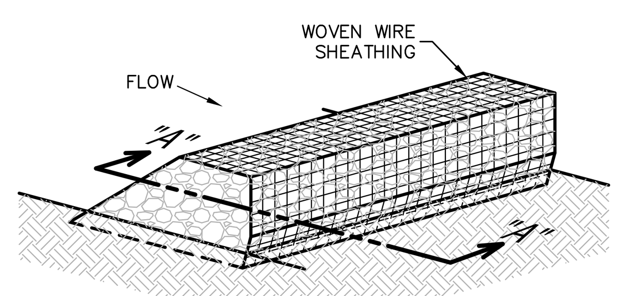
3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.

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.

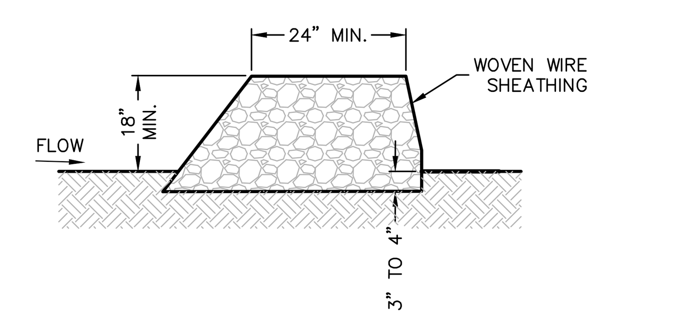
5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

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 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.

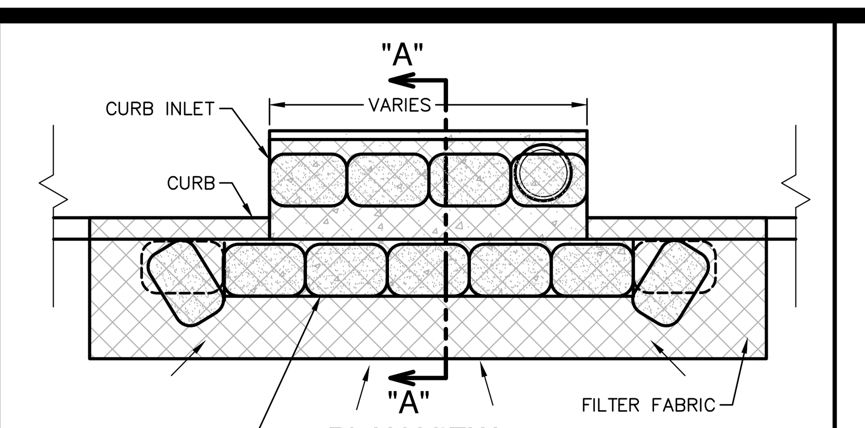
COMMON TROUBLE POINTS

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

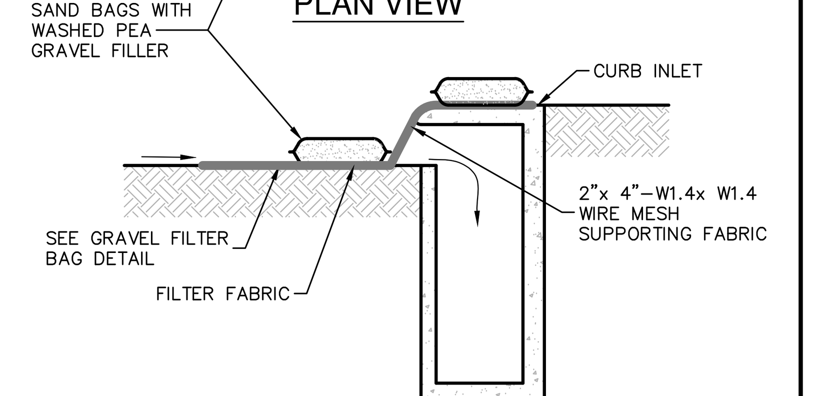
2. BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE).

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. 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.

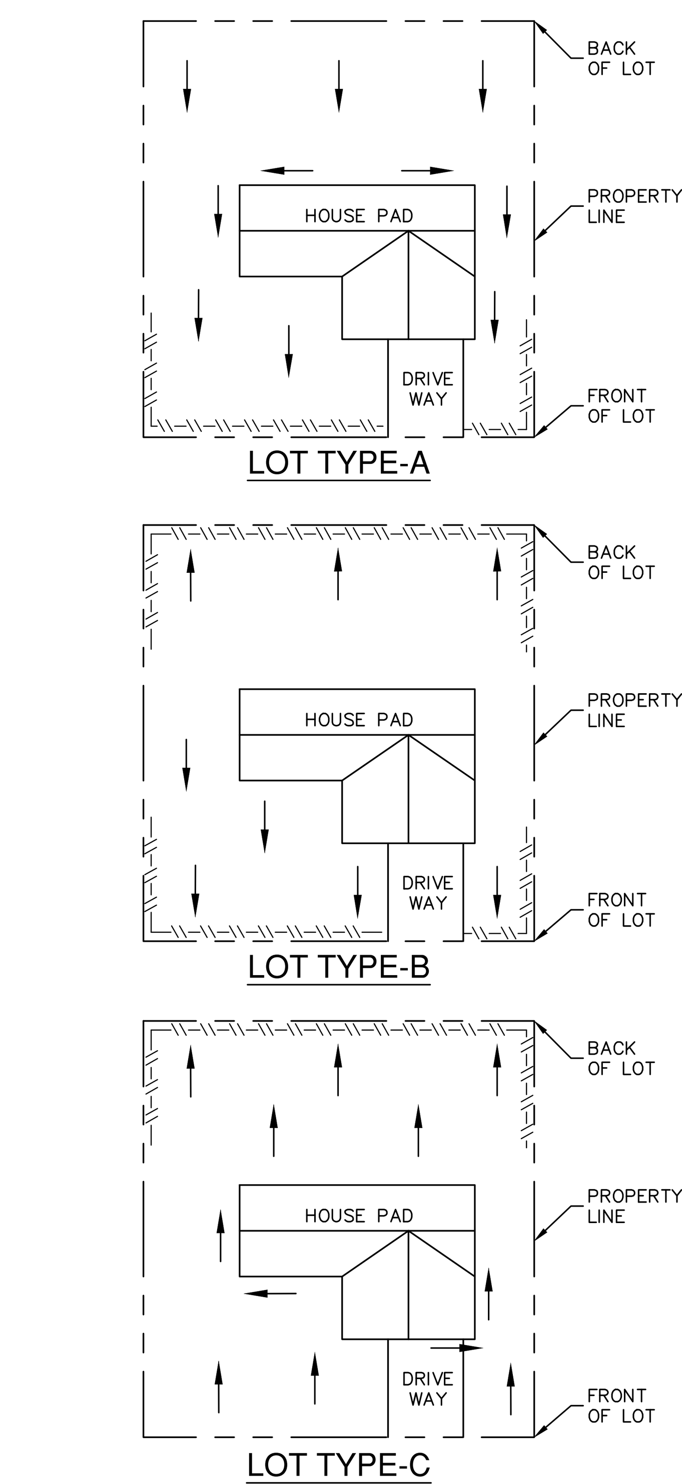
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.

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

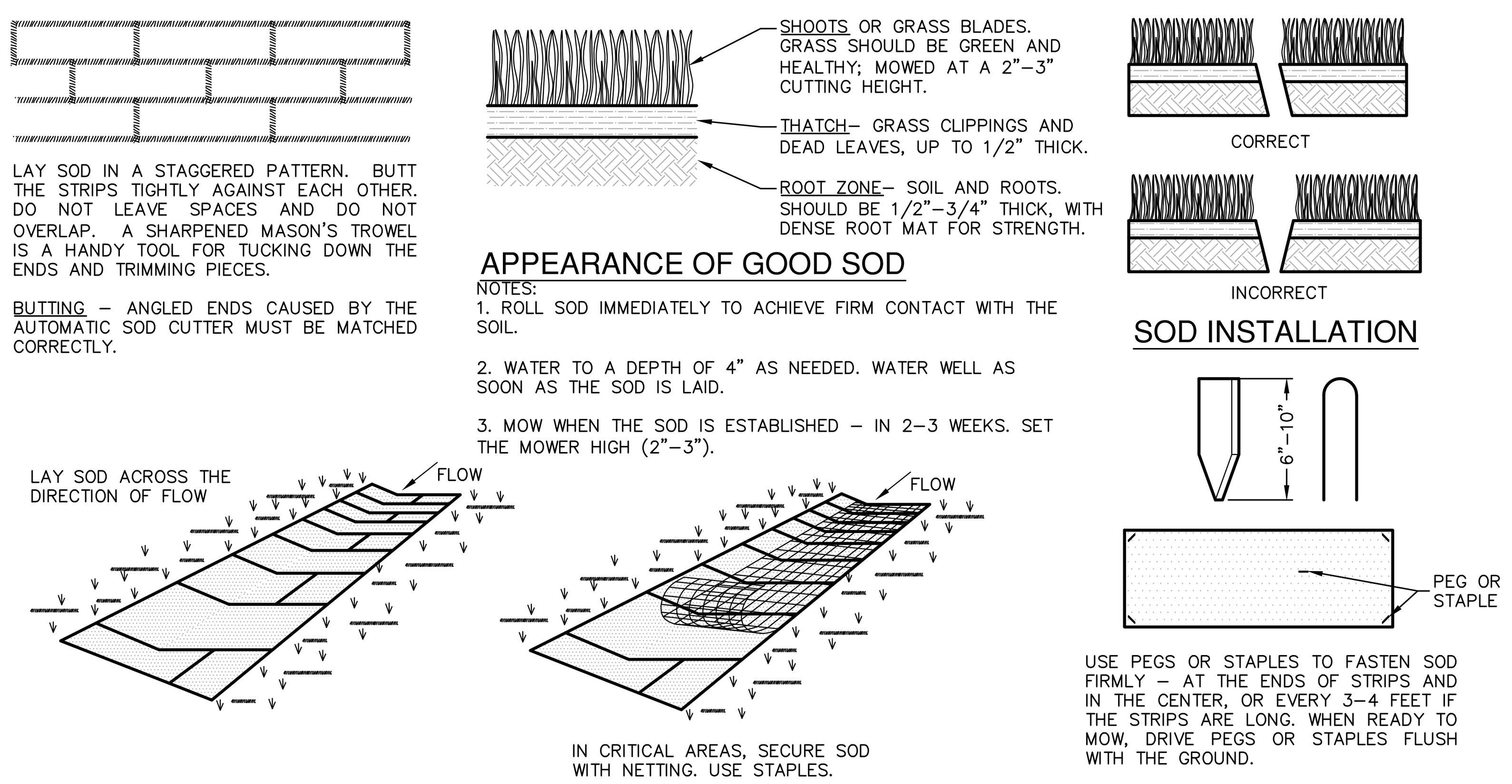


NOTE: SILT FENCE TO BE INSTALLED PER THESE DETAILS AND LOCATED ON THE DOWNGRADIENT SIDE OF EACH LOT LINE OR LIMITS OF CLEARING AS GENERALLY SHOWN ON THE OVERALL SITE PLAN.

LEGEND
—\\—\\—\\— SILT FENCE
⟵ DRAINAGE FLOW

TYPICAL HOUSE LOT LAYOUTS

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.

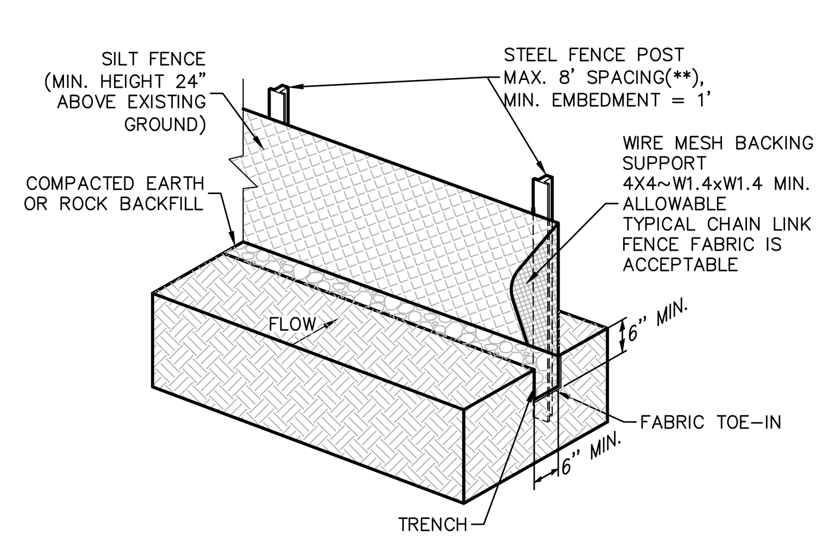
INSPECTION AND MAINTENANCE GUIDELINES

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

**STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST 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. (RG-348, SECTION 1.4.3)

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.

2. REMOVE SEDIMENT WHEN BUILDUP APPROACHES 6 INCHES, BUT NOT TO EXCEED 50% OF HEIGHT.

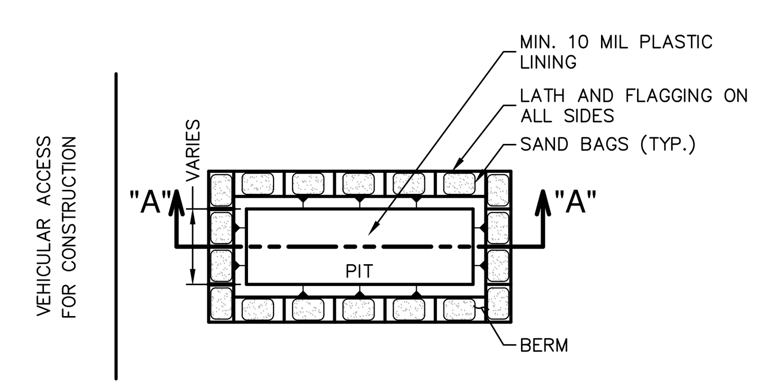
3. REPLACE TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.

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.

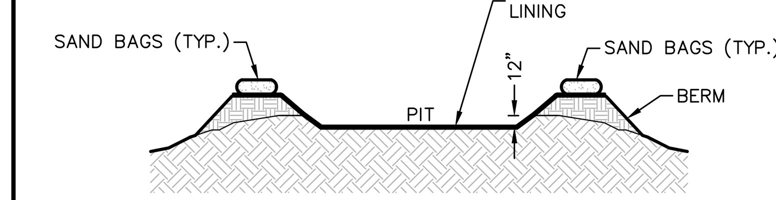
5. WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

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

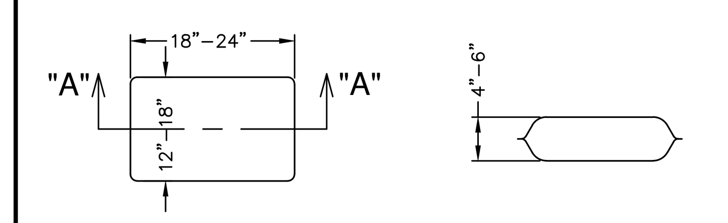
1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.

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"

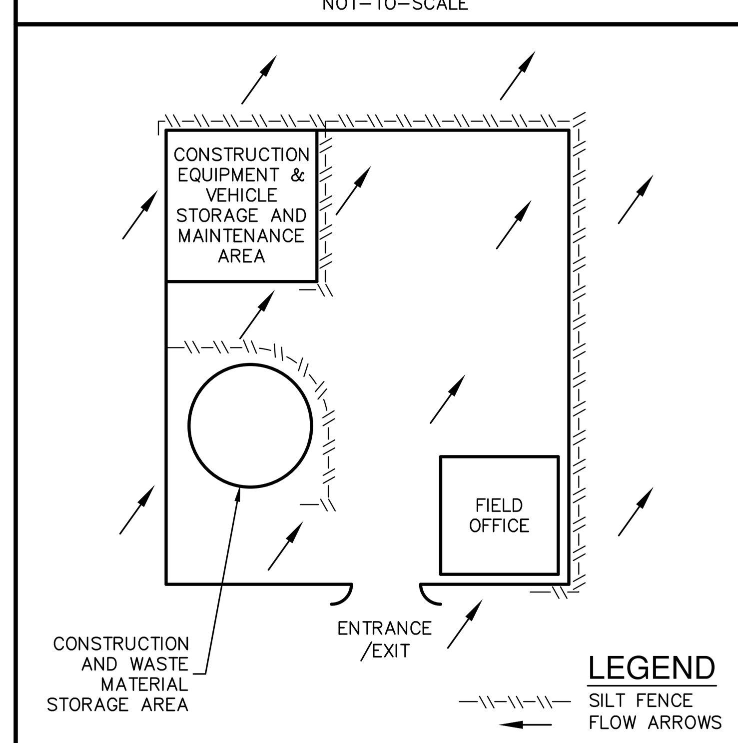
NOTES:
1. THE FILTER BAG MATERIAL SHALL BE MADE OF POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE WOVEN FABRIC, MIN. UNIT WEIGHT OF 4 OUNCES/SY, HAVE A MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70%.

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

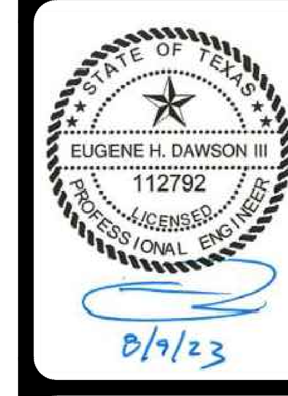
NOT-TO-SCALE

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 3
1 OF 1

NO.	REVISION	DATE



PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

ESPADA TRACT UNIT 15
SAN ANTONIO, TEXAS
STORM WATER POLLUTION PREVENTION PLAN DETAILS

PLAT NO. 23-11800231
JOB NO. 12632-14
DATE JULY 2023
DESIGNER JG
CHECKED DW DRAWN TC
SHEET C8.03

Date: Aug 09, 2023, 2:36pm User ID: tcamacho
File: P:\126\32\14\Design\Civil\SWPPPDT1263214.dwg

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