CONSTRUCTION PLANS

CUDEENGINEERS.COM

STREET AND DRAINAGE CONSTRUCTION PLANS

- C0 - OVERALL COVER SHEET
- C1 - ULTIMATE MASTER DRAINAGE PLAN
- C2 - STREET PLAN & PROFILE - ZINNIA WAY
- C3 - STREET PLAN & PROFILE - ZINNIA WAY
- C4 - STREET PLAN & PROFILE - HYDRANGEA HILL
- C5 - STREET PLAN & PROFILE - HYDRANGEA HILL
- C6 - STREET PLAN & PROFILE - PEONY PLACE
- C7 - STREET PLAN & PROFILE - PEONY PLACE
- C8 - STREET PLAN & PROFILE - LAVENDER PATH
- C9 - STREET PLAN & PROFILE - LILAC PATH
- C10 - STREET PLAN & PROFILE - AZALEA ALLEY
- C11 - STREET PLAN & PROFILE - PETUNIA PATH
- C12 - STREET PLAN & PROFILE - SAGE HILL
- C13 - STREET PLAN & PROFILE - TULIP TERRACE
- C14 - STREET PLAN & PROFILE - TULIP TERRACE
- C15 - STREET PLAN & PROFILE - DAFFODIL PATH
- C16 - STREET PLAN & PROFILE - HOLLY PATH
- C17 - TRAFFIC SIGNAGE PLAN
- C18 - TURN LANE PLAN
- C19 - STANDARD STREET DETAILS
- C20 - TXDOT DETAILS - PEDESTRIAN FACILITIES
- C21 - TXDOT DETAILS - SIGN MOUNTING DETAILS
- C22 - TXDOT DETAILS - PAVEMENT MARKINGS & GUARD RAILS
- C23 - DRAIN PLAN & PROFILE - DRAIN 'A'
- C24 - DRAIN PLAN & PROFILE - DRAIN 'A'
- C25 - DRAIN PLAN & PROFILE - DRAIN 'A'
- C26 - DRAIN PLAN & PROFILE - DRAIN 'A'
- C27 - DRAIN PLAN & PROFILE - DRAIN 'A'
- C28 - DRAIN PLAN & PROFILE - DRAIN 'A'
- C29 - DRAIN PLAN & PROFILE - DRAIN 'A'
- C30 - DRAIN PLAN & PROFILE - DRAIN 'A'
- C31 - DRAIN PLAN & PROFILE - DRAIN 'B'
- C32 - DRAIN PLAN & PROFILE - DRAIN 'B'
- C33 - DRAIN PLAN & PROFILE - DRAIN 'B'
- C34 - DRAIN PLAN & PROFILE - DRAIN 'B'
- C35 - DRAIN PLAN & PROFILE - DRAIN 'B'
- C36 - DRAIN PLAN & PROFILE - DRAIN 'C'
- C37 - DRAIN PLAN & PROFILE - DRAIN 'C'
- C38 - DRAIN PLAN & PROFILE - DRAIN 'C'
- C39 - DRAIN PLAN & PROFILE - DRAIN 'D'
- C40 - DRAIN PLAN & PROFILE - DRAIN 'D'
- C41 - DRAIN PLAN & PROFILE - DRAIN 'D'
- C42 - DRAIN PLAN & PROFILE - DRAIN 'F'
- C43 - DRAIN PLAN & PROFILE - DRAIN 'G'
- C44 - DRAIN PLAN & PROFILE - DRAIN 'G'
- C45 - DRAIN PLAN & PROFILE - DRAIN 'G'
- C46 - DRAIN PLAN & PROFILE - DRAIN 'G'
- C47 - DRAIN PLAN & PROFILE - DRAIN 'G'
- C48 - DRAIN PLAN & PROFILE - DRAIN 'H'
- C49 - DRAIN PLAN & PROFILE - DRAIN 'H'
- C50 - DRAIN PLAN & PROFILE - DRAIN 'H'
- C51 - DRAIN PLAN & PROFILE - DRAIN 'I'
- C52 - DRAIN PLAN & PROFILE - DRAIN 'J'
- C53 - DRAIN PLAN & PROFILE - DRAIN 'K'
- C54 - DRAIN PLAN & PROFILE - DRAIN 'L'
- C55 - DRAIN PLAN & PROFILE - DRAIN 'M'
- C56 - DRAIN PLAN & PROFILE - DRAIN 'N'
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- C58 - DETENTION POND PLAN DETAILS
- C59 - CURB INLET DETAILS
- C60 - DRAINAGE DETAILS
- C61 - DRAINAGE DETAILS
- C62 - DRAINAGE DETAILS

SANITARY SEWER CONSTRUCTION PLANS

- C63 - SANITARY SEWER GENERAL NOTES
- C64 - OVERALL SANITARY SEWER PLAN
- C65 - OVERALL SANITARY SEWER PLAN
- C66 - OVERALL SANITARY SEWER PLAN
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- C68 - SANITARY SEWER PLAN & PROFILE - LINE A
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- C70 - SANITARY SEWER PLAN & PROFILE - LINE C
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- C72 - SANITARY SEWER PLAN & PROFILE - LINE D
- C73 - SANITARY SEWER PLAN & PROFILE - LINE E
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- C76 - SANITARY SEWER PLAN & PROFILE - LINE H
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- C78 - SANITARY SEWER PLAN & PROFILE - LINE J
- C79 - SANITARY SEWER PLAN & PROFILE - LINE Z
- C80 - SANITARY SEWER PLAN & PROFILE - LINE Z
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- C82 - SANITARY SEWER PLAN & PROFILE - LINE Z
- C83 - SANITARY SEWER PLAN & PROFILE - LINE Z
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- C86 - SANITARY SEWER PLAN & PROFILE - LINE Z
- C87 - LIFT STATION SITE PLAN
- C88 - WET WELL PLAN AND PROFILE
- C89 - LIFT STATION GRADING PLAN
- C90 - SANITARY SEWER DETAILS
- C91 - LIFT STATION DETAILS
- C92 - LIFT STATION DETAILS
- C93 - LIFT STATION DETAILS

WATER DISTRIBUTION CONSTRUCTION PLANS

- C94 - WATER DISTRIBUTION PLAN
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- C96 - WATER DISTRIBUTION PLAN DETAILS
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MISCELLANEOUS CONSTRUCTION PLANS

- C99 - UTILITY LAYOUT PLAN
- C100 - UTILITY LAYOUT PLAN
- C101 - STORM WATER POLLUTION PREVENTION PLAN
- C102 - STORM WATER POLLUTION PREVENTION PLAN
- C103 - STORM WATER POLLUTION PREVENTION PLAN

GUADALUPE COUNTY MUNICIPAL UTILITY DISTRICT #15

CIVIL CONSTRUCTION DOCUMENTS

LANTANA SUBDIVISION, UNIT 1

DISTRICT:

GUADALUPE COUNTY MUNICIPAL UTILITY
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CONTACT PERSON: TONDA ALEXANDER
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PH: (210) 298-4294

DESIGN ENGINEER:

CUDE ENGINEERS
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SURVEYOR:

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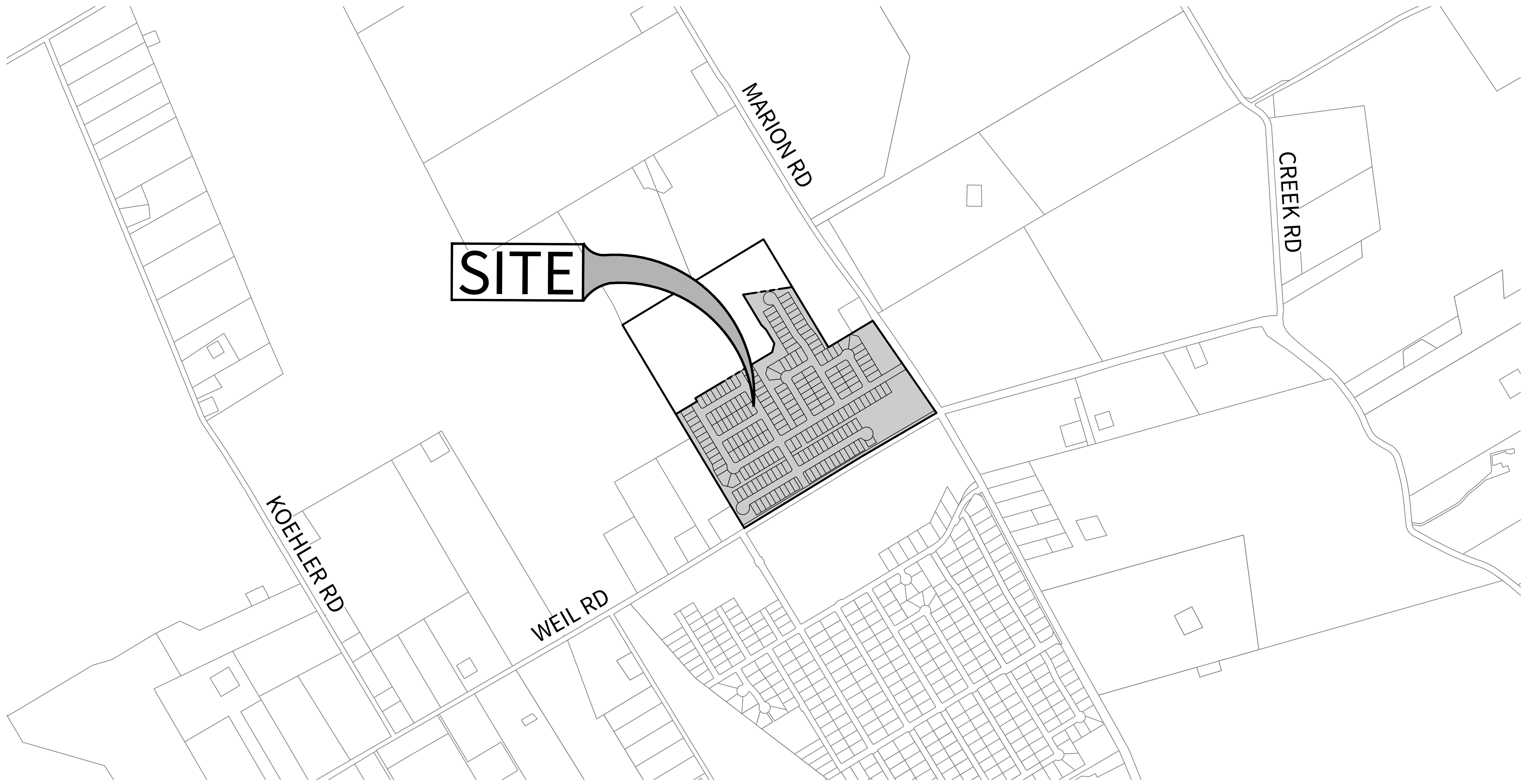


DISTRICT NOTES

THE DISTRICT ENGINEER, CUDE ENGINEERS (JEFFERY McKINNIE, PH:210-681-2951) SHALL BE CONTACTED 48 HOURS PRIOR TO:
i) PRE-CONSTRUCTION MEETINGS;
ii) BEGINNING EACH PHASE OF CONSTRUCTION;
iii) TESTING OF WATER AND/OR WASTEWATER LINES; AND,
iv)FINAL WALK-THROUGH OF FACILITIES.

LOCATION MAP
N.T.S.

DISTRICT ENGINEER'S APPROVAL

THESE PLANS HAVE BEEN REVIEW AND APPROVED BY______________________________ ON ______________________

REVIEW OF THE PLANS BY THE DISTRICT IS LIMITED TO STREETS, WATER, WASTEWATER, AND DRAINAGE AND DOES NOT INDICATE A REVIEW OF THE ADEQUACY OF THE DESIGN FOR THE FACILITIES. IN APPROVING THESE PLANS, THE DISTRICT MUST RELY ON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.

____
DISTRICT ENGINEER

LEGAL DESCRIPTION:

LANTANA, UNIT 1

BEING 67.08 ACRES OF LAND OUT OF THE E. COY SURVEY 93, ABSTRACT 87, SITUATED IN GUADALUPE COUNTY, TEXAS, AND BEING ALL OF A CALLED 36.0 ACRE TRACT OF LAND AND ALL OF THAT CALLED 61.87 ACRE TRACT OF LAND RECORDED IN DOCUMENT 202199013820 OF THE OFFICIAL PUBLIC RECORD OF GUADALUPE COUNTY, TEXAS.

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

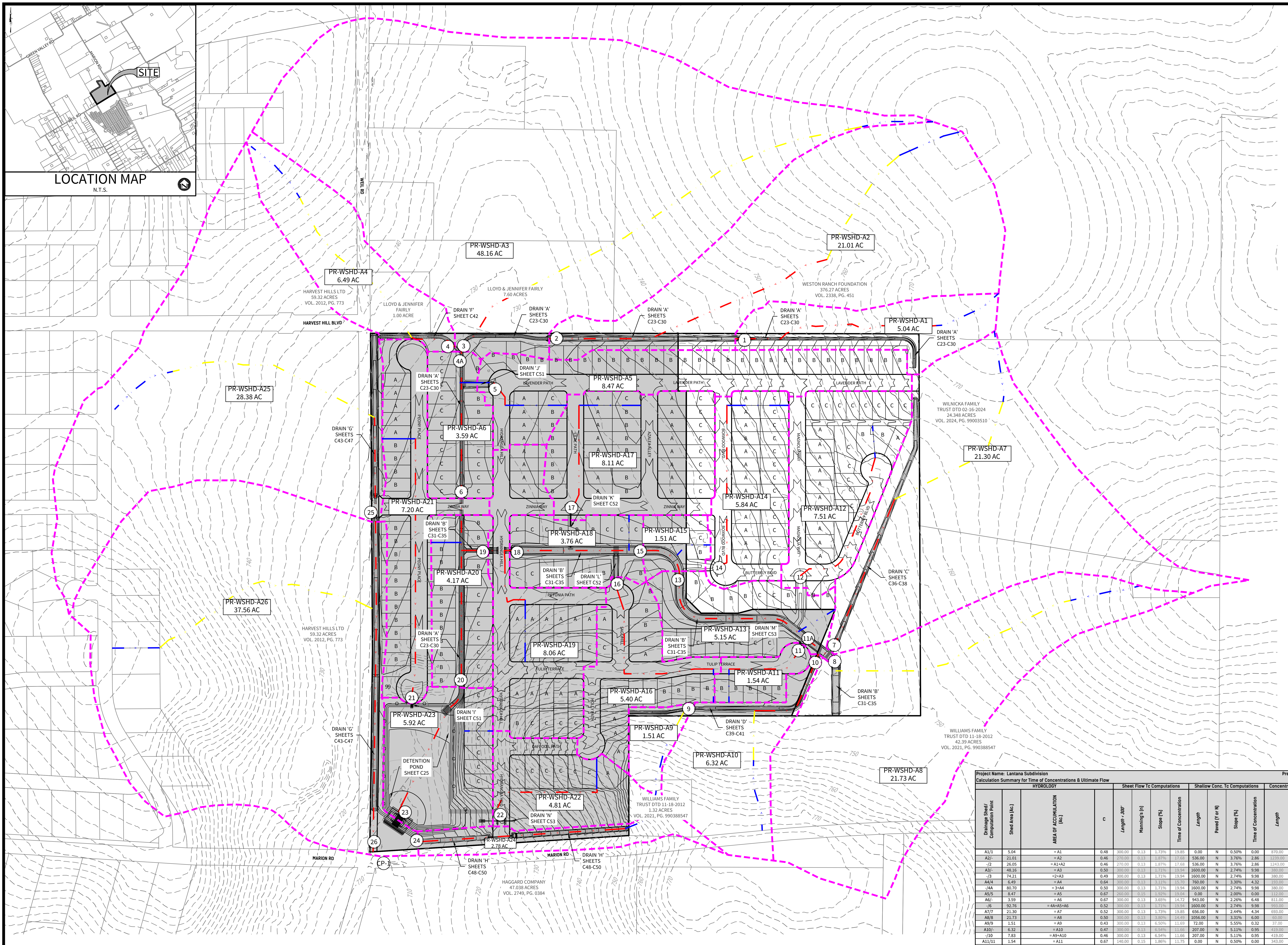
DRAWN BY	DATE
CG//JG/LJ/TCD	05/12/2025
CHECKED BY	**PROJECT NO.**
XV/JC	04037.003

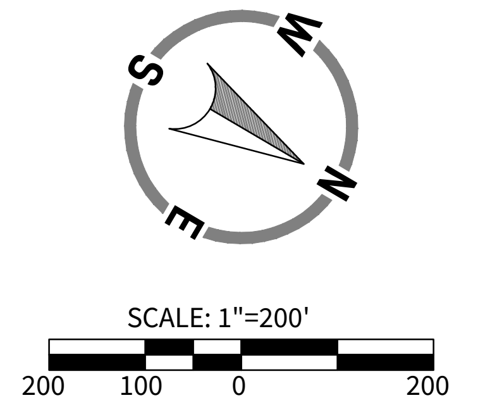
EST. 1980
CUDE
ENGINEERS

LANTANA SUBDIVISION
UNIT 1
CONSTRUCTION PLANS

JAVIER CASTELLO
122170
J. Castello
5/12/2025

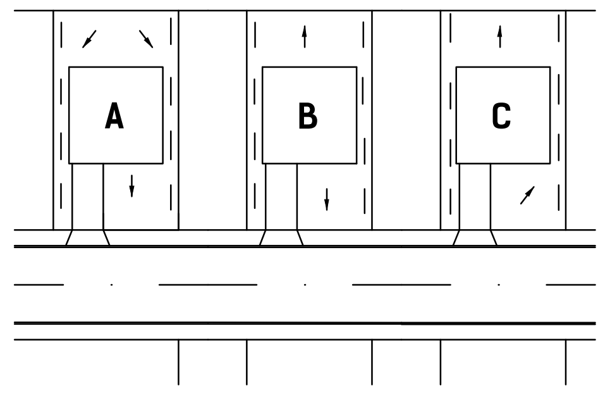
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500





LEGEND

UNIT BOUNDARY	▬ ▬ ▬
DRAINAGE AREA BOUNDARY	▬ ▬ ▬
SHEET FLOW Tc PATH	— · —
SHALLOW CONC. Tc PATH	— · —
CHANNEL CONC. Tc PATH	— · —
ACCUMULATION POINT	(XX)



TYPICAL LOT SITE PLAN

N.T.S.

Project Name: Lantana Subdivision

Calculation Summary for Time of Concentrations & Ultimate Flow

Precipitation Area Atlas 14 = PA2

HYDROLOGY				Sheet Flow Tc Computations				Shallow Conc. Tc Computations				Concentrated Tc Computations			Overall	INTENSITY			Q FLOW			
Drainage Shed/ Computation Point	Shed Area (Ac.)	AREA OF ACCUMULATION (Ac.)	C	Length ‹ 300'	Manning's (n)	Slope (%)	Time of Concentration	Length	Paved (Y or N)	Slope (%)	Time of Concentration	Length	Velocity (fps)	Time of Concentration	Time of Concentration (min)	I5	I25	I100	Q5	Q25	Q100	Drainage Shed
A1/1	5.04	= A1	0.48	300.00	0.13	1.73%	19.85	0.00	N	0.50%	0.00	870.00	6	2.42	22.26	4.33	6.01	7.49	10.48	14.54	18.12	A1/1
A2/-	21.01	= A2	0.46	270.00	0.13	1.87%	17.68	536.00	N	3.76%	2.86	1239.00	6	3.44	23.98	4.17	5.78	7.20	40.30	55.86	69.59	A2/-
-/2	26.05	= A1+A2	0.46	270.00	0.13	1.87%	17.68	536.00	N	3.76%	2.86	1243.00	6	3.45	23.99	4.17	5.78	7.20	49.97	69.26	86.28	-/2
A3/-	48.16	= A3	0.50	300.00	0.13	1.71%	19.94	1600.00	N	2.74%	9.98	380.00	6	1.06	30.98	3.66	5.08	6.32	88.13	122.33	152.19	A3/-
-/3	74.21	=2+A3	0.49	300.00	0.13	1.71%	19.94	1600.00	N	2.74%	9.98	380.00	6	1.06	30.98	3.66	5.08	6.32	133.09	184.72	229.81	-/3
A4/4	6.49	= A4	0.64	300.00	0.13	3.11%	15.70	760.00	N	3.30%	4.32	193.00	6	0.54	20.55	4.51	6.26	7.81	18.73	26.00	32.44	A4/4
-/4A	80.70	= 3+A4	0.50	300.00	0.13	1.71%	19.94	1600.00	N	2.74%	9.98	380.00	6	1.06	30.98	3.66	5.08	6.32	147.68	204.98	255.01	-/4A
A5/5	8.47	= A5	0.67	260.00	0.15	1.92%	19.04	0.00	N	2.00%	0.00	112.00	6	0.31	19.35	4.65	6.46	8.06	26.39	36.66	45.74	A5/5
A6/-	3.59	= A6	0.67	300.00	0.13	3.65%	14.72	943.00	N	2.26%	6.48	811.00	6	2.25	23.46	4.22	5.85	7.29	10.15	14.07	17.53	A6/-
-/6	92.76	= 4A+A5+A6	0.52	300.00	0.13	1.71%	19.94	1600.00	N	2.74%	9.98	993.00	6	2.76	32.68	3.56	4.94	6.15	171.72	238.28	296.65	-/6
A7/7	21.30	= A7	0.52	300.00	0.13	1.73%	19.85	656.00	N	2.44%	4.34	693.00	6	1.93	26.11	3.99	5.54	6.90	44.19	61.36	76.42	A7/7
A8/8	21.73	= A8	0.50	300.00	0.13	3.80%	14.49	1056.00	N	3.31%	6.00	60.00	6	0.17	20.65	4.50	6.24	7.79	48.89	67.80	84.64	A8/8
A9/9	1.51	= A9	0.43	300.00	0.13	6.50%	11.69	72.00	N	5.55%	0.32	37.00	6	0.10	12.11	5.89	8.22	10.37	3.82	5.34	6.73	A9/9
A10/-	6.32	= A10	0.47	300.00	0.13	6.54%	11.66	207.00	N	5.11%	0.95	419.00	6	1.16	13.77	5.56	7.74	9.72	16.52	22.99	28.87	A10/-
-/10	7.83	= A9+A10	0.46	300.00	0.13	6.54%	11.66	207.00	N	5.11%	0.95	419.00	6	1.16	13.77	5.56	7.74	9.72	20.03	27.88	35.01	-/10
A11/11	1.54	= A11	0.67	140.00	0.15	1.86%	11.75	0.00	N	0.50%	0.00	343.00	6	0.95	12.70	5.77	8.04	10.13	5.95	8.30	10.45	A11/11
-/11A	52.40	= 7+8+10+11	0.51	300.00	0.13	1.73%	19.85	656.00	N	2.44%	4.34	802.00	6	2.23	26.41	3.97	5.51	6.86	106.09	147.25	183.33	-/11A
A12/12	7.51	= A12	0.67	135.00	0.15	1.70%	11.83	0.00	N	0.50%	0.00	659.00	6	1.83	13.66	5.58	7.77	9.77	28.08	39.10	49.16	A12/12
A13/-	5.15	=A13	0.67	295.00	0.13	2.90%	15.93	0.00	N	0.50%	0.00	668.00	6	1.86	17.78	4.86	6.75	8.44	16.77	23.29	29.12	A13/-
-/13	65.06	= 11A+A12+A13	0.54	300.00	0.13	1.73%	19.85	656.00	N	2.44%	4.34	1540.00	6	4.28	28.46	3.82	5.30	6.60	134.21	186.20	231.87	-/13
A14/14	5.84	= A14	0.67	260.00	0.15	4.21%	13.91	0.00	N	0.50%	0.00	702.00	6	1.95	15.86	5.16	7.18	8.98	20.19	28.09	35.14	A14/14
A15/-	1.51	= A15	0.67	170.00	0.15	1.59%	14.61	0.00	N	0.50%	0.00	172.00	6	0.48	15.09	5.30	7.38	9.24	5.36	7.47	9.35	A15/-
-/15	72.41	= 13+A14+A15	0.55	300.00	0.13	1.73%	19.85	656.00	N	2.44%	4.34	1735.00	6	4.82	29.00	3.78	5.25	6.53	150.54	209.08	260.06	-/15
A16/16	5.40	= A16	0.67	140.00	0.15	2.11%	11.17	0.00	N	0.50%	0.00	740.00	6	2.06	13.23	5.67	7.89	9.93	20.51	28.55	35.93	A16/16
A17/17	8.11	= A17	0.67	260.00	0.15	2.00%	18.73	0.00	N	0.50%	0.00	446.00	6	1.24	19.97	4.58	6.35	7.93	24.89	34.50	43.09	A17/17
A18/-	3.76	= A18	0.67	145.00	0.15	2.00%	11.74	0.00	N	0.50%	0.00	495.00	6	1.38	13.11	5.69	7.92	9.97	14.33	19.95	25.12	A18/-
-/18	89.68	= 15+A16+A17+A18	0.58	300.00	0.13	1.73%	19.85	656.00	N	2.44%	4.34	2295.00	6	6.38	30.56	3.69	5.11	6.36	191.93	265.79	330.81	-/18
A19/-	8.06	= A19	0.67	260.00	0.15	2.16%	18.16	0.00	N	0.50%	0.00	295.00	6	0.82	18.98	4.70	6.52	8.14	25.38	35.21	43.96	A19/-
-/19	97.74	= 18+A19	0.58	300.00	0.13	1.73%	19.85	656.00	N	2.44%	4.34	2385.00	6	6.63	30.81	3.67	5.09	6.33	208.05	288.55	358.84	-/19
A20/-	4.17	= A20	0.67	120.00	0.15	1.53%	11.23	0.00	N	1.31%	0.00	657.00	6	1.83	13.06	5.70	7.94	10.00	15.93	22.18	27.94	A20/-
-/20	194.67	= 6+19+A20	0.56	300.00	0.13	1.71%	19.94	1600.00	N	2.74%	9.98	1786.00	6	4.96	34.89	3.44	4.77	5.94	375.01	520.00	647.55	-/20
A21/21	7.20	= A21	0.67	140.00	0.15	2.05%	11.30	0.00	N	0.50%	0.00	1085.00	6	3.01	14.32	5.45	7.59	9.52	26.29	36.61	45.92	A21/21
A22/22	4.81	= A22	0.67	140.00	0.15	2.00%	11.41	0.00	N	0.50%	0.00	363.00	6	1.01	12.42	5.83	8.13	10.24	18.79	26.20	33.00	A22/22
A23/-	5.92	= A23	0.67	122.00	0.15	2.00%	10.22	0.00	N	2.00%	0.00	473.00	6	1.31	11.54	6.02	8.39	10.59	23.88	33.28	42.00	A23/-
-/23	*Reference Lantana Subdivision SWMP for SCS hydrology calculations & Detention Analysis																					-/23
A24/24	2.78	= A24	0.67	209.00	0.13	7.62%	8.21	0.00	N	2.44%	0.00	870.00	6	2.42	10.63	6.22	8.68	10.97	11.59	16.17	20.43	A24/24
A25/25	28.38	= A25	0.52	300.00	0.13	1.70%	19.99	906.00	N	2.54%	5.87	348.00	6	0.97	26.83	3.94	5.46	6.80	58.14	80.58	100.35	A25/25
A26/-	37.56	= A26	0.53	200.00	0.13	1.92%	13.76	1007.00	N	5.87%	4.29	1010.00	6	2.81	20.86	4.47	6.21	7.75	88.98	123.62	154.28	A26/-
-/26	65.94	= A25+A26	0.53	200.00	0.13	1.70%	14.45	906.00	N	2.54%	5.87	1818.00	6	5.05	25.37	4.05	5.62	7.00	141.54	196.41	244.64	-/26
CP-1	*Reference Lantana Subdivision SWMP for SCS hydrology calculations & Detention Analysis																					CP-1

CUDEENGINEERS.COM

EST. 1980
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LANTANA SUBDIVISION
UNIT 1

ULTIMATE MASTER DRAINAGE PLAN

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

#	DATE	REVISIONS
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C1

CUDEENGINEERS.COM

P:\04037\003\2-DWG\4-Plans\C1 ULTIMATE MASTER DRAINAGE PLAN.dwg 2025/05/12 1:38pm tduano

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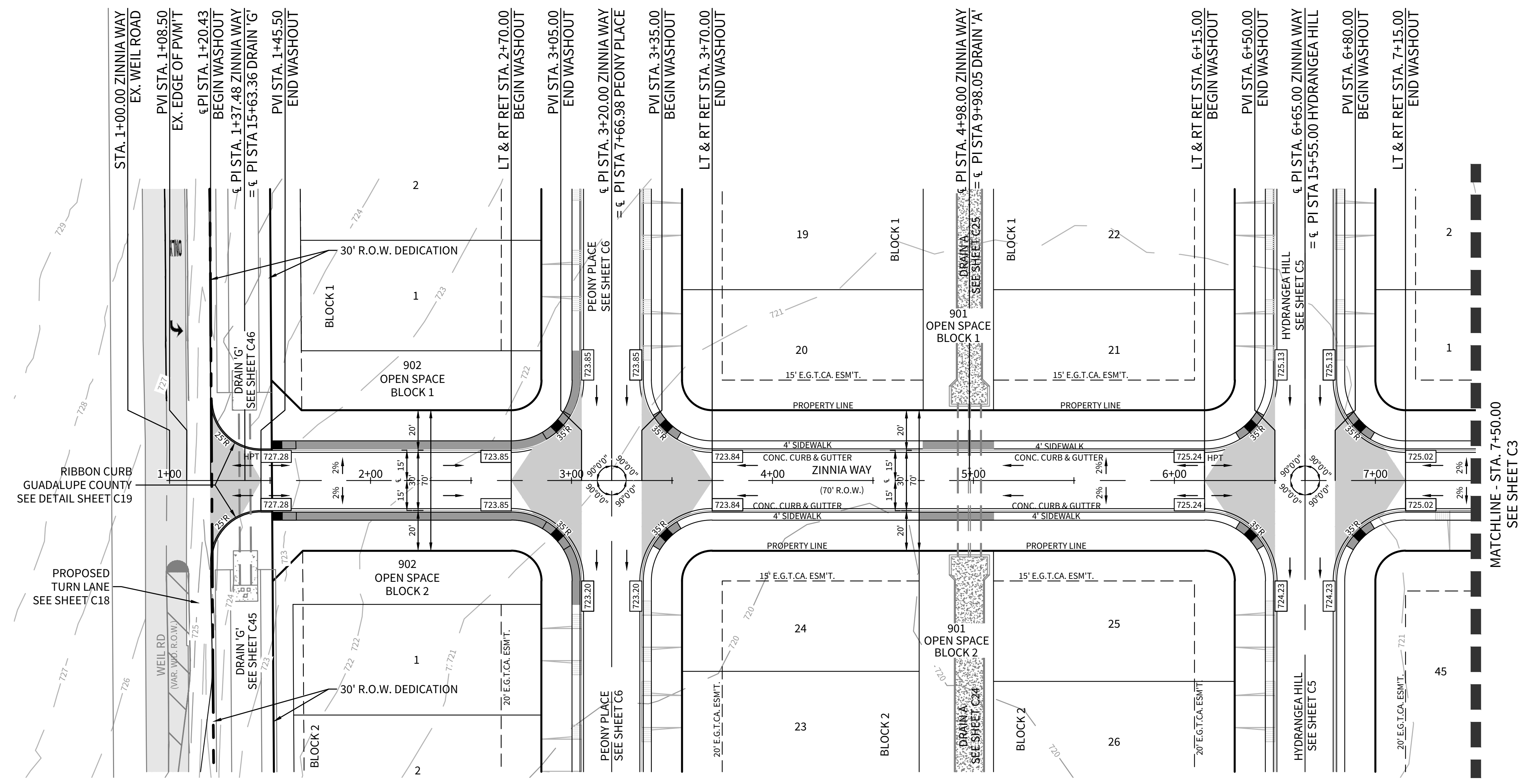
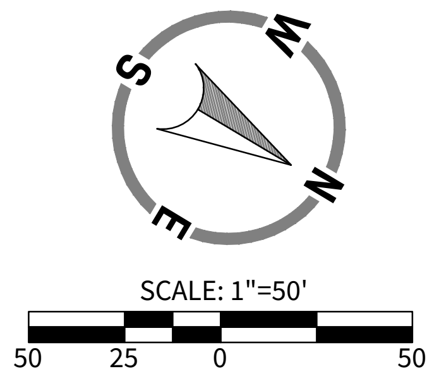




LEGEND

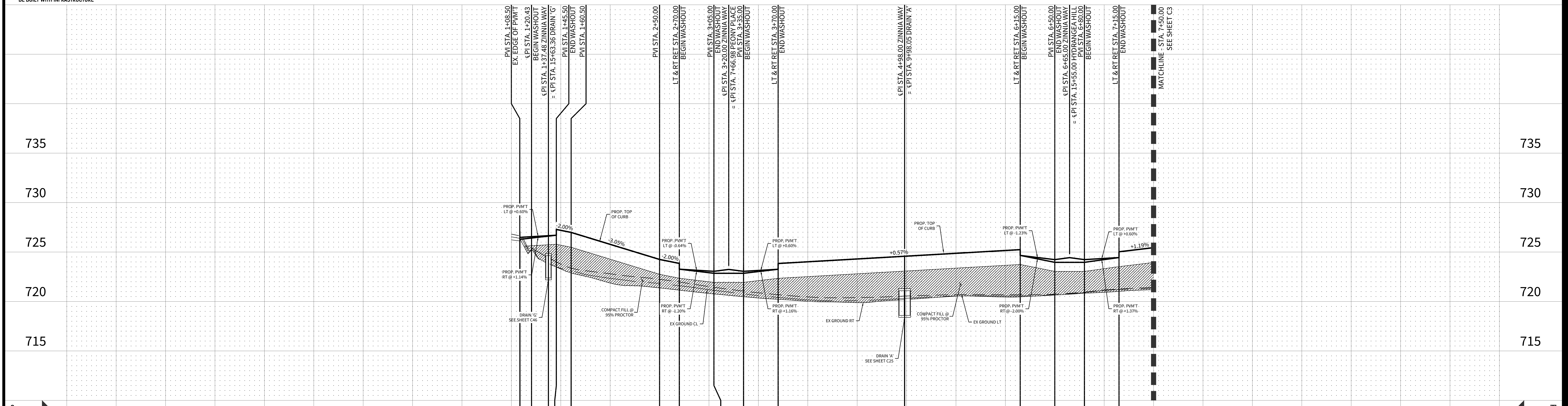
— · > · —	PAVEMENT GUTTER LINE
☐	DRIVEWAY TO BE BUILT WITH HOMEBUILDING
▨	STREET WASHOUT - SEE DETAIL SHEET C19
▨	SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
■	ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C20

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

ZINNIA WAY

STA. 1+00.00 TO STA. 7+50.00

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



PROP. TOP OF CURB RT.	PROP. TOP OF CURB LT.
726.28 (PVMT.)	726.48 (PVMT.)
726.42 (PVMT.)	726.55 (PVMT.)
727.19	727.24
727.28	727.28
727.19	727.19
726.98	726.98
725.78	725.78
724.25	724.25
723.85	723.85
722.91 (PVMT.)	723.08 (PVMT.)
722.85 (PVMT.)	723.04 (PVMT.)
722.85 (PVMT.)	723.04 (PVMT.)
723.02 (PVMT.)	723.13 (PVMT.)
723.84	723.84
724.01	724.01
724.30	724.30
724.57	724.57
724.87	724.87
725.16	725.16
725.24	725.24
723.96 (PVMT.)	724.23 (PVMT.)
723.96 (PVMT.)	724.23 (PVMT.)
724.23 (PVMT.)	724.35 (PVMT.)
725.02	725.02

1+00 2+00 3+00 4+00 5+00 6+00 7+00

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4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION
UNIT 1

STREET PLAN & PROFILE - ZINNIA WAY

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C2

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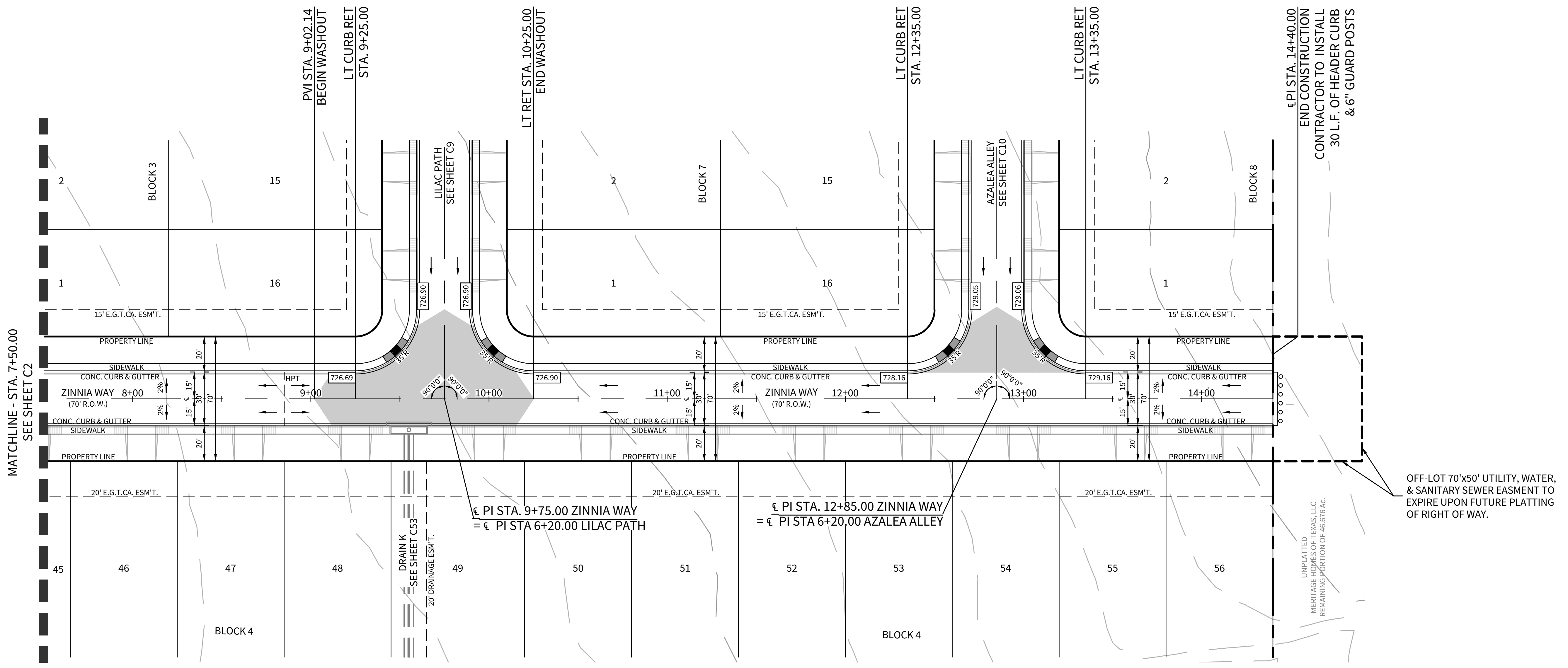


SCALE: 1"=50'
50 25 0 50

LEGEND

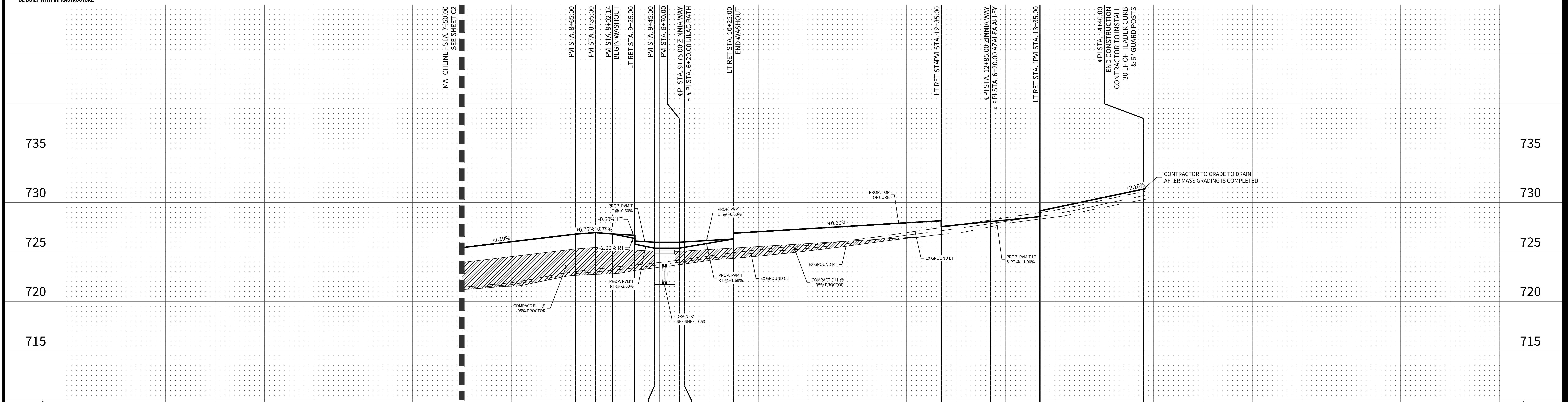
— · > · —	PAVEMENT GUTTER LINE
	DRIVEWAY TO BE BUILT WITH HOMEBUILDING
	STREET WASHOUT – SEE DETAIL SHEET C19
	SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
	ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C20

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

ZINNIA WAY

STA. 7+50.00 TO STA. 14+40.00

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



PROP. TOP OF CURB RT.	725.44	726.03	726.62	726.80	726.95	726.82	726.37	725.38 (PVMT.)	725.38 (PVMT.)	725.38 (PVMT.)	725.47 (PVMT.)	725.89 (PVMT.)	726.90	727.05	727.35	727.65	727.95	728.16	727.72 (PVMT.)	728.07 (PVMT.)	728.22 (PVMT.)	729.16	729.47	730.52	731.36	PROP. TOP OF CURB RT.
PROP. TOP OF CURB LT.	725.44	726.03	726.62	726.80	726.95	726.82	726.69	725.98 (PVMT.)	725.98 (PVMT.)	725.98 (PVMT.)	726.01 (PVMT.)	726.16 (PVMT.)	726.90	727.05	727.35	727.65	727.95	728.16	727.72 (PVMT.)	728.07 (PVMT.)	728.22 (PVMT.)	729.16	729.47	730.52	731.36	PROP. TOP OF CURB LT.

8+00 9+00 10+00 11+00 12+00 13+00 14+00

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LANTANA SUBDIVISION
UNIT 1

STREET PLAN & PROFILE - ZINNIA WAY

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

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XV/AL

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
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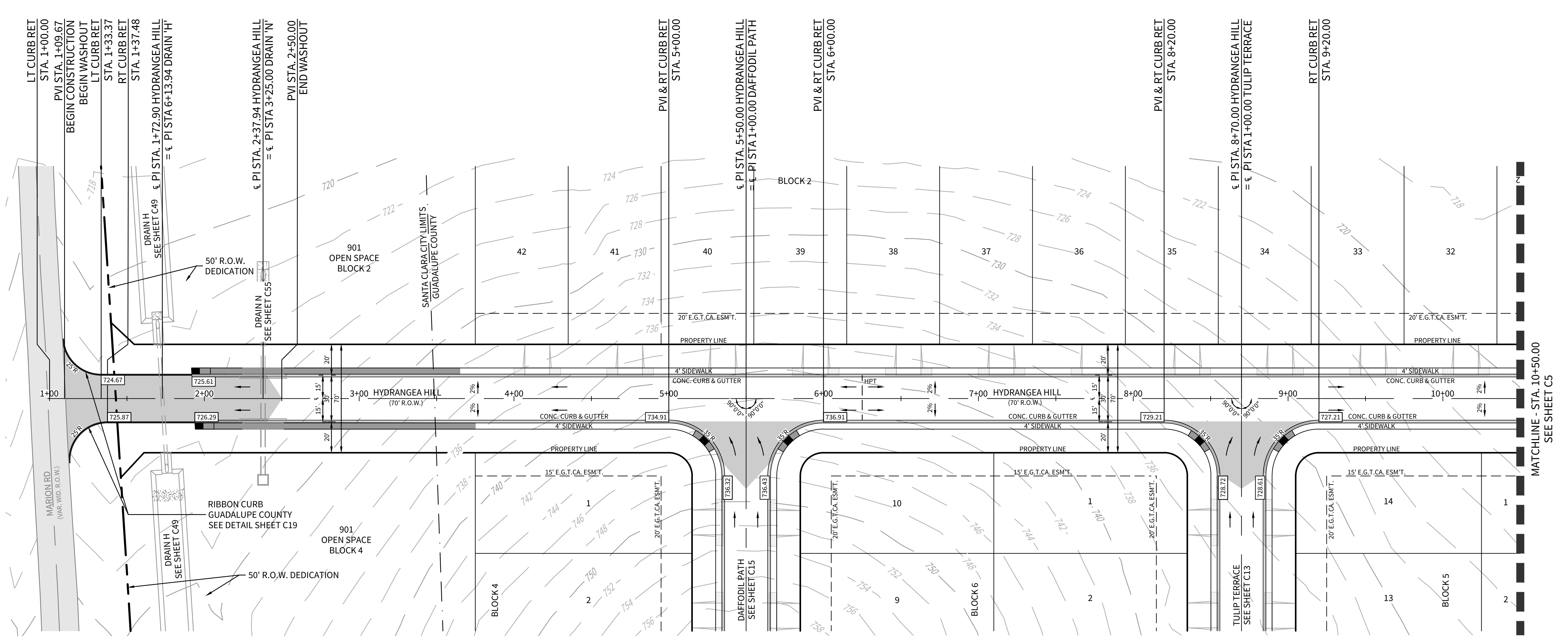
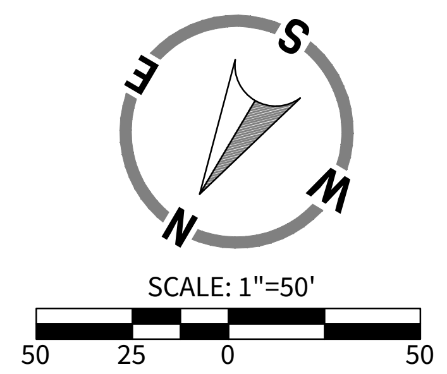

LT CURB RET STA. 1+00.00
PVI STA. 1+09.67
BEGIN CONSTRUCTION
BEGIN WASHOUT
LT CURB RET STA. 1+33.37
RT CURB RET STA. 1+37.48
¢ PI STA. 1+72.90 HYDRANGEA HILL = ¢ PI STA. 6+13.94 DRAIN 'H'
¢ PI STA. 2+37.94 HYDRANGEA HILL = ¢ PI STA. 3+25.00 DRAIN 'N'
PVI STA. 2+50.00
END WASHOUT
PVI & RT CURB RET STA. 5+00.00
¢ PI STA. 5+50.00 HYDRANGEA HILL = ¢ PI STA. 1+00.00 DAFFODIL PATH
PVI & RT CURB RET STA. 6+00.00
PVI & RT CURB RET STA. 8+20.00
¢ PI STA. 8+70.00 HYDRANGEA HILL = ¢ PI STA. 1+00.00 TULIP TERRACE
RT CURB RET STA. 9+20.00
DRAIN H SEE SHEET C49
50' R.O.W. DEDICATION
DRAIN N SEE SHEET C55
901 OPEN SPACE BLOCK 2
SANTA CLARA CITY LIMITS GUADALUPE COUNTY
BLOCK 2
42
41
40
39
38
37
36
35
34
33
32
20' E.G.T.CA. ESMT.
PROPERTY LINE
4' SIDEWALK
CONC. CURB & GUTTER
1+00
2+00
3+00 HYDRANGEA HILL (70' R.O.W.)
4+00
5+00
6+00
7+00 HYDRANGEA HILL (70' R.O.W.)
8+00
9+00
10+00
725.61
724.67
725.87
726.29
734.91
736.91
729.21
727.21
MARION RD (VAR. WID. R.O.W.)
RIBBON CURB GUADALUPE COUNTY SEE DETAIL SHEET C19
901 OPEN SPACE BLOCK 4
DRAIN H SEE SHEET C49
50' R.O.W. DEDICATION
15' E.G.T.CA. ESMT.
BLOCK 4
1
2
DAFFODIL PATH SEE SHEET C15
10
9
BLOCK 6
1
2
TULIP TERRACE SEE SHEET C13
14
13
BLOCK 5
1
2
MATCHLINE - STA. 10+50.00 SEE SHEET C5



LEGEND

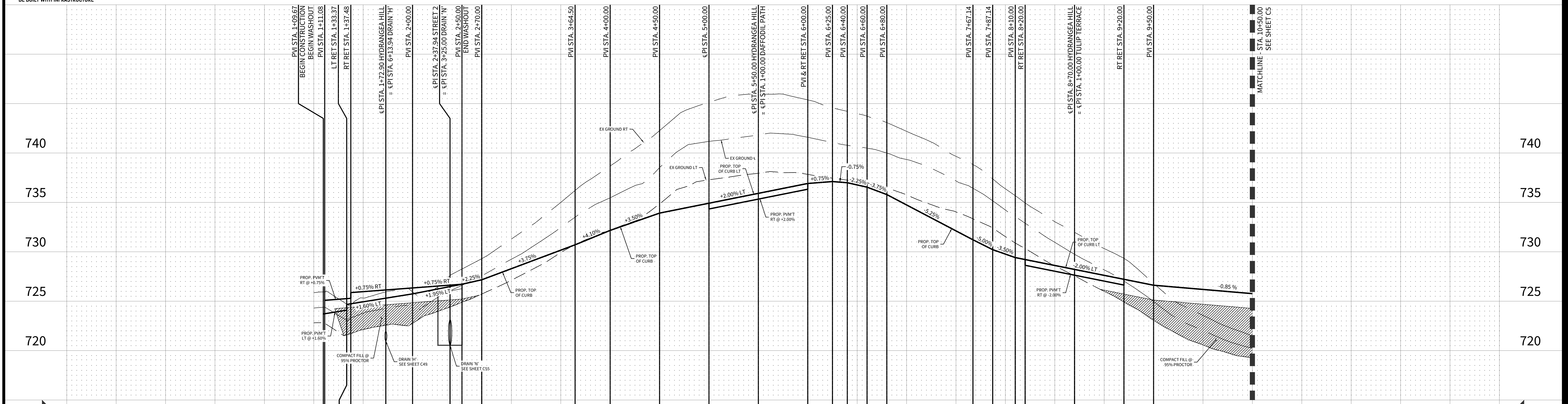
- - - - PAVEMENT GUTTER LINE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- ▨ STREET WASHOUT - SEE DETAIL SHEET C19
- ▨ SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ▨ ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C20

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

HYDRANGEA HILL

STA. 1+00.00 TO STA. 10+50.00

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



PROP. TOP OF CURB RT.	725.09 (PVMT.)	725.26 (PVMT.)	725.87	725.96	726.14	726.34	726.62	726.71	727.16	728.29	730.16	730.71	732.16	733.91	734.91	735.33 (PVMT.)	736.91	737.10	736.99	736.76	736.54	735.79	734.74	732.11	731.21	730.21	729.76	729.41	729.21	728.03 (PVMT.)	727.63 (PVMT.)	727.03 (PVMT.)	727.21	726.61	726.19				
PROP. TOP OF CURB LT.	723.71 (PVMT.)	724.67	724.74	724.94	725.31	725.74	726.48	726.71	727.16	728.29	730.16	730.71	732.16	733.91	734.91	735.91	736.91	737.10	736.99	736.76	736.54	735.79	734.74	732.11	731.21	730.21	729.76	729.41	729.21	728.61	728.21	727.61	727.21	726.61	726.19					

1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00

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LANTANA SUBDIVISION
UNIT 1

STREET PLAN & PROFILE - HYDRANGEA HILL

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	
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JAVIER CASTELLO
122170
5/12/2025

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TBPLS No. 10048500

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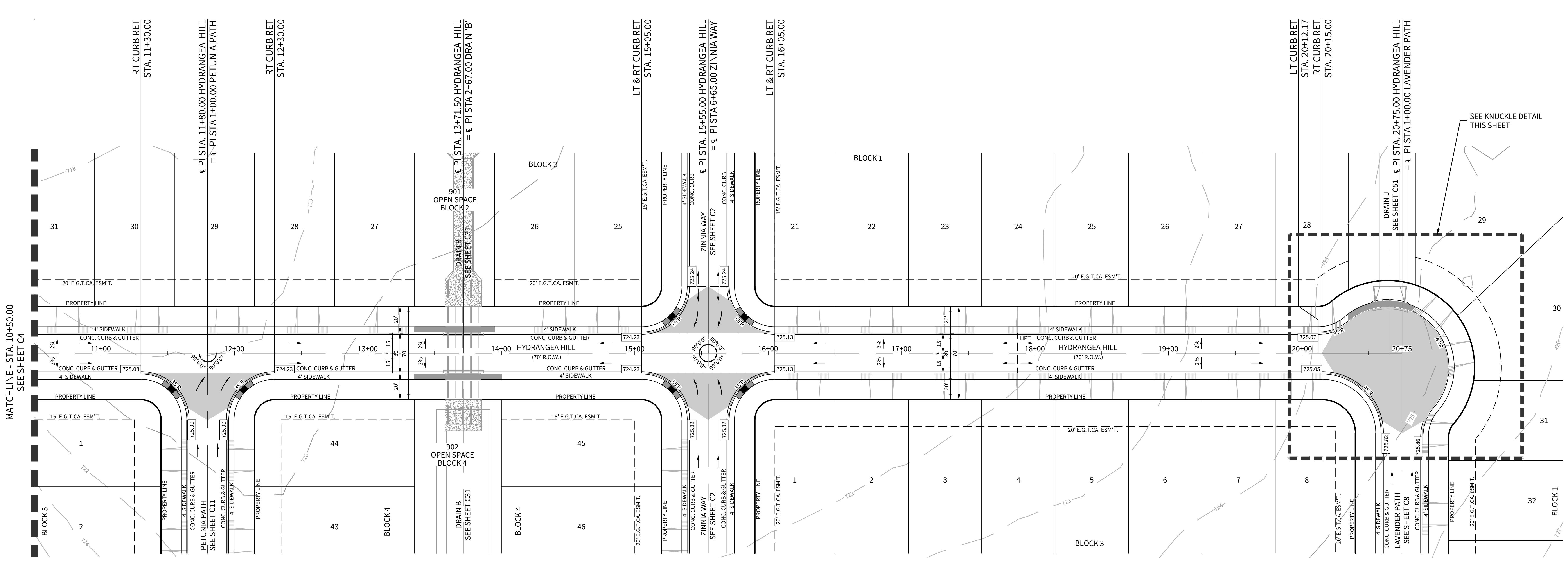
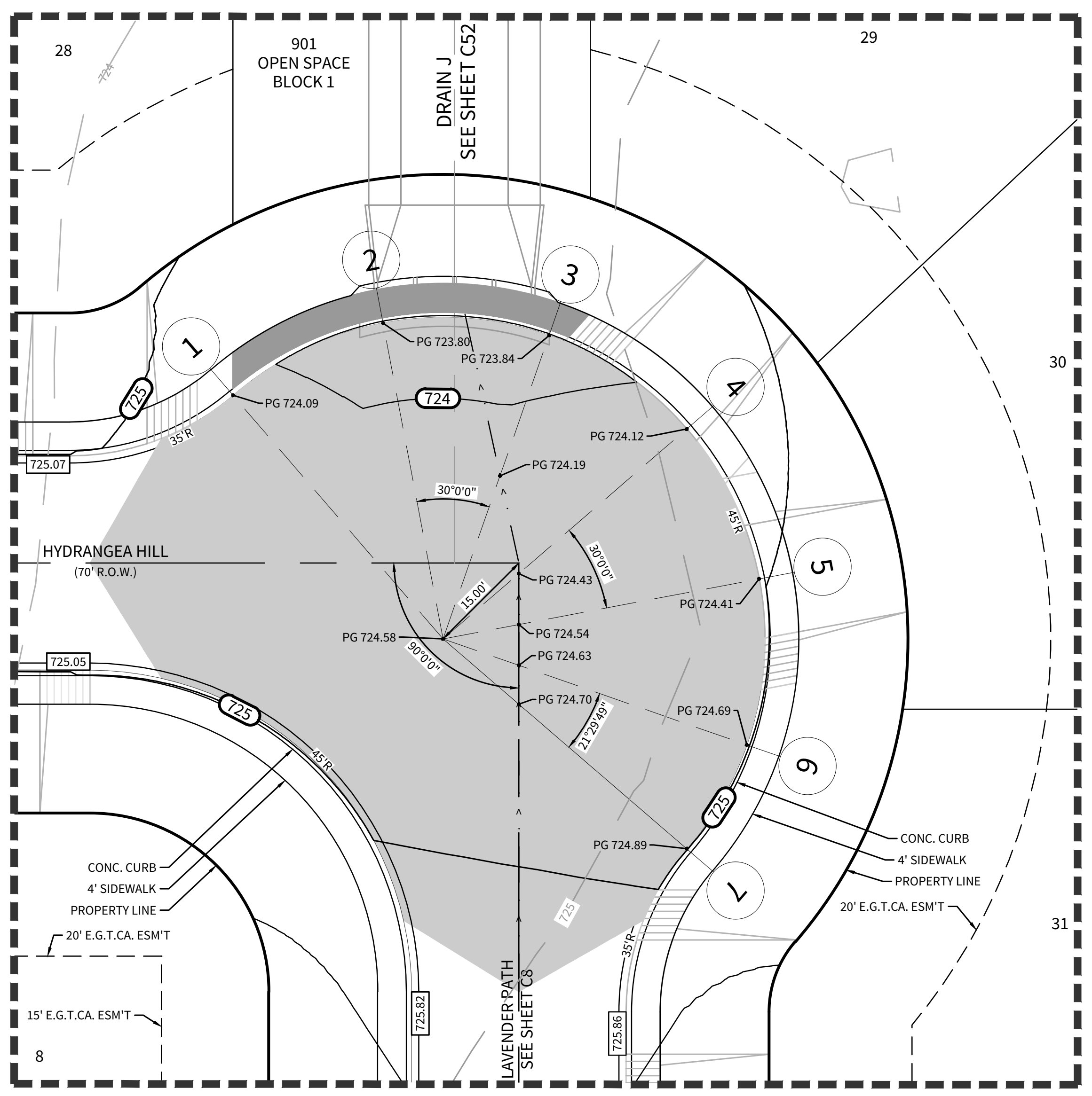

SCALE: 1"=50'
50 25 0 50
RT CURB RET STA. 11+30.00
℄ PI STA. 11+80.00 HYDRANGEA HILL = ℄ PI STA. 1+00.00 PETUNIA PATH
RT CURB RET STA. 12+30.00
℄ PI STA. 13+71.50 HYDRANGEA HILL = ℄ PI STA. 2+67.00 DRAIN 'B'
LT & RT CURB RET STA. 15+05.00
℄ PI STA. 15+55.00 HYDRANGEA HILL = ℄ PI STA. 6+65.00 ZINNIA WAY
LT & RT CURB RET STA. 16+05.00
LT CURB RET STA. 20+12.17
RT CURB RET STA. 20+15.00
℄ PI STA. 20+75.00 HYDRANGEA HILL = ℄ PI STA. 1+00.00 LAVENDER PATH
SEE KNUCKLE DETAIL THIS SHEET
MATCHLINE - STA. 10+50.00 SEE SHEET C4
BLOCK 2
BLOCK 1
BLOCK 3
BLOCK 4
BLOCK 5
901 OPEN SPACE BLOCK 2
902 OPEN SPACE BLOCK 4
HYDRANGEA HILL (70' R.O.W.)
20' E.G.T.CA. ESM'T.
15' E.G.T.CA. ESM'T.
PROPERTY LINE
4' SIDEWALK
CONC. CURB & GUTTER
DRAIN B SEE SHEET C31
PETUNIA PATH SEE SHEET C11
ZINNIA WAY SEE SHEET C2
DRAIN J SEE SHEET C51
LAVENDER PATH SEE SHEET C8
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
20+75



KNUCKLE DETAIL

SCALE: 1"= 20'

CUL-DE-SAC BACK OF CURB ELEVATIONS	
NUMBER	TOC ELEV.
1	724.68
2	724.38
3	724.41
4	724.70
5	724.98
6	725.27
7	725.48

LEGEND

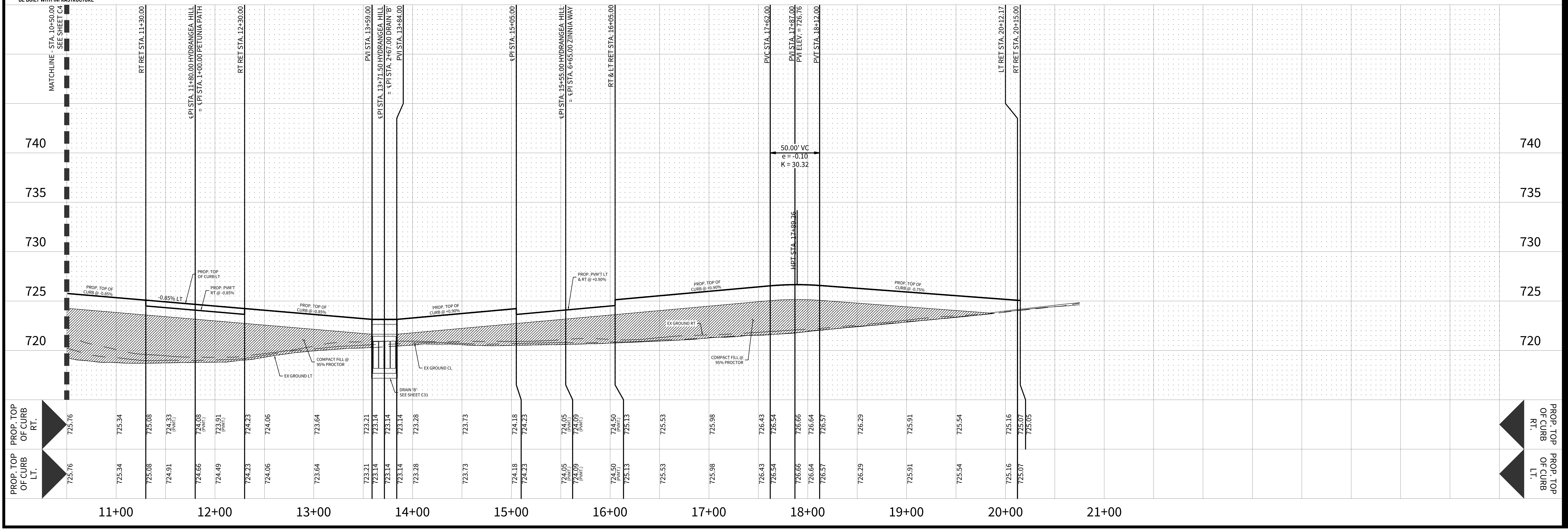
—— · > · ——	PAVEMENT GUTTER LINE
☐	DRIVEWAY TO BE BUILT WITH HOMEBUILDING
▭	STREET WASHOUT – SEE DETAIL SHEET C19
▬	SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
▬■▬	ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C20

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

HYDRANGEA HILL

STA. 10+50.00 TO STA. 20+75.00

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


MATCHLINE - STA. 10+50.00 SEE SHEET C4
RT RET STA. 11+30.00
℄ PI STA. 11+80.00 HYDRANGEA HILL = ℄ PI STA. 1+00.00 PETUNIA PATH
RT RET STA. 12+30.00
PVI STA. 13+59.00
℄ PI STA. 13+71.50 HYDRANGEA HILL = ℄ PI STA. 2+67.00 DRAIN 'B'
PVI STA. 13+84.00
℄ RET STA. 15+05.00
℄ PI STA. 15+55.00 HYDRANGEA HILL = ℄ PI STA. 6+65.00 ZINNIA WAY
RT & LT RET STA. 16+05.00
PVC STA. 17+62.00
PVI STA. 17+87.00
PVI ELEV. = 726.76
PVT STA. 18+12.00
HPT STA. 17+89.26
LT RET STA. 20+12.17
RT RET STA. 20+15.00
50.00' VC
e = -0.10
K = 30.32
PROP. TOP OF CURB @ -0.85%
-0.85% LT
PROP. TOP OF CURB LT
PROP. PVM'T RT @ -0.85%
PROP. TOP OF CURB @ -0.85%
PROP. TOP OF CURB @ +0.90%
PROP. PVM'T LT & RT @ +0.90%
PROP. TOP OF CURB @ +0.90%
PROP. TOP OF CURB @ -0.75%
EX GROUND RT
EX GROUND LT
EX GROUND CL
COMPACT FILL @ 95% PROCTOR
COMPACT FILL @ 95% PROCTOR
DRAIN 'B' SEE SHEET C31
740
735
730
725
720
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00

PROP. TOP OF CURB RT.	PROP. TOP OF CURB LT.
725.76	725.76
725.34	725.34
725.08	725.08
724.33 (PVMT.)	724.91
724.08 (PVMT.)	724.66
723.91 (PVMT.)	724.49
724.23	724.23
724.06	724.06
723.64	723.64
723.21	723.21
723.14	723.14
723.14	723.14
723.14	723.14
723.28	723.28
723.73	723.73
724.18	724.18
724.23	724.23
724.05 (PVMT.)	724.05 (PVMT.)
724.09 (PVMT.)	724.09 (PVMT.)
724.50 (PVMT.)	724.50 (PVMT.)
725.13	725.13
725.53	725.53
725.98	725.98
726.43	726.43
726.54	726.54
726.66	726.66
726.64	726.64
726.57	726.57
726.29	726.29
725.91	725.91
725.54	725.54
725.16	725.16
725.07	725.07
725.05	

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LANTANA SUBDIVISION UNIT 1

STREET PLAN & PROFILE - HYDRANGEA HILL

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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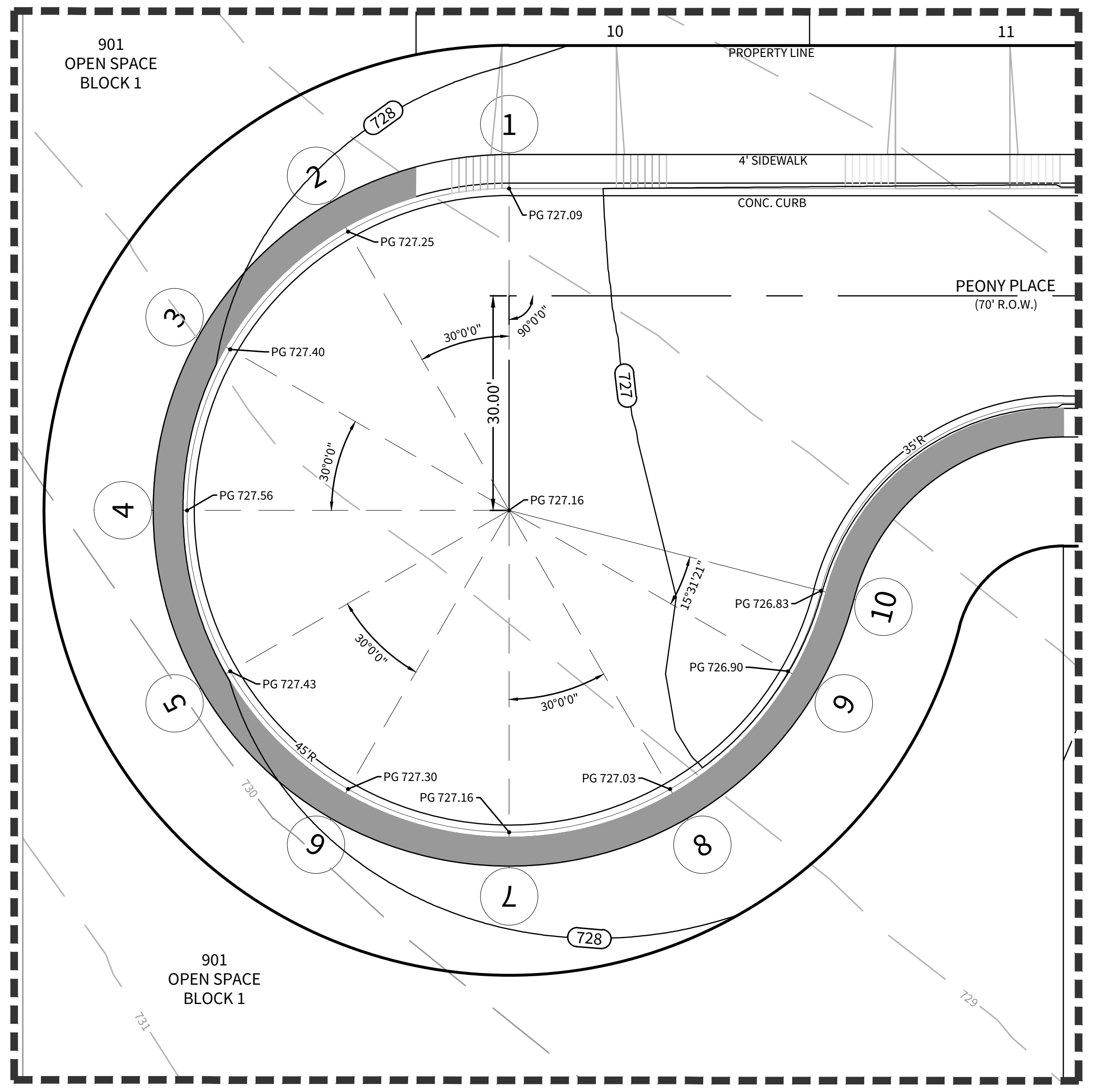
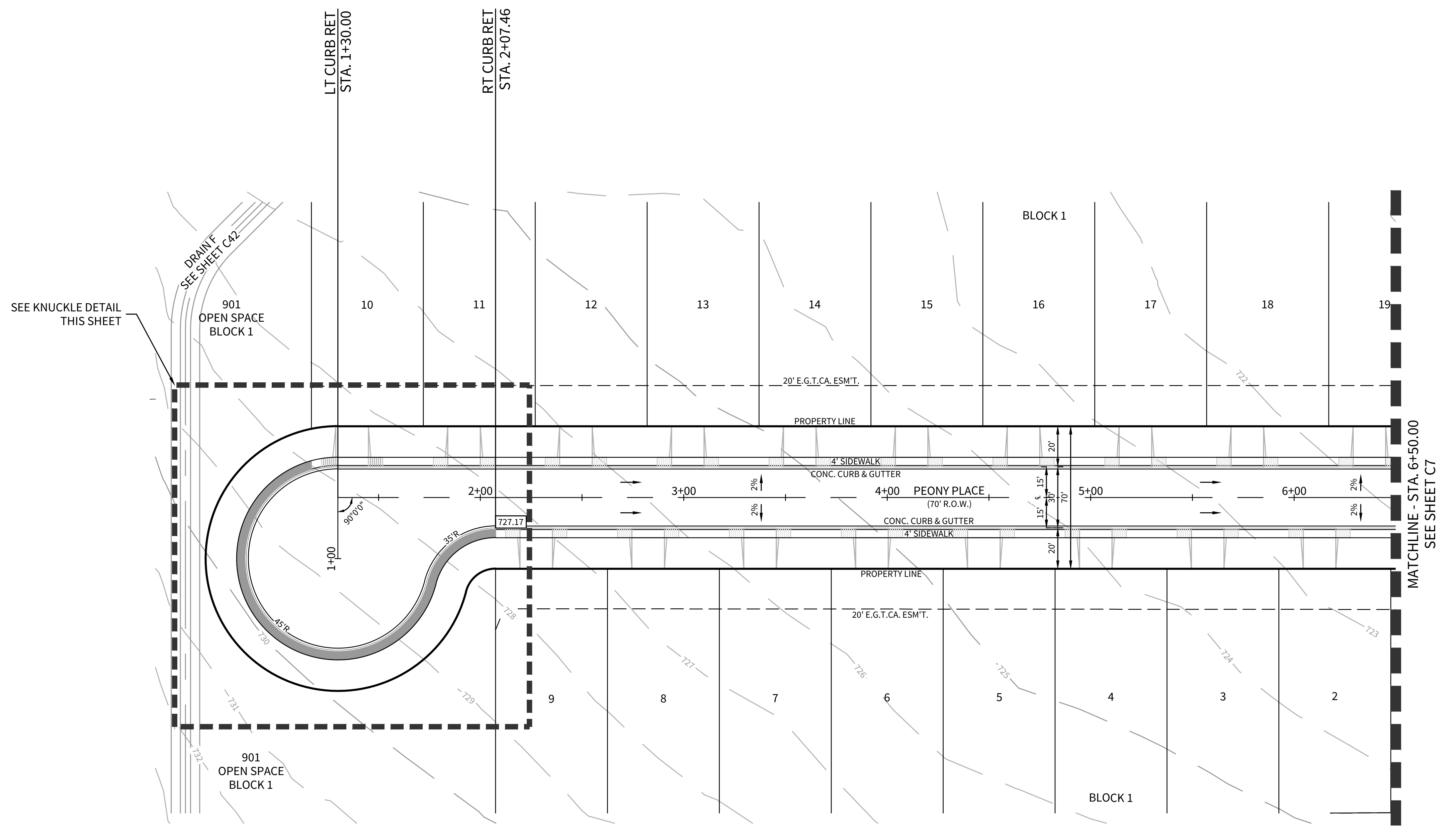
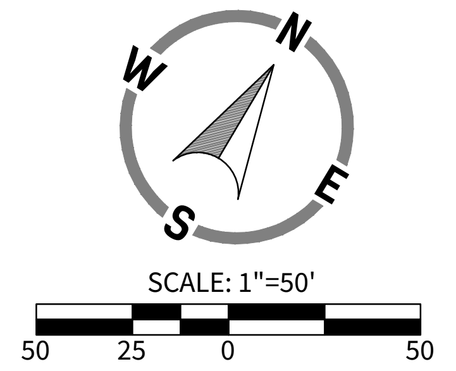


KNUCKLE DETAIL

SCALE: 1"= 20'

CUL-DE-SAC BACK OF CURB ELEVATIONS	
NUMBER	TOC ELEV.
1	727.67
2	727.83
3	727.98
4	728.14
5	728.01
6	727.88
7	727.74
8	727.61
9	727.48
10	727.41





LEGEND

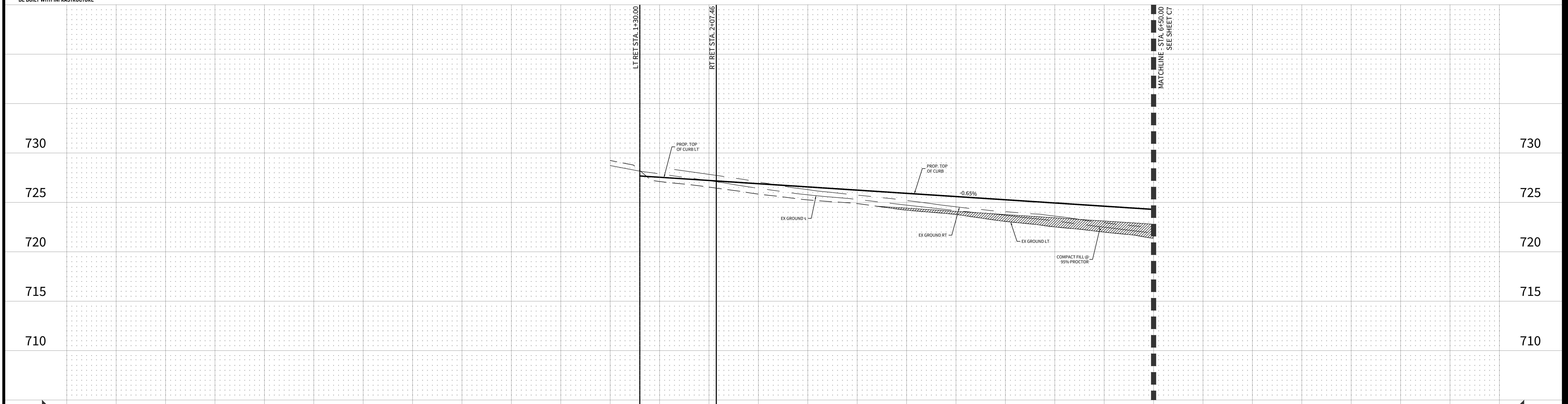
- — · > · — PAVEMENT GUTTER LINE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- ▨ STREET WASHOUT – SEE DETAIL SHEET C19
- ▨ SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ▨■▨ ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C20

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

PEONY PLACE

STA. 1+00.00 TO STA. 6+50.00

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



PROP. TOP OF CURB RT.				727.17	726.89	726.57	726.24	725.92	725.59	725.27	724.94	724.62
PROP. TOP OF CURB LT.	727.67	727.54	727.22	727.17	726.89	726.57	726.24	725.92	725.59	725.27	724.94	724.62

1+00 2+00 3+00 4+00 5+00 6+00

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P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION
UNIT 1

STREET PLAN & PROFILE - PEONY PLACE

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE

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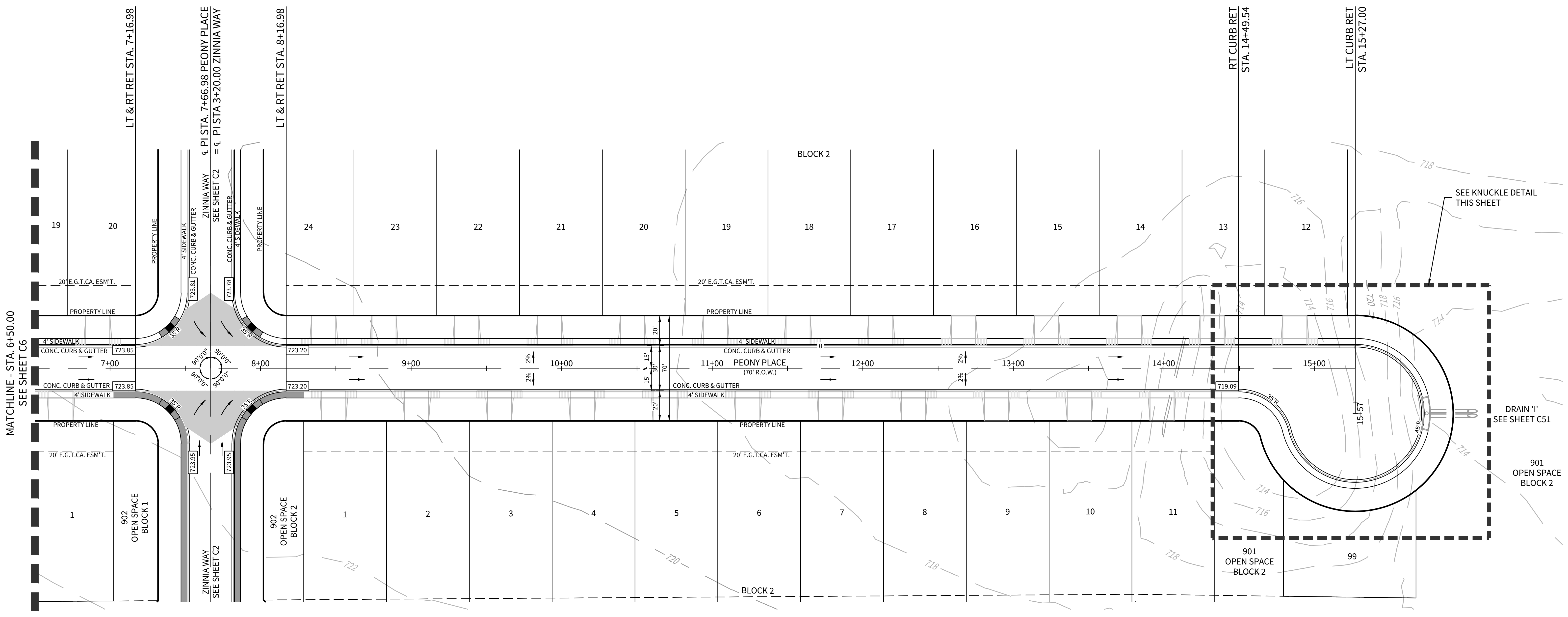
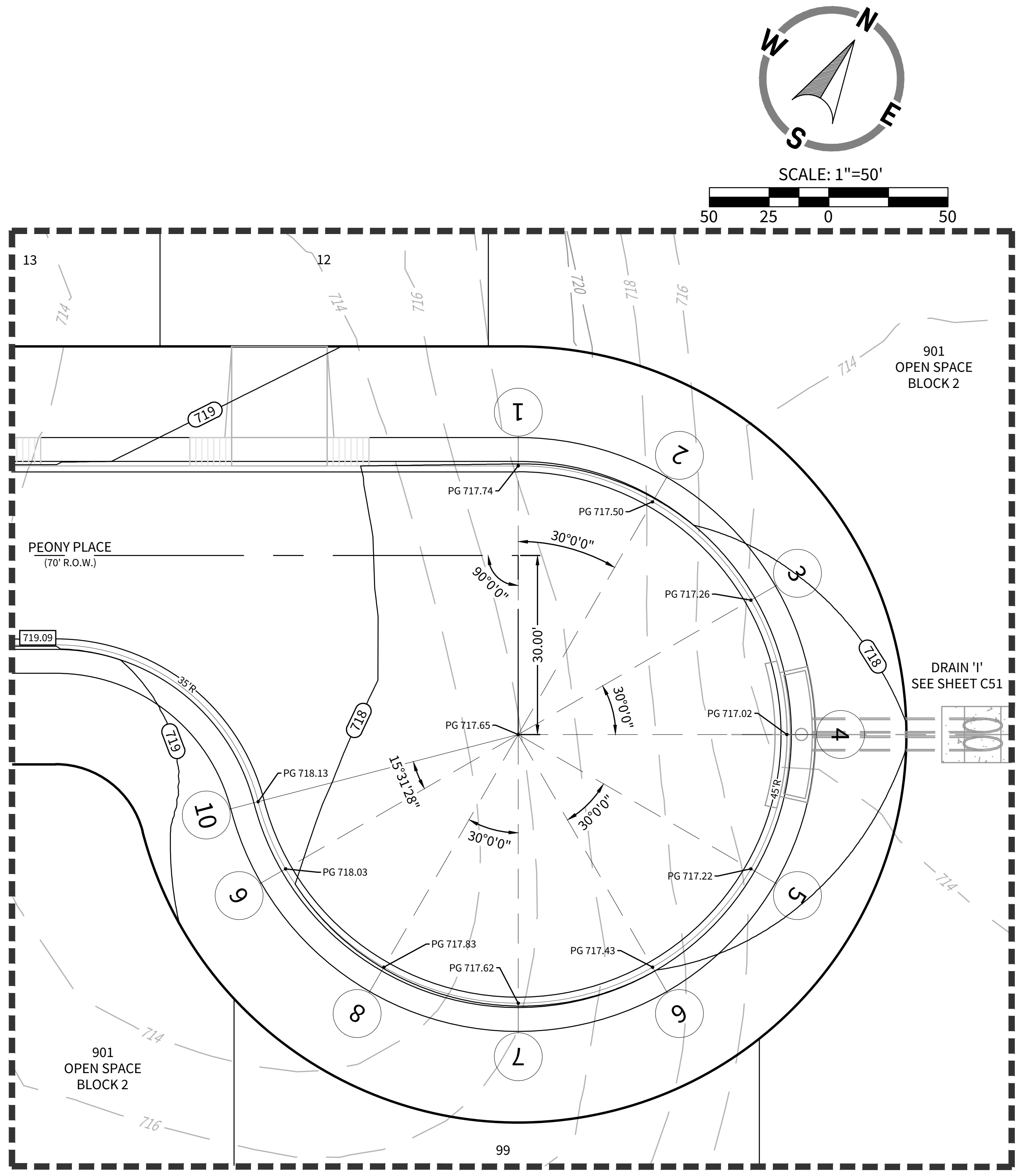
JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6





CUL-DE-SAC BACK OF CURB ELEVATIONS	
NUMBER	TOC ELEV.
1	718.32
2	718.08
3	717.84
4	717.60
5	717.80
6	718.00
7	718.21
8	718.41
9	718.61
10	718.71

KNUCKLE DETAIL

SCALE: 1"= 20'

LEGEND

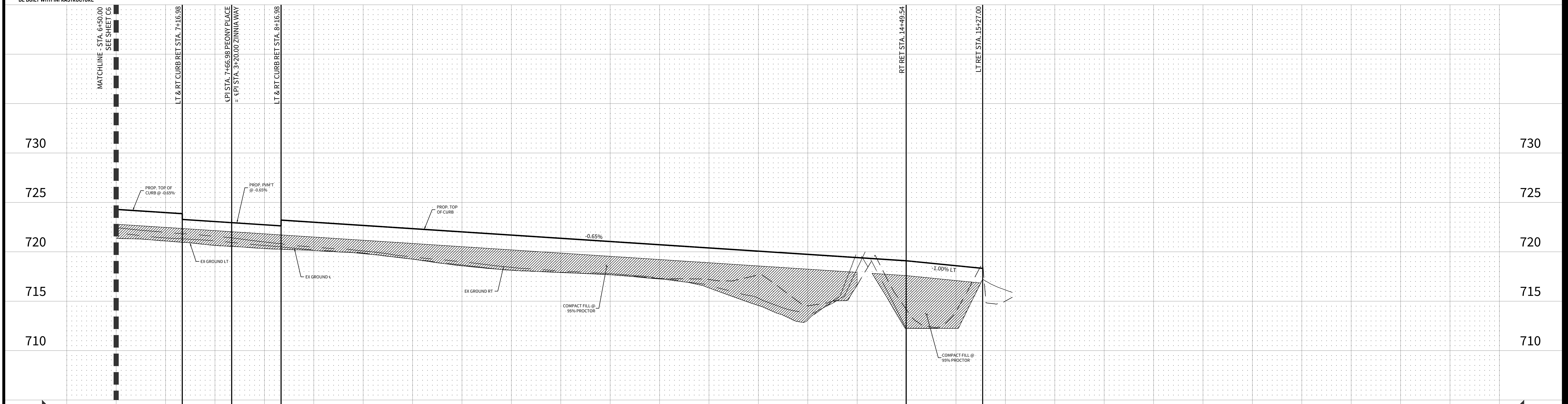
— · > · —	PAVEMENT GUTTER LINE
	DRIVEWAY TO BE BUILT WITH HOMEBUILDING
▨	STREET WASHOUT – SEE DETAIL SHEET C19
▨	SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
▨■▨	ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C20

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

PEONY PLACE

STA. 6+50.00 TO STA. END

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



PROP. TOP OF CURB RT.	724.29	723.97	723.85	723.06 (PVMT.)	722.95 (PVMT.)	722.73 (PVMT.)	723.20	722.99	722.67	722.34	722.02	721.69	721.37	721.04	720.72	720.39	720.07	719.74	719.42	719.09		
PROP. TOP OF CURB LT.	724.29	723.97	723.85	723.06 (PVMT.)	722.95 (PVMT.)	722.73 (PVMT.)	723.20	722.99	722.67	722.34	722.02	721.69	721.37	721.04	720.72	720.39	720.07	719.74	719.42	719.09	718.59	718.32

7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00 15+00

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LANTANA SUBDIVISION
UNIT 1

STREET PLAN & PROFILE - PEONY PLACE

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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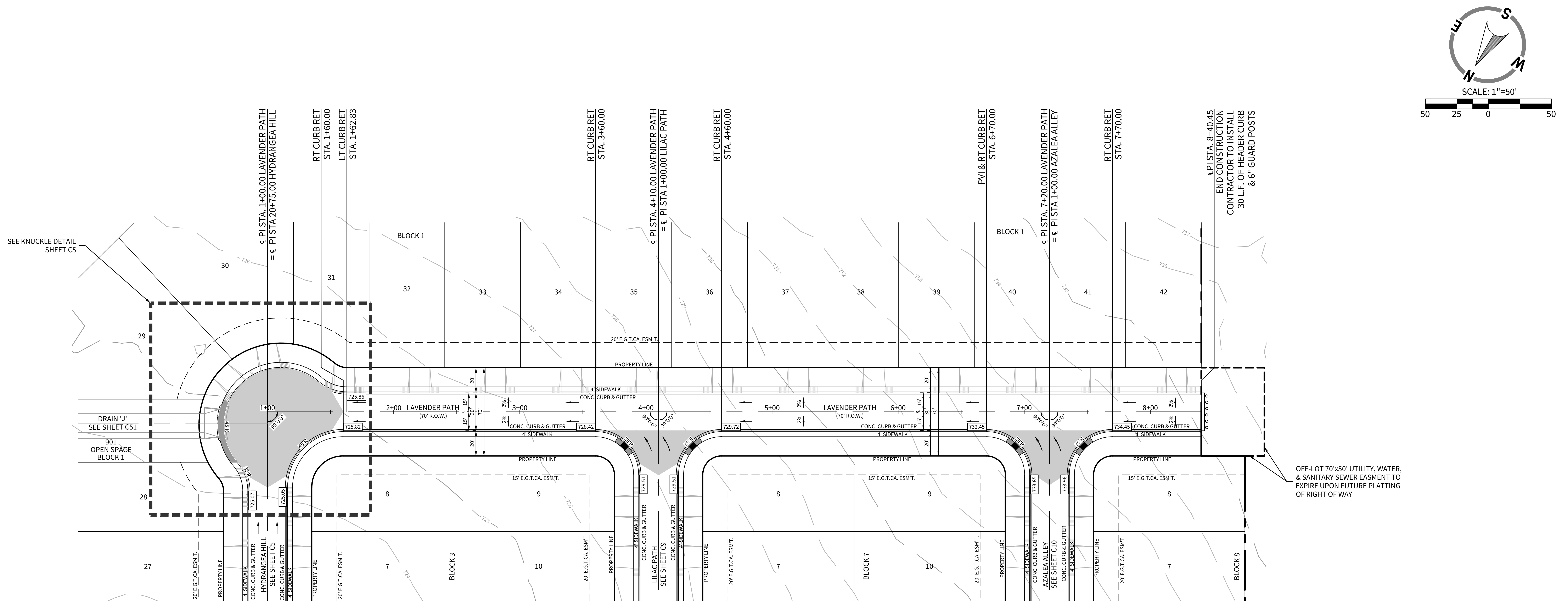

SCALE: 1"=50'
50
25
0
50
N
S
E
W
℄ PI STA. 1+00.00 LAVENDER PATH = ℄ PI STA 20+75.00 HYDRANGEA HILL
RT CURB RET STA. 1+60.00
LT CURB RET STA. 1+62.83
RT CURB RET STA. 3+60.00
℄ PI STA. 4+10.00 LAVENDER PATH = ℄ PI STA 1+00.00 LILAC PATH
RT CURB RET STA. 4+60.00
PVI & RT CURB RET STA. 6+70.00
℄ PI STA. 7+20.00 LAVENDER PATH = ℄ PI STA 1+00.00 AZALEA ALLEY
RT CURB RET STA. 7+70.00
℄ PI STA. 8+40.45 END CONSTRUCTION CONTRACTOR TO INSTALL 30 L.F. OF HEADER CURB & 6" GUARD POSTS
SEE KNUCKLE DETAIL SHEET C5
BLOCK 1
30
31
32
33
34
35
36
37
38
39
40
41
42
29
28
27
DRAIN 'J' SEE SHEET C51
901 OPEN SPACE BLOCK 1
20' E.G.T.CA. ESM'T.
PROPERTY LINE
4' SIDEWALK
CONC. CURB & GUTTER
LAVENDER PATH (70' R.O.W.)
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
725.86
725.82
728.42
729.72
732.45
734.45
725.69
725.82
729.53
729.52
733.85
733.56
15' E.G.T.CA. ESM'T.
BLOCK 3
BLOCK 7
BLOCK 8
7
8
9
10
HYDRANGEA HILL SEE SHEET C5
LILAC PATH SEE SHEET C9
AZALEA ALLEY SEE SHEET C10
OFF-LOT 70'x50' UTILITY, WATER, & SANITARY SEWER EASMENT TO EXPIRE UPON FUTURE PLATTING OF RIGHT OF WAY

LEGEND

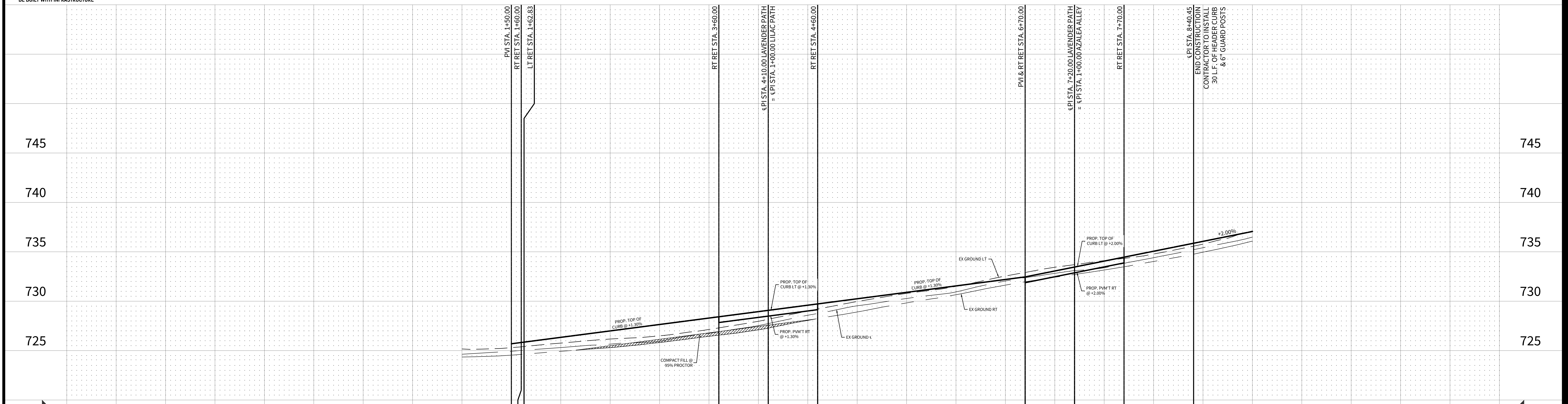
—— · > · ——	PAVEMENT GUTTER LINE
▭	DRIVEWAY TO BE BUILT WITH HOMEBUILDING
▨	STREET WASHOUT – SEE DETAIL SHEET C19
▨	SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
▨	ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C20

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

LAVENDER PATH

STA. 1+00.00 TO STA. 8+40.45

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


PVI STA. 1+50.00
RT RET STA. 1+60.00
LT RET STA. 1+62.83
RT RET STA. 3+60.00
℄ PI STA. 4+10.00 LAVENDER PATH = ℄ PI STA. 1+00.00 LILAC PATH
RT RET STA. 4+60.00
PVI & RT RET STA. 6+70.00
℄ PI STA. 7+20.00 LAVENDER PATH = ℄ PI STA. 1+00.00 AZALEA ALLEY
RT RET STA. 7+70.00
℄ PI STA. 8+40.45 END CONSTRUCTION CONTRACTOR TO INSTALL 30 L.F. OF HEADER CURB & 6" GUARD POSTS
745
740
735
730
725
PROP. TOP OF CURB @ +1.30%
COMPACT FILL @ 95% PROCTOR
PROP. TOP OF CURB LT @ +1.30%
PROP. PVM'T RT @ +1.30%
EX GROUND ℄
PROP. TOP OF CURB @ +1.30%
EX GROUND RT
EX GROUND LT
PROP. TOP OF CURB LT @ +2.00%
PROP. PVM'T RT @ +2.00%
+2.00%

PROP. TOP OF CURB RT.	PROP. TOP OF CURB LT.
725.69	
725.82	
725.86	725.86
726.34	726.34
726.99	726.99
727.64	727.64
728.29	728.29
728.42	728.42
728.36 (PVMT.)	728.94
728.49 (PVMT.)	729.07
729.01 (PVMT.)	729.59
729.72	729.72
730.24	730.24
730.89	730.89
731.54	731.54
732.19	732.19
732.45	732.45
732.47 (PVMT.)	733.05
732.87 (PVMT.)	733.45
733.47 (PVMT.)	734.05
734.45	734.45
735.05	735.05
735.86	735.86
736.05	736.05
737.05	737.05

1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00

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LANTANA SUBDIVISION UNIT 1

STREET PLAN & PROFILE - LAVENDER PATH

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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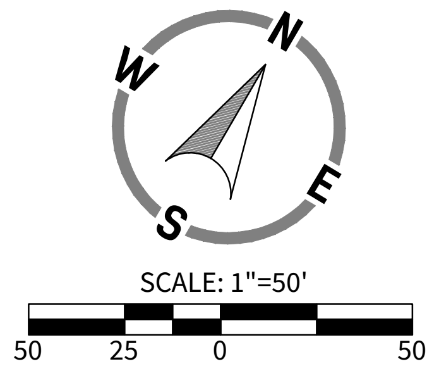
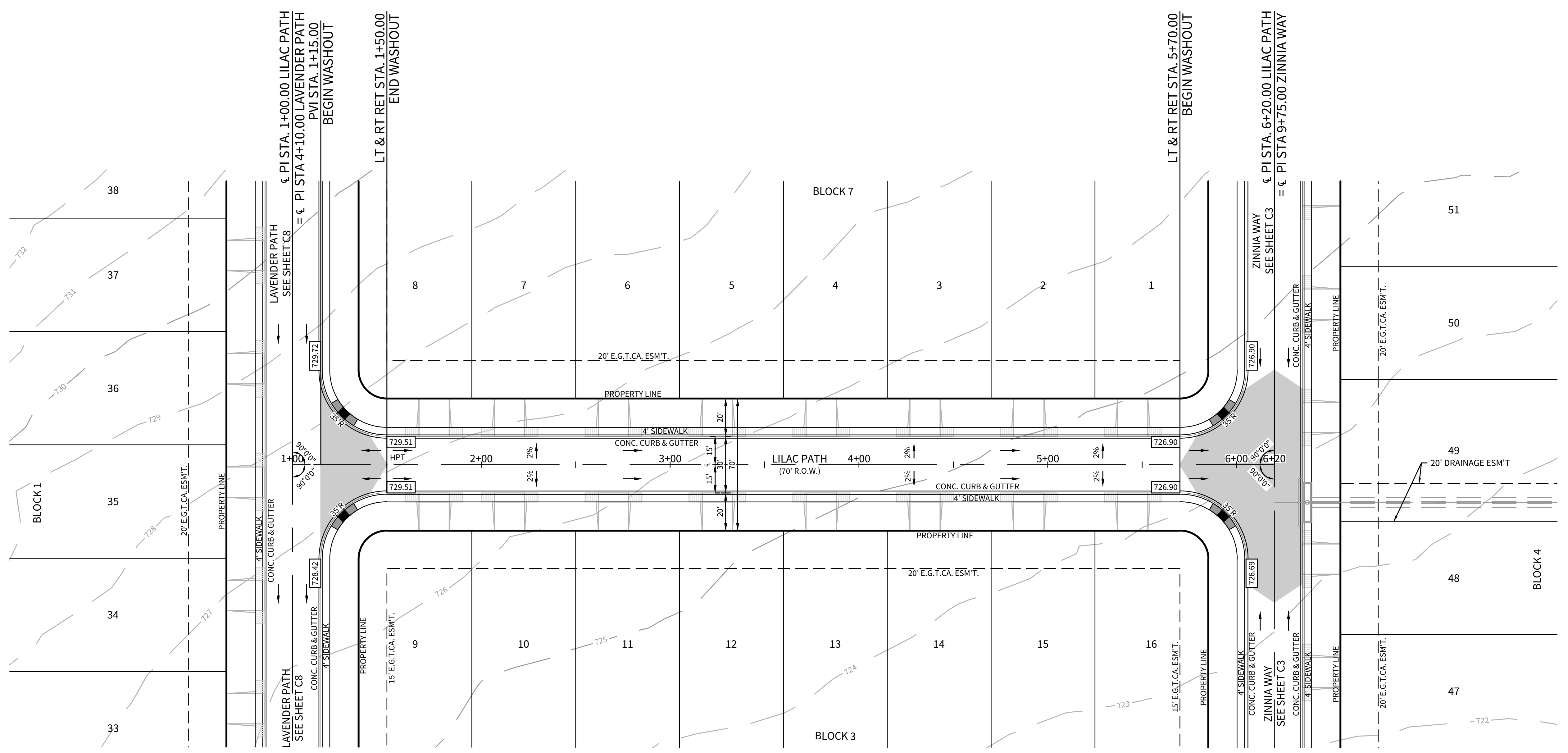
P:\04037\003\2-DWG\4-Plans\C8 STREET PLAN & PROFILE - LAVENDER PATH.dwg 2025/05/12 1:40pm tduano




℄ PI STA. 1+00.00 LILAC PATH = ℄ PI STA 4+10.00 LAVENDER PATH
PVI STA. 1+15.00 BEGIN WASHOUT
LT & RT RET STA. 1+50.00 END WASHOUT
LT & RT RET STA. 5+70.00 BEGIN WASHOUT
℄ PI STA. 6+20.00 LILAC PATH = ℄ PI STA 9+75.00 ZINNIA WAY
BLOCK 7
BLOCK 1
BLOCK 3
BLOCK 4
LAVENDER PATH SEE SHEET C8
ZINNIA WAY SEE SHEET C3
20' E.G.T.CA. ESM'T.
PROPERTY LINE
4' SIDEWALK
CONC. CURB & GUTTER
LILAC PATH
(70' R.O.W.)
HPT
1+00
2+00
3+00
4+00
5+00
6+00
20' DRAINAGE ESM'T
729.51
726.90

LEGEND

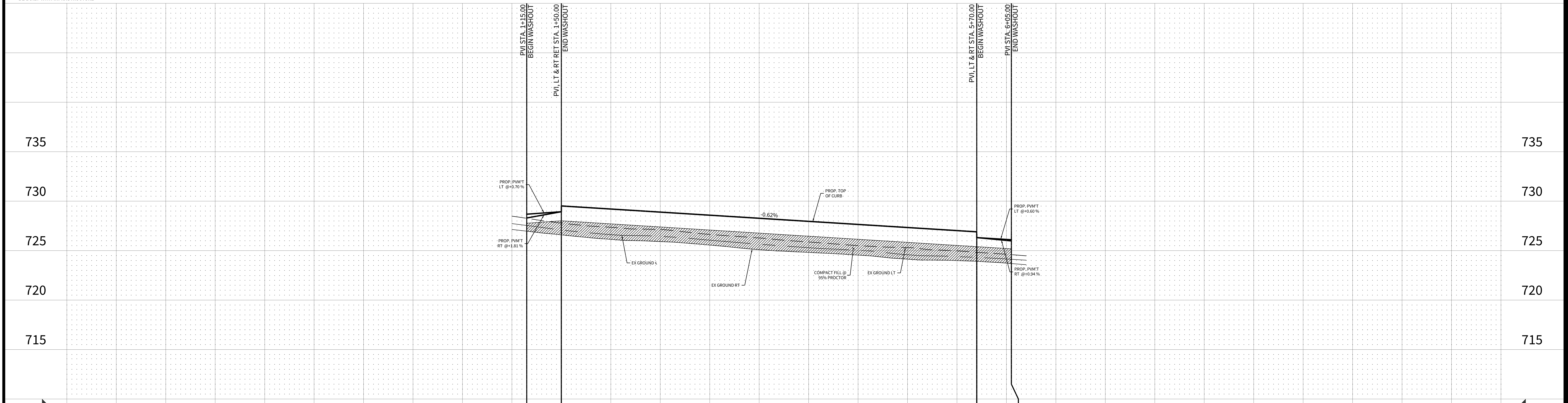
— · > · —	PAVEMENT GUTTER LINE
▭	DRIVEWAY TO BE BUILT WITH HOMEBUILDING
▨	STREET WASHOUT – SEE DETAIL SHEET C19
▨	SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
▨■▨	ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C20

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

LILAC PATH

STA. 1+00.00 TO STA. 6+20.00

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



PROP. TOP OF CURB RT.	728.30 (PVMT.)	729.51	729.20	728.89	728.58	728.27	727.96	727.64	727.33	727.02	726.90	726.03 (PVMT.)	725.98 (PVMT.)
PROP. TOP OF CURB LT.	728.69 (PVMT.)	729.51	729.20	728.89	728.58	728.27	727.96	727.64	727.33	727.02	726.90	726.13 (PVMT.)	726.10 (PVMT.)

1+00 2+00 3+00 4+00 5+00 6+00

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LANTANA SUBDIVISION UNIT 1

STREET PLAN & PROFILE - LILAC PATH

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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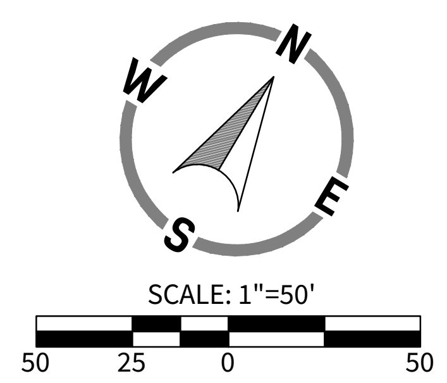
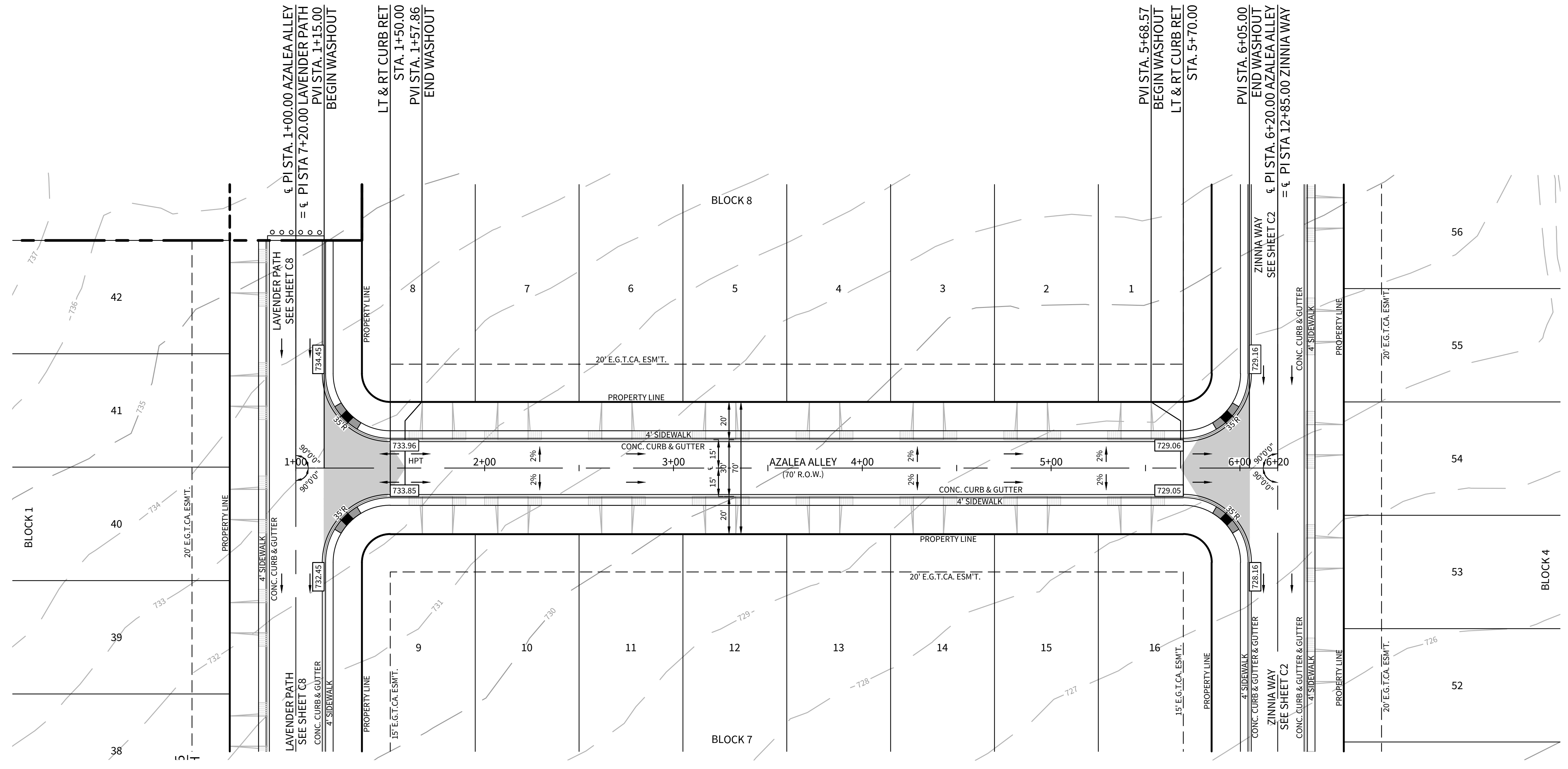




LEGEND

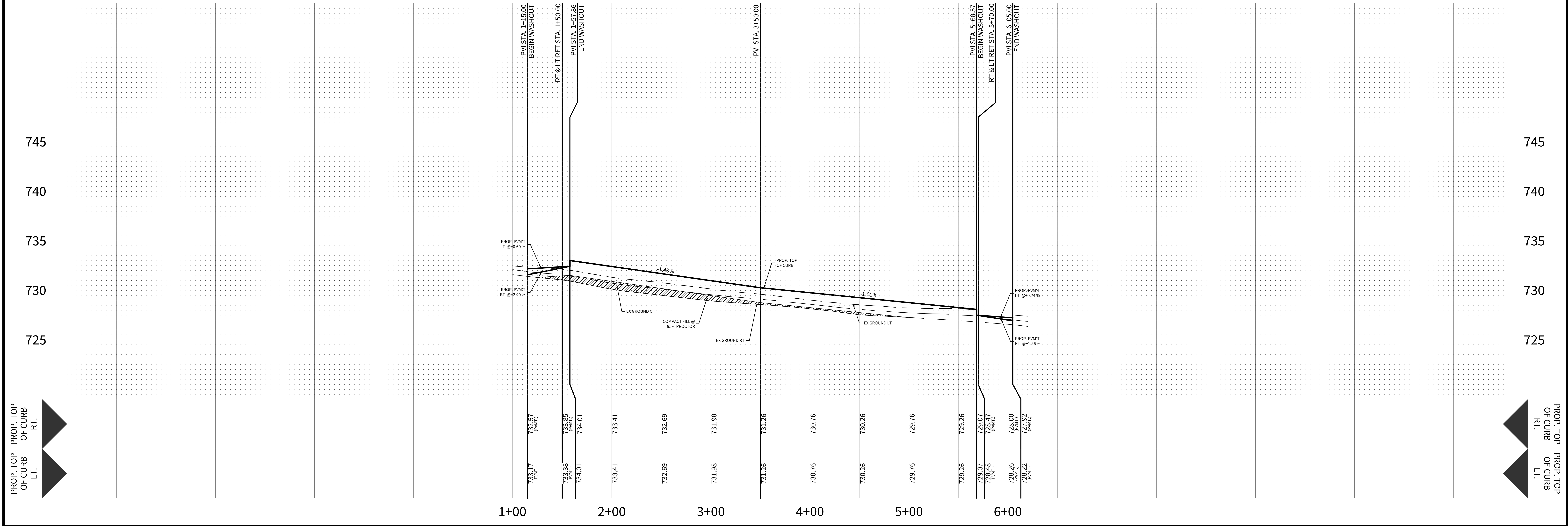
— · > · —	PAVEMENT GUTTER LINE
	DRIVEWAY TO BE BUILT WITH HOMEBUILDING
▨	STREET WASHOUT – SEE DETAIL SHEET C19
▨	SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
■	ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C20

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

AZALEA ALLEY

STA. 1+00.00 TO STA. 6+20.00

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



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LANTANA SUBDIVISION
UNIT 1

STREET PLAN & PROFILE - AZALEA ALLEY

DATE
05/12/2025

PROJECT NO.
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JAVIER CASTELLO
122170
5/12/2025

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TBPE No. 455
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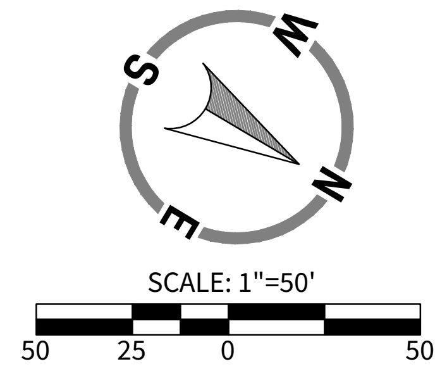
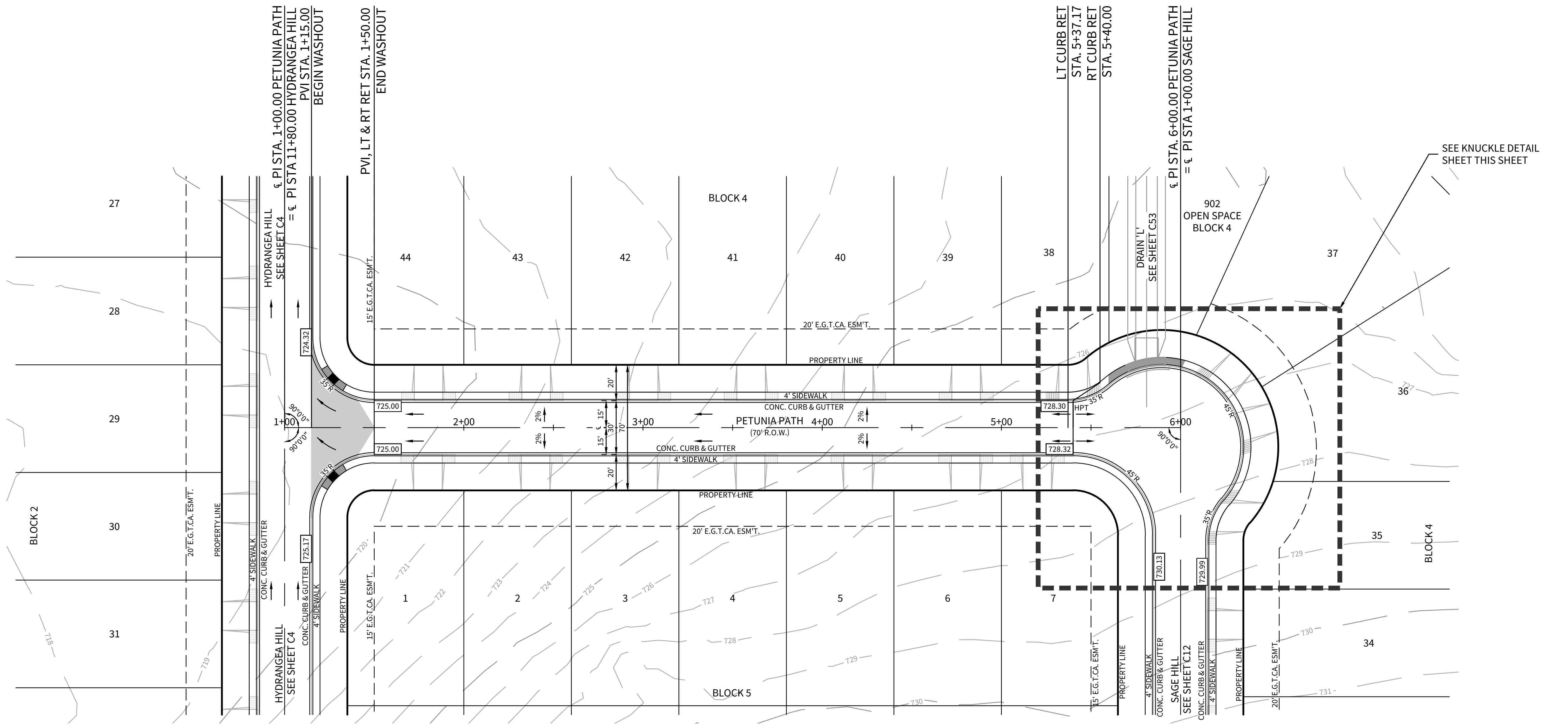
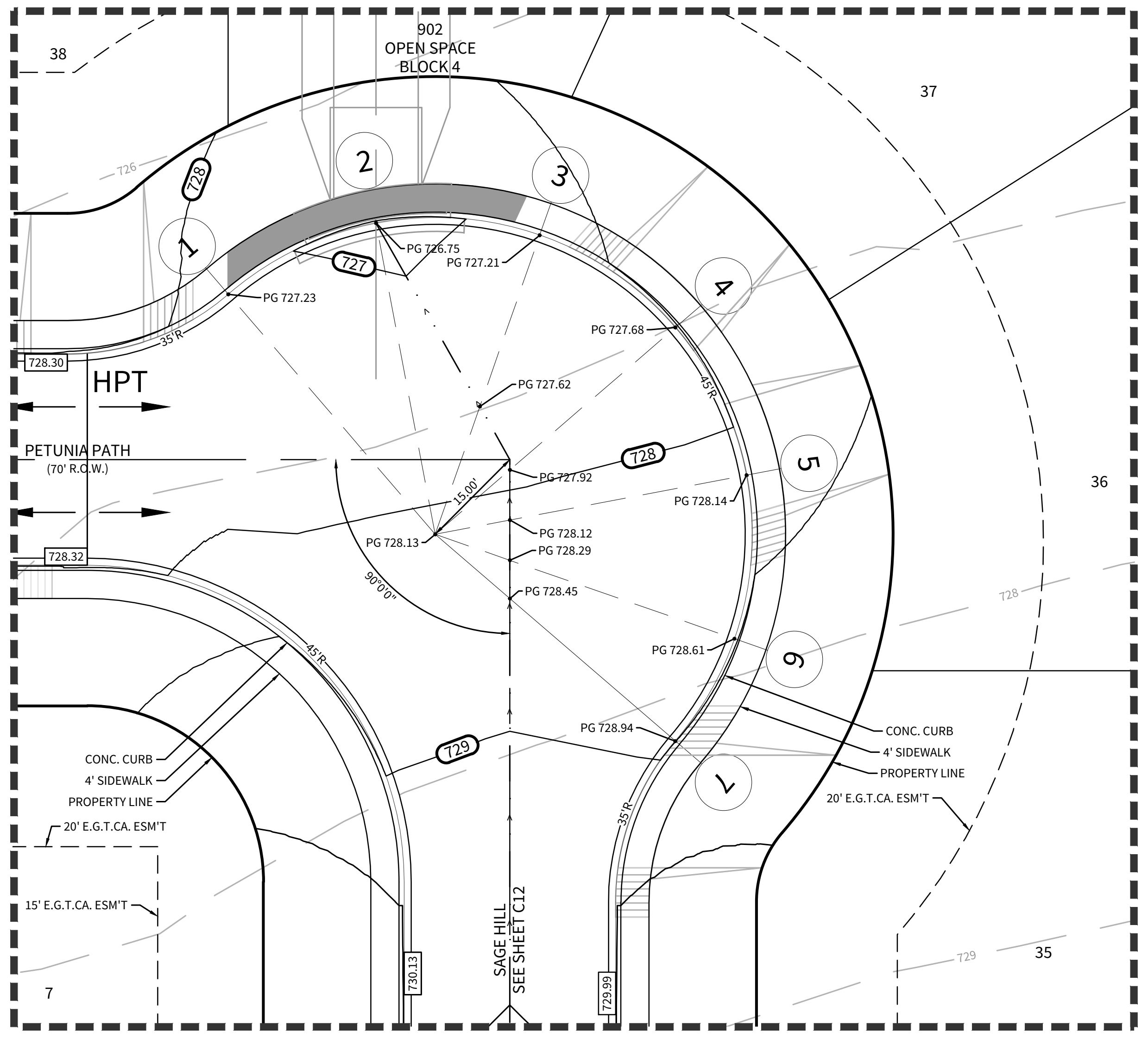






KNUCKLE DETAIL

SCALE: 1"= 20'

CUL-DE-SAC BACK OF CURB ELEVATIONS	
NUMBER	TOC ELEV.
1	727.81
2	727.19
3	727.79
4	728.26
5	728.72
6	729.19
7	729.52

LEGEND

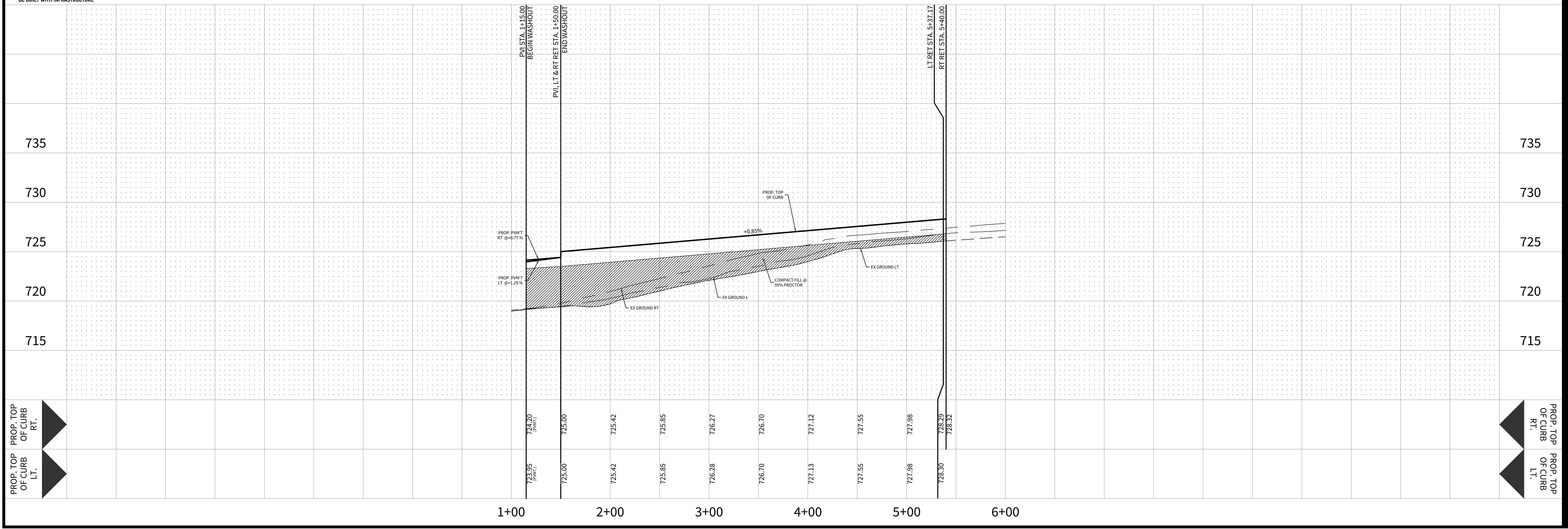
— · > · —	PAVEMENT GUTTER LINE
▭	DRIVEWAY TO BE BUILT WITH HOMEBUILDING
▨	STREET WASHOUT – SEE DETAIL SHEET C19
▨	SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
▨■▨	ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C20

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

PETUNIA PATH

STA. 1+00.00 TO STA. 6+00.00

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



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LANTANA SUBDIVISION
UNIT 1

STREET PLAN & PROFILE - PETUNIA PATH

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JAVIER CASTELLO
122170
J. Castello
5/12/2025

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TBPE No. 455
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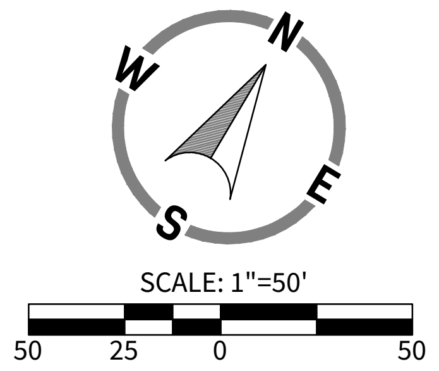
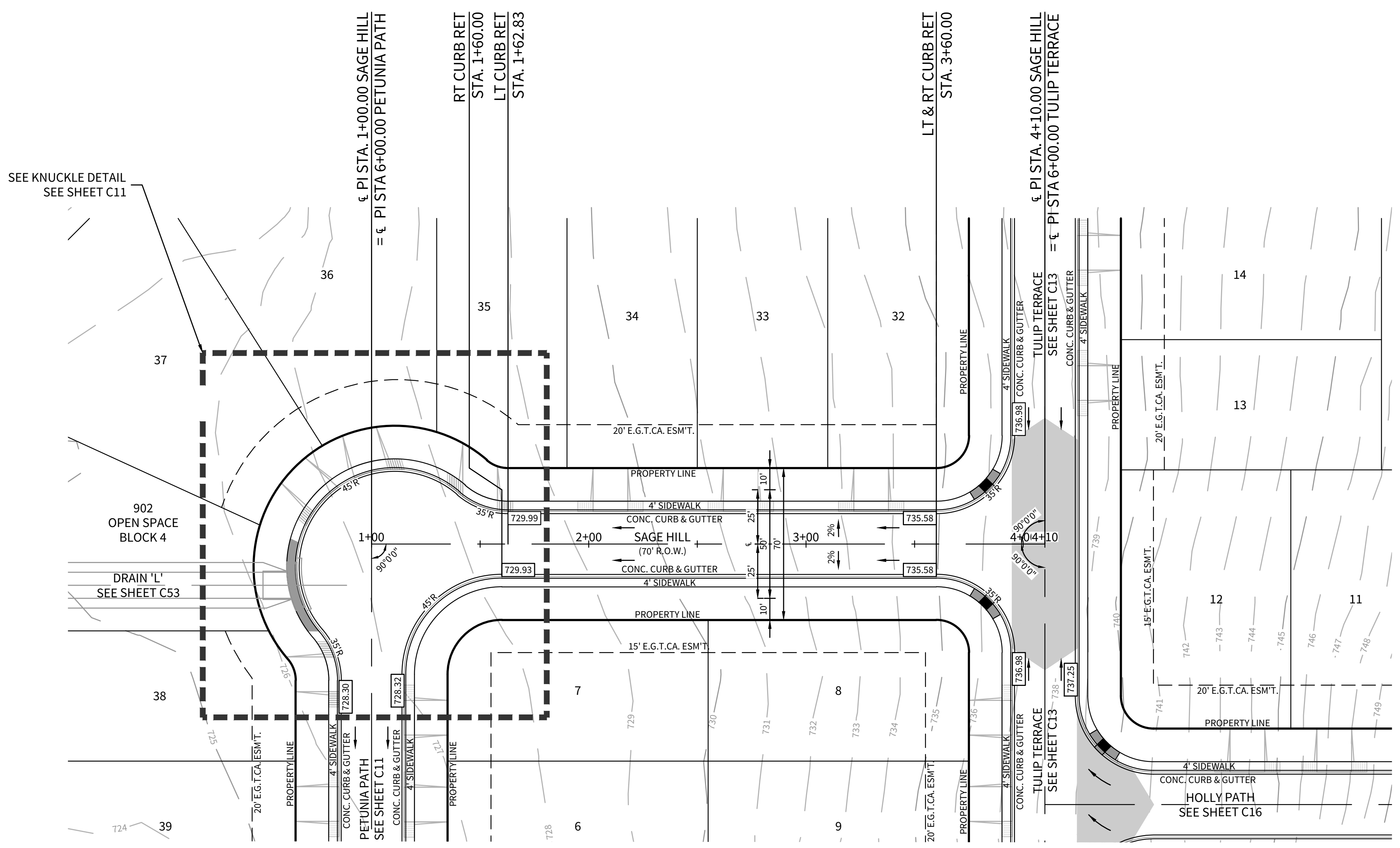




LEGEND

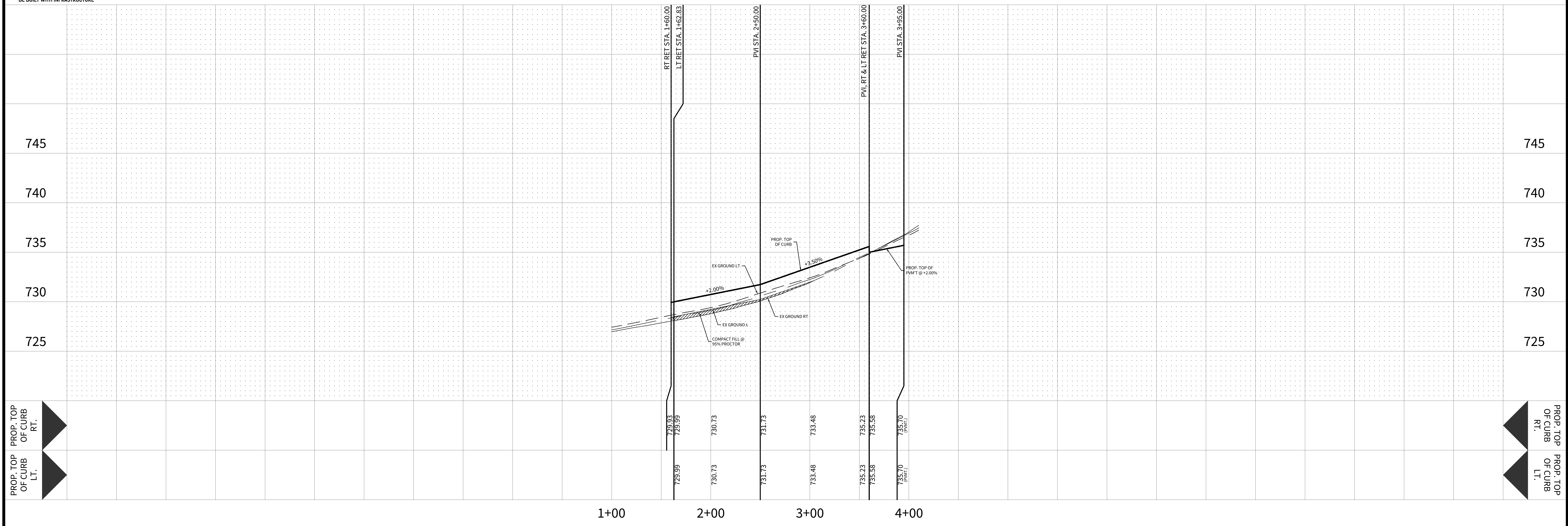
— · > · —	PAVEMENT GUTTER LINE
☐	DRIVEWAY TO BE BUILT WITH HOMEBUILDING
▨	STREET WASHOUT – SEE DETAIL SHEET C19
▨	SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
▨■▨	ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C20

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

SAGE HILL

STA. 1+00.00 TO STA. 4+10.00

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



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LANTANA SUBDIVISION
UNIT 1

STREET PLAN & PROFILE - SAGE HILL

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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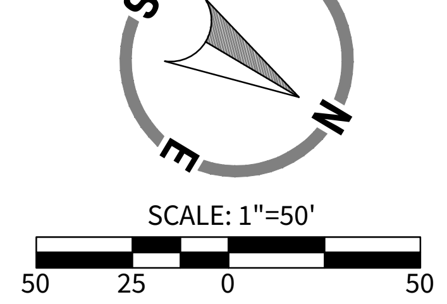
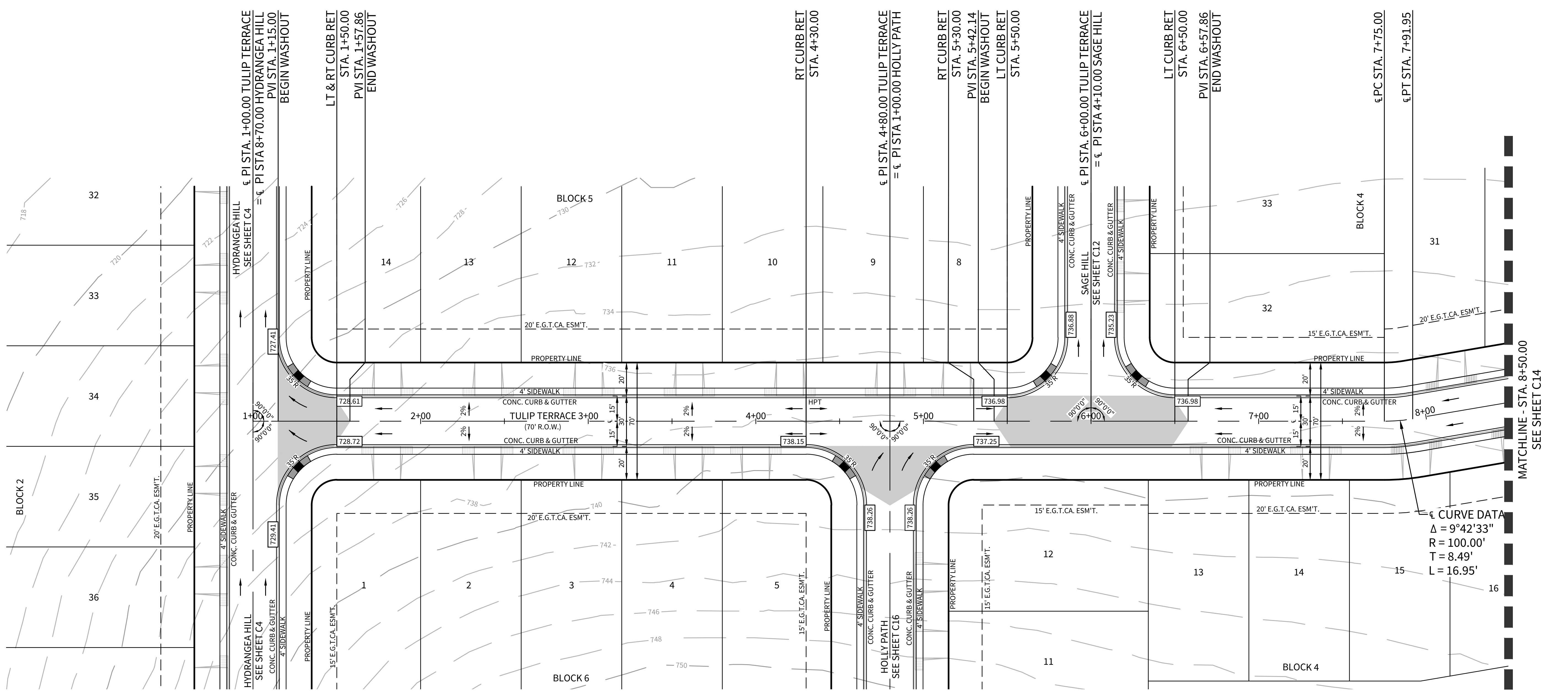
JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C12





LEGEND

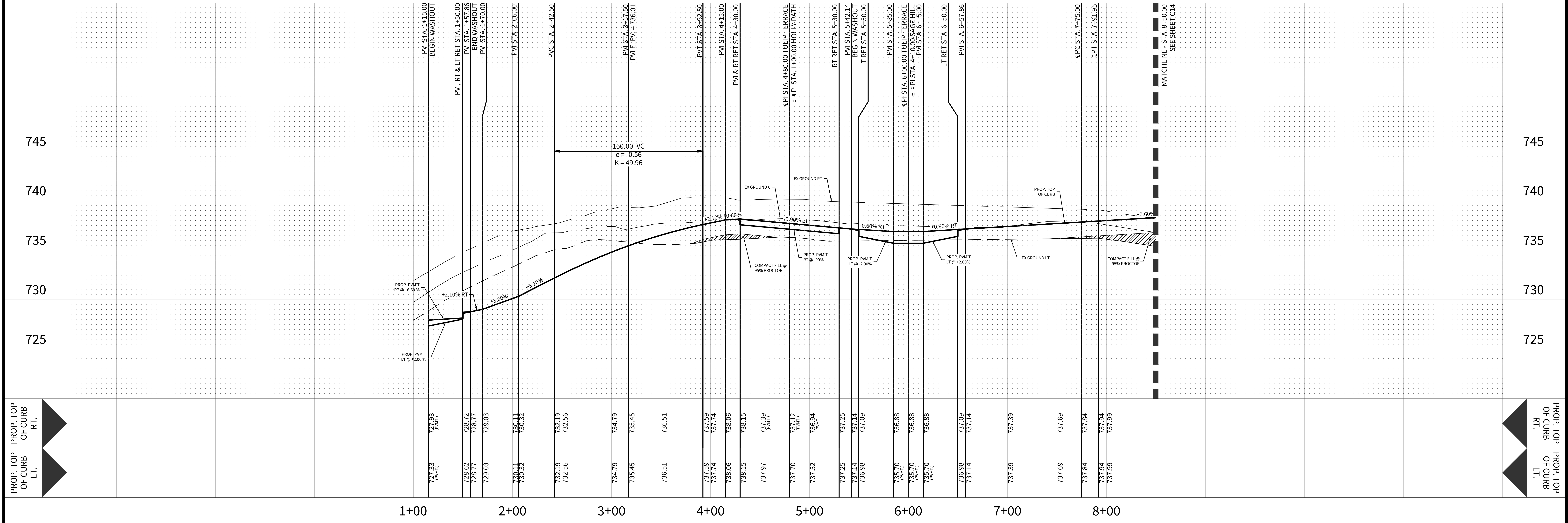
— · > · —	PAVEMENT GUTTER LINE
▭	DRIVEWAY TO BE BUILT WITH HOMEBUILDING
▢	STREET WASHOUT – SEE DETAIL SHEET C19
▨	SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
▨■▨	ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C20

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

TULIP TERRACE

STA. 1+00.00 TO STA. 8+50.00

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



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STREET PLAN & PROFILE - TULIP TERRACE

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JAVIER CASTELLO
122170
J. Castello 5/12/2025

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TBPE No. 455
TBPLS No. 10048500

P:\04037\003\2-DWG\4-Plans\C13 STREET PLAN & PROFILE - TULIP TERRACE.dwg 2025/05/12 1:41pm tduano

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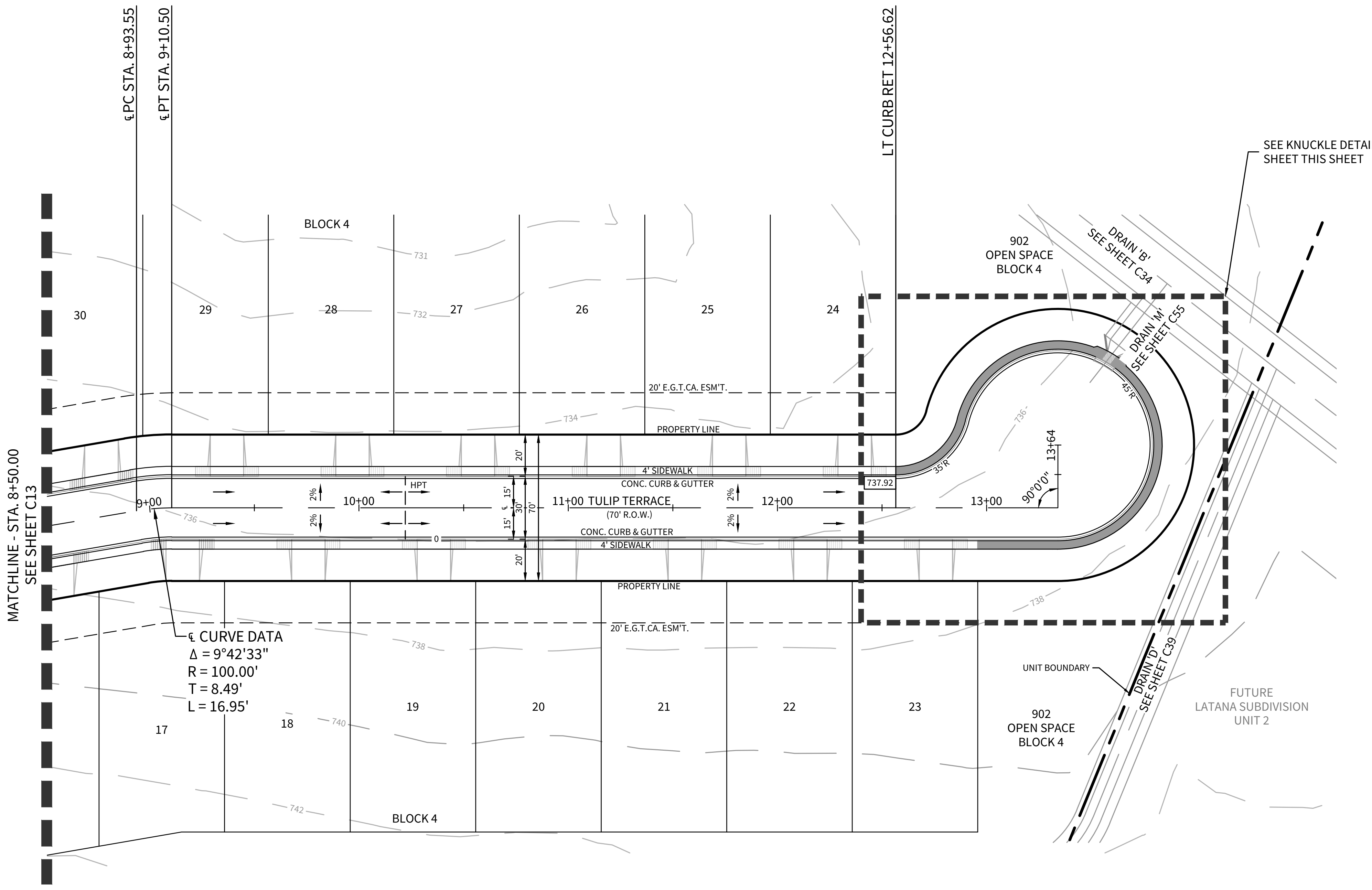
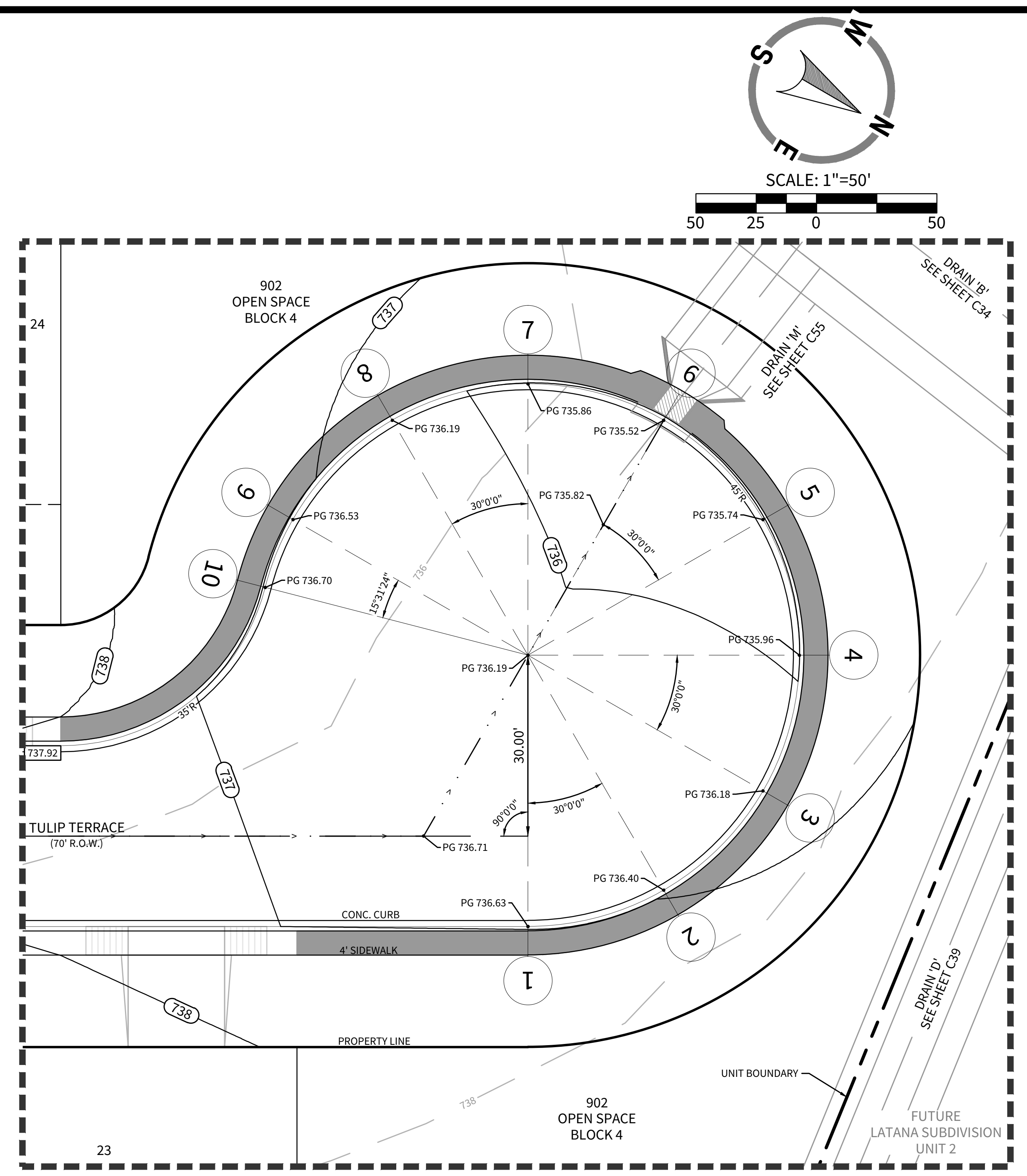




KNUCKLE DETAIL

SCALE: 1"= 20'

CUL-DE-SAC BACK OF CURB ELEVATIONS	
NUMBER	TOC ELEV.
1	737.21
2	736.98
3	736.76
4	736.54
5	736.32
6	736.11
7	736.44
8	736.77
9	737.11
10	737.28

LEGEND

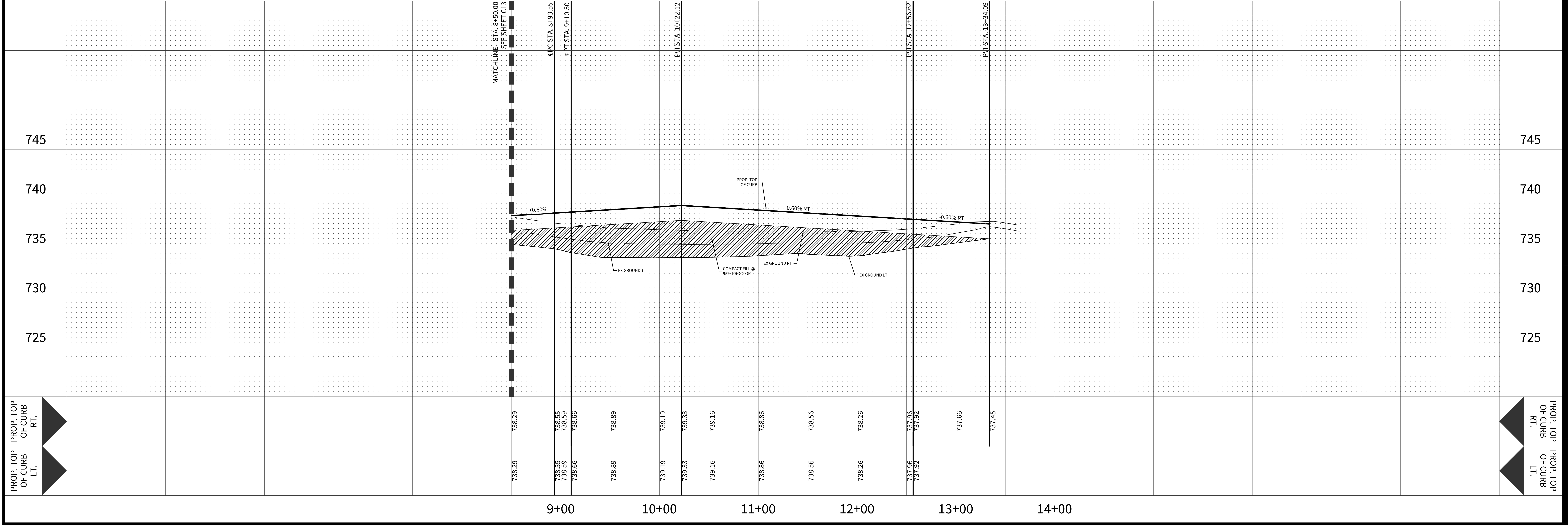
— · > · —	PAVEMENT GUTTER LINE
	DRIVEWAY TO BE BUILT WITH HOMEBUILDING
▨	STREET WASHOUT – SEE DETAIL SHEET C19
▨	SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
▨	ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C20

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

TULIP TERRACE

STA. 8+50.00 TO STA. END

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



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LANTANA SUBDIVISION UNIT 1

STREET PLAN & PROFILE - TULIP TERRACE

DATE
05/12/2025

PROJECT NO.
04037.003

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JAVIER CASTELLO
122170
5/12/2025

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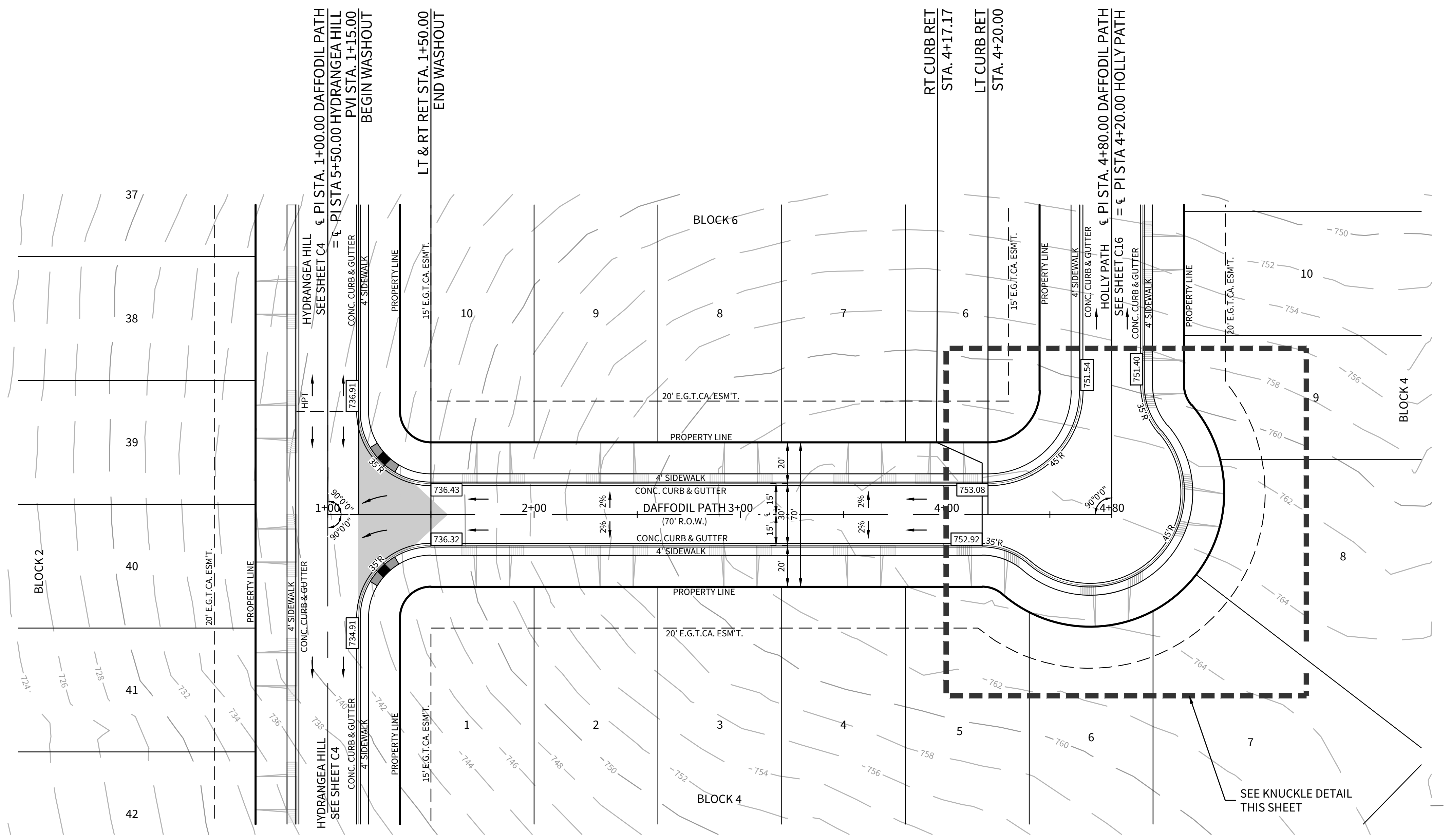
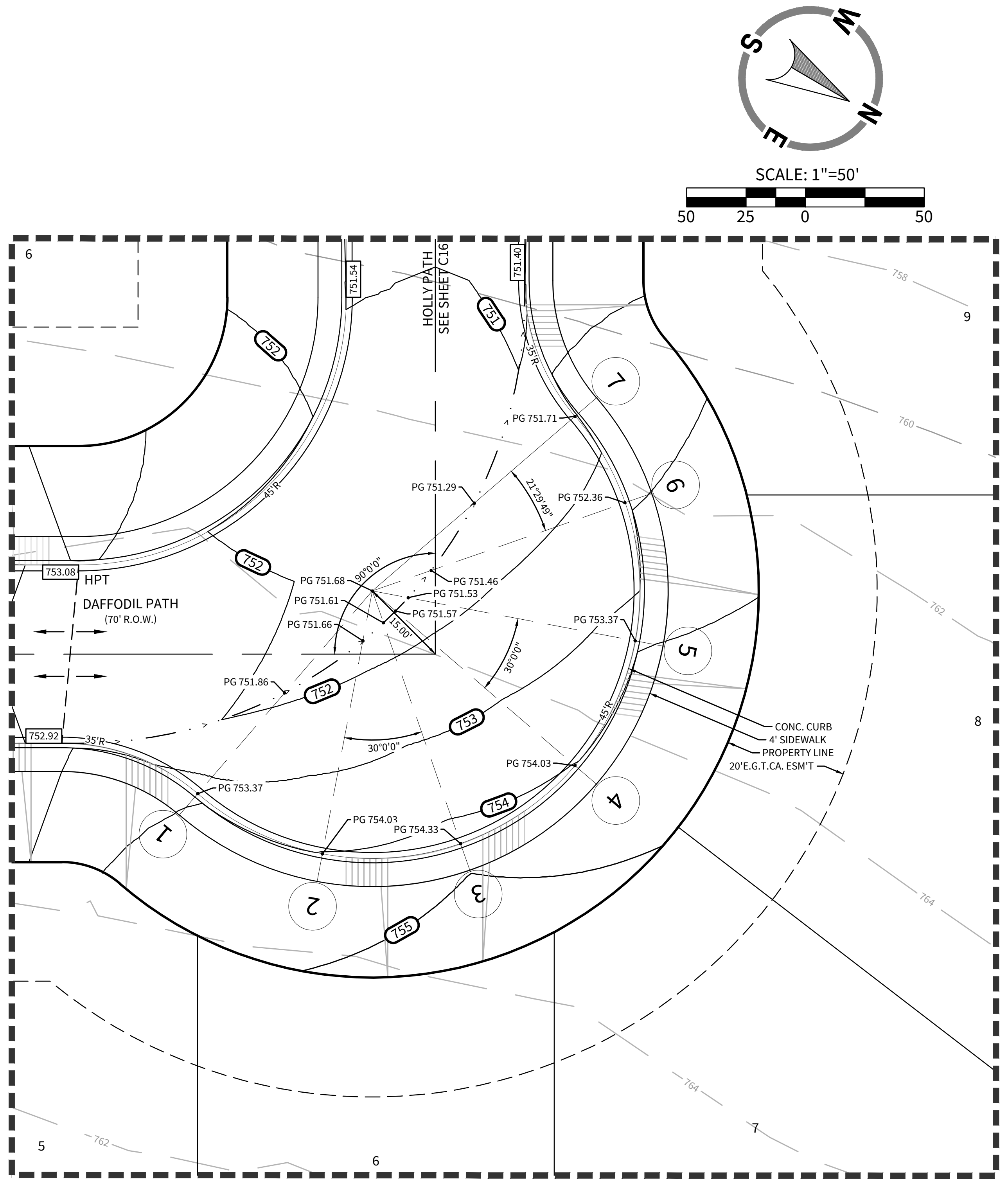




KNUCKLE DETAIL

SCALE: 1"= 20'

CUL-DE-SAC BACK OF CURB ELEVATIONS	
NUMBER	TOC ELEV.
1	753.95
2	754.61
3	754.91
4	754.61
5	753.95
6	752.93
7	752.30

LEGEND

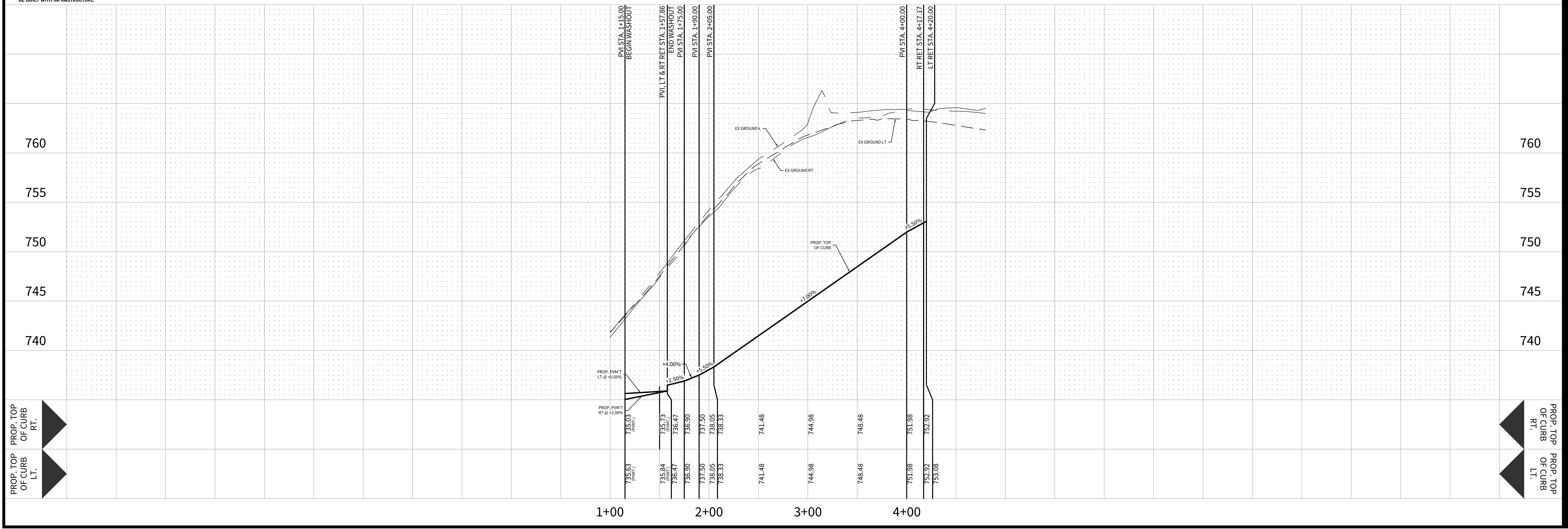
— · > · —	**PAVEMENT GUTTER LINE**
	DRIVEWAY TO BE BUILT WITH HOMEBUILDING
▨	**STREET WASHOUT – SEE DETAIL SHEET C19**
▨	**SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE**
▨	**ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C20**

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

DAFFODIL PATH

STA. 1+00.00 TO STA. 4+80.00

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



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STREET PLAN & PROFILE - DAFFODIL PATH

DATE	05/12/2025
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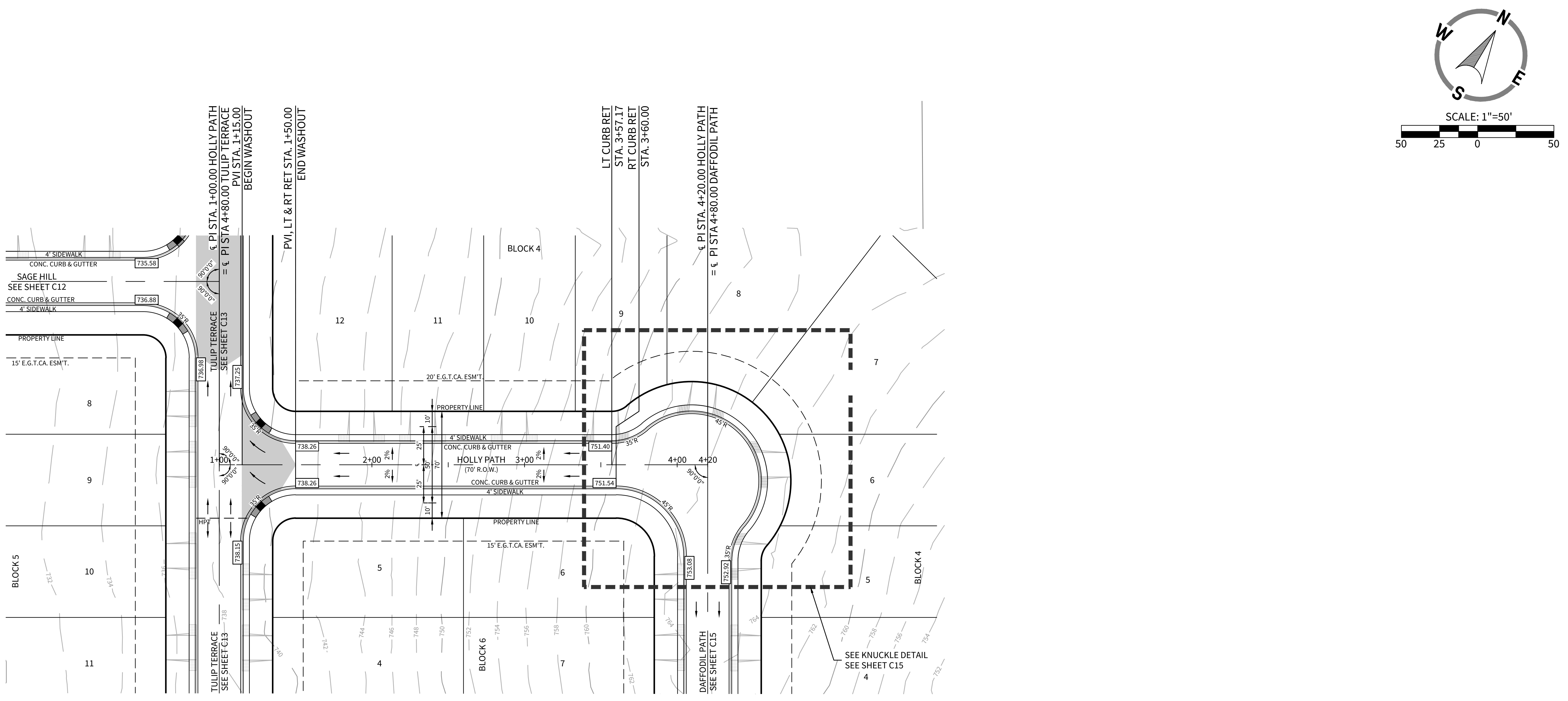


LEGEND

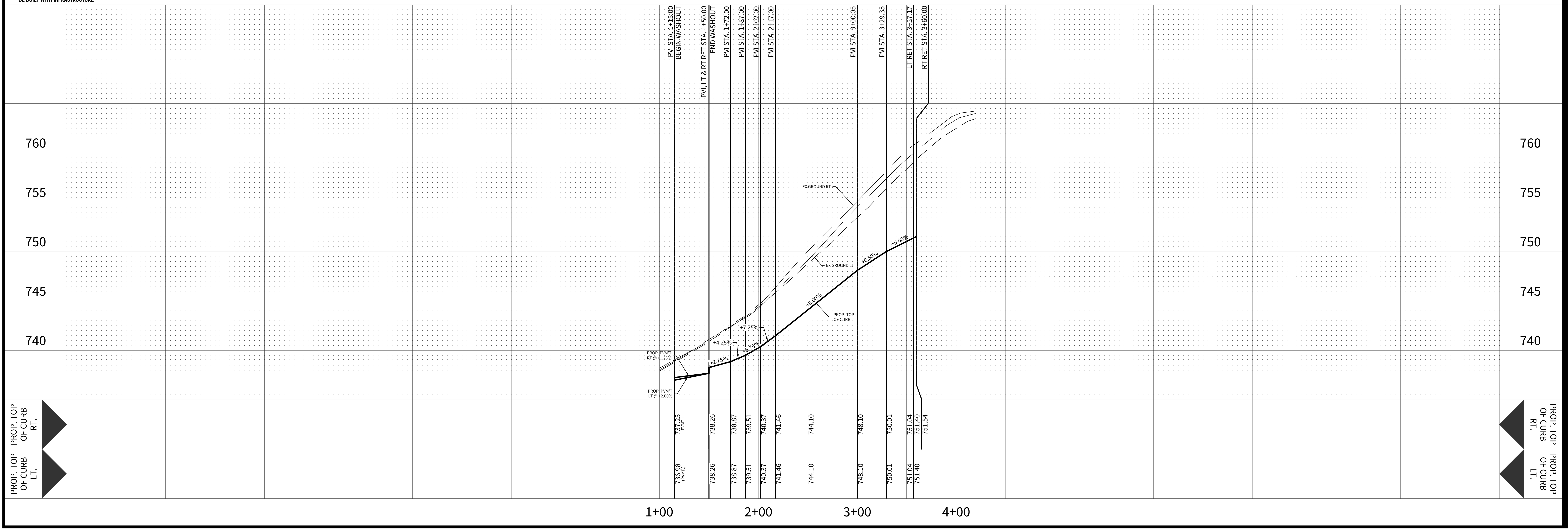
— · > · —	PAVEMENT GUTTER LINE
	DRIVEWAY TO BE BUILT WITH HOMEBUILDING
▨	STREET WASHOUT – SEE DETAIL SHEET C19
▨	SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
▨	ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C20

ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

HOLLY PATH

STA. 1+00.00 TO STA. 4+10.00

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



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STREET PLAN & PROFILE - HOLLY PATH

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P:\04037\003\2-DWG\4-Plans\C16 STREET PLAN & PROFILE - HOLLY PATH.dwg 2025/05/12 1:42pm tduano

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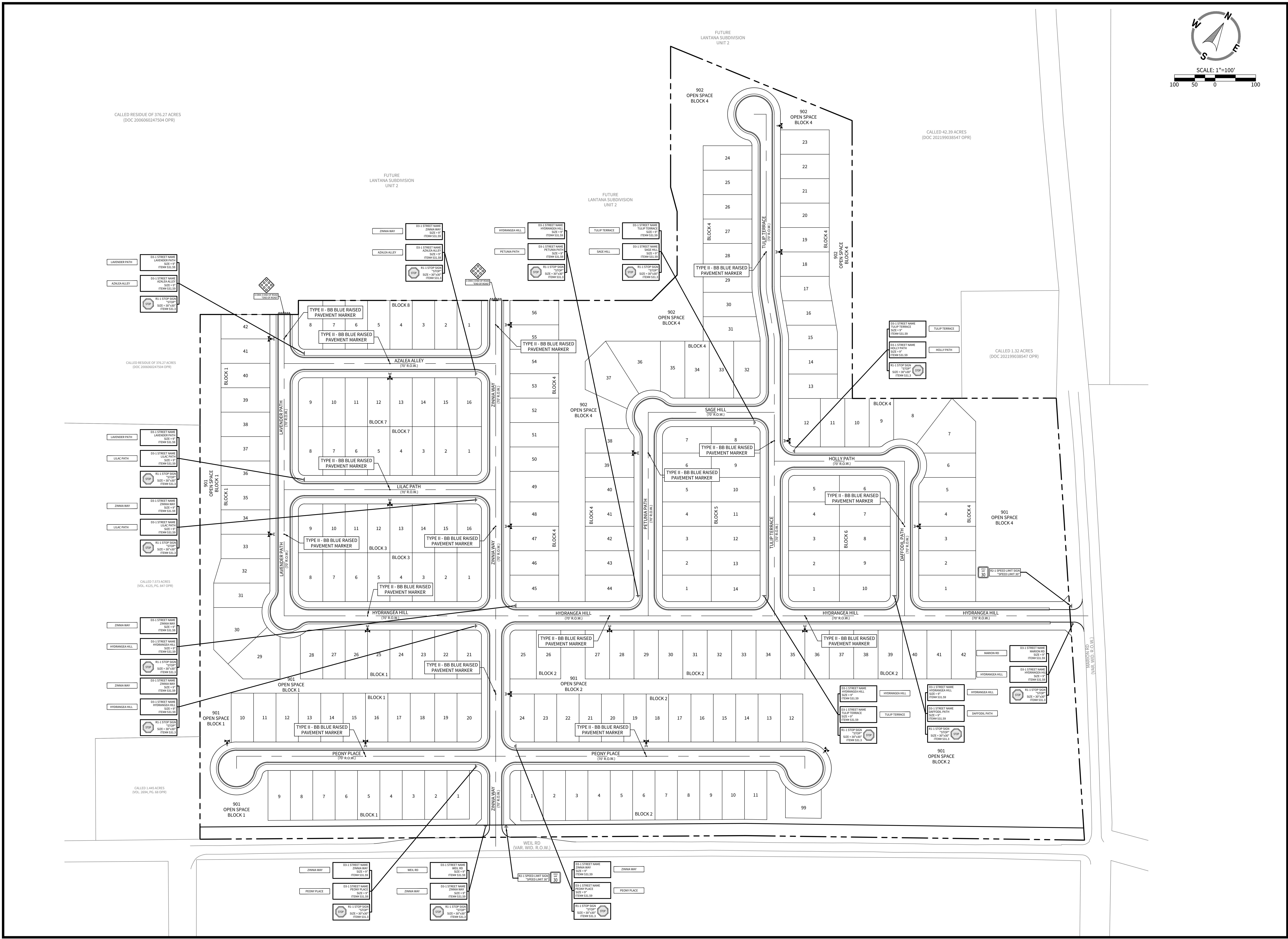

SCALE: 1"=100'
100 50 0 100
FUTURE LANTANA SUBDIVISION UNIT 2
CALLED RESIDUE OF 376.27 ACRES (DOC 20060247504 OPR)
CALLED 42.39 ACRES (DOC 202199038547 OPR)
CALLED 1.32 ACRES (DOC 202199038547 OPR)
CALLED 7.573 ACRES (VOL. 4125, PG. 847 OPR)
CALLED 1.445 ACRES (VOL. 2694, PG. 68 OPR)
AZALEA ALLEY (70' R.O.W.)
LILAC PATH (70' R.O.W.)
LAVENDER PATH (70' R.O.W.)
ZINNIA WAY (70' R.O.W.)
HYDRANGEA HILL (70' R.O.W.)
PETUNIA PATH (70' R.O.W.)
SAGE HILL (70' R.O.W.)
TULIP TERRACE (70' R.O.W.)
HOLLY PATH (70' R.O.W.)
DAFFODIL PATH (70' R.O.W.)
PEONY PLACE (70' R.O.W.)
MARION RD (VAR. WID. R.O.W.)
WEIL RD (VAR. WID. R.O.W.)
BLOCK 1
BLOCK 2
BLOCK 3
BLOCK 4
BLOCK 5
BLOCK 6
BLOCK 7
BLOCK 8
901 OPEN SPACE BLOCK 1
901 OPEN SPACE BLOCK 2
901 OPEN SPACE BLOCK 4
902 OPEN SPACE BLOCK 4
TYPE II - BB BLUE RAISED PAVEMENT MARKER
D3-1 STREET NAME SIZE = 9" ITEM# 531.59
R1-1 STOP SIGN "STOP" SIZE = 30"x30" ITEM# 531.3
R2-1 SPEED LIMIT SIGN "SPEED LIMIT 30"
W2044-1 END OF ROAD "END OF ROAD"

LANTANA SUBDIVISION
UNIT 1

TRAFFIC SIGNAGE PLAN

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P:\04037\003\2-DWG\4-Plans\C17 TRAFFIC SIGNAGE PLAN.dwg 2025/05/12 1:42pm tduano

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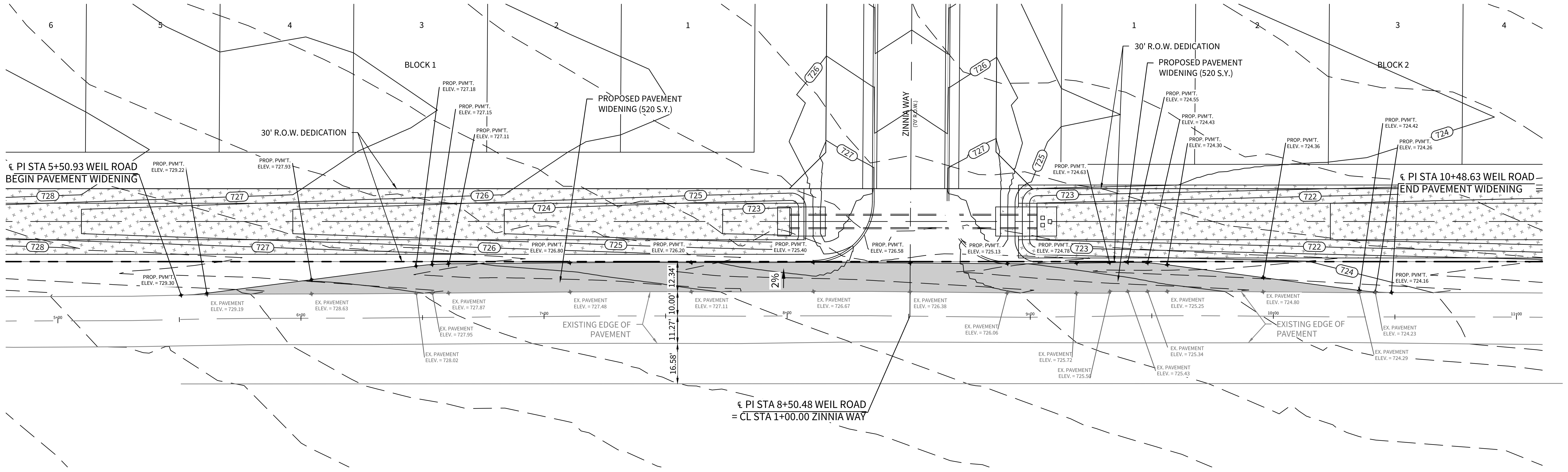

6
5
4
3
2
1
BLOCK 1
30' R.O.W. DEDICATION
PROPOSED PAVEMENT WIDENING (520 S.Y.)
℄ PI STA 5+50.93 WEIL ROAD
BEGIN PAVEMENT WIDENING
PROP. PVM'T. ELEV. = 729.22
PROP. PVM'T. ELEV. = 727.93
PROP. PVM'T. ELEV. = 727.18
PROP. PVM'T. ELEV. = 727.15
PROP. PVM'T. ELEV. = 727.11
PROP. PVM'T. ELEV. = 729.30
PROP. PVM'T. ELEV. = 726.80
PROP. PVM'T. ELEV. = 726.20
PROP. PVM'T. ELEV. = 725.40
PROP. PVM'T. ELEV. = 726.58
PROP. PVM'T. ELEV. = 725.13
PROP. PVM'T. ELEV. = 724.78
PROP. PVM'T. ELEV. = 724.63
PROP. PVM'T. ELEV. = 724.55
PROP. PVM'T. ELEV. = 724.43
PROP. PVM'T. ELEV. = 724.30
PROP. PVM'T. ELEV. = 724.36
PROP. PVM'T. ELEV. = 724.42
PROP. PVM'T. ELEV. = 724.26
PROP. PVM'T. ELEV. = 724.16
728
727
726
725
724
723
722
EX. PAVEMENT ELEV. = 729.19
EX. PAVEMENT ELEV. = 728.63
EX. PAVEMENT ELEV. = 727.87
EX. PAVEMENT ELEV. = 727.95
EX. PAVEMENT ELEV. = 728.02
EX. PAVEMENT ELEV. = 727.48
EX. PAVEMENT ELEV. = 727.11
EX. PAVEMENT ELEV. = 726.67
EX. PAVEMENT ELEV. = 726.38
EX. PAVEMENT ELEV. = 726.06
EX. PAVEMENT ELEV. = 725.72
EX. PAVEMENT ELEV. = 725.50
EX. PAVEMENT ELEV. = 725.43
EX. PAVEMENT ELEV. = 725.34
EX. PAVEMENT ELEV. = 725.25
EX. PAVEMENT ELEV. = 724.80
EX. PAVEMENT ELEV. = 724.29
EX. PAVEMENT ELEV. = 724.23
EXISTING EDGE OF PAVEMENT
EXISTING EDGE OF PAVEMENT
5+00
6+00
7+00
8+00
9+00
10+00
11+00
12.34'
10.00'
11.27'
16.58'
2%
ZINNIA WAY
(70' R.O.W.)
℄ PI STA 8+50.48 WEIL ROAD
= CL STA 1+00.00 ZINNIA WAY
30' R.O.W. DEDICATION
PROPOSED PAVEMENT WIDENING (520 S.Y.)
BLOCK 2
1
2
3
4
℄ PI STA 10+48.63 WEIL ROAD
END PAVEMENT WIDENING

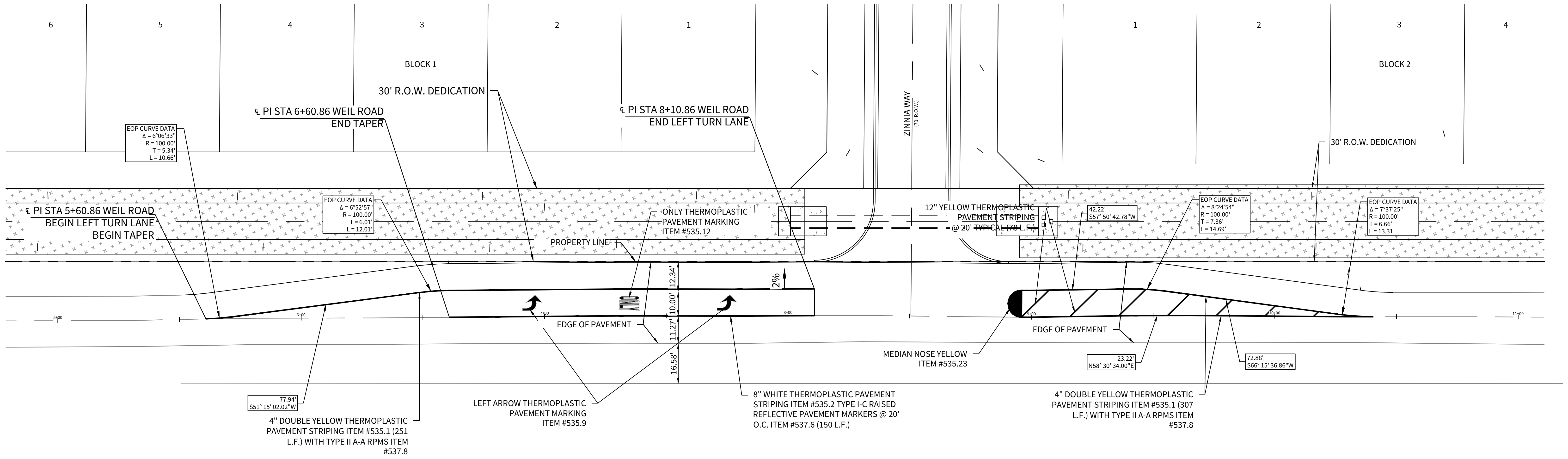
WEIL RD

EXISTING vs. PROPOSED PAVEMENT

N W S E

SCALE: 1"=30'

30 15 0 30


6
5
4
3
2
1
BLOCK 1
30' R.O.W. DEDICATION
℄ PI STA 6+60.86 WEIL ROAD
END TAPER
℄ PI STA 8+10.86 WEIL ROAD
END LEFT TURN LANE
EOP CURVE DATA
Δ = 6°06'33"
R = 100.00'
T = 5.34'
L = 10.66'
℄ PI STA 5+60.86 WEIL ROAD
BEGIN LEFT TURN LANE
BEGIN TAPER
EOP CURVE DATA
Δ = 6°52'57"
R = 100.00'
T = 6.01'
L = 12.01'
ONLY THERMOPLASTIC PAVEMENT MARKING ITEM #535.12
PROPERTY LINE
ONLY
12.34'
10.00'
11.27'
16.58'
2%
EDGE OF PAVEMENT
5+00
6+00
7+00
8+00
9+00
10+00
11+00
77.94'
S51° 15' 02.02"W
4" DOUBLE YELLOW THERMOPLASTIC PAVEMENT STRIPING ITEM #535.1 (251 L.F.) WITH TYPE II A-A RPMS ITEM #537.8
LEFT ARROW THERMOPLASTIC PAVEMENT MARKING ITEM #535.9
8" WHITE THERMOPLASTIC PAVEMENT STRIPING ITEM #535.2 TYPE I-C RAISED REFLECTIVE PAVEMENT MARKERS @ 20' O.C. ITEM #537.6 (150 L.F.)
ZINNIA WAY
(70' R.O.W.)
12" YELLOW THERMOPLASTIC PAVEMENT STRIPING @ 20' TYPICAL (78 L.F.)
42.22'
S57° 50' 42.78"W
EOP CURVE DATA
Δ = 8°24'54"
R = 100.00'
T = 7.36'
L = 14.69'
EOP CURVE DATA
Δ = 7°37'25"
R = 100.00'
T = 6.66'
L = 13.31'
30' R.O.W. DEDICATION
BLOCK 2
1
2
3
4
MEDIAN NOSE YELLOW ITEM #535.23
EDGE OF PAVEMENT
23.22'
N58° 30' 34.00"E
72.88'
S66° 15' 36.86"W
4" DOUBLE YELLOW THERMOPLASTIC PAVEMENT STRIPING ITEM #535.1 (307 L.F.) WITH TYPE II A-A RPMS ITEM #537.8

WEIL RD

EAST BOUND LEFT TURN LANE
PROPOSED CONDITIONS STA. 5+60.86 TO STA. 8+10.86

N W S E

SCALE: 1"=30'

30 15 0 30

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LANTANA SUBDIVISION
UNIT 1

TURN LANE PLAN

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

	DATE	REVISIONS
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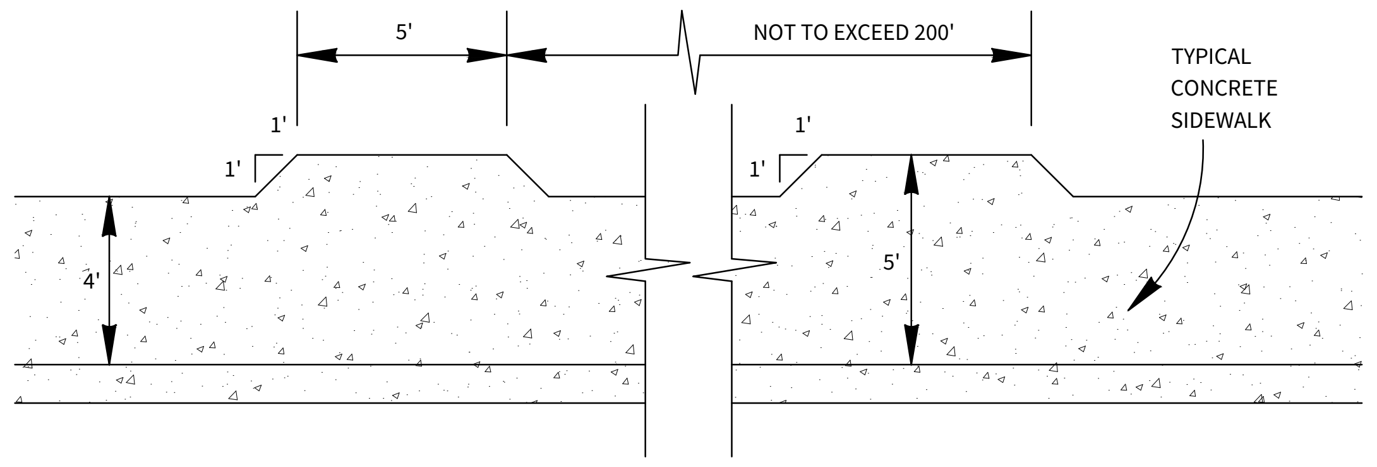
JAVIER CASTELLO
122170
5/12/2025

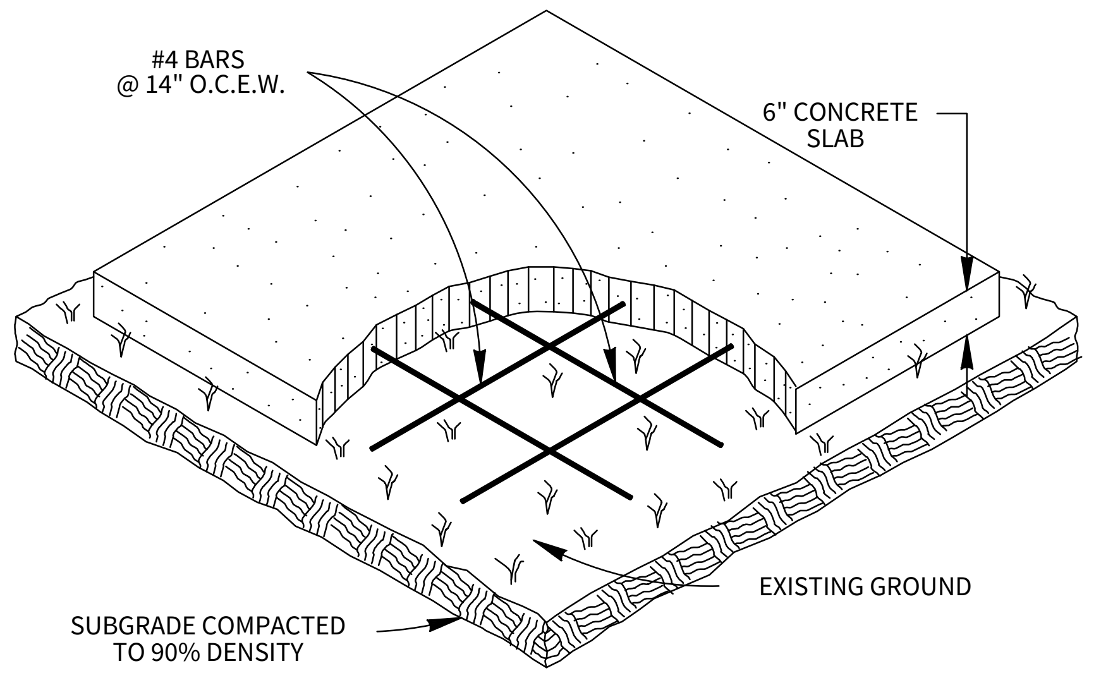
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C18



SIDEWALK PASSING SPACE

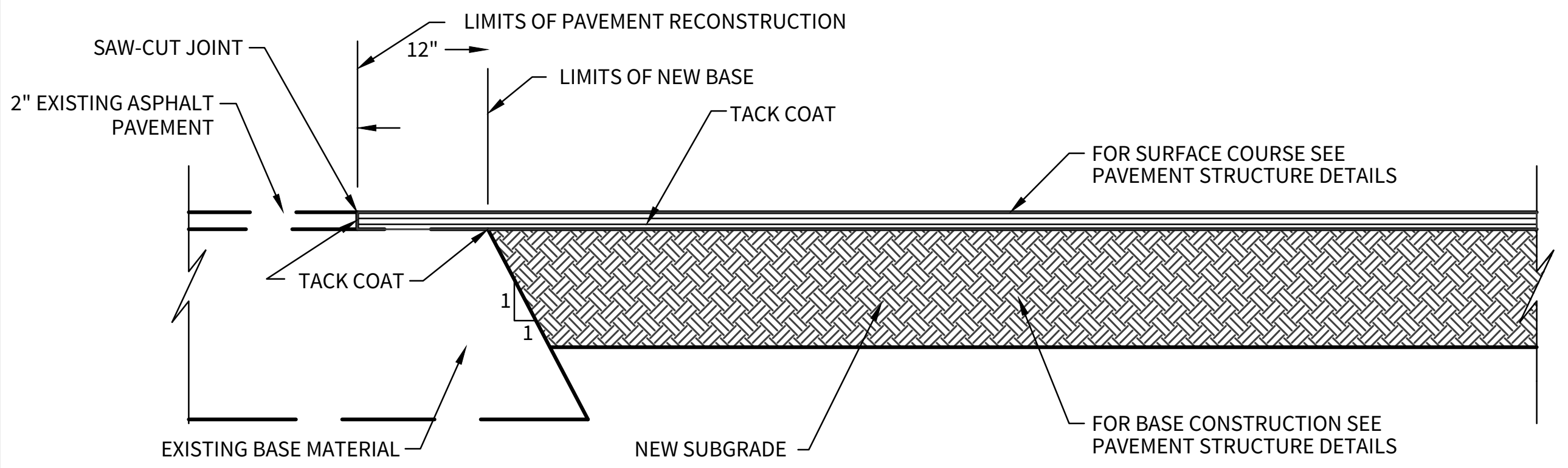
1. FOR LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 3' FROM THE BACK OF CURB.
2. SIDEWALKS LESS THAN 5 FEET IN WIDTH SHALL BE PROVIDED WITH A PASSING SPACE AT A MAXIMUM SPACING OF 200 FEET.



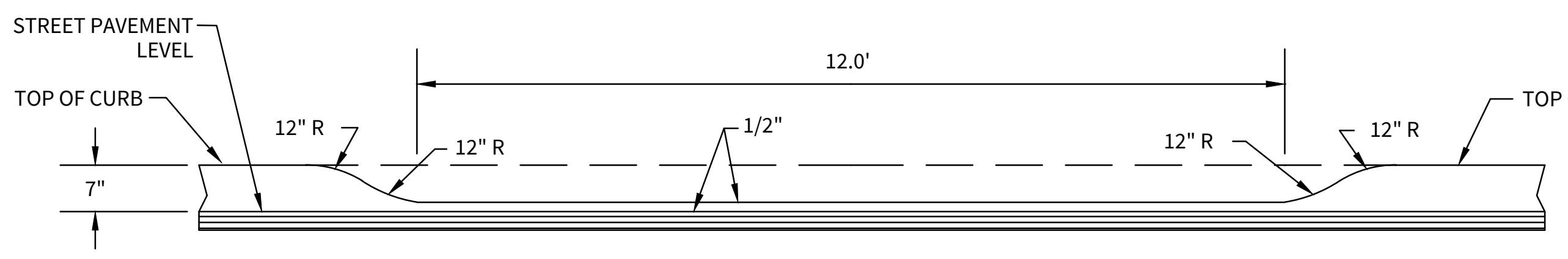
MAIL BOX PAD NOTE:

1. THE CONTRACTOR WILL CONSTRUCT SLABS FOR "TEMPORARY MAIL BOX COLLECTION PAD" FOR THE UNITED STATES POSTAL SERVICE WITH LOCATIONS AND SIZES SPECIFIED BY THE CITY ENGINEER DURING CONSTRUCTION.
2. THE CONSTRUCTION OF SLABS SHALL CONFORM TO ITEM 513 "REMOVING AND RELOCATING MAILBOXES".
3. PAYMENT WILL BE MADE UNDER ITEM 513.2 "COMMUNITY MAILBOX SLAB - PER SQUARE YARD".
4. UNIT PRICE WILL INCLUDE REMOVAL OF "TEMPORARY MAIL BOX COLLECTION PAD" SLABS AT THE END OF THE PROJECT. NO SEPARATE PAY ITEM.

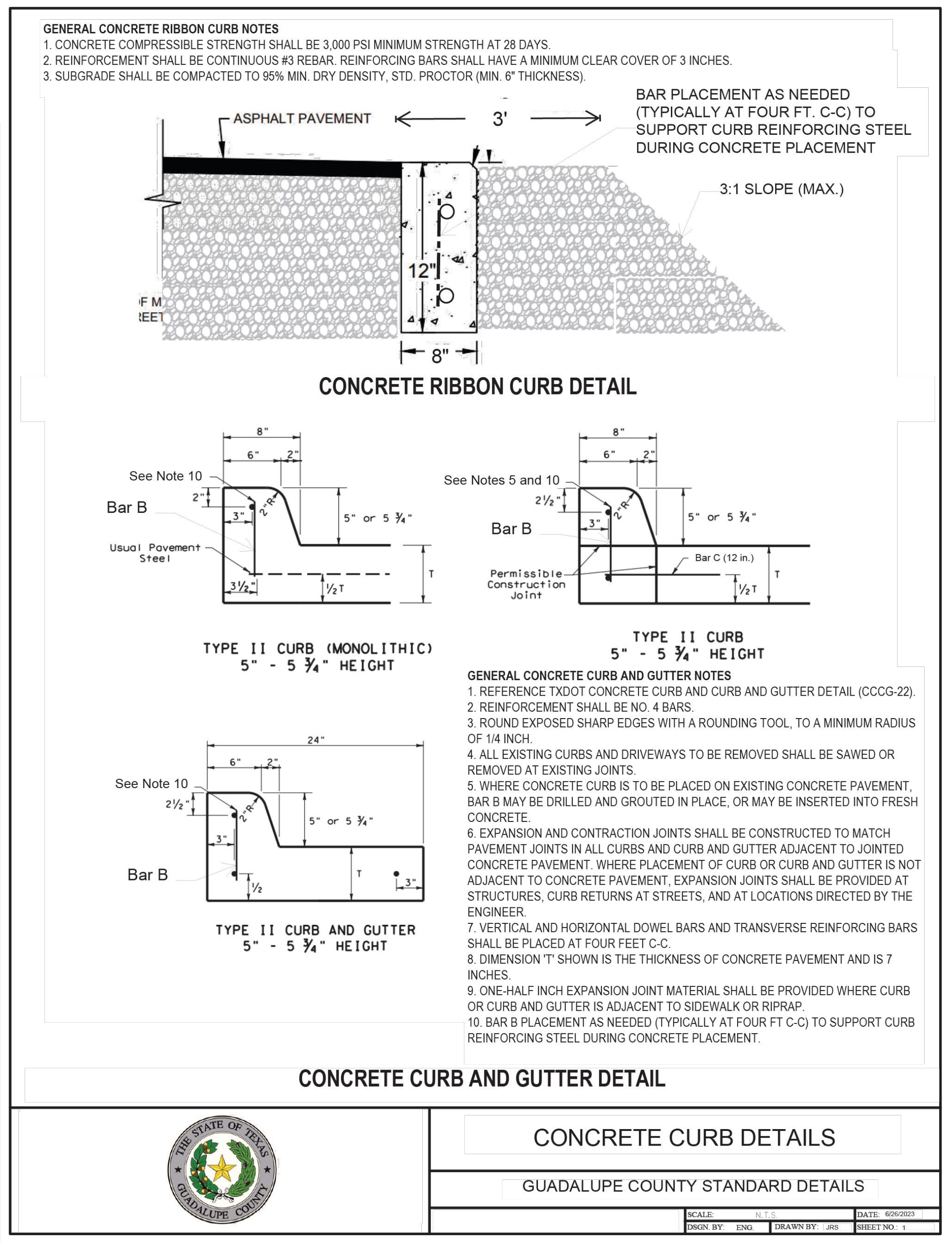
COMMUNITY MAIL BOX SLAB


SAW-CUT JOINT
LIMITS OF PAVEMENT RECONSTRUCTION
12"
LIMITS OF NEW BASE
2" EXISTING ASPHALT PAVEMENT
TACK COAT
FOR SURFACE COURSE SEE PAVEMENT STRUCTURE DETAILS
TACK COAT
1
1
EXISTING BASE MATERIAL
NEW SUBGRADE
FOR BASE CONSTRUCTION SEE PAVEMENT STRUCTURE DETAILS

PAVEMENT JUNCTION DETAILS
N.T.S.



TYPICAL DRIVEWAY CUT SECTION


GENERAL CONCRETE RIBBON CURB NOTES
1. CONCRETE COMPRESSIBLE STRENGTH SHALL BE 3,000 PSI MINIMUM STRENGTH AT 28 DAYS.
2. REINFORCEMENT SHALL BE CONTINUOUS #3 REBAR. REINFORCING BARS SHALL HAVE A MINIMUM CLEAR COVER OF 3 INCHES.
3. SUBGRADE SHALL BE COMPACTED TO 95% MIN. DRY DENSITY, STD. PROCTOR (MIN. 6" THICKNESS).

ASPHALT PAVEMENT
3'
BAR PLACEMENT AS NEEDED (TYPICALLY AT FOUR FT. C-C) TO SUPPORT CURB REINFORCING STEEL DURING CONCRETE PLACEMENT
3:1 SLOPE (MAX.)
12"
8"

CONCRETE RIBBON CURB DETAIL

8"
6"
2"
See Note 10
Bar B
2"
3"
2"R
5" or 5 ¾"
Usual Pavement Steel
3½"
½T
T
8"
6"
2"
See Notes 5 and 10
2½"
Bar B
3"
2"R
5" or 5 ¾"
Bar C (12 in.)
Permissible Construction Joint
½T
T
24"
6"
2"
See Note 10
2½"
2"R
5" or 5 ¾"
3"
Bar B
½
T
3"

TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT

TYPE II CURB
5" - 5 ¾" HEIGHT

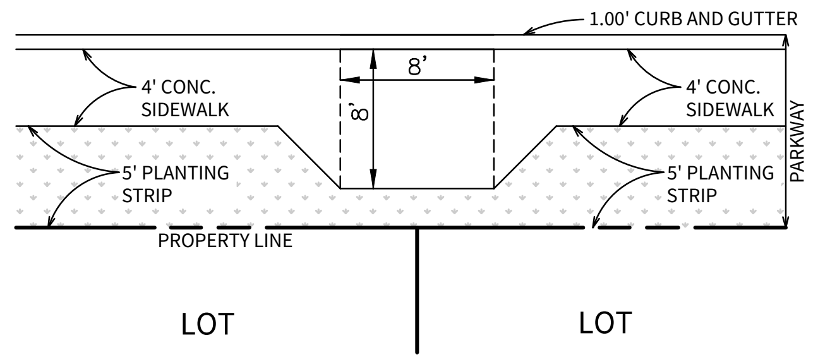
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT

GENERAL CONCRETE CURB AND GUTTER NOTES
1. REFERENCE TXDOT CONCRETE CURB AND CURB AND GUTTER DETAIL (CCCG-22).
2. REINFORCEMENT SHALL BE NO. 4 BARS.
3. ROUND EXPOSED SHARP EDGES WITH A ROUNDING TOOL, TO A MINIMUM RADIUS OF 1/4 INCH.
4. ALL EXISTING CURBS AND DRIVEWAYS TO BE REMOVED SHALL BE SAWED OR REMOVED AT EXISTING JOINTS.
5. WHERE CONCRETE CURB IS TO BE PLACED ON EXISTING CONCRETE PAVEMENT, BAR B MAY BE DRILLED AND GROUTED IN PLACE, OR MAY BE INSERTED INTO FRESH CONCRETE.
6. EXPANSION AND CONTRACTION JOINTS SHALL BE CONSTRUCTED TO MATCH PAVEMENT JOINTS IN ALL CURBS AND CURB AND GUTTER ADJACENT TO JOINTED CONCRETE PAVEMENT. WHERE PLACEMENT OF CURB OR CURB AND GUTTER IS NOT ADJACENT TO CONCRETE PAVEMENT, EXPANSION JOINTS SHALL BE PROVIDED AT STRUCTURES, CURB RETURNS AT STREETS, AND AT LOCATIONS DIRECTED BY THE ENGINEER.
7. VERTICAL AND HORIZONTAL DOWEL BARS AND TRANSVERSE REINFORCING BARS SHALL BE PLACED AT FOUR FEET C-C.
8. DIMENSION 'T' SHOWN IS THE THICKNESS OF CONCRETE PAVEMENT AND IS 7 INCHES.
9. ONE-HALF INCH EXPANSION JOINT MATERIAL SHALL BE PROVIDED WHERE CURB OR CURB AND GUTTER IS ADJACENT TO SIDEWALK OR RIPRAP.
10. BAR B PLACEMENT AS NEEDED (TYPICALLY AT FOUR FT C-C) TO SUPPORT CURB REINFORCING STEEL DURING CONCRETE PLACEMENT.

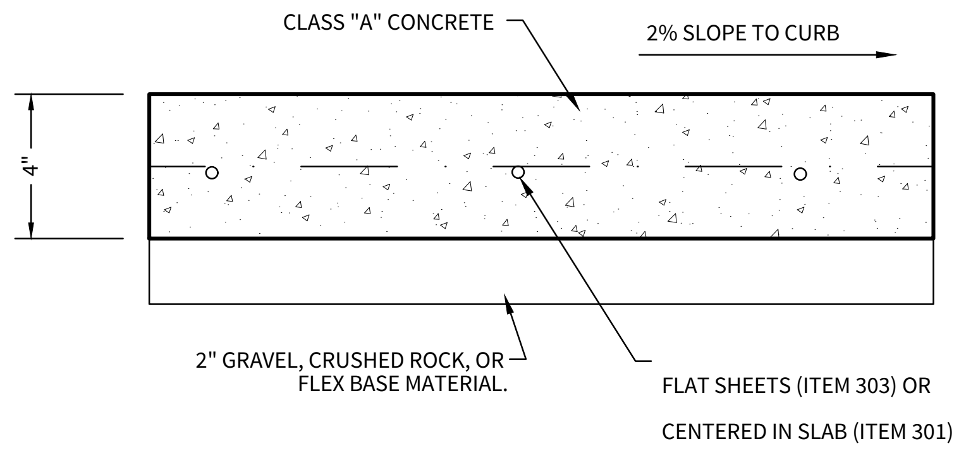
CONCRETE CURB AND GUTTER DETAIL

CONCRETE CURB DETAILS
GUADALUPE COUNTY STANDARD DETAILS

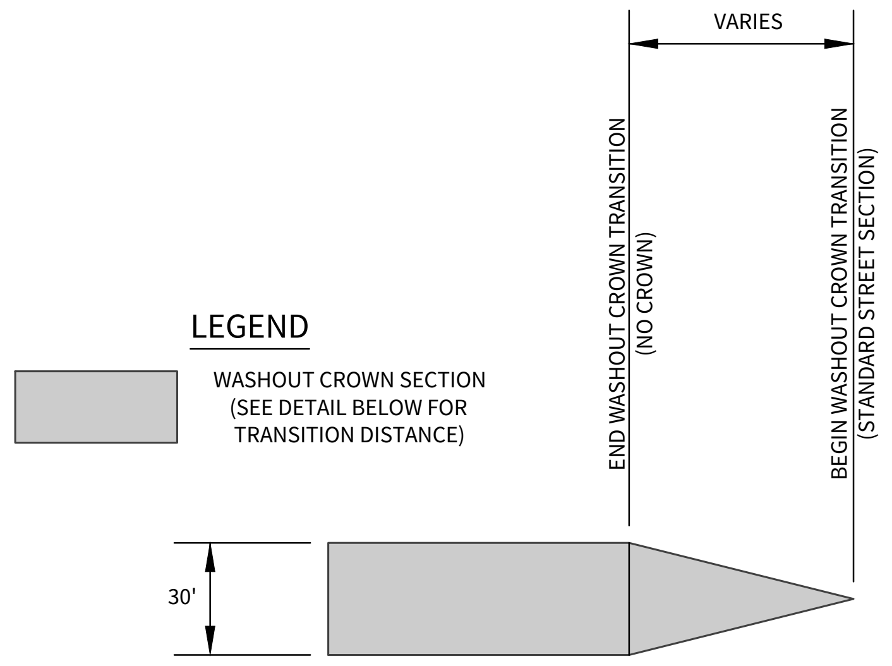
SCALE: N.T.S.
DATE: 6/26/2023
DSGN. BY: ENG.
DRAWN BY: JRS
SHEET NO.: 1



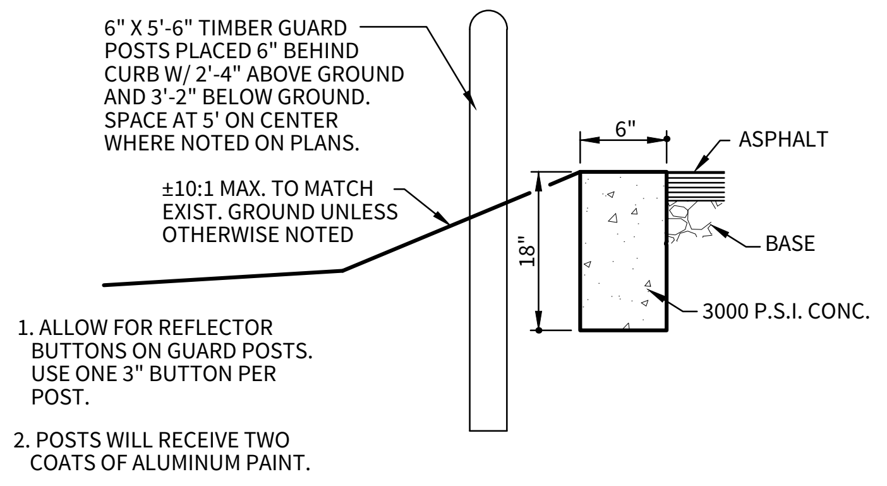
MAILBOX PAD DETAIL
N.T.S.


CLASS "A" CONCRETE
2% SLOPE TO CURB
4"
2" GRAVEL, CRUSHED ROCK, OR FLEX BASE MATERIAL.
FLAT SHEETS (ITEM 303) OR
CENTERED IN SLAB (ITEM 301)

CONCRETE SIDEWALK

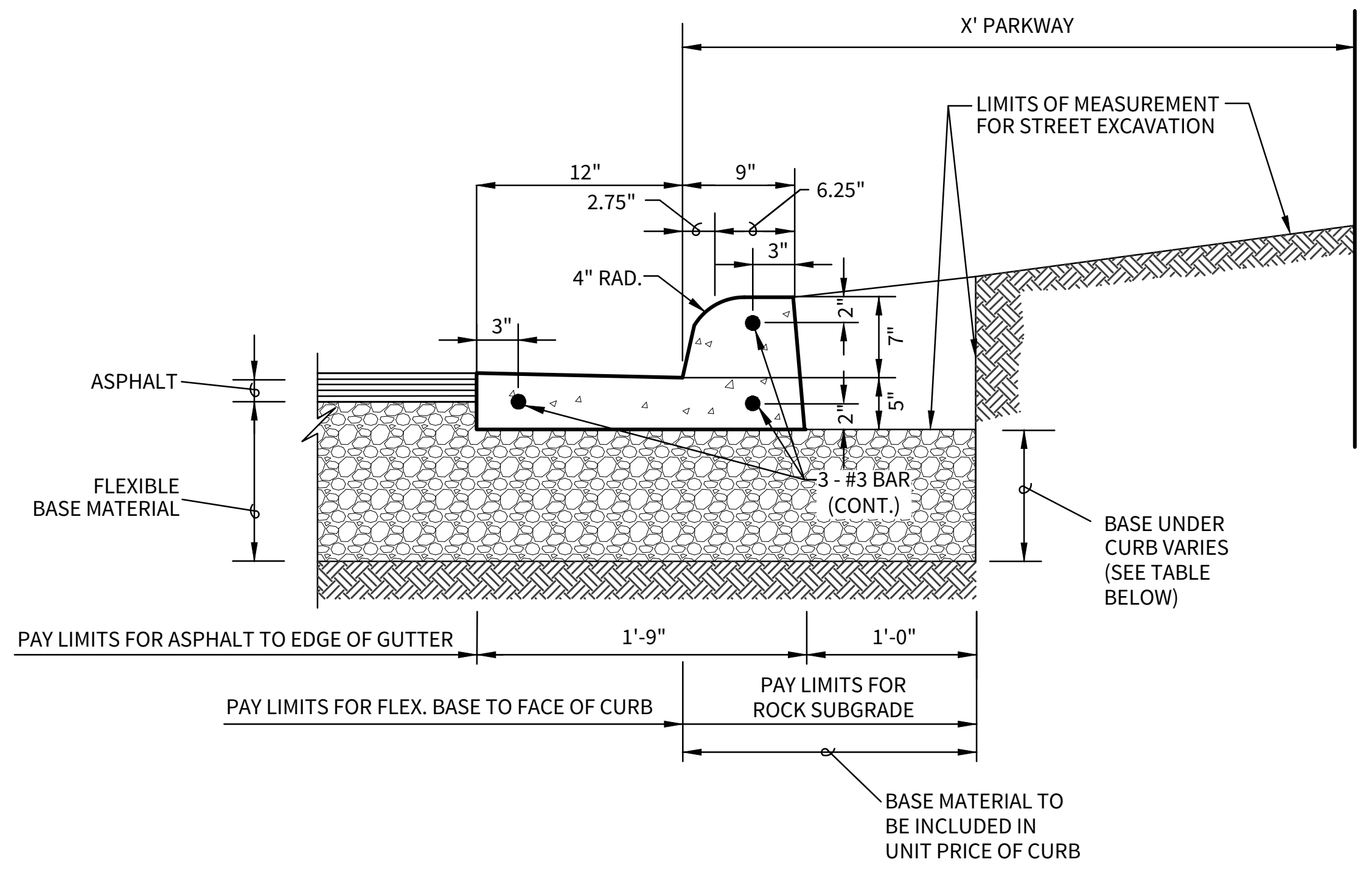

VARIES
END WASHOUT CROWN TRANSITION (NO CROWN)
BEGIN WASHOUT CROWN TRANSITION (STANDARD STREET SECTION)
LEGEND
WASHOUT CROWN SECTION (SEE DETAIL BELOW FOR TRANSITION DISTANCE)
30'

WASHOUT CROWN TRANSITION DETAIL

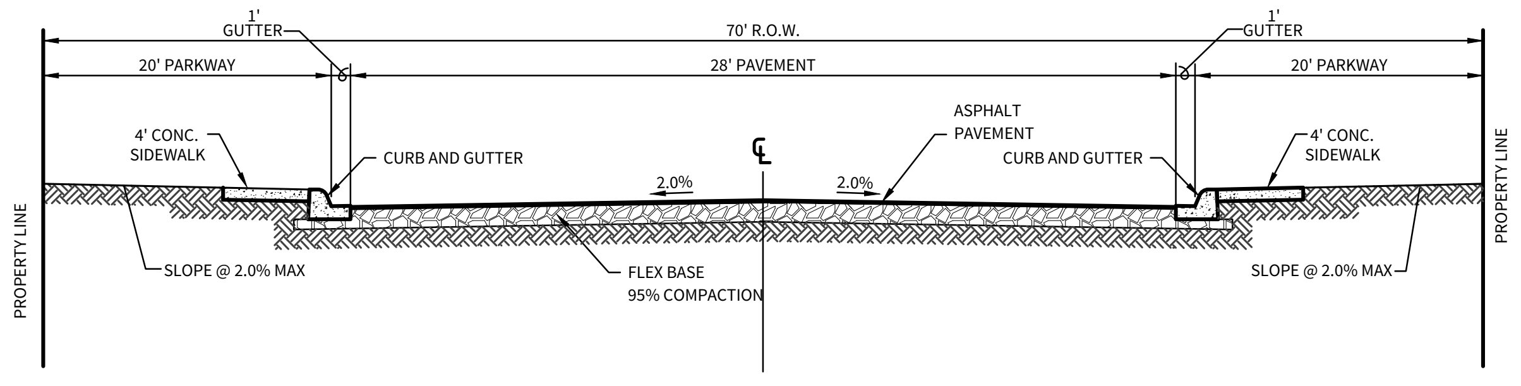

6" X 5'-6" TIMBER GUARD POSTS PLACED 6" BEHIND CURB W/ 2'-4" ABOVE GROUND AND 3'-2" BELOW GROUND. SPACE AT 5' ON CENTER WHERE NOTED ON PLANS.
±10:1 MAX. TO MATCH EXIST. GROUND UNLESS OTHERWISE NOTED
6"
ASPHALT
BASE
18"
3000 P.S.I. CONC.

1. ALLOW FOR REFLECTOR BUTTONS ON GUARD POSTS. USE ONE 3" BUTTON PER POST.
2. POSTS WILL RECEIVE TWO COATS OF ALUMINUM PAINT.

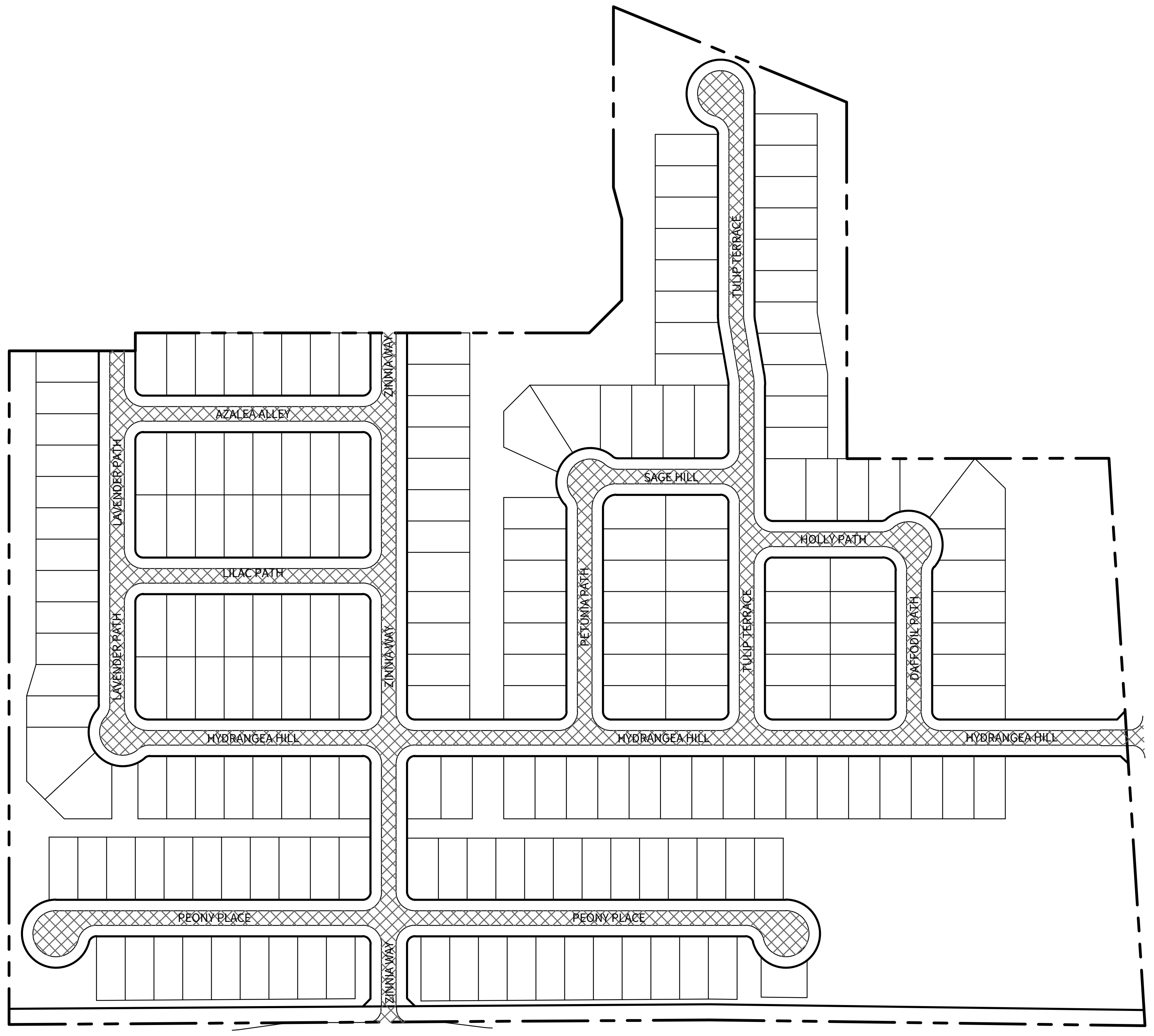
HEADER CURB & BOLLARD DETAIL


X' PARKWAY
LIMITS OF MEASUREMENT FOR STREET EXCAVATION
12"
9"
2.75"
6.25"
3"
4" RAD.
3"
2"
7"
2"
5"
ASPHALT
FLEXIBLE BASE MATERIAL
3 - #3 BAR (CONT.)
BASE UNDER CURB VARIES (SEE TABLE BELOW)
PROPERTY LINE
PAY LIMITS FOR ASPHALT TO EDGE OF GUTTER
1'-9"
1'-0"
PAY LIMITS FOR FLEX. BASE TO FACE OF CURB
PAY LIMITS FOR ROCK SUBGRADE
BASE MATERIAL TO BE INCLUDED IN UNIT PRICE OF CURB

STREET CURB & GUTTER DETAIL



LOCAL 'A' STREET CROSS-SECTION (70' R.O.W.)
N.T.S.



NOTES:

1. PAVEMENT DESIGN THICKNESS BASED ON GEOTECHNICAL REPORT. SEE TABLE FOR STRUCTURAL NUMBER CALCULATION. REFERENCE PROJECT GEOTECHNICAL REPORT AND PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND ALTERNATE PAVEMENT SECTIONS. (SEE GEOTECH REPORT BY TERRADYNE, PROJECT NO. A241069-R1, DATED 05/29/24)
2. ANY AREAS OF CLAY ENCOUNTERED DURING CONSTRUCTION SHALL BE REMOVED DOWN TO THE WEATHERED/FRIABLE MARLSTONE/LIMESTONE AND PROPERLY BACKFILLED WITH MARLSTONE/LIMESTONE MILLINGS HAVING A CBR VALUE DETERMINED BY THE GEOTECHNICAL ENGINEER.
3. A GEOTECHNICAL ENGINEERING REPRESENTATIVE SHALL BE RETAINED TO: (1) OBSERVE THE SITE PREPARATION AND SUBGRADE OPERATIONS. (2) EVALUATE THE ACTUAL SUBGRADE MATERIAL CLASSIFICATION; AND (3) VERIFY THAT RECOMMENDATIONS ARE FOLLOWED. THE ACTUAL SUBGRADE CONDITION AT A PARTICULAR LOCATION WILL NEED TO BE EVALUATED DURING CONSTRUCTION ONCE THE SUBGRADE IS CUT/FILLED TO THE PROPER GRADE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.
5. CONTRACTOR MAY LEAVE VERTICAL CUT BANKS AT R.O.W. LINE AND MEDIANS PROVIDED PROJECT GEOTECHNICAL ENGINEER DETERMINES ROCK IS COMPETENT TO STAND ON ITS OWN.
6. IF ALTERNATE PAVEMENT SECTION CHOSEN, CITY OF MARION SHALL BE PROVIDED WITH REVISED CONSTRUCTION PLANS INDICATING SELECTED PAVEMENT DESIGN PRIOR TO CONSTRUCTION.
7. PAVEMENT SECTIONS ARE SUBJECT TO CHANGE DUE TO RETESTING OF SOIL AFTER STREET EXCAVATION HAS BEEN DONE TO TOP OF CURB.
8. CONTRACTOR SHALL CONTACT ENGINEER 48 HRS IN ADVANCE FOR FIELD OBSERVATION DURING STREET CONSTRUCTION. CONTRACTOR WILL BE REQUIRED TO CONTACT ENGINEER FOR INSPECTION OF THE SUBGRADE, BASE, ASPHALT, AND CURB.
9. GENERAL FILL MATERIALS SHOULD CONSIST OF ONSITE SOILS OR CLEAN IMPORTED FILL SOILS WITH EQUAL OR BETTER CBR CHARACTERISTICS TO THE ONSITE SOILS. GENERAL FILL MATERIAL SHOULD BE CLEAN AND FREE OF ANY VEGETATION ROOTS, ORGANIC MATERIALS, TRASH OR GARBAGE, CONSTRUCTION DEBRIS, OR OTHER DELETERIOUS MATERIALS AND SHOULD CONTAIN NO LARGER THAT THREE (3) INCHES IN MAXIMUM DIMENSION.

PAVEMENT DESIGN SCHEMATIC

NOTE:
1. REFERENCE GEOTECHNICAL REPORT (A241069-R1) FOR BORING INFORMATION AND CBR LOCATIONS

LEGEND:

▨ TYPICAL "RESIDENTIAL LOCAL 'A' STREET"

STREET TYPE	HMAC TYPE "D"	HMAC TYPE "C"	AGGREGATE BASE	LIME TREATED SUBGRADE (44 LB/SY)	BASE UNDER CURB	STRUCTURAL NUMBER
RESIDENTIAL LOCAL 'A' STREET	2.0"	-----	8.0"	8.0"	8.0"	4.06

STREET PAVEMENT DESIGN OPTIONS

1. SUBGRADE – GEOTECH ENGINEER WILL BE PRESENT TO DETERMINE IF NATIVE MARL/ROCK SUBGRADE IS SUFFICIENT FOR PAVEMENT SECTION LISTED ABOVE.
2. CONTRACTOR SHALL APPLY CLAY SUBGRADE PAVEMENT SECTION (SEE GEOTECH REPORT BY TERRADYNE PROJECT NO. A241069-R1, DATED 05/29/24) IF GEOTECH ENGINEER DETERMINES NATIVE MARL/ROCK IS NOT SUFFICIENT. IF LIME TREATMENT IS REPLACED BY NATIVE MARL/ROCK, CITY OF MARION PUBLIC WORKS WILL BE INFORMED OF ALL CHANGES. REVISIONS WILL BE SUBMITTED INDICATING WHERE LIME TREATMENT WAS USED, ALONG WITH STATIONING. CONTRACTOR TO REVIEW GEOTECH RECOMMENDATIONS PRIOR TO FINAL SUBGRADE PREPARATION.
3. FILL MATERIAL – CONTRACTOR SHALL OVER-EXCAVATE STREET SUBGRADE AREAS CONTAINING SOILS HAVING A PLASTICITY INDEX GREATER THAN 20 AND REPLACE A MINIMUM OF 8" OF SUBGRADE WITH ON-SITE LIMESTONE MILLINGS THAT HAVE A PLASTICITY INDEX OF LESS THAN 20 OR USE FILL MATERIAL FROM AREAS OF SIMILAR SUBGRADE MATERIAL FOR ROADWAY EMBANKMENTS. GEOTECHNICAL ENGINEER WILL BE PRESENT AT THE TIME OF SUBGRADE PREPARATION TO DETERMINE THE EXTENTS OF APPLICABLE PAVEMENT SECTIONS BASED ON FINAL SUBGRADE.

DETAILS ON THIS DRAWING ARE NOT TO SCALE

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LANTANA SUBDIVISION
UNIT 1
STANDARD STREET DETAILS

DATE
05/12/2025
PROJECT NO.
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DRAWN BY
CG/JG/LJ/TCD
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#	DATE	REVISIONS
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122170
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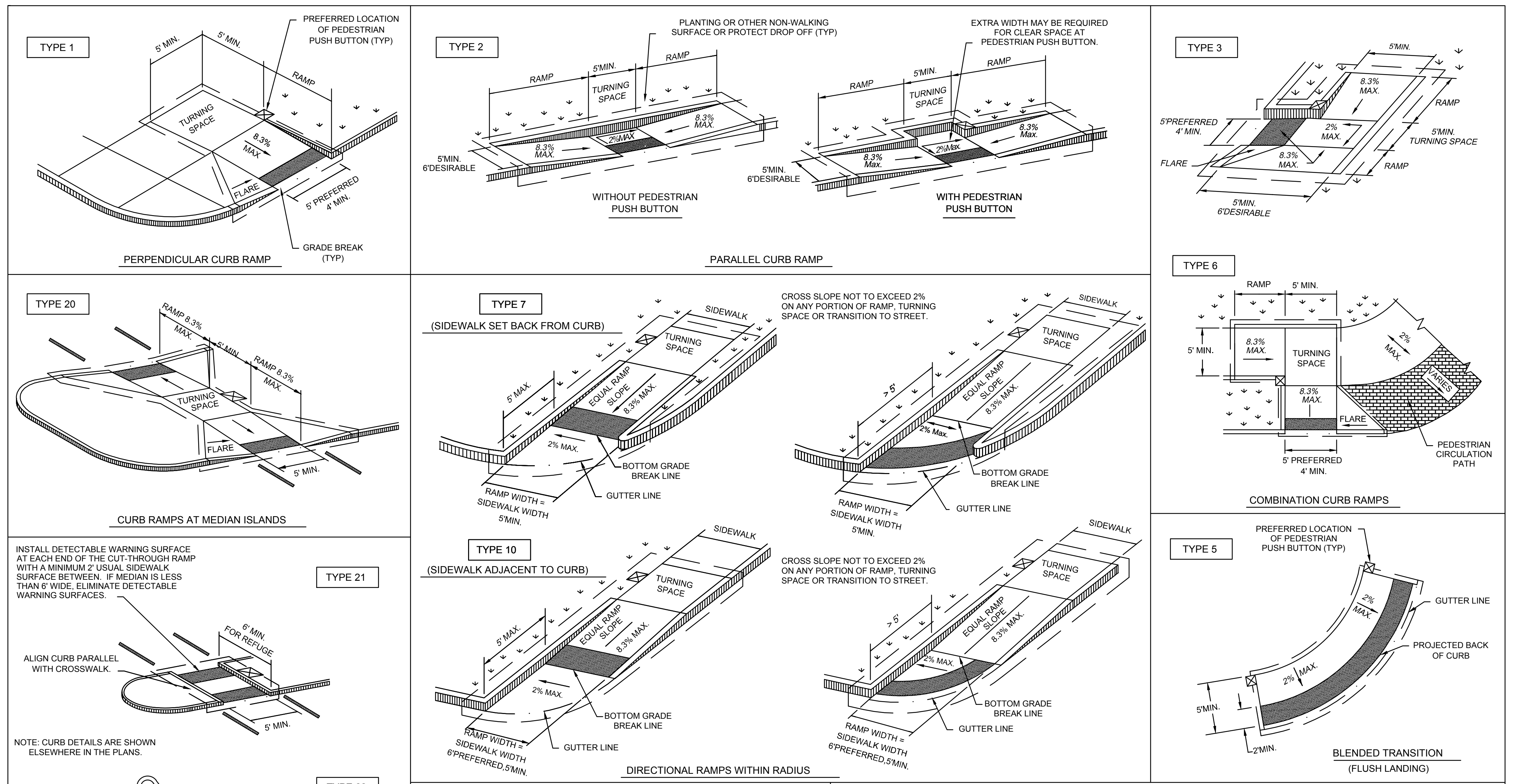
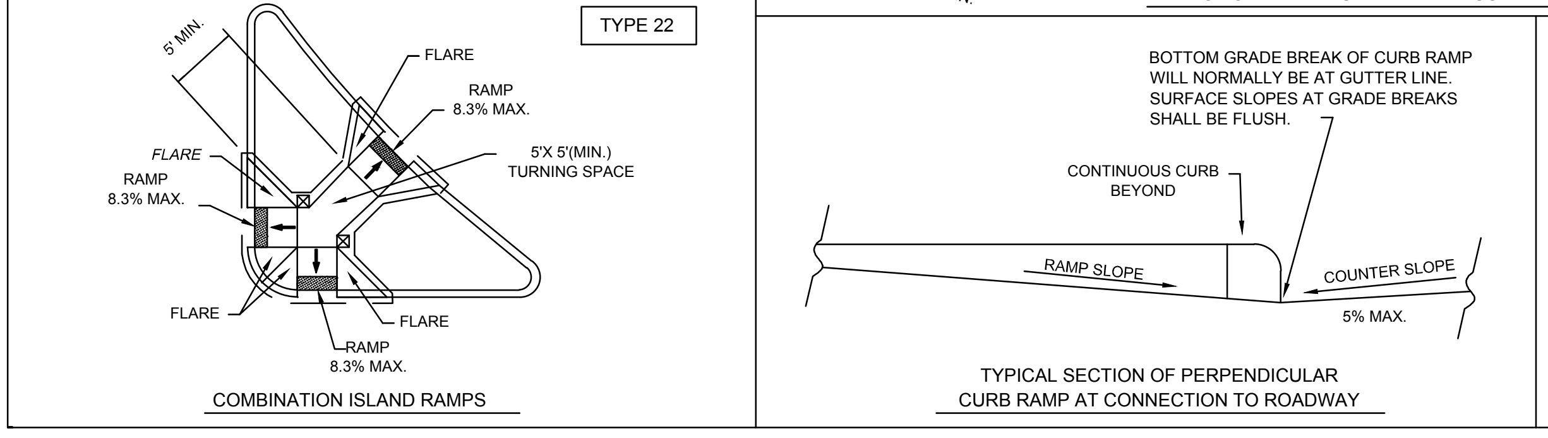

TYPE 1
PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (TYP)
5' MIN.
RAMP
TURNING SPACE
8.3% MAX
FLARE
5' PREFERRED 4' MIN.
GRADE BREAK (TYP)
PERPENDICULAR CURB RAMP
TYPE 2
PLANTING OR OTHER NON-WALKING SURFACE OR PROTECT DROP OFF (TYP)
EXTRA WIDTH MAY BE REQUIRED FOR CLEAR SPACE AT PEDESTRIAN PUSH BUTTON.
5'MIN. 6'DESIRABLE
WITHOUT PEDESTRIAN PUSH BUTTON
WITH PEDESTRIAN PUSH BUTTON
PARALLEL CURB RAMP
TYPE 3
5'PREFERRED 4' MIN.
5'MIN. TURNING SPACE
5'MIN. 6'DESIRABLE
TYPE 6
COMBINATION CURB RAMPS
PEDESTRIAN CIRCULATION PATH
TYPE 20
CURB RAMPS AT MEDIAN ISLANDS
TYPE 7
(SIDEWALK SET BACK FROM CURB)
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.
EQUAL RAMP SLOPE 8.3% MAX
BOTTOM GRADE BREAK LINE
GUTTER LINE
RAMP WIDTH = SIDEWALK WIDTH 5'MIN.
TYPE 10
(SIDEWALK ADJACENT TO CURB)
RAMP WIDTH = SIDEWALK WIDTH 6'PREFERRED,5'MIN.
DIRECTIONAL RAMPS WITHIN RADIUS
TYPE 5
PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (TYP)
GUTTER LINE
PROJECTED BACK OF CURB
5'MIN.
2'MIN.
BLENDED TRANSITION
(FLUSH LANDING)
TYPE 21
INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.
6' MIN. FOR REFUGE
ALIGN CURB PARALLEL WITH CROSSWALK
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.


TYPE 22
FLARE
RAMP 8.3% MAX
5'X 5'(MIN.) TURNING SPACE
COMBINATION ISLAND RAMPS
BOTTOM GRADE BREAK OF CURB RAMP WILL NORMALLY BE AT GUTTER LINE. SURFACE SLOPES AT GRADE BREAKS SHALL BE FLUSH.
CONTINUOUS CURB BEYOND
RAMP SLOPE
COUNTER SLOPE
5% MAX.

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.	ⱽ ⱽ ⱽ	GUTTER LINE	———
DETECTABLE WARNING SURFACE	▨	GRADE BREAK	· ·
DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.	☒	RAMP LIMITS OF PAYMENT	———

SHEET 1 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
©TxDOT: MARCH,2002	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.

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 applicalble standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

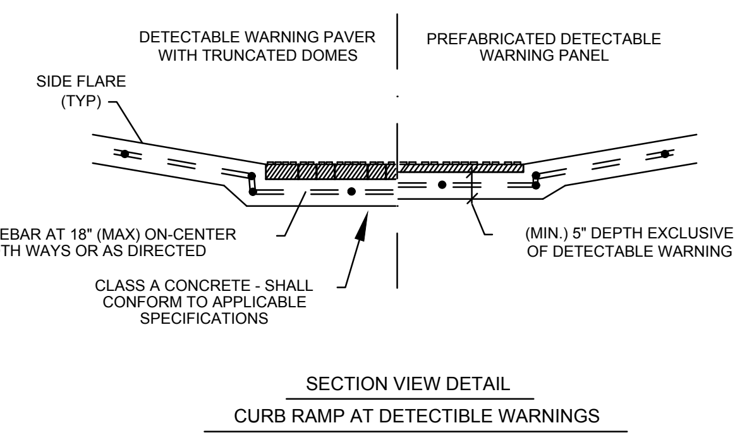
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material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

DETECTABLE WARNING PAVERS (IF USED)

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

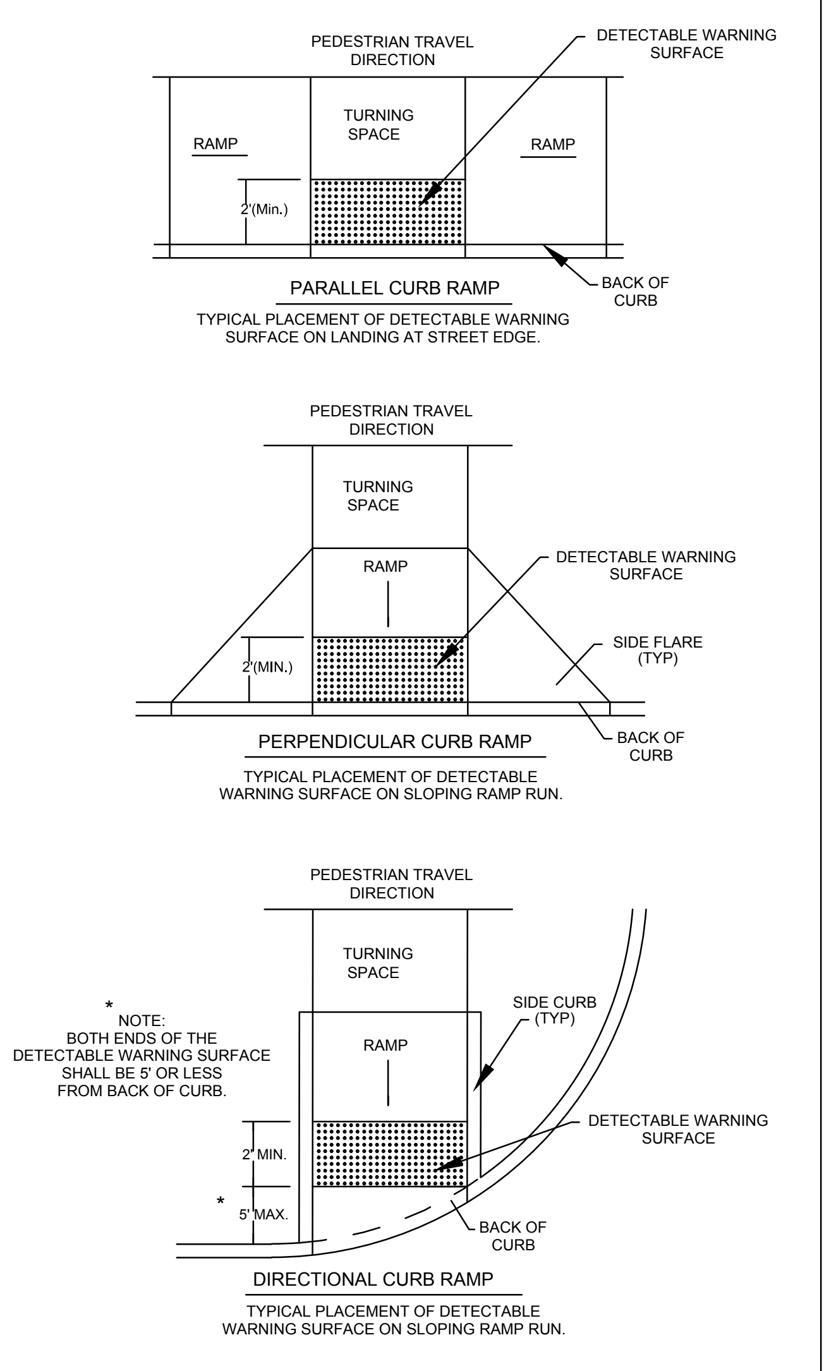
SIDEWALKS

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


DETECTABLE WARNING PAVER WITH TRUNCATED DOMES
PREFABRICATED DETECTABLE WARNING PANEL
SIDE FLARE (TYP)
NO.3 REBAR AT 18" (MAX) ON-CENTER BOTH WAYS OR AS DIRECTED
CLASS A CONCRETE - SHALL CONFORM TO APPLICABLE SPECIFICATIONS
(MIN.) 5" DEPTH EXCLUSIVE OF DETECTABLE WARNING

SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS


PEDESTRIAN TRAVEL DIRECTION
DETECTABLE WARNING SURFACE
TURNING SPACE
RAMP
2'(Min.)
BACK OF CURB
PARALLEL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.
SIDE FLARE (TYP)
PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.
NOTE: BOTH ENDS OF THE DETECTABLE WARNING SURFACE SHALL BE 5' OR LESS FROM BACK OF CURB.
SIDE CURB (TYP)
2' MIN.
5' MAX.
DIRECTIONAL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

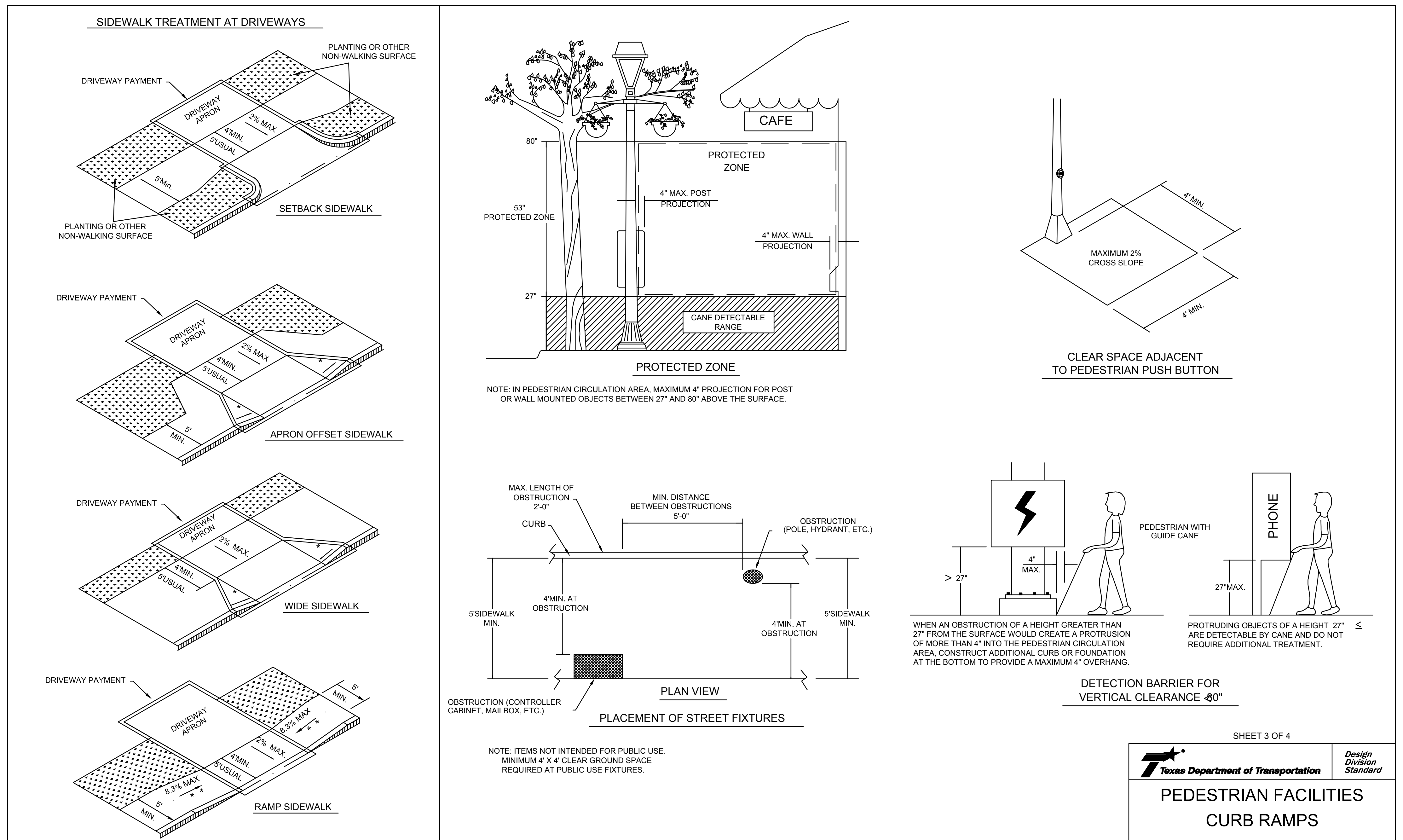
SHEET 2 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS

PED-18

SIDEWALK TREATMENT AT DRIVEWAYS



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

WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.

PROTRUDING OBJECTS OF A HEIGHT 27" ≤ ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

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

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.

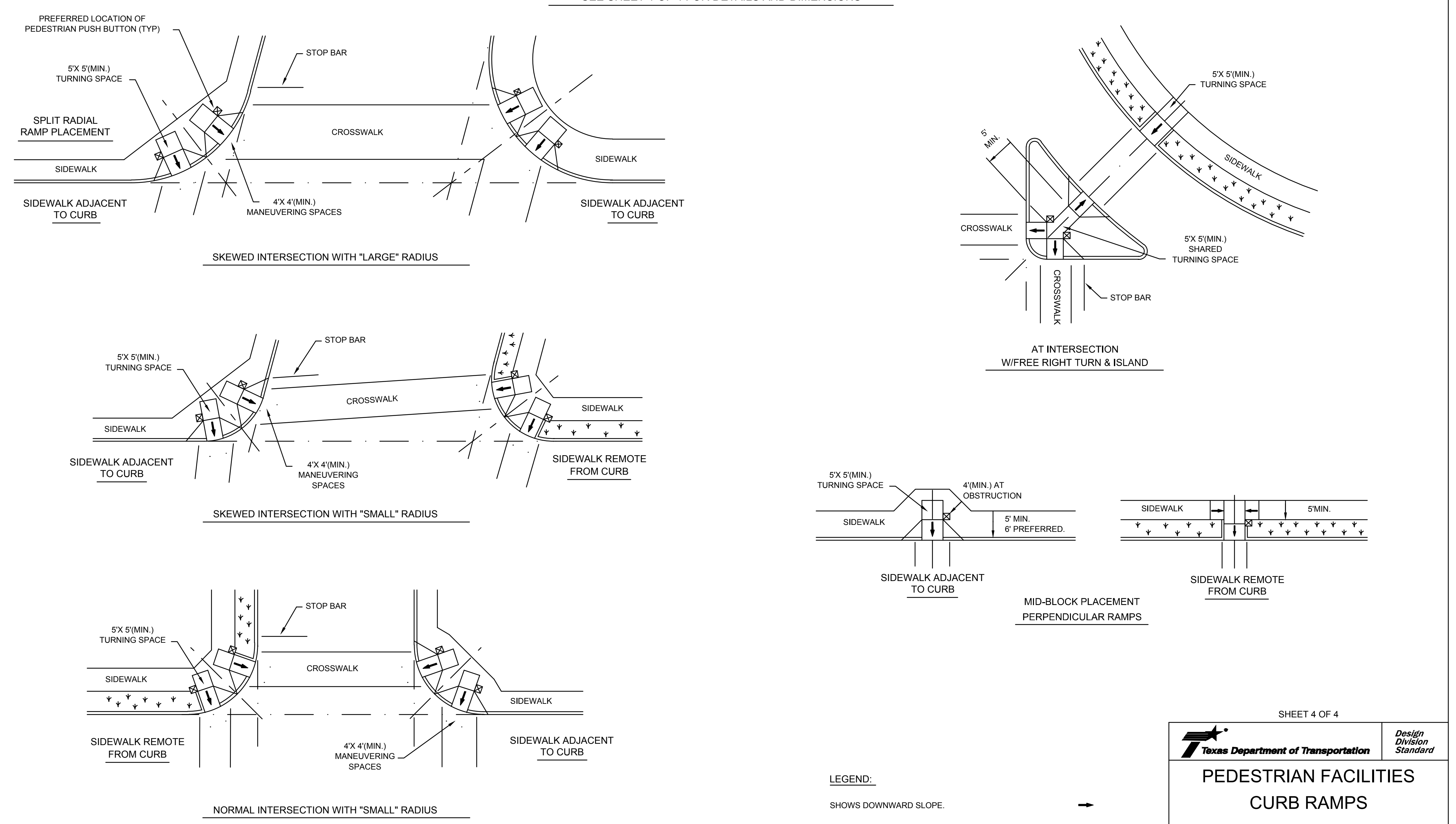
SHEET 3 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS

PED-18

TYPICAL CROSSING LAYOUTS
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS


PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (TYP)
STOP BAR
5'X 5'(MIN.) TURNING SPACE
SPLIT RADIAL RAMP PLACEMENT
CROSSWALK
SIDEWALK
4'X 4'(MIN.) MANEUVERING SPACES
SIDEWALK ADJACENT TO CURB
SKEWED INTERSECTION WITH "LARGE" RADIUS
SIDEWALK REMOTE FROM CURB
SKEWED INTERSECTION WITH "SMALL" RADIUS
NORMAL INTERSECTION WITH "SMALL" RADIUS
5'X 5'(MIN.) SHARED TURNING SPACE
AT INTERSECTION W/FREE RIGHT TURN & ISLAND
4'(MIN.) AT OBSTRUCTION
5' MIN. 6' PREFERRED.
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.	ⱽ ⱽ ⱽ

SHEET 4 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
©TxDOT: MARCH,2002	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.

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LANTANA SUBDIVISION
UNIT 1

TXDOT DETAILS - PEDESTRIAN FACILITIES

DATE
05/12/2025
PROJECT NO.
04037.003
DRAWN BY
CG/JG/LJ/TCD
CHECKED BY
XV/AL

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JAVIER CASTELLO
122170
Castello 5/12/2025

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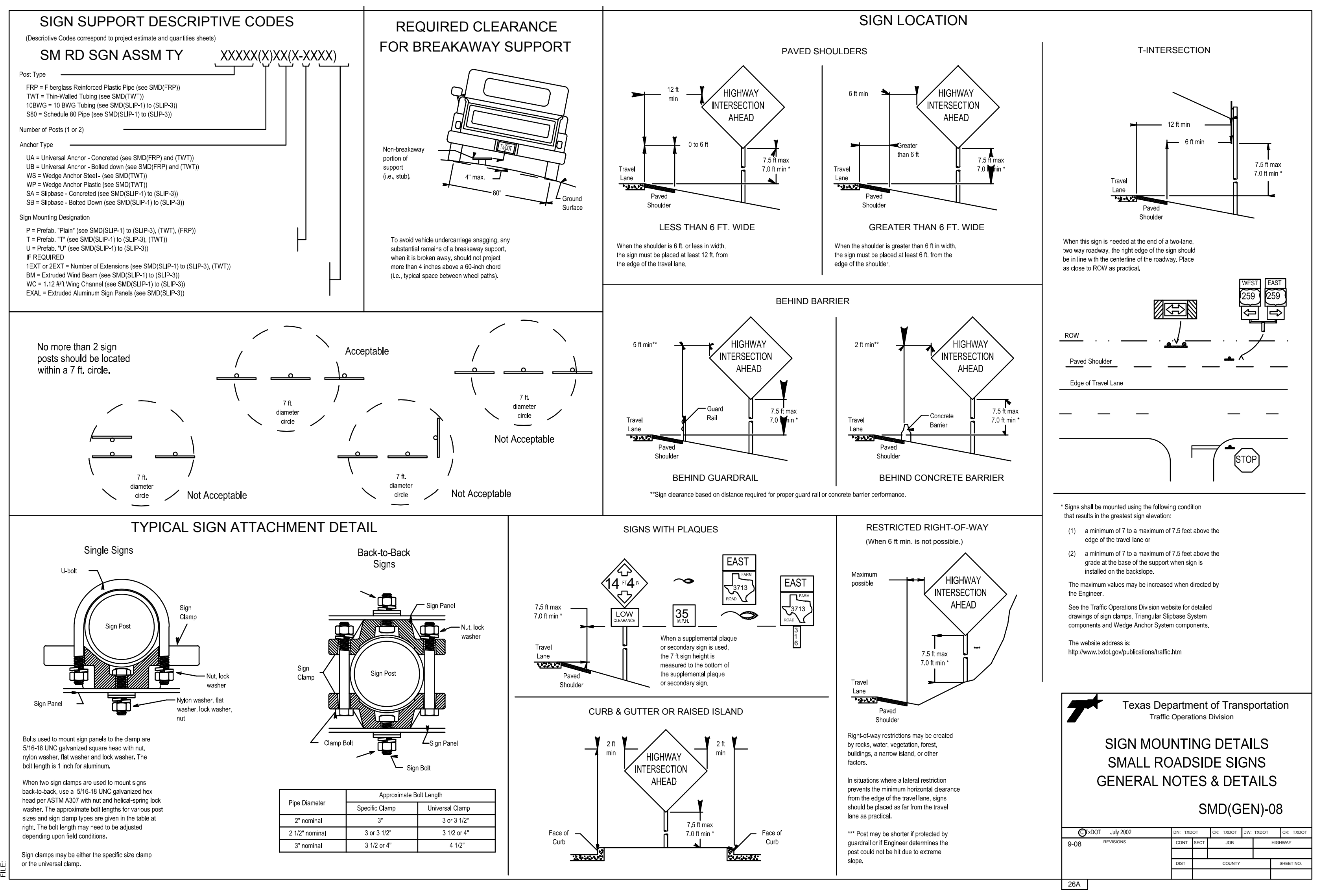
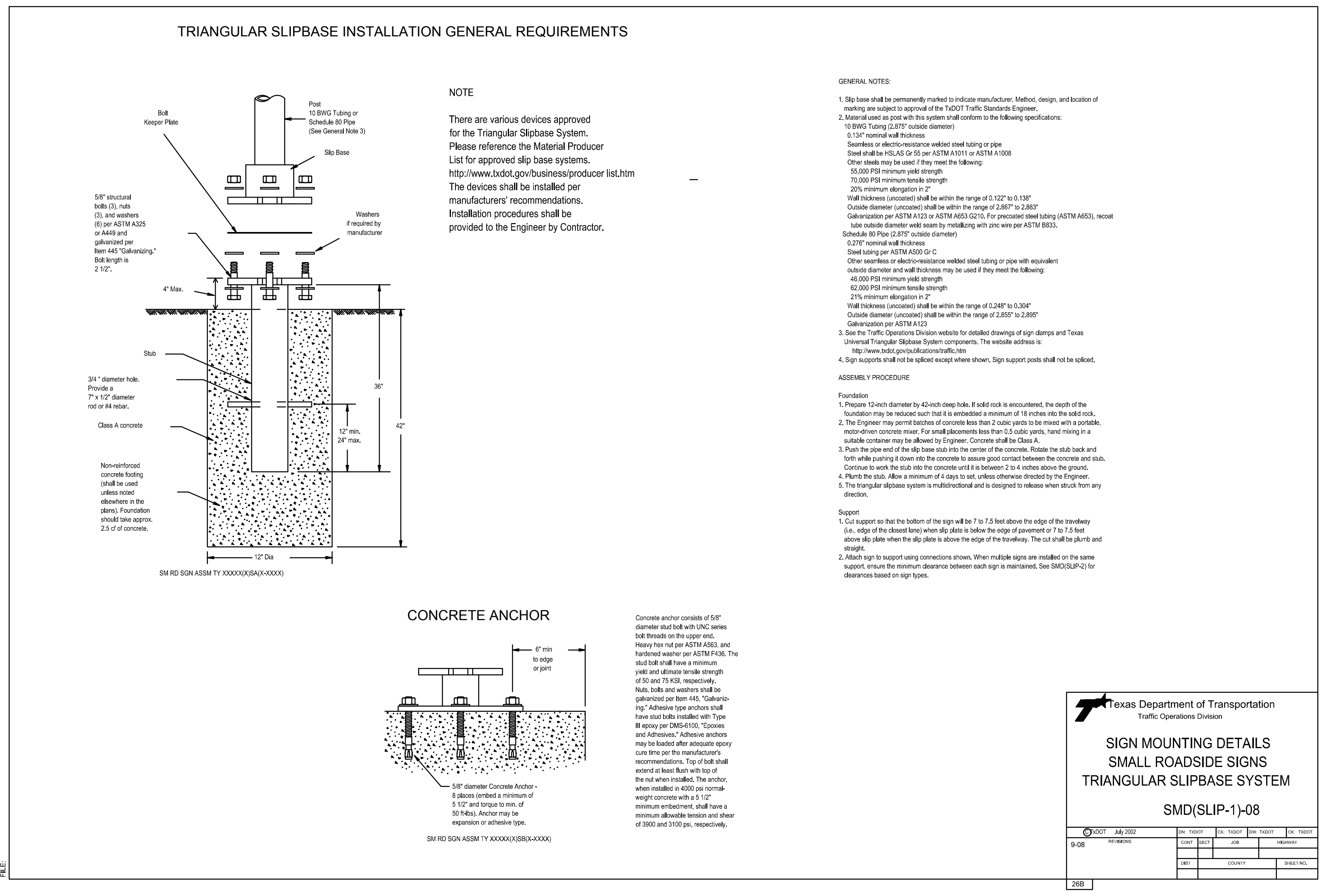
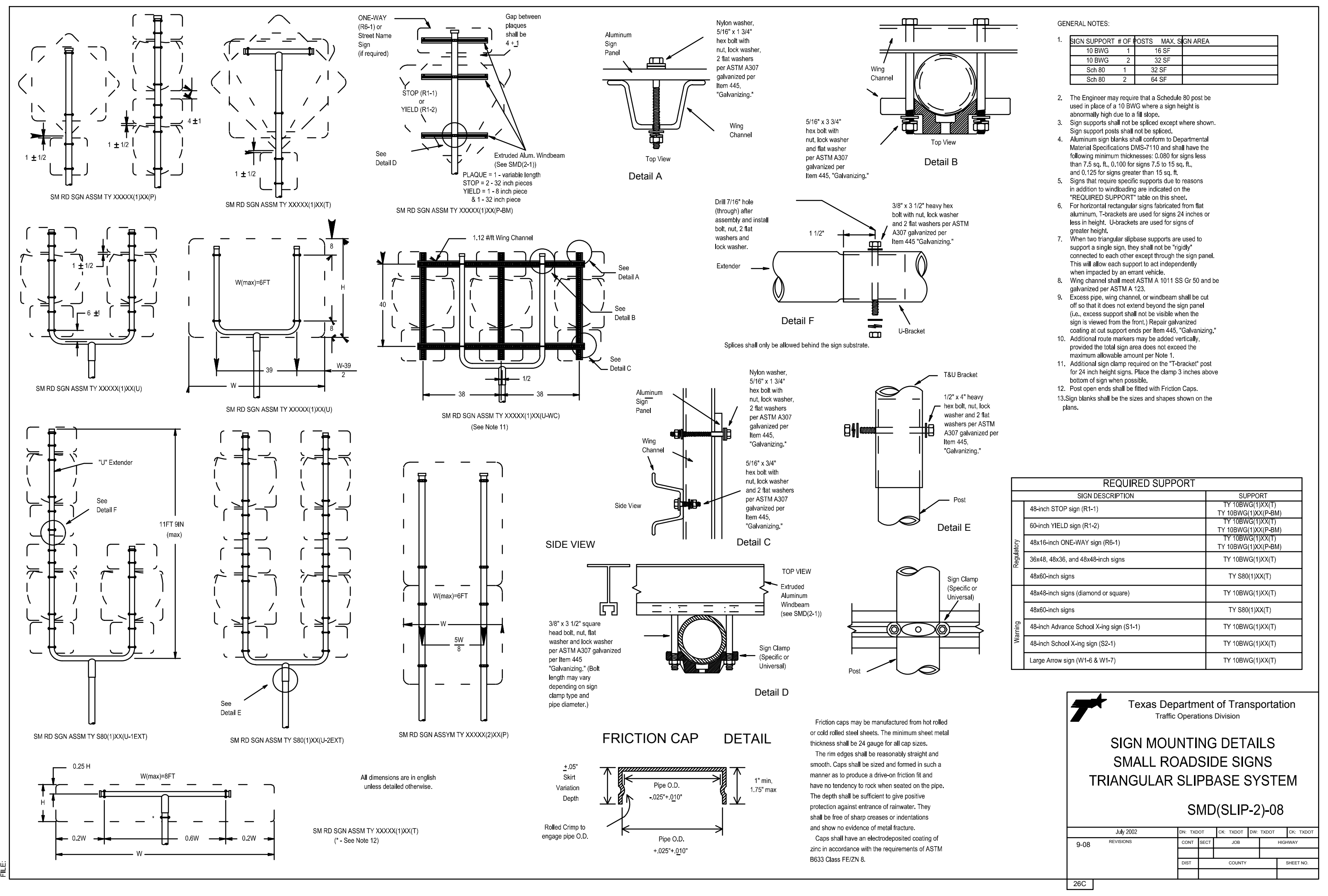
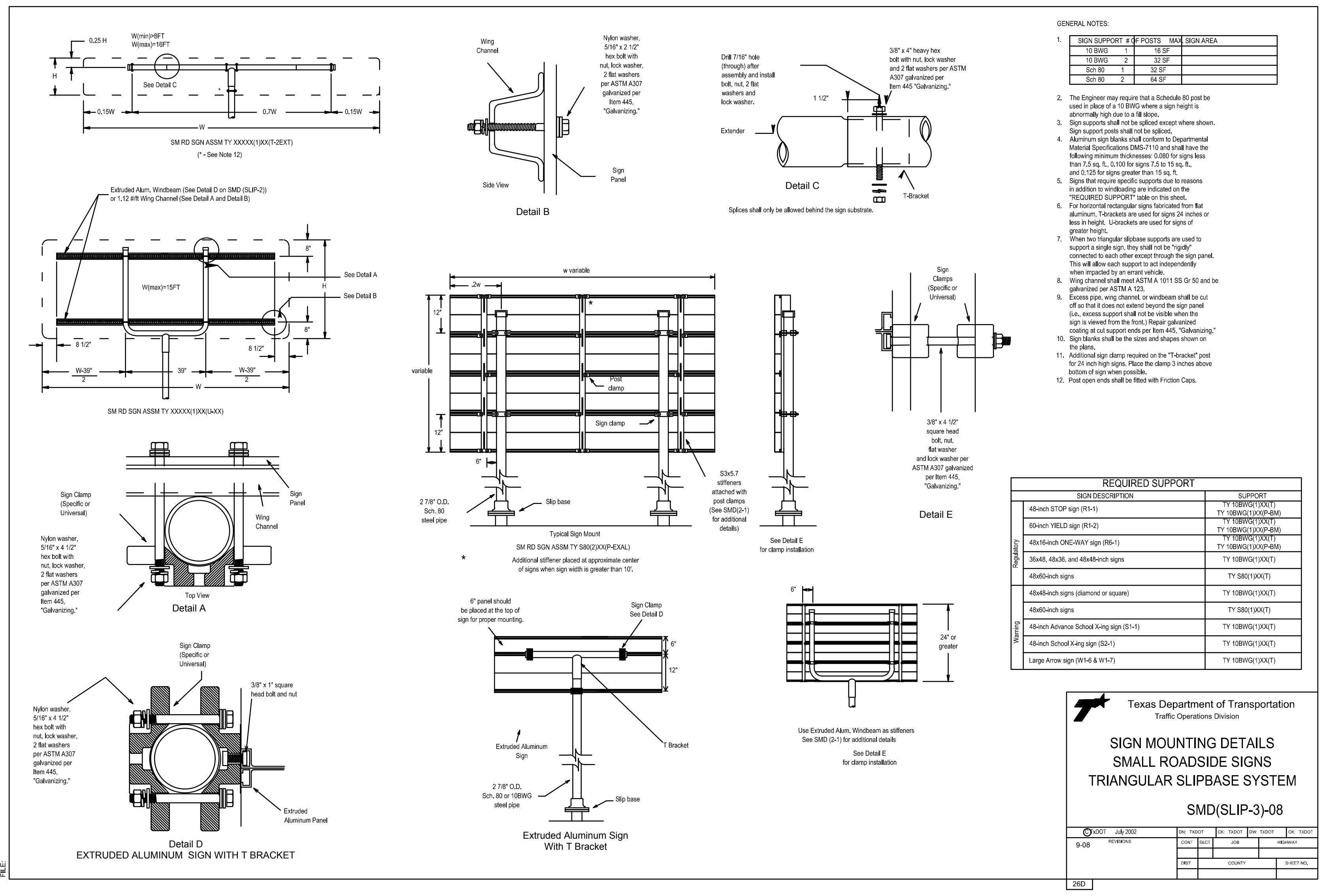
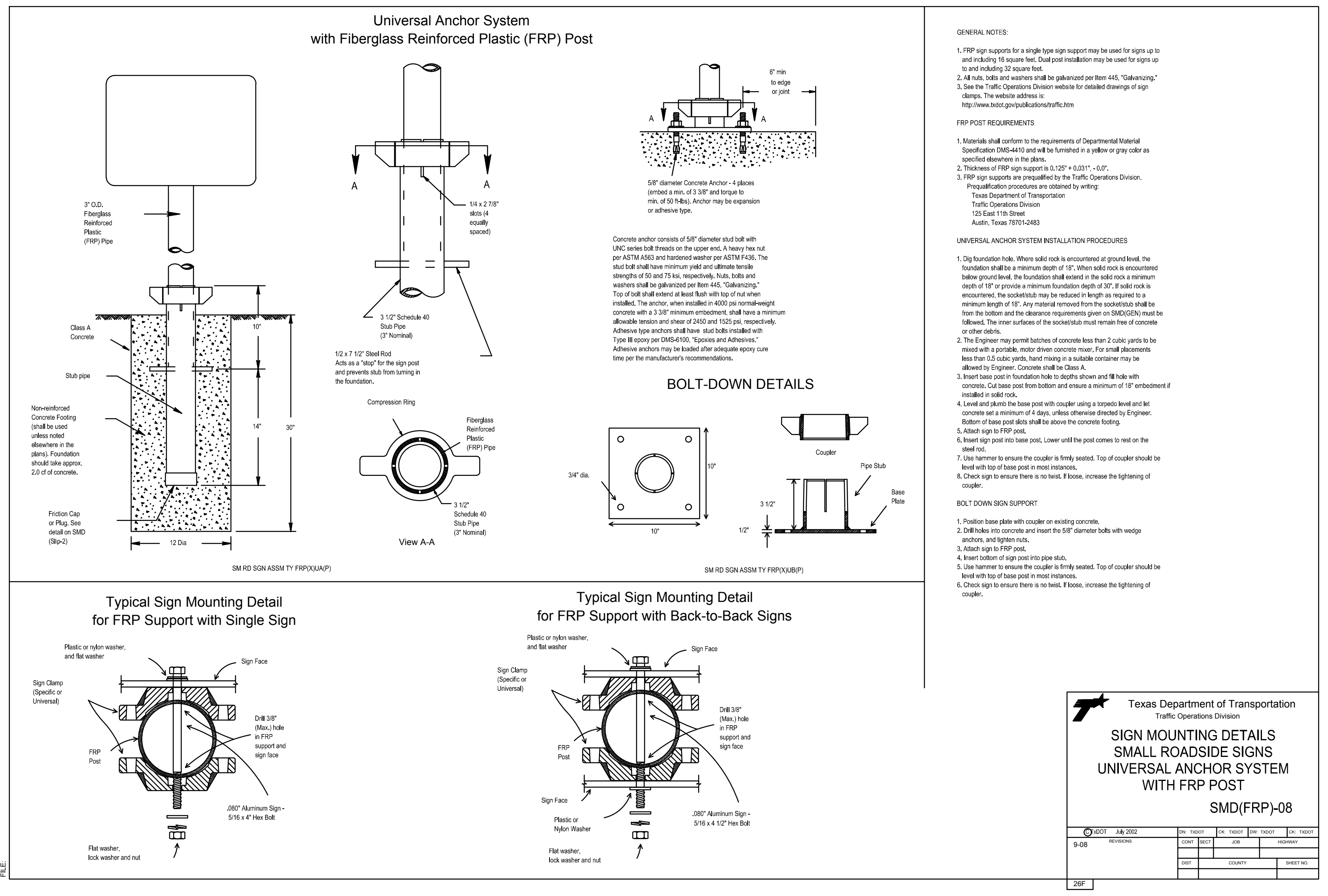
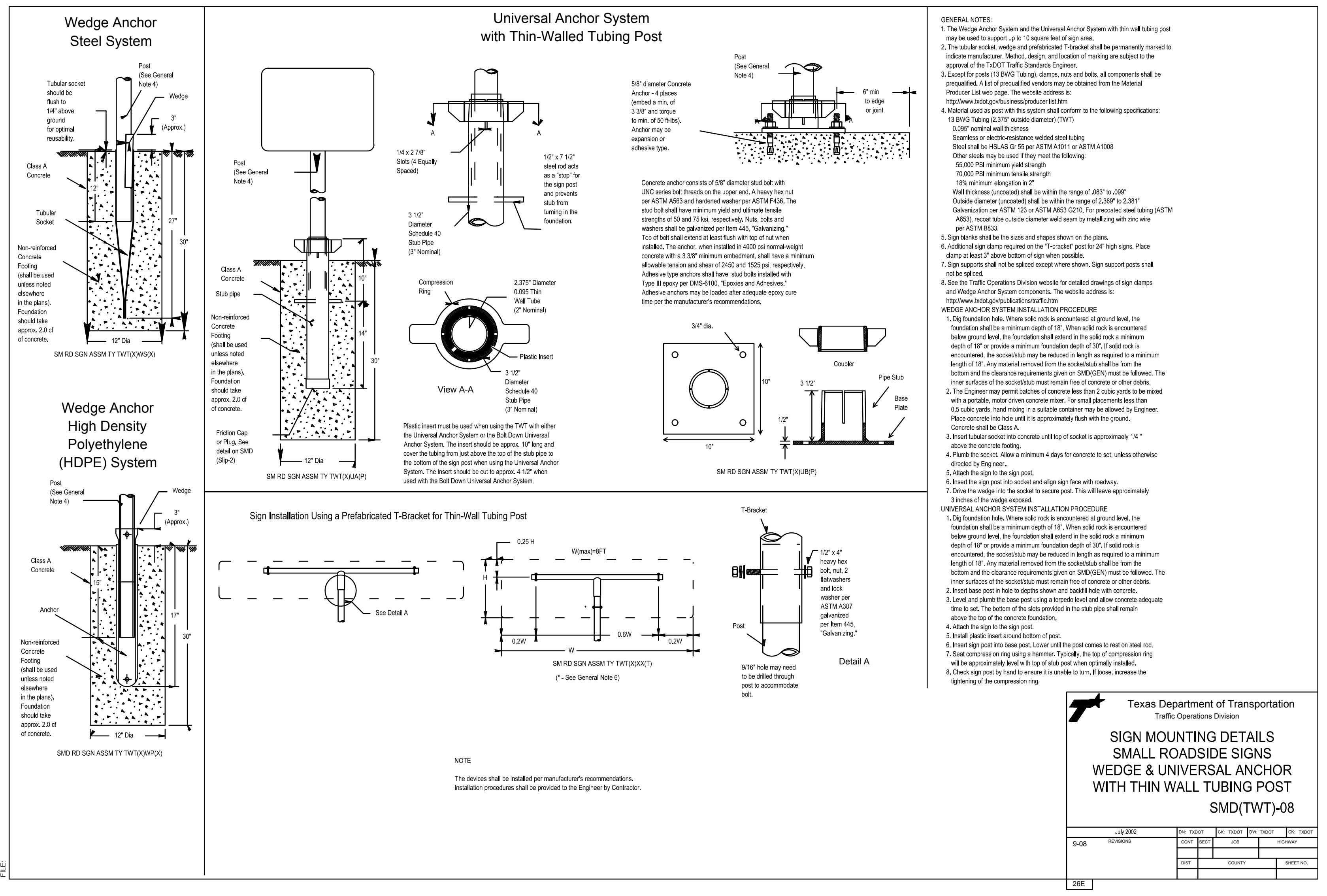

SIGN SUPPORT DESCRIPTIVE CODES
SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT
SIGN LOCATION
PAVED SHOULDERS
T-INTERSECTION
LESS THAN 6 FT. WIDE
GREATER THAN 6 FT. WIDE
BEHIND BARRIER
BEHIND GUARDRAIL
BEHIND CONCRETE BARRIER
No more than 2 sign posts should be located within a 7 ft. circle.
Acceptable
Not Acceptable
TYPICAL SIGN ATTACHMENT DETAIL
Single Signs
Back-to-Back Signs
SIGNS WITH PLAQUES
RESTRICTED RIGHT-OF-WAY
CURB & GUTTER OR RAISED ISLAND
HIGHWAY INTERSECTION AHEAD
Texas Department of Transportation
Traffic Operations Division
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
GENERAL NOTES & DETAILS
SMD(GEN)-08


TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS
NOTE
There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems.
The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.
CONCRETE ANCHOR
GENERAL NOTES
ASSEMBLY PROCEDURE
Texas Department of Transportation
Traffic Operations Division
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD(SLIP-1)-08




Detail A
Detail B
Detail C
Detail D
Detail E
EXTRUDED ALUMINUM SIGN WITH T BRACKET
Extruded Aluminum Sign With T Bracket
REQUIRED SUPPORT
Texas Department of Transportation
Traffic Operations Division
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM
SMD(SLIP-3)-08


Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post
BOLT-DOWN DETAILS
View A-A
Typical Sign Mounting Detail for FRP Support with Single Sign
Typical Sign Mounting Detail for FRP Support with Back-to-Back Signs
GENERAL NOTES
FRP POST REQUIREMENTS
UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES
BOLT DOWN SIGN SUPPORT
Texas Department of Transportation
Traffic Operations Division
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
UNIVERSAL ANCHOR SYSTEM WITH FRP POST
SMD(FRP)-08


Wedge Anchor Steel System
Universal Anchor System with Thin-Walled Tubing Post
Wedge Anchor High Density Polyethylene (HDPE) System
View A-A
Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post
Detail A
NOTE
GENERAL NOTES
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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LANTANA SUBDIVISION UNIT 1

TXDOT DETAILS - SIGN MOUNTING DETAILS

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05/12/2025

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XV/AL

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JAVIER CASTELLO
122170
5/12/2025

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TBPLS No. 10048500

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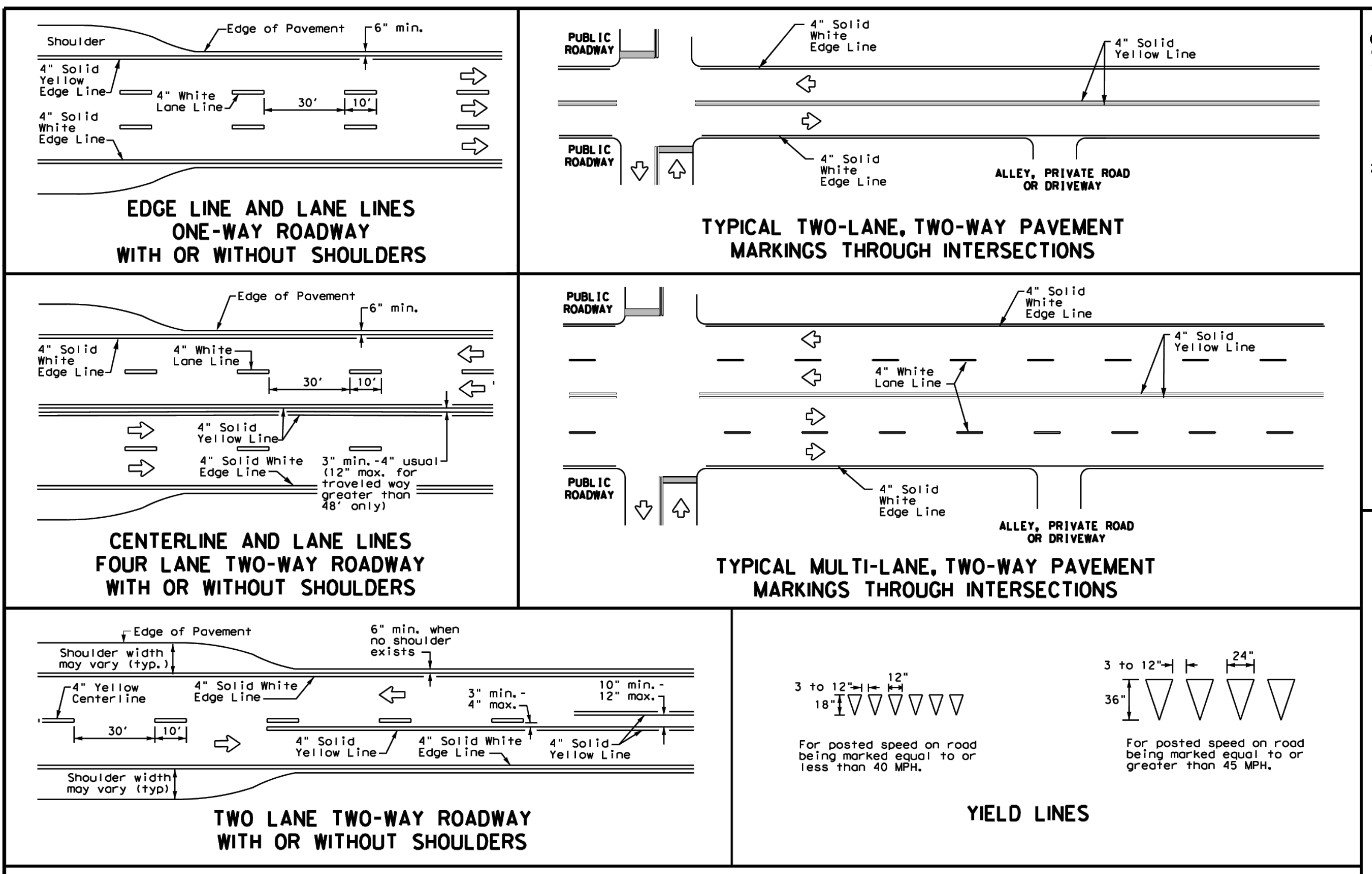


Shoulder
Edge of Pavement
6" min.
4" Solid Yellow Edge Line
4" White Lane Line
4" Solid White Edge Line
30'
10'
PUBLIC ROADWAY
4" Solid White Edge Line
4" Solid Yellow Line
ALLEY, PRIVATE ROAD OR DRIVEWAY
3" min.-4" usual (12" max. for traveled way greater than 48' only)
Shoulder width may vary (typ.)
6" min. when no shoulder exists
3 to 12"
12"
18"
24"
36"
For posted speed on road being marked equal to or less than 40 MPH.
For posted speed on road being marked equal to or greater than 45 MPH.

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

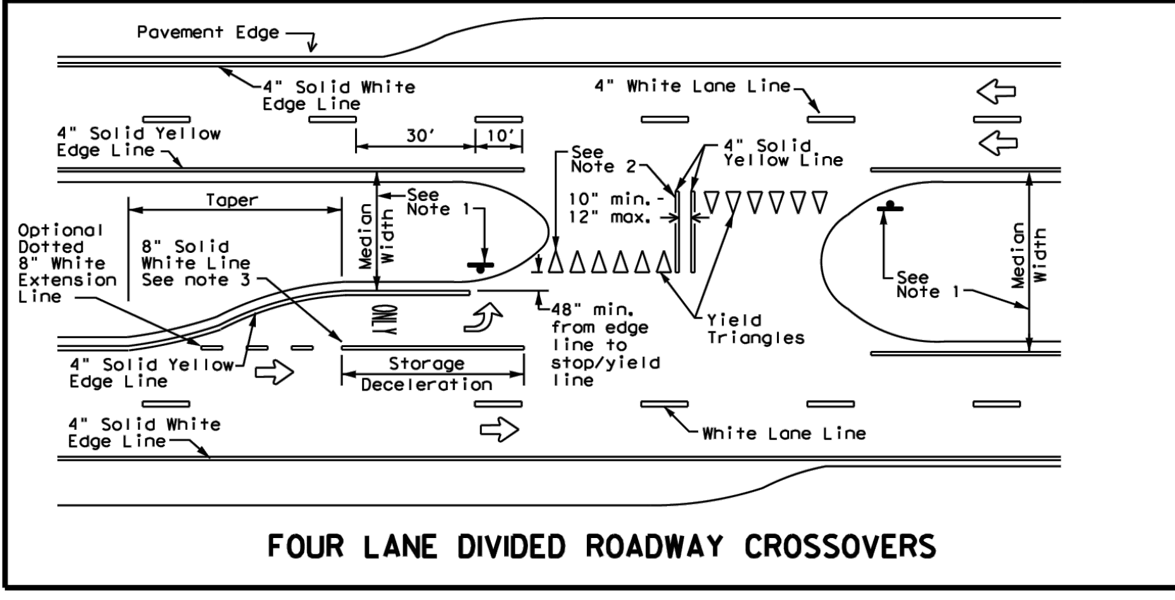
TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS

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

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

TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

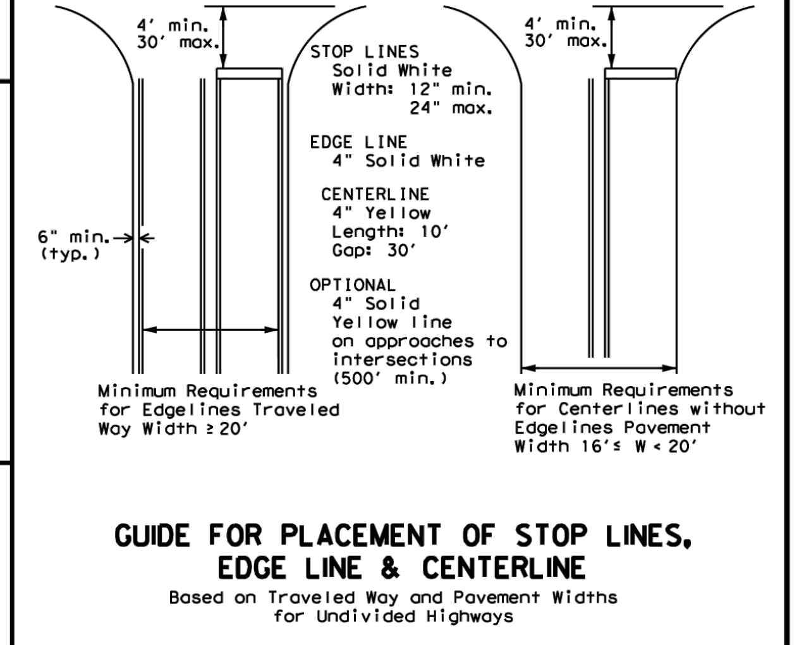
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop bars/yield triangles) when a 50' or greater median centerline can be placed. Stop bars shall only be used with stop signs. Yield traingles 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. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should not be placed less less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines 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 inside of edgeline to the inside of edgeline 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.



4' min. 30' max.
STOP LINES Solid White Width: 12" min. 24" max.
EDGE LINE 4" Solid White
CENTERLINE 4" Yellow Length: 10' Gap: 30'
OPTIONAL 4" Solid Yellow line on approaches to intersections (500' min.)
6" min. (typ.)
Minimum Requirements for Edgelines Traveled Way Width ≥20'
Minimum Requirements for Centerlines without Edgelines Pavement Width 16' ≥ ≥20'

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways

Texas Department of Transportation | Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-20

FILE: pm1-20.dgn	DN:	CK:	DW:	CK:
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REVISIONS 8-95 3-03 5-00 2-12 8-00 6-20	DIST	COUNTY		SHEET NO.

22A

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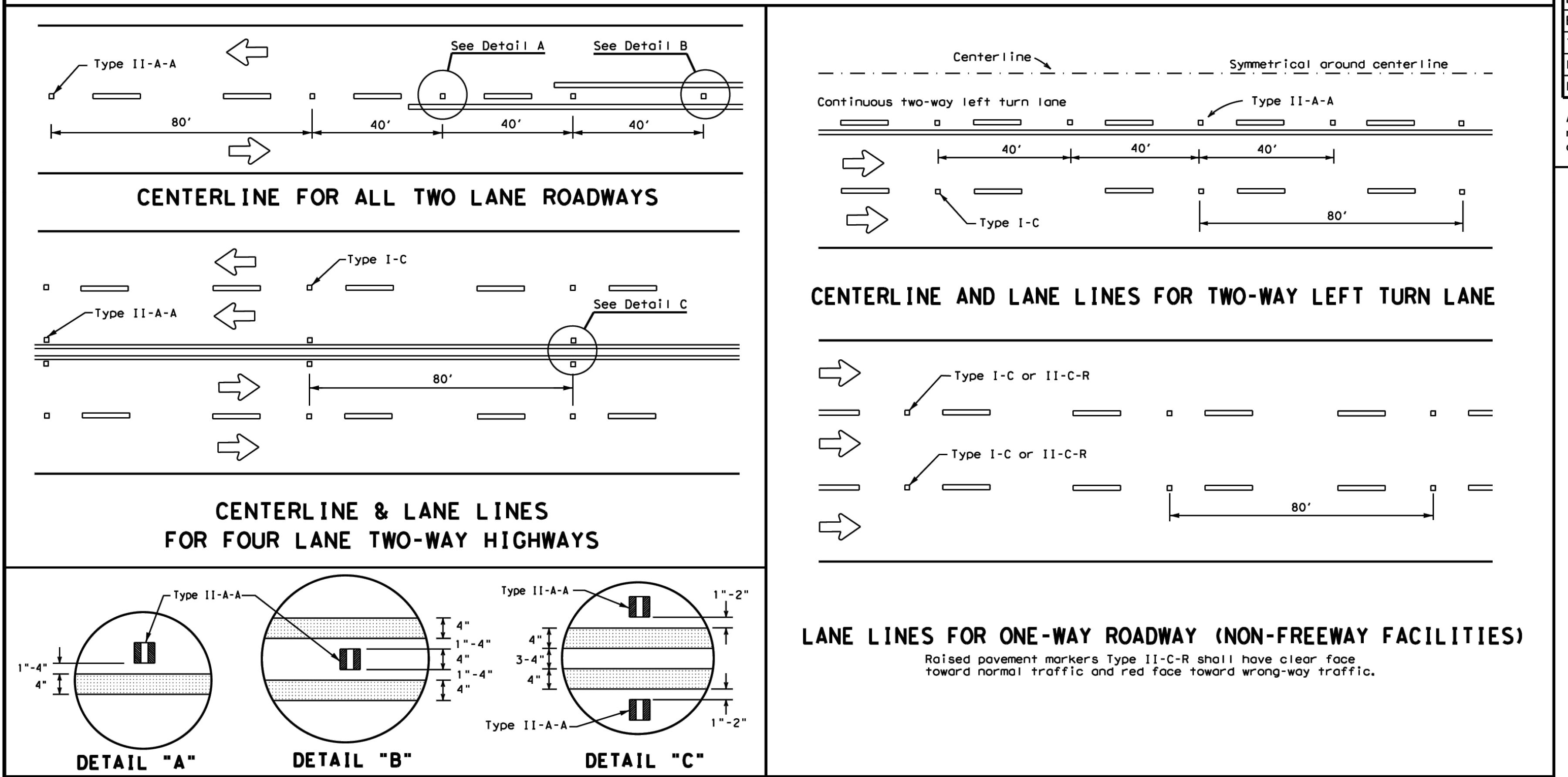
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



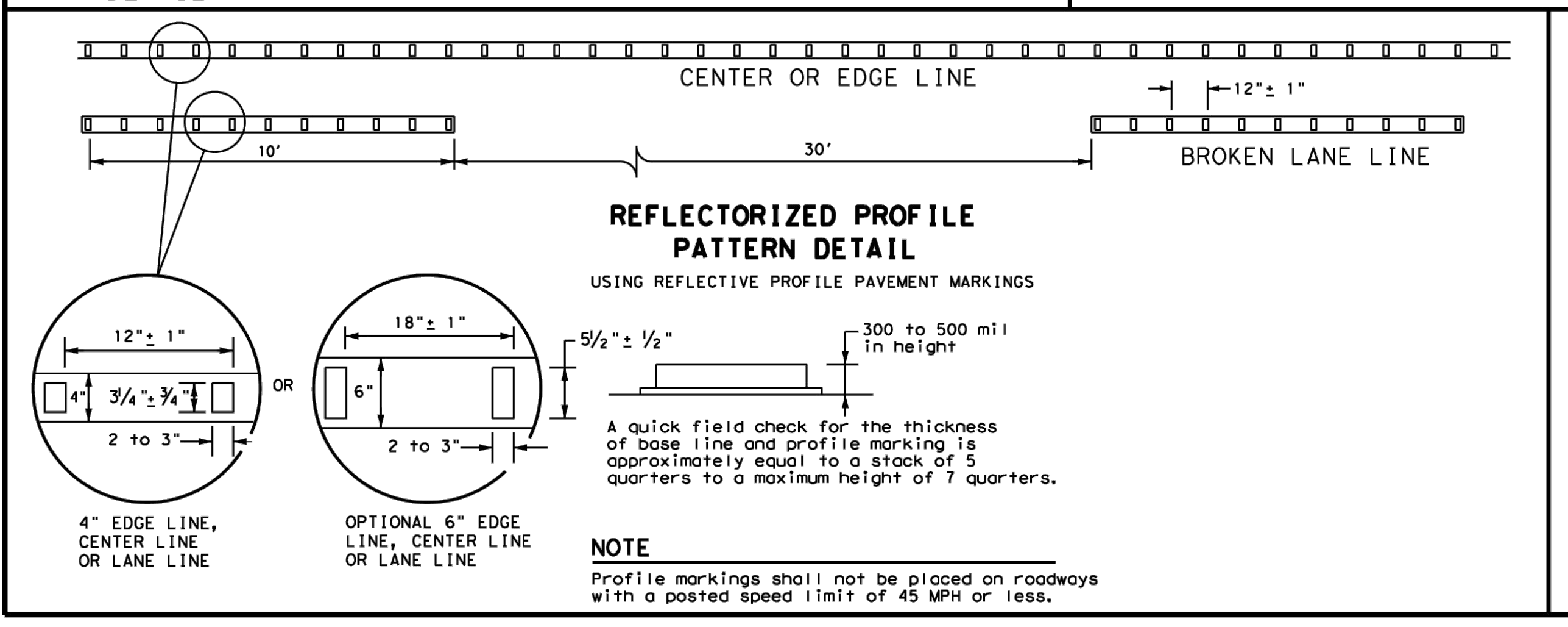
CENTERLINE FOR ALL TWO LANE ROADWAYS

CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE

CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS

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.



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.

NOTE

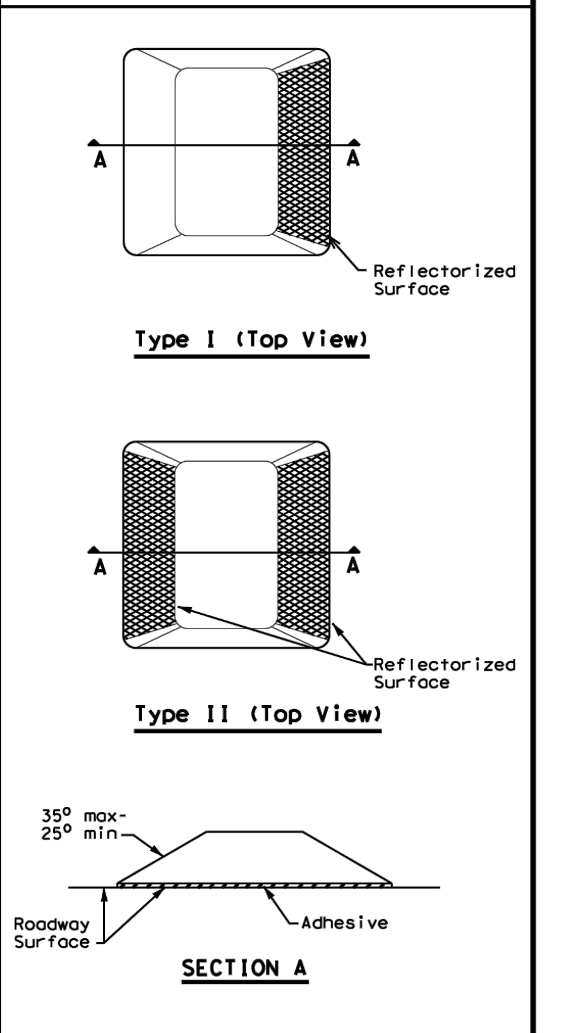
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

1. All raised pavement markers placed in 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.

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.



RAISED PAVEMENT MARKERS

Texas Department of Transportation | Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS

PM(2)-20

FILE: pm2-20.dgn	DN:	CK:	DW:	CK:
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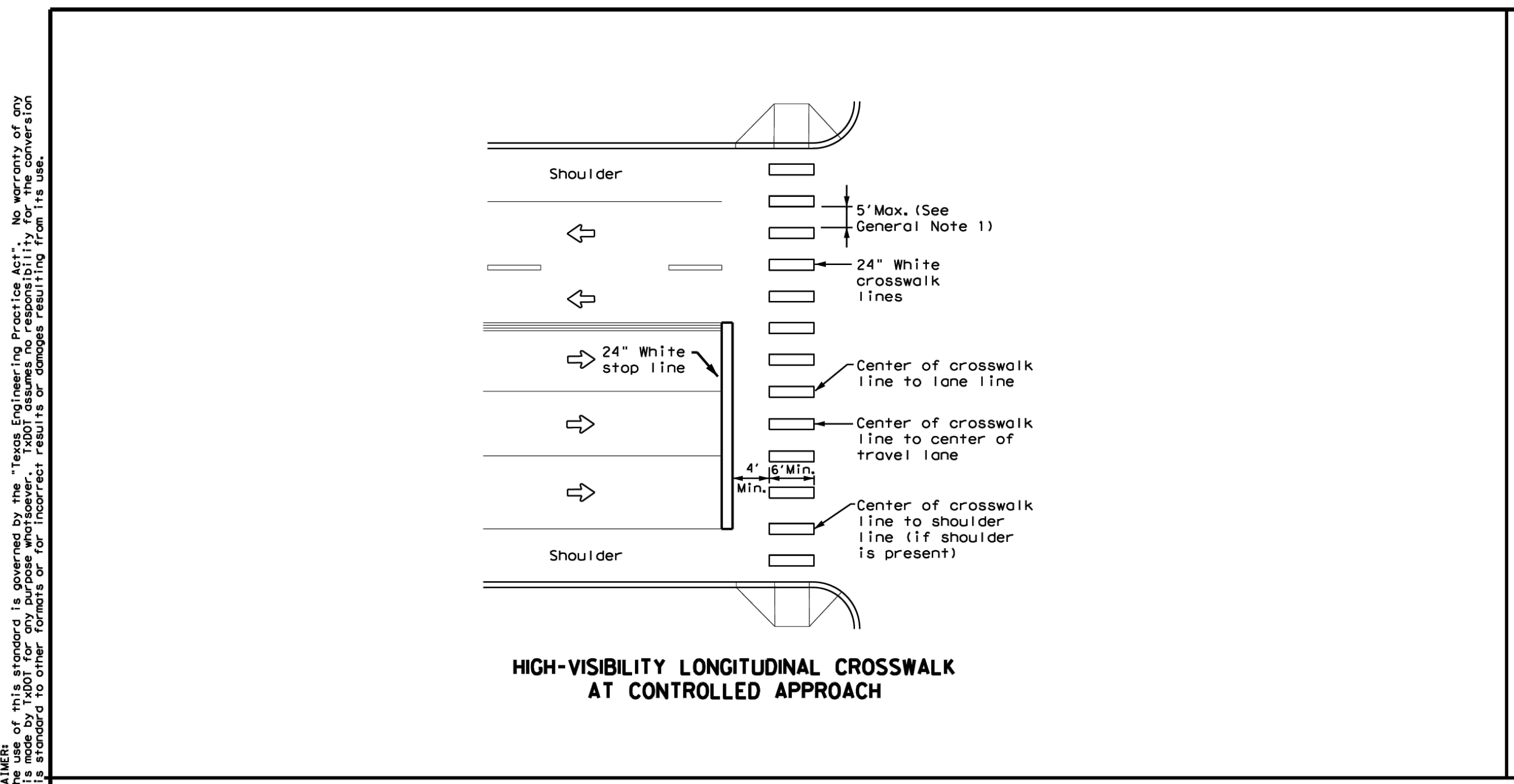


Shoulder
5' Max. (See General Note 1)
24" White crosswalk lines
24" White stop line
Center of crosswalk line to lane line
Center of crosswalk line to center of travel lane
Center of crosswalk line to shoulder line (if shoulder is present)
4' Min.
6' Min.

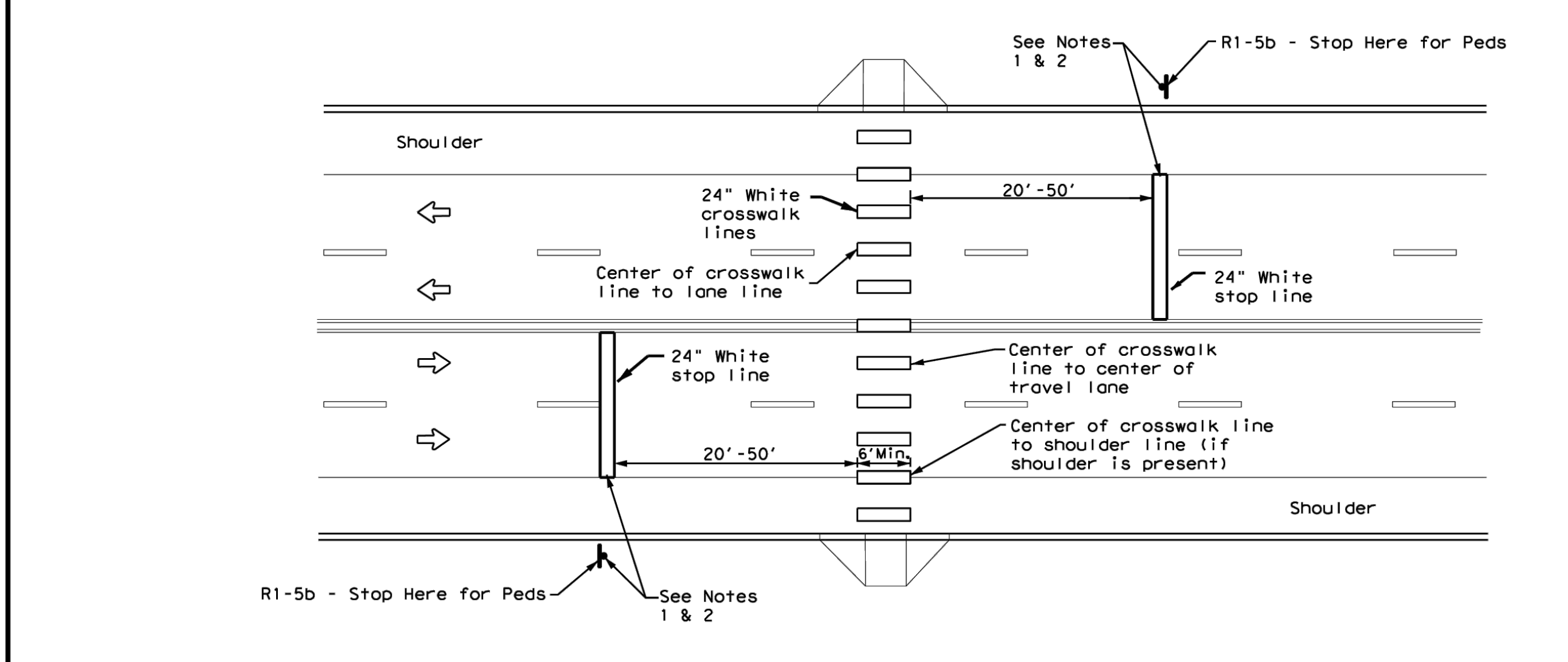
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

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

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

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



See Notes 1 & 2
R1-5b - Stop Here for Peds
Shoulder
24" White crosswalk lines
20'-50'
Center of crosswalk line to lane line
24" White stop line
Center of crosswalk line to center of travel lane
Center of crosswalk line to shoulder line (if shoulder is present)
6' Min.

UNSIGNALIZED MID BLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with "Stop Here for Pedestrians" signs at unsignalized mid block cross walks.
2. Use stop bars with "Stop Here on Red" signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation | Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22

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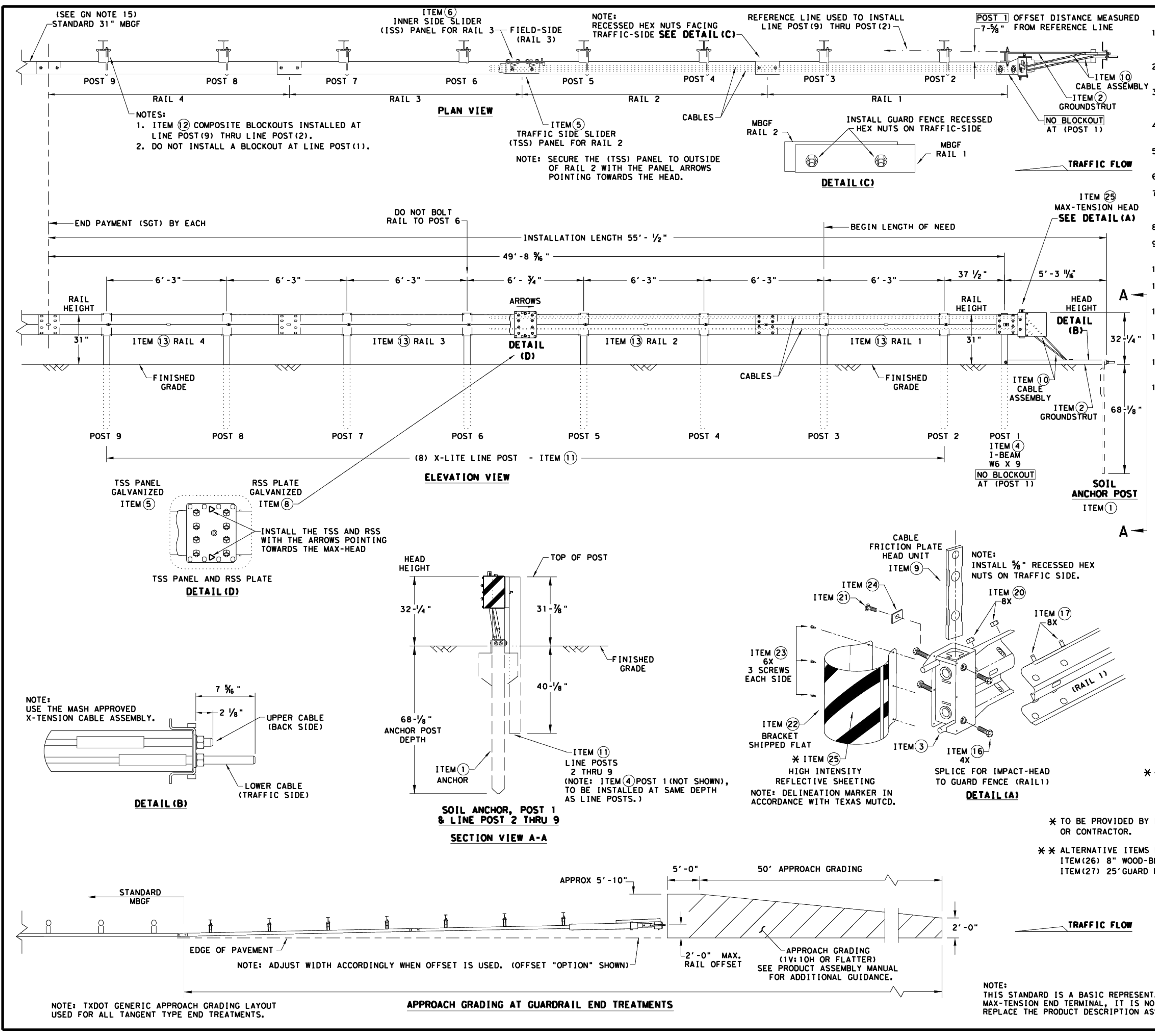

(SEE NOTE 15) STANDARD 31" MBGF
ITEM 6 INNER SIDE SLIDER (ISS) PANEL FOR RAIL 3
FIELD-SIDE (RAIL 3)
RECESSED HEX NUTS FACING TRAFFIC-SIDE SEE DETAIL (C)
REFERENCE LINE USED TO INSTALL LINE POST(9) THRU POST(2)
POST 1 OFFSET DISTANCE MEASURED FROM REFERENCE LINE 7-⅝"
ITEM 10 CABLE ASSEMBLY
ITEM 2 GROUNDSTRUT
NO BLOCKOUT AT (POST 1)
TRAFFIC FLOW
PLAN VIEW
ITEM 5 TRAFFIC SIDE SLIDER (TSS) PANEL FOR RAIL 2
DETAIL (C)
END PAYMENT (SGT) BY EACH
DO NOT BOLT RAIL TO POST 6
INSTALLATION LENGTH 55'-½"
BEGIN LENGTH OF NEED
49'-8 ⅝"
6'-3"
ITEM 25 MAX-TENSION HEAD SEE DETAIL (A)
RAIL HEIGHT 31"
ITEM 13 RAIL 4
ITEM 13 RAIL 3
ITEM 13 RAIL 2
ITEM 13 RAIL 1
DETAIL (D)
DETAIL (B)
HEAD HEIGHT
32-¼"
68-⅛"
SOIL ANCHOR POST ITEM 1
(8) X-LITE LINE POST - ITEM 11
ELEVATION VIEW
TSS PANEL AND RSS PLATE DETAIL (D)
DETAIL (B)
SOIL ANCHOR, POST 1 & LINE POST 2 THRU 9
SECTION VIEW A-A
DETAIL (A)
APPROACH GRADING AT GUARDRAIL END TREATMENTS
50' APPROACH GRADING
2'-0"

NOTE: TXDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

NOTE: ADJUST WIDTH ACCORDINGLY WHEN OFFSET IS USED. (OFFSET "OPTION" SHOWN)

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE MAX-TENSION END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800
2. FOR INSTALLATION, REPAIR, & MAINTENANCE REFER TO THE; MAX-TENSION INSTALLATION INSTRUCTION MANUAL. P/N MANMAX REV D (ECN 3516).
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURE'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. ALL STEEL COMPONENTS ARE GALVANIZED PER ASTM A123 OR EQUIVALENT UNLESS OTHERWISE STATED.
6. SYSTEM SHOWN USING STEEL WIDE FLANGE POST WITH COMPOSITE BLOCKOUTS.
7. COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST(MPL)FOR CERTIFIED PRODUCERS.
8. REFER TO INSTALLATION MANUAL FOR SPECIFIC PANEL LAPPING GUIDANCE.
9. IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL FOR INSTALLATION GUIDANCE.
10. POSTS SHALL NOT BE SET IN CONCRETE.
11. A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POST TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST.
12. MAX-TENSION SYSTEM SHALL NEVER BE INSTALLED WITHIN A CURVED SECTION OF GUARDRAIL.
13. IF A DELINEATION MARKER IS REQUIRED, MARKER SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
14. THE SYSTEM IS SHOWN WITH 12'-6" MBGF PANELS, 25'-0" MBGF PANELS ARE ALSO ALLOWED.
15. A MINIMUM OF 12'-6" OF 12GA. MBGF IS REQUIRED IMMEDIATELY DOWNSTREAM OF THE MAX-TENSION SYSTEM.

	ITEM#	PART NUMBER	DESCRIPTION	QTY
	1	BSI-1610060-00	SOIL ANCHOR - GALVANIZED	1
	2	BSI-1610061-00	GROUND STRUT - GALVANIZED	1
	3	BSI-1610062-00	MAX-TENSION IMPACT HEAD	1
	4	BSI-1610063-00	W6x9 I-BEAM POST 6FT.-GALVANIZED	1
	5	BSI-1610064-00	TSS PANEL - TRAFFIC SIDE SLIDER	1
	6	BSI-1610065-00	ISS PANEL - INNER SIDE SLIDER	1
	7	BSI-1610066-00	TOOTH - GEOMET	1
	8	BSI-1610067-00	RSS PLATE - REAR SIDE SLIDER	1
	9	B061058	CABLE FRICTION PLATE - HEAD UNIT	1
	10	BSI-1610069-00	CABLE ASSEMBLY - MASH X-TENSION	2
	11	BSI-1012078-00	X-LITE LINE POST-GALVANIZED	8
	12	B090534	8" W-BEAM COMPOSITE-BLOCKOUT XT110	8
	13	BSI-4004386	12'-6" W-BEAM GUARD FENCE PANELS 12GA.	4
	14	BSI-1102027-00	X-LITE SQUARE WASHER	1
	15	BSI-2001886	⅝" X 7" THREAD BOLT HH (GR.5)GEOMET	1
	16	BSI-2001885	¾" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET	4
	17	4001115	⅝" X 1 ¼" GUARD FENCE BOLTS (GR.2)MGAL	48
	18	2001840	⅝" X 10" GUARD FENCE BOLTS MGAL	8
	19	2001636	⅝" WASHER F436 STRUCTURAL MGAL	2
	20	4001116	⅝" RECESSED GUARD FENCE NUT (GR.2)MGAL	59
	21	BSI-2001888	⅝" X 2" ALL THREAD BOLT (GR.5)GEOMET	1
	22	BSI-1701063-00	DELINEATION MOUNTING (BRACKET)	1
	23	BSI-2001887	¼" X ¾" SCREW SD HH 410SS	7
	24	4002051	GUARDRAIL WASHER RECT AASHTO FWR03	1
*	25	SEE NOTE BELOW	HIGH INTENSITY REFLECTIVE SHEETING	1
**	26	4002337	8" W-BEAM TIMBER-BLOCKOUT, PDB01B	8
**	27	BSI-4004431	25' W-BEAM GUARDRAIL PANEL, 8-SPACE, 12GA.	2
	28	MANMAX Rev-(D)	MAX-TENSION INSTALLATION INSTRUCTIONS	1

* TO BE PROVIDED BY DISTRIBUTOR OR CONTRACTOR.

** ALTERNATIVE ITEMS NOT SHOWN.
ITEM(26) 8" WOOD-BLOCKOUTS
ITEM(27) 25' GUARD FENCE PANELS

Texas Department of Transportation | Design Division Standard

MAX-TENSION END TERMINAL MASH - TL-3

SGT(11S)31-18

FILE: sgt11s3118.dgn	DN: TxDOT	CK: KM	DW: TxDOT	CK: CL
© TxDOT: FEBRUARY 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

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San Antonio, Texas 78231
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LANTANA SUBDIVISION UNIT 1

TXDOT DETAILS - PAVEMENT MARKINGS & GUARD RAILS

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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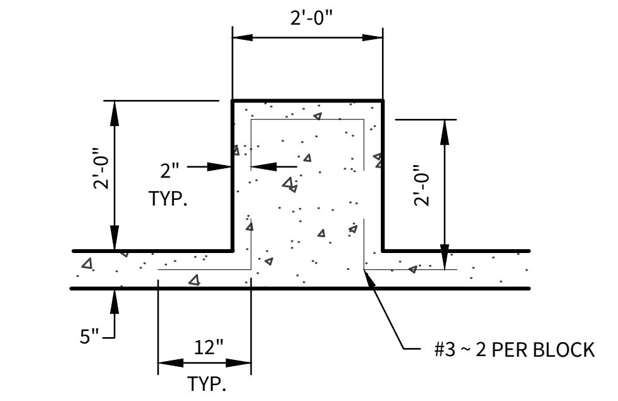
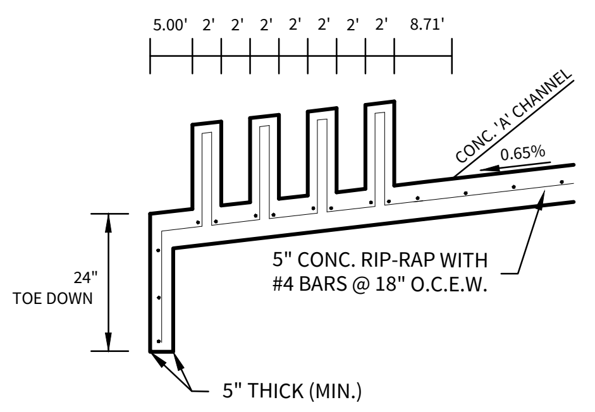


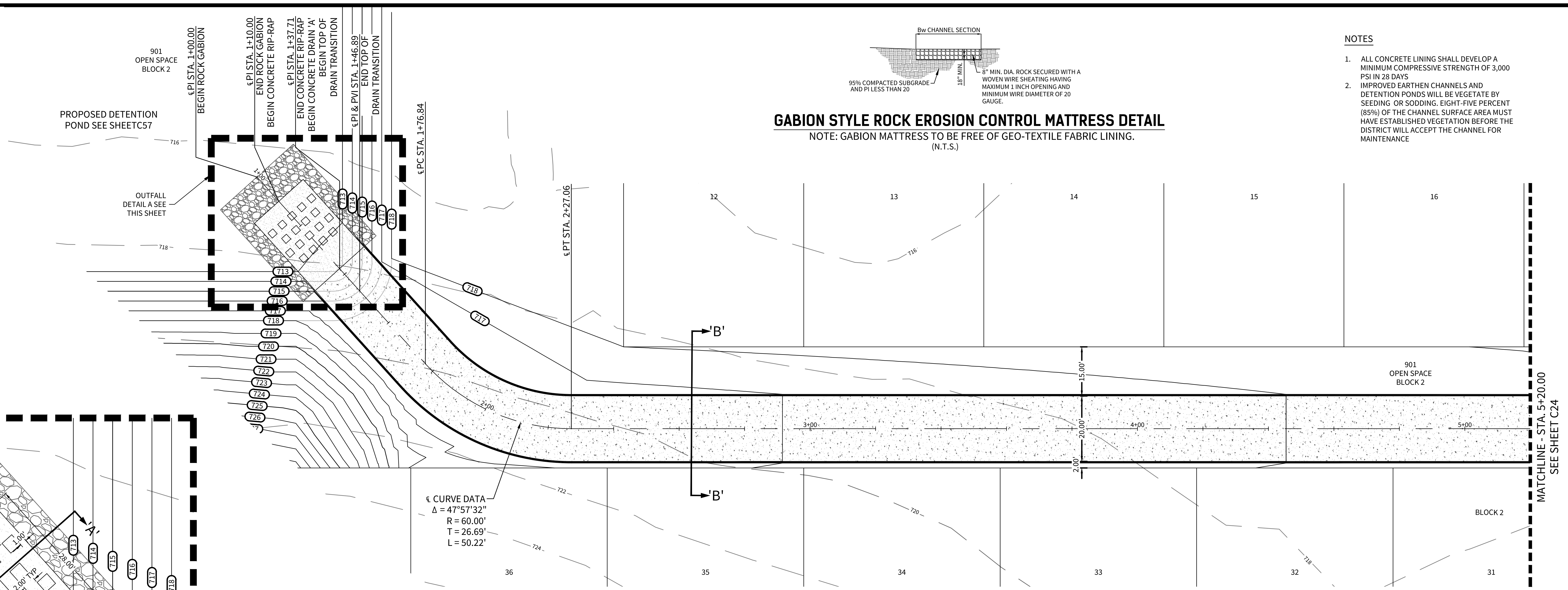
DRAIN 'A' BAFFLE BLOCK REINFORCEMENT DETAIL

(N.T.S.)



DRAIN 'A' BAFFLE BLOCK DETAIL

(N.T.S.)



GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.

(N.T.S.)

NOTES

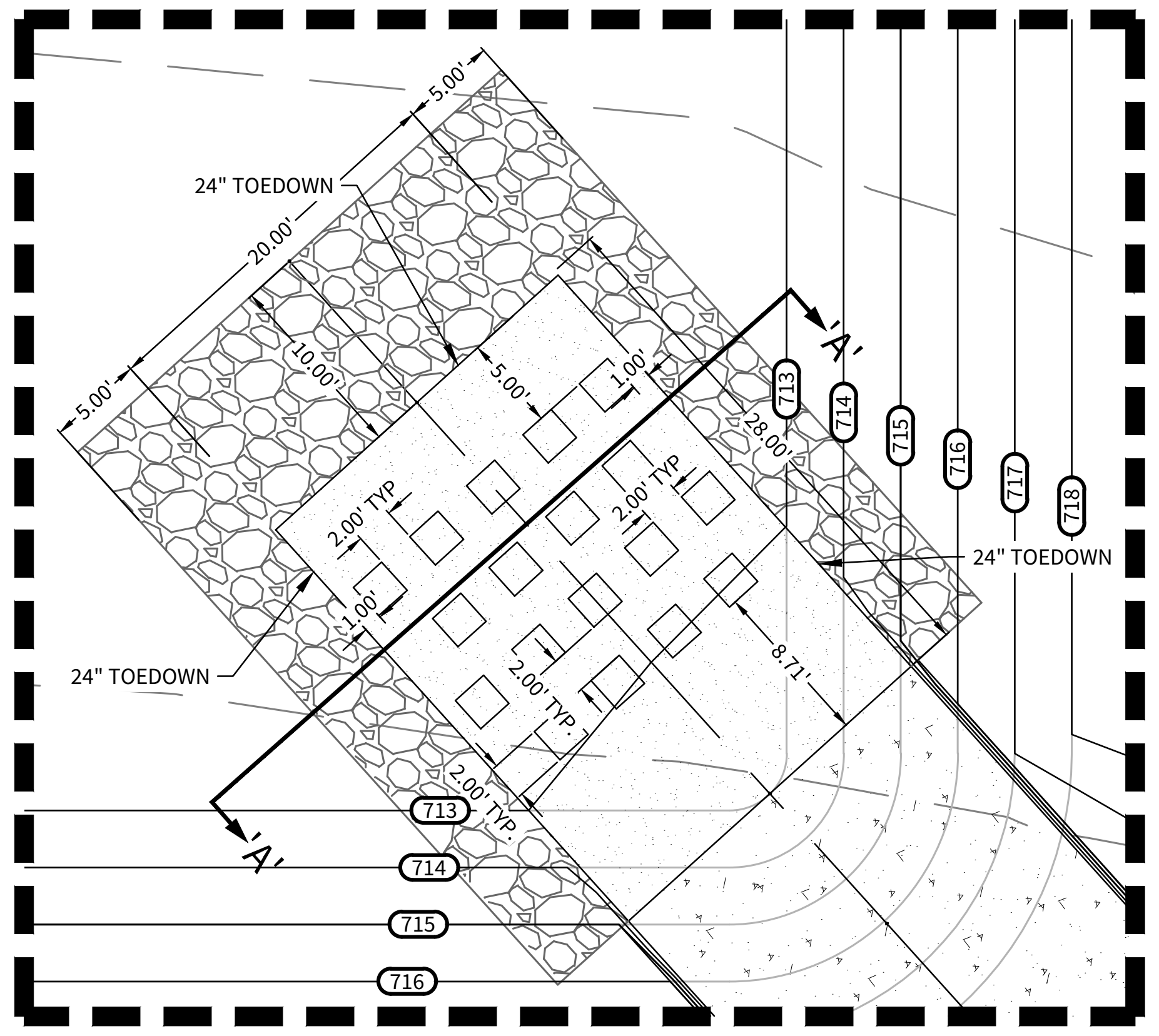
1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

SCALE: 1"=20'

20 10 0 20

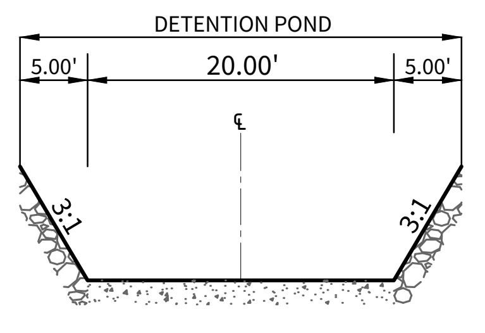
LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.C.A. EASEMENT	- - - -
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
CONCRETE DRAINAGE CHANNEL	▨
GABION MATTRESS	▨



DETAIL A

SCALE: 1" = 10'

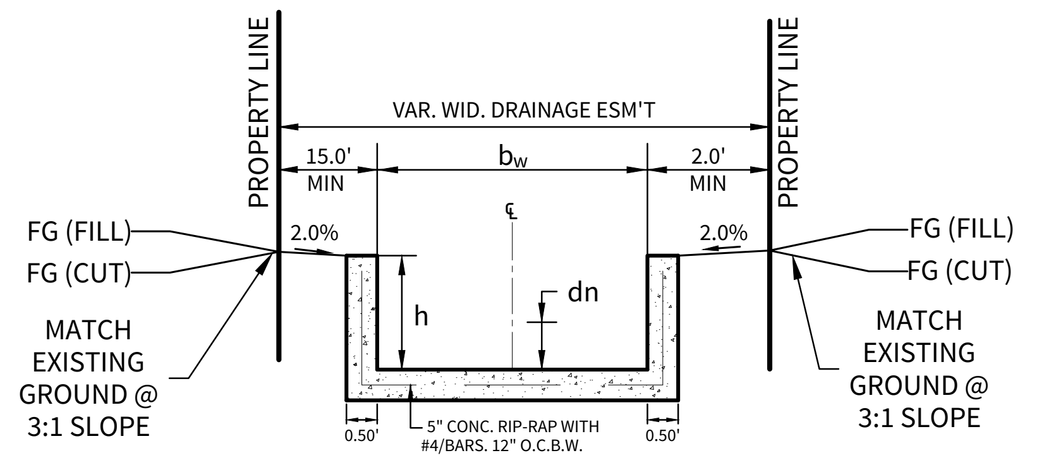


OUTFALL DETAIL CROSS SECTION 'A-A'

(N.T.S.)

DRAIN 'A'

STA. 1+00.00 TO STA. 5+20.00



DRAIN 'A' CONCRETE CHANNEL

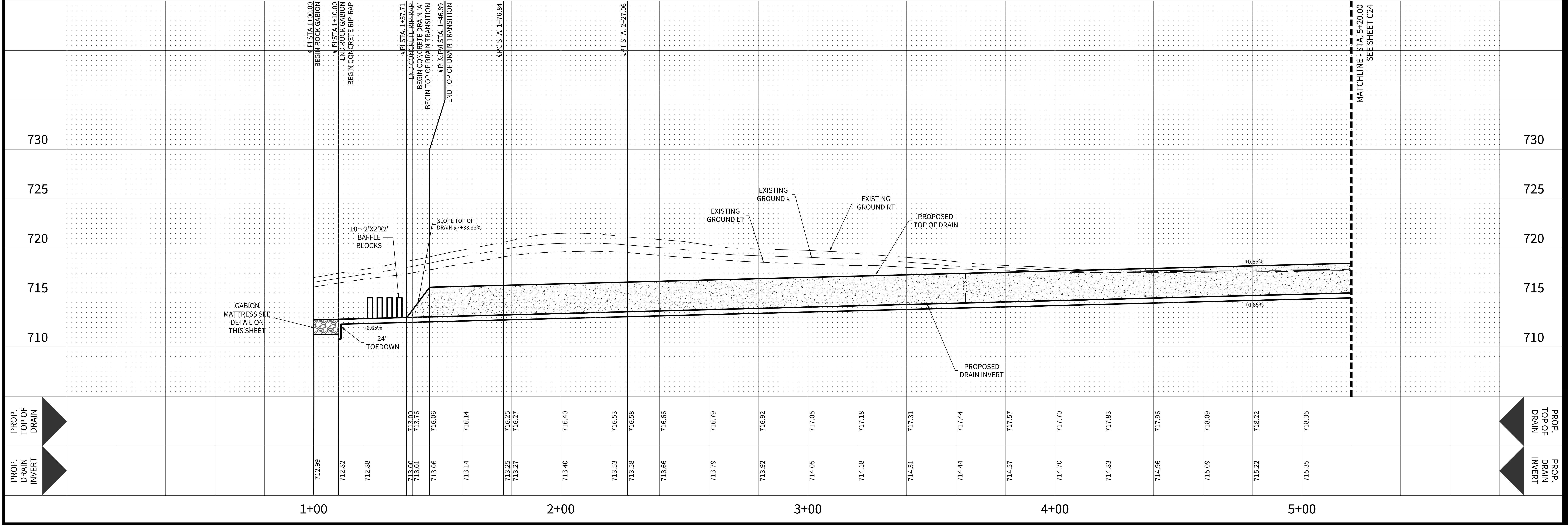
(N.T.S.)

'B-B' STA. 1+46.89 TO STA. 5+20.00

	'B-B'
Q_{25} (cfs)	520.00
b_w (ft)	20.00'
n	0.013
h (ft)	3.00'
S (%)	0.65%
d_n (ft)	2.00
V (fps)	12.99

NOTE:
VELOCITY AFTER BAFFLE BLOCKS IS 6 fps.

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



PROP. TOP OF DRAIN	PROP. DRAIN INVERT
	712.99
	712.82
	712.88
713.00	713.00
713.76	713.01
716.06	713.06
716.14	713.14
716.25	713.25
716.27	713.27
716.40	713.40
716.53	713.53
716.58	713.58
716.66	713.66
716.79	713.79
716.92	713.92
717.05	714.05
717.18	714.18
717.31	714.31
717.44	714.44
717.57	714.57
717.70	714.70
717.83	714.83
717.96	714.96
718.09	715.09
718.22	715.22
718.35	715.35

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LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'A'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
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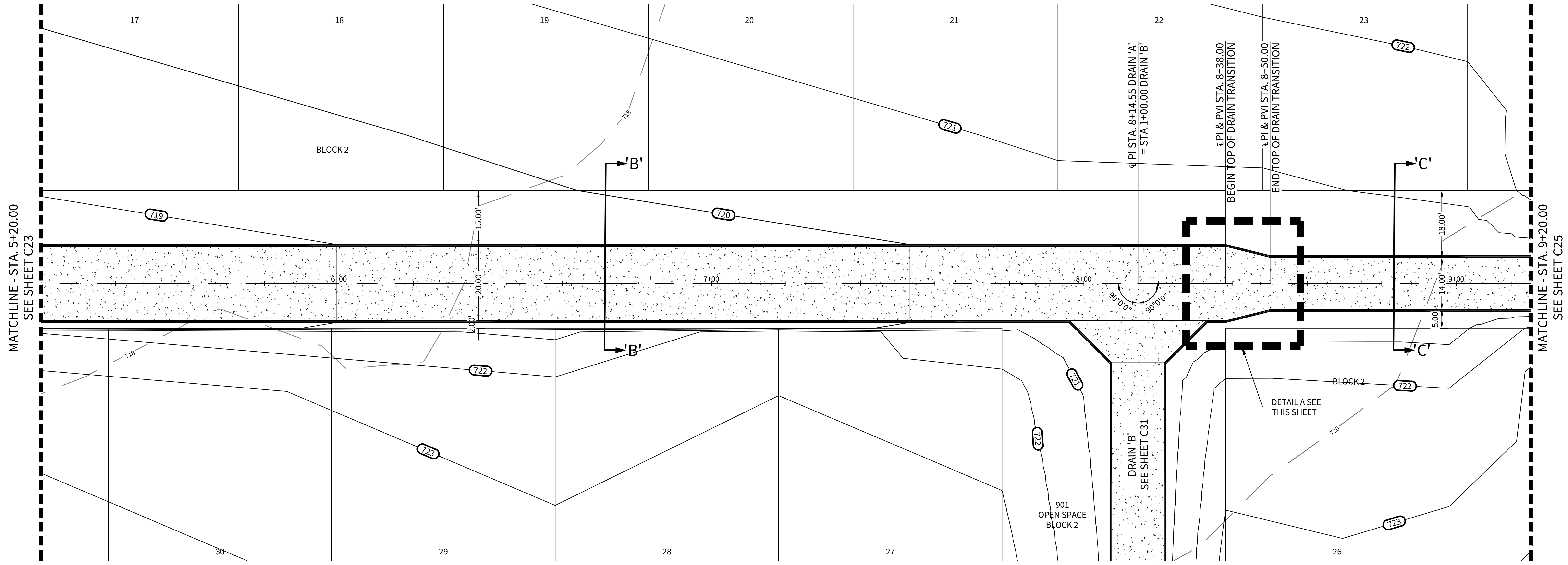

17
18
19
20
21
22
23
BLOCK 2
'B'
'B'
'C'
'C'
¢ PI STA. 8+14.55 DRAIN 'A' = STA 1+00.00 DRAIN 'B'
¢ PI & PVI STA. 8+38.00 BEGIN TOP OF DRAIN TRANSITION
¢ PI & PVI STA. 8+50.00 END TOP OF DRAIN TRANSITION
MATCHLINE - STA. 5+20.00 SEE SHEET C23
MATCHLINE - STA. 9+20.00 SEE SHEET C25
719
720
721
722
723
718
15.00'
20.00'
18.00'
14.00'
5.00'
6+00
7+00
8+00
9+00
90°0'0"
DETAIL A SEE THIS SHEET
BLOCK 2
DRAIN 'B' SEE SHEET C31
901 OPEN SPACE BLOCK 2
30
29
28
27
26

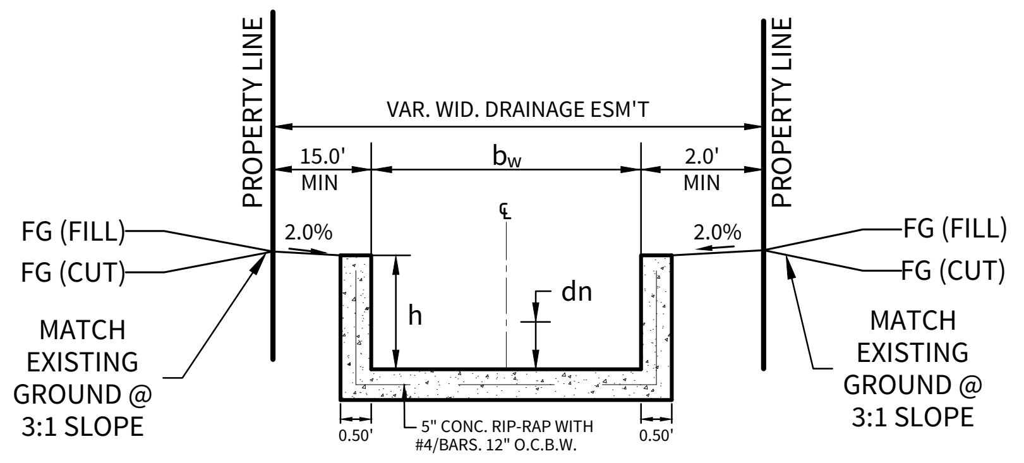
SCALE: 1"=20'

20 10 0 20

LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.CA. EASEMENT	- - - -
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
CONCRETE DRAINAGE CHANNEL	▨

	'B-B'	'C-C'
Q_{25} (cfs)	520.00	238.28
b_w (ft)	20.00'	14.00'
n	0.013	0.013
h (ft)	3.00'	2.50'
S (%)	0.65%	0.65%
d_n (ft)	2.00'	1.56'
V (fps)	12.99	10.88



DRAIN 'A' CONCRETE CHANNEL

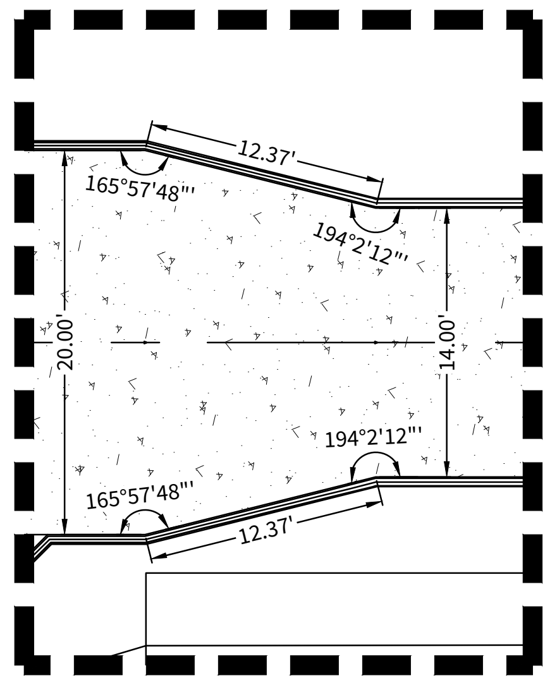
(N.T.S.)

'B-B' STA. 5+20.00 TO STA. 8+38.00

'C-C' STA. 8+50.00 TO STA. 9+20.00

DRAIN 'A'

STA. 5+20.00 TO STA. 9+20.00



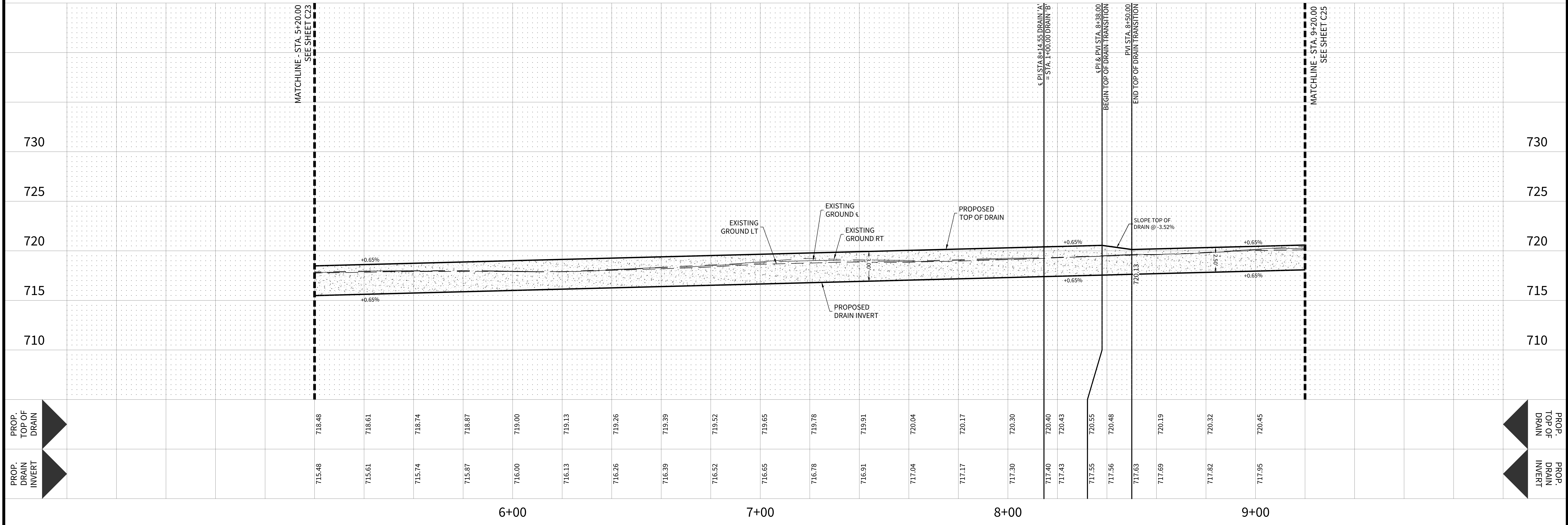
DETAIL A

SCALE: 1" = 10'

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



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LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'A'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
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TBPLS No. 10048500

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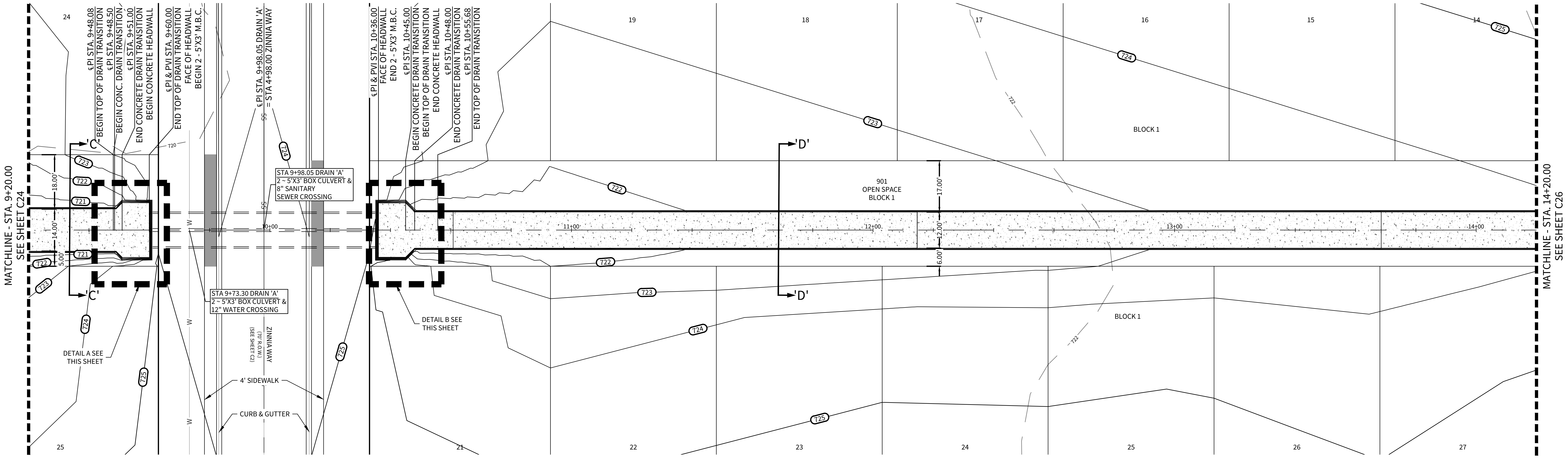
24
25
MATCHLINE - STA. 9+20.00 SEE SHEET C24
℄ PI STA. 9+48.08 BEGIN TOP OF DRAIN TRANSITION
℄ PI STA. 9+48.50 BEGIN CONC. DRAIN TRANSITION
℄ PI STA. 9+51.00 END CONCRETE DRAIN TRANSITION BEGIN CONCRETE HEADWALL
℄ PI & PVI STA. 9+60.00 END TOP OF DRAIN TRANSITION FACE OF HEADWALL BEGIN 2 - 5'X3' M.B.C.
℄ PI STA. 9+98.05 DRAIN 'A' = STA 4+98.00 ZINNIA WAY
℄ PI & PVI STA. 10+36.00 FACE OF HEADWALL END 2 - 5'X3' M.B.C.
℄ PI STA. 10+45.00 BEGIN CONCRETE DRAIN TRANSITION BEGIN TOP OF DRAIN TRANSITION END CONCRETE HEADWALL
℄ PI STA. 10+48.00 END CONCRETE DRAIN TRANSITION
℄ PI STA. 10+55.68 END TOP OF DRAIN TRANSITION
STA 9+98.05 DRAIN 'A' 2 - 5'X3' BOX CULVERT & 8" SANITARY SEWER CROSSING
STA 9+73.30 DRAIN 'A' 2 - 5'X3' BOX CULVERT & 12" WATER CROSSING
ZINNIA WAY (SEE SHEET C13)
4' SIDEWALK
CURB & GUTTER
DETAIL A SEE THIS SHEET
DETAIL B SEE THIS SHEET
C'
D'
901 OPEN SPACE BLOCK 1
BLOCK 1
17.00'
12.00'
6.00'
18.00'
14.00'
5.00'
11+00
12+00
13+00
14+00
19
18
17
16
15
14
21
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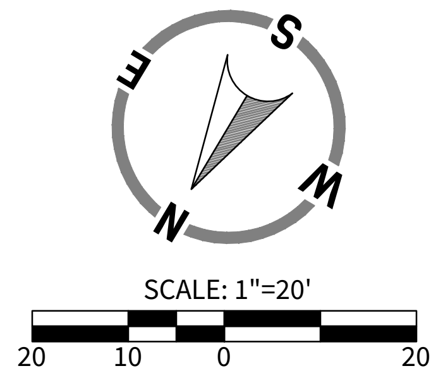
25
26
27
720
721
722
723
724
725
MATCHLINE - STA. 14+20.00 SEE SHEET C26



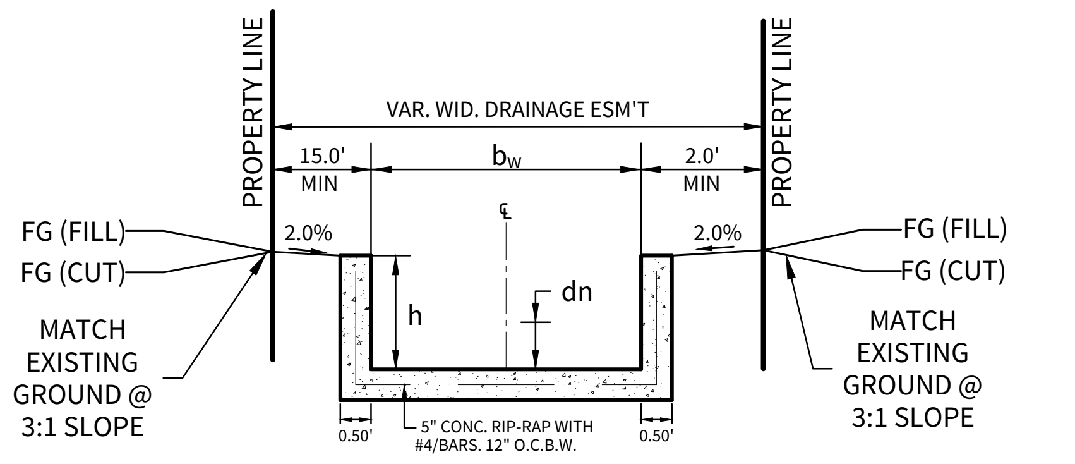
LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.C.A. EASEMENT	— — —
EXISTING 1' CONTOUR	— 499 —
EXISTING 5' CONTOUR	— 500 —
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
CONCRETE DRAINAGE CHANNEL	▨

CULVERT SUMMARY

Q_{25} = 238.28 c.f.s.
MANNING'S COEFFICIENT = 0.013
CULVERT SHAPE = CONC. BOX
RISE = 36"
SPAN = 60"
PIPE SLOPE = 0.65%
OUTFALL V = 10.26 f.p.s.

	'C-C'	'D-D'
Q_{25} (cfs)	238.28	238.28
b_w (ft)	14.00'	12.00'
n	0.013	0.013
h (ft)	2.50'	2.50'
S (%)	0.65%	0.65%
d_n (ft)	1.56'	1.75'
V (fps)	10.88	11.33



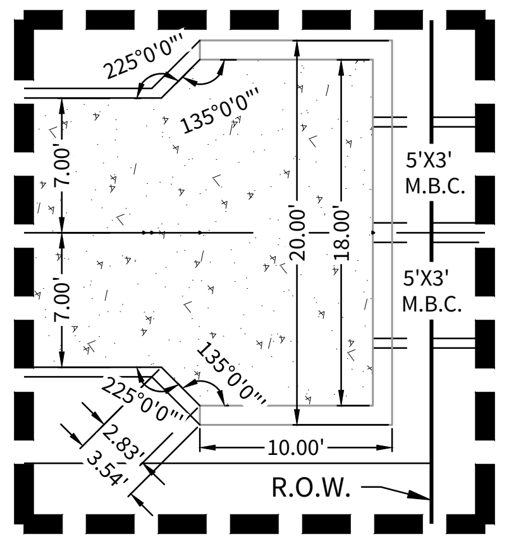
DRAIN 'A' CONCRETE CHANNEL

(N.T.S.)

'C-C' STA. 9+20.00 TO STA. 9+60.00
'D-D' STA. 10+36.00 TO STA. 14+20.00

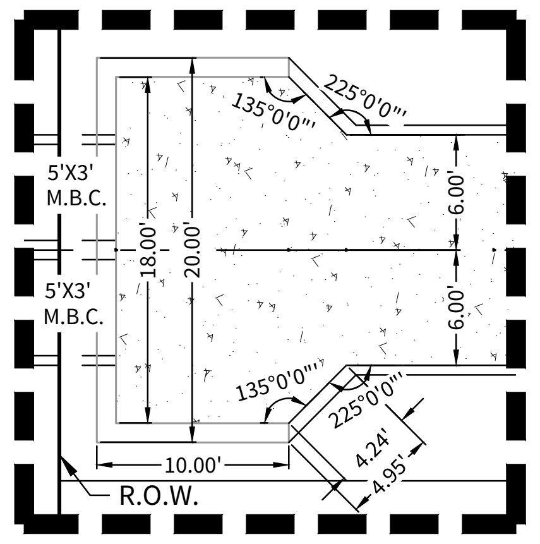
DRAIN 'A'

STA. 9+20.00 TO STA. 14+20.00



DETAIL A

SCALE: 1" = 10'



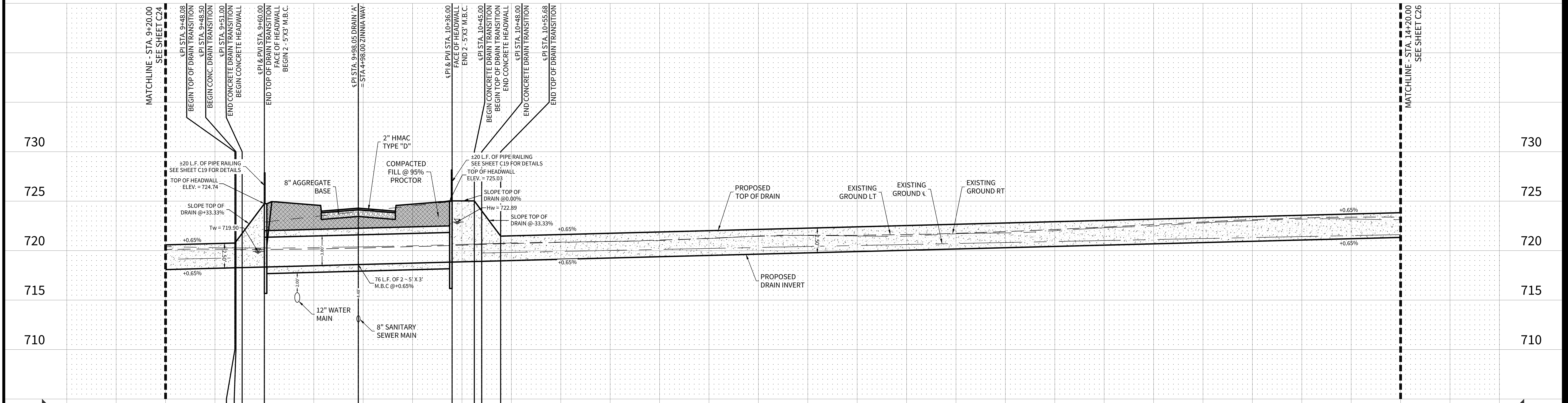
DETAIL B

SCALE: 1" = 10'

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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


MATCHLINE - STA. 9+20.00 SEE SHEET C24
℄ PI STA. 9+48.08 BEGIN TOP OF DRAIN TRANSITION
℄ PI STA. 9+48.50 BEGIN CONC. DRAIN TRANSITION
℄ PI STA. 9+51.00 END CONCRETE DRAIN TRANSITION BEGIN CONCRETE HEADWALL
℄ PI & PVI STA. 9+60.00 END TOP OF DRAIN TRANSITION FACE OF HEADWALL BEGIN 2 - 5'X3' M.B.C.
℄ PI STA. 9+98.05 DRAIN 'A' = STA 4+98.00 ZINNIA WAY
℄ PI & PVI STA. 10+36.00 FACE OF HEADWALL END 2 - 5'X3' M.B.C.
℄ PI STA. 10+45.00 BEGIN CONCRETE DRAIN TRANSITION BEGIN TOP OF DRAIN TRANSITION END CONCRETE HEADWALL
℄ PI STA. 10+48.00 END CONCRETE DRAIN TRANSITION
℄ PI STA. 10+55.68 END TOP OF DRAIN TRANSITION
MATCHLINE - STA. 14+20.00 SEE SHEET C26
730
725
720
715
710
±20 L.F. OF PIPE RAILING SEE SHEET C19 FOR DETAILS
TOP OF HEADWALL ELEV. = 724.74
SLOPE TOP OF DRAIN @+33.33%
Tw = 719.90
8" AGGREGATE BASE
2" HMAC TYPE "D"
COMPACTED FILL @ 95% PROCTOR
TOP OF HEADWALL ELEV. = 725.03
SLOPE TOP OF DRAIN @0.00%
Hw = 722.89
SLOPE TOP OF DRAIN @-33.33%
PROPOSED TOP OF DRAIN
EXISTING GROUND LT
EXISTING GROUND ℄
EXISTING GROUND RT
+0.65%
76 L.F. OF 2 - 5' X 3' M.B.C @+0.65%
12" WATER MAIN
8" SANITARY SEWER MAIN
PROPOSED DRAIN INVERT

PROP. TOP OF DRAIN	PROP. DRAIN INVERT
720.58	718.08
720.71	718.21
720.77	718.27
720.91	718.27
721.74	718.29
724.74	718.34
724.82	718.47
724.88	718.59
724.97	718.73
725.03	718.84
725.03	718.90
724.03	718.92
721.47	718.97
721.49	718.99
721.62	719.12
721.75	719.25
721.88	719.38
722.01	719.51
722.14	719.64
722.27	719.77
722.40	719.90
722.53	720.03
722.66	720.16
722.79	720.29
722.92	720.42
723.05	720.55
723.18	720.68
723.31	720.81
723.44	720.94
723.57	721.07
723.70	721.20

10+00 11+00 12+00 13+00 14+00

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LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'A'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

#	DATE
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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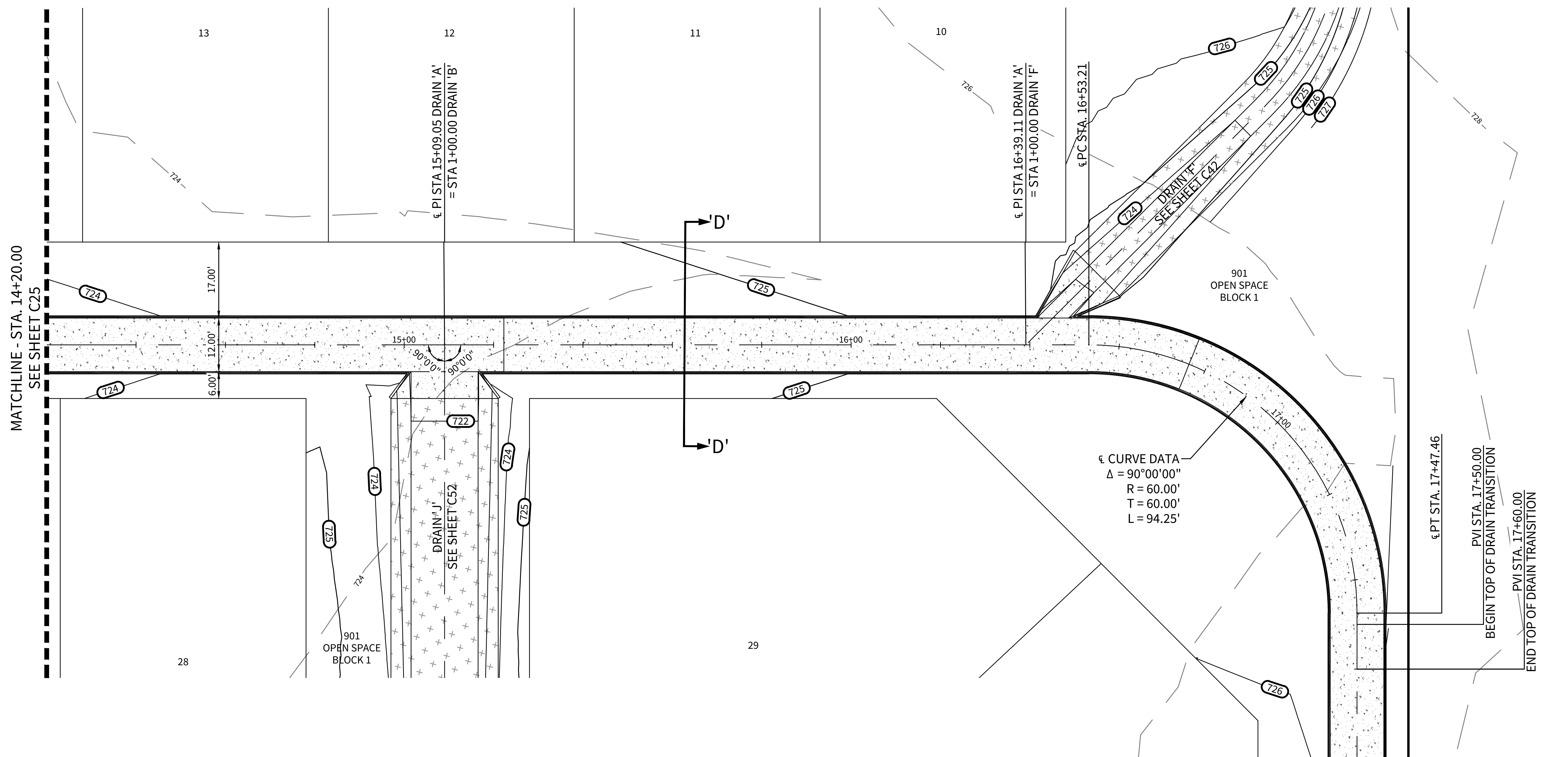
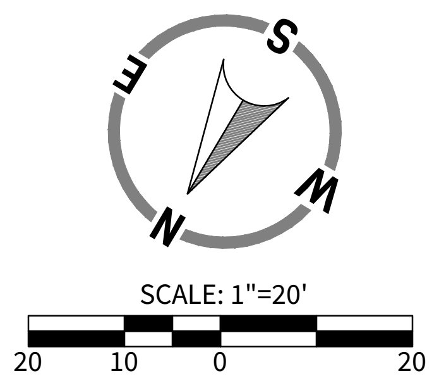
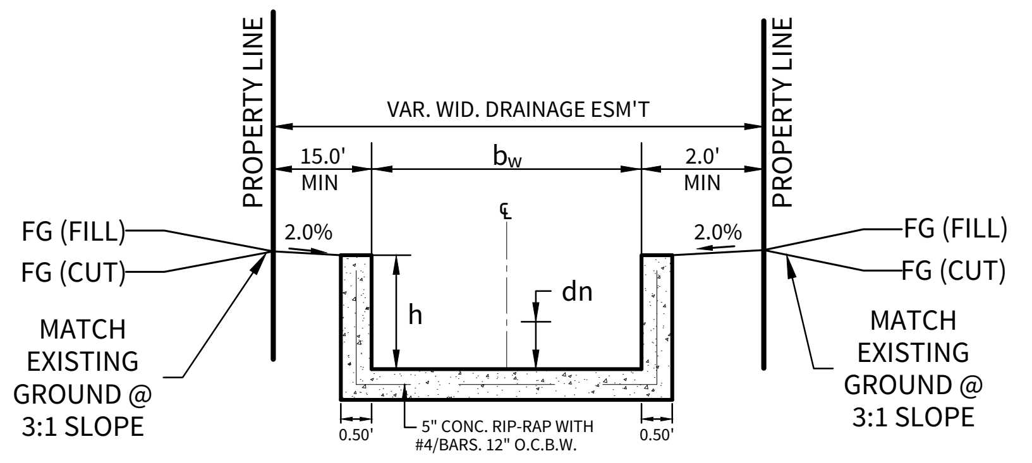

13
12
11
10
¢ PI STA 15+09.05 DRAIN 'A' = STA 1+00.00 DRAIN 'B'
¢ PI STA 16+39.11 DRAIN 'A' = STA 1+00.00 DRAIN 'F'
¢ PC STA. 16+53.21
MATCHLINE - STA. 14+20.00 SEE SHEET C25
DRAIN 'F' SEE SHEET C42
DRAIN 'J' SEE SHEET C52
'D'
'D'
17.00'
12.00'
6.00'
15+00
16+00
90°0'0"
901 OPEN SPACE BLOCK 1
¢ CURVE DATA
Δ = 90°00'00"
R = 60.00'
T = 60.00'
L = 94.25'
¢ PT STA. 17+47.46
PVI STA. 17+50.00 BEGIN TOP OF DRAIN TRANSITION
PVI STA. 17+60.00 END TOP OF DRAIN TRANSITION
28
29
30
724
725
726
722
16.16'
12.00'
5.50'
'E'
'E'
CALLED 7.573 ACRES (VOL. 4125, PG. 847 OPR)
MATCHLINE - STA. 18+40.00 SEE SHEET C27



LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.C.A. EASEMENT	- - - -
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
CONCRETE DRAINAGE CHANNEL	▨
EARTHEN DRAINAGE CHANNEL	▨

	'D-D'	'E-E'
Q_{25} (cfs)	238.28	204.98
b_w (ft)	12.00'	12.00'
n	0.013	0.013
h (ft)	2.50'	2.25'
S (%)	0.65%	0.65%
d_n (ft)	1.75'	1.59'
V (fps)	11.33	10.76



DRAIN 'A' CONCRETE CHANNEL

(N.T.S.)

'D-D' STA. 14+20.00 TO STA. 17+50.00
'E-E' STA. 17+60.00 TO STA. 18+40.00

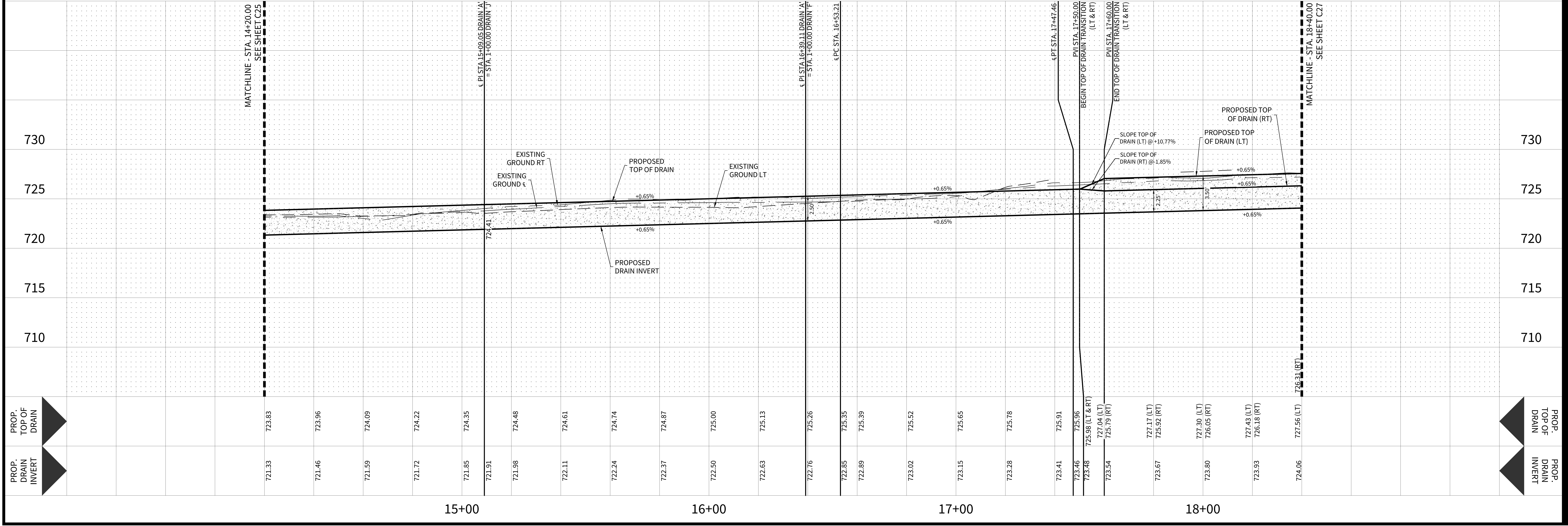
DRAIN 'A'

STA. 14+20.00 TO STA. 18+40.00

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



PROP. TOP OF DRAIN	PROP. DRAIN INVERT
723.83	721.33
723.96	721.46
724.09	721.59
724.22	721.72
724.35	721.85
	721.91
724.48	721.98
724.61	722.11
724.74	722.24
724.87	722.37
725.00	722.50
725.13	722.63
725.26	722.76
725.35	722.85
725.39	722.89
725.52	723.02
725.65	723.15
725.78	723.28
725.91	723.41
725.96	723.46
725.98 (LT & RT)	723.48
727.04 (LT) 725.79 (RT)	723.54
727.17 (LT) 725.92 (RT)	723.67
727.30 (LT) 726.05 (RT)	723.80
727.43 (LT) 726.18 (RT)	723.93
727.56 (LT) 726.31 (RT)	724.06

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LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'A'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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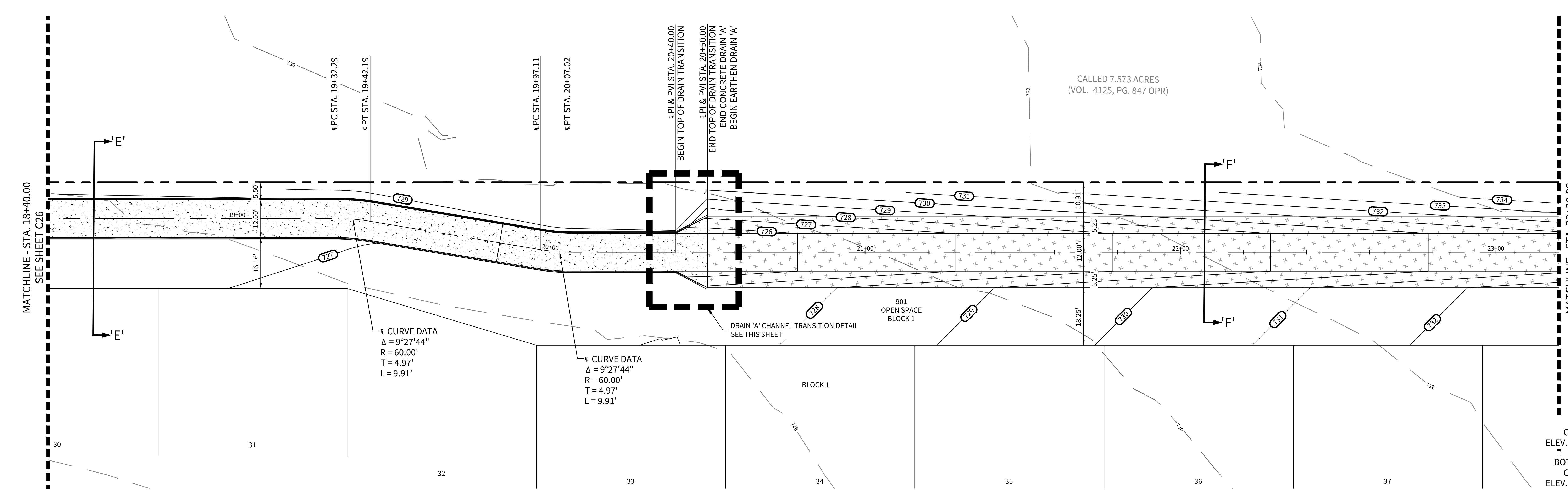
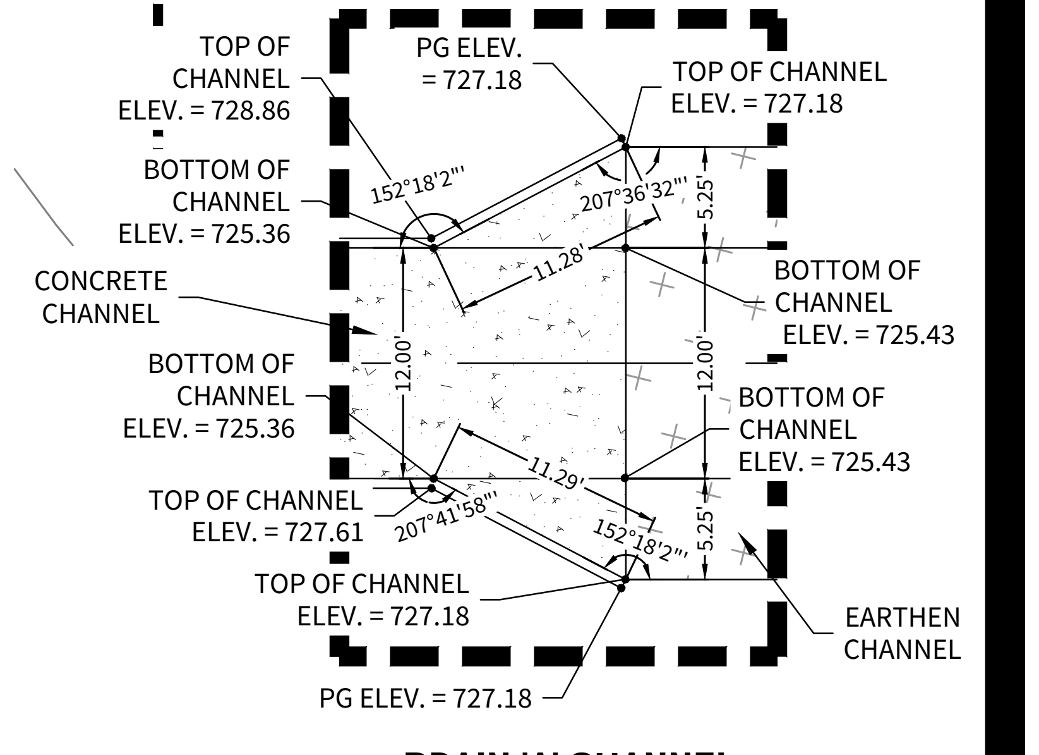


SCALE: 1"=20'

20 10 0 20

LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	—
PROPOSED RIGHT OF WAY	—
E.G.T.CA. EASEMENT	- - - -
EXISTING 1' CONTOUR	— 499 —
EXISTING 5' CONTOUR	— 500 —
PROPOSED 1' CONTOUR	— 499 —
PROPOSED 5' CONTOUR	— 500 —
CONCRETE DRAINAGE CHANNEL	▨
EARTHEN DRAINAGE CHANNEL	▨



TOP OF CHANNEL ELEV. = 728.86
PG ELEV. = 727.18
TOP OF CHANNEL ELEV. = 727.18
BOTTOM OF CHANNEL ELEV. = 725.36
152°18'2"
207°36'32"
11.28'
5.25'
BOTTOM OF CHANNEL ELEV. = 725.43
CONCRETE CHANNEL
12.00'
12.00'
BOTTOM OF CHANNEL ELEV. = 725.36
BOTTOM OF CHANNEL ELEV. = 725.43
11.29'
207°41'58"
152°18'2"
5.25'
TOP OF CHANNEL ELEV. = 727.61
TOP OF CHANNEL ELEV. = 727.18
PG ELEV. = 727.18
EARTHEN CHANNEL

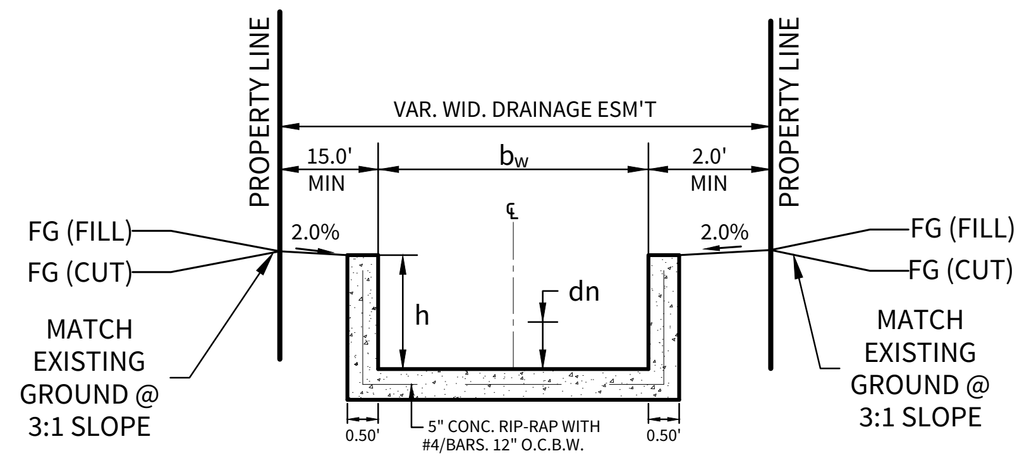
DRAIN 'A' CHANNEL TRANSITION DETAIL

SCALE: 1" = 10'

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

	'E-E'
Q_{25} (cfs)	204.98
b_w (ft)	12.00'
n	0.013
h (ft)	2.25'
S (%)	0.65%
d_n (ft)	1.59'
V (fps)	10.76



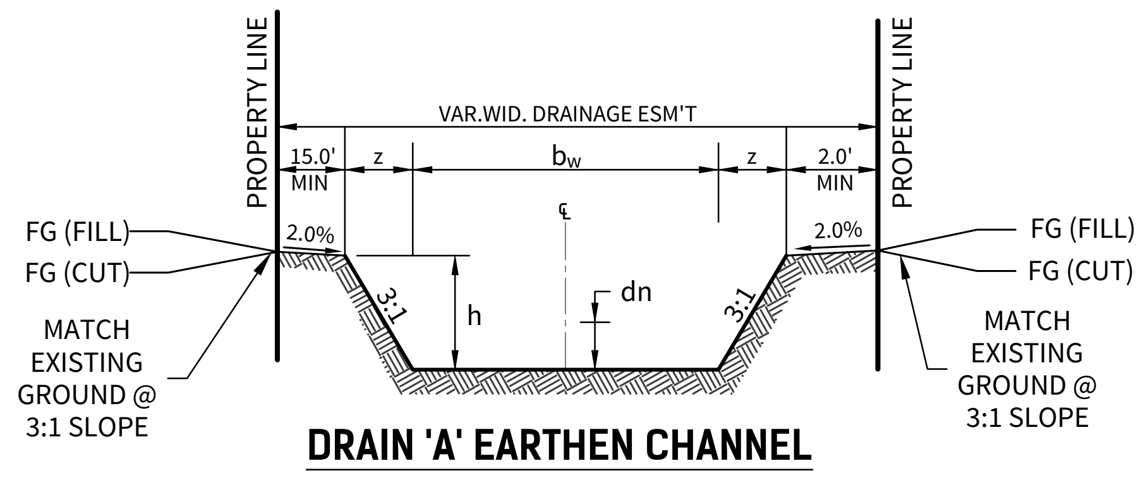
DRAIN 'A' CONCRETE CHANNEL

[N.T.S.]

'D-D' STA. 18+40.00 TO STA. 20+40.00

DRAIN 'A'

STA. 18+40.00 TO STA. 23+20.00



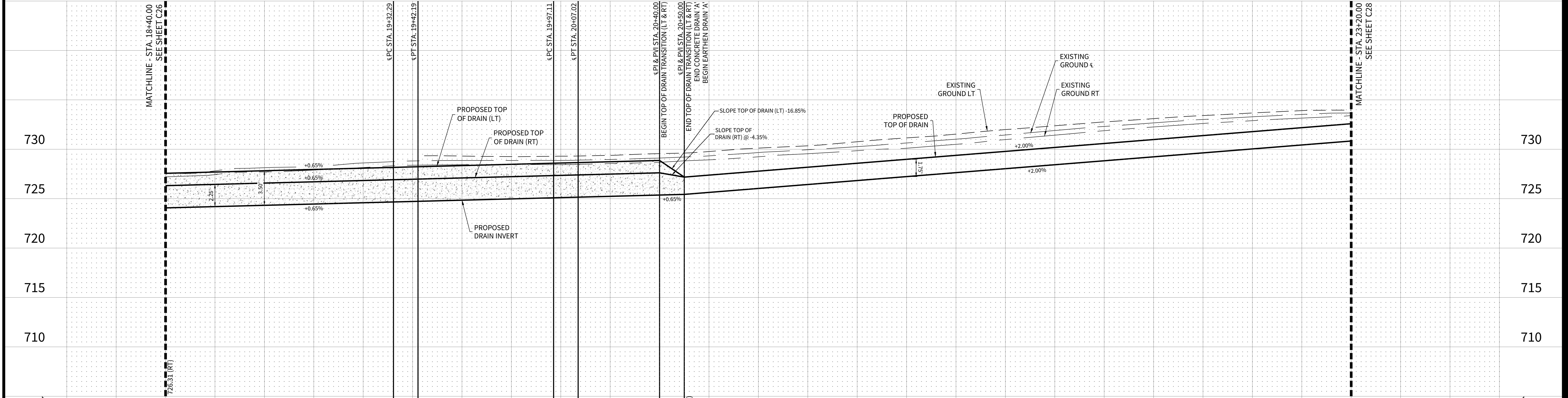
DRAIN 'A' EARTHEN CHANNEL

[N.T.S.]

'E-E' STA. 20+50.00 TO STA. 23+20.00

	'F-F'
Q_{25} (cfs)	69.26
b_w (ft)	12.00'
z (ft)	3.00'
n	0.035
h (ft)	1.75'
S (%)	2.00%
d_n (ft)	0.93'
V (fps)	5.05

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



PROP. TOP OF DRAIN	PROP. DRAIN INVERT
727.56 (LT)	724.06
727.69 (LT) 726.44 (RT)	724.19
727.82 (LT) 726.57 (RT)	724.32
727.95 (LT) 726.70 (RT)	724.45
728.08 (LT) 726.83 (RT)	724.58
728.16 (LT) 726.91 (RT)	724.66
728.23 (LT) 726.98 (RT)	724.73
728.34 (LT) 727.09 (RT)	724.84
728.47 (LT) 727.22 (RT)	724.97
728.59 (LT) 728.60 (LT)	725.09
728.65 (LT) 727.40 (RT)	725.15
728.73 (LT) 727.48 (RT)	725.23
728.86 (LT) 727.61 (RT)	725.36
727.18 (LT & RT)	725.43
727.38	725.63
727.78	726.03
728.18	726.43
728.58	726.83
728.98	727.23
729.38	727.63
729.78	728.03
730.18	728.43
730.58	728.83
730.98	729.23
731.38	729.63
731.78	730.03
732.18	730.43

19+00 20+00 21+00 22+00 23+00

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LANTANA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'A'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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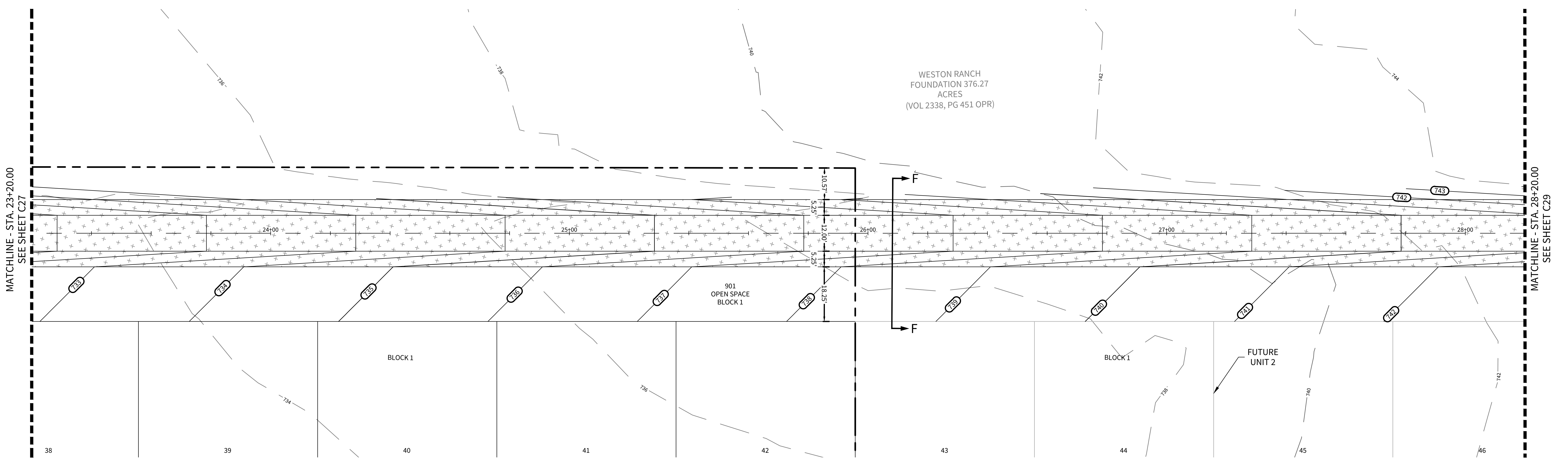


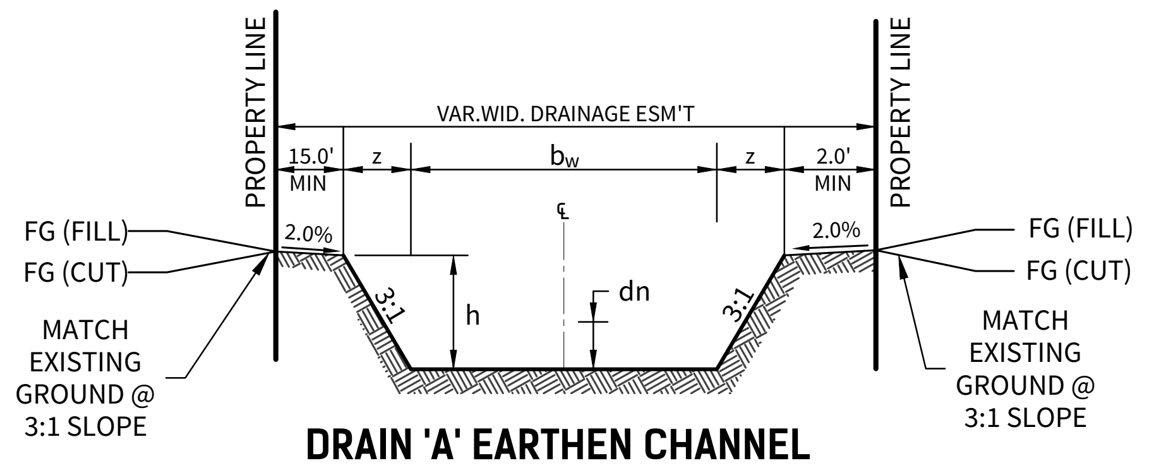
SCALE: 1"=20'

20 10 0 20

LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	— — —
EXISTING 1' CONTOUR	— — 499 — —
EXISTING 5' CONTOUR	— — 500 — —
PROPOSED 1' CONTOUR	—(499)—
PROPOSED 5' CONTOUR	—(500)—
EARTHEN DRAINAGE CHANNEL	▨

	'F-F'
Q_{25} (cfs)	69.26
b_w (ft)	12.00'
z (ft)	3.00'
n	0.035
h (ft)	1.75'
S (%)	2.00%
d_n (ft)	0.93'
V (fps)	5.05



DRAIN 'A' EARTHEN CHANNEL

(N.T.S.)

'F-F' STA. 23+20.00 TO STA. 28+20.00

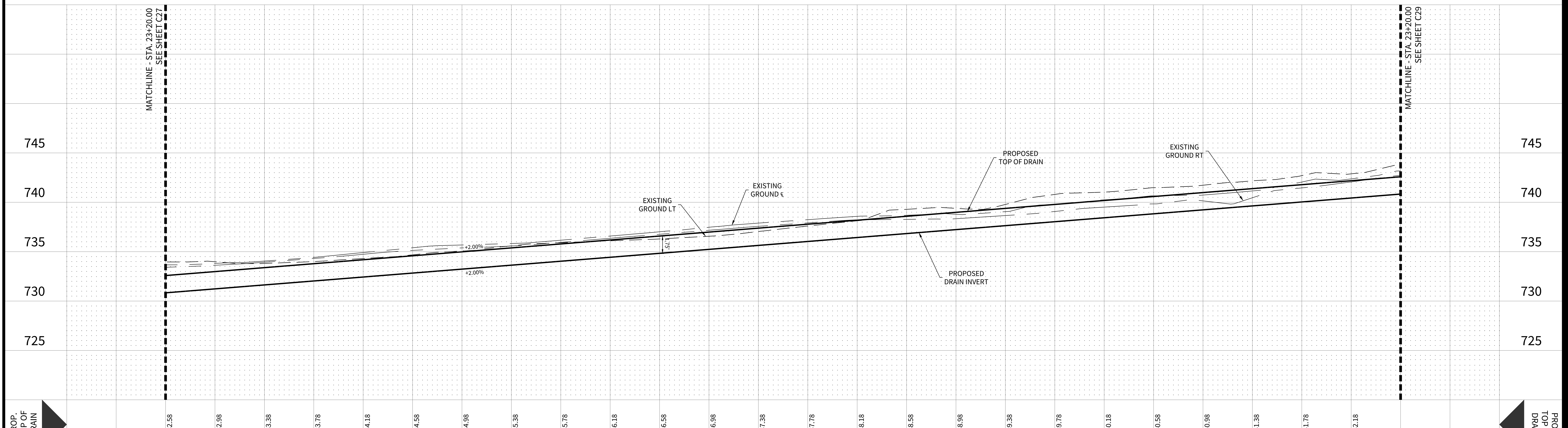
DRAIN 'A'

STA. 23+20.00 TO STA. 28+20.00

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



PROP. TOP OF DRAIN	732.58	732.98	733.38	733.78	734.18	734.58	734.98	735.38	735.78	736.18	736.58	736.98	737.38	737.78	738.18	738.58	738.98	739.38	739.78	740.18	740.58	740.98	741.38	741.78	742.18
PROP. DRAIN INVERT	730.83	731.23	731.63	732.03	732.43	732.83	733.23	733.63	734.03	734.43	734.83	735.23	735.63	736.03	736.43	736.83	737.23	737.63	738.03	738.43	738.83	739.23	739.63	740.03	740.43

24+00 25+00 26+00 27+00 28+00

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LANTANA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'A'

DATE
05/12/2025

PROJECT NO.
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DRAWN BY
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JAVIER CASTELLO
122170
5/12/2025

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P:\04037\003\2-DWG\4-Plans\C28 DRAIN PLAN & PROFILE - DRAIN 'A'.dwg 2025/05/12 1:45pm tduano

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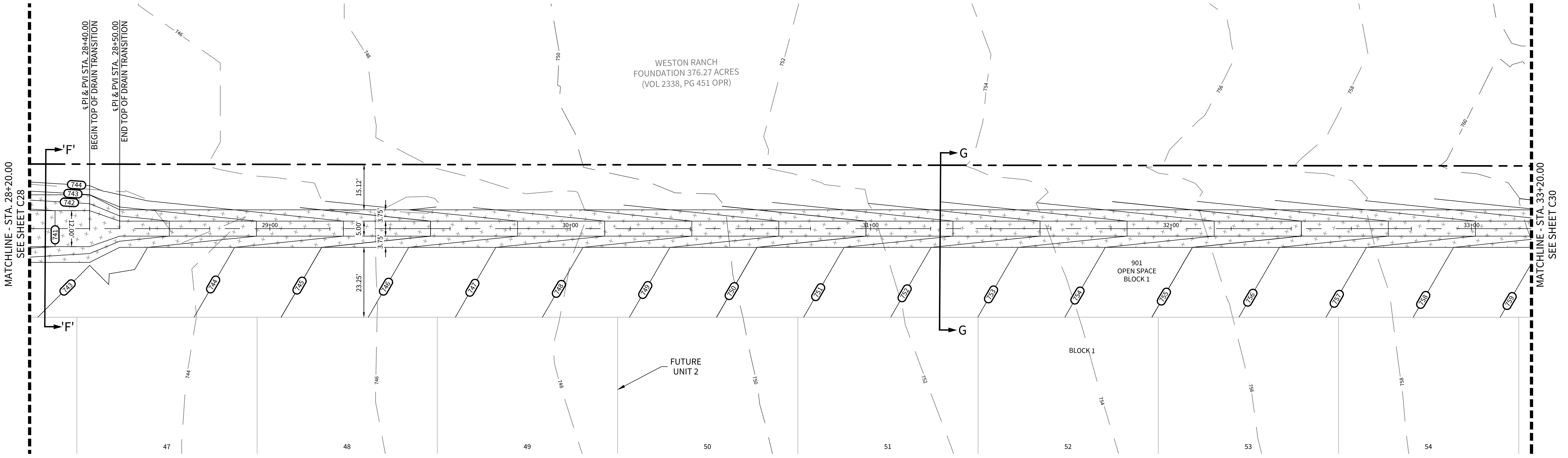
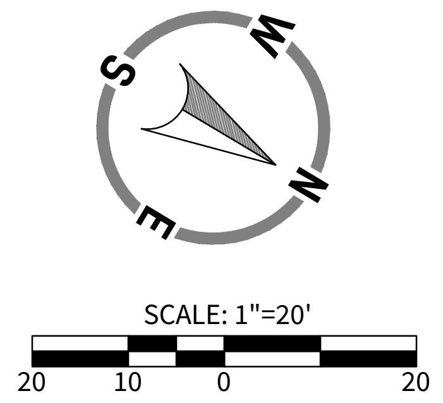
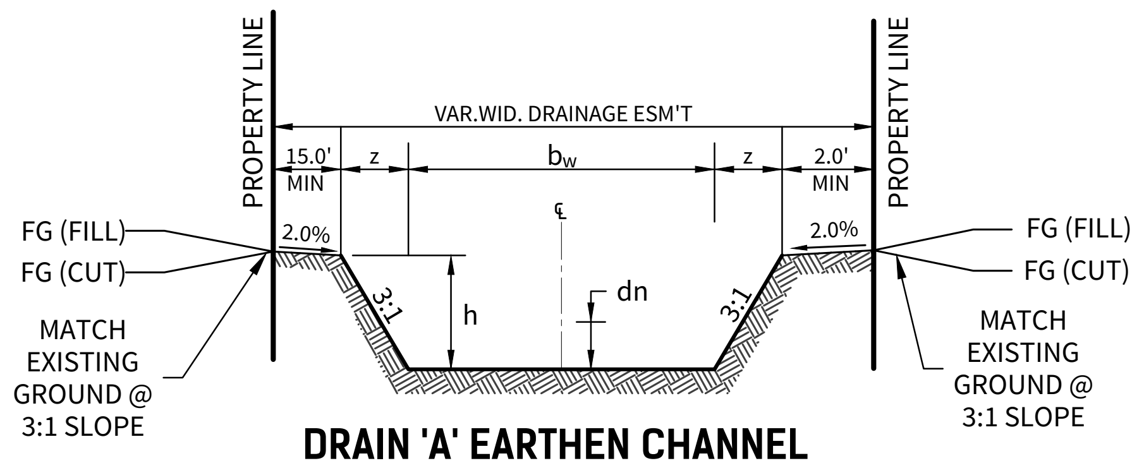




LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	- - - -
EXISTING 1' CONTOUR	- - 499 - -
EXISTING 5' CONTOUR	- - 500 - -
PROPOSED 1' CONTOUR	—(499)—
PROPOSED 5' CONTOUR	—(500)—
EARTHEN DRAINAGE CHANNEL	+ + +

	'F-F'	'G-G'
Q_{25} (cfs)	69.26	14.54
b_w (ft)	12.00'	5.00'
z (ft)	3.00'	3.00'
n	0.035	0.035
h (ft)	1.75'	1.25'
S (%)	2.00%	3.45%
d_n (ft)	0.93'	0.51'
V (fps)	5.05	4.34



DRAIN 'A' EARTHEN CHANNEL

(N.T.S.)

'F-F' STA. 28+20.00 TO STA. 28+40.00
'G-G' STA. 28+50.00 TO STA. 33+20.00

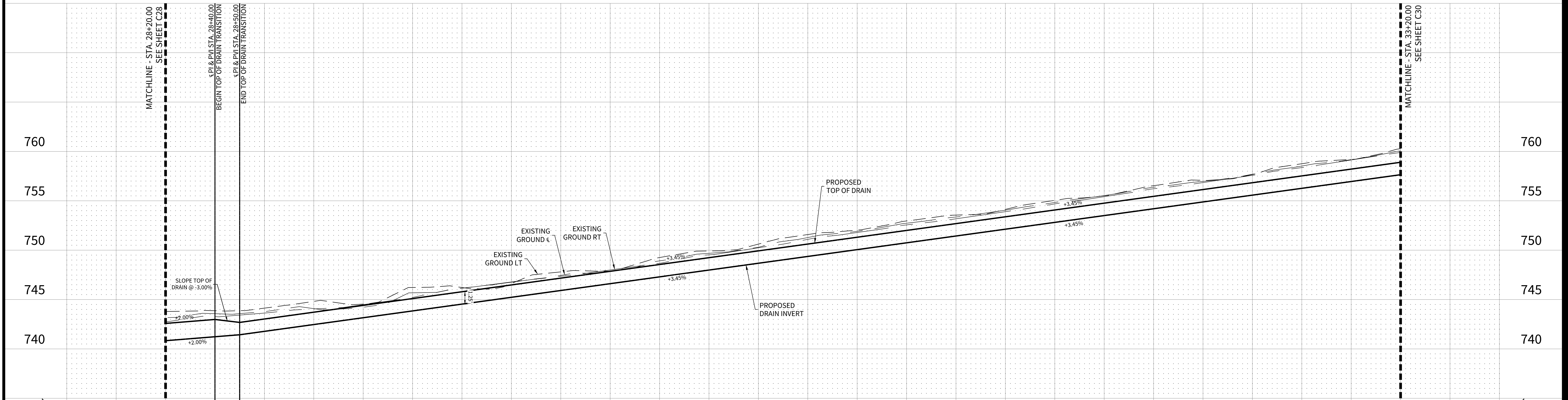
DRAIN 'A'

STA. 28+20.00 TO STA. 33+20.00

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



PROP. TOP OF DRAIN	PROP. DRAIN INVERT
742.58	740.83
742.98	741.23
742.68	741.43
743.02	741.77
743.71	742.46
744.40	743.15
745.09	743.84
745.78	744.53
746.47	745.22
747.16	745.91
747.85	746.60
748.54	747.29
749.23	747.98
749.92	748.67
750.61	749.36
751.30	750.05
751.99	750.74
752.68	751.43
753.37	752.12
754.06	752.81
754.75	753.50
755.44	754.19
756.13	754.88
756.82	755.57
757.51	756.26
758.20	756.95

29+00 30+00 31+00 32+00 33+00

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LANTANA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'A'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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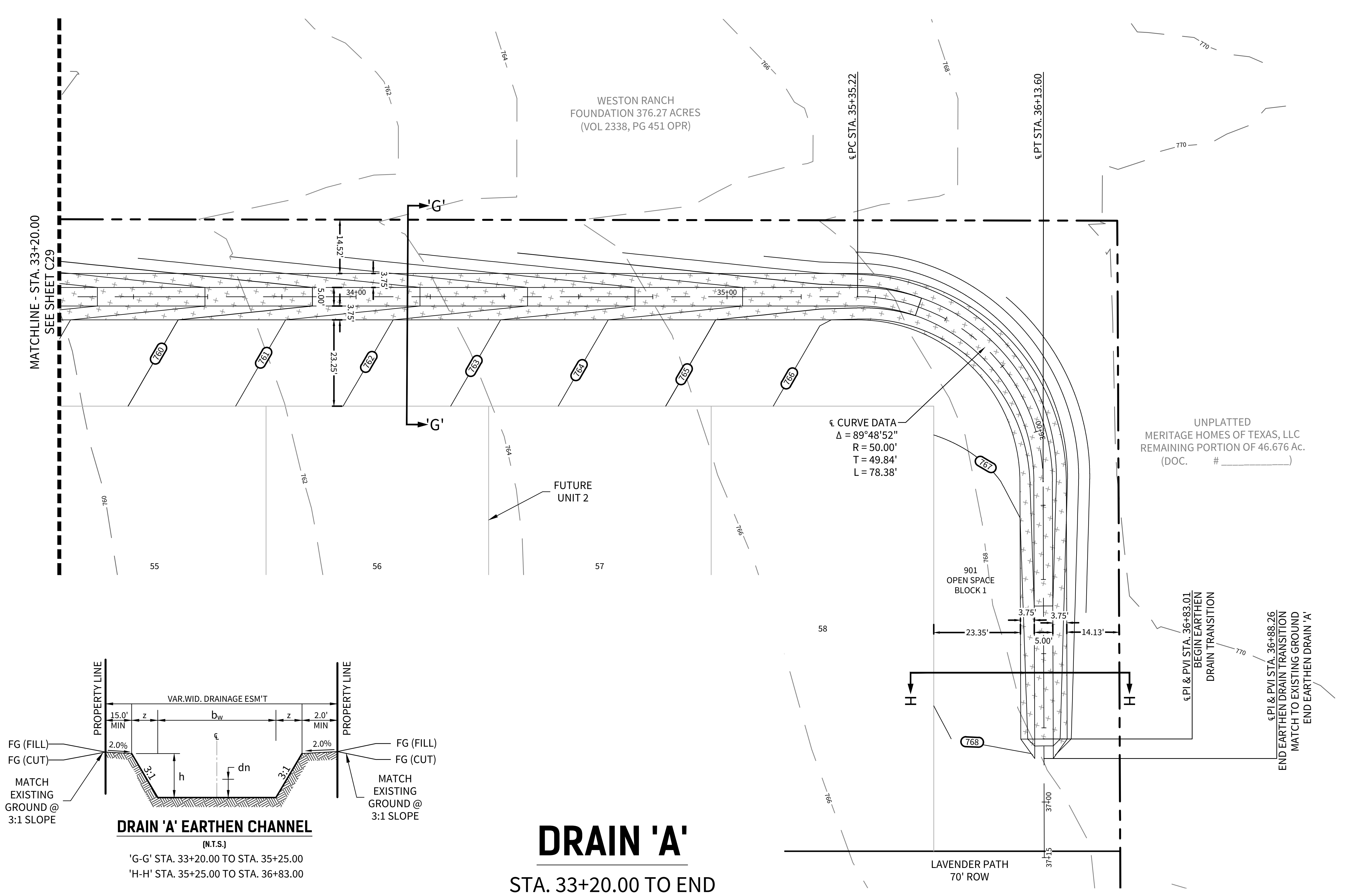
P:\04037\003\2-DWG\4-Plans\C29 DRAIN PLAN & PROFILE - DRAIN 'A'.dwg 2025/05/12 1:45pm tduano



	'G-G'	'H-H'
Q_{25} (cfs)	14.54	14.54
b_w (ft)	5.00'	5.00'
z (ft)	3.00'	3.00'
n	0.035	0.035
h (ft)	1.25'	1.25'
S (%)	3.45%	1.05%
d_n (ft)	0.51'	0.71'
V (fps)	4.34	2.87

DRAIN 'A' EARTHEN CHANNEL

(N.T.S.)

'G-G' STA. 33+20.00 TO STA. 35+25.00
'H-H' STA. 35+25.00 TO STA. 36+83.00

DRAIN 'A'

STA. 33+20.00 TO END

SCALE: 1"=20'
20 10 0 20

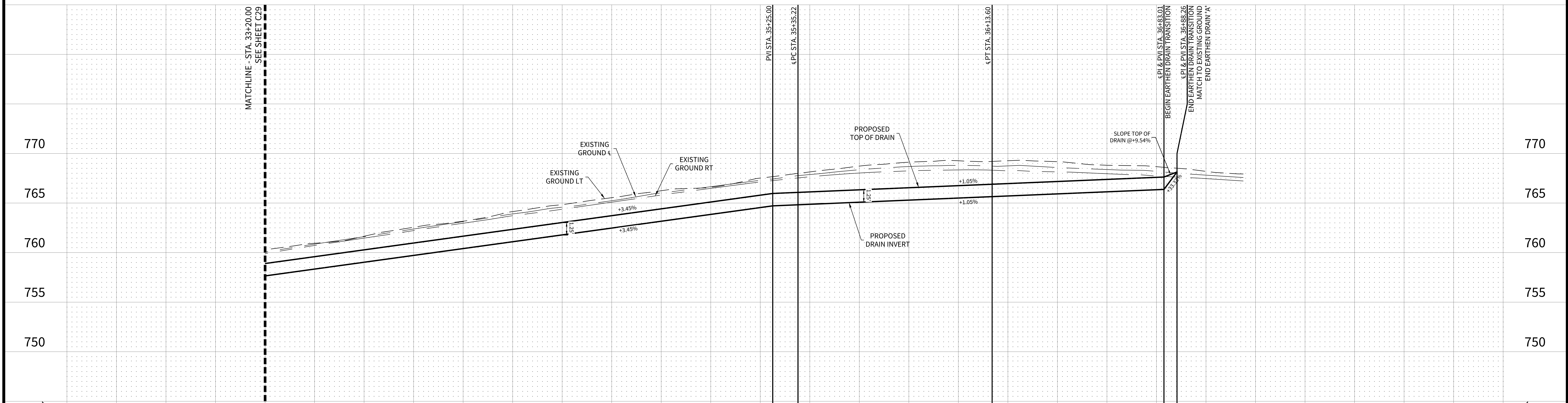
LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.C.A. EASEMENT	- - -
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	▨

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



PROP. TOP OF DRAIN	PROP. DRAIN INVERT
758.89	757.64
759.58	758.33
760.27	759.02
760.96	759.71
761.65	760.40
762.34	761.09
763.03	761.78
763.72	762.47
764.41	763.16
765.10	763.85
765.79	764.54
765.97	764.72
766.07	764.82
766.12	764.87
766.33	765.08
766.54	765.29
766.75	765.50
766.90	765.65
766.96	765.71
767.17	765.92
767.38	766.13
767.59	766.34
767.63	766.38
768.13	768.13

34+00 35+00 36+00 37+00

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LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'A'

DATE	05/12/2025
PROJECT NO.	04037.003
DRAWN BY	CG/JG/LJ/TCD
CHECKED BY	XV/AL

REVISIONS

DATE
1.
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7.
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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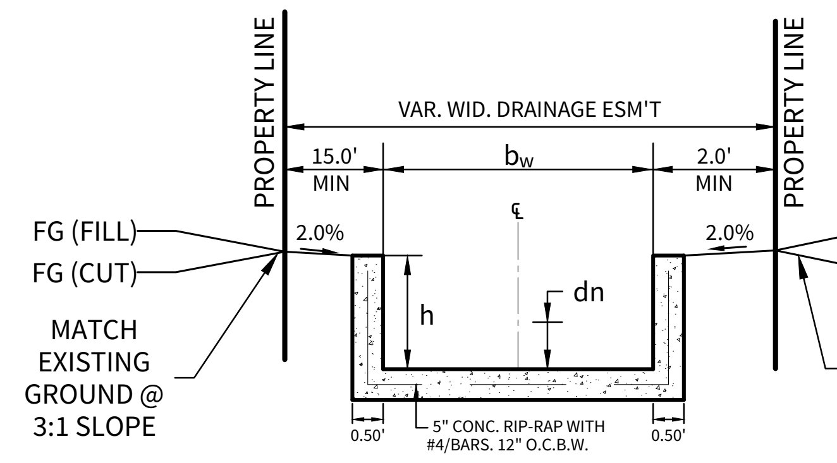
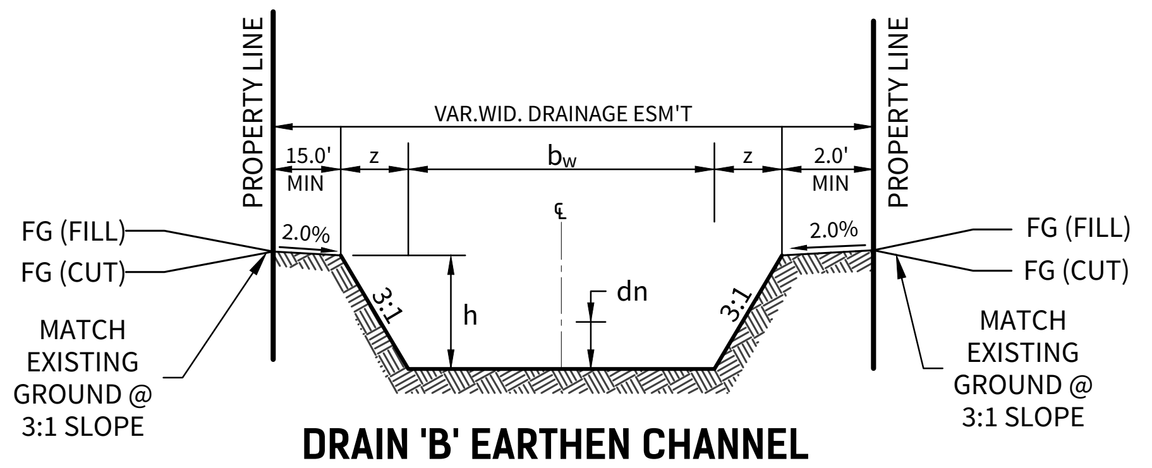
	'A-A'
Q_{25} (cfs)	288.55
b_w (ft)	14.00'
n	0.013
h (ft)	3.00'
S (%)	0.50%
d_n (ft)	1.94'
V (fps)	10.62



DRAIN 'B' CONCRETE CHANNEL

(N.T.S.)

'A-A' STA. 1+10.00 TO STA. 2+12.13

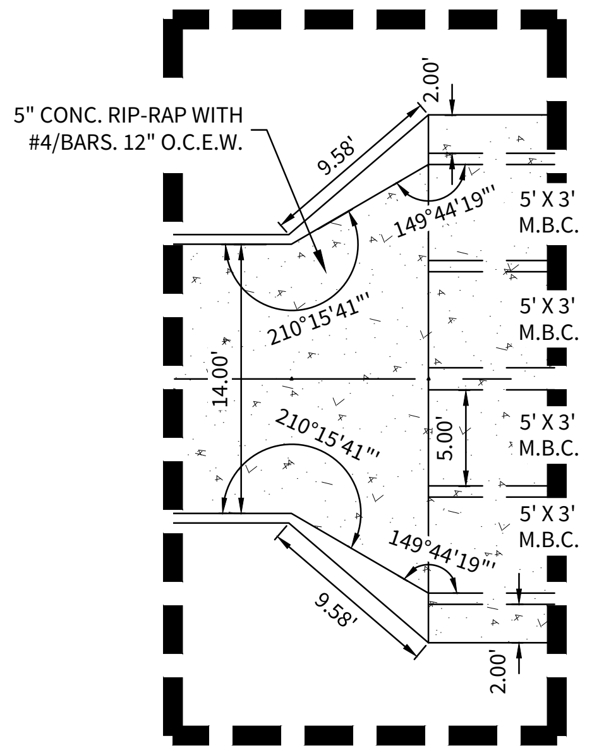


DRAIN 'B' EARTHEN CHANNEL

(N.T.S.)

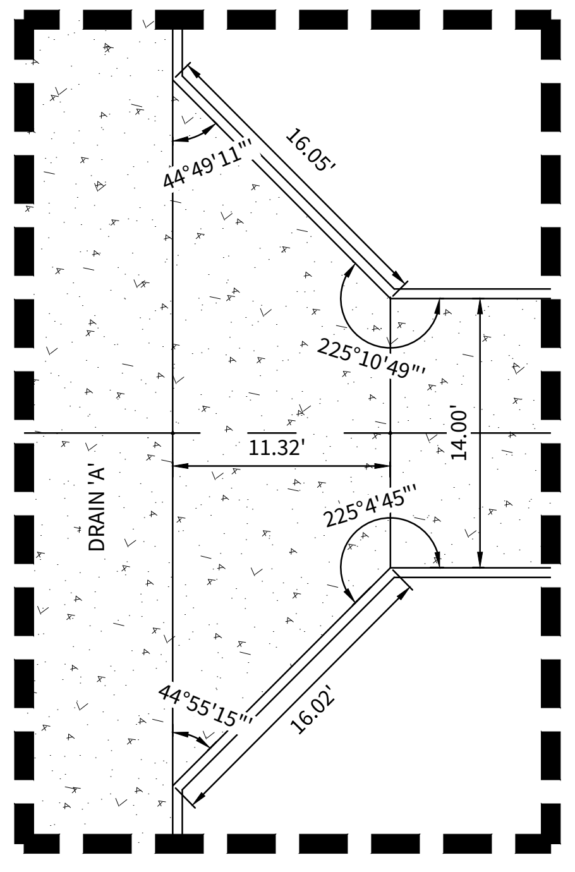
'B-B' STA. 3+20.25 TO STA. 5+80.00

	'B-B'
Q_{25} (cfs)	265.79
b_w (ft)	25.00'
z (ft)	3.00'
n	0.035
h (ft)	2.50'
S (%)	0.75%
d_n (ft)	1.80'
V (fps)	4.87



DETAIL A

SCALE: 1" = 10'



DETAIL B

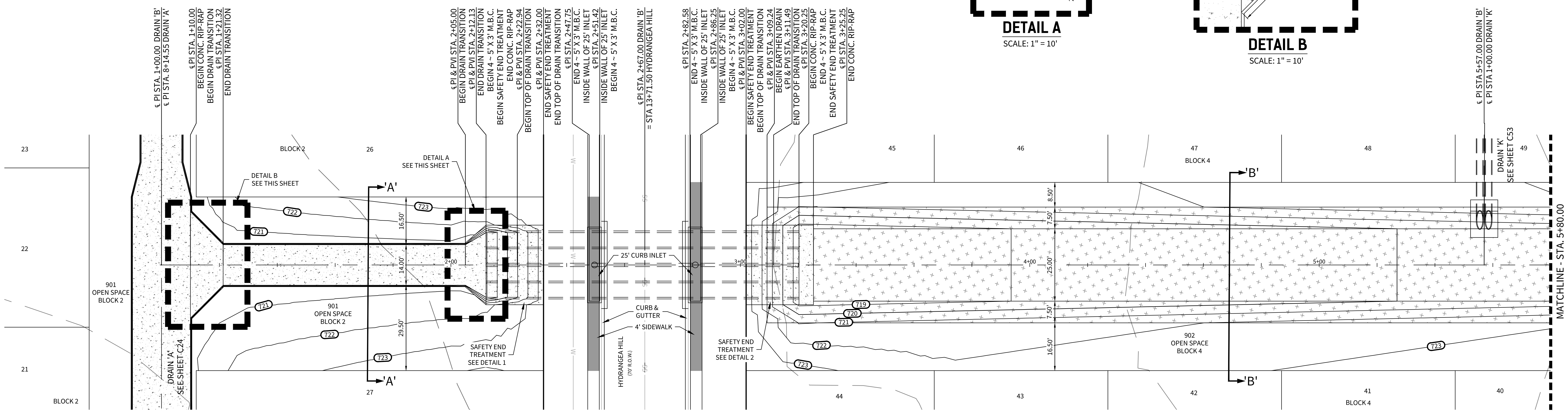
SCALE: 1" = 10'

SCALE: 1"=20'

20 10 0 20

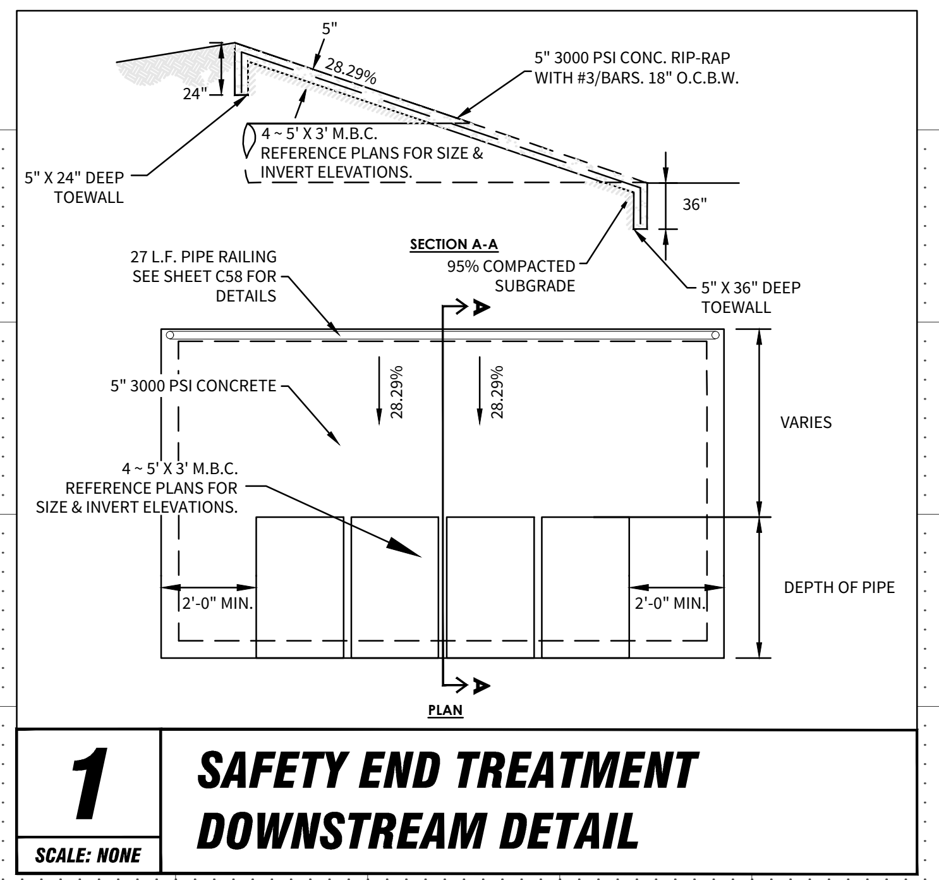
LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	──
PROPOSED RIGHT OF WAY	━━
E.G.T.CA. EASEMENT	- - - -
EXISTING 1' CONTOUR	— — 499 — —
EXISTING 5' CONTOUR	— — 500 — —
PROPOSED 1' CONTOUR	── 499 ──
PROPOSED 5' CONTOUR	━━ 500 ━━
CONCRETE DRAINAGE CHANNEL	▨
EARTHEN DRAINAGE CHANNEL	▨



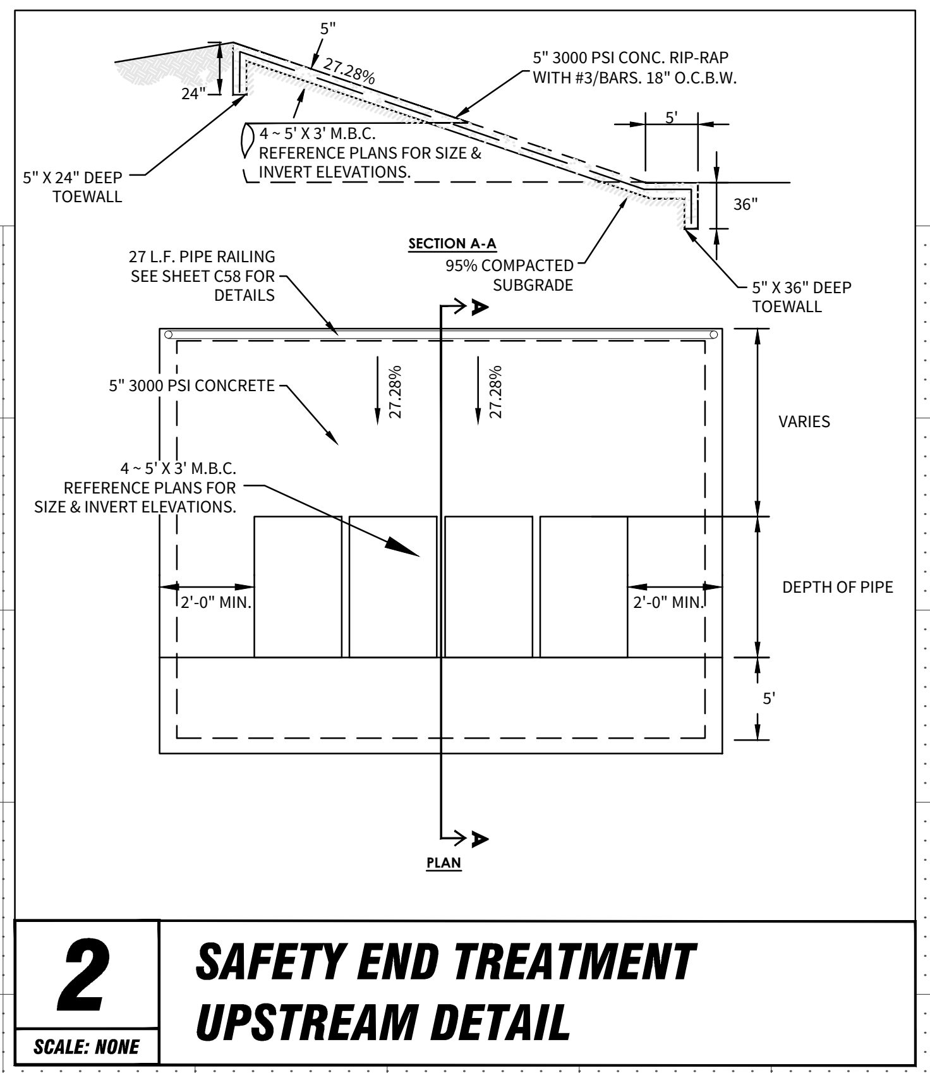
DRAIN 'B'

STA. 1+00.00 TO STA. 5+80.00


5"
28.29%
24"
5" X 24" DEEP TOEWALL
5" 3000 PSI CONC. RIP-RAP WITH #3/BARS, 18" O.C.B.W.
4 ~ 5' X 3' M.B.C. REFERENCE PLANS FOR SIZE & INVERT ELEVATIONS.
36"
5" X 36" DEEP TOEWALL
SECTION A-A
95% COMPACTED SUBGRADE
27 L.F. PIPE RAILING SEE SHEET C58 FOR DETAILS
5" 3000 PSI CONCRETE
28.29%
VARIES
4 ~ 5' X 3' M.B.C. REFERENCE PLANS FOR SIZE & INVERT ELEVATIONS.
DEPTH OF PIPE
2'-0" MIN.
PLAN

1 **SAFETY END TREATMENT DOWNSTREAM DETAIL**

SCALE: NONE


5"
27.28%
24"
5" X 24" DEEP TOEWALL
5" 3000 PSI CONC. RIP-RAP WITH #3/BARS, 18" O.C.B.W.
4 ~ 5' X 3' M.B.C. REFERENCE PLANS FOR SIZE & INVERT ELEVATIONS.
36"
5" X 36" DEEP TOEWALL
SECTION A-A
95% COMPACTED SUBGRADE
27 L.F. PIPE RAILING SEE SHEET C58 FOR DETAILS
5" 3000 PSI CONCRETE
27.28%
VARIES
4 ~ 5' X 3' M.B.C. REFERENCE PLANS FOR SIZE & INVERT ELEVATIONS.
DEPTH OF PIPE
2'-0" MIN.
5'
PLAN

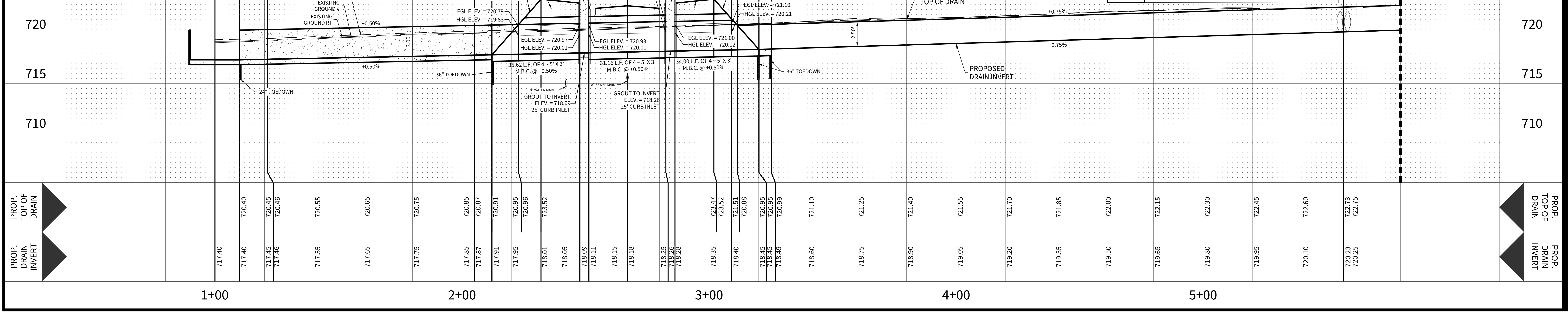
2 **SAFETY END TREATMENT UPSTREAM DETAIL**

SCALE: NONE

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



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LANTANA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'B'

DATE	05/12/2025
PROJECT NO.	04037.003
DRAWN BY	CG/JG/LJ/TCD
CHECKED BY	XV/AL

#	REVISIONS	DATE
1.		
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9.		

JAVIER CASTELLO
122170
5/12/2025

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TBPE No. 455
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P:\04037\003\2-DWG\4-Plans\C31 DRAIN PLAN & PROFILE - DRAIN 'B'.dwg 2025/05/12 1:45pm tduano

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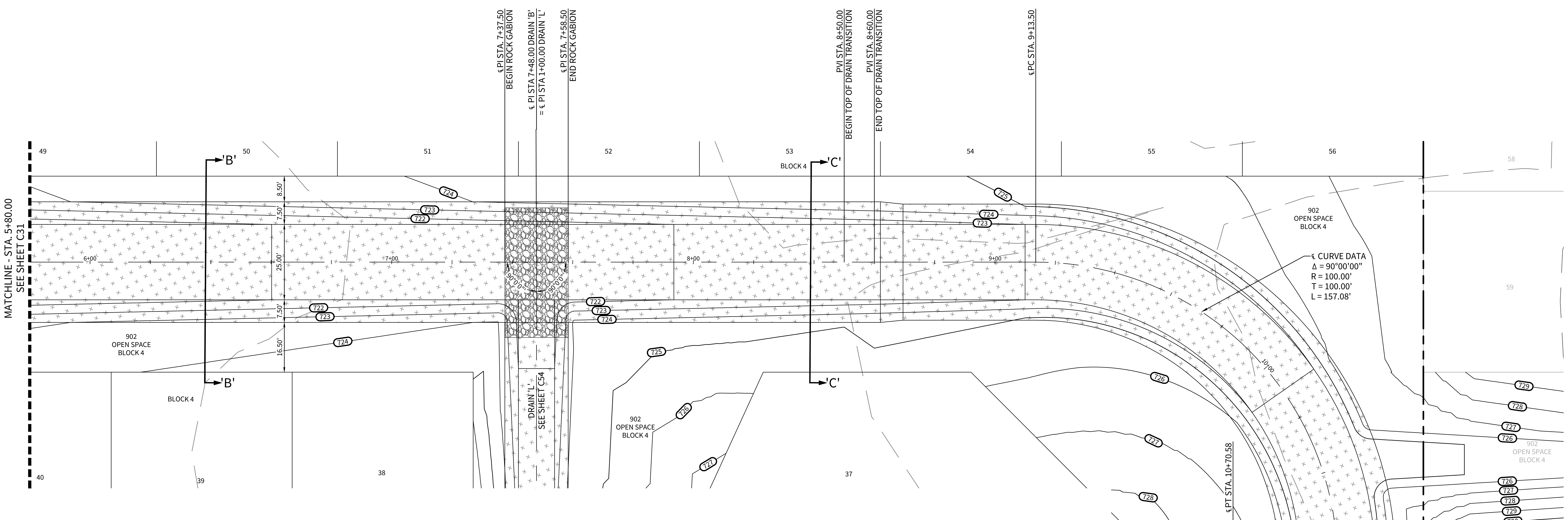
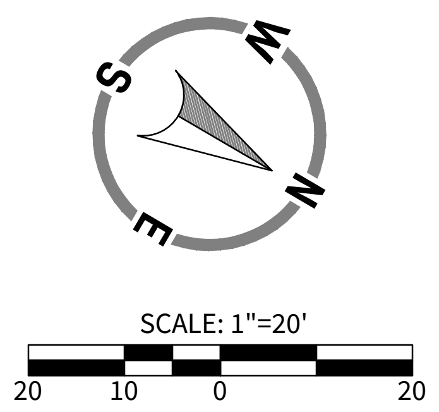


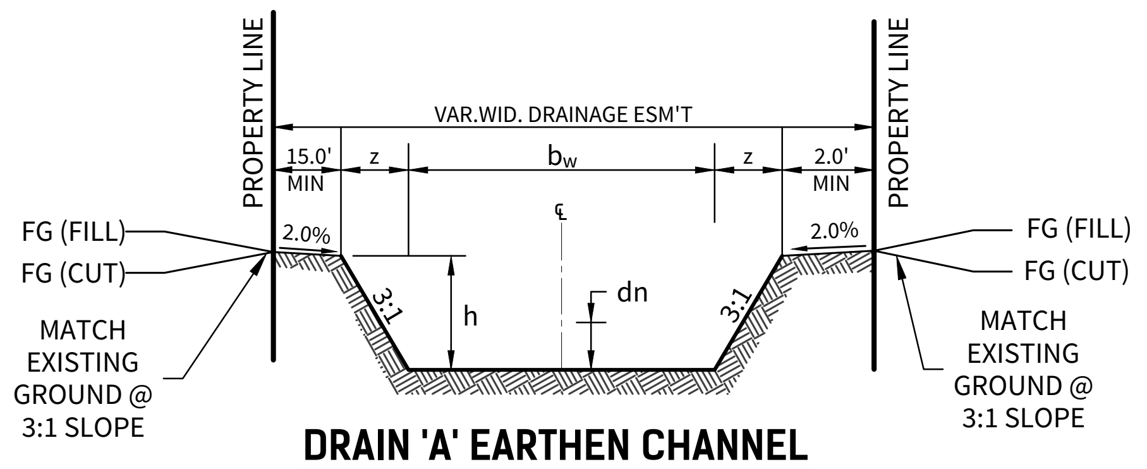
¢ PI STA. 7+37.50 BEGIN ROCK GABION
¢ PI STA 7+48.00 DRAIN 'B' = ¢ PI STA 1+00.00 DRAIN 'L'
¢ PI STA. 7+58.50 END ROCK GABION
PVI STA. 8+50.00 BEGIN TOP OF DRAIN TRANSITION
PVI STA. 8+60.00 END TOP OF DRAIN TRANSITION
¢ PC STA. 9+13.50
¢ PT STA. 10+70.58
MATCHLINE - STA. 5+80.00 SEE SHEET C31
MATCHLINE - STA. 11+20.00 SEE SHEET C33
'B'
'C'
'D'
BLOCK 4
902 OPEN SPACE BLOCK 4
DRAIN 'L' SEE SHEET C34
¢ CURVE DATA
Δ = 90°00'00"
R = 100.00'
T = 100.00'
L = 157.08'
8.50'
7.50'
25.00'
16.50'
53.00'
6.00'
25.00'
6.00'
10.00'
6+00
7+00
8+00
9+00
10+00



LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.C.A. EASEMENT	– – –
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	▨

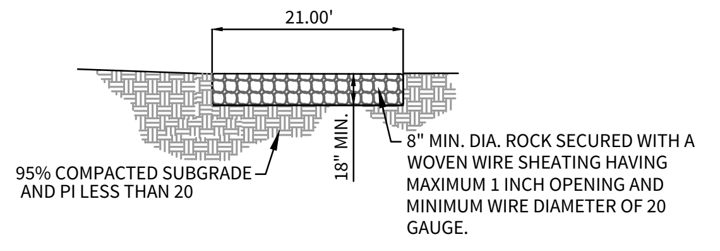
	'B-B'	'C-C'	'D-D'
Q_{25} (cfs)	265.79	209.08	186.20
b_w (ft)	25.00'	25.00'	25.00'
z (ft)	3.00'	3.00'	3.00'
n	0.035	0.035	0.035
h (ft)	2.50'	2.00'	2.00'
S (%)	0.75%	1.00%	1.00%
d_n (ft)	1.80'	1.42'	1.39'
V (fps)	4.87	5.03	4.58



DRAIN 'A' EARTHEN CHANNEL

(N.T.S.)

'B-B' STA. 5+80.00 TO STA. 8+50.00
'C-C' STA. 8+60.00 TO STA. 10+70.00
'D-D' STA. 10+70.00 TO STA. 11+20.00



21.00'
18" MIN.
95% COMPACTED SUBGRADE AND PI LESS THAN 20
8" MIN. DIA. ROCK SECURED WITH A WOVEN WIRE SHEATING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.

GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)

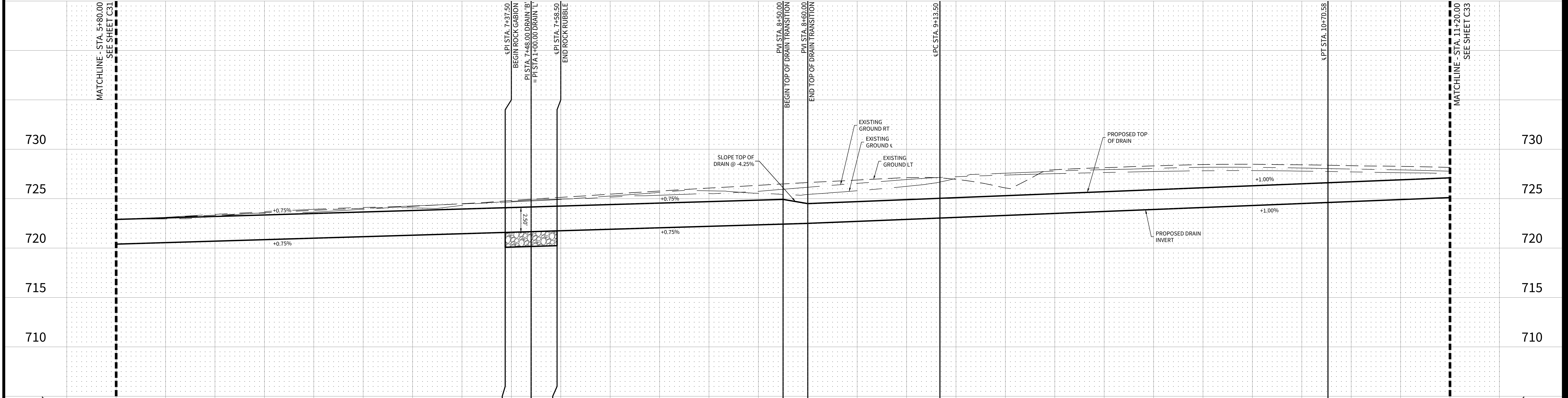
DRAIN 'B'

STA. 5+80.00 TO STA. 11+20.00

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



MATCHLINE - STA. 5+80.00 SEE SHEET C31
¢ PI STA 7+37.50 BEGIN ROCK GABION
PI STA. 7+48.00 DRAIN 'B' = ¢ PI STA 1+00.00 DRAIN 'L'
¢ PI STA. 7+58.50 END ROCK RUBBLE
PVI STA. 8+50.00 BEGIN TOP OF DRAIN TRANSITION
PVI STA. 8+60.00 END TOP OF DRAIN TRANSITION
¢ PC STA. 9+13.50
¢ PT STA. 10+70.58
MATCHLINE - STA. 11+20.00 SEE SHEET C33
EXISTING GROUND RT
EXISTING GROUND ¢
EXISTING GROUND LT
SLOPE TOP OF DRAIN @ -4.25%
PROPOSED TOP OF DRAIN
PROPOSED DRAIN INVERT
+0.75%
+0.75%
+0.75%
+0.75%
+1.00%
+1.00%
2.50'
730
725
720
715
710

	6+00				7+00									8+00							9+00					10+00						11+00
PROP. TOP OF DRAIN	722.90	723.05	723.20	723.35	723.50	723.65	723.80	723.95	724.08	724.10	724.16	724.24	724.25	724.40	724.55	724.70	724.85	724.92	724.50	724.70	724.90	725.04	725.10	725.30	725.50	725.70	725.90	726.11	726.31	726.51	726.61	726.71	726.91
PROP. DRAIN INVERT	720.40	720.55	720.70	720.85	721.00	721.15	721.30	721.45	721.58	721.60	721.66	721.74	721.75	721.90	722.05	722.20	722.35	722.42	722.50	722.70	722.90	723.04	723.10	723.30	723.50	723.70	723.90	724.11	724.31	724.51	724.61	724.71	724.91

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LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'B'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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JAVIER CASTELLO
122170
5/12/2025

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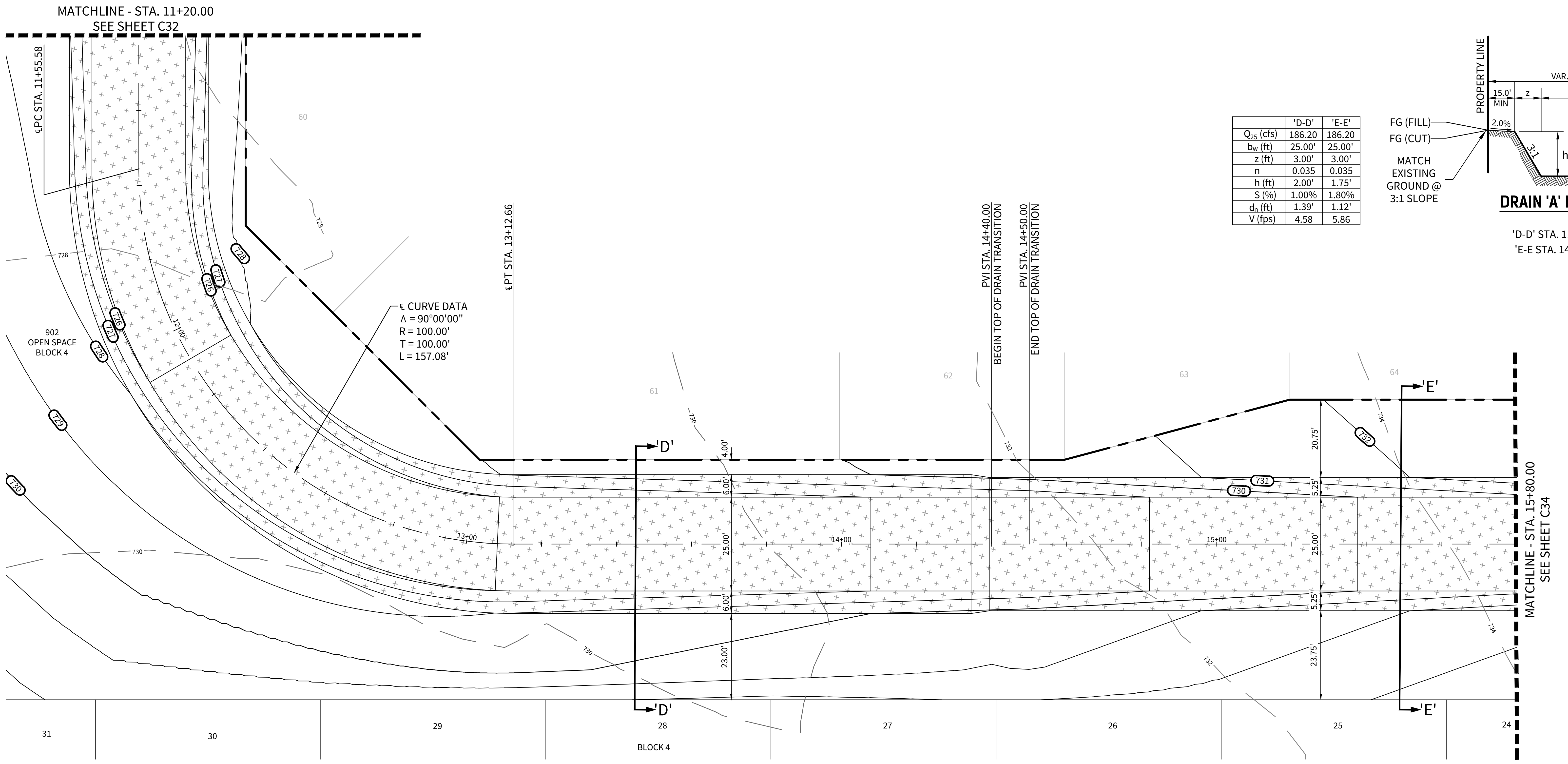
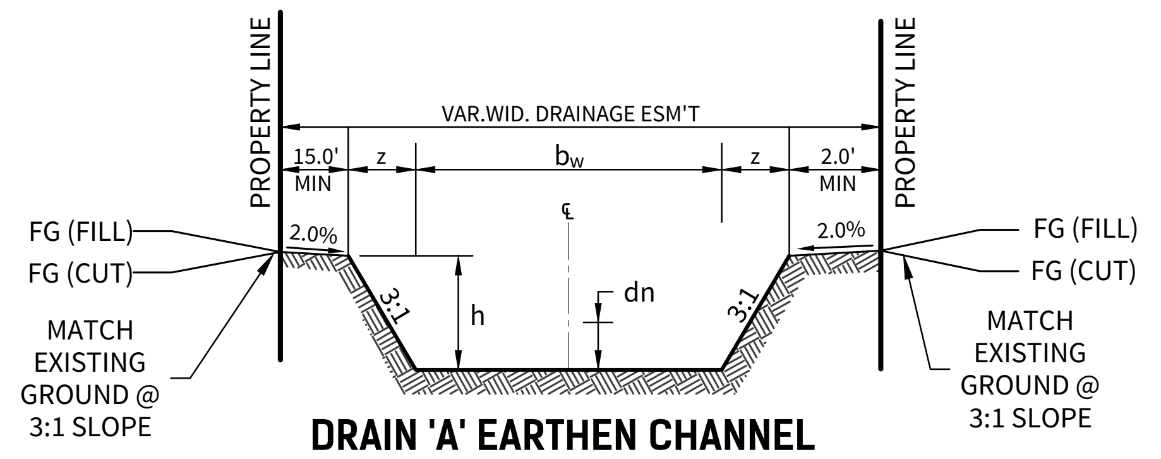


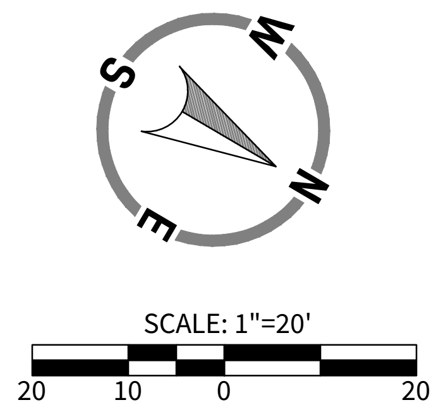
	'D-D'	'E-E'
Q_{25} (cfs)	186.20	186.20
b_w (ft)	25.00'	25.00'
z (ft)	3.00'	3.00'
n	0.035	0.035
h (ft)	2.00'	1.75'
S (%)	1.00%	1.80%
d_n (ft)	1.39'	1.12'
V (fps)	4.58	5.86



DRAIN 'A' EARTHEN CHANNEL

(N.T.S.)

'D-D' STA. 11+20.00 TO STA. 14+40.00
'E-E STA. 14+50.00 TO STA. 15+80.00



LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	- - - -
EXISTING 1' CONTOUR	- - 499 - -
EXISTING 5' CONTOUR	- - 500 - -
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	▨

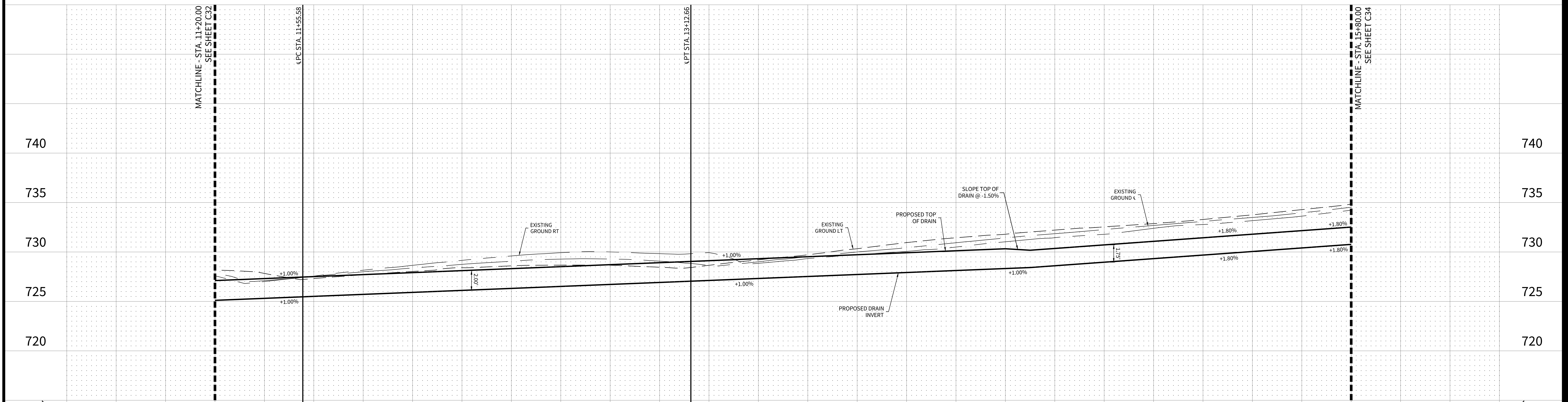
NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

DRAIN 'B'

STA. 11+20.00 TO STA. 15+80.00

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



PROP. TOP OF DRAIN	727.11	727.31	727.47	727.51	727.71	727.91	728.11	728.31	728.52	728.72	728.92	729.04	729.12	729.32	729.52	729.72	729.92	730.12	730.32	730.35	730.71	731.07	731.43	731.79	732.15
PROP. DRAIN INVERT	725.11	725.31	725.47	725.51	725.71	725.91	726.11	726.31	726.52	726.72	726.92	727.04	727.12	727.32	727.52	727.72	727.92	728.12	728.32	728.60	728.96	729.32	729.68	730.04	730.40

12+00 13+00 14+00 15+00

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4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'B'

DATE
05/12/2025
PROJECT NO.
04037.003
DRAWN BY
CG/JG/LJ/TCD
CHECKED BY
XV/AL

#	DATE	REVISIONS
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C33

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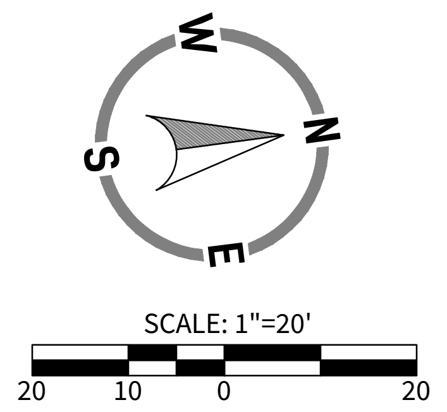
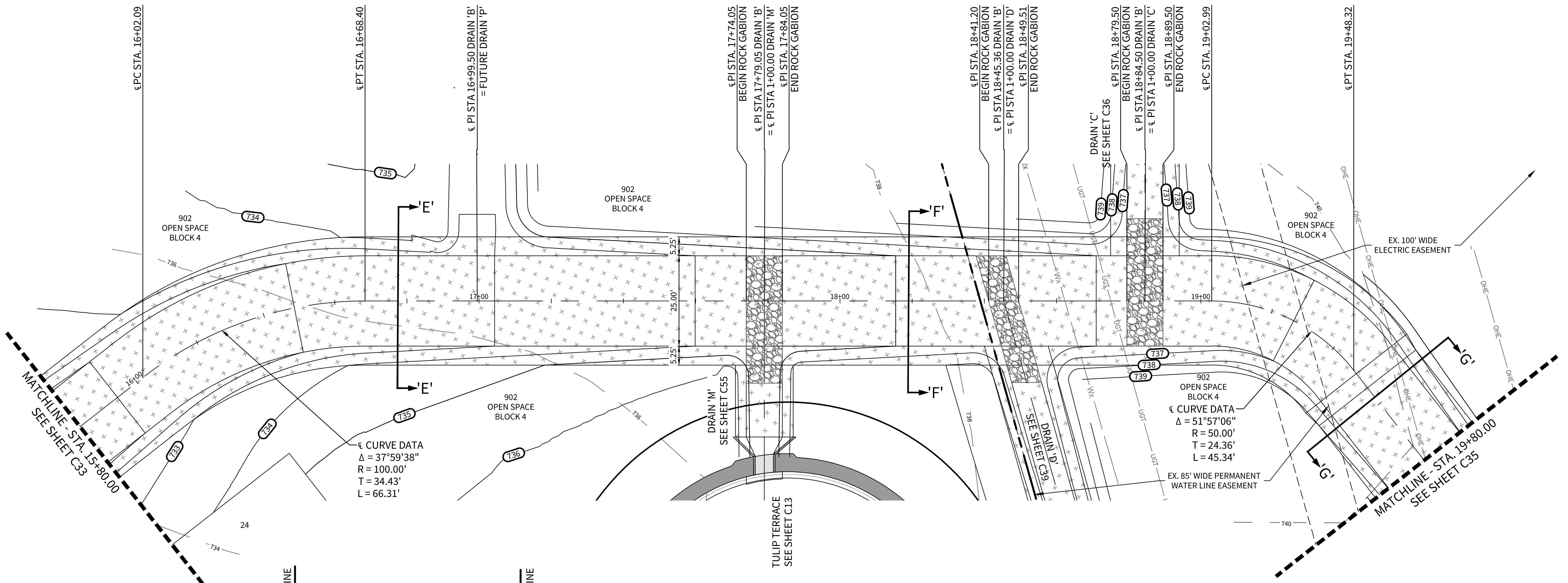
P:\04037\003\2-DWG\4-Plans\C33 DRAIN PLAN & PROFILE - DRAIN 'B'.dwg 2025/05/12 1:46pm tduano

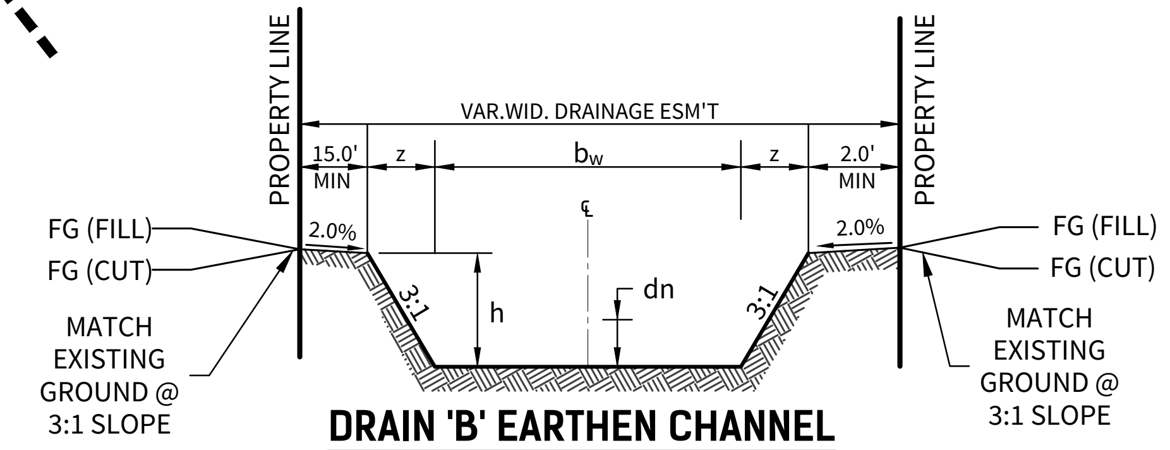




LEGEND

PROPERTY BOUNDARY	
PROPOSED LOT LINE	
PROPOSED RIGHT OF WAY	
E.G.T.C.A. EASEMENT	
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	

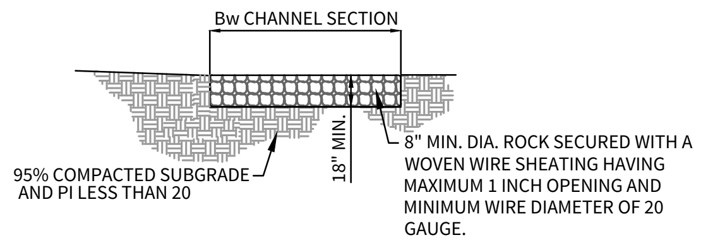
	'E-E'	'F-F'	'G-G'
Q_{25} (cfs)	186.20	147.25	67.80
b_w (ft)	25.00'	25.00'	25.00'
z (ft)	3.00'	3.00'	3.00'
n	0.035	0.035	0.035
h (ft)	1.75'	1.75'	1.75'
S (%)	1.80%	1.80%	1.80%
d_n (ft)	1.12'	0.96'	0.85'
V (fps)	5.86	5.49	2.88



DRAIN 'B' EARTHEN CHANNEL

(N.T.S.)

'E-E' STA. 15+80.00 TO STA. 18+20.00
'F-F' STA. 18+20.00 TO STA. 19+50.00
'G-G' STA. 19+55.00 TO STA. 19+80.00



Bw CHANNEL SECTION
95% COMPACTED SUBGRADE
AND PI LESS THAN 20
18" MIN.
8" MIN. DIA. ROCK SECURED WITH A
WOVEN WIRE SHEATING HAVING
MAXIMUM 1 INCH OPENING AND
MINIMUM WIRE DIAMETER OF 20
GAUGE.

GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)

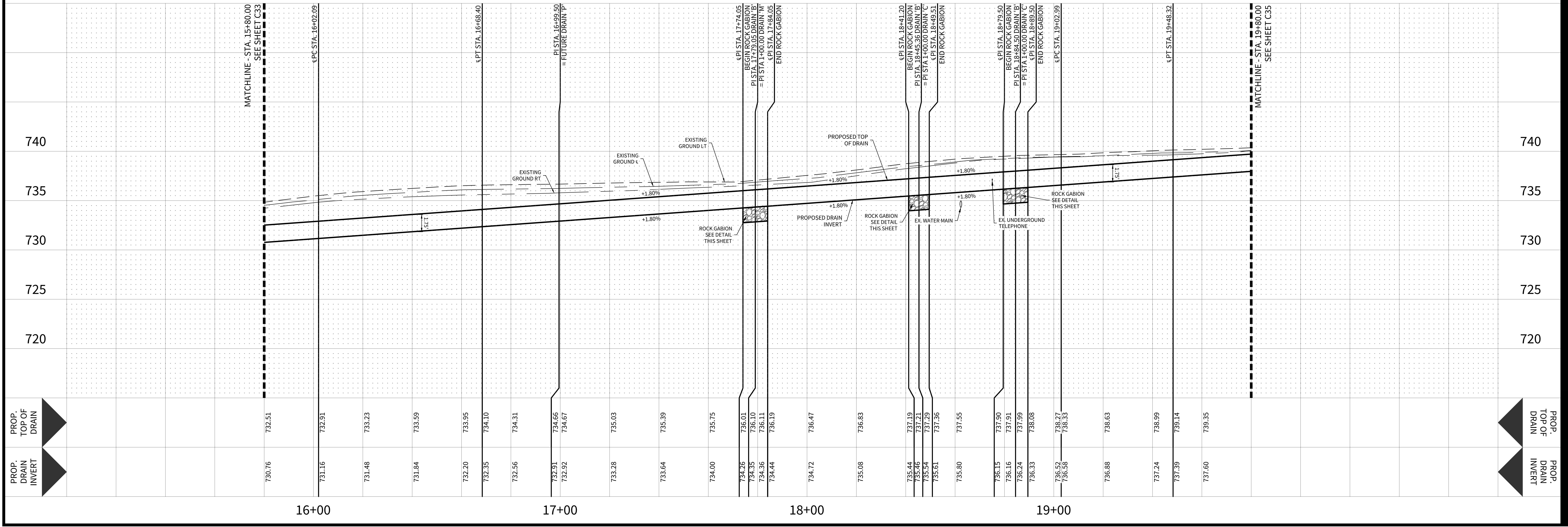
DRAIN 'B'

STA. 15+80.00 TO STA. 19+80.00

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



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LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'B'

DATE	05/12/2025
PROJECT NO.	04037.003
DRAWN BY	CG/JG/LJ/TCD
CHECKED BY	XV/AL

#	DATE	REVISIONS
1.		
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9.		

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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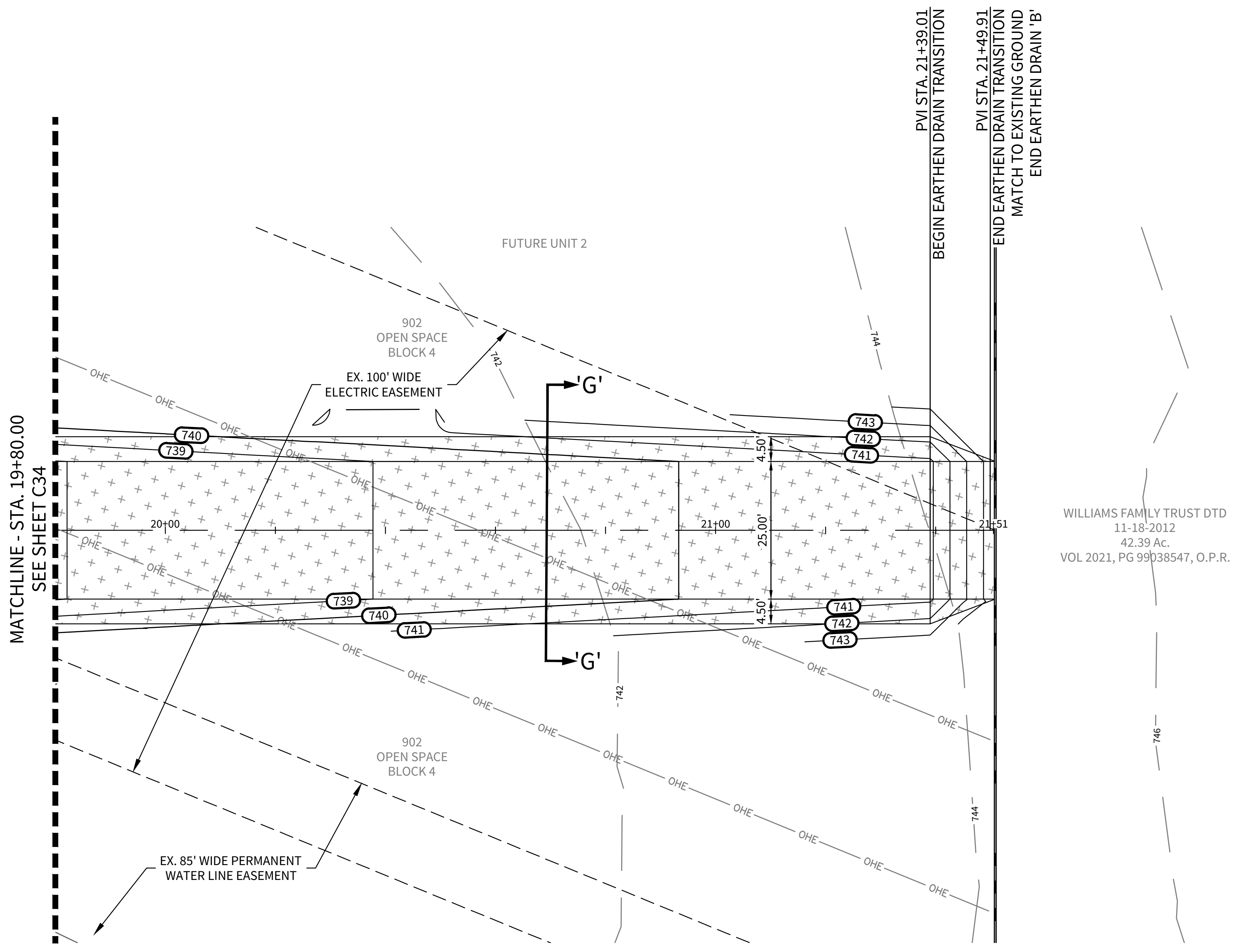
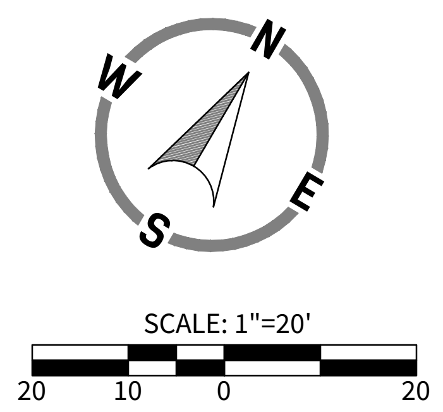
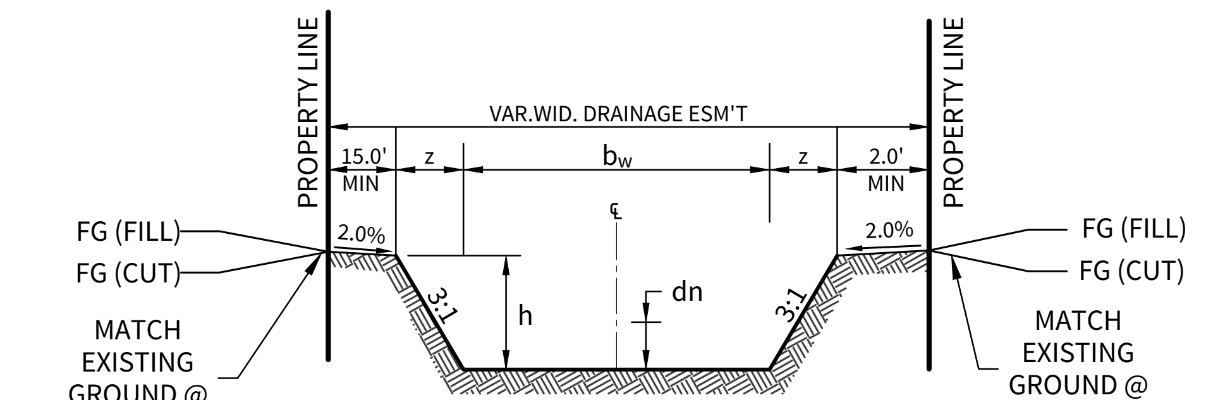




LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	- - - -
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	▨

	'G-G'
Q_{25} (cfs)	67.80
b_w (ft)	25.00'
z (ft)	3.00'
n	0.035
h (ft)	1.75'
S (%)	1.80%
d_n (ft)	0.85'
V (fps)	2.88



DRAIN 'B' EARTHEN CHANNEL

(N.T.S.)

'G-G' STA. 19+80.00 TO STA. 21+39.51

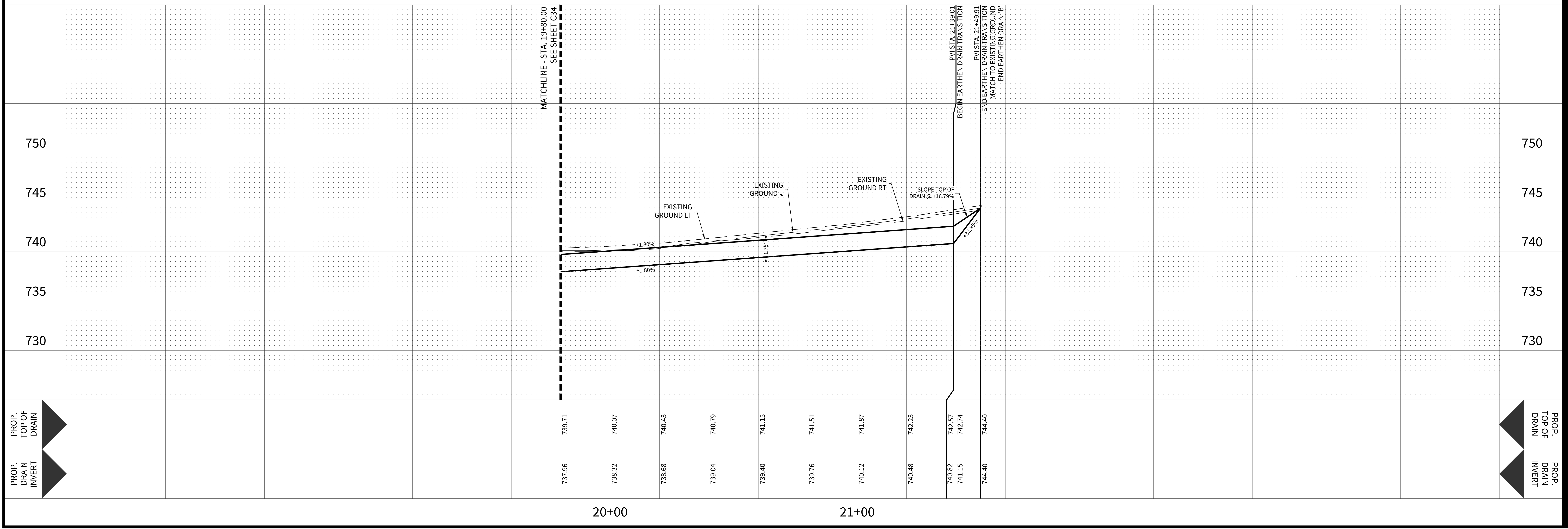
DRAIN 'B'

STA. 19+80.00 TO END

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



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P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'B'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
1.		
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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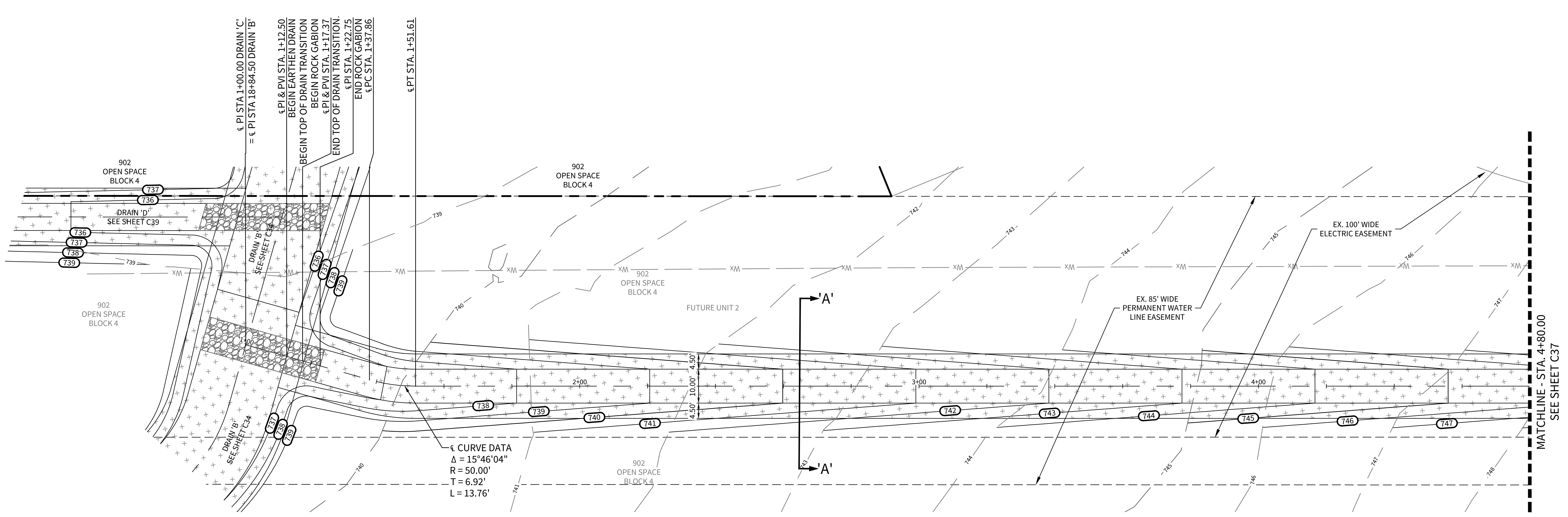
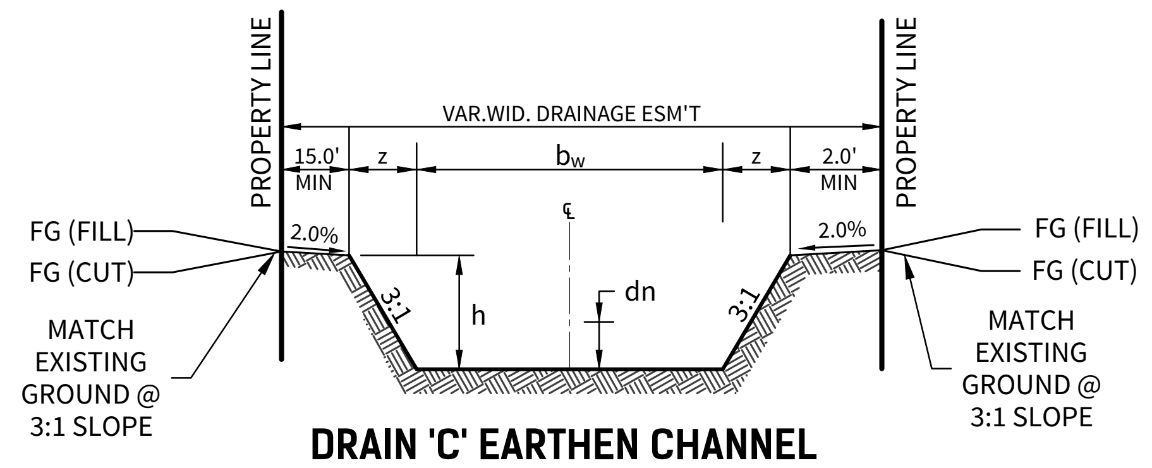
P:\04037\003\2-DWG\4-Plans\C35 DRAIN PLAN & PROFILE - DRAIN 'B'.dwg 2025/05/12 1:46pm tduano



LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	- - -
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	▨

	'A-A'
Q_{25} (cfs)	61.36
b_w (ft)	10.00'
z (ft)	3.00'
n	0.035
h (ft)	1.50'
S (%)	2.55%
d_n (ft)	0.89'
V (fps)	5.46



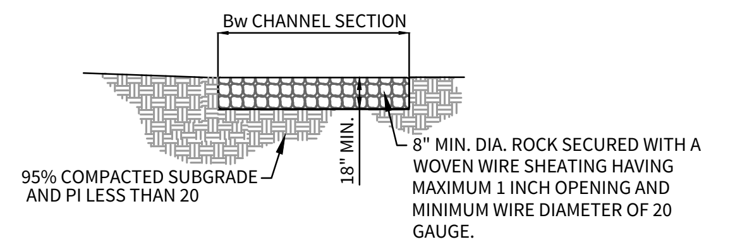
DRAIN 'C' EARTHEN CHANNEL

(N.T.S.)

'A-A' STA. 1+17.37 TO STA. 4+30.00

DRAIN 'C'

STA. 1+00.00 TO STA. 4+80.00


Bw CHANNEL SECTION
18" MIN.
95% COMPACTED SUBGRADE AND PI LESS THAN 20
8" MIN. DIA. ROCK SECURED WITH A WOVEN WIRE SHEATING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.

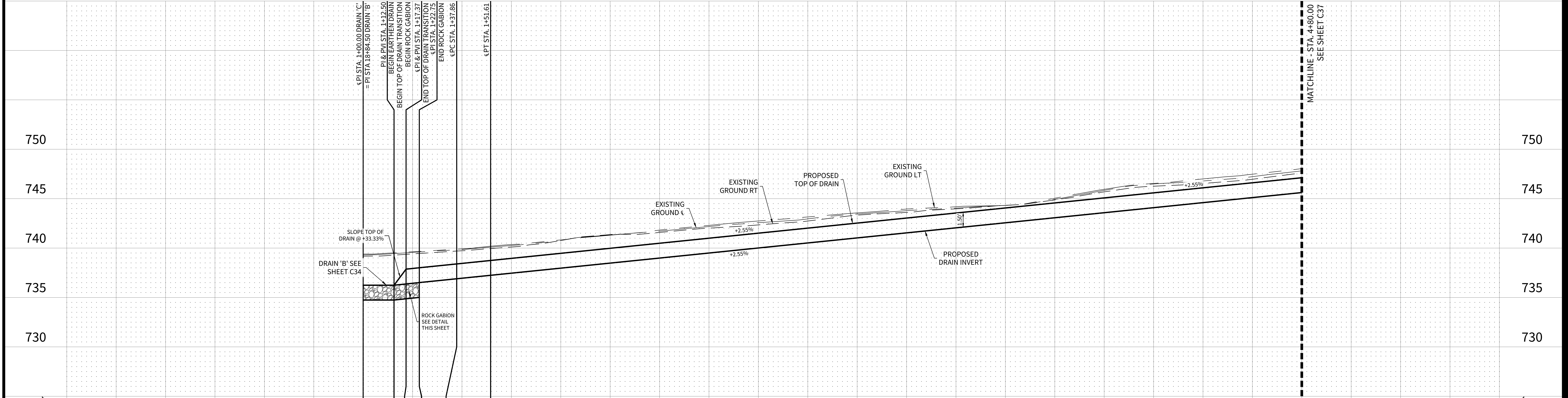
GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



PROP. TOP OF DRAIN	PROP. DRAIN INVERT
	736.24
736.24	736.24
737.87	736.37
737.93	736.43
738.00	736.50
738.39	736.89
738.44	736.94
738.74	737.24
738.95	737.45
739.46	737.96
739.97	738.47
740.48	738.98
740.99	739.49
741.50	740.00
742.01	740.51
742.52	741.02
743.03	741.53
743.54	742.04
744.05	742.55
744.56	743.06
745.07	743.57
745.58	744.08
746.09	744.59
746.60	745.10

1+00 2+00 3+00 4+00

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LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'C'

DATE	05/12/2025
PROJECT NO.	04037.003
DRAWN BY	CG/JG/LJ/TCD
CHECKED BY	XV/AL

REVISIONS

DATE

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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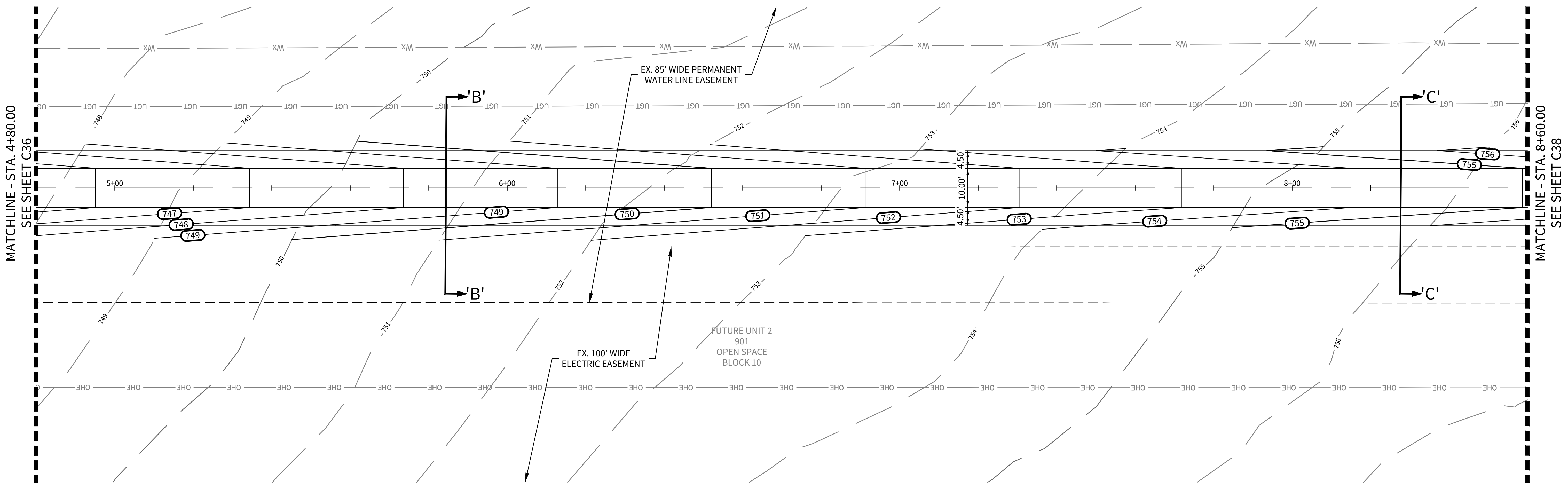
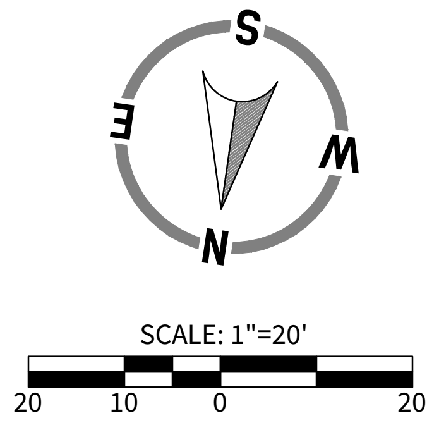
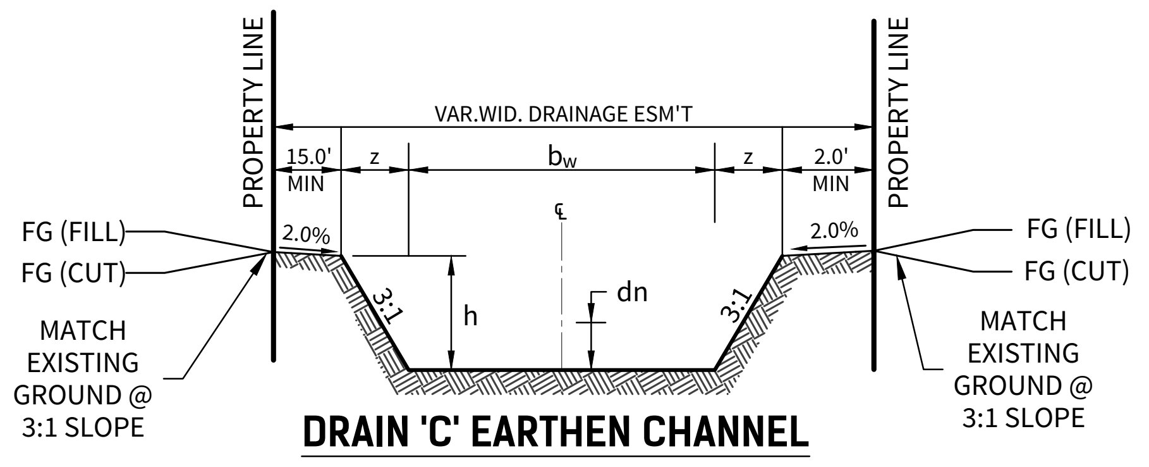




LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.CA. EASEMENT	— — —
EXISTING 1' CONTOUR	— — 499 — —
EXISTING 5' CONTOUR	— — 500 — —
PROPOSED 1' CONTOUR	—(499)—
PROPOSED 5' CONTOUR	—(500)—
EARTHEN DRAINAGE CHANNEL	▨

	'B-B'	'C-C'
Q_{25} (cfs)	45.51	45.51
b_w (ft)	10.00'	10.00'
z (ft)	3.00'	3.00'
n	0.035	0.035
h (ft)	1.50'	1.50'
S (%)	2.50%	2.35%
d_n (ft)	0.75'	0.77'
V (fps)	4.92	4.82



DRAIN 'C' EARTHEN CHANNEL

(N.T.S.)

'B-B' STA. 5+34.59 TO STA. 7+50.00
'C-C' STA. 7+50.00 TO STA. 8+60.00

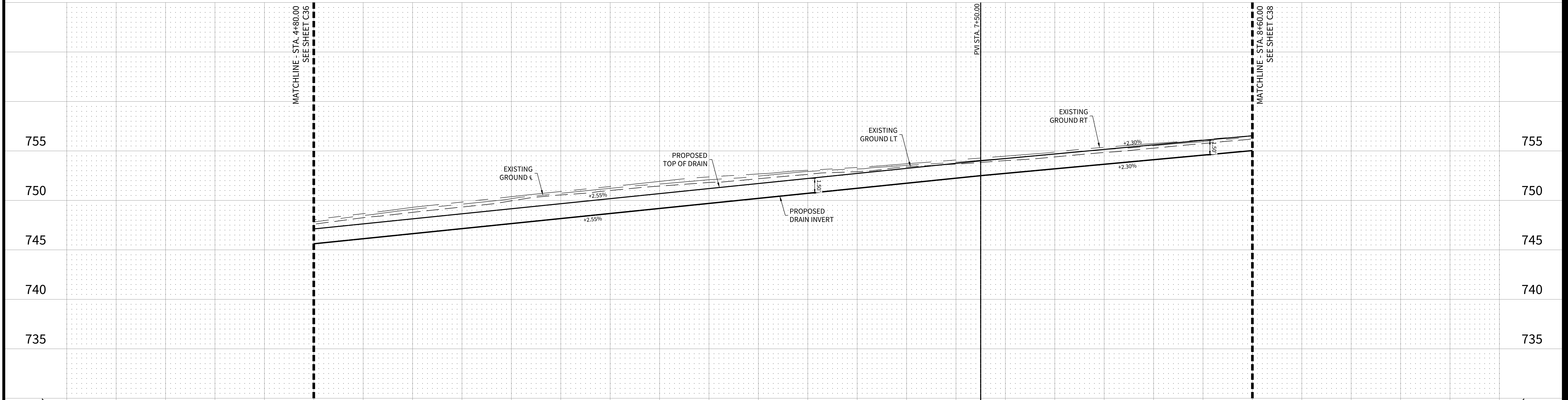
NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

DRAIN 'C'

STA. 4+80.00 TO STA. 8+60.00

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



PROP. TOP OF DRAIN	747.11	747.62	748.13	748.64	749.15	749.66	750.17	750.68	751.19	751.70	752.21	752.72	753.23	753.74	754.00	754.23	754.69	755.15	755.61	756.07
PROP. DRAIN INVERT	745.61	746.12	746.63	747.14	747.65	748.16	748.67	749.18	749.69	750.20	750.71	751.22	751.73	752.24	752.50	752.73	753.19	753.65	754.11	754.57

5+00 6+00 7+00 8+00

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LANTANA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'C'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

△	DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
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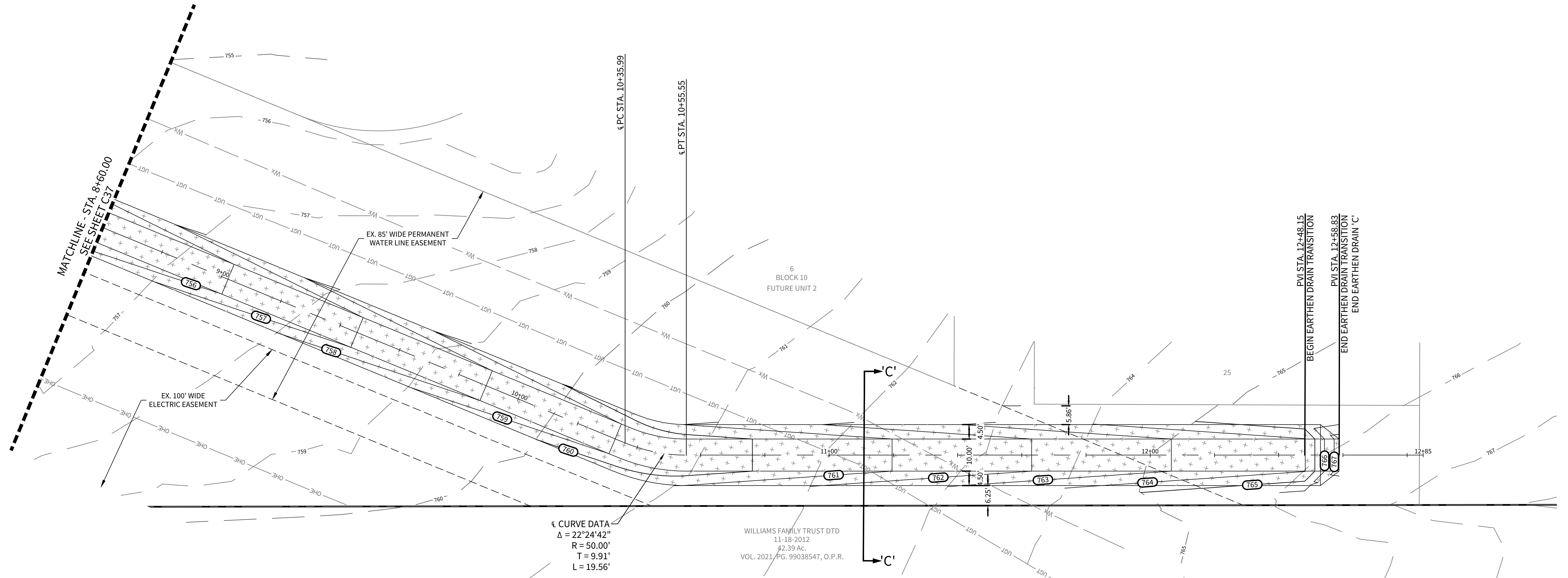


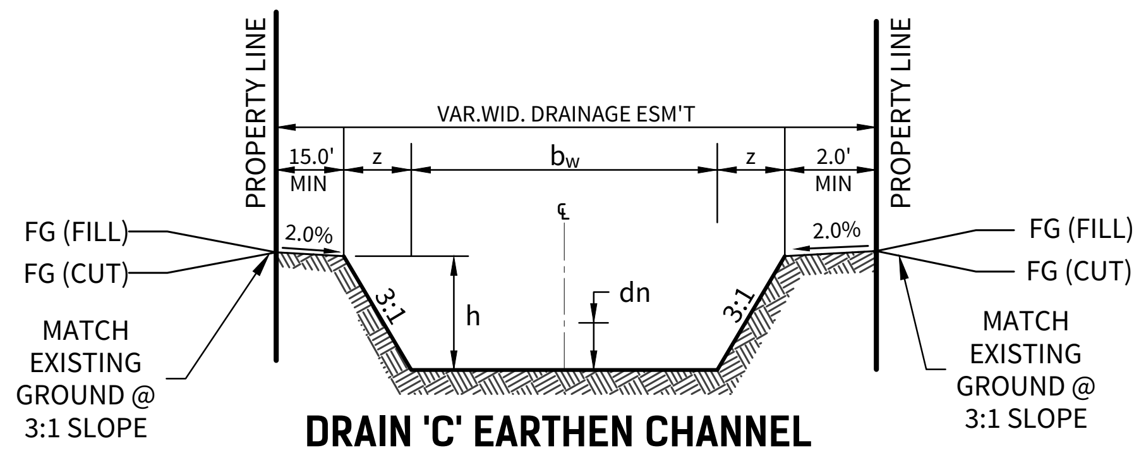
SCALE: 1"=20'

20 10 0 20

LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.C.A. EASEMENT	– – –
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	▨

	'C-C'
Q_{25} (cfs)	61.36
b_w (ft)	10.00'
z (ft)	3.00'
n	0.035
h (ft)	1.50'
S (%)	2.30%
d_n (ft)	0.91'
V (fps)	5.27



DRAIN 'C' EARTHEN CHANNEL

(N.T.S.)

'C-C' STA. 8+60.00 TO STA. 12+48.15

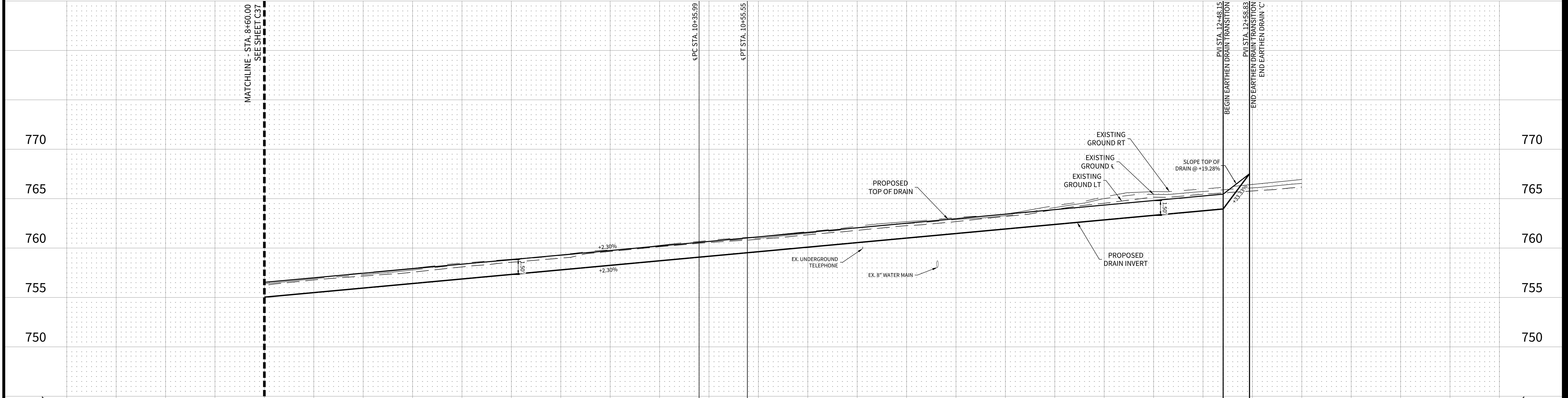
DRAIN 'C'

STA. 8+60.00 TO END

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



PROP. TOP OF DRAIN	756.53	756.99	757.45	757.91	758.37	758.83	759.29	759.75	760.21	760.58	760.67	761.03	761.13	761.59	762.05	762.51	762.97	763.43	763.89	764.35	764.81	765.27	765.46	767.52
PROP. DRAIN INVERT	755.03	755.49	755.95	756.41	756.87	757.33	757.79	758.25	758.71	759.08	759.17	759.53	759.63	760.09	760.55	761.01	761.47	761.93	762.39	762.85	763.31	763.77	763.96	767.52

9+00 10+00 11+00 12+00

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San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'C'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

	DATE
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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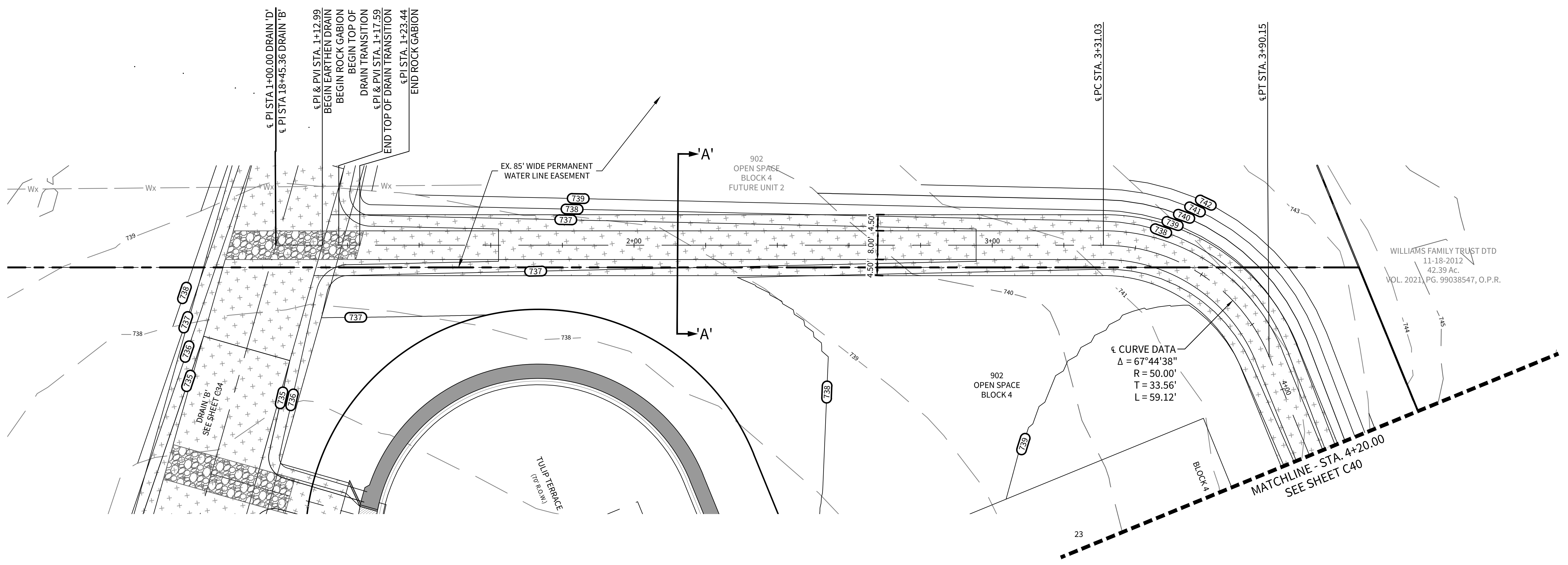
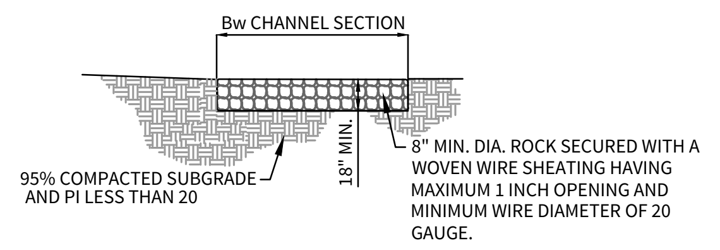


SCALE: 1"=20'

LEGEND

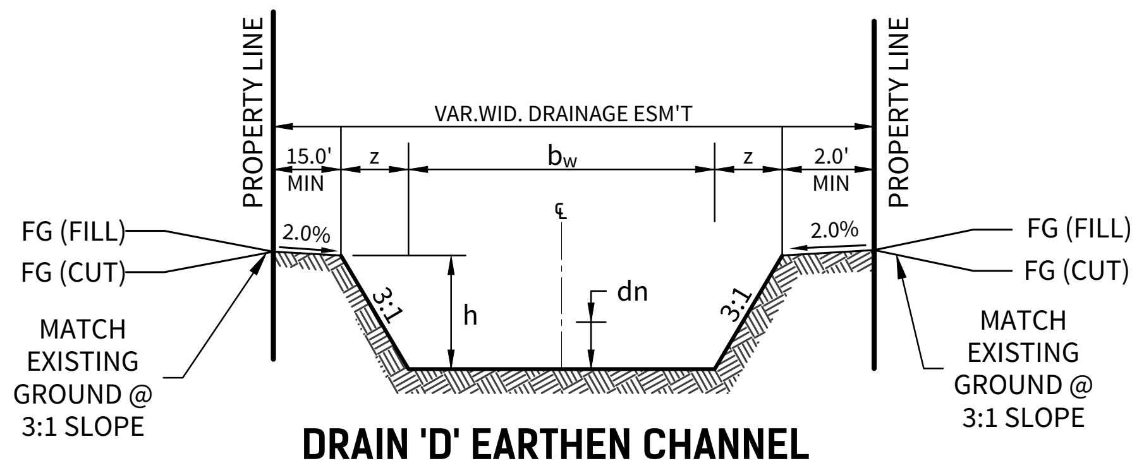
PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.C.A. EASEMENT	- - -
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	▨


Bw CHANNEL SECTION
95% COMPACTED SUBGRADE
AND PI LESS THAN 20
18" MIN.
8" MIN. DIA. ROCK SECURED WITH A
WOVEN WIRE SHEATING HAVING
MAXIMUM 1 INCH OPENING AND
MINIMUM WIRE DIAMETER OF 20
GAUGE.

GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)

	'A-A'
Q_{25} (cfs)	27.88
b_w (ft)	8.00'
z (ft)	3.00'
n	0.035
h (ft)	1.50'
S (%)	0.75%
d_n (ft)	0.90'
V (fps)	2.91



DRAIN 'D' EARTHEN CHANNEL

(N.T.S.)

'A-A' STA. 1+13.00 TO STA. 4+20.00

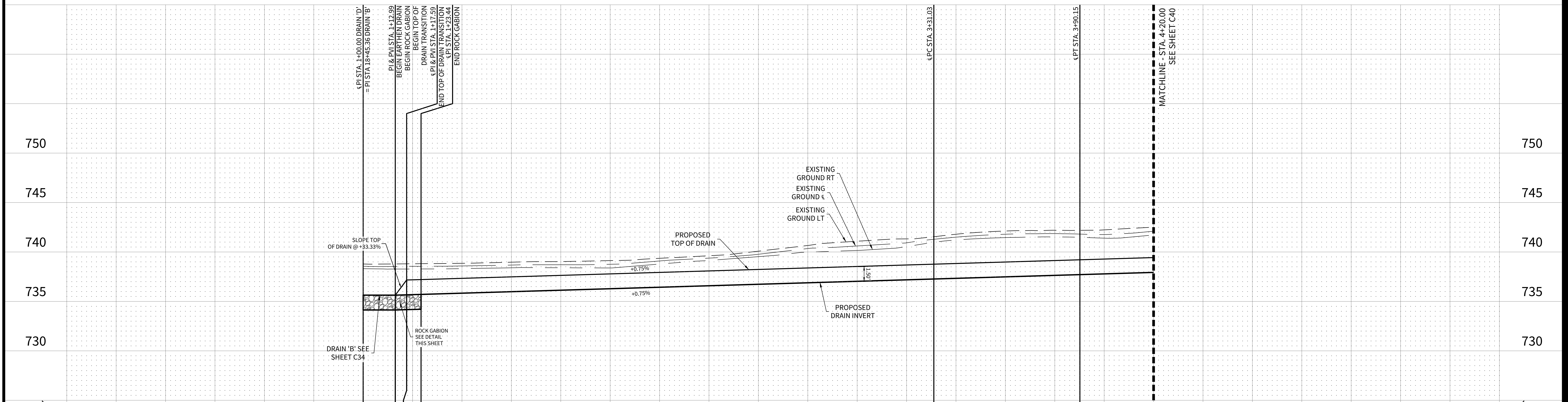
NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

DRAIN 'D'

STA. 1+00.00 TO STA. 4+20.00

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



PROP. TOP OF DRAIN	PROP. DRAIN INVERT
	735.63
735.63	735.63
737.17	735.67
737.18	735.68
737.21	735.71
737.33	735.83
737.48	735.98
737.63	736.13
737.78	736.28
737.93	736.43
738.08	736.58
738.23	736.73
738.38	736.88
738.53	737.03
738.68	737.18
738.77	737.27
738.83	737.33
738.98	737.48
739.13	737.63
739.21	737.71
739.28	737.78

1+00 2+00 3+00 4+00

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LANTANA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'D'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

#	DATE
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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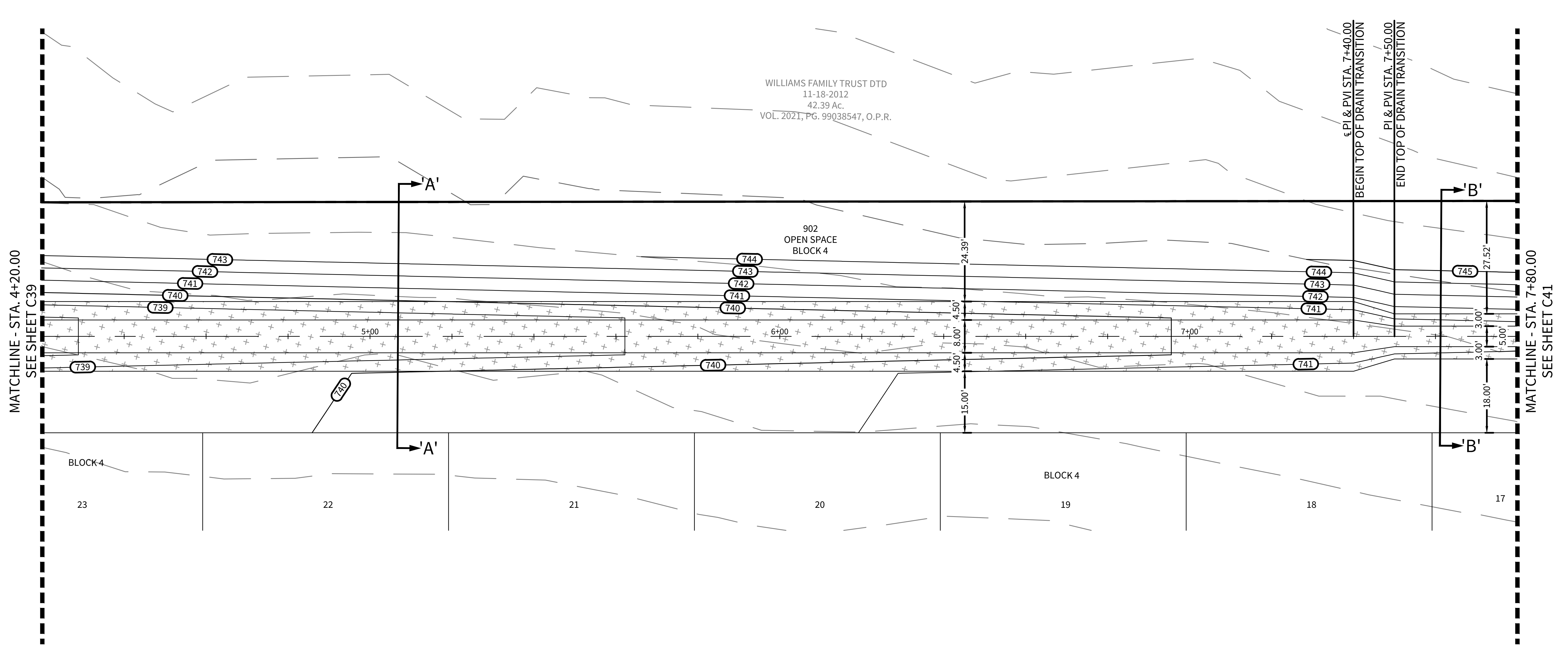
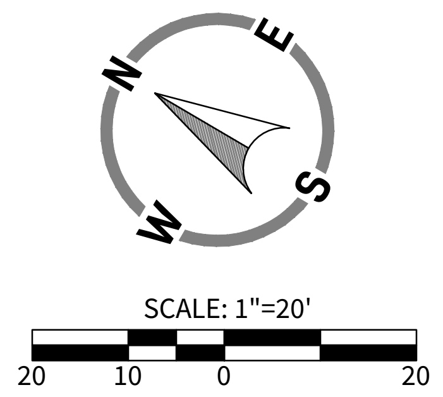
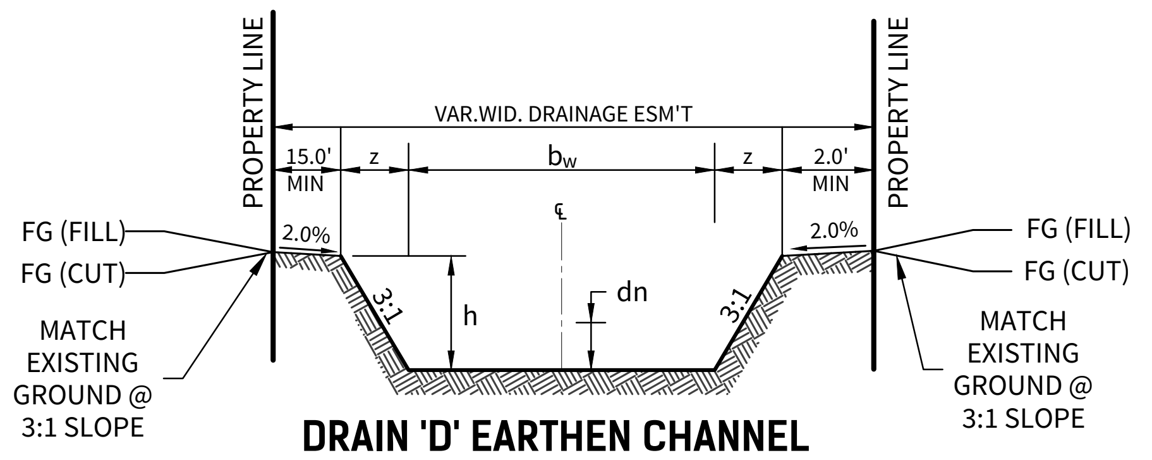




LEGEND

PROPERTY BOUNDARY	
PROPOSED LOT LINE	
PROPOSED RIGHT OF WAY	
E.G.T.C.A. EASEMENT	
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	

	'A-A'	'B-B'
Q_{25} (cfs)	27.88	5.34
b_w (ft)	8.00'	5.00'
z (ft)	3.00'	3.00'
n	0.035	0.035
h (ft)	1.50'	1.00'
S (%)	0.75%	0.75%
d_n (ft)	0.90'	0.45'
V (fps)	2.91	1.88



DRAIN 'D' EARTHEN CHANNEL

(N.T.S.)

'A-A' STA. 4+20.00 TO STA. 7+40.00
'B-B' STA. 7+50.00 TO STA. 7+80.00

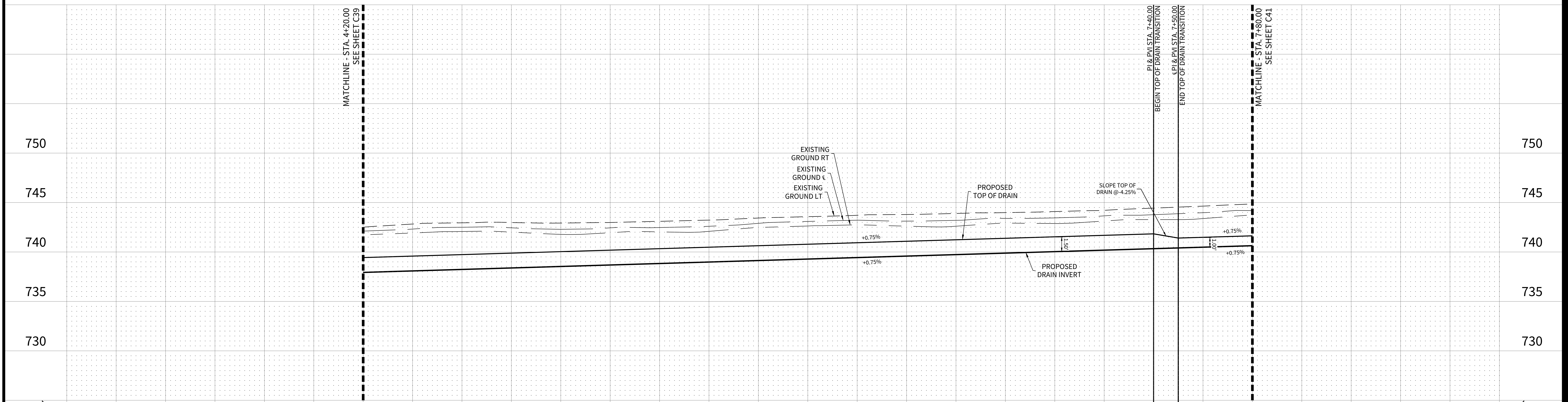
NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

DRAIN 'D'

STA. 4+20.00 TO STA. 7+80.00

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



PROP. TOP OF DRAIN	739.43	739.58	739.73	739.88	740.03	740.18	740.33	740.48	740.63	740.78	740.93	741.08	741.23	741.38	741.53	741.68	741.83	741.41	741.48
PROP. DRAIN INVERT	737.93	738.08	738.23	738.38	738.53	738.68	738.83	738.98	739.13	739.28	739.43	739.58	739.73	739.88	740.03	740.18	740.33	740.41	740.48

5+00 6+00 7+00

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LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'D'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
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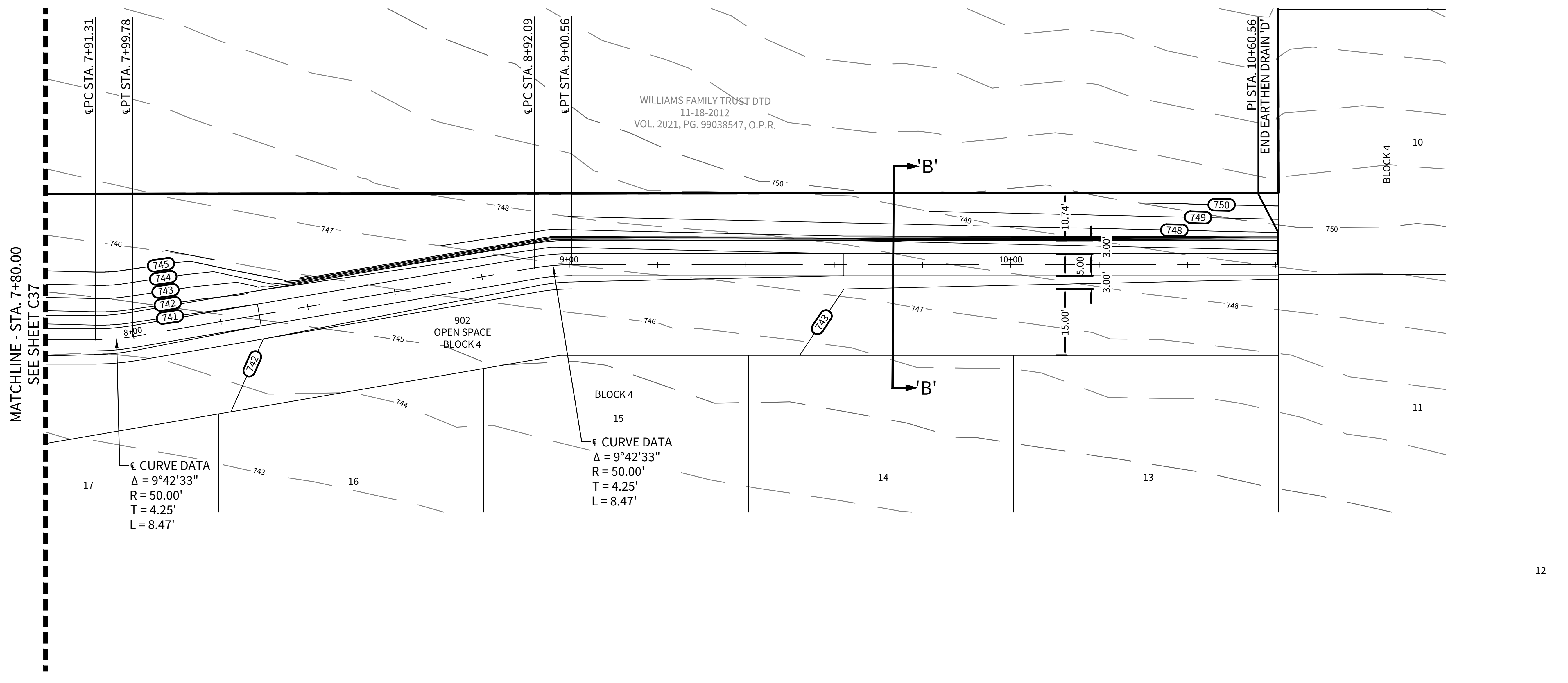


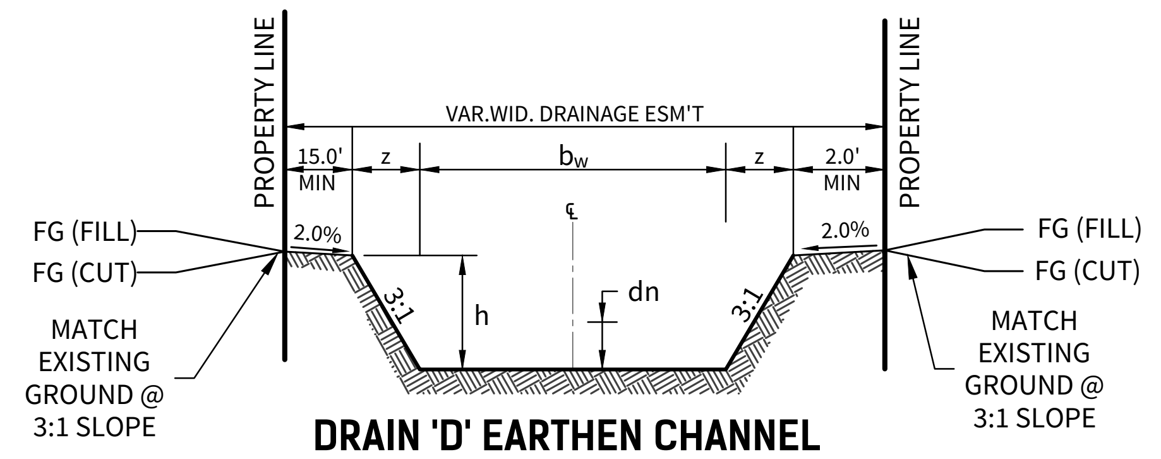
SCALE: 1"=20'

20 10 0 20

LEGEND

PROPERTY BOUNDARY
PROPOSED LOT LINE
PROPOSED RIGHT OF WAY
E.G.T.C.A. EASEMENT
EXISTING 1' CONTOUR 499
EXISTING 5' CONTOUR 500
PROPOSED 1' CONTOUR 499
PROPOSED 5' CONTOUR 500
EARTHEN DRAINAGE CHANNEL

	'B-B'
Q_{25} (cfs)	5.34
b_w (ft)	5.00'
z (ft)	3.00'
n	0.035
h (ft)	1.00'
S (%)	0.75%
d_n (ft)	0.45'
V (fps)	1.88



DRAIN 'D' EARTHEN CHANNEL

(N.T.S.)

'B-B' STA. 7+80.00 TO STA. 10+54.43

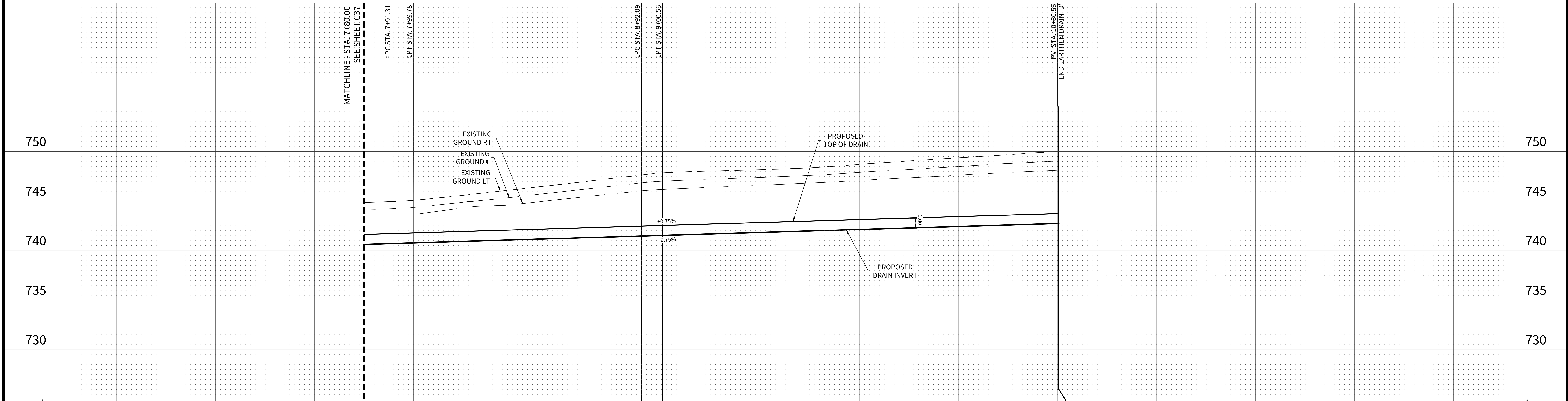
DRAIN 'D'

STA. 7+80.00 TO END

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



PROP. TOP OF DRAIN	741.63	741.72	741.78	741.93	742.08	742.23	742.38	742.47	742.54	742.68	742.83	742.98	743.13	743.28	743.43	743.58	743.73	743.74
PROP. DRAIN INVERT	740.63	740.72	740.78	740.93	741.08	741.23	741.38	741.47	741.54	741.68	741.83	741.98	742.13	742.28	742.43	742.58	742.73	742.74

8+00 9+00 10+00

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LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'D'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE

1. 2. 3. 4. 5. 6. 7. 8. 9.

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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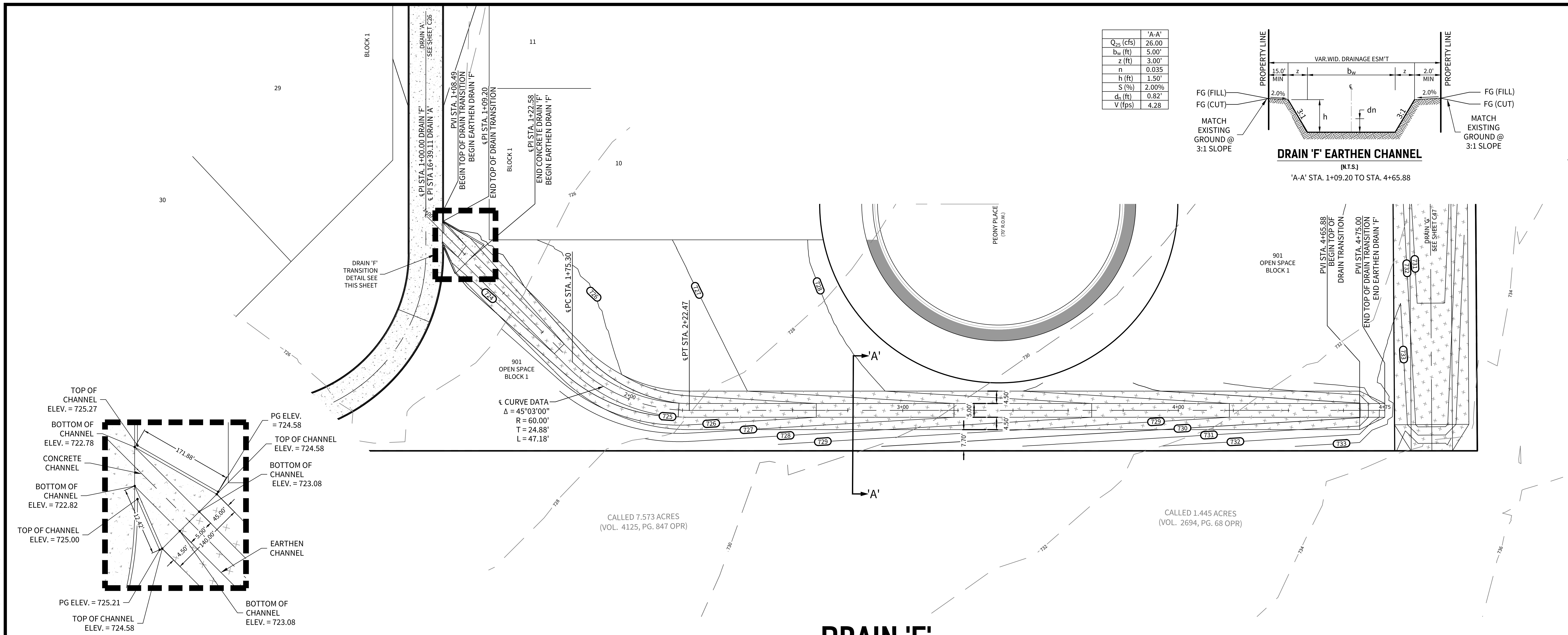


	'A-A'
Q_{25} (cfs)	26.00
b_w (ft)	5.00'
z (ft)	3.00'
n	0.035
h (ft)	1.50'
S (%)	2.00%
d_n (ft)	0.82'
V (fps)	4.28

DRAIN 'F' EARTHEN CHANNEL

(N.T.S.)

'A-A' STA. 1+09.20 TO STA. 4+65.88

DRAIN 'F' CHANNEL TRANSITION DETAIL

SCALE: 1" = 10'

DRAIN 'F'

STA. 1+00.00 TO END

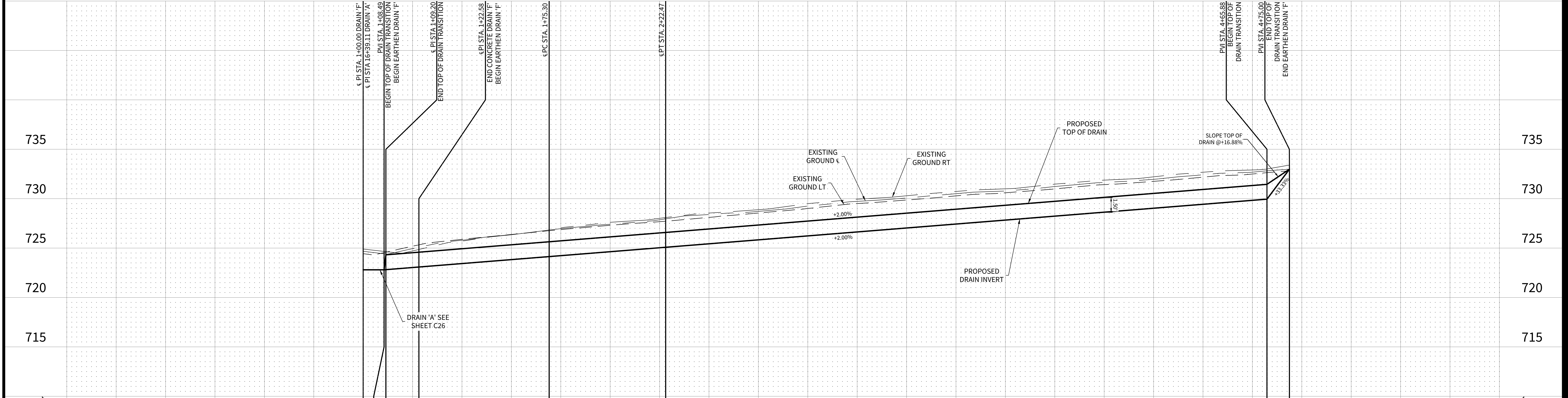
LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	—
PROPOSED RIGHT OF WAY	—
E.G.T.CA. EASEMENT	- - - -
EXISTING 1' CONTOUR	— — 499 — —
EXISTING 5' CONTOUR	— — 500 — —
PROPOSED 1' CONTOUR	— 499 —
PROPOSED 5' CONTOUR	— 500 —
EARTHEN DRAINAGE CHANNEL	▨

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



PROP. TOP OF DRAIN		722.80	724.31	724.58	724.93	725.33	725.63	725.73	726.13	726.58	726.93	727.33	727.73	728.13	728.53	728.93	729.33	729.73	730.13	730.53	730.93	731.33	731.45	732.98
PROP. DRAIN INVERT	722.80	722.80	722.81	723.08	723.43	723.83	724.13	724.23	724.63	725.08	725.43	725.83	726.23	726.63	727.03	727.43	727.83	728.23	728.63	729.03	729.43	729.83	729.95	732.98

1+00 2+00 3+00 4+00

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LANTANA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'F'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

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JAVIER CASTELLO
122170
5/12/2025

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P:\04037\003\2-DWG\4-Plans\C42 DRAIN PLAN & PROFILE - DRAIN 'F'.dwg 2025/05/12 1:48pm tduano

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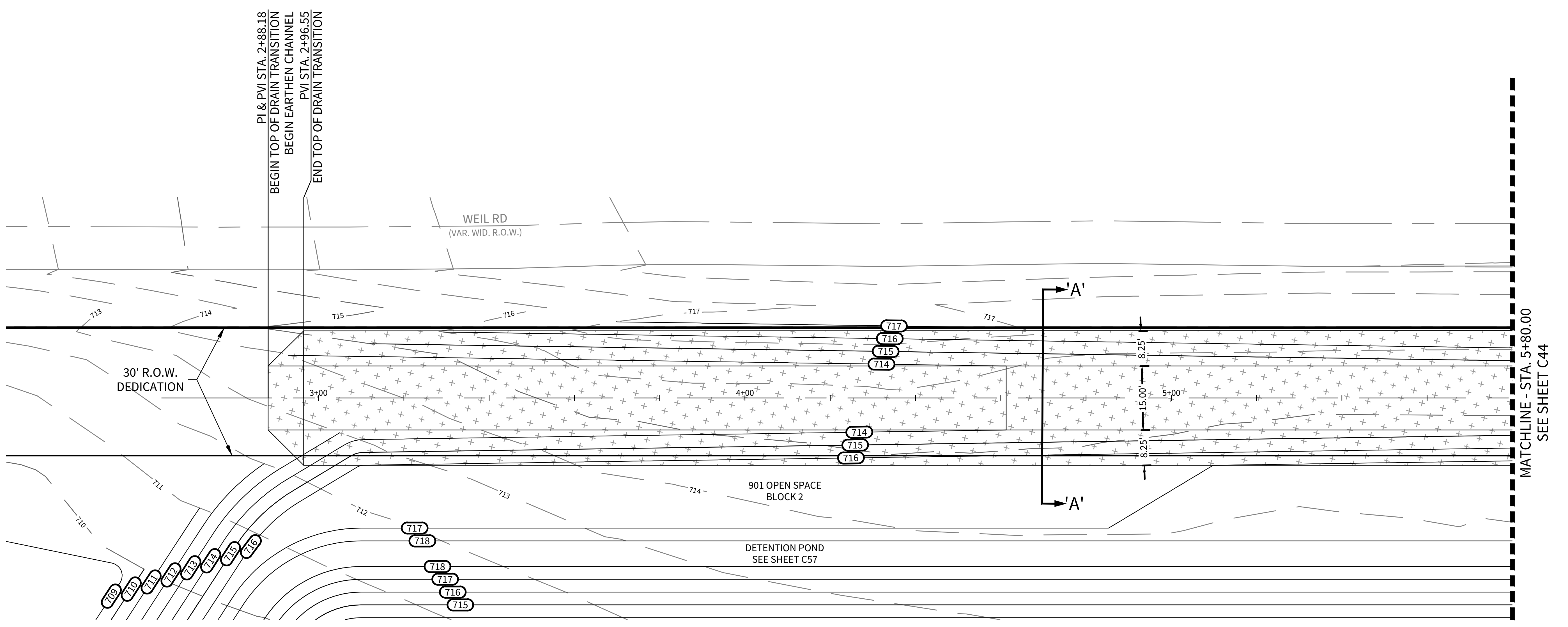


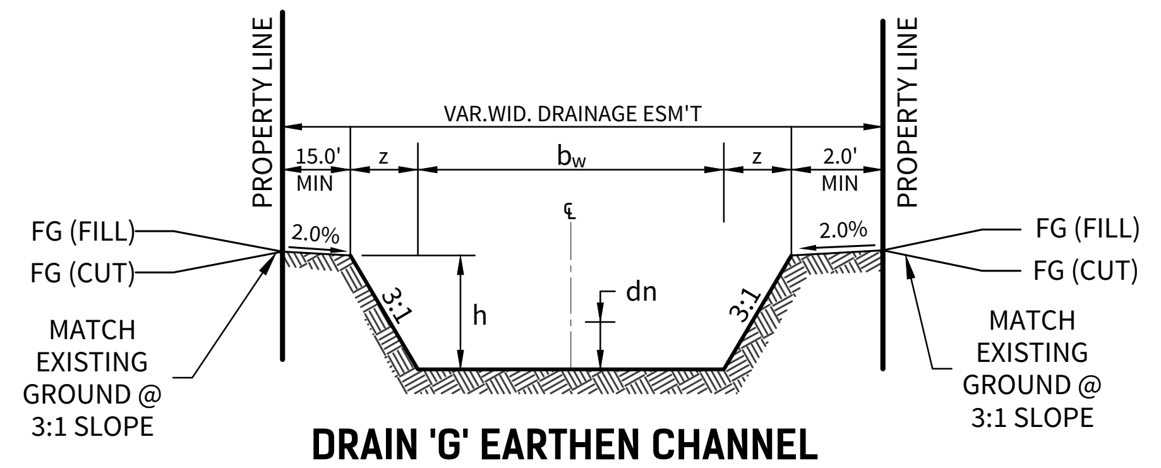
SCALE: 1"=20'

20 10 0 20

LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	– – –
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	▨

	'A-A'
Q_{25} (cfs)	196.41
b_w (ft)	15.00'
z (ft)	3.00'
n	0.035
h (ft)	2.75'
S (%)	0.50%
d_n (ft)	2.18'
V (fps)	4.17



DRAIN 'G' EARTHEN CHANNEL

(N.T.S.)

'A-A' STA. 2+96.55 TO STA. 5+80.00

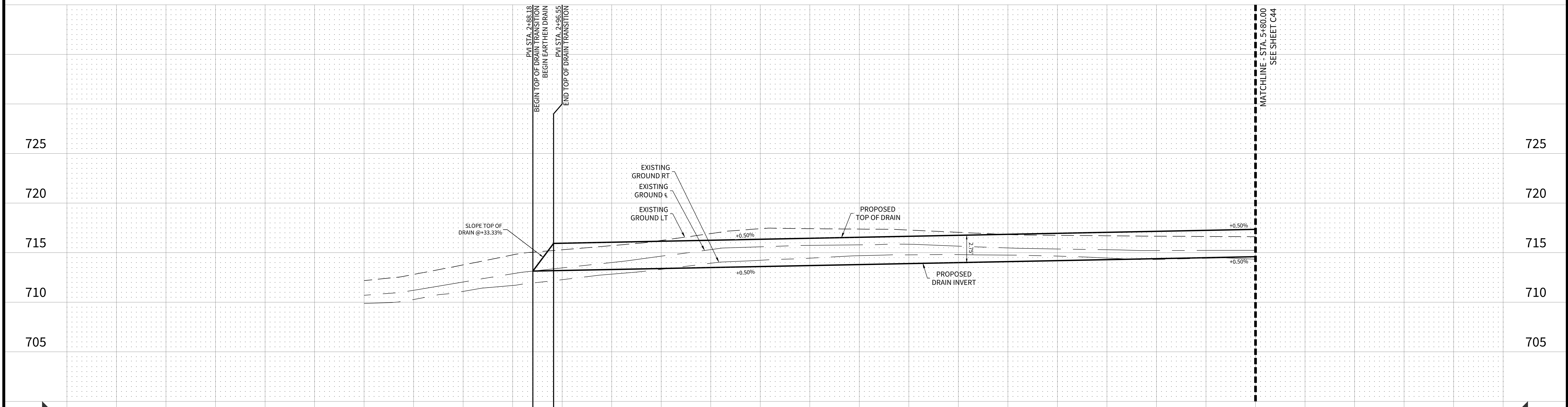
NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

DRAIN 'G'

STA. 2+88.18 TO STA. 5+80.00

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



PROP. TOP OF DRAIN	713.14	715.93	715.95	716.05	716.15	716.25	716.35	716.45	716.55	716.65	716.75	716.85	716.95	717.05	717.15	717.25	PROP. TOP OF DRAIN
PROP. DRAIN INVERT	713.14	713.18	713.20	713.30	713.40	713.50	713.60	713.70	713.80	713.89	713.99	714.09	714.19	714.29	714.39	714.49	PROP. DRAIN INVERT

3+00 4+00 5+00

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P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'G'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

DATE	REVISIONS
1.	
2.	
3.	
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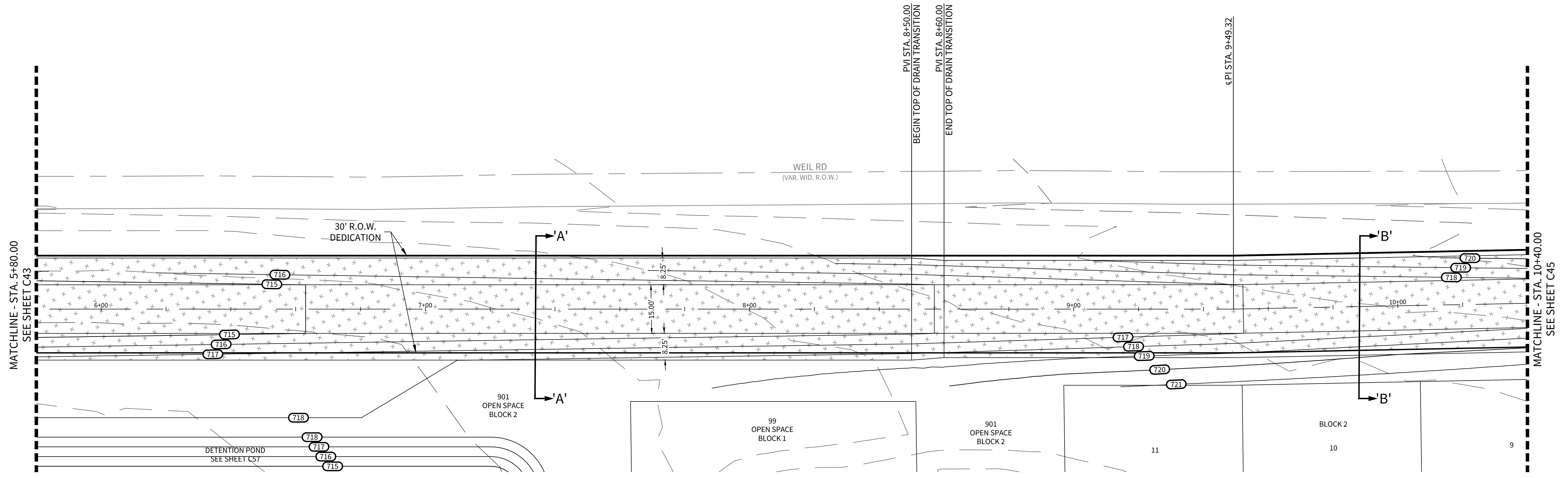
JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C43



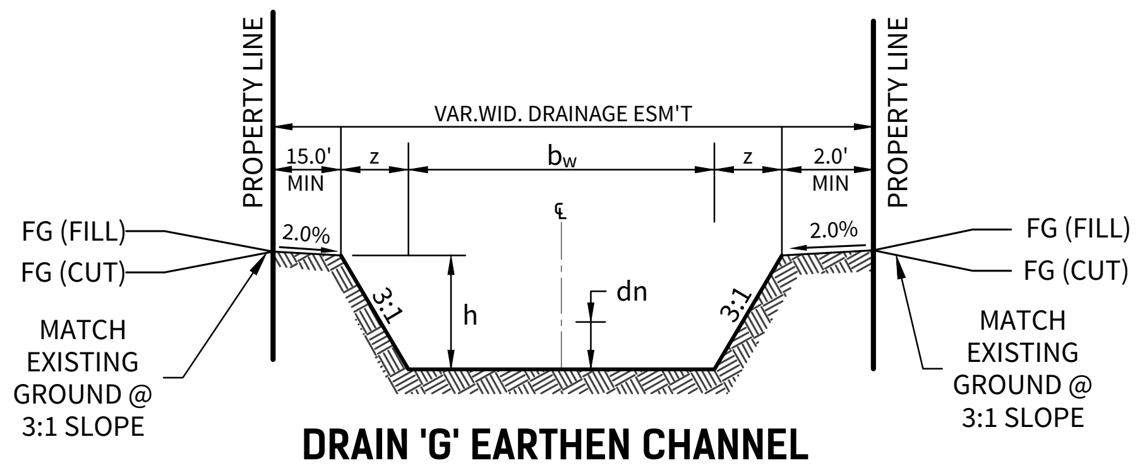
SCALE: 1"=20'

20 10 0 20

LEGEND

PROPERTY BOUNDARY	— —
PROPOSED LOT LINE	—
PROPOSED RIGHT OF WAY	—
E.G.T.CA. EASEMENT	— — —
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	▨

	'A-A'	'B-B'
Q_{25} (cfs)	196.41	196.41
b_w (ft)	15.00'	15.00'
z (ft)	3.00'	3.00'
n	0.035	0.035
h (ft)	2.75'	2.50'
S (%)	0.50%	1.05%
d_n (ft)	2.18'	1.78'
V (fps)	4.17	5.41



DRAIN 'G' EARTHEN CHANNEL

(N.T.S.)

'A-A' STA. 5+80.00 TO STA. 8+50.00
'B-B' STA. 8+60.00 TO STA. 10+40.00

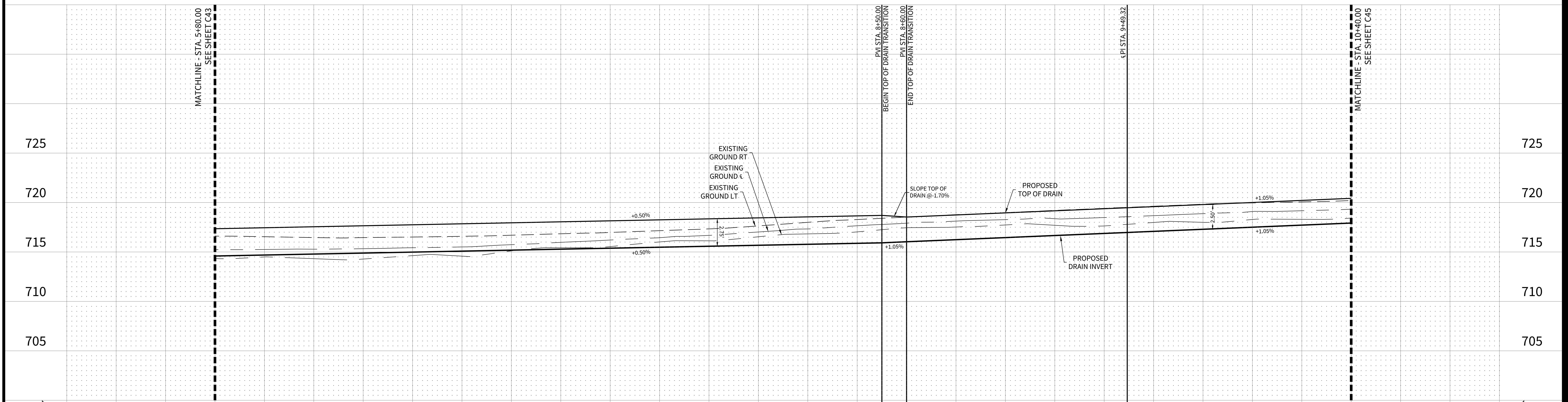
DRAIN 'G'

STA. 5+80.00 TO STA. 10+40.00

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



PROP. TOP OF DRAIN	717.35	717.45	717.55	717.65	717.75	717.85	717.95	718.05	718.15	718.25	718.35	718.45	718.55	718.65	718.70	718.53	718.74	718.95	719.16	719.37	719.47	719.58	719.79	720.00	720.21
PROP. DRAIN INVERT	714.59	714.69	714.79	714.89	714.98	715.08	715.18	715.28	715.38	715.48	715.58	715.68	715.78	715.88	715.93	716.03	716.24	716.45	716.66	716.87	716.97	717.08	717.29	717.50	717.71

6+00 7+00 8+00 9+00 10+00

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LANTANA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'G'

DATE
05/12/2025
PROJECT NO.
04037.003
DRAWN BY
CG/JG/LJ/TCD
CHECKED BY
XV/AL

DATE	REVISIONS
1.	
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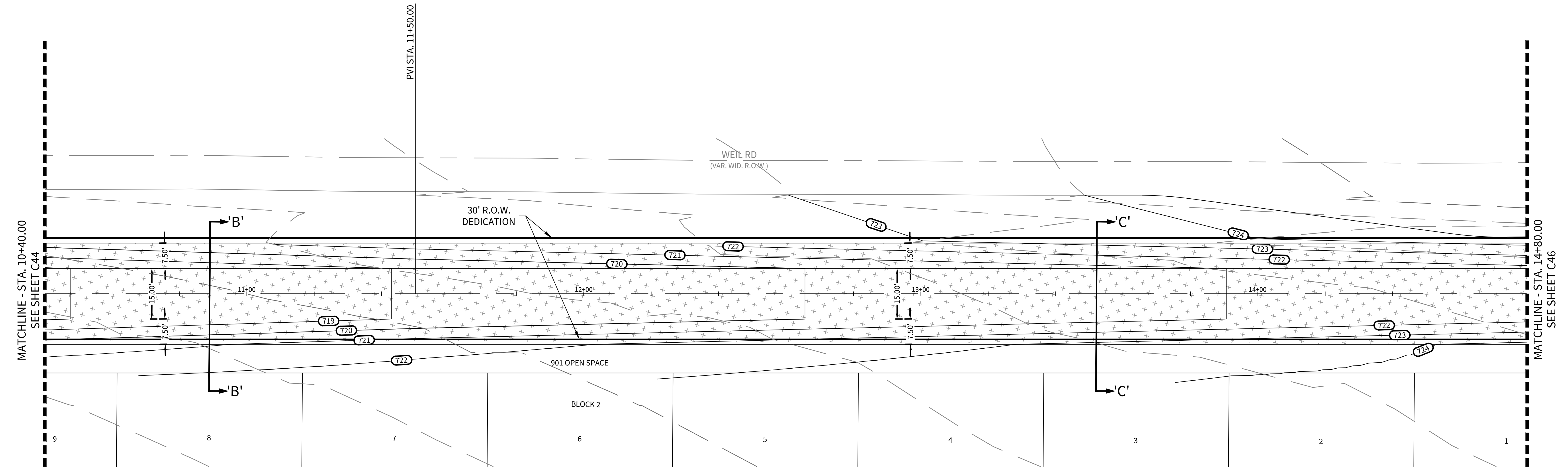
9.	

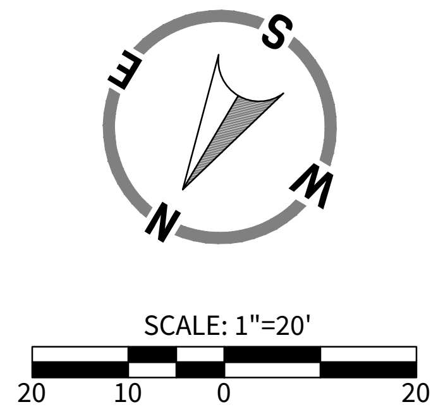
JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C44

P:\04037\003\2-DWG\4-Plans\C44 DRAIN PLAN & PROFILE - DRAIN 'G'.dwg 2025/05/12 1:48pm tduano

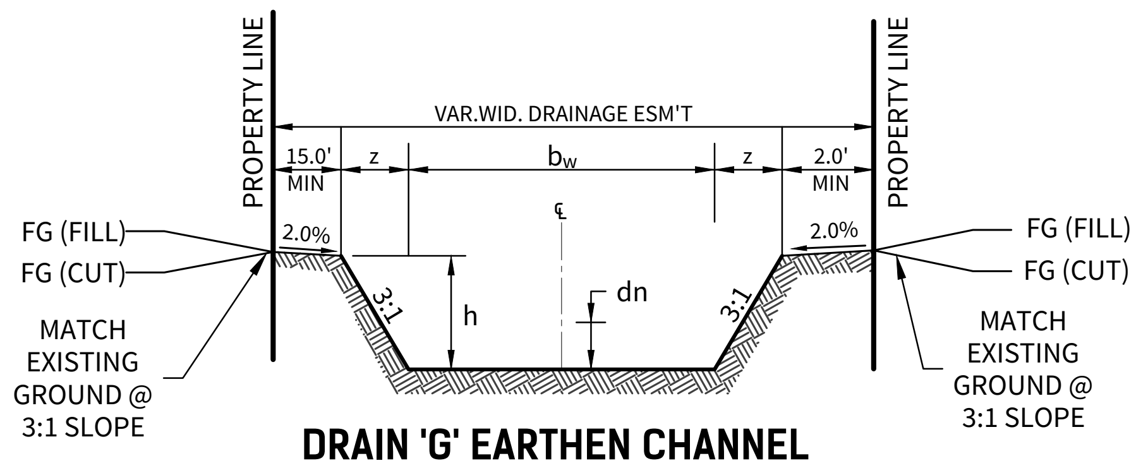




LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	— — —
EXISTING 1' CONTOUR	— — 499 — —
EXISTING 5' CONTOUR	— — 500 — —
PROPOSED 1' CONTOUR	—— 499 ——
PROPOSED 5' CONTOUR	—— 500 ——
EARTHEN DRAINAGE CHANNEL	▨

	'B-B'	'C-C'
Q_{25} (cfs)	196.41	196.41
b_w (ft)	15.00'	15.00'
z (ft)	3.00'	3.00'
n	0.035	0.035
h (ft)	2.50'	2.50'
S (%)	1.05%	0.80%
d_n (ft)	1.78'	1.92'
V (fps)	5.41	4.92



DRAIN 'G' EARTHEN CHANNEL

(N.T.S.)

'B-B' STA. 10+40.00 TO STA. 11+50.00
'C-C' STA. 11+50.00 TO STA. 15+11.25

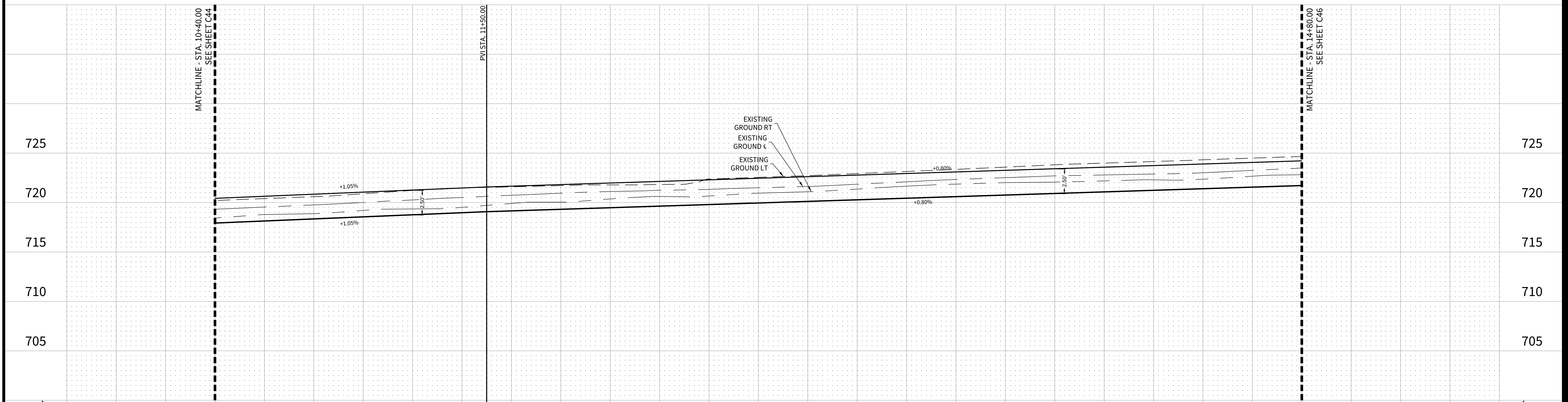
NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

DRAIN 'G'

STA. 10+40.00 TO STA. 14+80.00

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



PROP. TOP OF DRAIN	720.42	720.63	720.84	721.05	721.26	721.47	721.57	721.65	721.81	721.97	722.13	722.29	722.45	722.61	722.77	722.93	723.09	723.25
PROP. DRAIN INVERT	717.92	718.13	718.34	718.55	718.76	718.97	719.07	719.15	719.31	719.47	719.63	719.79	719.95	720.11	720.27	720.43	720.59	720.75

PROP. TOP OF DRAIN	723.41	723.57	723.73	723.89	724.05
PROP. DRAIN INVERT	720.91	721.07	721.23	721.39	721.55

11+00 12+00 13+00 14+00

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LANTANA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'G'

DATE
05/12/2025
PROJECT NO.
04037.003
DRAWN BY
CG/JG/LJ/TCD
CHECKED BY
XV/AL

△	DATE	REVISIONS
1.		
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5.		
6.		
7.		
8.		
9.		

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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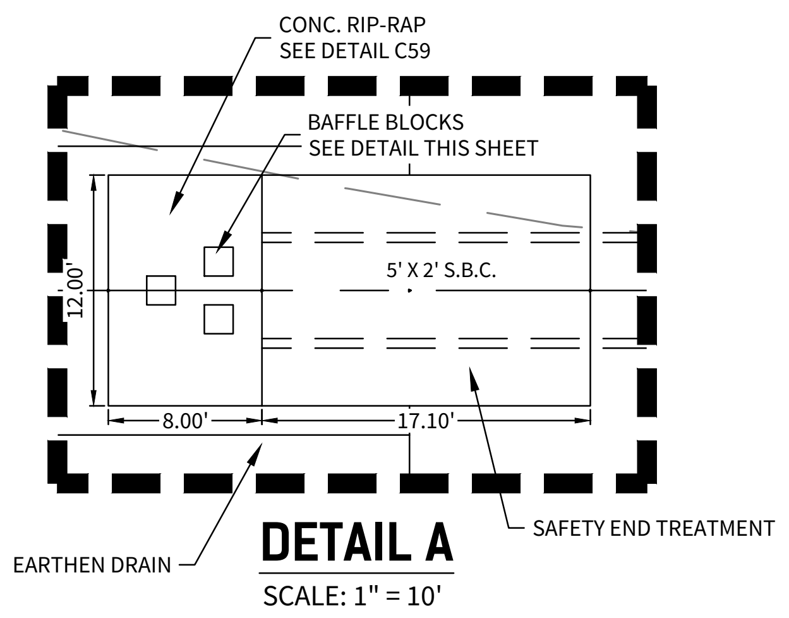
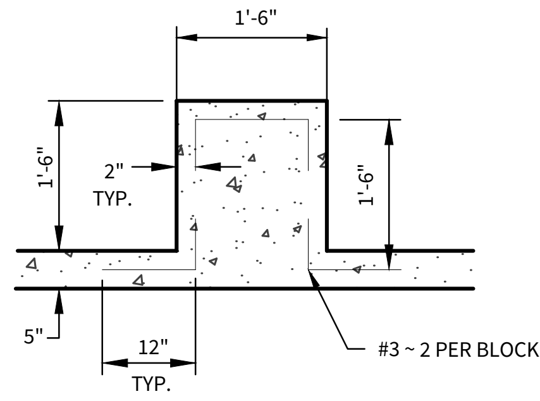


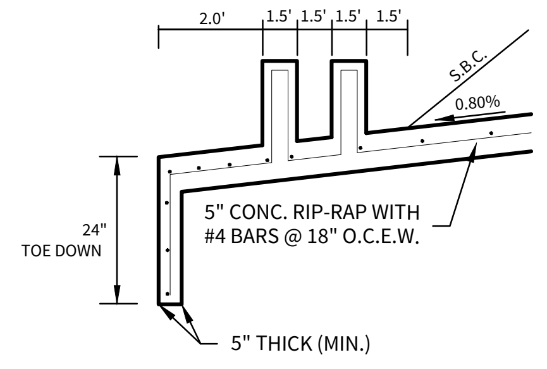
DETAIL A

SCALE: 1" = 10'



BAFFLE BLOCK REINFORCEMENT DETAIL

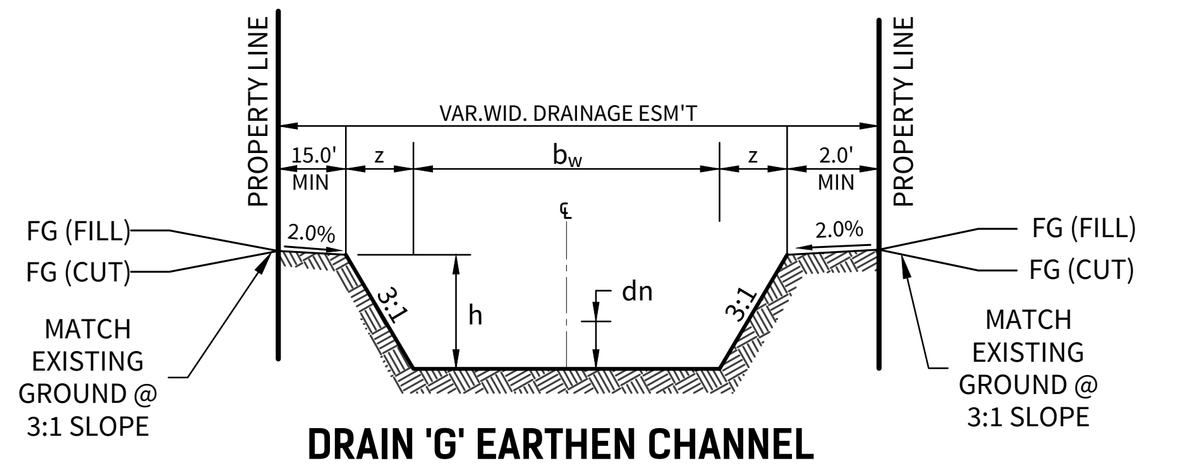
(N.T.S.)



BAFFLE BLOCK DETAIL

(N.T.S.)

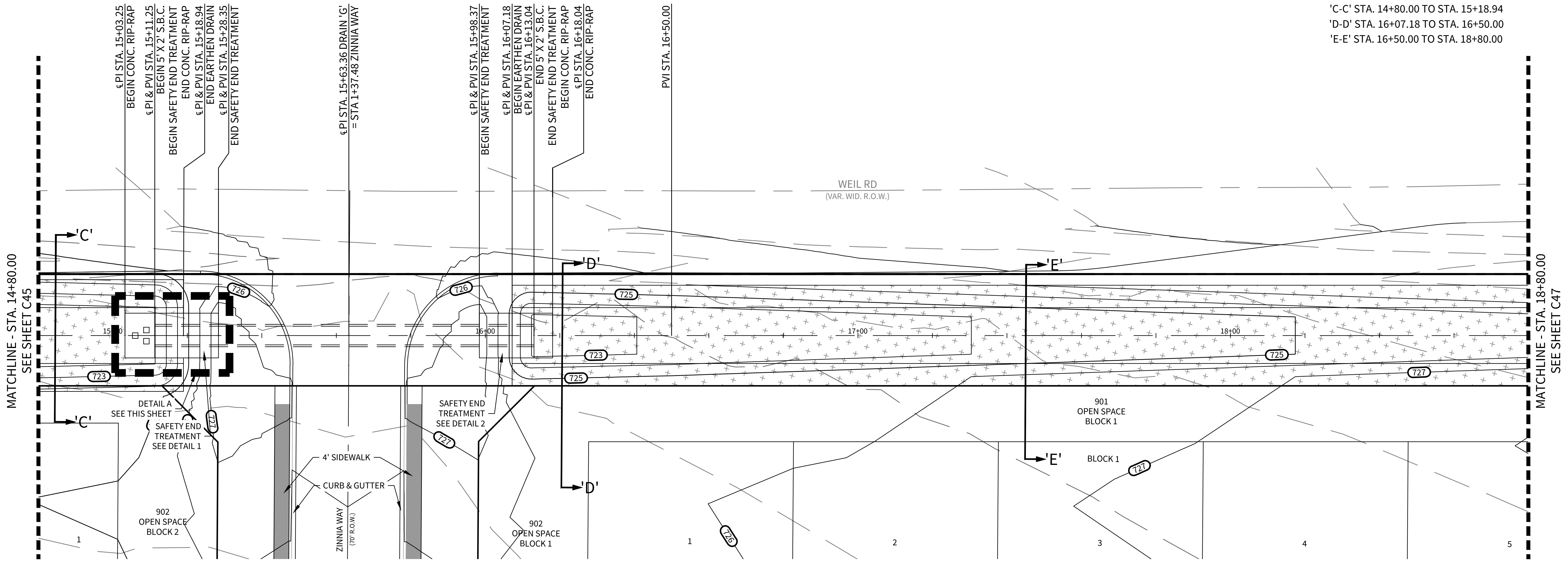
	'C-C'	'D-D'	'E-E'
Q_{25} (cfs)	196.41	80.58	80.58
b_w (ft)	15.00'	15.00'	15.00'
z (ft)	3.00'	3.00'	3.00'
n	0.035	0.035	0.035
h (ft)	2.50'	2.00'	2.00'
S (%)	0.80%	0.80%	1.15%
d_n (ft)	1.92'	1.17'	1.05'
V (fps)	4.92	3.72	4.21



DRAIN 'G' EARTHEN CHANNEL

(N.T.S.)

'C-C' STA. 14+80.00 TO STA. 15+18.94
'D-D' STA. 16+07.18 TO STA. 16+50.00
'E-E' STA. 16+50.00 TO STA. 18+80.00

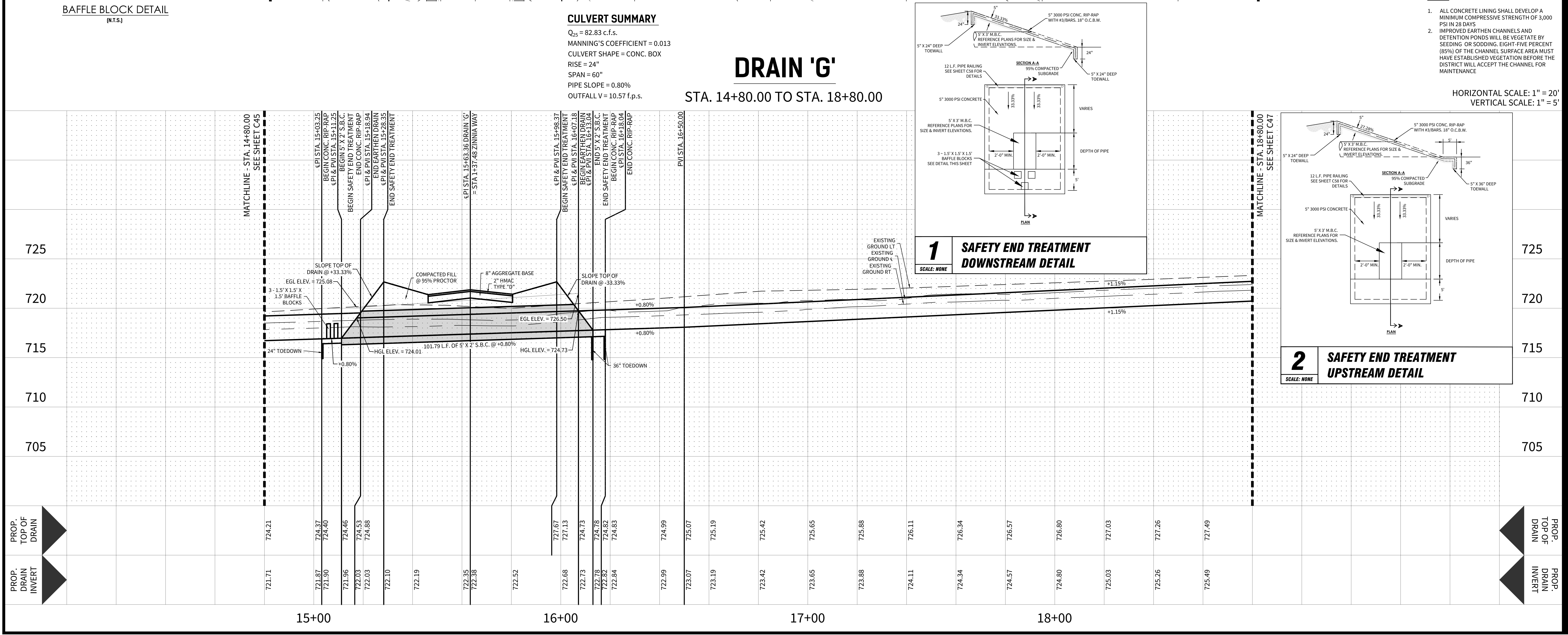


CULVERT SUMMARY

Q_{25} = 82.83 c.f.s.
MANNING'S COEFFICIENT = 0.013
CULVERT SHAPE = CONC. BOX
RISE = 24"
SPAN = 60"
PIPE SLOPE = 0.80%
OUTFALL V = 10.57 f.p.s.

DRAIN 'G'

STA. 14+80.00 TO STA. 18+80.00



1 SAFETY END TREATMENT DOWNSTREAM DETAIL

SCALE: NONE

2 SAFETY END TREATMENT UPSTREAM DETAIL

SCALE: NONE

PROP. TOP OF DRAIN	PROP. DRAIN INVERT
724.21	721.71
724.37	721.87
724.40	721.90
724.46	721.96
724.53	722.03
724.88	722.03
	722.10
	722.19
	722.35
	722.38
	722.52
727.67	
727.13	722.68
724.73	722.73
724.78	722.78
724.82	722.82
724.83	722.84
724.99	722.99
725.07	723.07
725.19	723.19
725.42	723.42
725.65	723.65
725.88	723.88
726.11	724.11
726.34	724.34
726.57	724.57
726.80	724.80
727.03	725.03
727.26	725.26
727.49	725.49

N
SCALE: 1"=20'
20 10 0 20

LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.C.A. EASEMENT	– – – –
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	▨

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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

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LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'G'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS
DATE
1.
2.
3.
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6.
7.
8.
9.

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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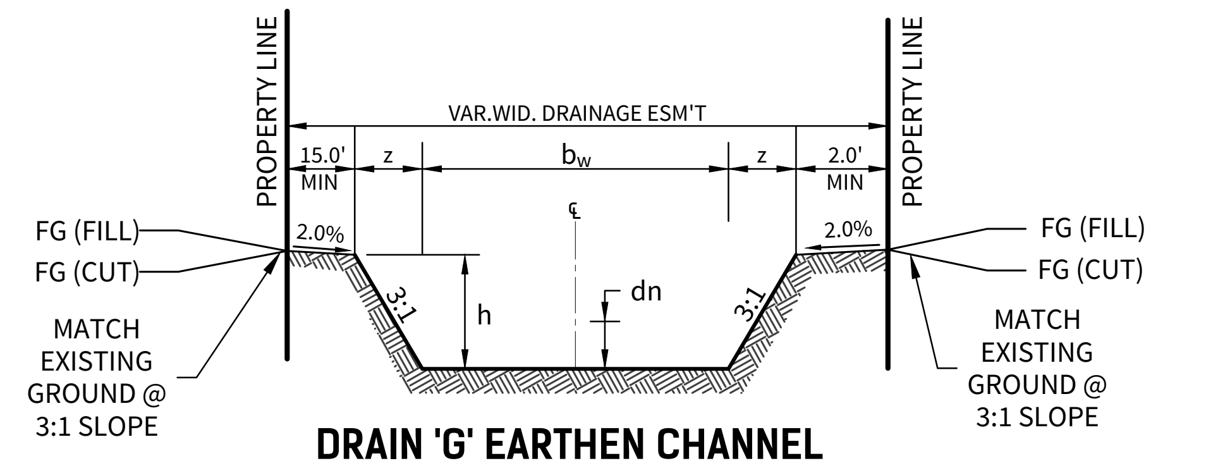
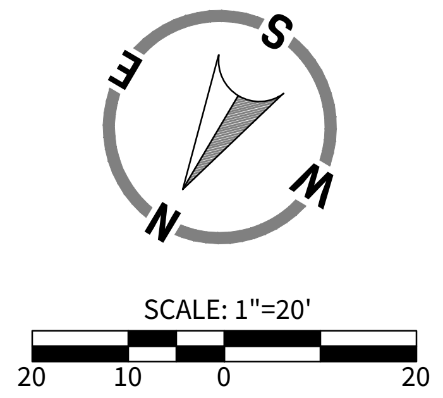
	'E-E'	'F-F'
Q_{25} (cfs)	80.58	80.58
b_w (ft)	15.00'	15.00'
z (ft)	3.00'	3.00'
n	0.035	0.035
h (ft)	2.00'	2.00'
S (%)	1.15%	1.65%
d_n (ft)	1.05'	0.95'
V (fps)	4.21	4.74



DRAIN 'G' EARTHEN CHANNEL

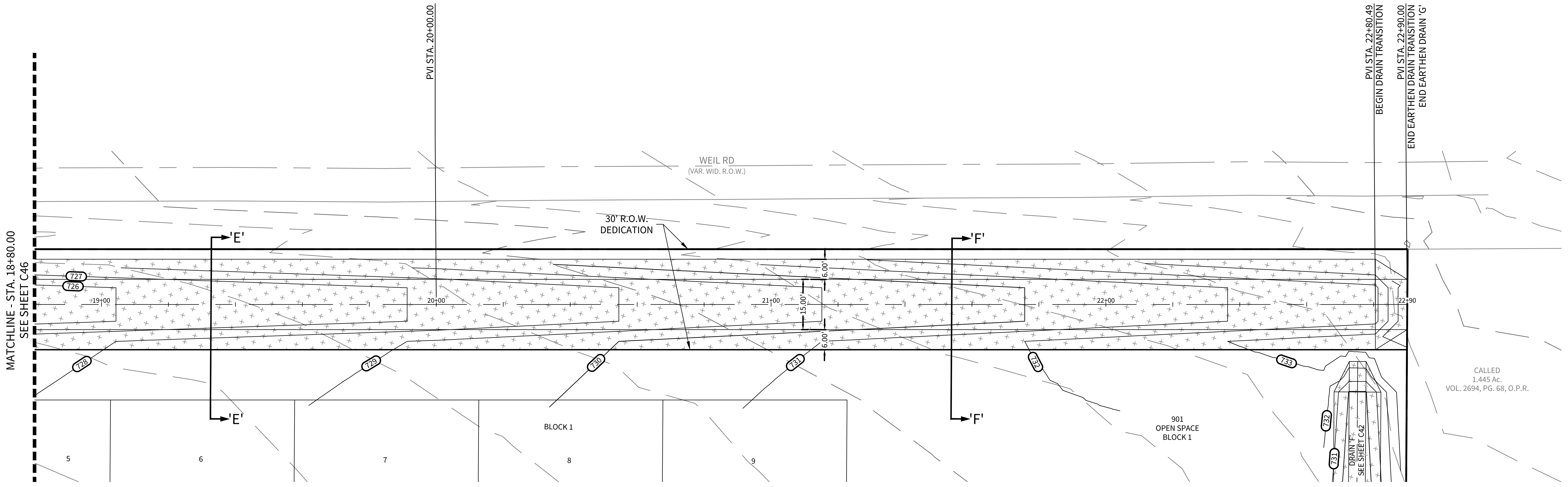
(N.T.S.)

'E-E' STA. 18+80.00 TO STA. 20+00.00
'F-F' STA. 20+00.00TO STA. 22+80.49



LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.C.A. EASEMENT	– – – –
EXISTING 1' CONTOUR	– – 499 – –
EXISTING 5' CONTOUR	– – 500 – –
PROPOSED 1' CONTOUR	— 499 —
PROPOSED 5' CONTOUR	— 500 —
EARTHEN DRAINAGE CHANNEL	▨



NOTES

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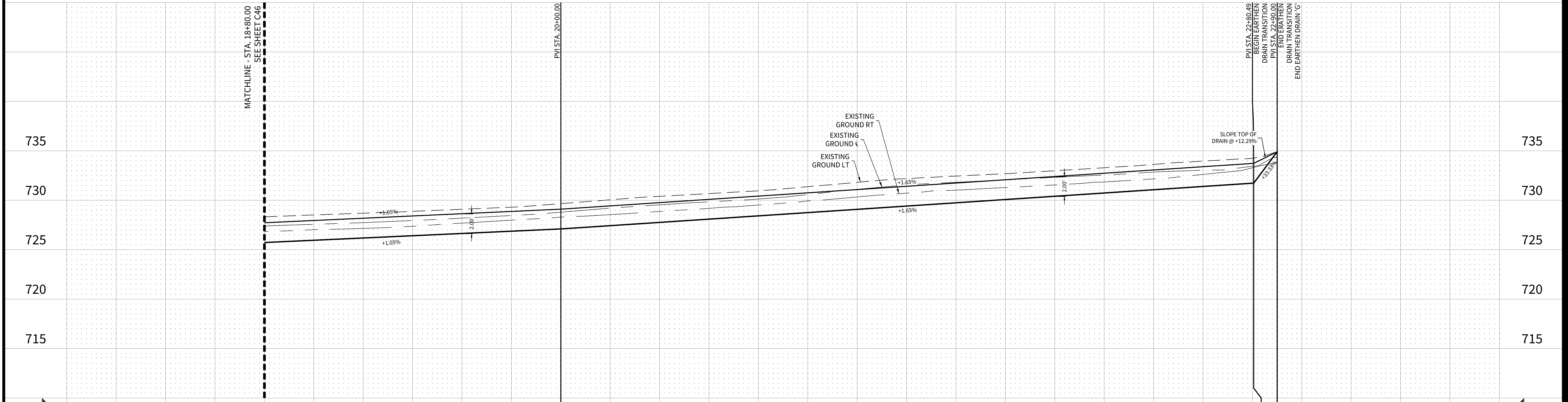
DRAIN 'G'

STA. 18+80.00 TO END

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



PROP. TOP OF DRAIN	PROP. DRAIN INVERT
727.72	725.72
727.95	725.95
728.18	726.18
728.41	726.41
728.64	726.64
728.87	726.87
729.10	727.10
729.43	727.43
729.76	727.76
730.09	728.09
730.42	728.42
730.75	728.75
731.08	729.08
731.41	729.41
731.74	729.74
732.07	730.07
732.40	730.40
732.73	730.73
733.06	731.06
733.39	731.39
733.72	731.72
733.73	731.73
734.90	734.90

19+00
20+00
21+00
22+00

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LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'G'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

#	1.	2.	3.	4.	5.	6.	7.	8.	9.
DATE									

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C47

CUDEENGINEERS.COM

P:\04037\003\2-DWG\4-Plans\C47 DRAIN PLAN & PROFILE - DRAIN 'G'.dwg 2025/05/12 1:49pm tduano

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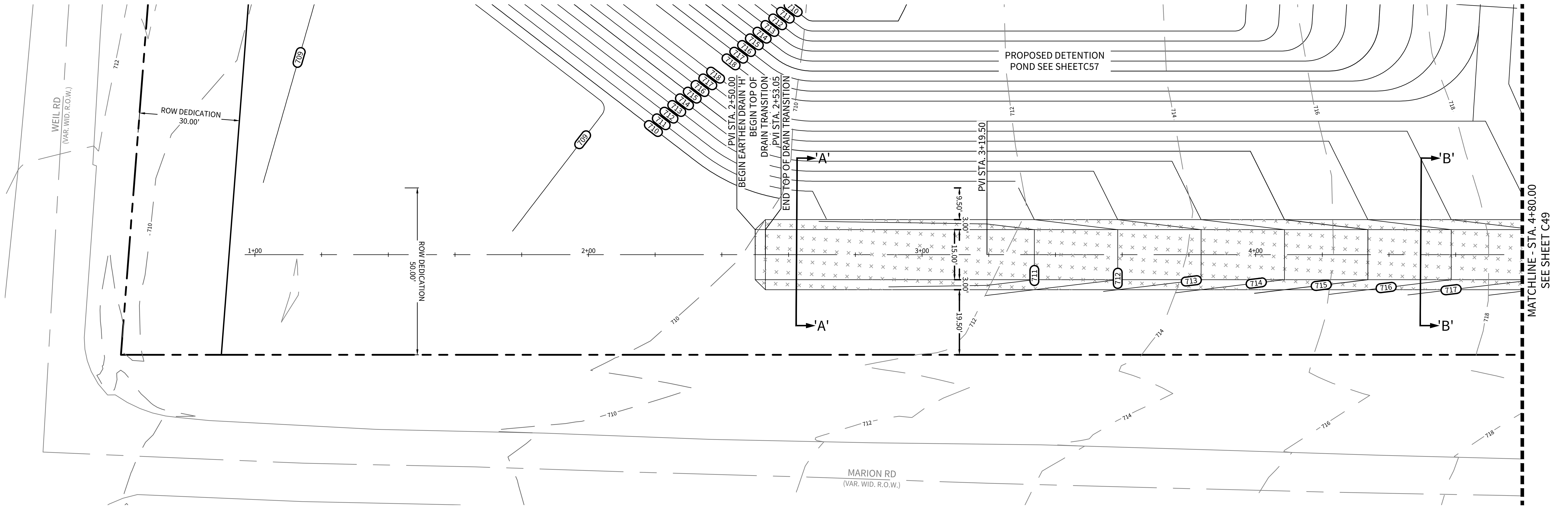
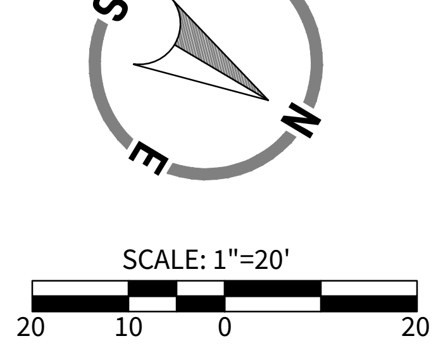
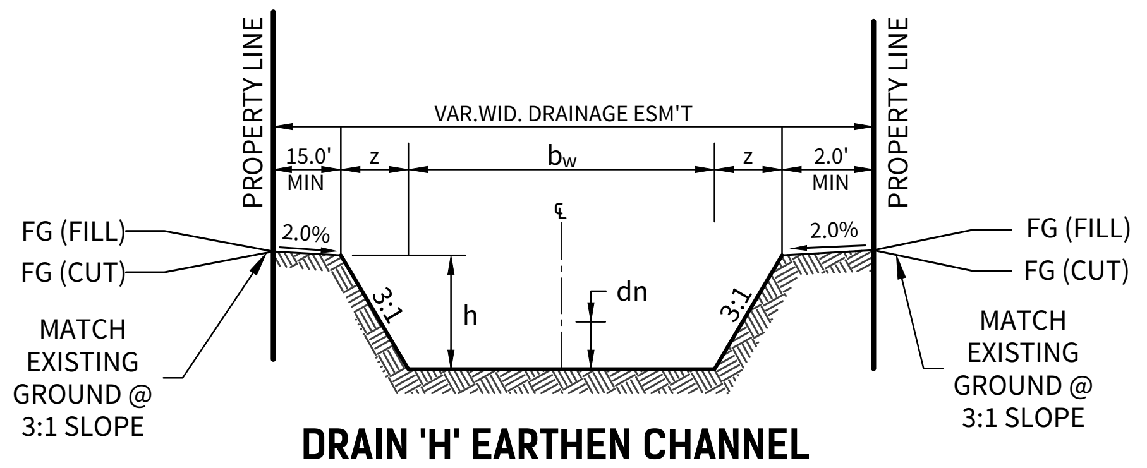




LEGEND

PROPERTY BOUNDARY	— —
PROPOSED LOT LINE	—
PROPOSED RIGHT OF WAY	—
E.G.T.C.A. EASEMENT	- - -
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	▨

	'A-A'	'B-B'
Q_{25} (cfs)	16.17	16.17
b_w (ft)	15.00'	15.00'
z (ft)	3.00'	3.00'
n	0.035	0.035
h (ft)	1.00'	1.00'
S (%)	0.50%	4.00%
d_n (ft)	0.53'	0.29'
V (fps)	1.84	3.56



DRAIN 'H' EARTHEN CHANNEL

(N.T.S.)

'A-A' STA. 2+53.05 TO STA. 3+19.50
'B-B' STA. 3+19.50 TO STA. 4+80.00

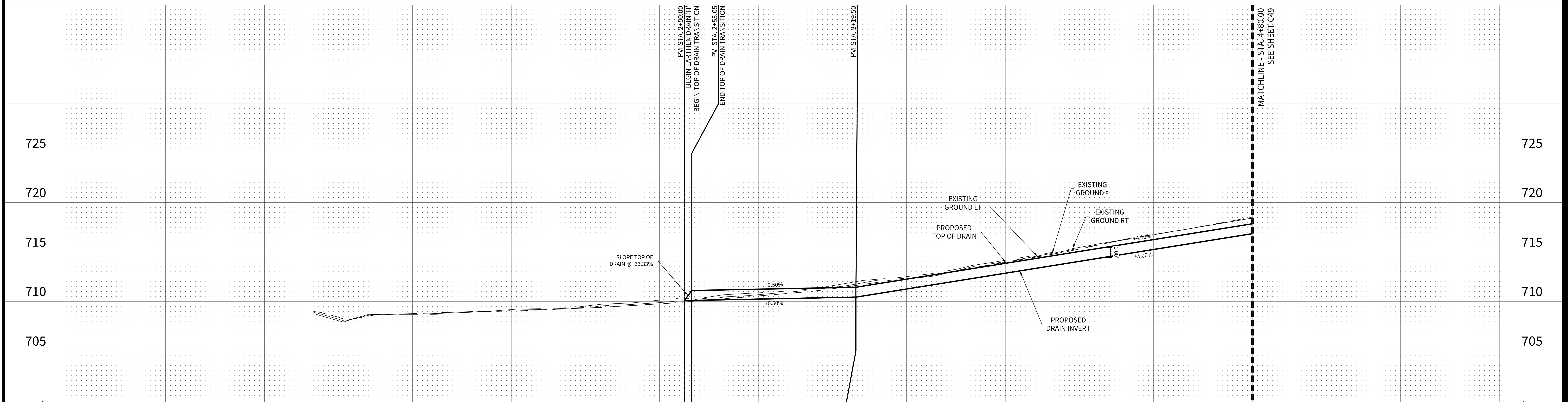
DRAIN 'H'

STA. 1+00.00 TO STA. 4+80.00

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



PROP. TOP OF DRAIN	710.09	711.10	711.14	711.24	711.34	711.43	711.45	712.25	713.05	713.85	714.65	715.45	716.25	717.05
PROP. DRAIN INVERT	710.09	710.10	710.14	710.24	710.34	710.43	710.45	711.25	712.05	712.85	713.65	714.45	715.25	716.05

1+00 2+00 3+00 4+00

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'H'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C48

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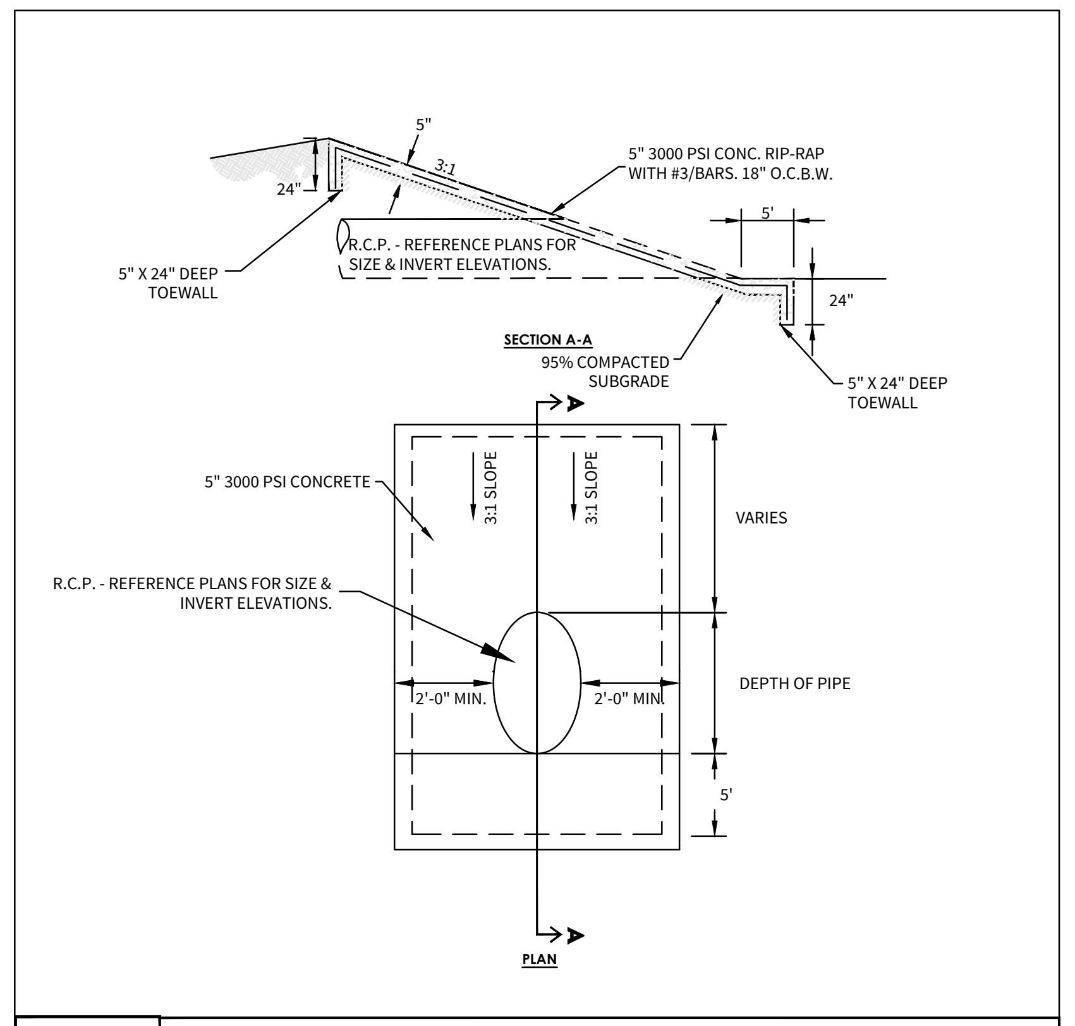
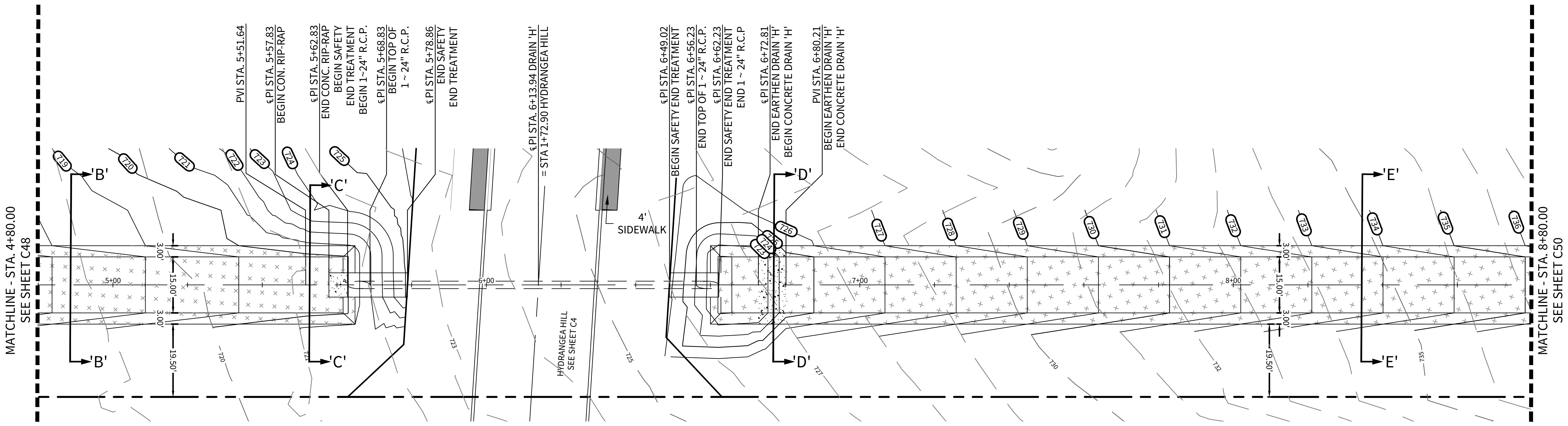
P:\04037\003\2-DWG\4-Plans\C48 DRAIN PLAN & PROFILE - DRAIN 'H'.dwg 2025/05/12 1:49pm tduano



5" 3000 PSI CONC. RIP-RAP WITH #3/BARS, 18" O.C.B.W.
R.C.P. - REFERENCE PLANS FOR SIZE & INVERT ELEVATIONS.
5" X 24" DEEP TOEWALL
SECTION A-A
95% COMPACTED SUBGRADE
5" 3000 PSI CONCRETE
3:1 SLOPE
VARIES
R.C.P. - REFERENCE PLANS FOR SIZE & INVERT ELEVATIONS.
2'-0" MIN.
DEPTH OF PIPE
PLAN

1 **SAFETY END TREATMENT DETAIL**

SCALE: NONE



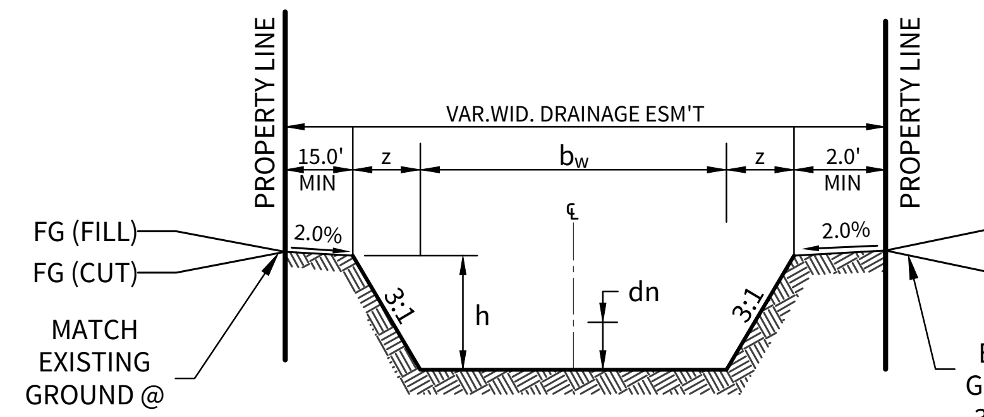
MATCHLINE - STA. 4+80.00 SEE SHEET C48
PVI STA. 5+51.64
℄ PI STA. 5+57.83 BEGIN CON. RIP-RAP
℄ PI STA. 5+62.83 END CONC. RIP-RAP BEGIN SAFETY END TREATMENT BEGIN 1 - 24" R.C.P.
℄ PI STA. 5+68.83 BEGIN TOP OF 1 - 24" R.C.P.
℄ PI STA. 5+78.86 END SAFETY END TREATMENT
℄ PI STA. 6+13.94 DRAIN 'H' = STA 1+72.90 HYDRANGEA HILL
℄ PI STA. 6+49.02 BEGIN SAFETY END TREATMENT
℄ PI STA. 6+56.23 END TOP OF 1 - 24" R.C.P.
℄ PI STA. 6+62.23 END SAFETY END TREATMENT END 1 - 24" R.C.P
℄ PI STA. 6+72.81 END EARTHEN DRAIN 'H' BEGIN CONCRETE DRAIN 'H'
PVI STA. 6+80.21 BEGIN EARTHEN DRAIN 'H' END CONCRETE DRAIN 'H'
'B'
'C'
'D'
'E'
4' SIDEWALK
HYDRANGEA HILL SEE SHEET C4
5+00
6+00
7+00
8+00
15.00'
3.00'
19.50
MATCHLINE - STA. 8+80.00 SEE SHEET C50

SCALE: 1"=20'

20 10 0 20

LEGEND

PROPERTY BOUNDARY	
PROPOSED LOT LINE	
PROPOSED RIGHT OF WAY	
E.G.T.CA. EASEMENT	
EXISTING 1' CONTOUR	499
EXISTING 5' CONTOUR	500
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	▨
CONCRETE DRAINAGE CHANNEL	▨

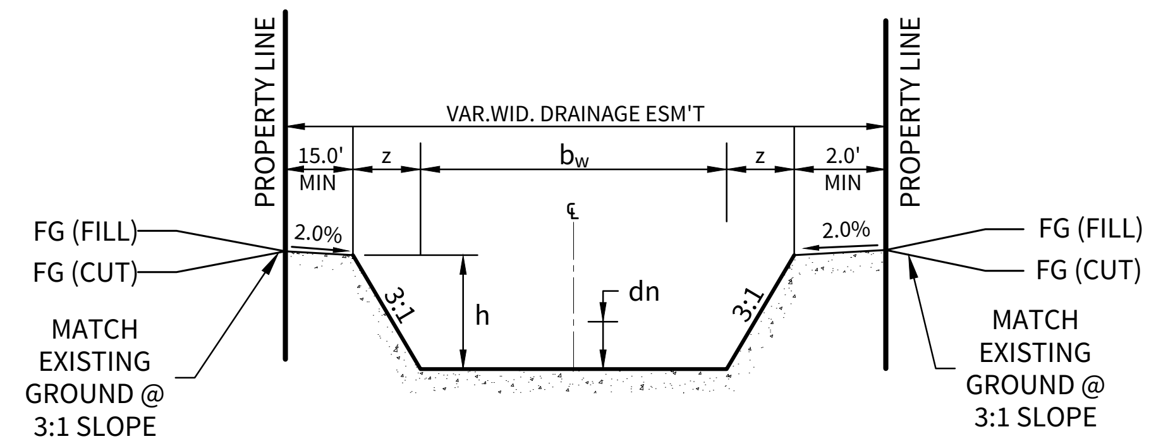


DRAIN 'H' EARTHEN CHANNEL

(N.T.S.)

'B-B' STA. 4+80.00 TO STA. 5+51.64
'C-C' STA. 5+51.64 TO STA. 6+72.81
'E-E' STA. 6+80.21 TO STA. 8+80.00

	'B-B'	'C-C'	'E-E'
Q_{25} (cfs)	16.17	16.17	16.17
b_w (ft)	15.00'	15.00'	15.00'
z (ft)	3.00'	3.00'	3.00'
n	0.035	0.035	0.035
h (ft)	1.00'	1.00'	1.00'
S (%)	4.00%	2.00%	5.25%
d_n (ft)	0.29'	0.35'	0.26'
V (fps)	3.56	2.86	3.87



DRAIN 'H' CONCRETE CHANNEL

(N.T.S.)

'D-D' STA. 6+72.81 TO STA. 6+80.21

	'D-D'
Q_{25} (cfs)	16.17
b_w (ft)	15.00'
z (ft)	3.00'
n	0.013
h (ft)	1.00'
S (%)	33.33%
d_n (ft)	0.08'
V (fps)	12.55

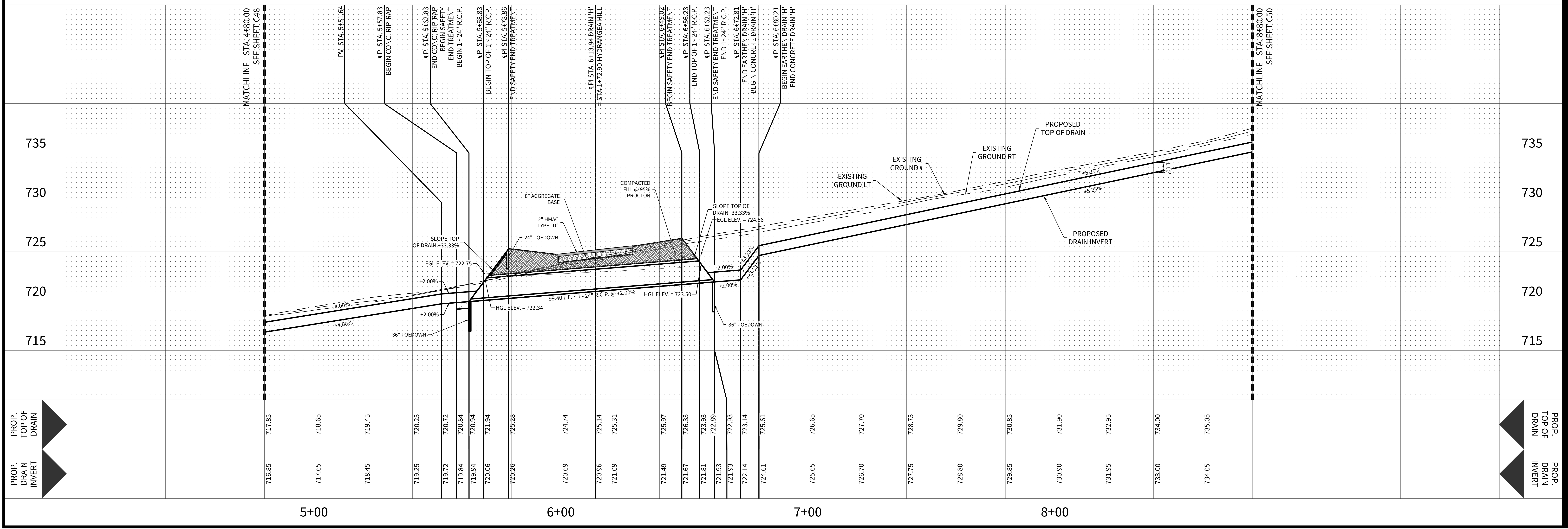
NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

DRAIN 'H'

STA. 4+80.00 TO STA. 8+80.00

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



MATCHLINE - STA. 4+80.00 SEE SHEET C48
PVI STA. 5+51.64
℄ PI STA. 5+57.83 BEGIN CONC. RIP-RAP
℄ PI STA. 5+62.83 END CONC. RIP-RAP BEGIN SAFETY END TREATMENT BEGIN 1 - 24" R.C.P.
℄ PI STA. 5+68.83 BEGIN TOP OF 1 - 24" R.C.P.
℄ PI STA. 5+78.86 END SAFETY END TREATMENT
℄ PI STA. 6+13.94 DRAIN 'H' = STA 1+72.90 HYDRANGEA HILL
℄ PI STA. 6+49.02 BEGIN SAFETY END TREATMENT
℄ PI STA. 6+56.23 END TOP OF 1 - 24" R.C.P.
℄ PI STA. 6+62.23 END SAFETY END TREATMENT END 1 - 24" R.C.P.
℄ PI STA. 6+72.81 END EARTHEN DRAIN 'H' BEGIN CONCRETE DRAIN 'H'
℄ PI STA. 6+80.21 BEGIN EARTHEN DRAIN 'H' END CONCRETE DRAIN 'H'
MATCHLINE - STA. 8+80.00 SEE SHEET C50
735
730
725
720
715
PROPOSED TOP OF DRAIN
EXISTING GROUND RT
EXISTING GROUND ℄
EXISTING GROUND LT
PROPOSED DRAIN INVERT
+5.25%
+4.00%
+2.00%
+33.33%
8" AGGREGATE BASE
2" HMAC TYPE "D"
24" TOEDOWN
COMPACTED FILL @ 95% PROCTOR
SLOPE TOP OF DRAIN +33.33%
EGL ELEV. = 722.75
HGL ELEV. = 722.34
99.40 L.F. - 1 - 24" R.C.P. @ +2.00%
HGL ELEV. = 723.50
SLOPE TOP OF DRAIN -33.33%
EGL ELEV. = 724.56
36" TOEDOWN
1.00'
PROP. TOP OF DRAIN
PROP. DRAIN INVERT
5+00
6+00
7+00
8+00

PROP. TOP OF DRAIN	PROP. DRAIN INVERT
717.85	716.85
718.65	717.65
719.45	718.45
720.25	719.25
720.72	719.72
720.84	719.84
720.94	719.94
721.94	720.06
725.28	720.26
724.74	720.69
725.14	720.96
725.31	721.09
725.97	721.49
726.33	721.67
723.93	721.81
722.89	721.93
722.93	721.93
723.14	722.14
725.61	724.61
726.65	725.65
727.70	726.70
728.75	727.75
729.80	728.80
730.85	729.85
731.90	730.90
732.95	731.95
734.00	733.00
735.05	734.05

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P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'H'

DATE	05/12/2025
PROJECT NO.	04037.003
DRAWN BY	CG/JG/LJ/TCD
CHECKED BY	XV/AL

REVISIONS

DATE

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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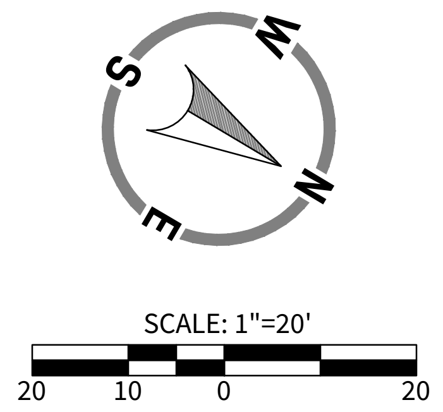
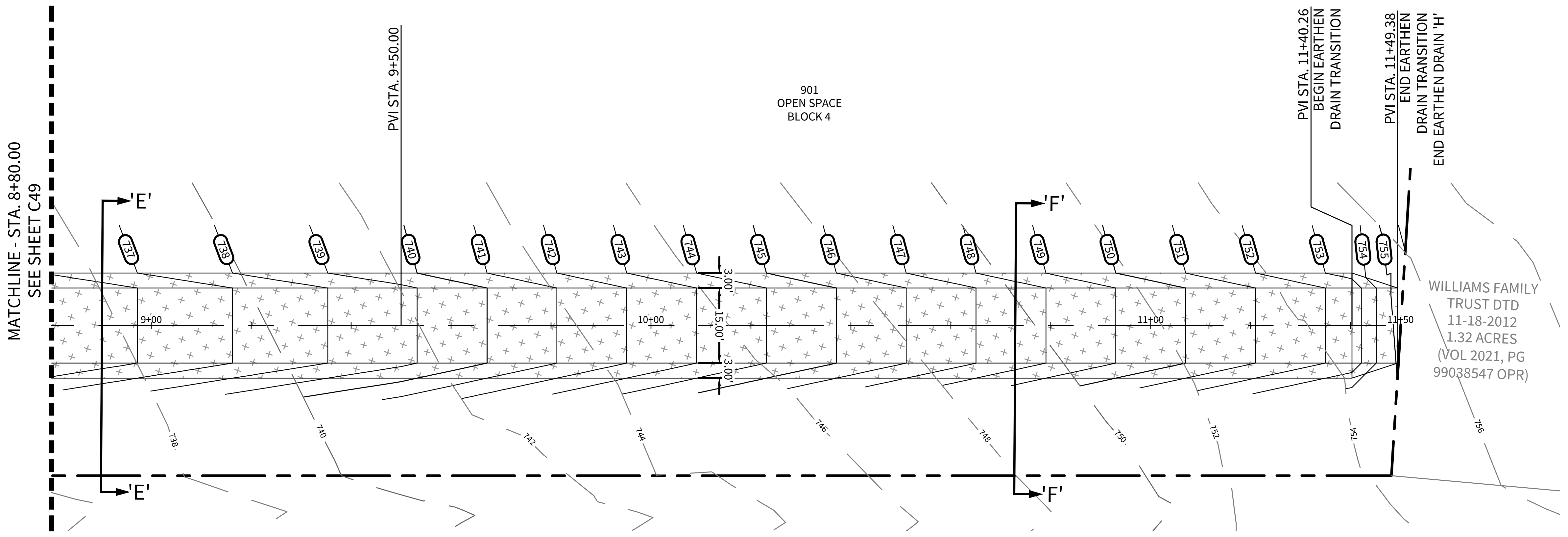
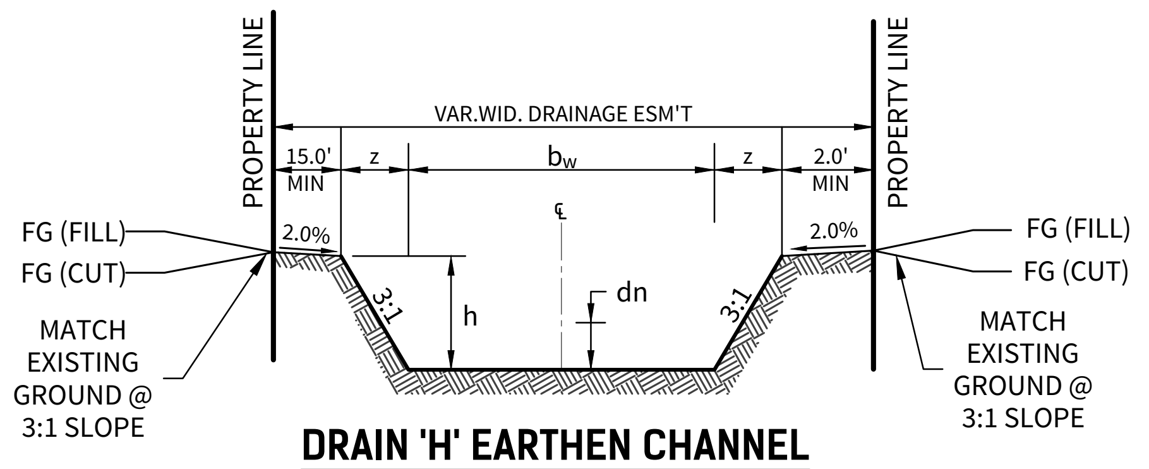




LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.CA. EASEMENT	– – – –
EXISTING 1' CONTOUR	— 499 —
EXISTING 5' CONTOUR	— 500 —
PROPOSED 1' CONTOUR	499
PROPOSED 5' CONTOUR	500
EARTHEN DRAINAGE CHANNEL	▨

	'E-E'	'F-F'
Q_{25} (cfs)	16.17	16.17
b_w (ft)	15.00'	15.00'
z (ft)	3.00'	3.00'
n	0.035	0.035
h (ft)	1.00'	1.00'
S (%)	5.25%	7.15%
d_n (ft)	0.20'	0.18'
V (fps)	3.23	3.55



DRAIN 'H' EARTHEN CHANNEL

(N.T.S.)

'E-E' STA. 8+80.00 TO STA. 9+50.00

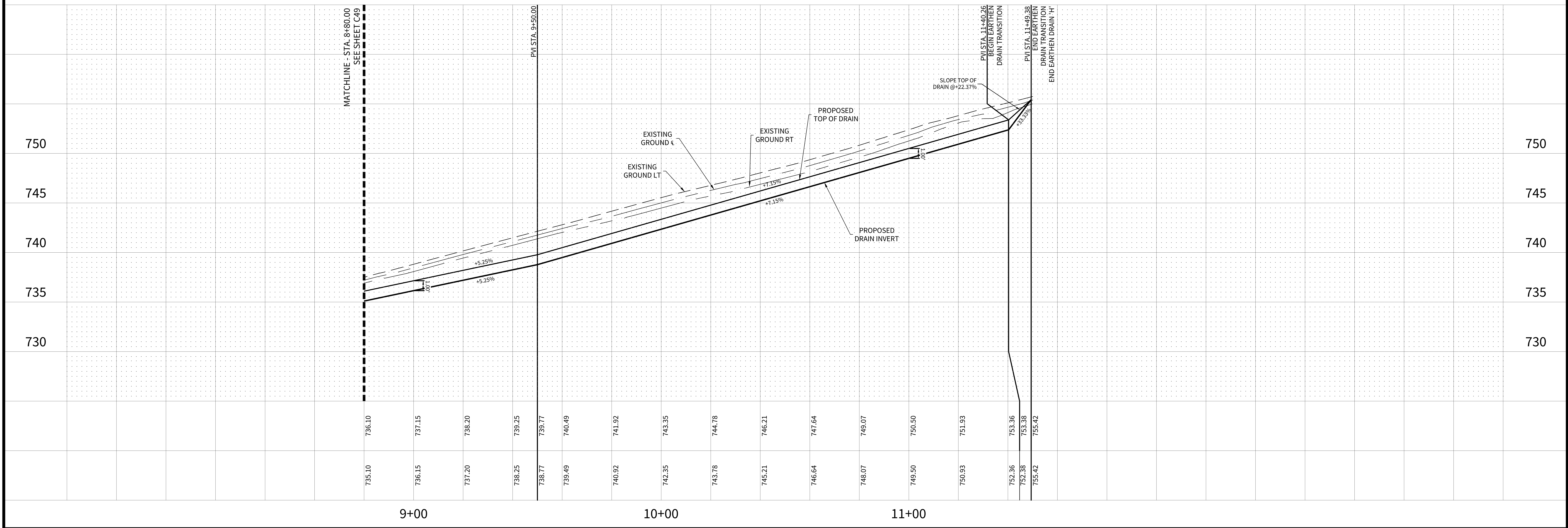
'F-F' STA. 9+50.00 TO STA. 11+40.26

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

DRAIN 'H'

STA. 8+80.00 TO END



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P:(210) 681.2951 F: (210) 523.7112

**LANTANA SUBDIVISION
UNIT 1**

DRAIN PLAN & PROFILE - DRAIN 'H'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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JAVIER CASTELLO
122170
5/12/2025

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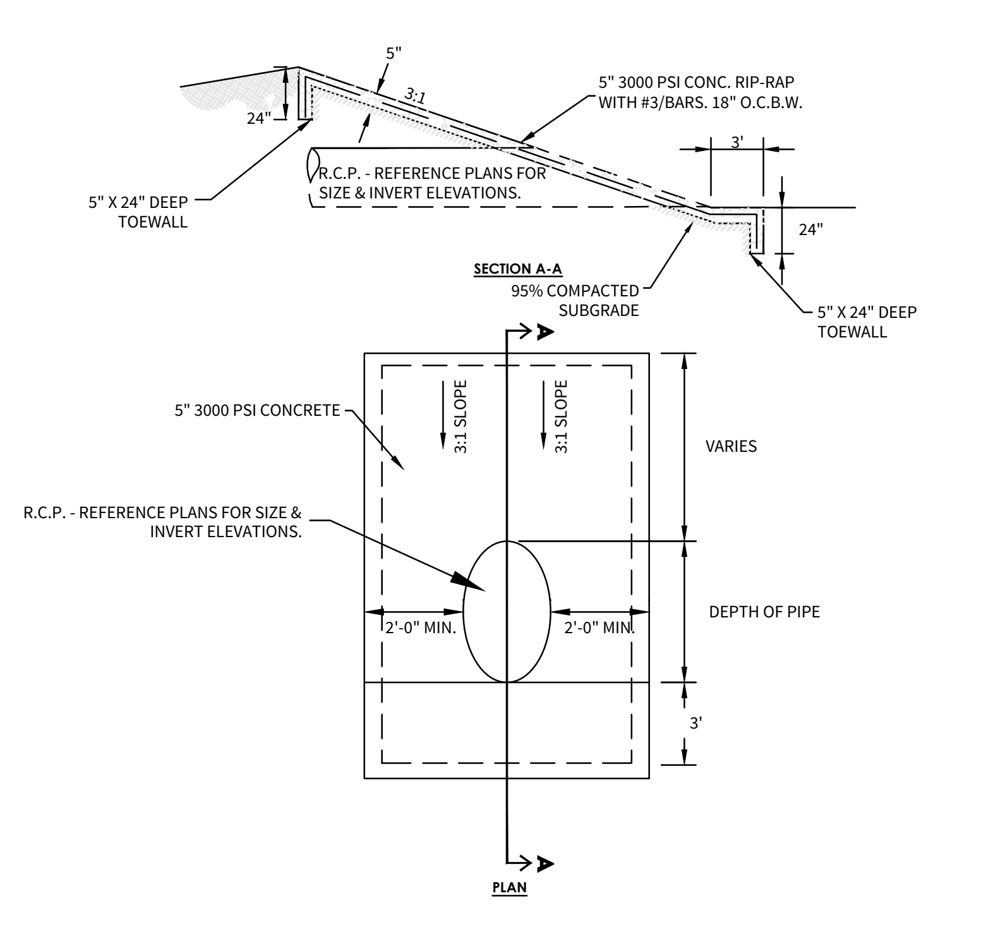

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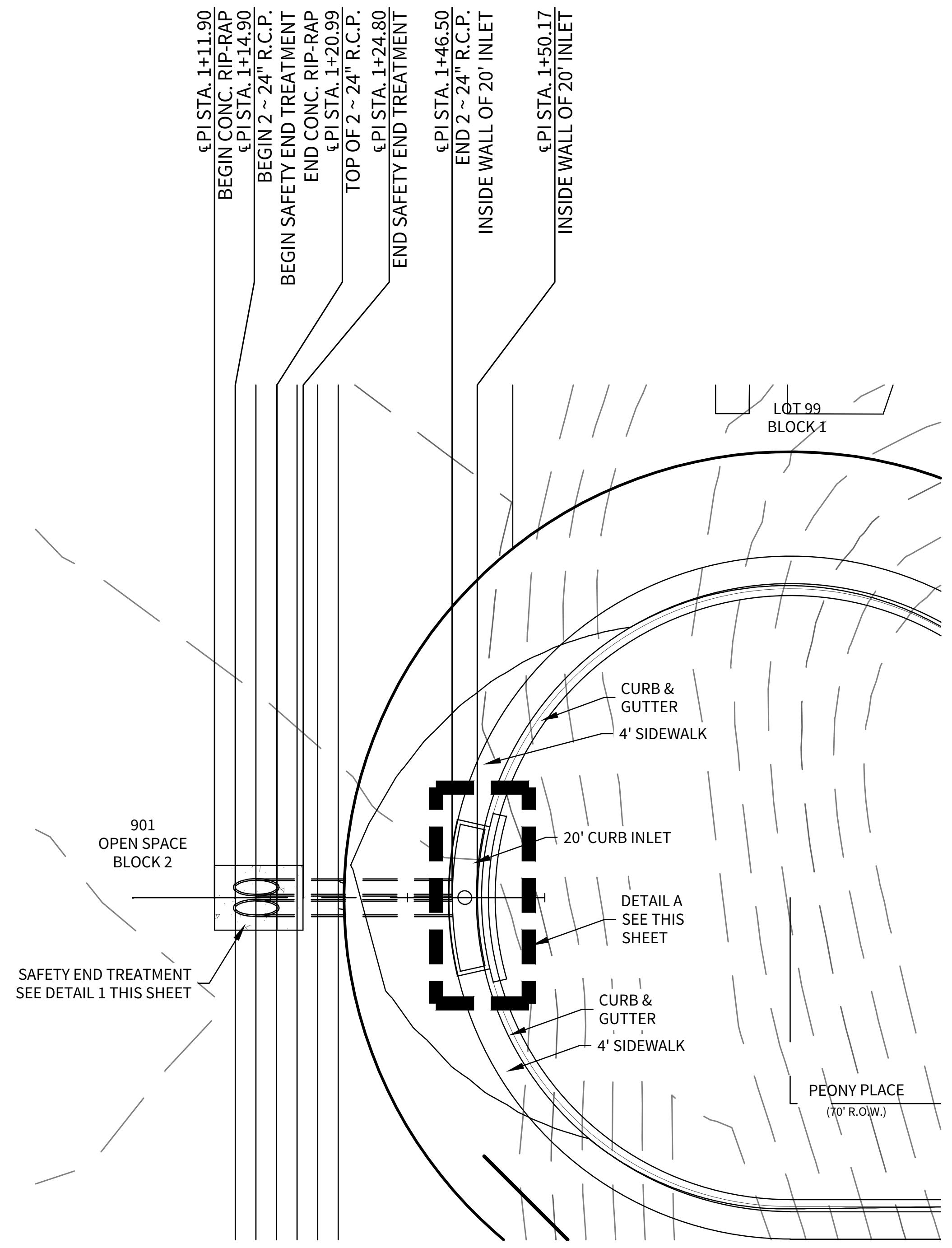
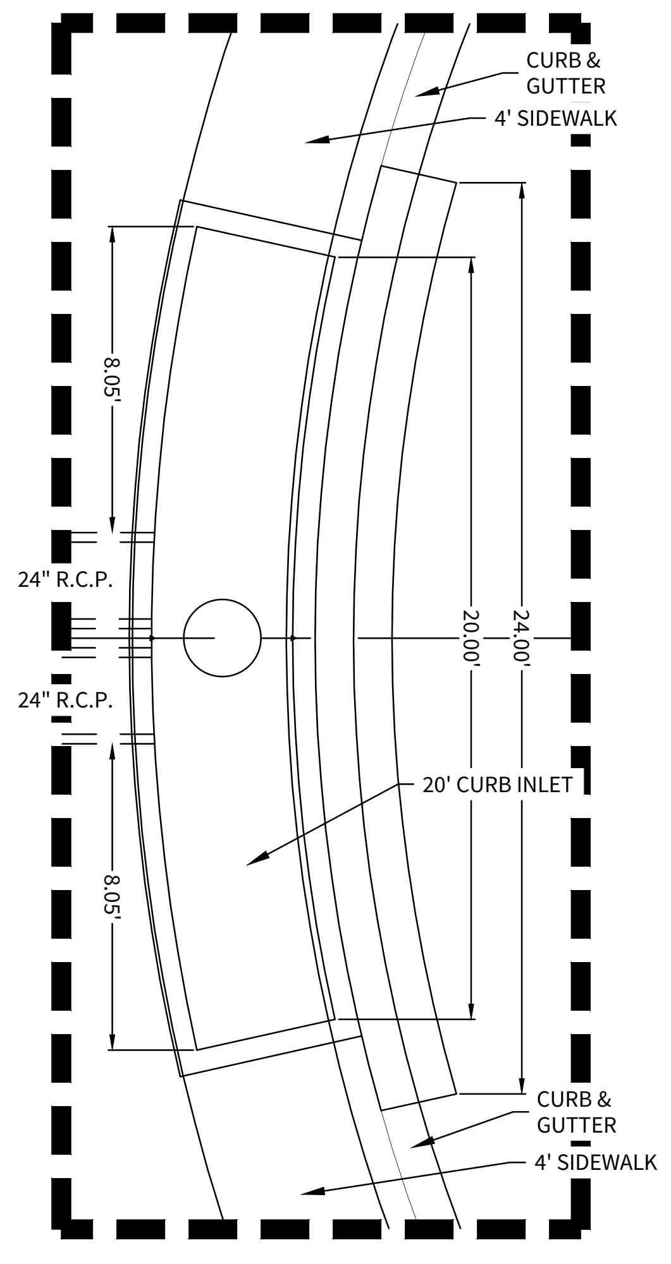
SCALE: NONE

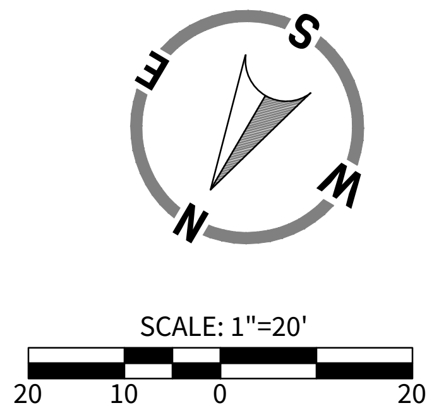
SAFETY END TREATMENT DETAIL





DETAIL A

SCALE: 1" = 5'



LEGEND

PROPERTY BOUNDARY
PROPOSED LOT LINE
PROPOSED RIGHT OF WAY
E.G.T.CA. EASEMENT
EXISTING 1' CONTOUR — 499
EXISTING 5' CONTOUR — 500
PROPOSED 1' CONTOUR — 499
PROPOSED 5' CONTOUR — 500
EARTHEN DRAINAGE CHANNEL

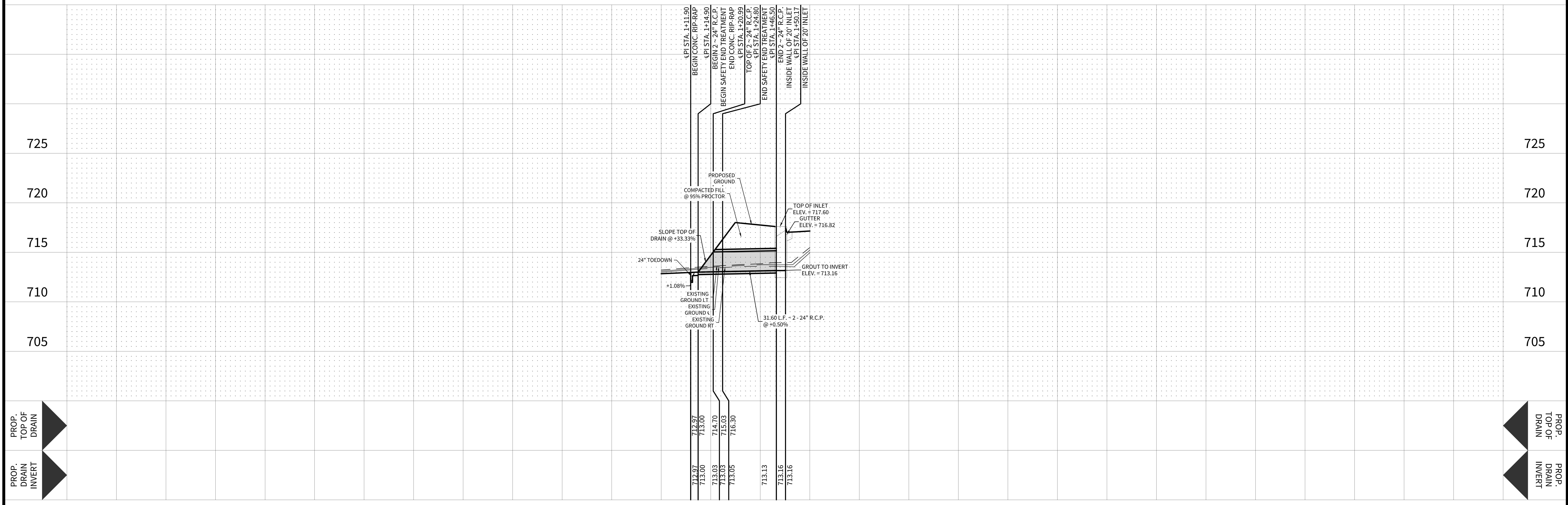
NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

DRAIN 'I'

STA. 1+11.90 TO END

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



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LANTANA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'I'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE

#	DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025

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P:\04037\003\2-DWG\4-Plans\C51 DRAIN PLAN & PROFILE - DRAIN 'I'.dwg 2025/05/12 1:50pm tduano

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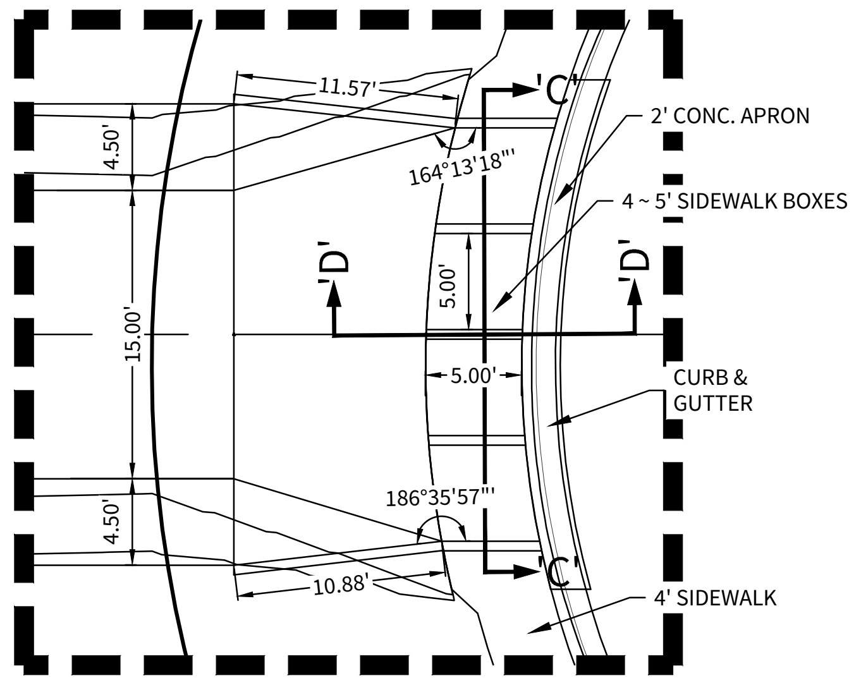
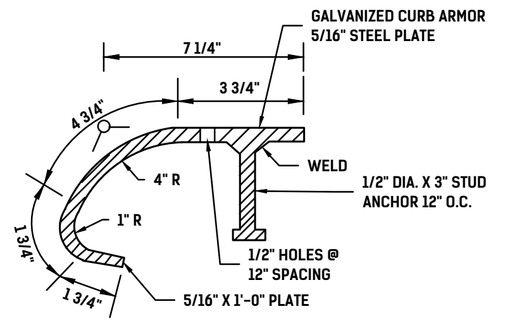


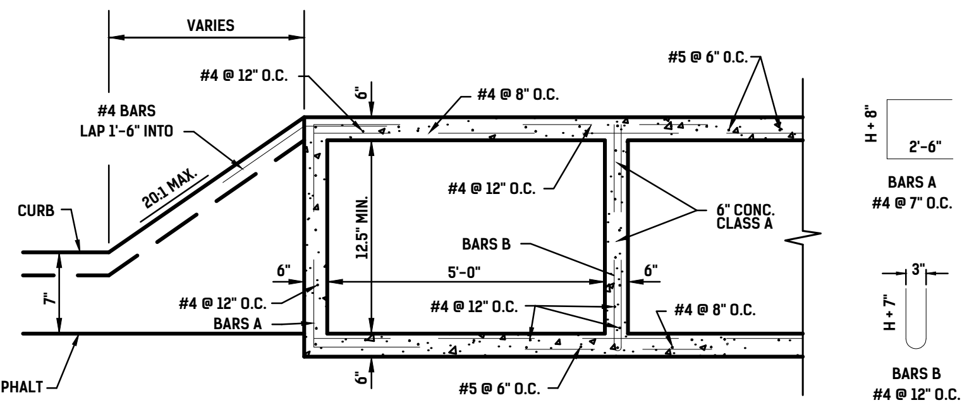
DETAIL A

SCALE: 1" = 10'



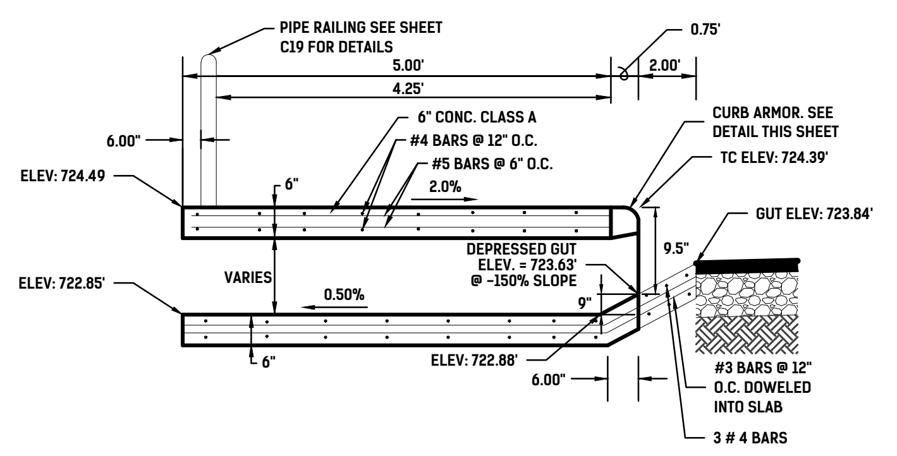
CURB ARMOR DETAIL

(N.T.S)



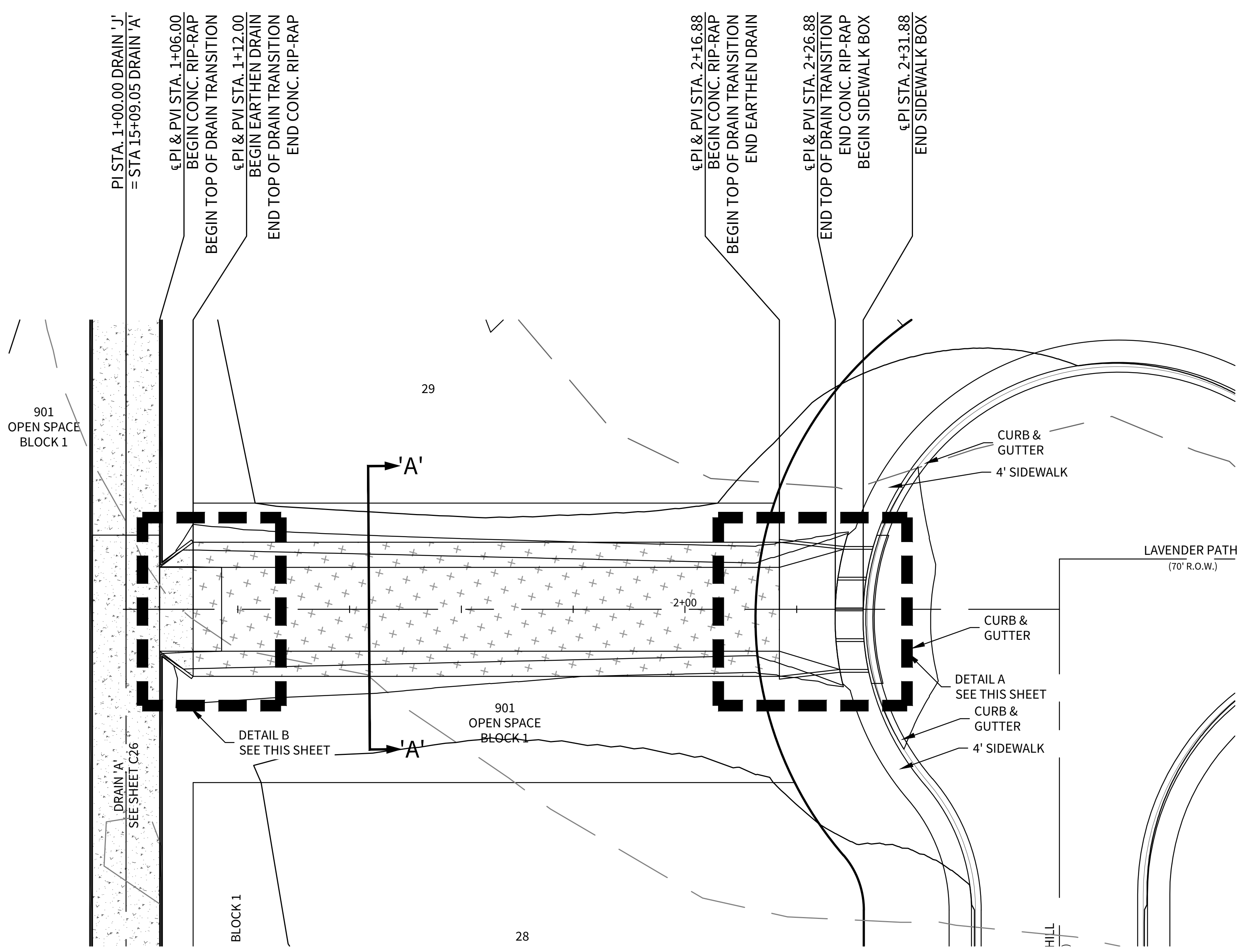
TYPICAL SIDEWALK BOX DRAIN SECTION 'C-C'

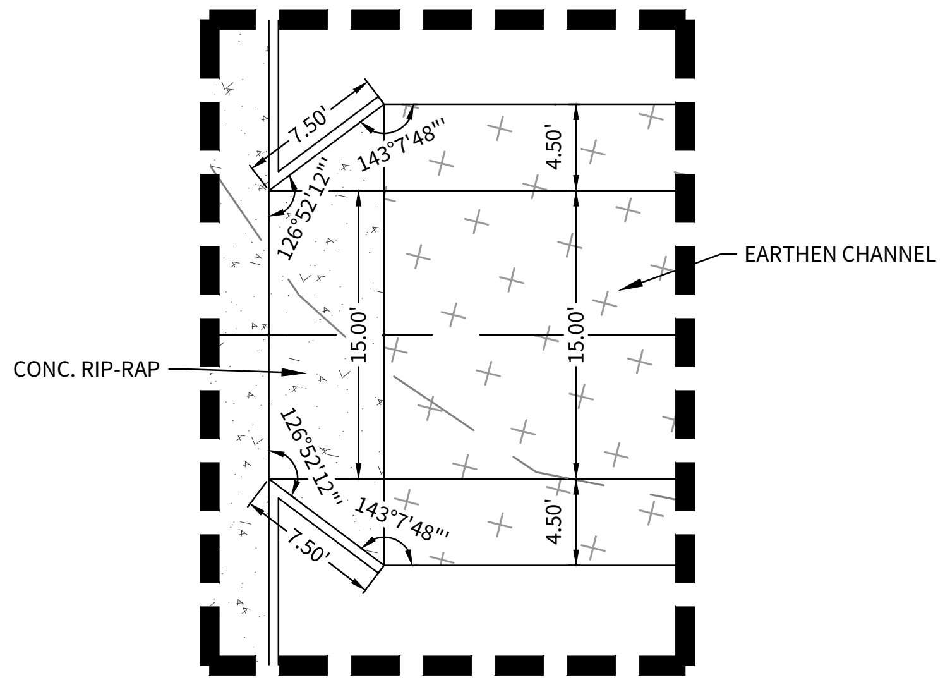
(N.T.S)



DRAIN "J" INLET SECTION 'D-D'

(N.T.S)





DETAIL B

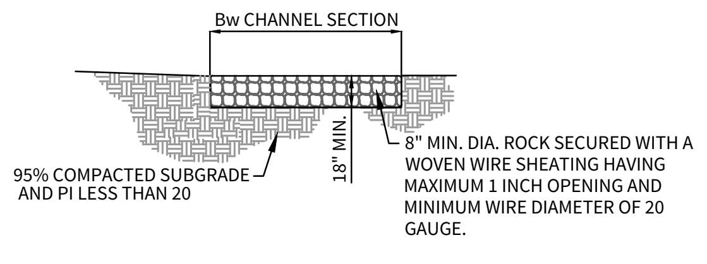
SCALE: 1" = 10'

SCALE: 1"=20'

20 10 0 20

LEGEND

PROPERTY BOUNDARY	— — — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	- - - - - -
EXISTING 1' CONTOUR	— — 499 — —
EXISTING 5' CONTOUR	— — 500 — —
PROPOSED 1' CONTOUR	—— 499 ——
PROPOSED 5' CONTOUR	—— 500 ——
EARTHEN DRAINAGE CHANNEL	▨


Bw CHANNEL SECTION
95% COMPACTED SUBGRADE
AND PI LESS THAN 20
18" MIN.
8" MIN. DIA. ROCK SECURED WITH A
WOVEN WIRE SHEATING HAVING
MAXIMUM 1 INCH OPENING AND
MINIMUM WIRE DIAMETER OF 20
GAUGE.

GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.

(N.T.S.)

SIDEWALK BOX OPENING

WEIR EQUATION

$Q_{25} = CL(H)^{3/2}$

$Q_{25} = 36.66$ C.F.S.

$C = 3.087$

$H = 0.79'$

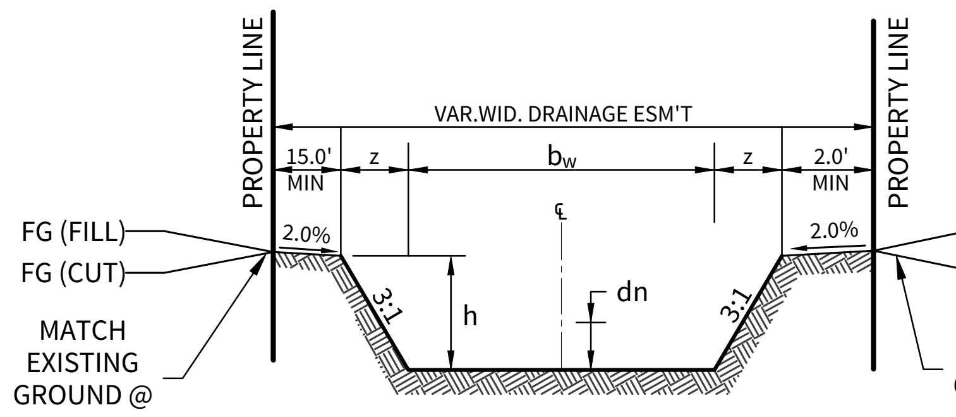
$L = \dfrac{36.66 \text{ C.F.S}}{(3.087)(0.79)^{3/2}}$

$L = 16.91'$

USE 4 ~ 5 FT SIDEWALK BOXES

DRAIN 'J'

STA. 1+00.00 TO END



DRAIN 'J' EARTHEN CHANNEL

(N.T.S.)

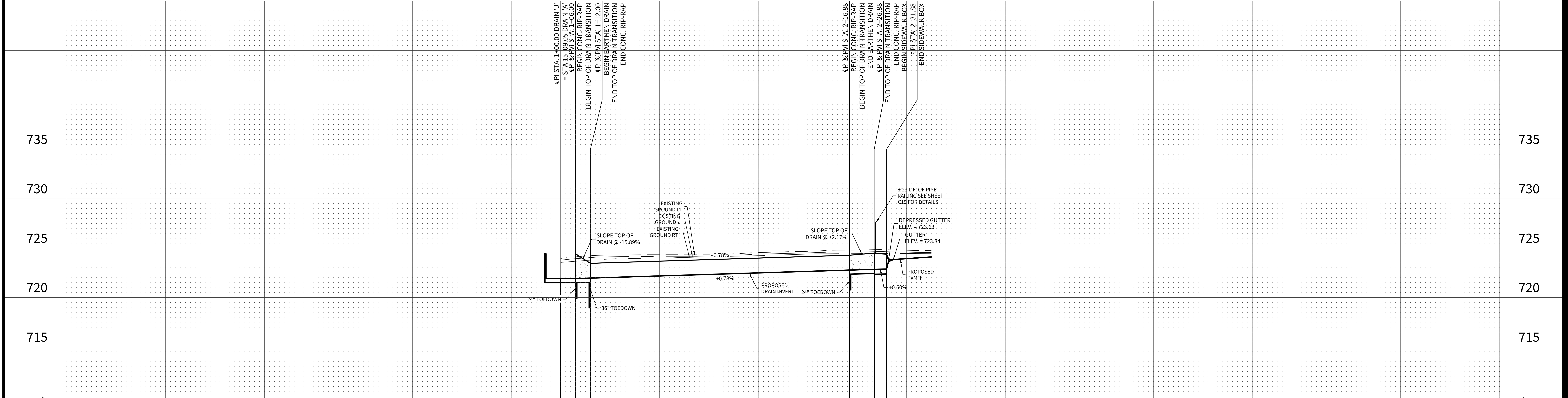
'A-A' STA. 1+12.00 TO STA. 2+16.88

	'A-A'
Q_{25} (cfs)	36.66
b_w (ft)	15.00'
z (ft)	3.00'
n	0.035
h (ft)	1.50'
S (%)	0.78%
d_n (ft)	0.75'
V (fps)	2.84

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



PROP. TOP OF DRAIN		724.41	723.46	723.52	723.68	723.83	723.99	724.14	724.28	724.34	724.49	
PROP. DRAIN INVERT	721.91	721.91	721.96	722.02	722.18	722.33	722.49	722.64	722.78	722.80	722.85	722.88

1+00 2+00

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San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'J'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	1.	2.	3.	4.	5.	6.	7.	8.	9.
REVISIONS									
DATE									

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C52

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P:\04037\003\2-DWG\4-Plans\C52 DRAIN PLAN & PROFILE - DRAIN 'J'.dwg 2025/05/12 1:50pm tduano

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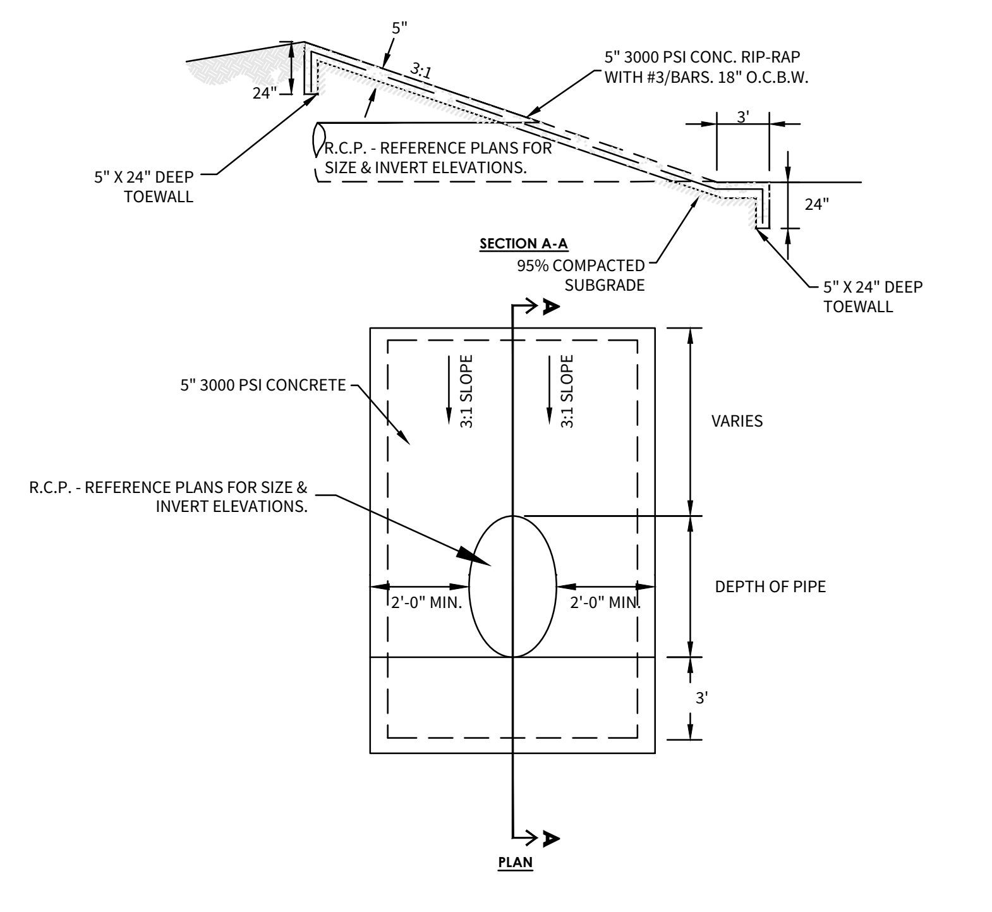
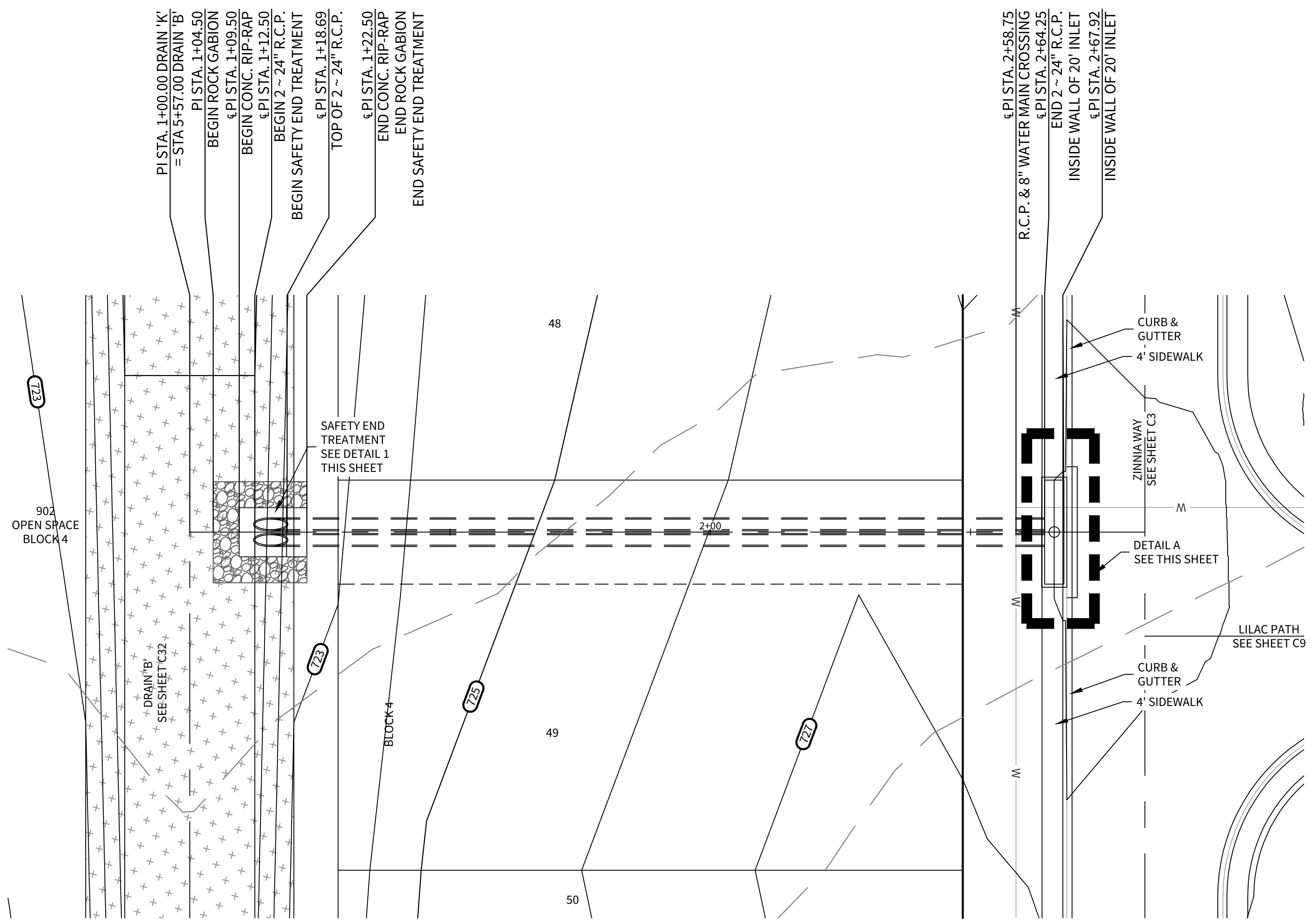


1 SCALE: NONE

SAFETY END TREATMENT DETAIL

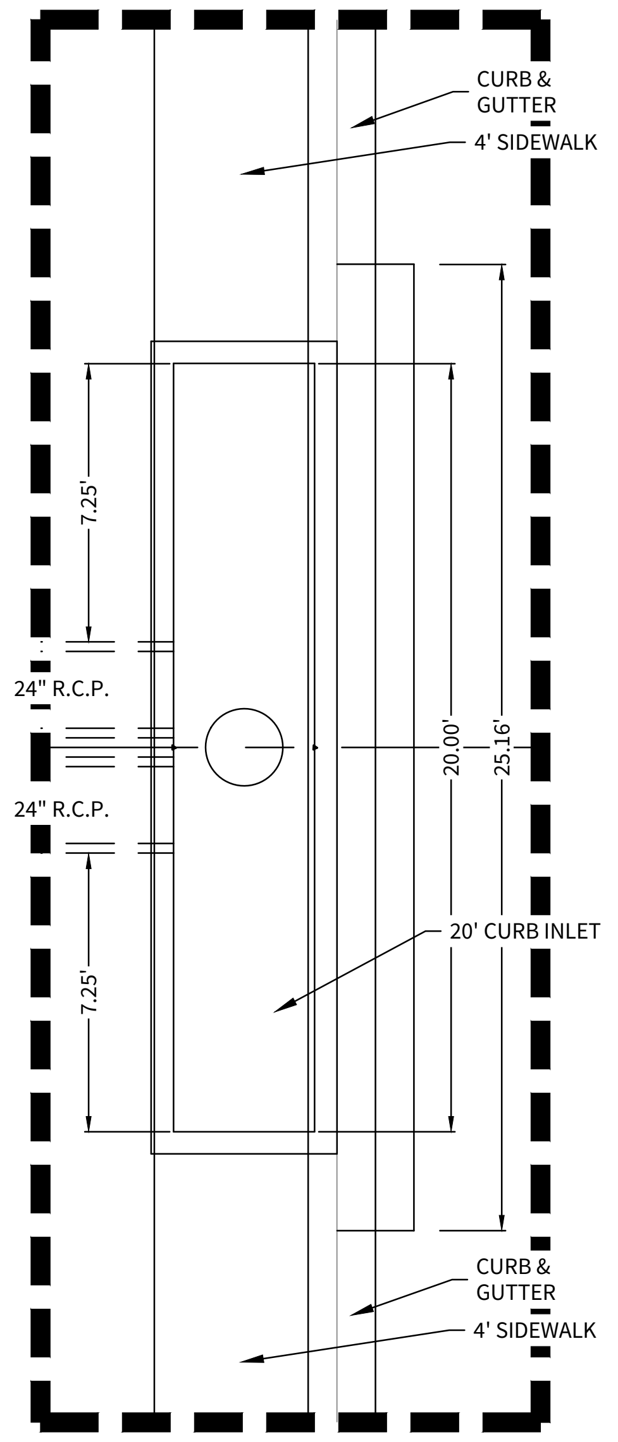


SCALE: 1"=20'

20 10 0 20

LEGEND

PROPERTY BOUNDARY	— — — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.CA. EASEMENT	- - - - - -
EXISTING 1' CONTOUR	— — 499 — —
EXISTING 5' CONTOUR	— — 500 — —
PROPOSED 1' CONTOUR	——(499)——
PROPOSED 5' CONTOUR	——(500)——
EARTHEN DRAINAGE CHANNEL	▨

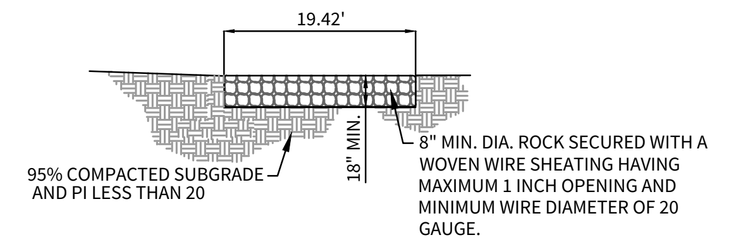


DETAIL A

SCALE: 1" = 5'

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE


19.42'
18" MIN.
95% COMPACTED SUBGRADE AND PI LESS THAN 20
8" MIN. DIA. ROCK SECURED WITH A WOVEN WIRE SHEATING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.

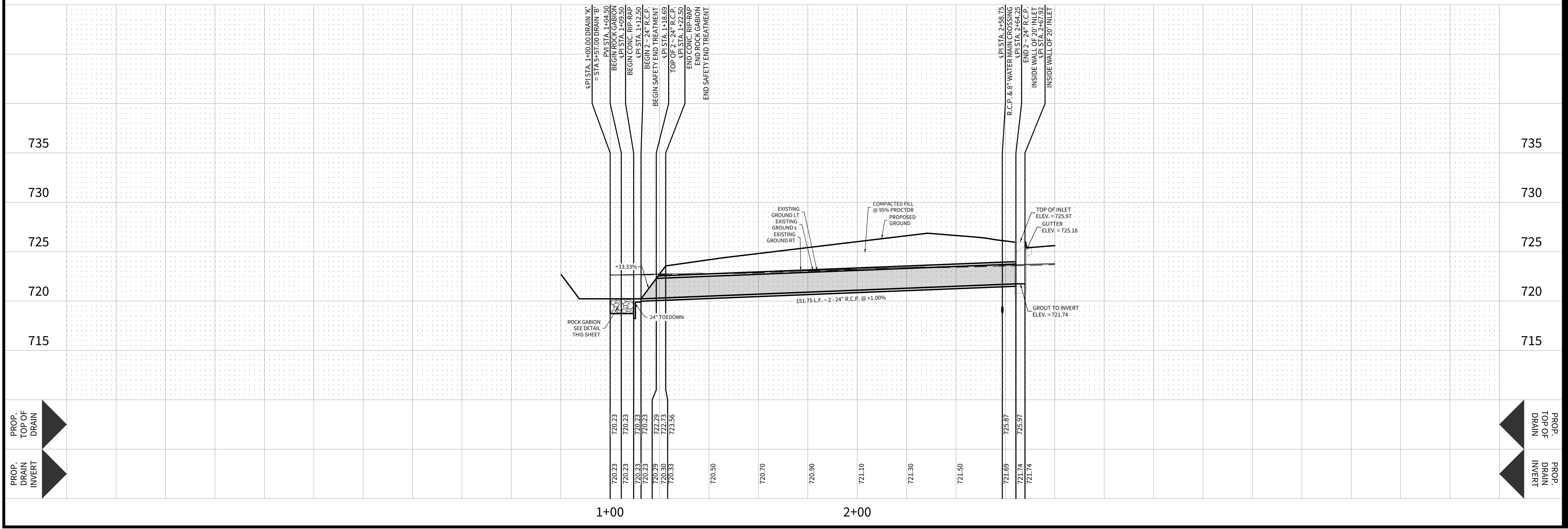
GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)

DRAIN 'K'

STA. 1+00.00 TO END

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



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LANTANA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'K'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE

1.
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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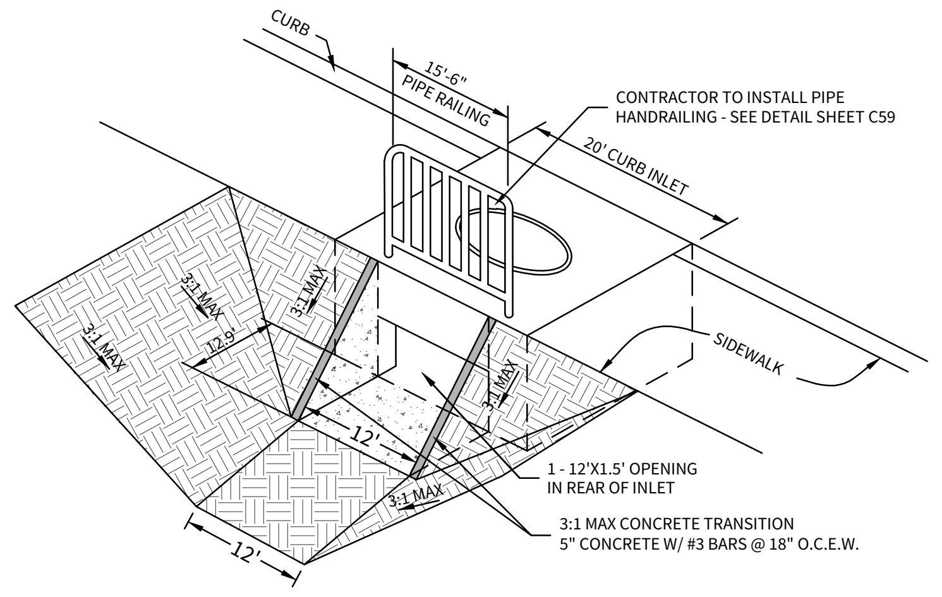

CURB
15'-6"
PIPE RAILING
CONTRACTOR TO INSTALL PIPE HANDRAILING - SEE DETAIL SHEET C59
20' CURB INLET
SIDEWALK
3:1 MAX
12.9'
12'
1 - 12'X1.5' OPENING IN REAR OF INLET
3:1 MAX CONCRETE TRANSITION 5" CONCRETE W/ #3 BARS @ 18" O.C.E.W.

DRAIN 'L'
CURB INLET & EARTHEN DRAIN DETAIL (N.T.S.)

NOTE: CONTRACTOR TO DOWEL CONC. TRANSITION TO REAR OF INLET WITH #4 DOWELS @ 12" O.C.

CURB INLET OPENING

Q_{25} = 28.55 c.f.s. / 2.06 = 13.86' REQ.

USED 20' INLET

A = 18.00 s.f. (1 - 12' x 1.5')

V = 1.59 f.p.s.

Hv = 0.04'

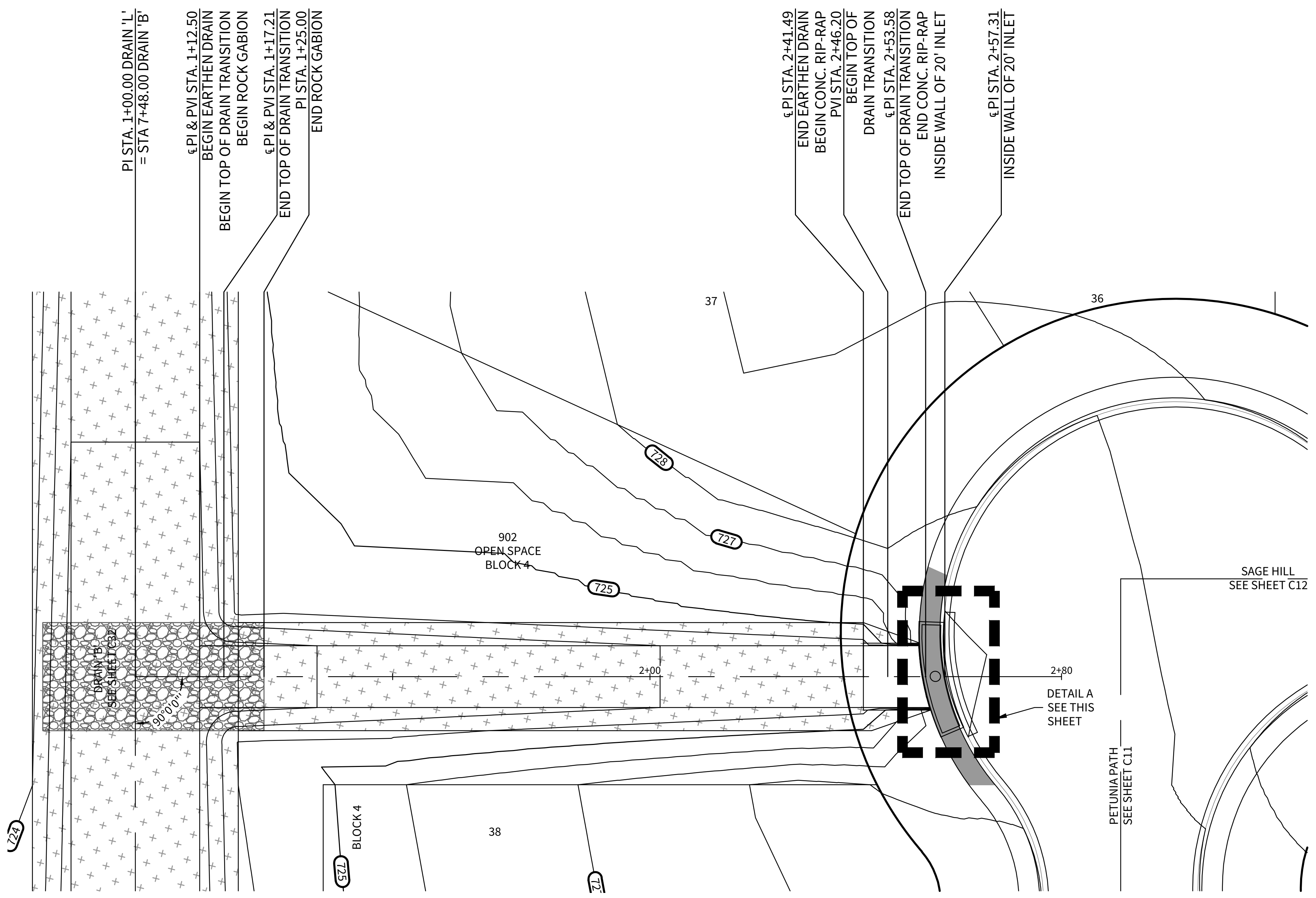
1.5Hv = 0.06'

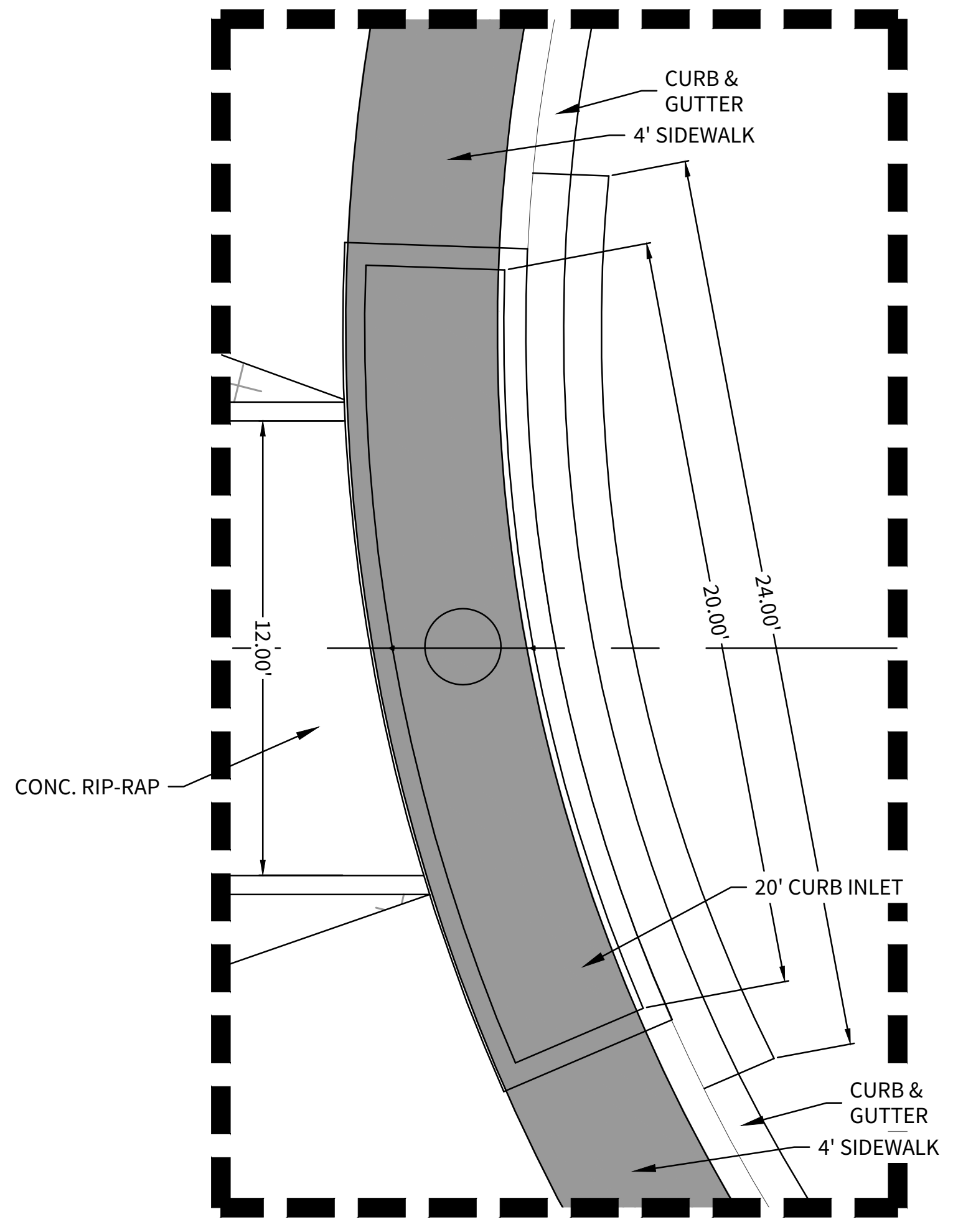
Hw = z + y + 1.5Hv

Hw = 723.77' + 1.50' + .06'

Hw = 725.33

GUTTER = 726.55





DETAIL A

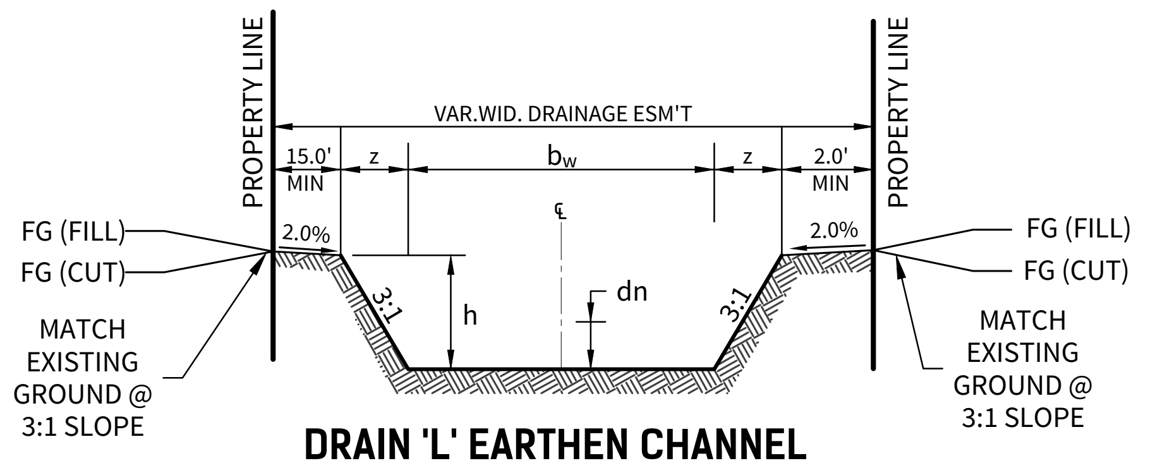
SCALE: 1" = 5'

SCALE: 1"=20'

20 10 0 20

LEGEND

PROPERTY BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	– – – –
EXISTING 1' CONTOUR	– – 499 – –
EXISTING 5' CONTOUR	– – 500 – –
PROPOSED 1' CONTOUR	— 499 —
PROPOSED 5' CONTOUR	— 500 —
EARTHEN DRAINAGE CHANNEL	▨



DRAIN 'L' EARTHEN CHANNEL

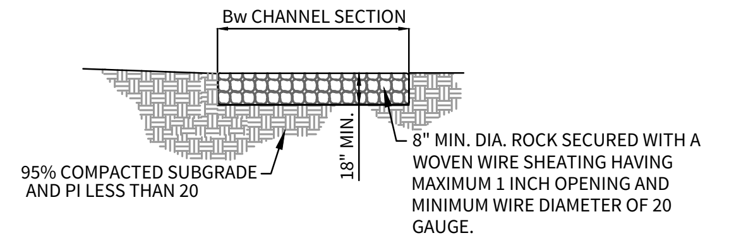
(N.T.S.)

'A-A' STA. 1+12.50 TO STA. 2+41.49

	'A-A'
Q_{25} (cfs)	28.55
b_w (ft)	12.00'
z (ft)	3.00'
n	0.035
h (ft)	1.50'
S (%)	1.50%
d_n (ft)	0.61'
V (fps)	3.41

DRAIN 'L'

STA. 1+00.00 TO END


Bw CHANNEL SECTION
95% COMPACTED SUBGRADE AND PI LESS THAN 20
18" MIN.
8" MIN. DIA. ROCK SECURED WITH A WOVEN WIRE SHEATING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.

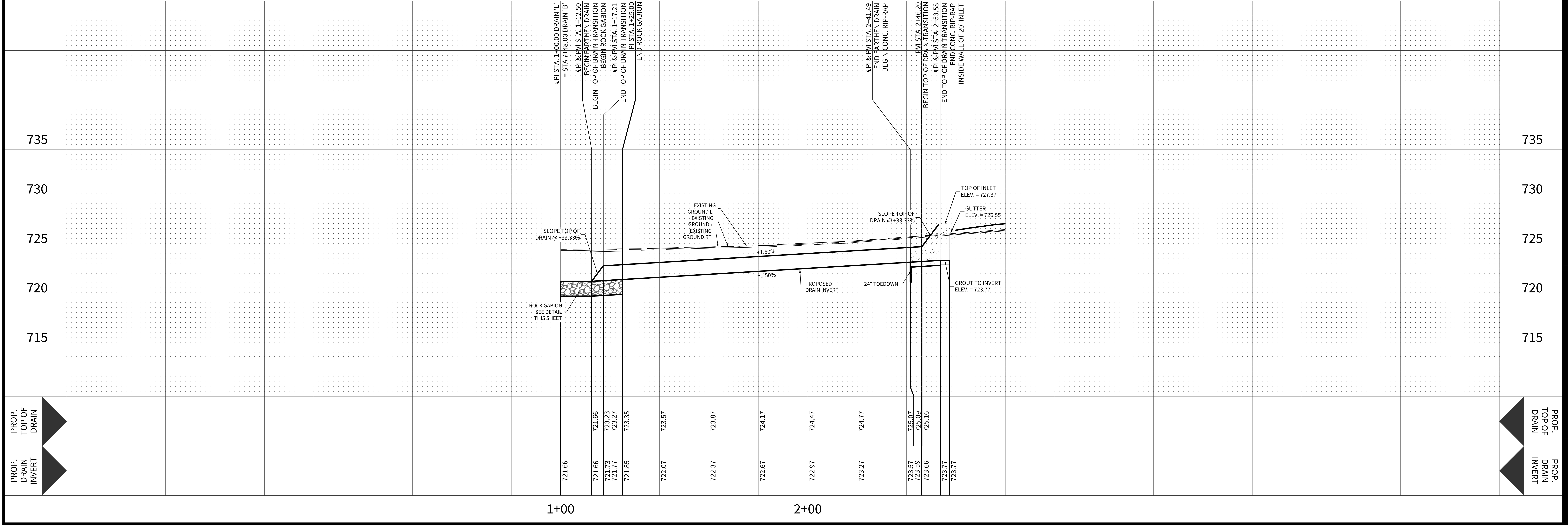
GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



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LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'L'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

△	DATE	
1.		
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7.		
8.		
9.		

JAVIER CASTELLO
122170
5/12/2025

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TBPLS No. 10048500

C54

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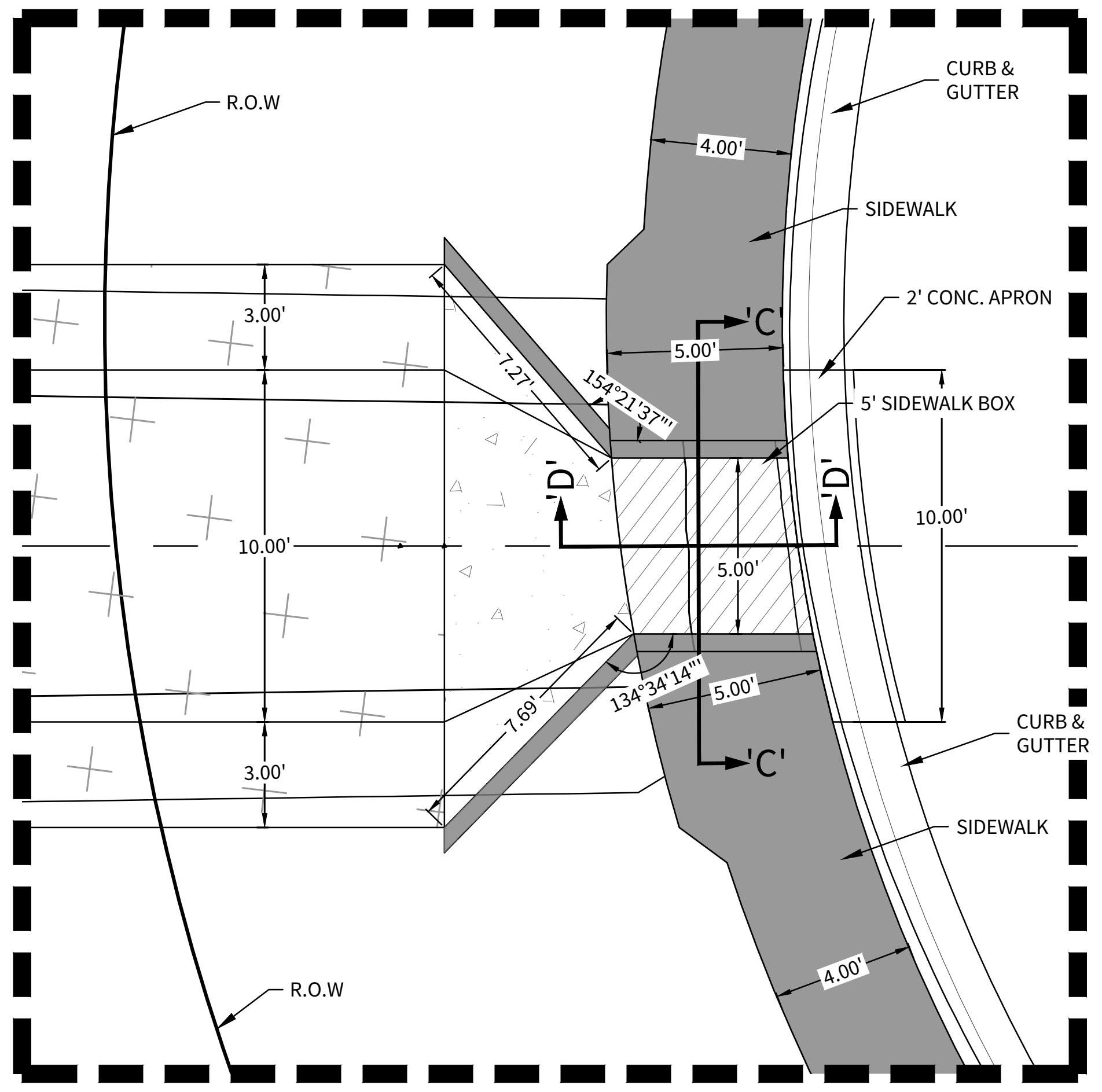
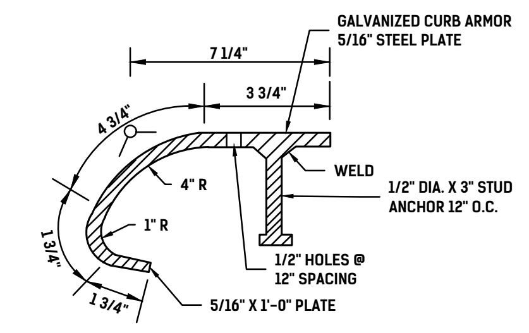


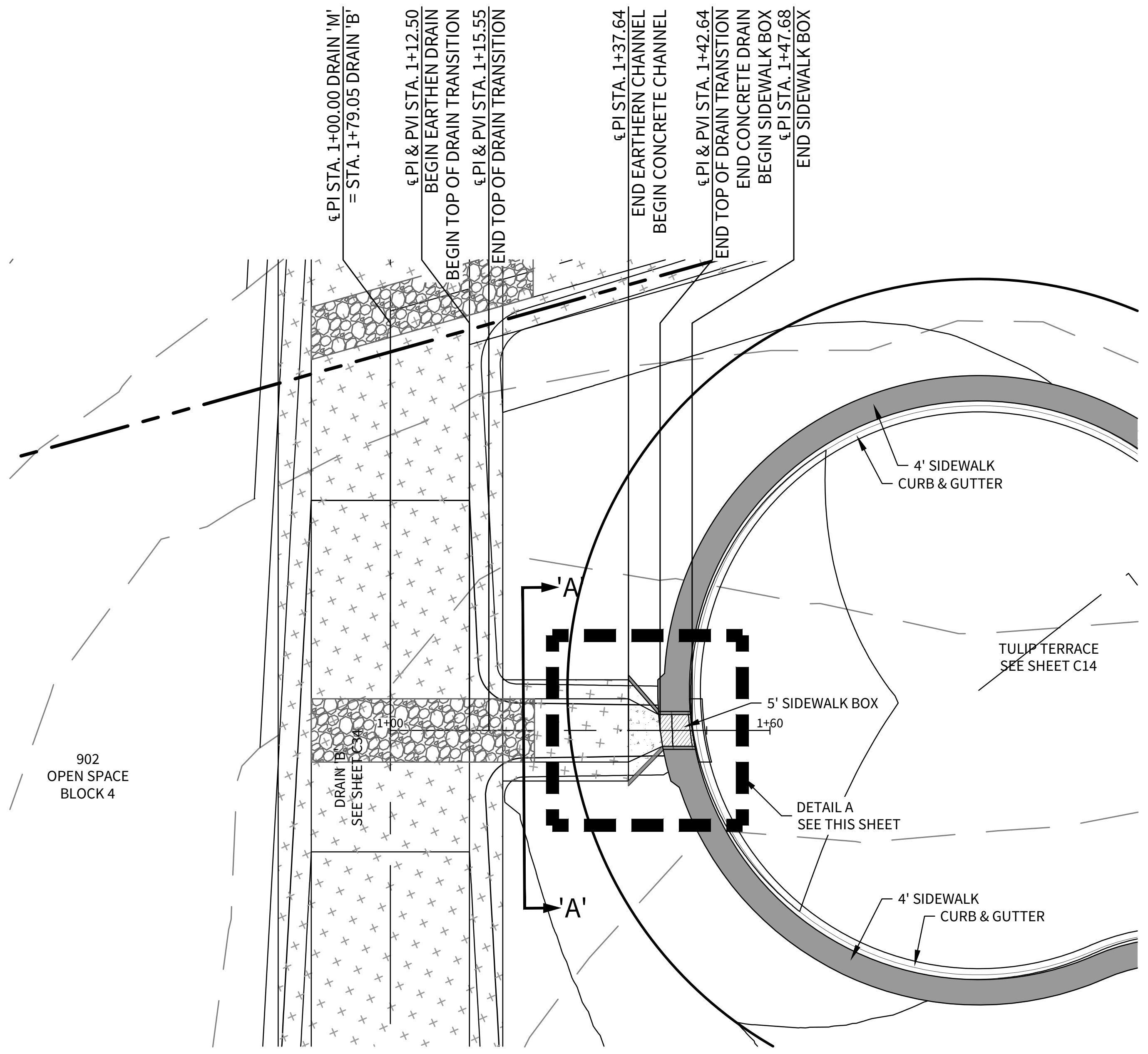
DETAIL A

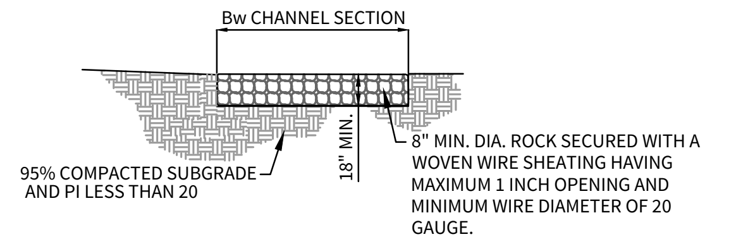
SCALE: 1" = 5'


7 1/4"
3 3/4"
GALVANIZED CURB ARMOR 5/16" STEEL PLATE
WELD
1/2" DIA. X 3" STUD ANCHOR 12" O.C.
4" R
1" R
1/2" HOLES @ 12" SPACING
5/16" X 1'-0" PLATE

CURB ARMOR DETAIL

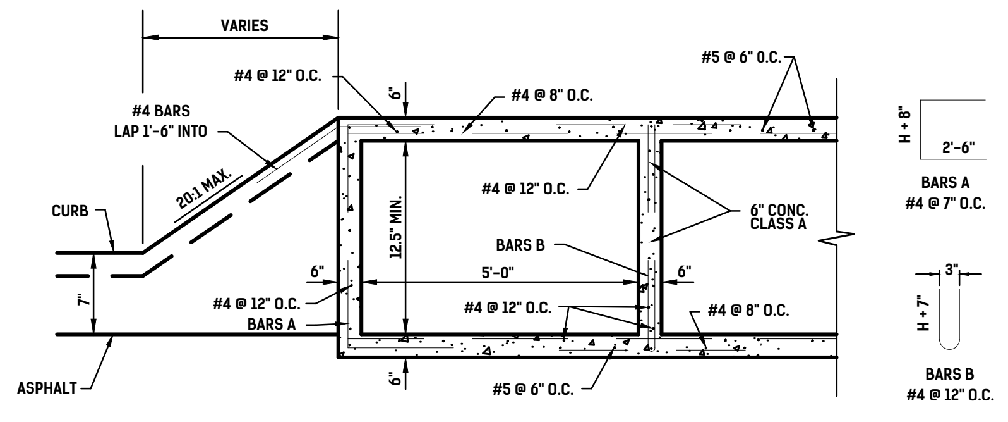
(N.T.S)


℄ PI STA. 1+00.00 DRAIN 'M' = STA. 1+79.05 DRAIN 'B'
℄ PI & PVI STA. 1+12.50 BEGIN EARTHEN DRAIN BEGIN TOP OF DRAIN TRANSITION
℄ PI & PVI STA. 1+15.55 END TOP OF DRAIN TRANSITION
℄ PI STA. 1+37.64 END EARTHEN CHANNEL BEGIN CONCRETE CHANNEL
℄ PI & PVI STA. 1+42.64 END TOP OF DRAIN TRANSITION END CONCRETE DRAIN BEGIN SIDEWALK BOX
℄ PI STA. 1+47.68 END SIDEWALK BOX
4' SIDEWALK CURB & GUTTER
'A'
'A'
5' SIDEWALK BOX
DETAIL A SEE THIS SHEET
TULIP TERRACE SEE SHEET C14
902 OPEN SPACE BLOCK 4
DRAIN 'B' SEE SHEET C54
4' SIDEWALK CURB & GUTTER


Bw CHANNEL SECTION
95% COMPACTED SUBGRADE AND PI LESS THAN 20
18" MIN.
6" MIN. DIA. ROCK SECURED WITH A WOVEN WIRE SHEATING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.

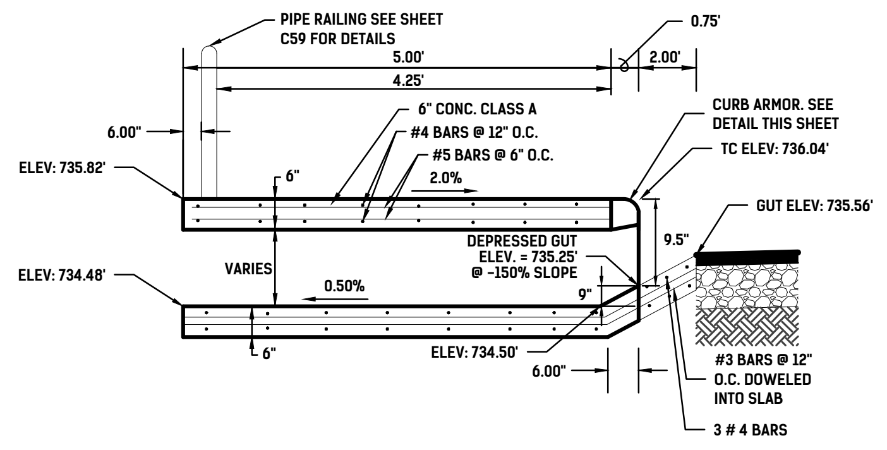
GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)



TYPICAL SIDEWALK BOX DRAIN SECTION 'C-C'

(N.T.S)



DRAIN "M" INLET SECTION 'D-D'

(N.T.S)

SIDEWALK BOX OPENING

WEIR EQUATION

$Q_{25} = CL(H)^{3/2}$

$Q_{25} = 8.30$ C.F.S.

$C = 3.087$

$H = 0.79'$

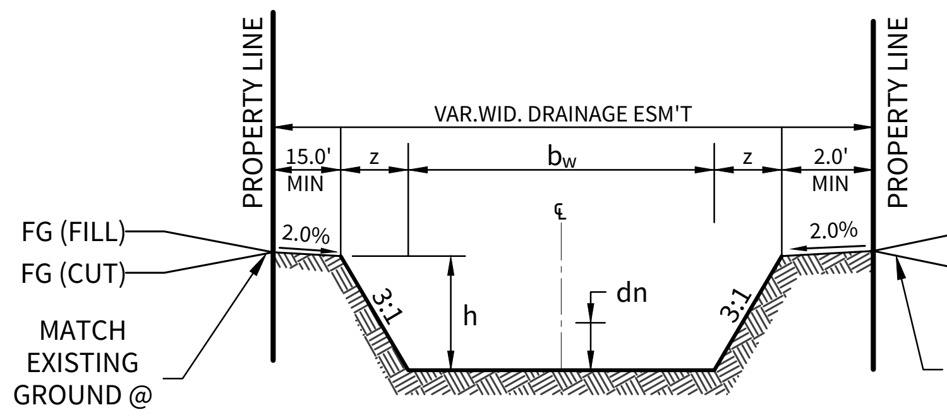
$$L = \frac{8.30 \text{ C.F.S}}{(3.087)(0.79)^{3/2}}$$

$L = 3.83'$

USE 1 ~ 5 FT SIDEWALK BOXES

DRAIN 'M'

STA. 1+00.00 TO END



DRAIN 'M' EARTHEN CHANNEL

(N.T.S)

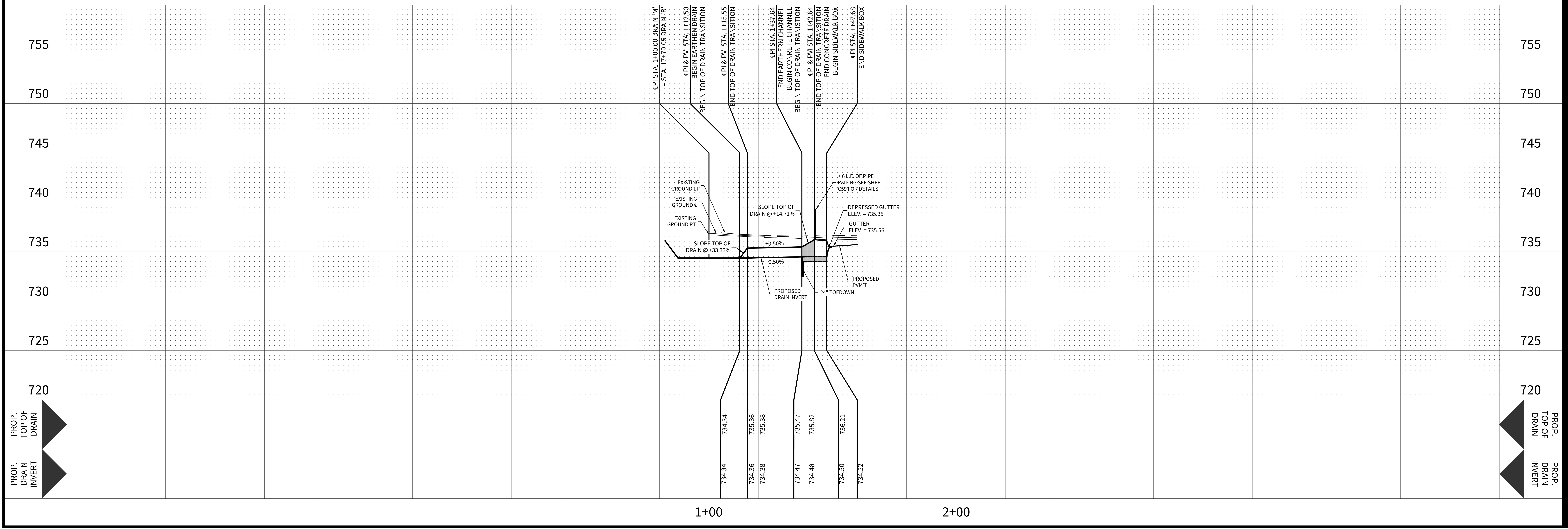
'A-A' STA. 1+12.50 TO STA. 1+37.50

	'A-A'
Q_{25} (cfs)	8.30
b_w (ft)	10.00'
z (ft)	3.00'
n	0.035
h (ft)	1.00'
S (%)	0.50%
d_n (ft)	0.45'
V (fps)	1.63

NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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


755
750
745
740
735
730
725
720
℄ PI STA. 1+00.00 DRAIN 'M' = STA. 1+79.05 DRAIN 'B'
℄ PI & PVI STA. 1+12.50 BEGIN EARTHEN DRAIN BEGIN TOP OF DRAIN TRANSITION
℄ PI & PVI STA. 1+15.55 END TOP OF DRAIN TRANSITION
℄ PI STA. 1+37.64 END EARTHEN CHANNEL BEGIN CONCRETE CHANNEL BEGIN TOP OF DRAIN TRANSITION
℄ PI & PVI STA. 1+42.64 END TOP OF DRAIN TRANSITION END CONCRETE DRAIN BEGIN SIDEWALK BOX
℄ PI STA. 1+47.68 END SIDEWALK BOX
EXISTING GROUND LT
EXISTING GROUND ℄
EXISTING GROUND RT
SLOPE TOP OF DRAIN @ +33.33%
+0.50%
SLOPE TOP OF DRAIN @ +14.71%
± 6 L.F. OF PIPE RAILING SEE SHEET C59 FOR DETAILS
DEPRESSED GUTTER ELEV. = 735.35
GUTTER ELEV. = 735.56
+0.50%
PROPOSED DRAIN INVERT
24" TOEDOWN
PROPOSED PVM'T
PROP. TOP OF DRAIN
734.34
735.36
735.38
735.47
735.82
736.21
PROP. DRAIN INVERT
734.34
734.36
734.38
734.47
734.48
734.50
734.52
1+00
2+00

SCALE: 1"=20'

20 10 0 20

LEGEND

PROPERTY BOUNDARY	— — — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	— — —
EXISTING 1' CONTOUR	— — 499 — —
EXISTING 5' CONTOUR	— — 500 — —
PROPOSED 1' CONTOUR	—499—
PROPOSED 5' CONTOUR	—500—
EARTHEN DRAINAGE CHANNEL	▨

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San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'M'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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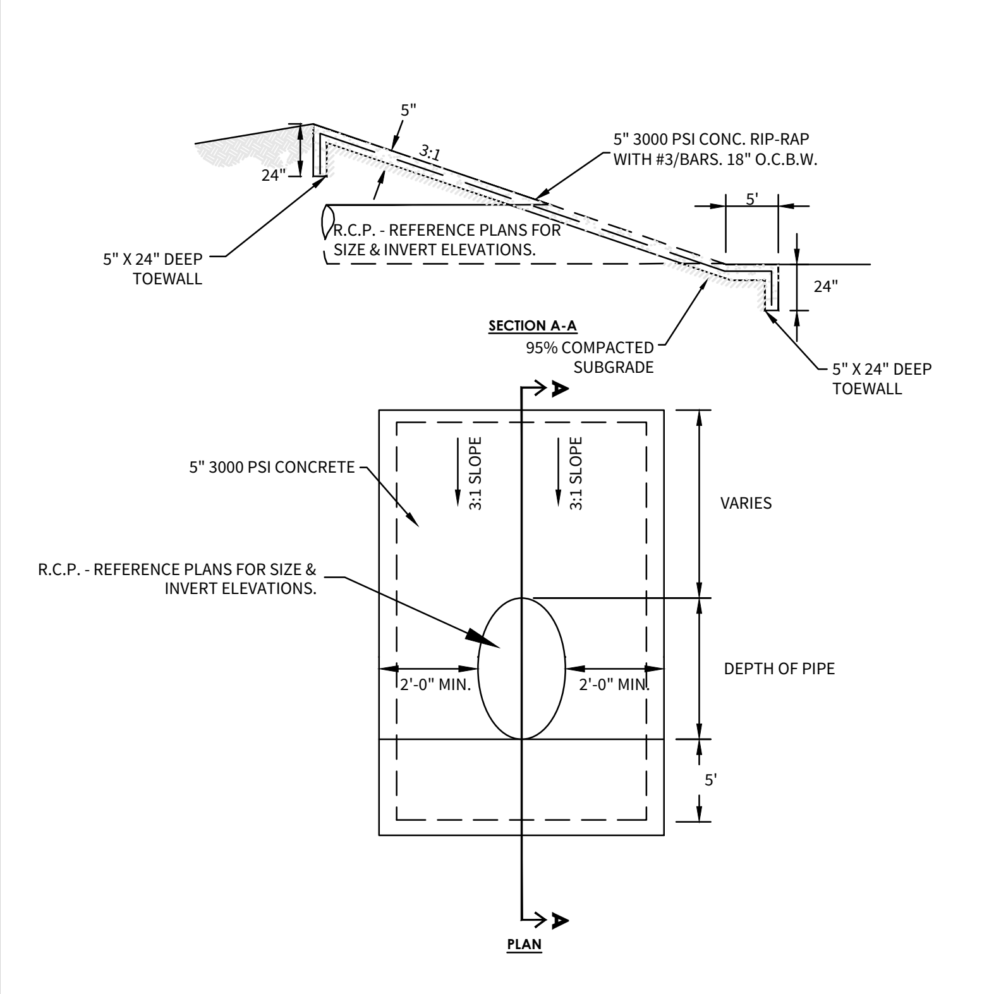
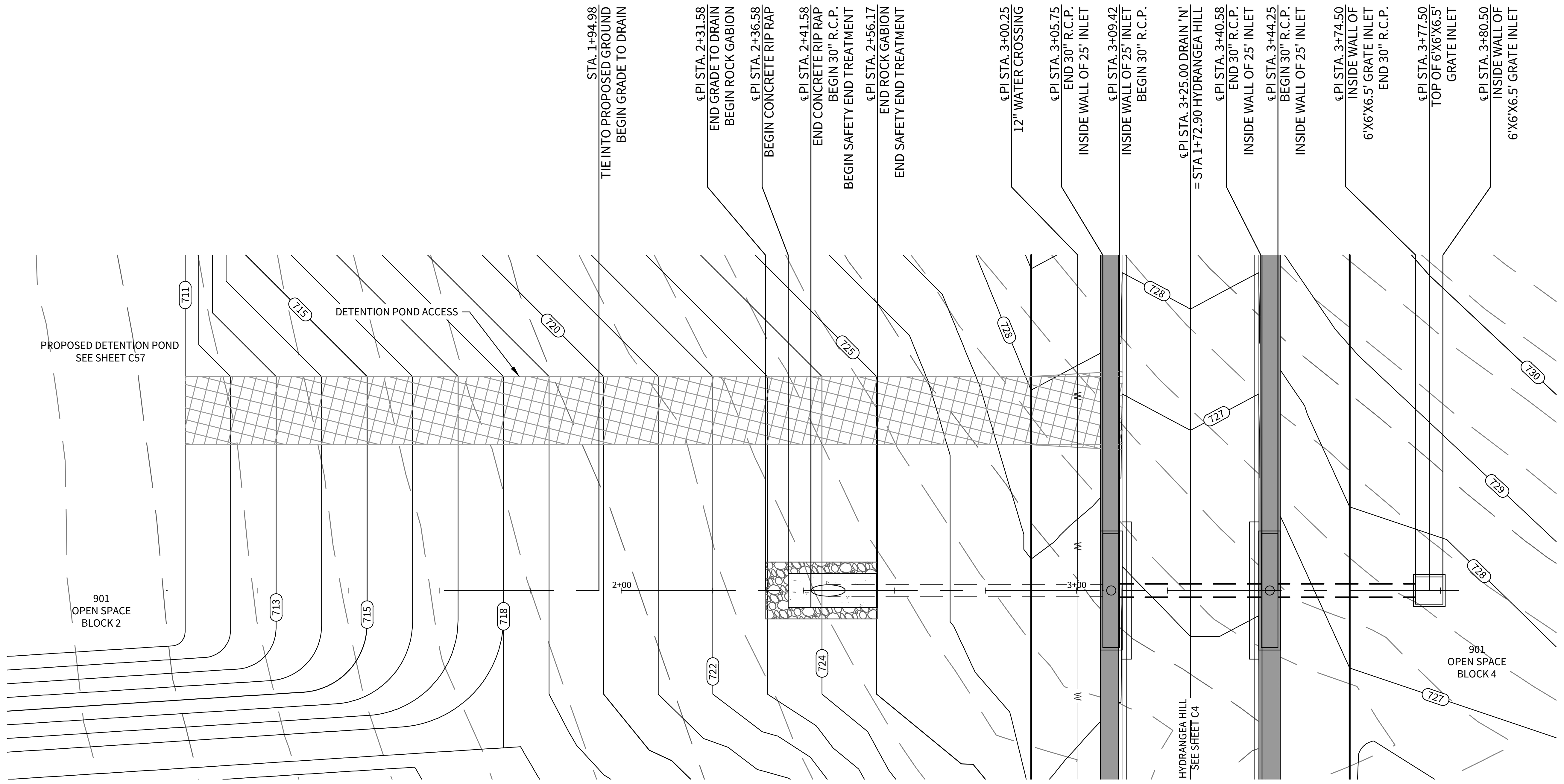


1 SCALE: NONE

SAFETY END TREATMENT DETAIL


STA. 1+94.98 TIE INTO PROPOSED GROUND BEGIN GRADE TO DRAIN
℄PI STA. 2+31.58 END GRADE TO DRAIN BEGIN ROCK GABION
℄PI STA. 2+36.58 BEGIN CONCRETE RIP RAP
℄PI STA. 2+41.58 END CONCRETE RIP RAP BEGIN 30" R.C.P. BEGIN SAFETY END TREATMENT
℄PI STA. 2+56.17 END ROCK GABION END SAFETY END TREATMENT
℄PI STA. 3+00.25 12" WATER CROSSING
℄PI STA. 3+05.75 END 30" R.C.P. INSIDE WALL OF 25' INLET
℄PI STA. 3+09.42 INSIDE WALL OF 25' INLET BEGIN 30" R.C.P.
℄PI STA. 3+25.00 DRAIN 'N' = STA 1+72.90 HYDRANGEA HILL
℄PI STA. 3+40.58 END 30" R.C.P. INSIDE WALL OF 25' INLET
℄PI STA. 3+44.25 BEGIN 30" R.C.P. INSIDE WALL OF 25' INLET
℄PI STA. 3+74.50 INSIDE WALL OF 6'X6'X6.5' GRATE INLET END 30" R.C.P.
℄PI STA. 3+77.50 TOP OF 6'X6'X6.5' GRATE INLET
℄PI STA. 3+80.50 INSIDE WALL OF 6'X6'X6.5' GRATE INLET
PROPOSED DETENTION POND SEE SHEET C57
DETENTION POND ACCESS
901 OPEN SPACE BLOCK 2
901 OPEN SPACE BLOCK 4
HYDRANGEA HILL SEE SHEET C4
2+00
3+00
711
713
715
715
718
720
722
724
725
726
727
727
728
728
729
730
730

SCALE: 1"=20'

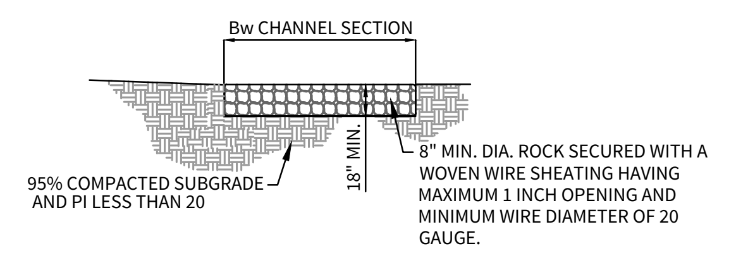
20 10 0 20

LEGEND

PROPERTY BOUNDARY	— — — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.C.A. EASEMENT	— — — —
EXISTING 1' CONTOUR	— 499 —
EXISTING 5' CONTOUR	— 500 —
PROPOSED 1' CONTOUR	— 499 —
PROPOSED 5' CONTOUR	— 500 —
EARTHEN DRAINAGE CHANNEL	▨

CULVERT SUMMARY

Q_{25} = 28.81 c.f.s.
MANNING'S COEFFICIENT = 0.013
CULVERT SHAPE = CIRCULAR
D = 30"
PIPE SLOPE = 0.50%
OUTFALL V = 6.74 f.p.s.


Bw CHANNEL SECTION
95% COMPACTED SUBGRADE AND PI LESS THAN 20
18" MIN.
8" MIN. DIA. ROCK SECURED WITH A WOVEN WIRE SHEATING HAVING MAXIMUM 1 INCH OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.

GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)

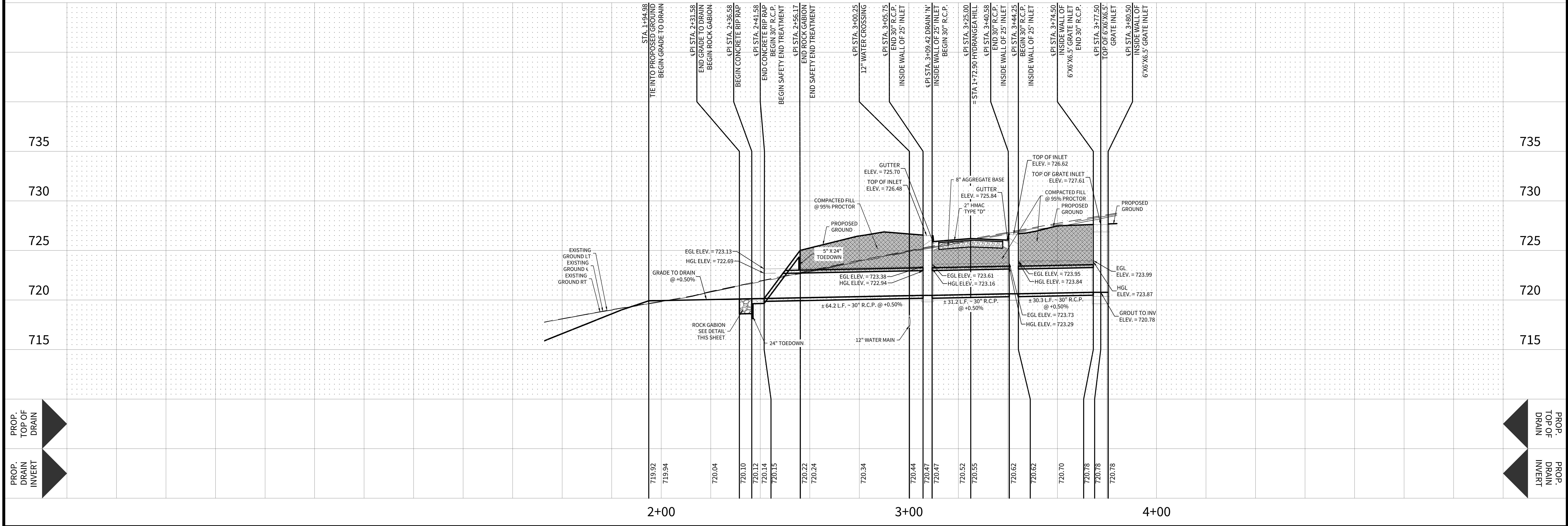
NOTES

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS
2. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

DRAIN 'N'

STA. 1+94.98 TO END

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'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℄PI STA. 3+77.50 TOP OF 6'X6'X6.5' GRATE INLET
℄PI STA. 3+80.50 INSIDE WALL OF 6'X6'X6.5' GRATE INLET
735
730
725
720
715
EXISTING GROUND LT
EXISTING GROUND ℄
EXISTING GROUND RT
GRADE TO DRAIN @ +0.50%
EGL ELEV. = 723.13
HGL ELEV. = 722.69
COMPACTED FILL @ 95% PROCTOR
PROPOSED GROUND
5" X 24" TOEDOWN
ROCK GABION SEE DETAIL THIS SHEET
24" TOEDOWN
±64.2 L.F. - 30" R.C.P. @ +0.50%
EGL ELEV. = 723.38
HGL ELEV. = 722.94
12" WATER MAIN
GUTTER ELEV. = 725.70
TOP OF INLET ELEV. = 726.48
8" AGGREGATE BASE
GUTTER ELEV. = 725.84
2" HMAC TYPE "D"
EGL ELEV. = 723.61
HGL ELEV. = 723.16
±31.2 L.F. - 30" R.C.P. @ +0.50%
TOP OF INLET ELEV. = 726.62
TOP OF GRATE INLET ELEV. = 727.61
COMPACTED FILL @ 95% PROCTOR
PROPOSED GROUND
EGL ELEV. = 723.95
HGL ELEV. = 723.84
±30.3 L.F. - 30" R.C.P. @ +0.50%
EGL ELEV. = 723.73
HGL ELEV. = 723.29
PROPOSED GROUND
EGL ELEV. = 723.99
HGL ELEV. = 723.87
GROUT TO INV ELEV. = 720.78
PROP. TOP OF DRAIN
PROP. DRAIN INVERT
719.92
719.94
720.04
720.10
720.12
720.14
720.15
720.22
720.24
720.34
720.44
720.47
720.47
720.52
720.55
720.62
720.62
720.70
720.78
720.78
720.78
2+00
3+00
4+00

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LANTANA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'N'

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
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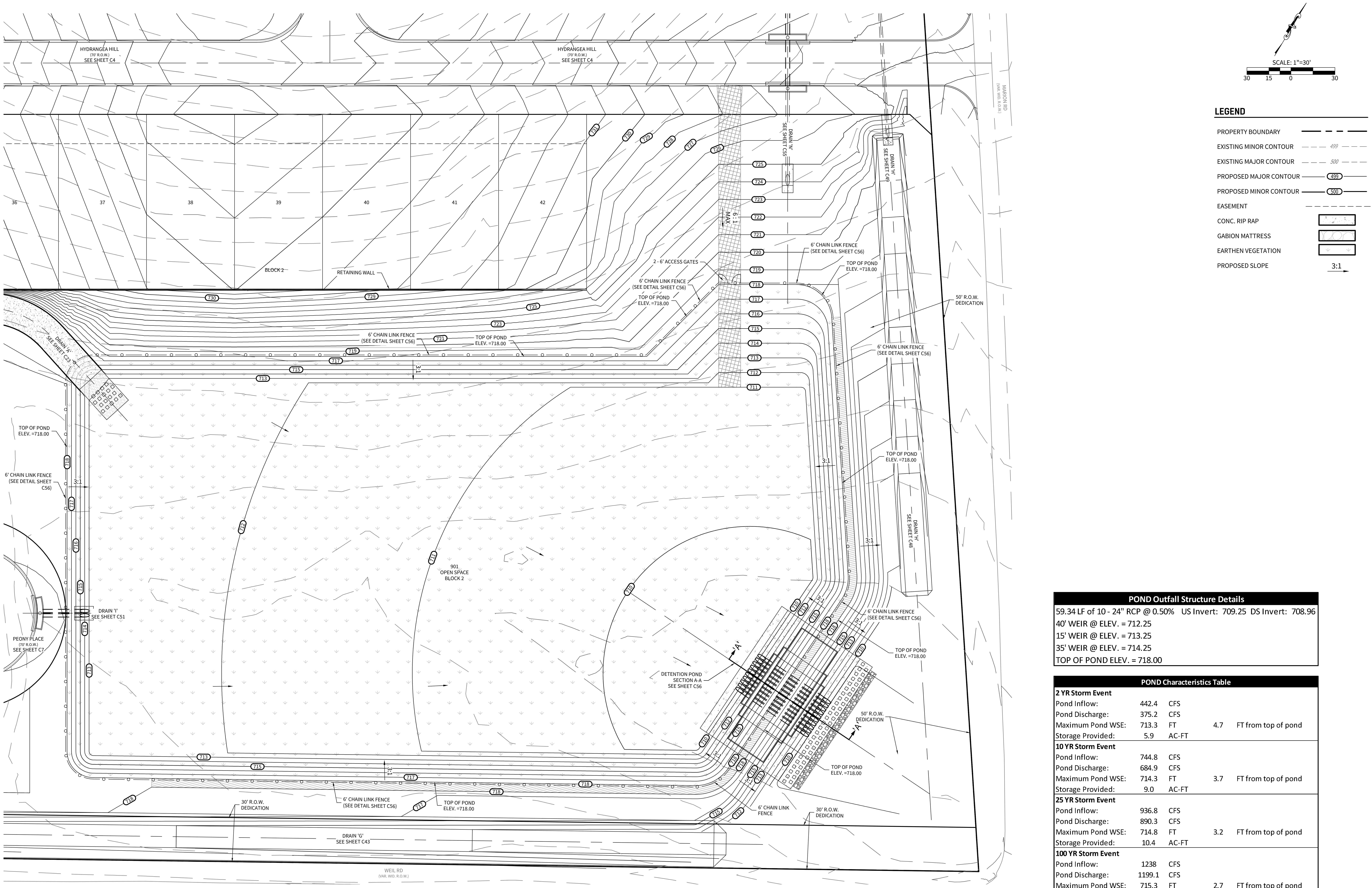

LEGEND

PROPERTY BOUNDARY	— — — —
EXISTING MINOR CONTOUR	— — 499 — —
EXISTING MAJOR CONTOUR	— — 500 — —
PROPOSED MAJOR CONTOUR	—— 499 ——
PROPOSED MINOR CONTOUR	—— 500 ——
EASEMENT	- - - - - -
CONC. RIP RAP	▨
GABION MATTRESS	▨
EARTHEN VEGETATION	▨
PROPOSED SLOPE	3:1 →

POND Outfall Structure Details

59.34 LF of 10 - 24" RCP @ 0.50%   US Invert: 709.25 DS Invert: 708.96
40' WEIR @ ELEV. = 712.25
15' WEIR @ ELEV. = 713.25
35' WEIR @ ELEV. = 714.25
TOP OF POND ELEV. = 718.00

POND Characteristics Table

2 YR Storm Event				
Pond Inflow:	442.4	CFS		
Pond Discharge:	375.2	CFS		
Maximum Pond WSE:	713.3	FT	4.7	FT from top of pond
Storage Provided:	5.9	AC-FT		
10 YR Storm Event				
Pond Inflow:	744.8	CFS		
Pond Discharge:	684.9	CFS		
Maximum Pond WSE:	714.3	FT	3.7	FT from top of pond
Storage Provided:	9.0	AC-FT		
25 YR Storm Event				
Pond Inflow:	936.8	CFS		
Pond Discharge:	890.3	CFS		
Maximum Pond WSE:	714.8	FT	3.2	FT from top of pond
Storage Provided:	10.4	AC-FT		
100 YR Storm Event				
Pond Inflow:	1238	CFS		
Pond Discharge:	1199.1	CFS		
Maximum Pond WSE:	715.3	FT	2.7	FT from top of pond
Storage Provided:	12.2	AC-FT		

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LANTANA SUBDIVISION
UNIT 1

DETENTION POND PLAN

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
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JAVIER CASTELLO
122170
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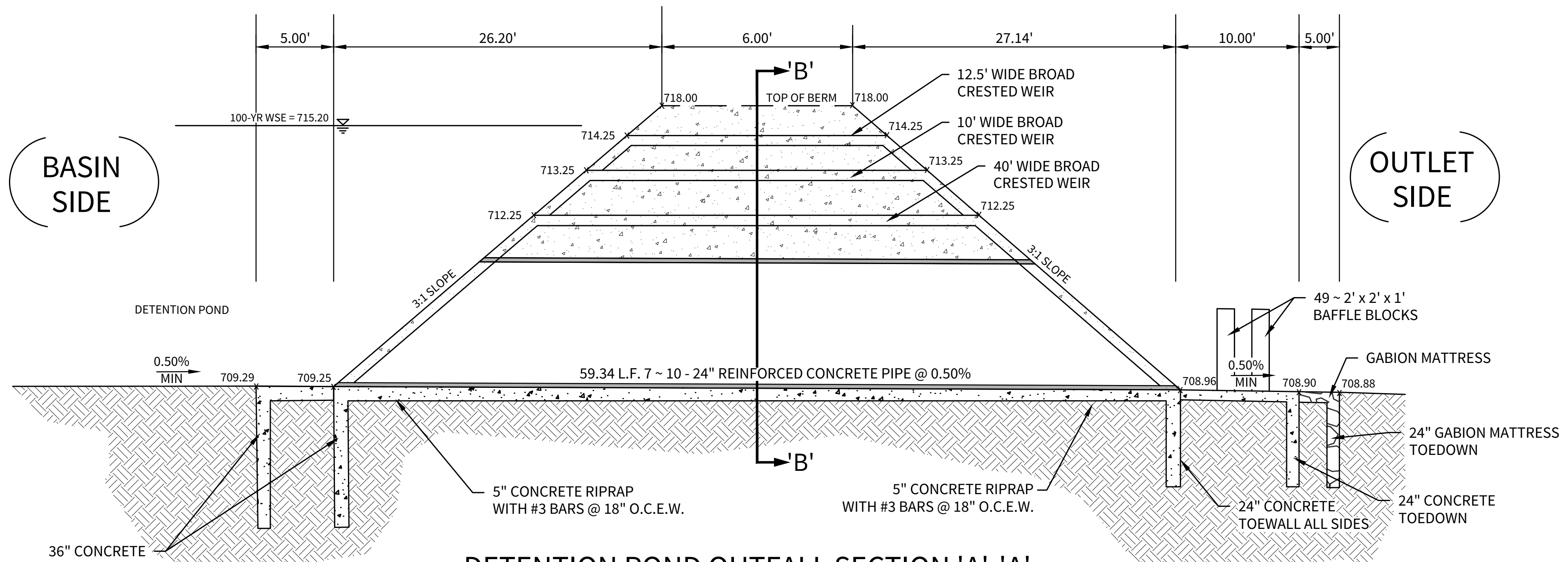
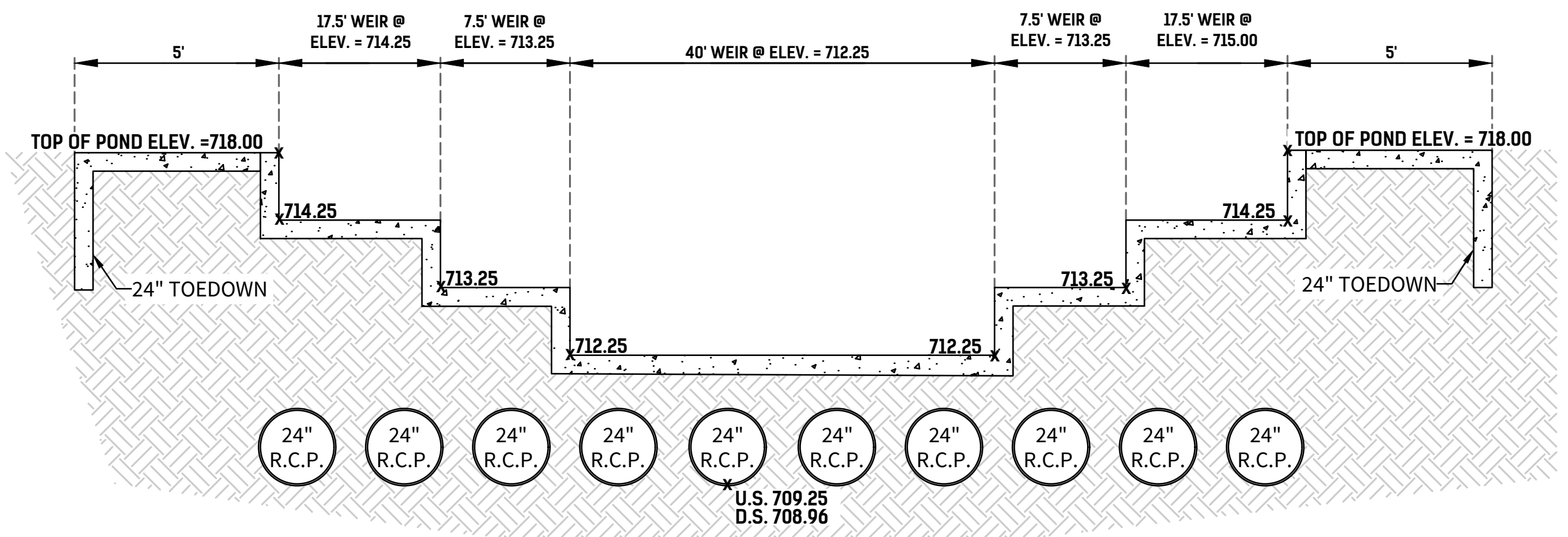

5.00'
26.20'
6.00'
27.14'
10.00'
5.00'
'B'
TOP OF BERM
718.00
718.00
12.5' WIDE BROAD CRESTED WEIR
10' WIDE BROAD CRESTED WEIR
40' WIDE BROAD CRESTED WEIR
100-YR WSE = 715.20
714.25
714.25
713.25
713.25
712.25
712.25
BASIN SIDE
OUTLET SIDE
3:1 SLOPE
3:1 SLOPE
DETENTION POND
49 ~ 2' x 2' x 1' BAFFLE BLOCKS
GABION MATTRESS
0.50% MIN
709.29
709.25
59.34 L.F. 7 ~ 10 - 24" REINFORCED CONCRETE PIPE @ 0.50%
708.96
0.50% MIN
708.90
708.88
24" GABION MATTRESS TOEDOWN
'B'
5" CONCRETE RIPRAP WITH #3 BARS @ 18" O.C.E.W.
5" CONCRETE RIPRAP WITH #3 BARS @ 18" O.C.E.W.
24" CONCRETE TOEWALL ALL SIDES
24" CONCRETE TOEDOWN
36" CONCRETE TOEWALL ALL SIDES

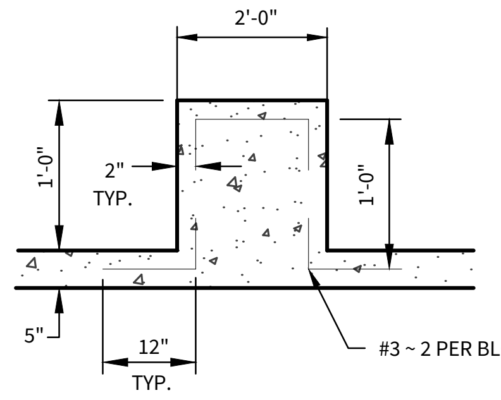
DETENTION POND OUTFALL SECTION 'A'-'A'

N.T.S.



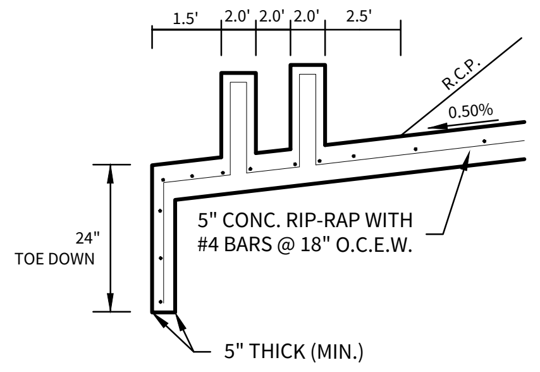
SECTION B-B

N.T.S.



BAFFLE BLOCK REINFORCEMENT DETAIL

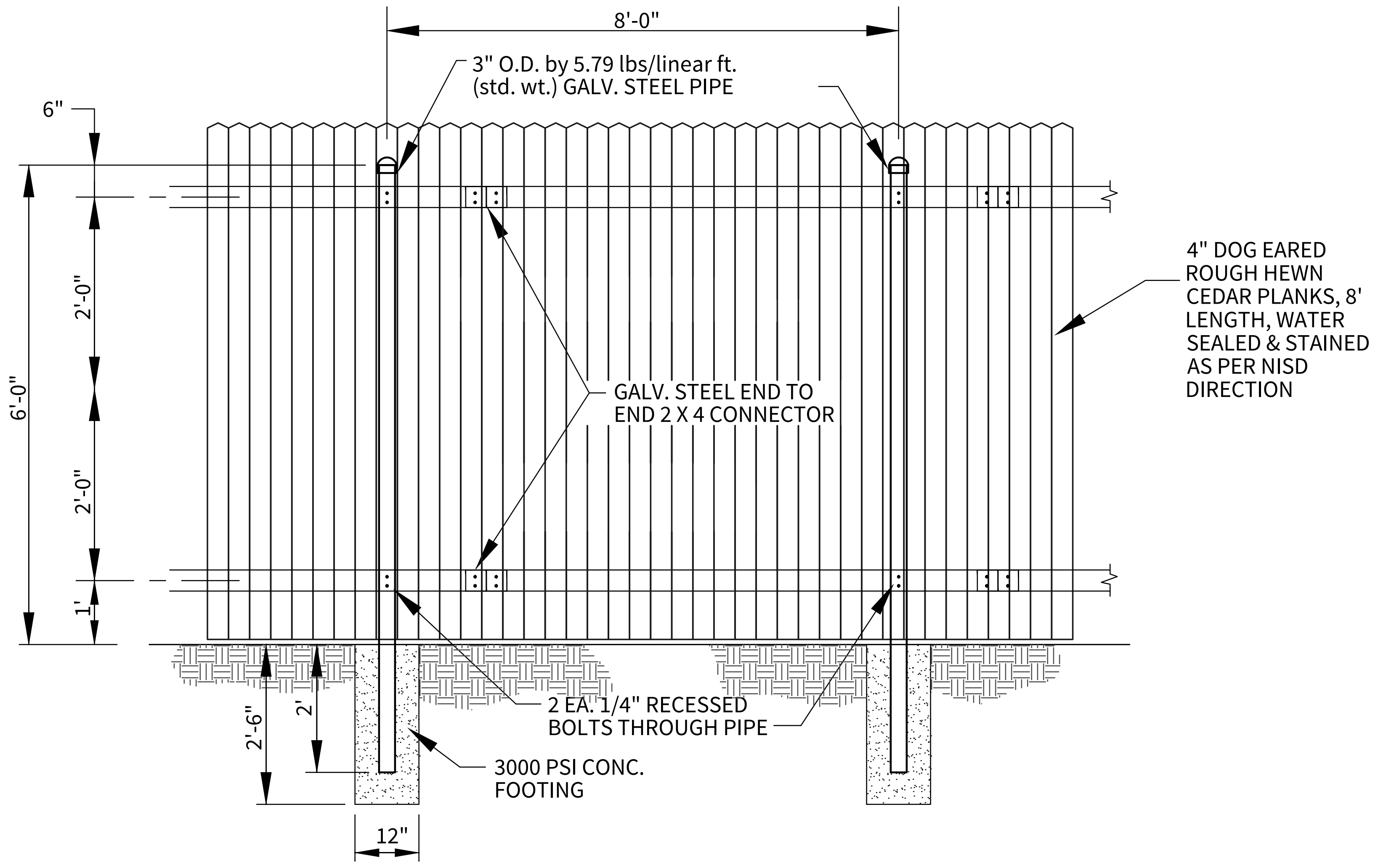
(N.T.S.)



BAFFLE BLOCK DETAIL

(N.T.S.)

POND Downstream Impact Summary			
Comparison at Marion Road			
2 YR Storm Event	**Pre-Development**	**Post-Development**	**Reduction**
Peak Discharge (cfs)	463.53	459.30	4.23
Water Surface Elevation (ft)	711.04	711.03	0.01
10 YR Storm Event	**Pre-Development**	**Post-Development**	**Reduction**
Peak Discharge (cfs)	867.54	859.40	8.14
Water Surface Elevation (ft)	711.49	711.48	0.01
25 YR Storm Event	**Pre-Development**	**Post-Development**	**Reduction**
Peak Discharge (cfs)	1133.91	1133.40	0.51
Water Surface Elevation (ft)	711.73	711.73	0.00
100 YR Storm Event	**Pre-Development**	**Post-Development**	**Reduction**
Peak Discharge (cfs)	1555.19	1548.90	6.29
Water Surface Elevation (ft)	712.06	712.06	0.00


8'-0"
3" O.D. by 5.79 lbs/linear ft. (std. wt.) GALV. STEEL PIPE
6"
6'-0"
2'-0"
2'-0"
1'
4" DOG EARED ROUGH HEWN CEDAR PLANKS, 8' LENGTH, WATER SEALED & STAINED AS PER NISD DIRECTION
GALV. STEEL END TO END 2 X 4 CONNECTOR
2'-6"
2'
2 EA. 1/4" RECESSED BOLTS THROUGH PIPE
3000 PSI CONC. FOOTING
12"

WOODEN PRIVACY FENCE DETAIL

N.T.S.

NOTE: THE OWNER SHALL SPECIFY THE USE OF EITHER A CHAINLINK FENCE OR A WOODEN PRIVACY FENCE. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER PRIOR TO INSTALLATION AND CONSTRUCTION.

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LANTANA SUBDIVISION UNIT 1

DETENTION POND PLAN DETAILS

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
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JAVIER CASTELLO
122170
5/12/2025

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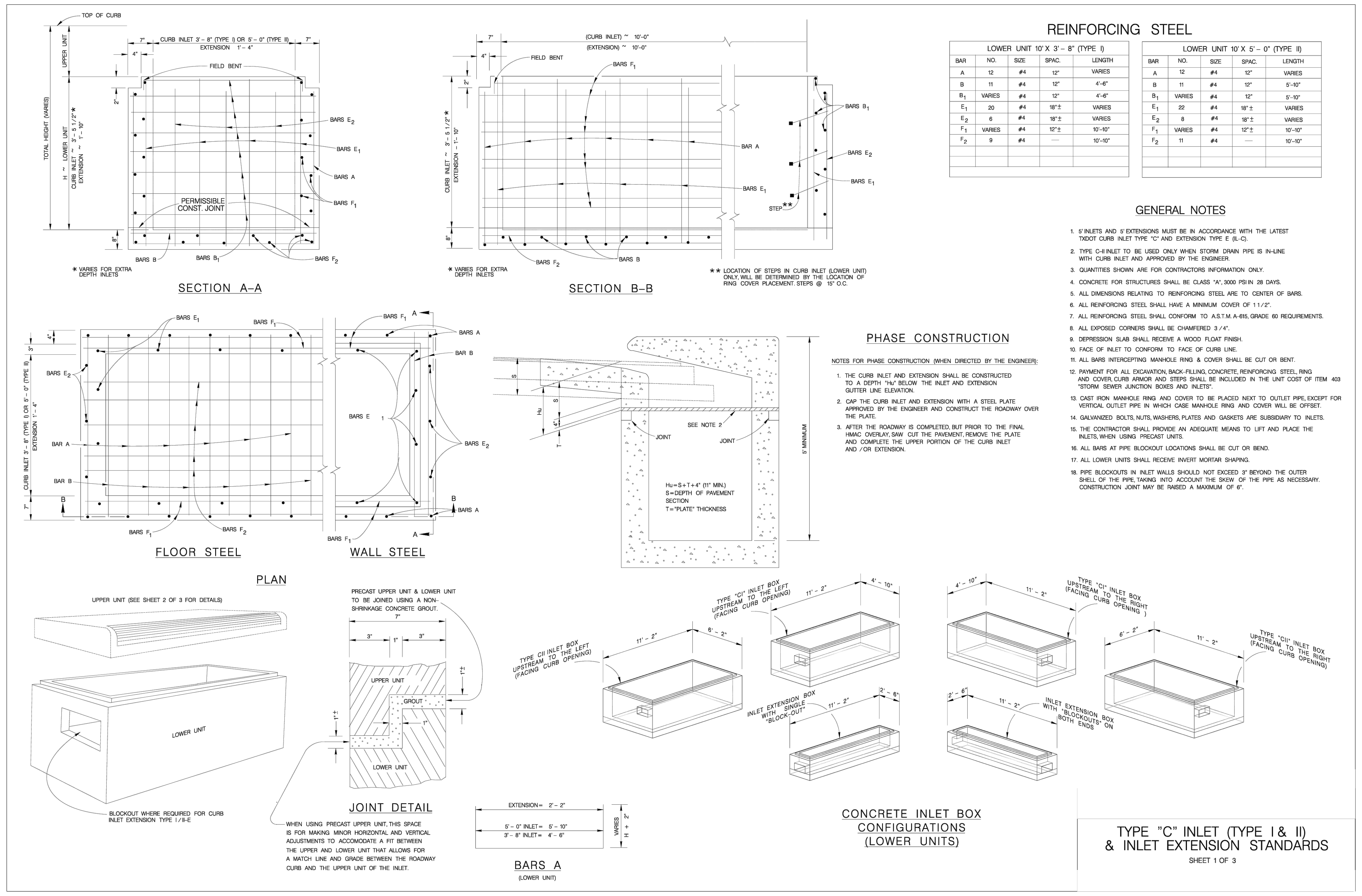


★★ LOCATION OF STEPS IN CURB INLET (LOWER UNIT) ONLY WILL BE DETERMINED BY THE LOCATION OF RING COVER PLACEMENT. STEPS @ 15" O.C.

REINFORCING STEEL

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

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

GENERAL NOTES

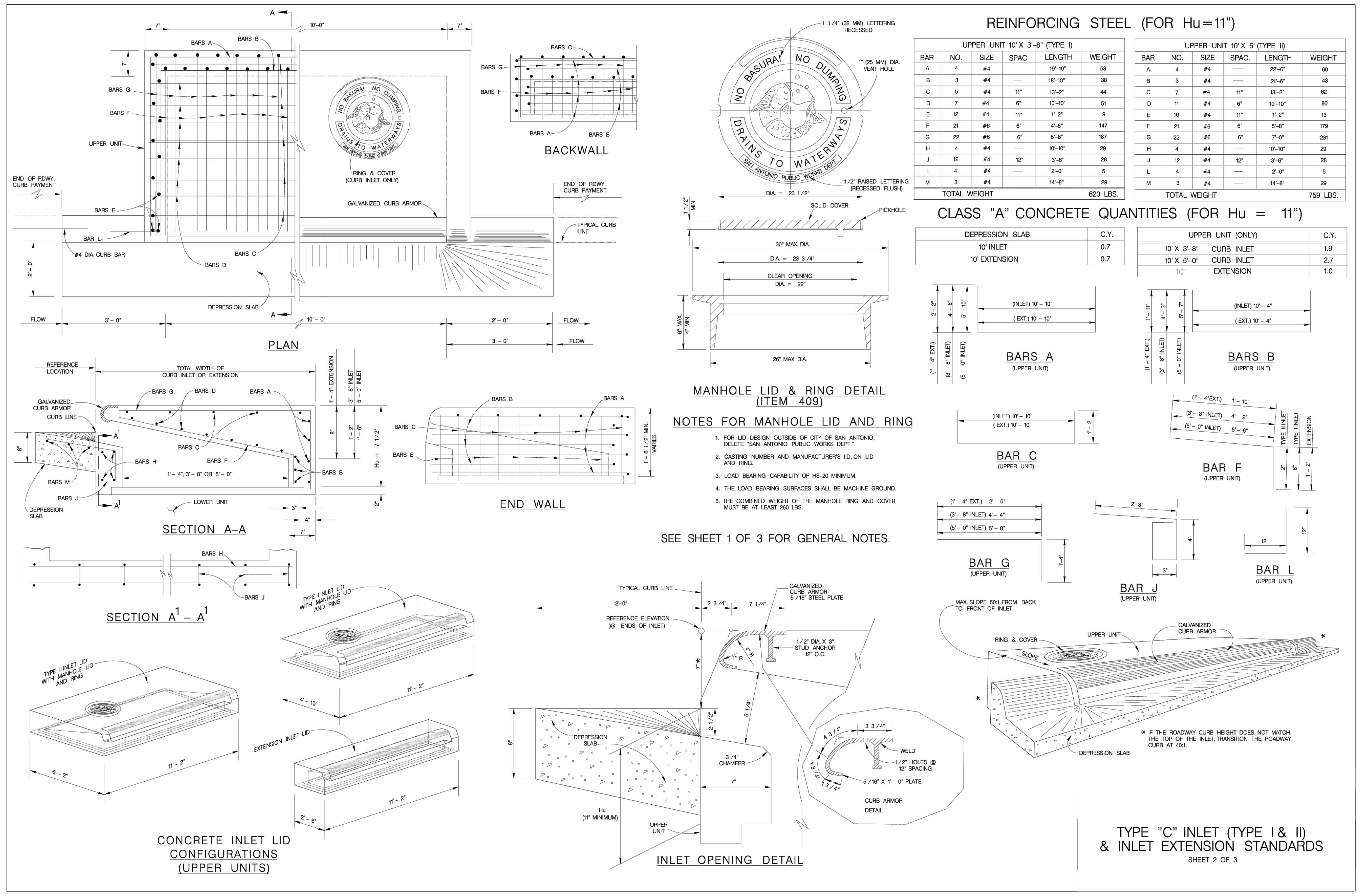
1. 5' INLETS AND 5' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE E (IL–C).
2. TYPE C–II INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS IN–LINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
3. QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
4. CONCRETE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

PHASE CONSTRUCTION

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

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

TYPE "C" INLET (TYPE I & II)
& INLET EXTENSION STANDARDS
SHEET 1 OF 3



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

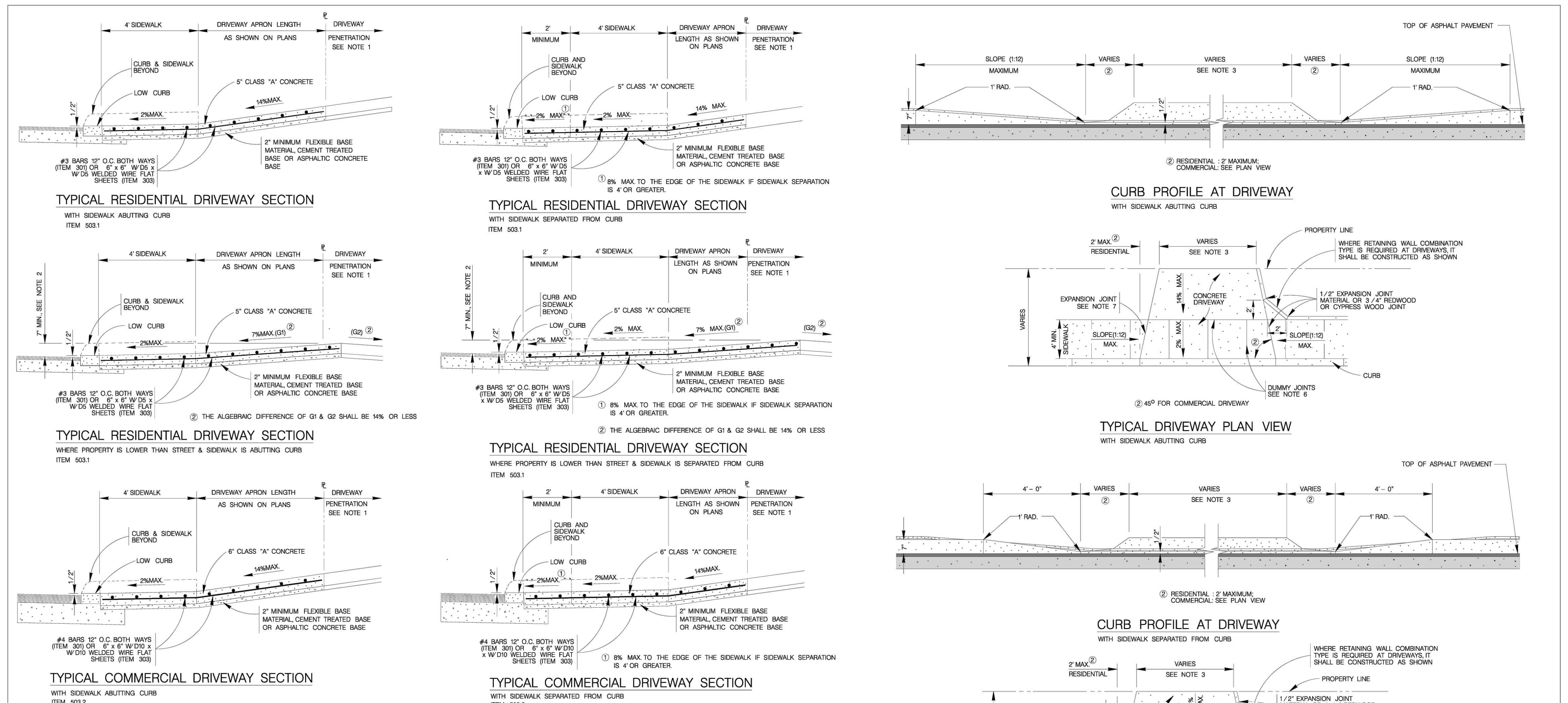
UPPER UNIT (ONLY)	C.Y.
10' X 3'–8" CURB INLET	1.9
10' X 5'–0" CURB INLET	2.7
10' EXTENSION	1.0

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.

TYPE "C" INLET (TYPE I & II)
& INLET EXTENSION STANDARDS
SHEET 2 OF 3


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
TYPICAL RESIDENTIAL DRIVEWAY SECTION
TYPICAL COMMERCIAL DRIVEWAY SECTION
5" CLASS "A" CONCRETE
6" CLASS "A" CONCRETE
2" MINIMUM FLEXIBLE BASE MATERIAL, CEMENT TREATED BASE OR ASPHALTIC CONCRETE BASE
#4 BARS 12" O.C. BOTH WAYS (ITEM 301) OR 6" x 6" W/D10 x W/D10 WELDED WIRE FLAT SHEETS (ITEM 303)
2%MAX.
TOP OF ASPHALT PAVEMENT
PROPERTY LINE
DUMMY JOINTS SEE NOTE 6
EXPANSION JOINT SEE NOTE 7

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

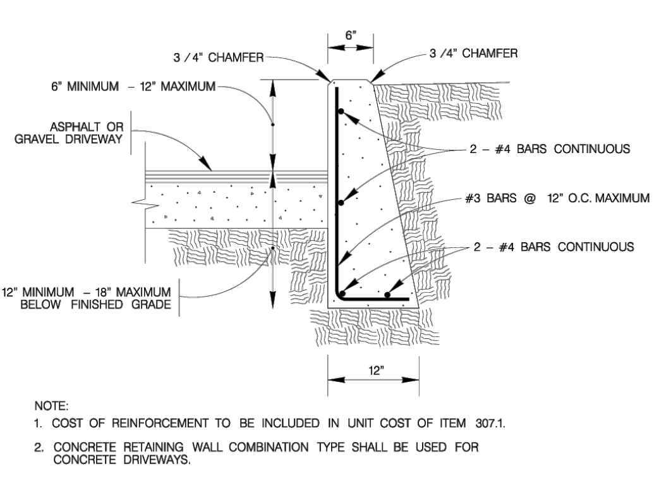
TYPICAL COMMERCIAL DRIVEWAY SECTION
WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.2

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'

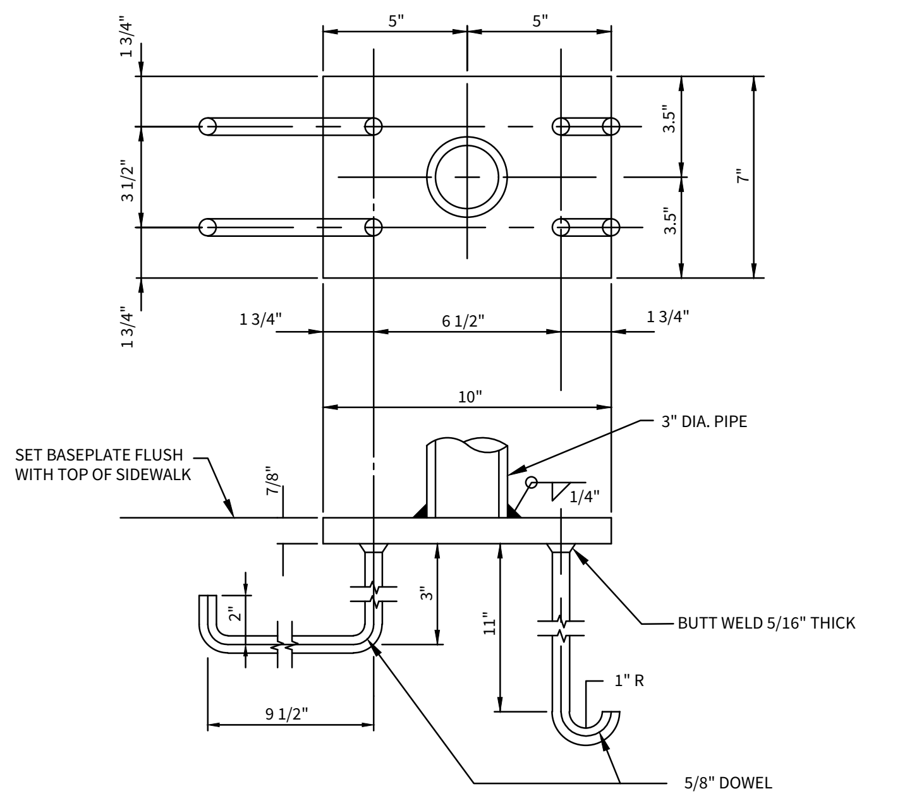
4. FOR LOCAL TYPE "A" STREETS, SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 2' FROM THE BACK OF CURB.
5. FOR OTHER THAN LOCAL TYPE "A" STREETS, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND SEPARATED A MINIMUM OF 2' FROM THE 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.


3/4" CHAMFER
ASPHALT OR GRAVEL DRIVEWAY
#3 BARS @ 12" O.C. MAXIMUM
2 – #4 BARS CONTINUOUS
12" MINIMUM – 16" MAXIMUM BELOW FINISHED GRADE
10"

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.

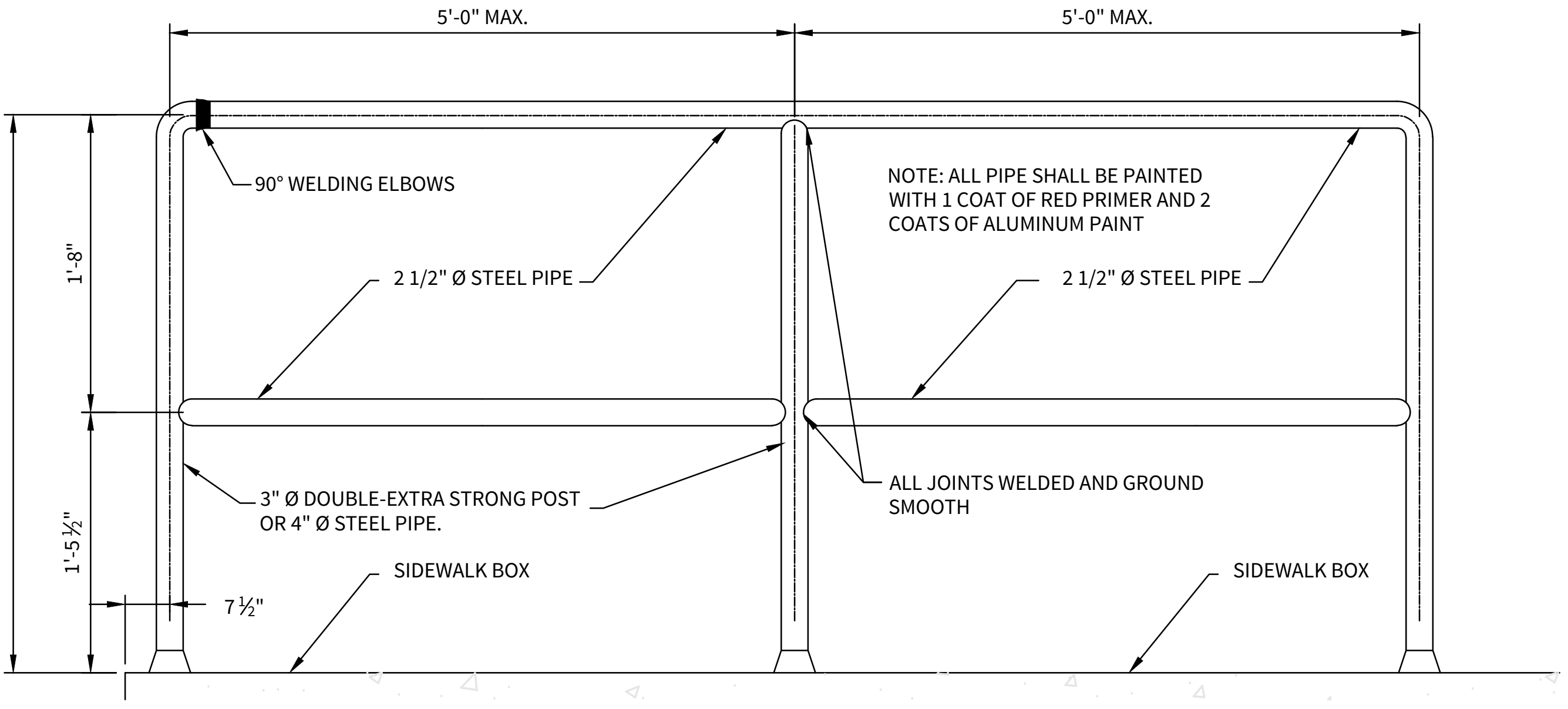
DRIVEWAY – CONCRETE RETAINING WALL
ON COMPACTED SUBGRADE
ITEM 307.1

CONCRETE DRIVEWAY STANDARDS



PIPE ANCHORAGE DETAILS

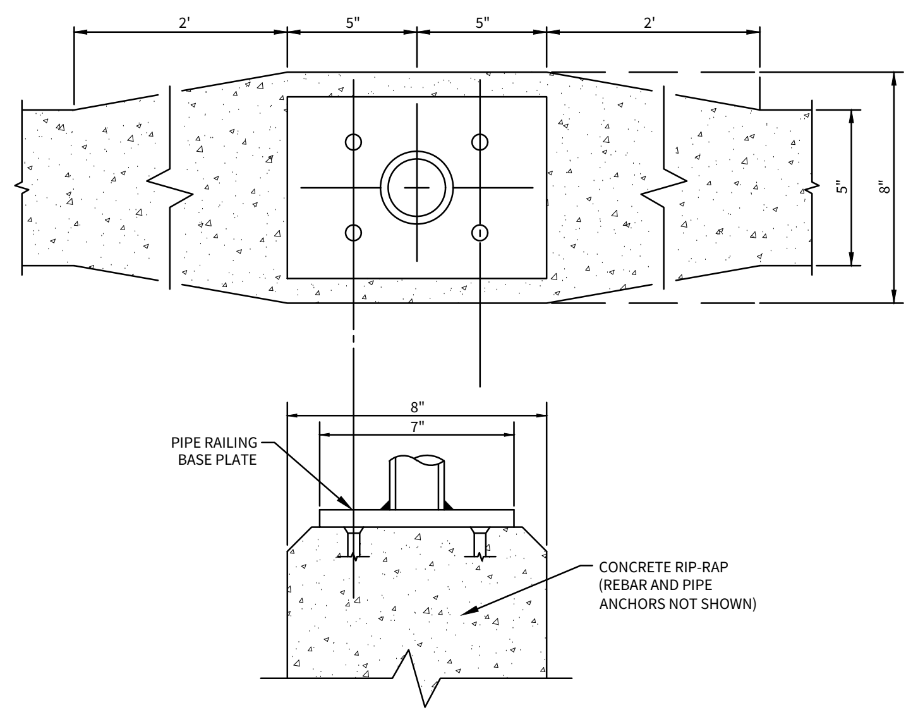
N.T.S.



NOTE: ALL PIPE SHALL BE PAINTED WITH 1 COAT OF RED PRIMER AND 2 COATS OF ALUMINUM PAINT

NOTE: ALL CONSTRUCTION OF HANDRAIL SHALL FOLLOW THE CITY OF MARION STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

PIPE RAILING DETAIL

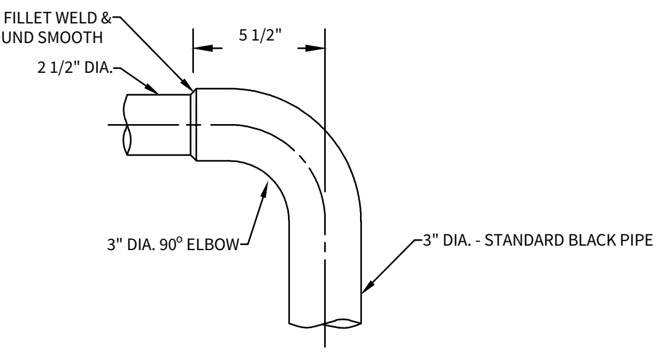


CONCRETE RIP–RAP AT PIPE RAILING BASE PLATE DETAIL

NOTES:

1) CONTRACTOR TO FLARE CONCRETE RIP-RAP TO 8" AT PROPOSED PIPE RAILING BASE PLATE LOCATIONS.

N.T.S.


3/8" FILLET WELD & GROUND SMOOTH
2 1/2" DIA.
5 1/2"
3" DIA. 90° ELBOW
3" DIA. - STANDARD BLACK PIPE

DETAIL OF 90° WELDING ELBOWS

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

SCALE: 1" = 8"

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

CURB INLET DETAILS

DATE	05/12/2025
PROJECT NO.	04037.003
DRAWN BY	CG/JG/LJ/TCD
CHECKED BY	XV/AL

#	DATE	REVISIONS
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C59

CUDEENGINEERS.COM

P:\04037\003\2-DWG\4-Plans\C59 CURB INLET DETAILS.dwg 2025/05/12 1:52pm tduano

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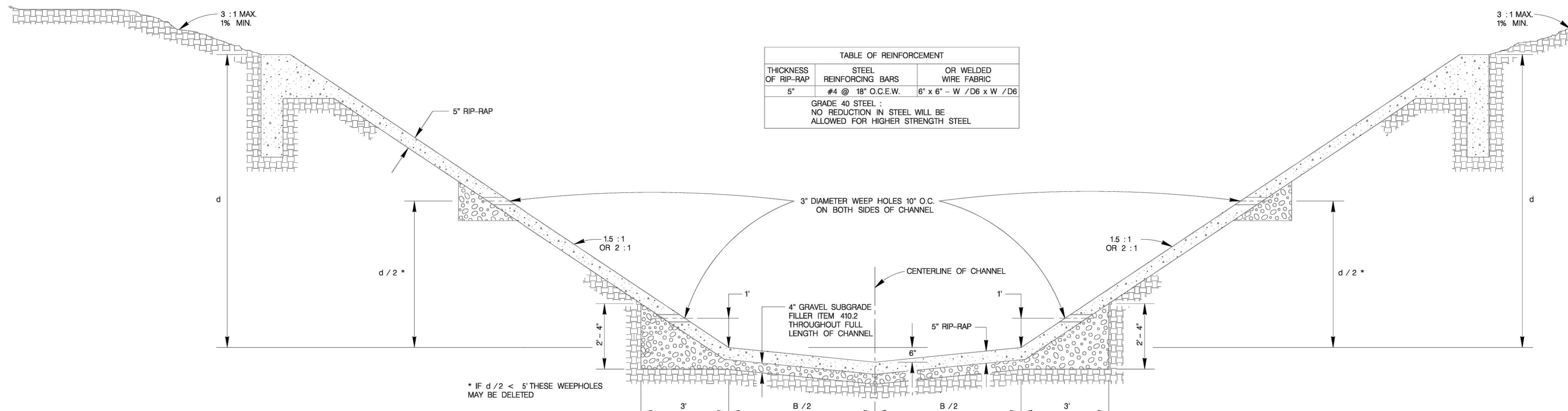
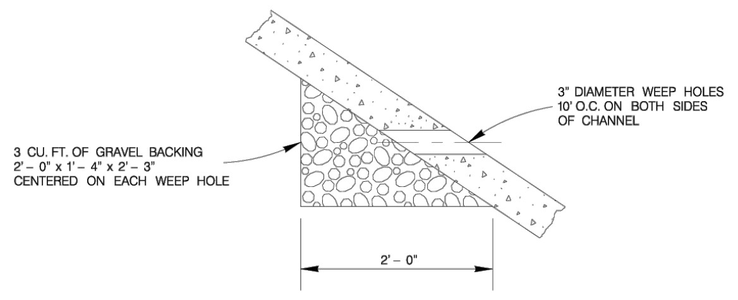
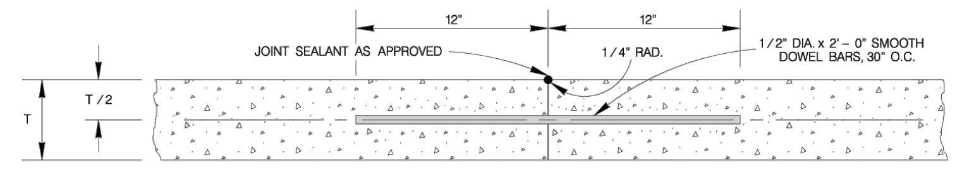

3 : 1 MAX.
1% MIN.
5" RIP-RAP
3" DIAMETER WEEP HOLES 10" O.C. ON BOTH SIDES OF CHANNEL
CENTERLINE OF CHANNEL
1.5 : 1 OR 2 : 1
d
d / 2 *
4" GRAVEL SUBGRADE FILLER ITEM 410.2 THROUGHOUT FULL LENGTH OF CHANNEL
5" RIP-RAP
* IF d / 2 < 5' THESE WEEPHOLES MAY BE DELETED
B / 2
B
2'

TABLE OF REINFORCEMENT		
THICKNESS OF RIP–RAP	STEEL REINFORCING BARS	OR WELDED WIRE FABRIC
5"	#4 @ 18" O.C.E.W.	6" x 6" – W /D6 x W /D6
GRADE 40 STEEL : NO REDUCTION IN STEEL WILL BE ALLOWED FOR HIGHER STRENGTH STEEL		

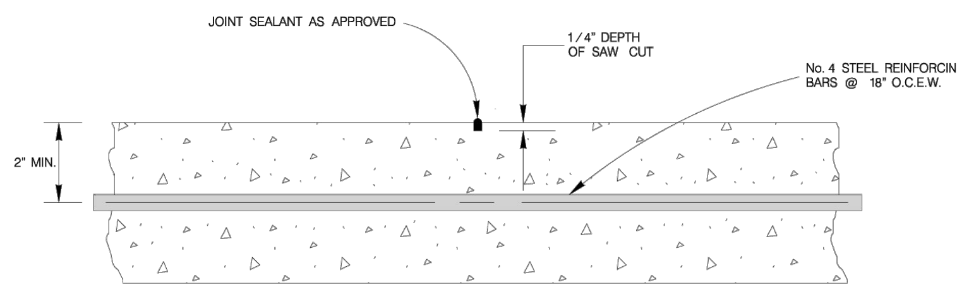
TYPICAL CHANNEL SECTION
LOOKING DOWNSTREAM
SCALE : 1" = 4'


3" DIAMETER WEEP HOLES 10" O.C. ON BOTH SIDES OF CHANNEL
3 CU. FT. OF GRAVEL BACKING 2' – 0" x 1' – 4" x 2' – 3" CENTERED ON EACH WEEP HOLE
2' – 0"

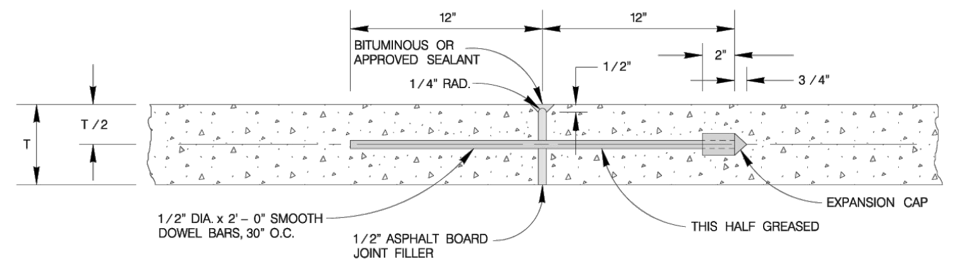
WEEP HOLES DETAILS
FOR SIDE SLOPES
SCALE : 1" = 2'


12"
JOINT SEALANT AS APPROVED
1 / 4" RAD.
1 / 2" DIA x 2 – 0" SMOOTH DOWEL BARS, 30" O.C.
T / 2
T

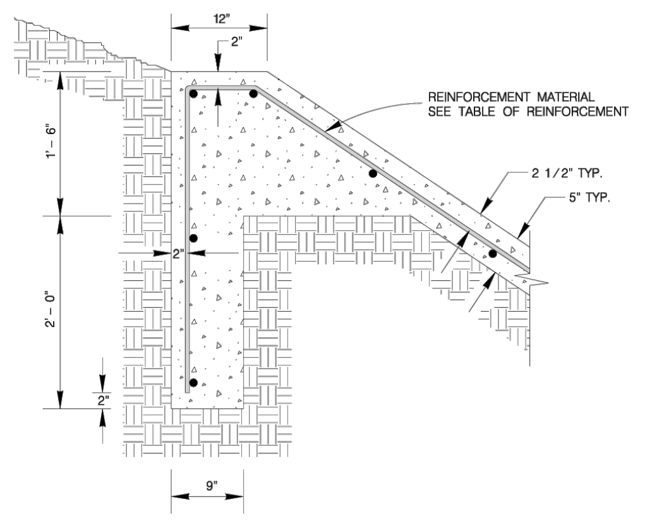
CONVERSE CONTRACTION
OR CONSTRUCTION JOINT
SCALE : 1" = 1'


JOINT SEALANT AS APPROVED
1 / 4" DEPTH OF SAW CUT
No. 4 STEEL REINFORCING BARS @ 18" O.C.E.W.
2" MIN.

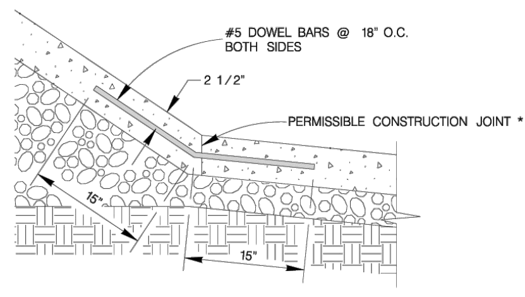
"SAW CUT" CONTRACTION JOINT
SCALE : 1" = 6'


12"
BITUMINOUS OR APPROVED SEALANT
1 / 4" RAD.
1 / 2"
3 / 4"
T / 2
T
1 / 2" DIA x 2' – 0" SMOOTH DOWEL BARS, 30" O.C.
1 / 2" ASPHALT BOARD JOINT FILLER
THIS HALF GREASED
EXPANSION CAP

TRANSVERSE EXPANSION JOINT
SCALE : 1" = 1'



REINFORCEMENT DETAIL
TOE–DOWN
SCALE : 1" = 2'

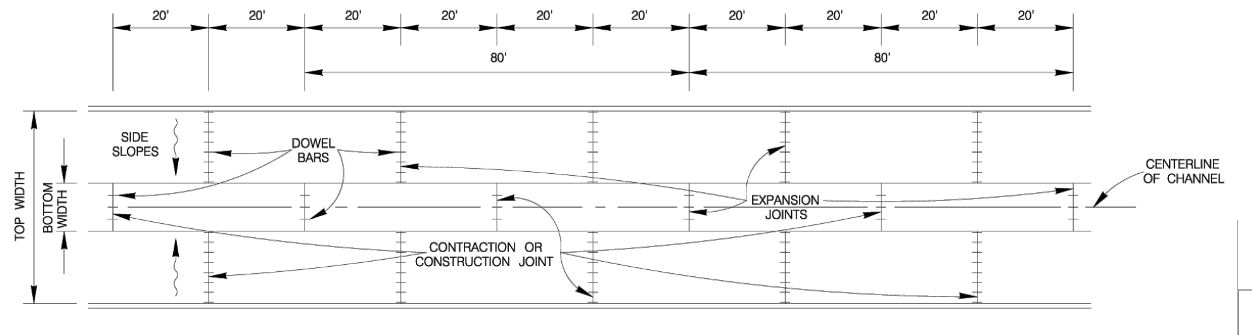

#5 DOWEL BARS @ 18" O.C. BOTH SIDES
2 1/2"
PERMISSIBLE CONSTRUCTION JOINT *
15"
15"

* THIS JOINT MUST BE A VERTICAL JOINT AS SHOWN

ALL SECTIONS
SCALE : 1" = 2'

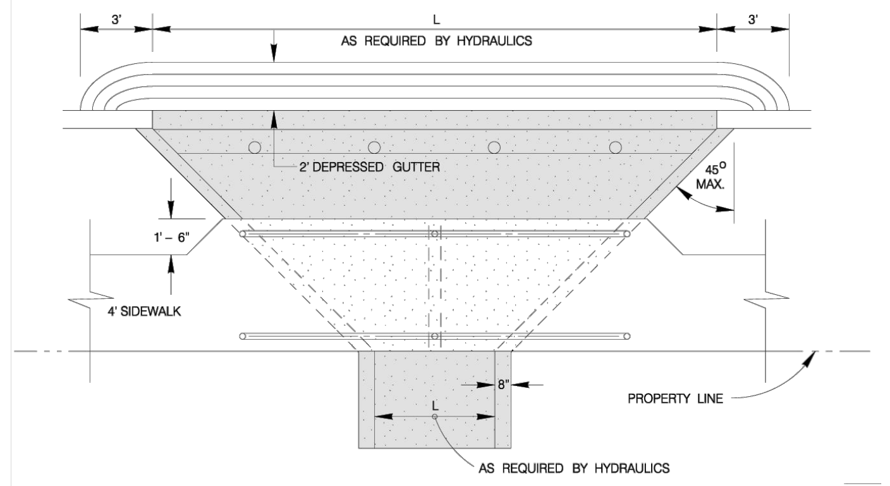
GENERAL NOTES

1. CONCRETE FOR CHANNEL RIP–RAP SHALL BE CLASS "A" 3000 P.S.I.
2. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS UNLESS OTHERWISE SHOWN.
3. ALL REINFORCEMENT STEEL SHALL MEET ASTM DESIGNATIONS AS CALLED FOR IN THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION".
4. NEW RIP–RAP SHOULD BE ATTACHED TO EXISTING RIP–RAP BY NO. 4 BARS DOWELED 6" INTO EXISTING RIP–RAP. THESE BARS ARE TO BE SPACED 18" O.C. AND HAVE A LENGTH OF 18".

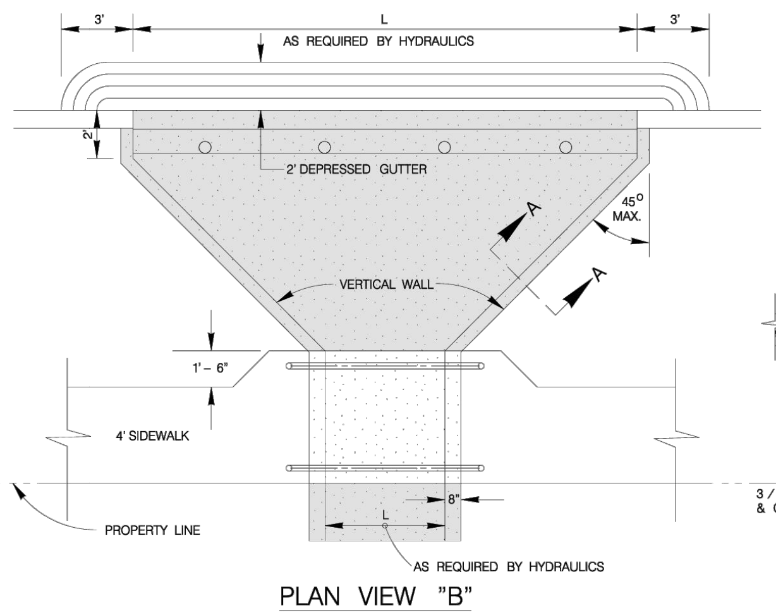


EXPANSION AND CONTRACTION JOINTS
FOR CONCRETE CHANNEL LINING
SCALE : 1" = 40'

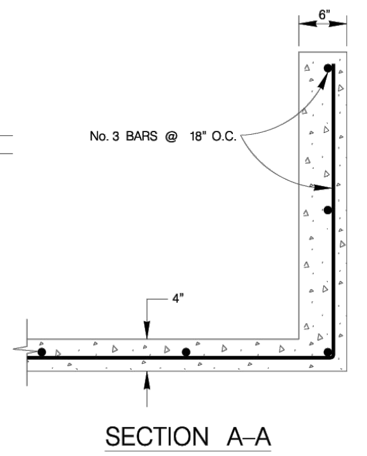
TYPICAL CONCRETE CHANNEL
RIP–RAP STANDARDS



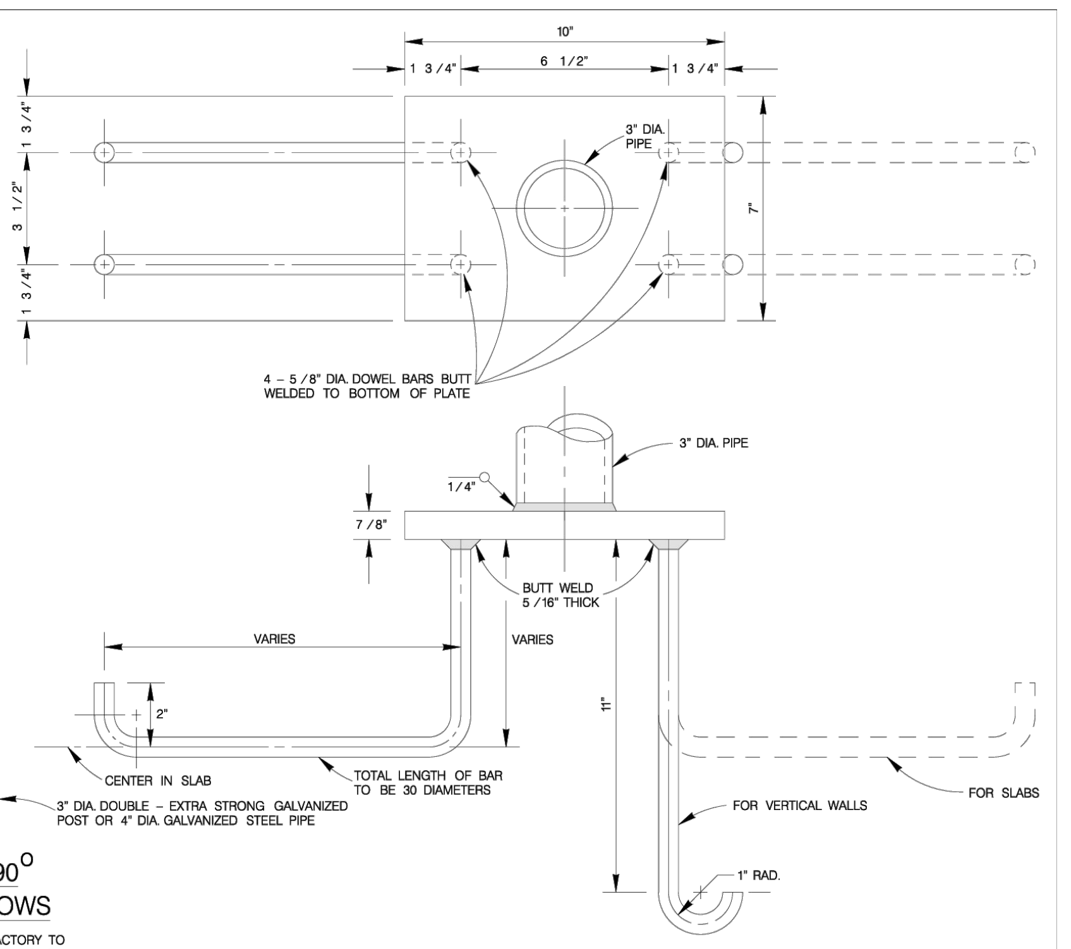
PLAN VIEW "A"
SCALE : 1" = 8'



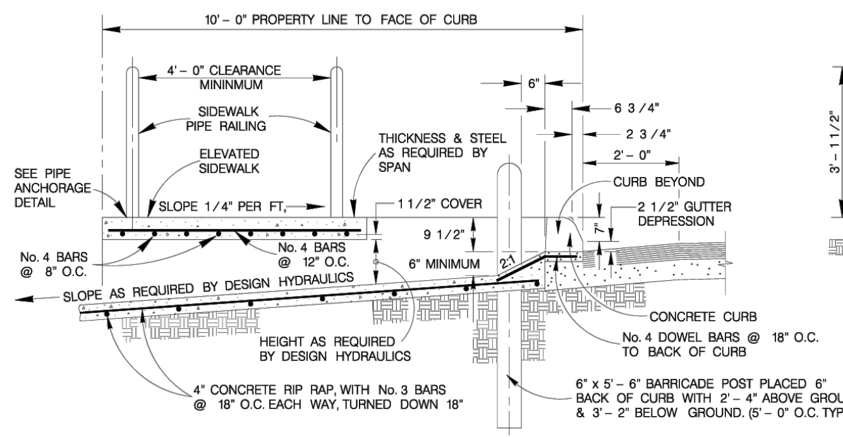
PLAN VIEW "B"
SCALE : 1" = 8'



SECTION A–A
SCALE : 1" = 2'

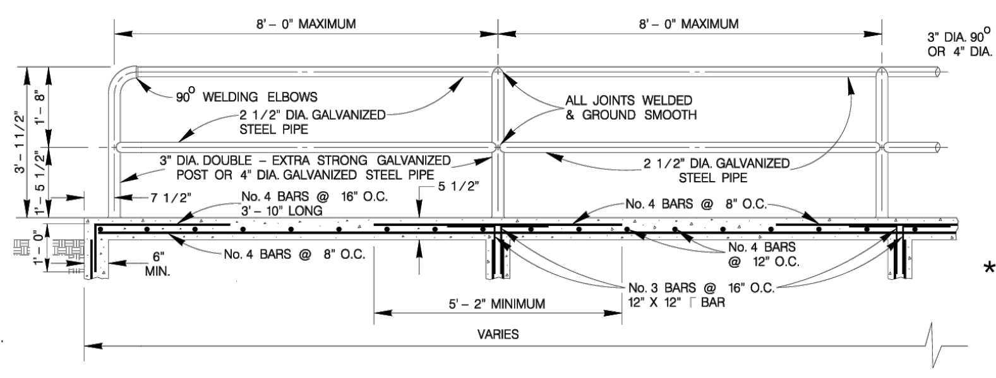

10"
1 3/4"
6 1/2"
3" DIA. PIPE
4 – 5 / 8" DIA. DOWEL BARS BUTT WELDED TO BOTTOM OF PLATE
3" DIA. PIPE
BUTT WELD 5 / 16" THICK
VARIES
CENTER IN SLAB
TOTAL LENGTH OF BAR TO BE 30 DIAMETERS
3" DIA. DOUBLE – EXTRA STRONG GALVANIZED POST OR 4" DIA. GALVANIZED STEEL PIPE
FOR VERTICAL WALLS
FOR SLABS
1" RAD.

PIPE ANCHORAGE DETAILS
SCALE : 1" = 6'

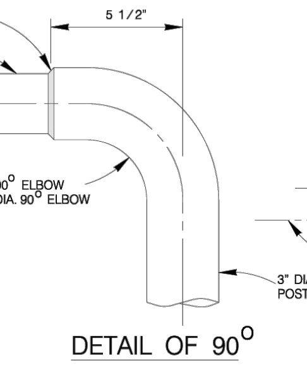

10' – 0" PROPERTY LINE TO FACE OF CURB
4' – 0" CLEARANCE MINIMUM
SIDEWALK PIPE RAILING
ELEVATED SIDEWALK
THICKNESS & STEEL AS REQUIRED BY SPAN
SEE PIPE ANCHORAGE DETAIL
SLOPE 1/4" PER FT.
1 1/2" COVER
9 1/2"
2' – 0"
CURB BEYOND
2 1/2" GUTTER DEPRESSION
No. 4 BARS @ 8" O.C.
No. 4 BARS @ 12" O.C.
6" MINIMUM
SLOPE AS REQUIRED BY DESIGN HYDRAULICS
HEIGHT AS REQUIRED BY DESIGN HYDRAULICS
CONCRETE CURB
No. 4 DOWEL BARS @ 18" O.C. TO BACK OF CURB
4" CONCRETE RIP RAP, WITH No. 3 BARS @ 18" O.C. EACH WAY, TURNED DOWN 18"
6" x 5' – 6" BARRICADE POST PLACED 6" BACK OF CURB WITH 2' – 4" ABOVE GROUND & 3' – 2" BELOW GROUND. (5' – 0" O.C. TYP.)

NOTE:
1. ALLOW FOR REFLECTOR BUTTONS ON BARRICADE POST. USE ONE 3 / 4" BUTTON PER POST.
2. POST SHALL RECEIVE TWO COATS OF ALUMINUM PAINT.

ELEVATED SIDEWALK & DROP CURB
DETAILS FOR DRAINAGE CHANNELS
SCALE : 1" = 4'


6' – 0" MAXIMUM
90° WELDING ELBOWS
2 1/2" DIA. GALVANIZED STEEL PIPE
ALL JOINTS WELDED & GROUND SMOOTH
3" DIA. DOUBLE – EXTRA STRONG GALVANIZED STEEL PIPE OR 4" DIA. GALVANIZED STEEL PIPE
2 1/2" DIA. GALVANIZED STEEL PIPE
No. 4 BARS @ 18" O.C.
3' – 10" LONG
5 1/2"
7 1/2"
No. 4 BARS @ 8" O.C.
No. 4 BARS @ 12" O.C.
No. 3 BARS @ 18" O.C.
6" MIN.
5' – 3" MINIMUM
VARIES

TYPICAL SIDEWALK BRIDGE &
SIDEWALK PIPE RAILING SECTION
SCALE : 1" = 4'

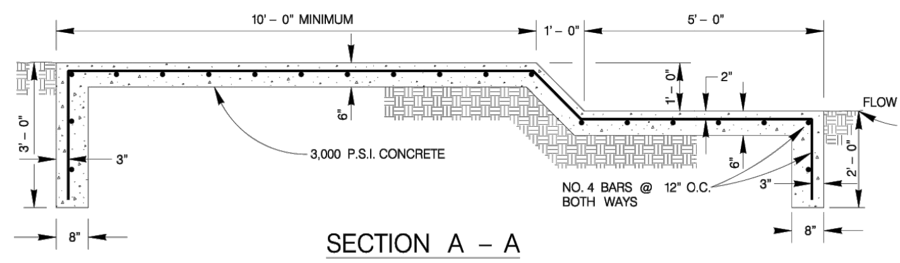

3 / 8" FILLET WELD & GROUND SMOOTH
2 1/2" DIA.
5 1/2"
3" DIA. 90° ELBOW OR 4" DIA. 90° ELBOW

DETAIL OF 90°
WELDING ELBOWS

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

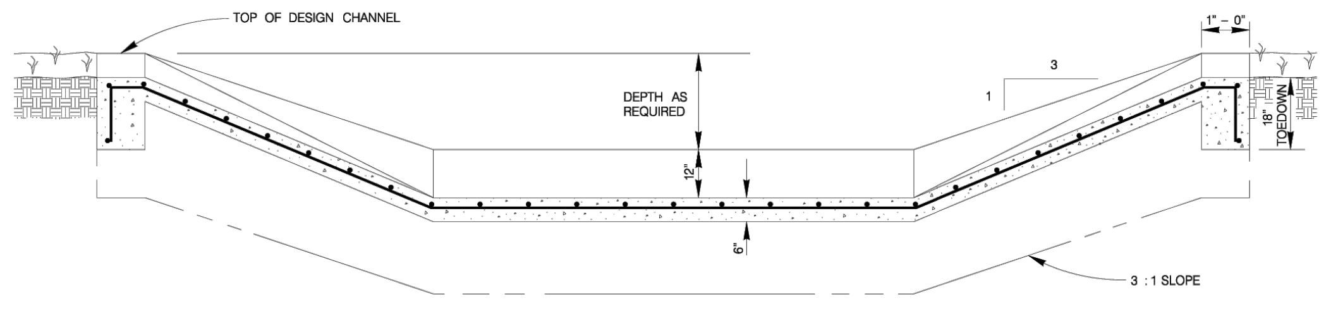
SCALE : 1" = 8"

RETARD DETAILS

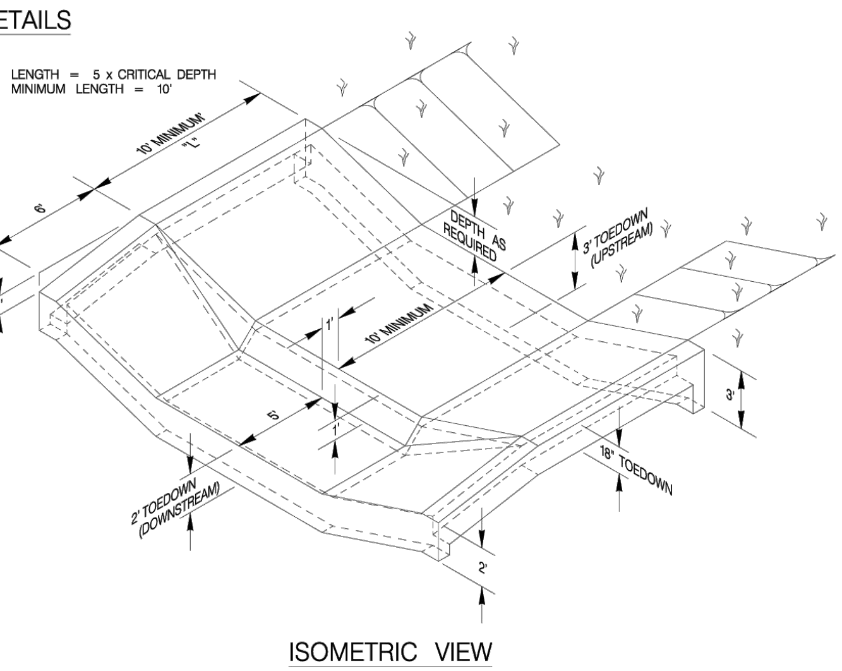


SECTION A – A
SCALE : 1" = 4'

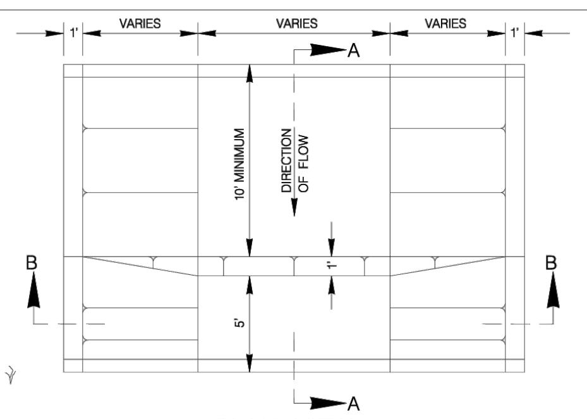
NOTE : RETARD TO BE CARRIED TO THE TOP OF DESIGN CHANNEL SECTION



SECTION B – B
SCALE : 1" = 4'



ISOMETRIC VIEW
SCALE : 1" = 10'



PLAN VIEW
SCALE : 1" = 10'

ELEVATED SIDEWALK & RETARD
STANDARDS

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EST. 1980
CUDE
ENGINEERS

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION
UNIT 1

DRAINAGE DETAILS

DATE	05/12/2025
PROJECT NO.	04037.003
DRAWN BY	CG/JG/LJ/TCD
CHECKED BY	XV/AL

REVISIONS
DATE
1.
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8.
9.

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C60

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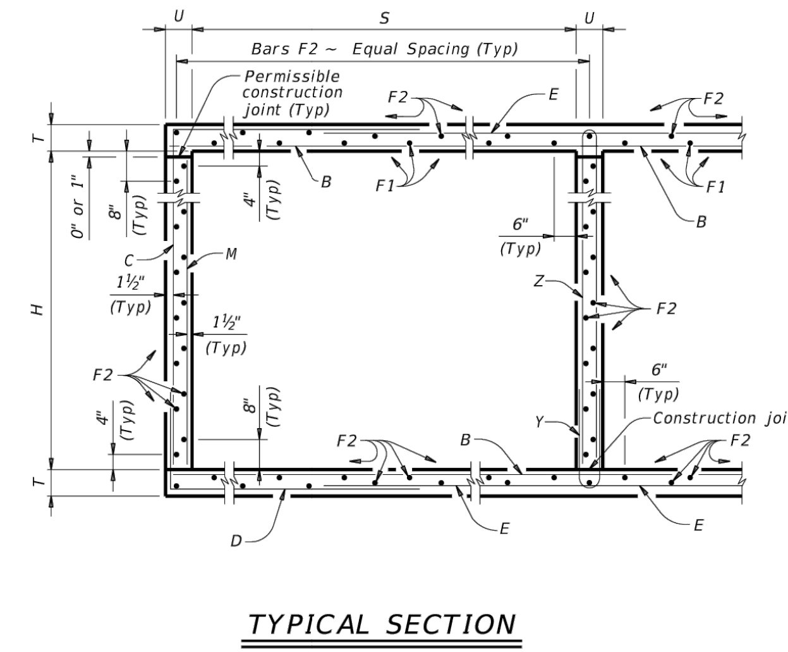
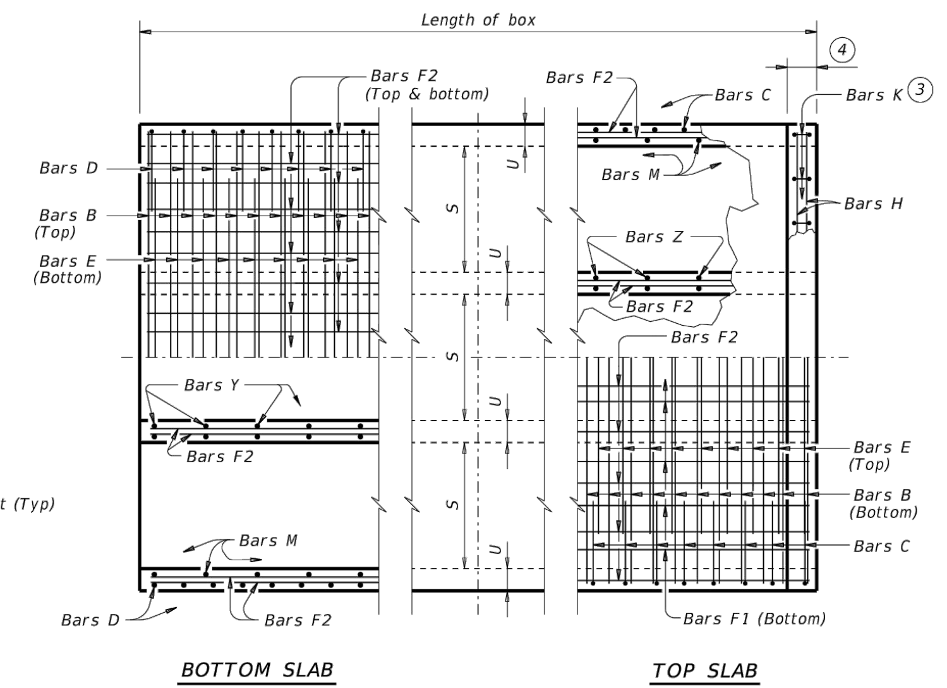
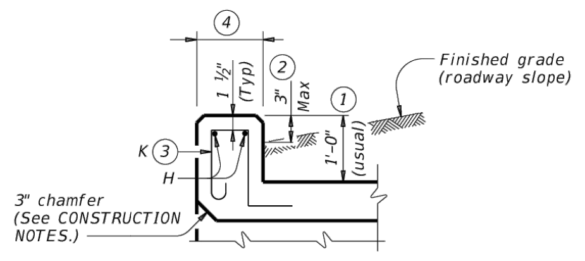
DATE:
FILE:


Bars F2 ~ Equal Spacing (Typ)
Permissible construction joint (Typ)
Bars F1
Construction joint (Typ)
S
U
H
T

TYPICAL SECTION



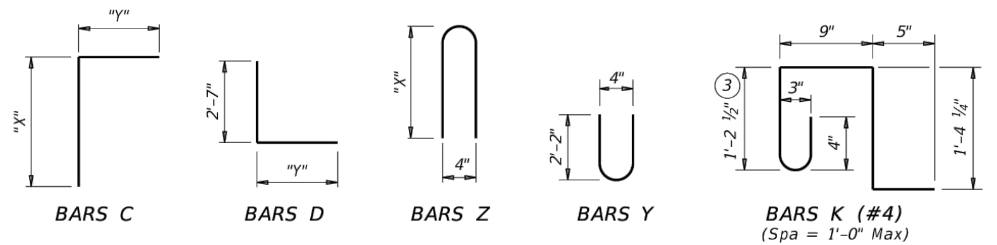
PART PLANS


④
①
Finished grade (roadway slope)
3" chamfer (See CONSTRUCTION NOTES.)
K ③
H

SECTION THRU CURB

TABLE OF BAR DIMENSIONS

H	"X"	"Y"
2'-0"	2'-6 ½"	3'-8 ½"
3'-0"	3'-6 ½"	3'-8 ½"
4'-0"	4'-6 ½"	3'-8 ½"
5'-0"	5'-6 ½"	3'-8 ½"



① 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

② For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

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

③ For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.

④ 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

CONSTRUCTION NOTES:

Do not use permanent forms.

Chamfer the bottom edge of the top slab 3" at the entrance.

Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed, and Bars Y and Z may be reversed.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

Provide galvanized reinforcing steel if required elsewhere in the plans.

Provide Class C concrete (f'c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

Provide bar laps, where required, as follows:
- Uncoated or galvanized ~ #4 = 1'-8" Min
- Uncoated or galvanized ~ #5 = 2'-1" Min
- Uncoated or galvanized ~ #6 = 2'-6" Min

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.

See the Multiple Box Culverts Cast-In-Place Miscellaneous Detail (MC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation
Bridge Division Standard

MULTIPLE BOX CULVERTS
CAST-IN-PLACE
5'-0" SPAN
0' TO 20' FILL
MC-5-20

FILE: CD-MC520-20.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

BILLS OF REINFORCING STEEL (For Box Length = 40 feet)

NUMBER OF SPANS	SECTION DIMENSIONS				Bars B					Bars C & D							Bars E				
	S	H	T	U	No.	Size	Spa	Length	Wt	No.	Size	Spa	Bars C		Bars D		No.	Size	Spa	Length	Wt
													Length	Wt	Length	Wt					
2	5' - 0"	2' - 0"	8"	7"	108	#5	9"	11' - 6"	1,295	108	#5	9"	6' - 3"	704	6' - 4"	713	108	#5	9"	8' - 8"	976
3	5' - 0"	2' - 0"	8"	7"	108	#5	9"	17' - 1"	1,924	108	#5	9"	6' - 3"	704	6' - 4"	713	108	#5	9"	14' - 3"	1,605
4	5' - 0"	2' - 0"	8"	7"	108	#5	9"	22' - 8"	2,553	108	#5	9"	6' - 3"	704	6' - 4"	713	108	#5	9"	19' - 10"	2,234
5	5' - 0"	2' - 0"	8"	7"	108	#5	9"	28' - 3"	3,182	108	#5	9"	6' - 3"	704	6' - 4"	713	108	#5	9"	25' - 5"	2,863
6	5' - 0"	2' - 0"	8"	7"	108	#5	9"	33' - 10"	3,811	108	#5	9"	6' - 3"	704	6' - 4"	713	108	#5	9"	31' - 0"	3,492
2	5' - 0"	3' - 0"	8"	7"	108	#6	9"	11' - 6"	1,865	108	#5	9"	7' - 3"	817	6' - 4"	713	108	#5	9"	8' - 8"	976
3	5' - 0"	3' - 0"	8"	7"	108	#6	9"	17' - 1"	2,771	108	#5	9"	7' - 3"	817	6' - 4"	713	108	#5	9"	14' - 3"	1,605
4	5' - 0"	3' - 0"	8"	7"	108	#6	9"	22' - 8"	3,677	108	#5	9"	7' - 3"	817	6' - 4"	713	108	#5	9"	19' - 10"	2,234
5	5' - 0"	3' - 0"	8"	7"	108	#6	9"	28' - 3"	4,583	108	#5	9"	7' - 3"	817	6' - 4"	713	108	#5	9"	25' - 5"	2,863
6	5' - 0"	3' - 0"	8"	7"	108	#6	9"	33' - 10"	5,488	108	#5	9"	7' - 3"	817	6' - 4"	713	108	#5	9"	31' - 0"	3,492
2	5' - 0"	4' - 0"	8"	7"	108	#6	9"	11' - 6"	1,865	108	#5	9"	8' - 3"	929	6' - 4"	713	108	#5	9"	8' - 8"	976
3	5' - 0"	4' - 0"	8"	7"	108	#6	9"	17' - 1"	2,771	108	#5	9"	8' - 3"	929	6' - 4"	713	108	#5	9"	14' - 3"	1,605
4	5' - 0"	4' - 0"	8"	7"	108	#6	9"	22' - 8"	3,677	108	#5	9"	8' - 3"	929	6' - 4"	713	108	#5	9"	19' - 10"	2,234
5	5' - 0"	4' - 0"	8"	7"	108	#6	9"	28' - 3"	4,583	108	#5	9"	8' - 3"	929	6' - 4"	713	108	#5	9"	25' - 5"	2,863
6	5' - 0"	4' - 0"	8"	7"	108	#6	9"	33' - 10"	5,488	108	#5	9"	8' - 3"	929	6' - 4"	713	108	#5	9"	31' - 0"	3,492
2	5' - 0"	5' - 0"	8"	7"	108	#6	9"	11' - 6"	1,865	108	#5	9"	9' - 3"	1,042	6' - 4"	713	108	#5	9"	8' - 8"	976
3	5' - 0"	5' - 0"	8"	7"	108	#6	9"	17' - 1"	2,771	108	#5	9"	9' - 3"	1,042	6' - 4"	713	108	#5	9"	14' - 3"	1,605
4	5' - 0"	5' - 0"	8"	7"	108	#6	9"	22' - 8"	3,677	108	#5	9"	9' - 3"	1,042	6' - 4"	713	108	#5	9"	19' - 10"	2,234
5	5' - 0"	5' - 0"	8"	7"	108	#6	9"	28' - 3"	4,583	108	#5	9"	9' - 3"	1,042	6' - 4"	713	108	#5	9"	25' - 5"	2,863
6	5' - 0"	5' - 0"	8"	7"	108	#6	9"	33' - 10"	5,488	108	#5	9"	9' - 3"	1,042	6' - 4"	713	108	#5	9"	31' - 0"	3,492

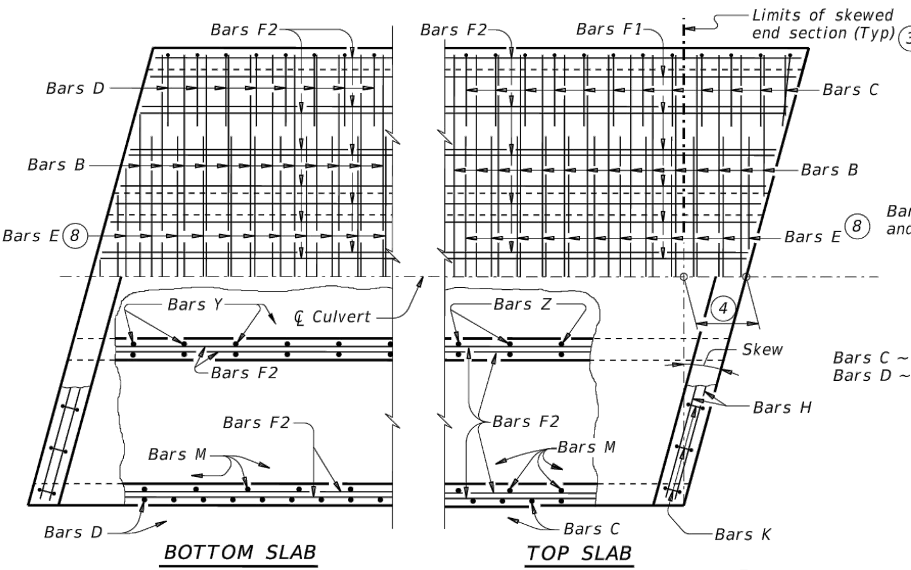
NUMBER OF SPANS	H	Bars F1 ~ #4				Bars F2 ~ #4				Bars M ~ #4				Bars Y & Z ~ #4						Bars H 4 ~ #4		Bars K		QUANTITIES: Per Foot of Barrel		Curb		Total	
		No.	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Spa	Bars Y		Bars Z		Length	Wt	No.	Wt	Conc (CY)	Renf (Lb)	Conc (CY)	Renf (Lb)	Conc (CY)	Renf (Lb)
																Length	Wt	Length	Wt										
2	2' - 0"	8	18"	39' - 9"	212	38	18"	39' - 9"	1,009	108	9"	2' - 0"	144	54	9"	4' - 7"	165	5' - 3"	189	11' - 6"	31	26	72	0.710	135.2	0.9	103	29.3	5,510
3	2' - 0"	12	18"	39' - 9"	319	54	18"	39' - 9"	1,434	108	9"	2' - 0"	144	108	9"	4' - 7"	331	5' - 3"	379	17' - 1"	46	38	106	1.029	188.8	1.3	152	42.4	7,705
4	2' - 0"	16	18"	39' - 9"	425	70	18"	39' - 9"	1,859	108	9"	2' - 0"	144	162	9"	4' - 7"	496	5' - 3"	568	22' - 8"	61	48	134	1.348	242.4	1.7	195	55.6	9,891
5	2' - 0"	20	18"	39' - 9"	531	86	18"	39' - 9"	2,284	108	9"	2' - 0"	144	216	9"	4' - 7"	661	5' - 3"	758	28' - 3"	75	60	167	1.667	296.0	2.1	242	68.8	12,082
6	2' - 0"	24	18"	39' - 9"	637	102	18"	39' - 9"	2,708	108	9"	2' - 0"	144	270	9"	4' - 7"	827	5' - 3"	947	33' - 10"	90	70	195	1.986	349.6	2.5	285	82.0	14,268
2	3' - 0"	8	18"	39' - 9"	212	44	18"	39' - 9"	1,168	108	9"	3' - 0"	216	54	9"	4' - 7"	165	7' - 3"	262	11' - 6"	31	26	72	0.775	159.9	0.9	103	31.9	6,497
3	3' - 0"	12	18"	39' - 9"	319	62	18"	39' - 9"	1,646	108	9"	3' - 0"	216	108	9"	4' - 7"	331	7' - 3"	523	17' - 1"	46	38	106	1.115	223.5	1.3	152	45.9	9,093
4	3' - 0"	16	18"	39' - 9"	425	80	18"	39' - 9"	2,124	108	9"	3' - 0"	216	162	9"	4' - 7"	496	7' - 3"	785	22' - 8"	61	48	134	1.456	287.2	1.7	195	59.9	11,682
5	3' - 0"	20	18"	39' - 9"	531	98	18"	39' - 9"	2,602	108	9"	3' - 0"	216	216	9"	4' - 7"	661	7' - 3"	1,046	28' - 3"	75	60	167	1.796	350.8	2.1	242	73.9	14,274
6	3' - 0"	24	18"	39' - 9"	637	116	18"	39' - 9"	3,080	108	9"	3' - 0"	216	270	9"	4' - 7"	827	7' - 3"	1,308	33' - 10"	90	70	195	2.137	414.5	2.5	285	88.0	16,863
2	4' - 0"	8	18"	39' - 9"	212	44	18"	39' - 9"	1,168	108	9"	4' - 0"	289	54	9"	4' - 7"	165	9' - 3"	334	11' - 6"	31	26	72	0.840	166.3	0.9	103	34.5	6,754
3	4' - 0"	12	18"	39' - 9"	319	62	18"	39' - 9"	1,646	108	9"	4' - 0"	289	108	9"	4' - 7"	331	9' - 3"	667	17' - 1"	46	38	106	1.202	231.8	1.3	152	49.4	9,422
4	4' - 0"	16	18"	39' - 9"	425	80	18"	39' - 9"	2,124	108	9"	4' - 0"	289	162	9"	4' - 7"	496	9' - 3"	1,001	22' - 8"	61	48	134	1.564	297.2	1.7	195	64.3	12,083
5	4' - 0"	20	18"	39' - 9"	531	98	18"	39' - 9"	2,602	108	9"	4' - 0"	289	216	9"	4' - 7"	661	9' - 3"	1,335	28' - 3"	75	60	167	1.926	362.7	2.1	242	79.1	14,748
6	4' - 0"	24	18"	39' - 9"	637	116	18"	39' - 9"	3,080	108	9"	4' - 0"	289	270	9"	4' - 7"	827	9' - 3"	1,668	33' - 10"	90	70	195	2.288	428.1	2.5	285	94.0	17,408
2	5' - 0"	8	18"	39' - 9"	212	50	18"	39' - 9"	1,328	108	9"	5' - 0"	361	54	9"	4' - 7"	165	11' - 3"	406	11' - 6"	31	26	72	0.904	176.7	0.9	103	37.0	7,171
3	5' - 0"	12	18"	39' - 9"	319	70	18"	39' - 9"	1,859	108	9"	5' - 0"	361	108	9"	4' - 7"	331	11' - 3"	812	17' - 1"	46	38	106	1.288	245.3	1.3	152	52.8	9,965
4	5' - 0"	16	18"	39' - 9"	425	90	18"	39' - 9"	2,390	108	9"	5' - 0"	361	162	9"	4' - 7"	496	11' - 3"	1,217	22' - 8"	61	48	134	1.672	313.9	1.7	195	68.6	12,750
5	5' - 0"	20	18"	39' - 9"	531	110	18"	39' - 9"	2,921	108	9"	5' - 0"	361	216	9"	4' - 7"	661	11' - 3"	1,623	28' - 3"	75	60	167	2.056	382.5	2.1	242	84.3	15,540
6	5' - 0"	24	18"	39' - 9"	637	130	18"	39' - 9"	3,452	108	9"	5' - 0"	361	270	9"	4' - 7"	827	11' - 3"	2,029	33' - 10"	90	70	195	2.439	451.0	2.5	285	100.1	18,326

HL93 LOADING SHEET 2 OF 2

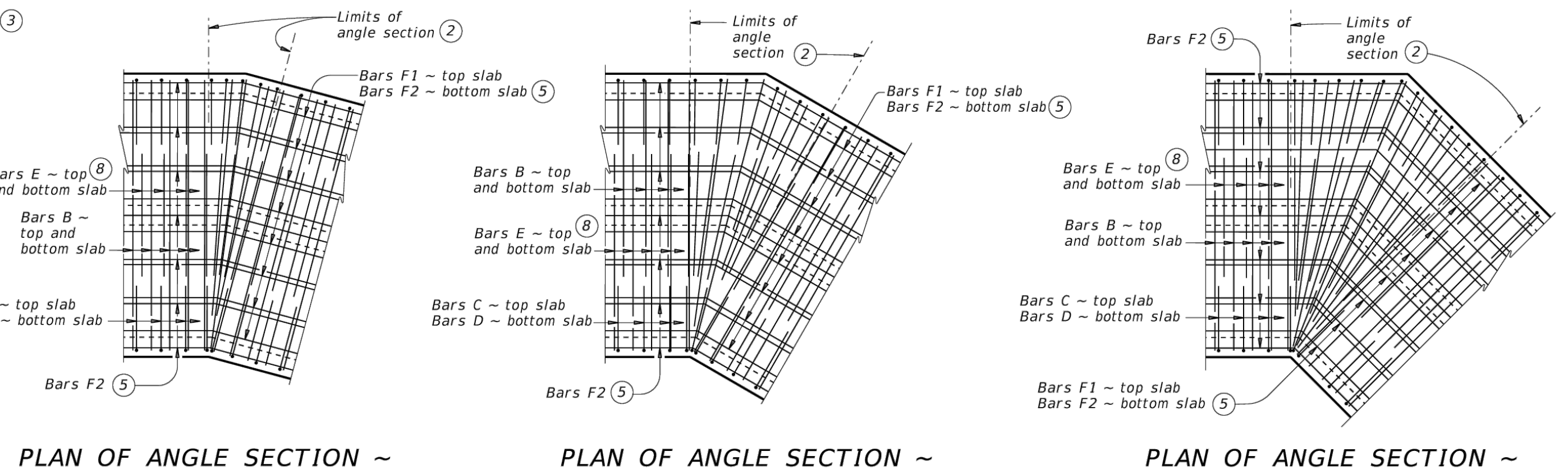
Texas Department of Transportation
Bridge Division Standard

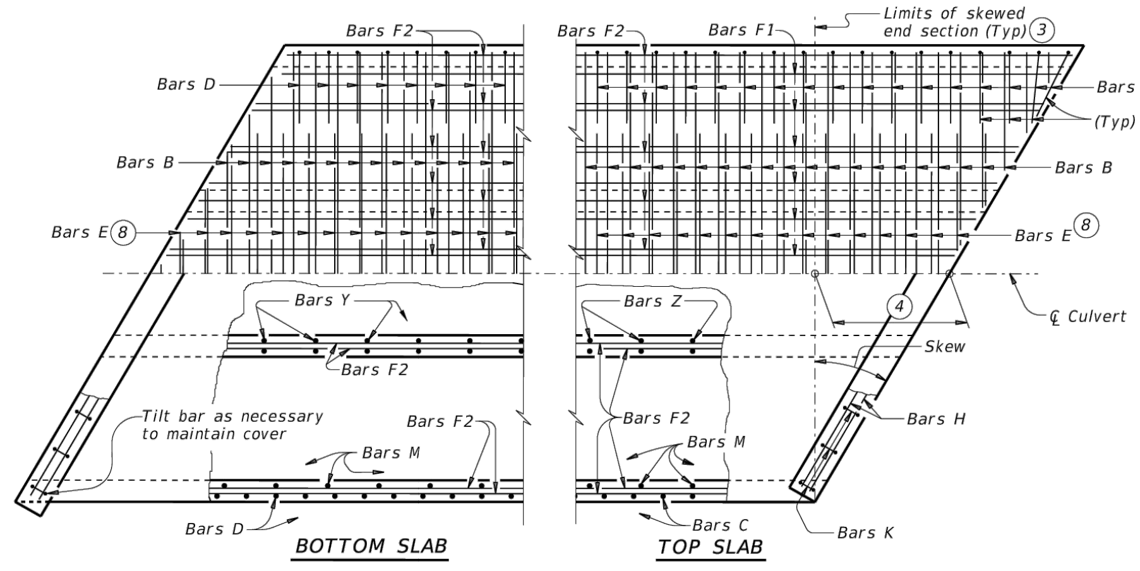
MULTIPLE BOX CULVERTS
CAST-IN-PLACE
5'-0" SPAN
0' TO 20' FILL
MC-5-20

FILE: CD-MC520-20.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

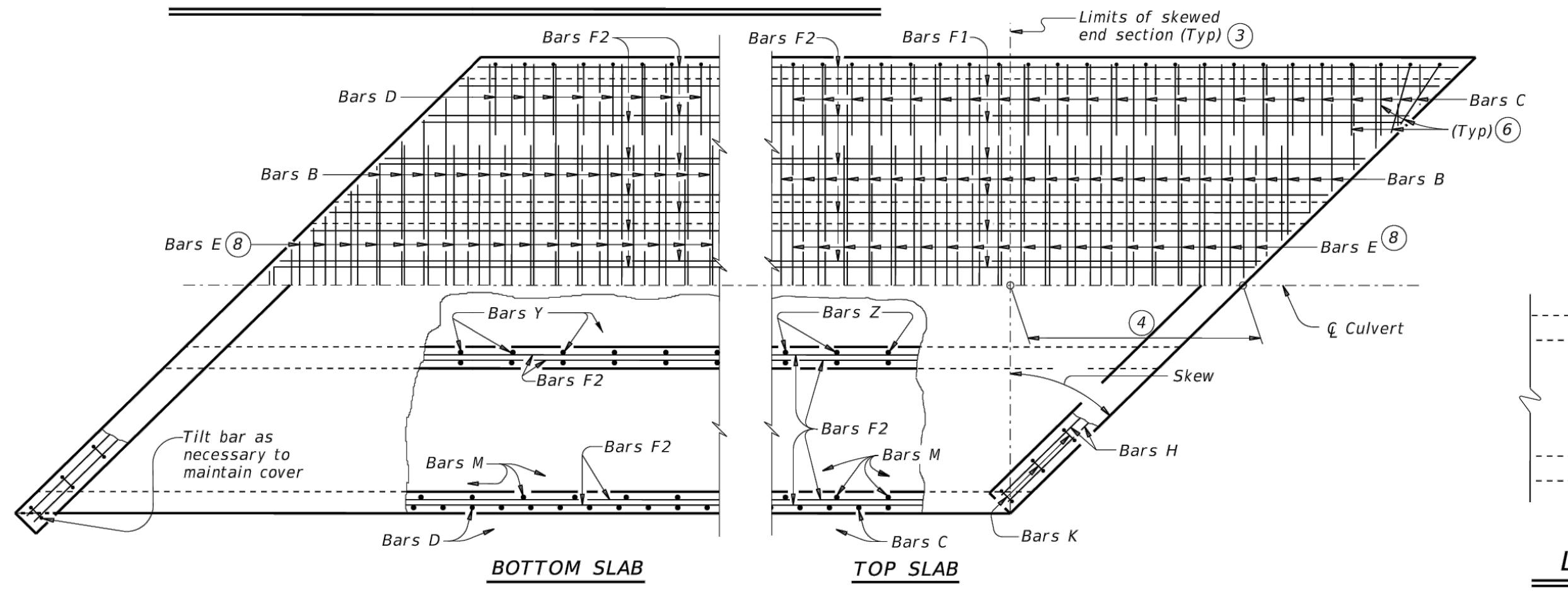


PLAN OF SKEWED ENDS ~ FROM 0° TO 15° ⑦

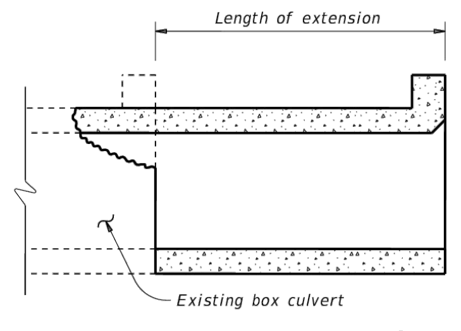

Limits of angle section ②
Bars F1 ~ top slab
Bars F2 ~ bottom slab ⑤
Bars E ~ top and bottom slab
Bars B ~ top and bottom slab
Bars C ~ top slab
Bars D ~ bottom slab
Bars F2 ⑤
Bars F2 ⑤
Bars F1 ~ top slab
Bars F2 ~ bottom slab ⑤
PLAN OF ANGLE SECTION ~ FROM 0° TO 15°
PLAN OF ANGLE SECTION ~ OVER 15° TO 30°
PLAN OF ANGLE SECTION ~ OVER 30° TO 45°



PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



PLAN OF SKEWED ENDS ~ OVER 30° TO 45°



LENGTHENING DETAIL ①

① For skewed box culverts with less than 2'-0" of fill, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension.

For non-skewed box culverts with less than 2'-0" of fill and for skewed or non-skewed culverts with a fill depth of 2'-0" or greater, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is non-skewed, embed #6 anchor bars with a Type III, Class C, D, E, or F anchor adhesive into the existing walls, top and bottom slab at 1'-6" center-to-center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 26.4 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing." Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.

Break back wings and apron as necessary to install the extension. Clean and extend the exposed wingwall and apron reinforcing into the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, form horizontal and vertical transitions as directed by the Engineer. Match bottom slabs to maintain an uninterrupted flow line. Field bend existing and new reinforcing into transitions and maintain specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, adjust the "H" dimension to provide a smooth riding surface.

② When the spacing between Bars B or Bars E becomes less than half of the normal spacing, cut bars to avoid conflict.

③ The length of Bars B and Bars E will vary in the skewed end sections.

④ [One half of overall width] x [tangent of the skew angle]

⑤ Place Bars F1 and F2 continuously through the angle section. Bend Bars F1 and F2 to remain parallel to the walls of the box culvert.

⑥ When necessary to avoid conflict in acute corners, shorten the slab extension leg of Bars C and Bars D to a minimum of 1'-6" for skews of 30° thru 45°.

⑦ At the Contractor's option, for skews of 15° or less, place Bars B, C, D, and E parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B and Bars E shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets to accommodate the skew.

⑧ Extend Bars E as shown on the MC standard sheet for direct traffic culverts.

CONSTRUCTION NOTES:

Do not use permanent forms.

When required, lap Bars H 1'-8" for uncoated or galvanized bars.

Provide a minimum of 1 ½" clear cover.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

Provide galvanized reinforcing steel, if required elsewhere in the plans.

Provide Class C concrete (f'c = 3,600 psi) with these exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Refer to Multiple Box Culverts Cast-in-Place (MC) standard sheets for details of straight sections of culvert.

For skewed sections and angle sections, refer to Multiple Box Culverts Cast-in-Place (MC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.

For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets by the cosine of the skew angle.

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation
Bridge Division Standard

MULTIPLE BOX CULVERTS
CAST-IN-PLACE
MISCELLANEOUS DETAILS
MC-MD

FILE: CD-MC-MD-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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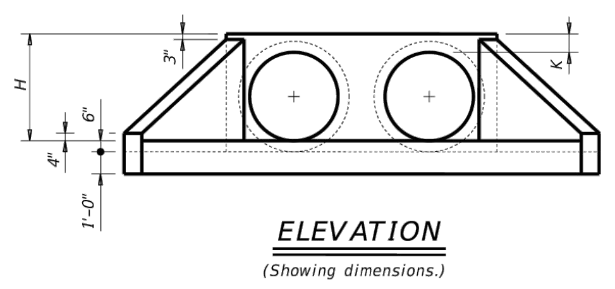
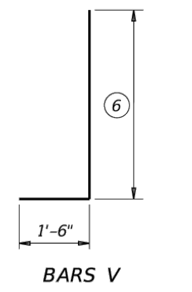
REVISIONS	DIST	COUNTY		SHEET NO.

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL ⑤

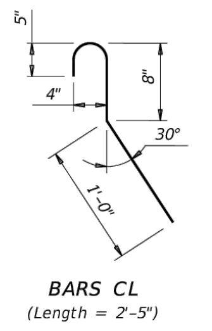
Slope	Dia of Pipe (D)	Values for One Pipe: W	X	Y	L	Reinf (Lbs)	Conc (CY) ①	Values to be Added for Each Addt'l Pipe: X and W	Reinf (Lbs)	Conc (CY) ①
2:1	12"	4' - 7 ½"	2' - 6"	2' - 10"	3' - 3 ¼"	88	0.6	1' - 9"	20	0.2
	15"	5' - 5 ¾"	2' - 9 ½"	3' - 4"	3' - 10 ¼"	103	0.7	2' - 2"	24	0.3
	18"	6' - 4 ¼"	3' - 1"	3' - 10"	4' - 5"	124	0.9	2' - 8"	32	0.3
	21"	7' - 2 ¾"	3' - 4 ½"	4' - 4"	5' - 0"	143	1.1	3' - 1"	43	0.4
	24"	8' - 2 ½"	3' - 9 ½"	4' - 10"	5' - 7"	164	1.3	3' - 7"	50	0.5
	27"	9' - 1"	4' - 1"	5' - 4"	6' - 2"	179	1.5	3' - 11"	56	0.6
	30"	9' - 11 ½"	4' - 4 ½"	5' - 10"	6' - 8 ¾"	203	1.7	4' - 4"	65	0.8
	33"	10' - 10"	4' - 8"	6' - 4"	7' - 3 ¾"	224	2.0	4' - 8"	71	0.9
	36"	11' - 8 ¼"	4' - 11 ½"	6' - 10"	7' - 10 ¾"	249	2.2	5' - 1"	81	1.0
	42"	13' - 5 ¼"	5' - 6 ½"	7' - 10"	9' - 0 ½"	298	2.8	5' - 10"	97	1.3
	48"	15' - 9"	6' - 1 ½"	9' - 4"	10' - 9 ¼"	360	3.8	6' - 7"	117	1.7
	54"	17' - 5 ¾"	6' - 8 ½"	10' - 4"	11' - 11 ¼"	427	4.5	7' - 6"	151	2.1
	60"	19' - 2 ¾"	7' - 3 ½"	11' - 4"	13' - 1"	481	5.3	8' - 3"	174	2.5
	66"	20' - 11 ½"	7' - 10 ½"	12' - 4"	14' - 3"	544	6.2	8' - 9"	194	2.9
	72"	22' - 8 ½"	8' - 5 ½"	13' - 4"	15' - 4 ¾"	601	7.1	9' - 4"	213	3.3
3:1	12"	6' - 3"	2' - 6"	4' - 3"	4' - 11"	118	0.8	1' - 9"	22	0.2
	15"	7' - 5"	2' - 9 ½"	5' - 0"	5' - 9 ¼"	137	1.1	2' - 2"	28	0.3
	18"	8' - 6 ¾"	3' - 1"	5' - 9"	6' - 7 ¾"	170	1.3	2' - 8"	37	0.5
	21"	9' - 8 ¾"	3' - 4 ½"	6' - 6"	7' - 6"	195	1.6	3' - 1"	48	0.6
	24"	11' - 0"	3' - 9 ½"	7' - 3"	8' - 4 ½"	227	2.0	3' - 7"	58	0.7
	27"	12' - 2"	4' - 1"	8' - 0"	9' - 2 ¾"	251	2.3	3' - 11"	67	0.8
	30"	13' - 4"	4' - 4 ½"	8' - 9"	10' - 1 ¼"	293	2.7	4' - 4"	77	1.0
	33"	14' - 5 ¾"	4' - 8"	9' - 6"	10' - 11 ¾"	318	3.1	4' - 8"	84	1.2
	36"	15' - 7 ¾"	4' - 11 ½"	10' - 3"	11' - 10"	351	3.5	5' - 1"	96	1.4
	42"	17' - 11 ½"	5' - 6 ½"	11' - 9"	13' - 6 ¾"	432	4.5	5' - 10"	119	1.7
	48"	21' - 1 ¾"	6' - 1 ½"	14' - 0"	16' - 2"	537	6.1	6' - 7"	146	2.3
	54"	23' - 5 ½"	6' - 8 ½"	15' - 6"	17' - 10 ¾"	630	7.3	7' - 6"	186	2.9
	60"	25' - 9 ¼"	7' - 3 ½"	17' - 0"	19' - 7 ½"	719	8.7	8' - 3"	219	3.4
	66"	28' - 1"	7' - 10 ½"	18' - 6"	21' - 4 ¼"	811	10.1	8' - 9"	242	3.9
	72"	30' - 4 ¾"	8' - 5 ½"	20' - 0"	23' - 1 ¼"	924	11.7	9' - 4"	272	4.4
4:1	12"	7' - 10 ¾"	2' - 6"	5' - 8"	6' - 6 ½"	148	1.1	1' - 9"	24	0.3
	15"	9' - 4"	2' - 9 ½"	6' - 8"	7' - 8 ½"	181	1.5	2' - 2"	32	0.4
	18"	10' - 9 ½"	3' - 1"	7' - 8"	8' - 10 ¼"	221	1.9	2' - 8"	42	0.5
	21"	12' - 2 ¾"	3' - 4 ½"	8' - 8"	10' - 0"	260	2.3	3' - 1"	57	0.7
	24"	13' - 9 ½"	3' - 9 ½"	9' - 8"	11' - 2"	301	2.8	3' - 7"	67	0.9
	27"	15' - 3"	4' - 1"	10' - 8"	12' - 3 ¾"	334	3.3	3' - 11"	77	1.0
	30"	16' - 8 ¼"	4' - 4 ½"	11' - 8"	13' - 5 ¾"	385	3.8	4' - 4"	89	1.3
	33"	18' - 1 ¾"	4' - 8"	12' - 8"	14' - 7 ½"	425	4.5	4' - 8"	101	1.4
	36"	19' - 7"	4' - 11 ½"	13' - 8"	15' - 9 ¼"	472	5.1	5' - 1"	115	1.7
	42"	22' - 5 ¾"	5' - 6 ½"	15' - 8"	18' - 1"	583	6.5	5' - 10"	141	2.1
	48"	26' - 6 ¼"	6' - 1 ½"	18' - 8"	21' - 6 ¾"	730	8.9	6' - 7"	175	2.8
	54"	29' - 5"	6' - 8 ½"	20' - 8"	23' - 10 ¼"	875	10.7	7' - 6"	226	3.6
	60"	32' - 3 ¾"	7' - 3 ½"	22' - 8"	26' - 2"	996	12.7	8' - 3"	264	4.3
	66"	35' - 2 ½"	7' - 10 ½"	24' - 8"	28' - 5 ¾"	1,140	14.9	8' - 9"	300	4.9
	72"	38' - 1 ¼"	8' - 5 ½"	26' - 8"	30' - 9 ½"	1,297	17.3	9' - 4"	334	5.6
6:1	12"	11' - 2"	2' - 6"	8' - 6"	9' - 9 ¾"	224	1.9	1' - 9"	28	0.4
	15"	13' - 2 ¼"	2' - 9 ½"	10' - 0"	11' - 6 ½"	268	2.5	2' - 2"	37	0.5
	18"	15' - 2 ½"	3' - 1"	11' - 6"	13' - 3 ¼"	330	3.2	2' - 8"	50	0.7
	21"	17' - 2 ¾"	3' - 4 ½"	13' - 0"	15' - 0 ¼"	387	3.9	3' - 1"	69	0.9
	24"	19' - 4 ½"	3' - 9 ½"	14' - 6"	16' - 9"	453	4.8	3' - 7"	80	1.2
	27"	21' - 4 ¾"	4' - 1"	16' - 0"	18' - 5 ¾"	512	5.7	3' - 11"	96	1.4
	30"	23' - 5 ¼"	4' - 4 ½"	17' - 6"	20' - 2 ½"	593	6.7	4' - 4"	110	1.7
	33"	25' - 5 ½"	4' - 8"	19' - 0"	21' - 11 ¼"	675	7.8	4' - 8"	127	2.0
	36"	27' - 5 ¾"	4' - 11 ½"	20' - 6"	23' - 8"	735	9.0	5' - 1"	144	2.3
	42"	31' - 6 ¼"	5' - 6 ½"	23' - 6"	27' - 1 ½"	922	11.5	5' - 10"	179	3.0
	48"	37' - 3 ½"	6' - 1 ½"	28' - 0"	32' - 4"	1,191	15.9	6' - 7"	231	4.0
	54"	41' - 4 ¼"	6' - 8 ½"	31' - 0"	35' - 9 ½"	1,424	19.2	7' - 6"	300	5.0
	60"	45' - 4 ¾"	7' - 3 ½"	34' - 0"	39' - 3"	1,631	22.9	8' - 3"	353	6.0



ELEVATION
(Showing dimensions.)



BARS V



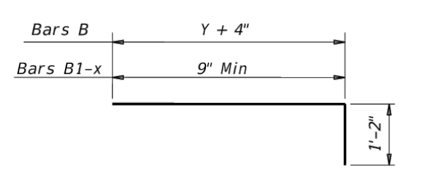
BARS CL
(Length = 2'-5")

TABLE OF REINFORCING STEEL ⑤

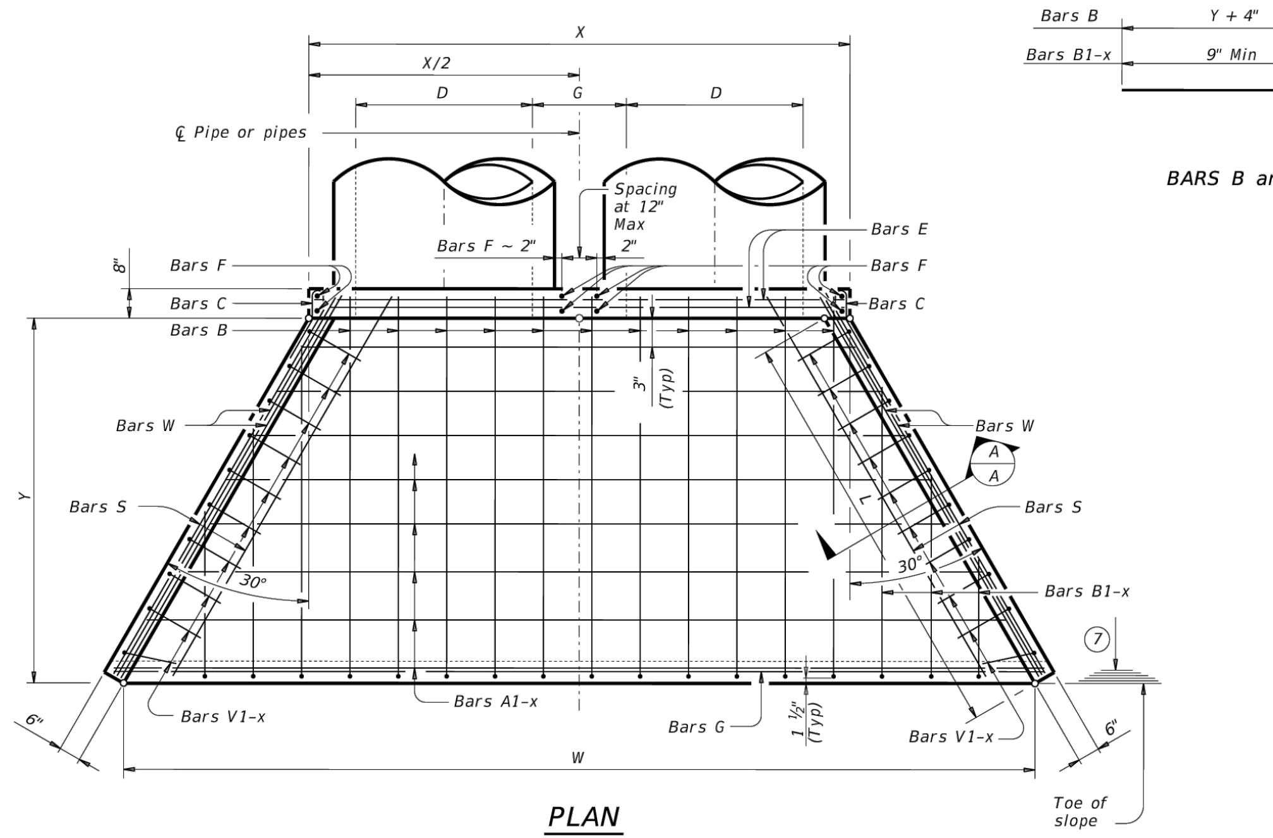
Bar	Size	Spa	No.
A	#4	1' - 0"	~
B	#3	1' - 6"	~
C	#4	1' - 0"	~
D	#3	1' - 0"	~
E	#5	~	4
F	#5	~	~
G	#3	~	2
S	#4	~	6
V	#4	1' - 0"	~
W	#5	~	4

TABLE OF CONSTANT DIMENSIONS

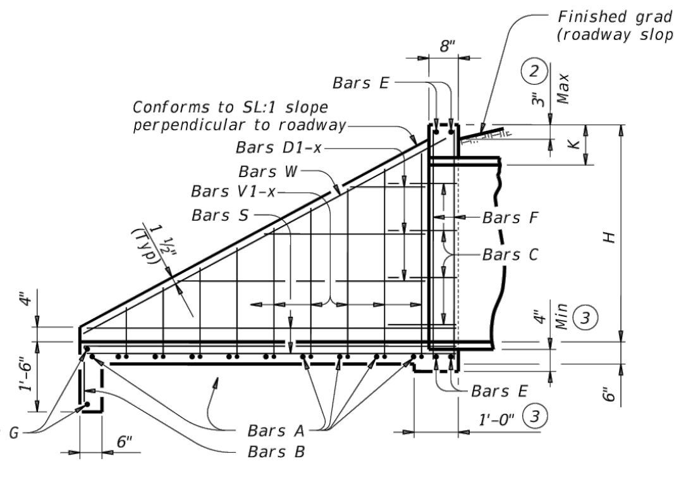
Dia of Pipe (D)	G	K ④	H
12"	0' - 9"	1' - 0"	2' - 0"
15"	0' - 11"	1' - 0"	2' - 3"
18"	1' - 2"	1' - 0"	2' - 6"
21"	1' - 4"	1' - 0"	2' - 9"
24"	1' - 7"	1' - 0"	3' - 0"
27"	1' - 8"	1' - 0"	3' - 3"
30"	1' - 10"	1' - 0"	3' - 6"
33"	1' - 11"	1' - 0"	3' - 9"
36"	2' - 1"	1' - 0"	4' - 0"
42"	2' - 4"	1' - 0"	4' - 6"
48"	2' - 7"	1' - 3"	5' - 3"
54"	3' - 0"	1' - 3"	5' - 9"
60"	3' - 3"	1' - 3"	6' - 3"
66"	3' - 3"	1' - 3"	6' - 9"
72"	3' - 4"	1' - 3"	7' - 3"



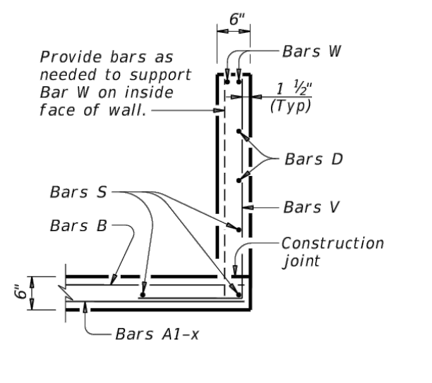
BARS B and B1-x



PLAN



TYPICAL WING ELEVATION



SECTION A-A

① Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

② For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

③ Provide a 1'-0" footing as shown where required to maintain 4" minimum cover for pipes.

④ Dimensions shown are usual and maximum.

⑤ Quantities shown are for one structure end only (one headwall).

⑥ Min Length = 6" + 3" x $\left(\frac{12 \times H - 7}{12 \times L}\right)$

Max Length = 12 x H - 3" x $\left(\frac{12 \times H - 7}{12 \times L}\right)$ - 1"

⑦ Lengths of wings based on SL:1 slope along this line.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Do not mount bridge rails of any type directly to these culvert headwalls.

This standard may not be used for wall heights, H, exceeding the values shown.

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

Texas Department of Transportation
Bridge Division Standard

CONCRETE HEADWALLS
WITH FLARED WINGS FOR
0° SKEW PIPE CULVERTS
CH-FW-0

FILE: CD-CH-FW0-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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San Antonio, Texas 78231
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LANTANA SUBDIVISION
UNIT 1

DRAINAGE DETAILS

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS
DATE
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1.
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6.
7.
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JAVIER CASTELLO
122170
5/12/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C61

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P:\04037\003\2-DWG\4-Plans\C61 DRAINAGE DETAILS.dwg 2025/05/12 1:52pm tduano

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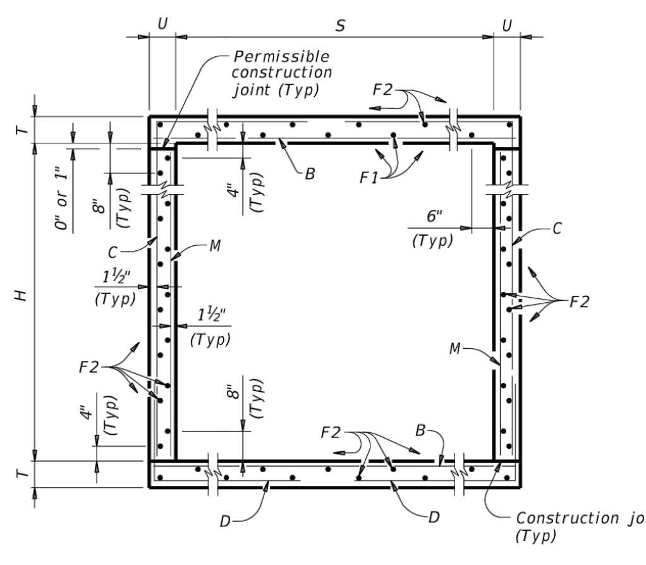
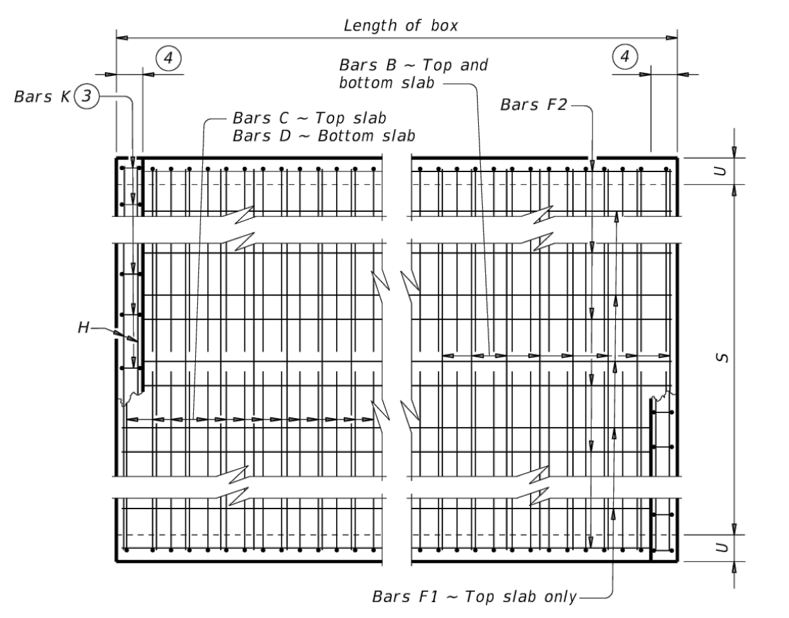
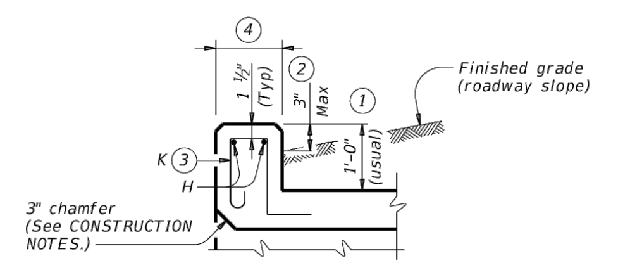


TYPICAL SECTION

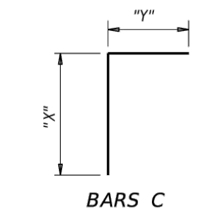


PLAN OF REINF STEEL

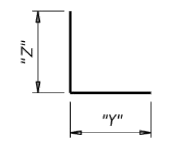


Finished grade (roadway slope)
K
H
3" chamfer (See CONSTRUCTION NOTES.)

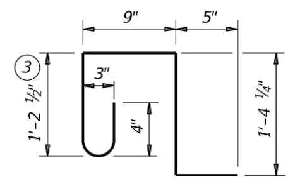
SECTION THRU CURB



BARS C



BARS D



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

① 0" Min to 5'–0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'–0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631–CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

② For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

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

③ For curbs less than 1'–0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.

④ 1'–0" typical. 2'–3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'–1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

CONSTRUCTION NOTES:

Do not use permanent forms.

Chamfer the bottom edge of the top slab 3" at the entrance.

Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

Provide galvanized reinforcing steel if required elsewhere in the plans.

Provide Class C concrete (f'c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1–to–2 course surface treatment, or
- culverts with the top slab as the final riding surface.

Provide bar laps, where required, as follows:
- Uncoated or galvanized ~ #4 = 1'–8" Min
- Uncoated or galvanized ~ #5 = 2'–1" Min
- Uncoated or galvanized ~ #6 = 2'–6" Min

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.

See the Single Box Culverts Cast–In–Place Miscellaneous Detail (SCC–MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

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

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation
Bridge Division Standard

SINGLE BOX CULVERTS
CAST-IN-PLACE
0' TO 30' FILL

SCC-5 & 6

FILE: CD-SCC56-21.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
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REVISIONS 04/2021 Updated X values.	DIST	COUNTY		SHEET NO.

DATE:
FILE:

SECTION DIMENSIONS / BILLS OF REINFORCING STEEL (For Box Length = 40 feet) / QUANTITIES

SECTION DIMENSIONS				FILL HEIGHT ⑤	Bars B					Bars C							Bars D							Bars M ~ #4				Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total	
S	H	T	U		No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
5' – 0"	2' – 0"	8"	7"	26'	108	#6	9"	5' – 11"	960	108	#5	9"	6' – 3"	704	2' – 6"	3' – 9"	108	#5	9"	6' – 5"	723	3' – 9"	2' – 8"	108	9"	2' – 0"	144	4	39' – 9"	106	22	39' – 9"	584	5' – 11"	16	14	39	0.391	80.5	0.5	55	16.1	3,276
5' – 0"	2' – 0"	9"	7"	30'	108	#6	9"	5' – 11"	960	108	#5	9"	6' – 4"	713	2' – 7"	3' – 9"	108	#5	9"	6' – 6"	732	3' – 9"	2' – 9"	108	9"	2' – 0"	144	4	39' – 9"	106	22	39' – 9"	584	5' – 11"	16	14	39	0.429	81.0	0.5	55	17.6	3,294
5' – 0"	3' – 0"	8"	7"	26'	108	#6	9"	5' – 11"	960	108	#5	9"	7' – 3"	817	3' – 6"	3' – 9"	108	#5	9"	6' – 5"	723	3' – 9"	2' – 8"	108	9"	3' – 0"	216	4	39' – 9"	106	26	39' – 9"	690	5' – 11"	16	14	39	0.434	87.8	0.5	55	17.8	3,567
5' – 0"	3' – 0"	9"	7"	30'	108	#6	9"	5' – 11"	960	108	#5	9"	7' – 4"	826	3' – 7"	3' – 9"	108	#5	9"	6' – 6"	732	3' – 9"	2' – 9"	108	9"	3' – 0"	216	4	39' – 9"	106	26	39' – 9"	690	5' – 11"	16	14	39	0.472	88.3	0.5	55	19.3	3,585
5' – 0"	4' – 0"	8"	7"	26'	108	#6	9"	5' – 11"	960	108	#5	9"	8' – 3"	929	4' – 6"	3' – 9"	108	#5	9"	6' – 5"	723	3' – 9"	2' – 8"	108	9"	4' – 0"	289	4	39' – 9"	106	26	39' – 9"	690	5' – 11"	16	14	39	0.477	92.4	0.5	55	19.5	3,752
5' – 0"	4' – 0"	9"	7"	30'	108	#6	9"	5' – 11"	960	108	#5	9"	8' – 4"	939	4' – 7"	3' – 9"	108	#5	9"	6' – 6"	732	3' – 9"	2' – 9"	108	9"	4' – 0"	289	4	39' – 9"	106	26	39' – 9"	690	5' – 11"	16	14	39	0.515	92.9	0.5	55	21.1	3,771
5' – 0"	5' – 0"	8"	7"	26'	108	#6	9"	5' – 11"	960	108	#5	9"	9' – 3"	1,042	5' – 6"	3' – 9"	108	#5	9"	6' – 5"	723	3' – 9"	2' – 8"	108	9"	5' – 0"	361	4	39' – 9"	106	30	39' – 9"	797	5' – 11"	16	14	39	0.521	99.7	0.5	55	21.3	4,044
5' – 0"	5' – 0"	9"	7"	30'	108	#6	9"	5' – 11"	960	108	#5	9"	9' – 4"	1,051	5' – 7"	3' – 9"	108	#5	9"	6' – 6"	732	3' – 9"	2' – 9"	108	9"	5' – 0"	361	4	39' – 9"	106	30	39' – 9"	797	5' – 11"	16	14	39	0.559	100.2	0.5	55	22.8	4,062
6' – 0"	2' – 0"	8"	7"	20'	108	#6	9"	6' – 11"	1,122	108	#5	9"	6' – 7"	742	2' – 6"	4' – 1"	108	#5	9"	6' – 9"	760	4' – 1"	2' – 8"	108	9"	2' – 0"	144	5	39' – 9"	133	25	39' – 9"	664	6' – 11"	18	16	45	0.440	89.1	0.5	63	18.1	3,628
6' – 0"	2' – 0"	9"	7"	26'	108	#6	9"	6' – 11"	1,122	162	#5	6"	6' – 8"	1,126	2' – 7"	4' – 1"	162	#5	6"	6' – 10"	1,155	4' – 1"	2' – 9"	108	9"	2' – 0"	144	5	39' – 9"	133	25	39' – 9"	664	6' – 11"	18	16	45	0.485	108.6	0.5	63	19.9	4,407
6' – 0"	2' – 0"	10"	8"	30'	108	#6	9"	7' – 1"	1,149	162	#5	6"	6' – 10"	1,155	2' – 8"	4' – 2"	162	#5	6"	7' – 0"	1,183	4' – 2"	2' – 10"	82	12"	2' – 0"	110	5	39' – 9"	133	25	39' – 9"	664	7' – 1"	19	18	50	0.551	109.9	0.5	69	22.6	4,463
6' – 0"	3' – 0"	8"	7"	20'	108	#6	9"	6' – 11"	1,122	108	#5	9"	7' – 7"	854	3' – 6"	4' – 1"	108	#5	9"	6' – 9"	760	4' – 1"	2' – 8"	108	9"	3' – 0"	216	5	39' – 9"	133	29	39' – 9"	770	6' – 11"	18	16	45	0.484	96.4	0.5	63	19.9	3,918
6' – 0"	3' – 0"	9"	7"	26'	108	#6	9"	6' – 11"	1,122	162	#5	6"	7' – 8"	1,295	3' – 7"	4' – 1"	162	#5	6"	6' – 10"	1,155	4' – 1"	2' – 9"	108	9"	3' – 0"	216	5	39' – 9"	133	29	39' – 9"	770	6' – 11"	18	16	45	0.528	117.3	0.5	63	21.6	4,754
6' – 0"	3' – 0"	10"	8"	30'	108	#6	9"	7' – 1"	1,149	162	#5	6"	7' – 10"	1,324	3' – 8"	4' – 2"	162	#5	6"	7' – 0"	1,183	4' – 2"	2' – 10"	82	12"	3' – 0"	164	5	39' – 9"	133	29	39' – 9"	770	7' – 1"	19	18	50	0.601	118.1	0.5	69	24.6	4,792
6' – 0"	4' – 0"	8"	7"	20'	108	#6	9"	6' – 11"	1,122	108	#5	9"	8' – 7"	967	4' – 6"	4' – 1"	108	#5	9"	6' – 9"	760	4' – 1"	2' – 8"	108	9"	4' – 0"	289	5	39' – 9"	133	29	39' – 9"	770	6' – 11"	18	16	45	0.527	101.0	0.5	63	21.6	4,104
6' – 0"	4' – 0"	9"	7"	26'	108	#6	9"	6' – 11"	1,122	162	#5	6"	8' – 8"	1,464	4' – 7"	4' – 1"	162	#5	6"	6' – 10"	1,155	4' – 1"	2' – 9"	108	9"	4' – 0"	289	5	39' – 9"	133	29	39' – 9"	770	6' – 11"	18	16	45	0.571	123.3	0.5	63	23.4	4,996
6' – 0"	4' – 0"	10"	8"	30'	108	#6	9"	7' – 1"	1,149	162	#5	6"	8' – 10"	1,493	4' – 8"	4' – 2"	162	#5	6"	7' – 0"	1,183	4' – 2"	2' – 10"	82	12"	4' – 0"	219	5	39' – 9"	133	29	39' – 9"	770	7' – 1"	19	18	50	0.650	123.7	0.5	69	26.5	5,016
6' – 0"	5' – 0"	8"	7"	20'	108	#6	9"	6' – 11"	1,122	108	#5	9"	9' – 7"	1,080	5' – 6"	4' – 1"	108	#5	9"	6' – 9"	760	4' – 1"	2' – 8"	108	9"	5' – 0"	361	5	39' – 9"	133	33	39' – 9"	876	6' – 11"	18	16	45	0.570	108.3	0.5	63	23.3	4,395
6' – 0"	5' – 0"	9"	7"	26'	108	#6	9"	6' – 11"	1,122	162	#5	6"	9' – 8"	1,633	5' – 7"	4' – 1"	162	#5	6"	6' – 10"	1,155	4' – 1"	2' – 9"	108	9"	5' – 0"	361	5	39' – 9"	133	33	39' – 9"	876	6' – 11"	18	16	45	0.614	132.0	0.5	63	25.1	5,343
6' – 0"	5' – 0"	10"	8"	30'	108	#6	9"	7' – 1"	1,149	162	#5	6"	9' – 10"	1,661	5' – 8"	4' – 2"	162	#5	6"	7' – 0"	1,183	4' – 2"	2' – 10"	82	12"	5' – 0"	274	5	39' – 9"	133	33	39' – 9"	876	7' – 1"	19	18	50	0.700	131.9	0.5	69	28.5	5,345
6' – 0"	6' – 0"	8"	7"	20'	108	#6	9"	6' – 11"	1,122	108	#5	9"	10' – 7"	1,192	6' – 6"	4' – 1"	108	#5	9"	6' – 9"	760	4' – 1"	2' – 8"	108	9"	6' – 0"	433	5	39' – 9"	133	37	39' – 9"	982	6' – 11"	18	16	45	0.613	115.6	0.5	63	25.0	4,685
6' – 0"	6' – 0"	9"	7"	26'	108	#6	9"	6' – 11"	1,122	162	#5	6"	10' – 8"	1,802	6' – 7"	4' – 1"	162	#5	6"	6' – 10"	1,155	4' – 1"	2' – 9"	108	9"	6' – 0"	433	5	39' – 9"	133	37	39' – 9"	982	6' – 11"	18	16	45	0.657	140.7	0.5	63	26.8	5,690
6' – 0"	6' – 0"	10"	8"	30'	108	#6	9"	7' – 1"	1,149	162	#5	6"	10' – 10"	1,830	6' – 8"	4' – 2"	162	#5	6"	7' – 0"	1,183	4' – 2"	2' – 10"	82	12"	6' – 0"	329	5	39' – 9"	133	37	39' – 9"	982	7' – 1"	19	18	50	0.749	140.2	0.5	69	30.5	5,675

⑤ For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.

HL93 LOADING SHEET 2 OF 2

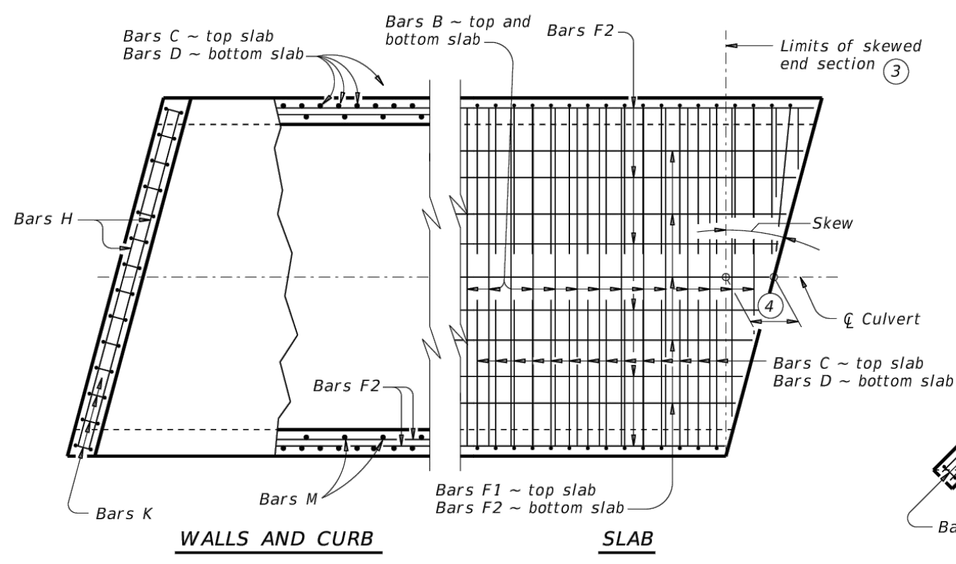
Texas Department of Transportation
Bridge Division Standard

SINGLE BOX CULVERTS
CAST-IN-PLACE
0' TO 30' FILL

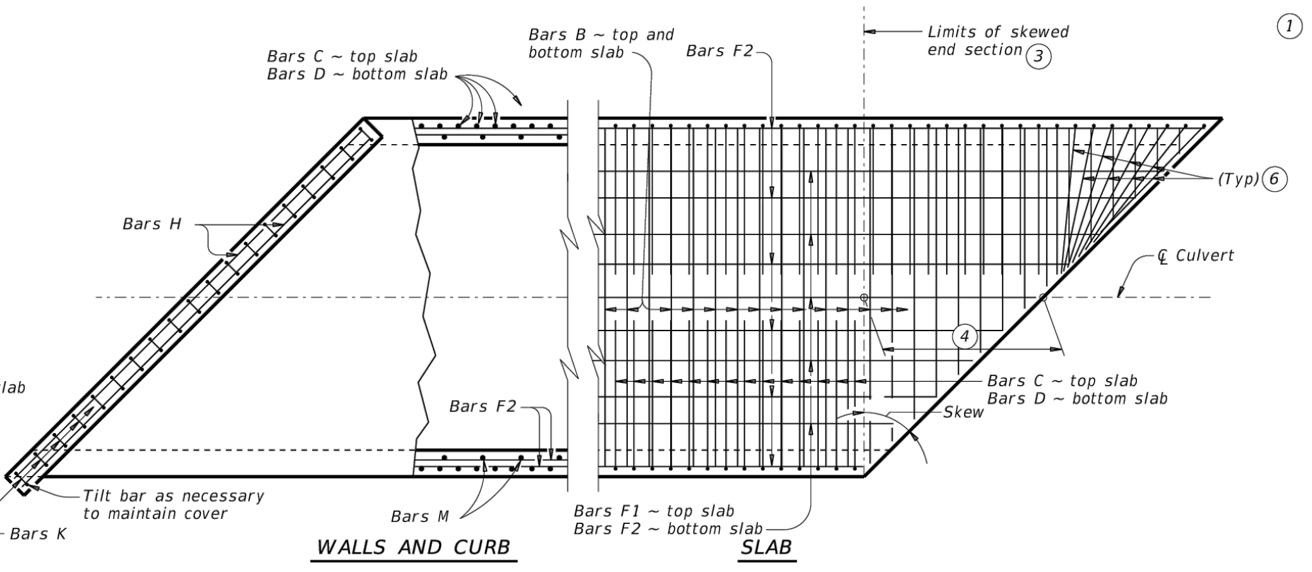
SCC-5 & 6

FILE: CD-SCC56-21.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 04/2021 Updated X values.	DIST	COUNTY		SHEET NO.

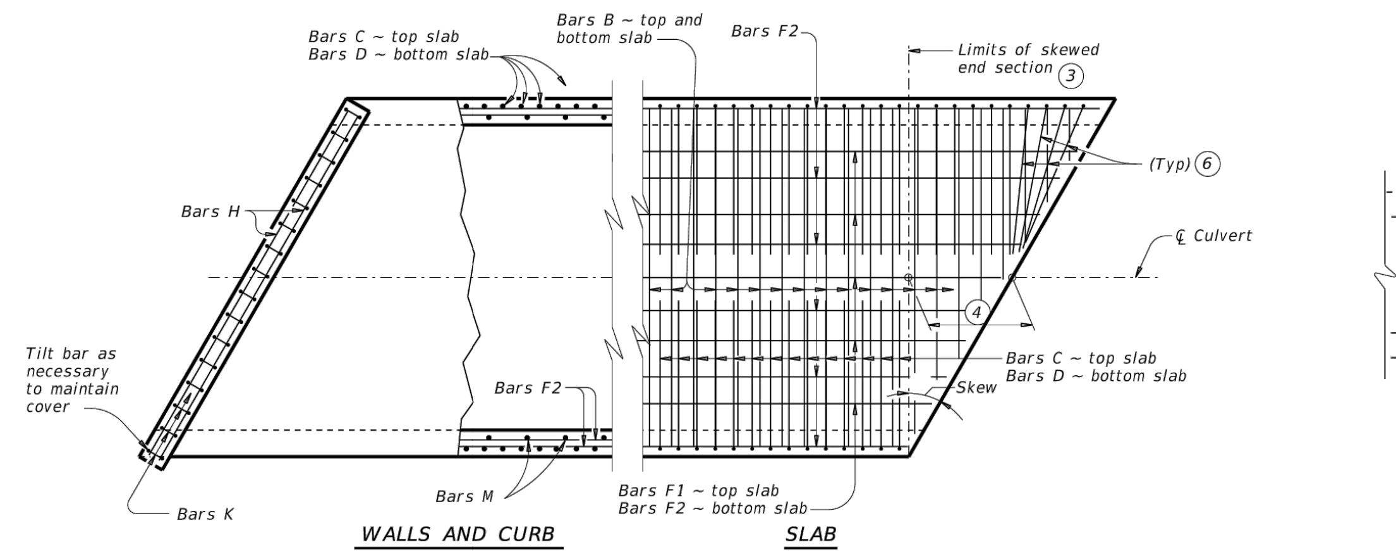
DATE:
FILE:



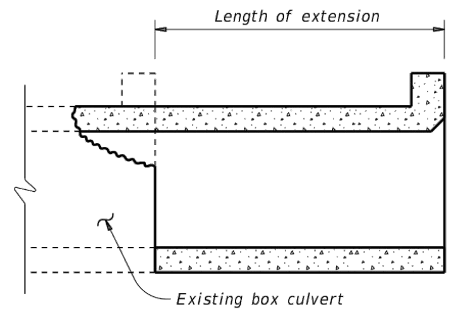
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° ⑦



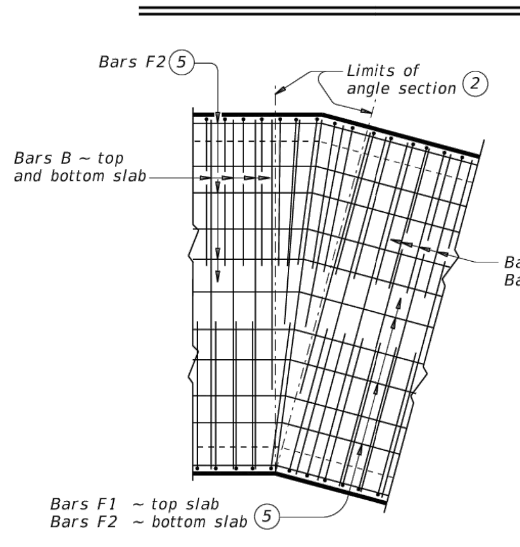
PLAN OF SKEWED ENDS ~ OVER 30° TO 45°



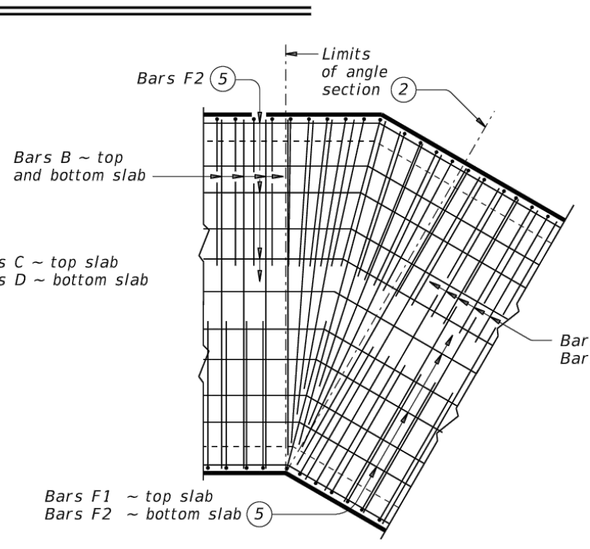
PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



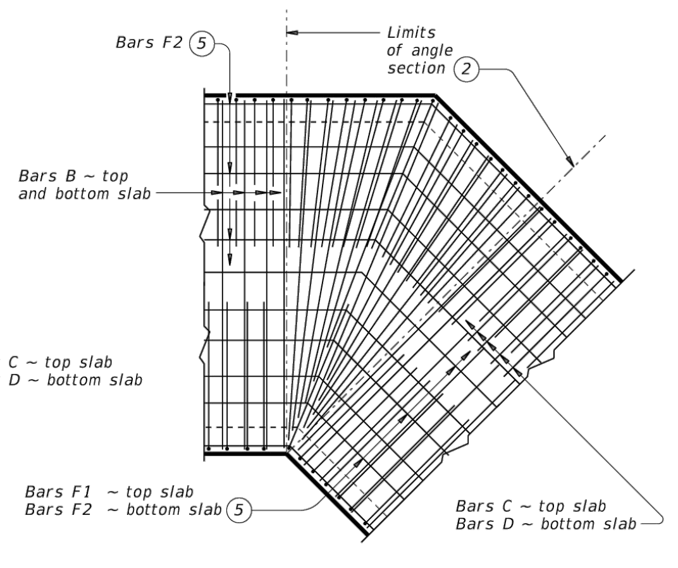
LENGTHENING DETAIL ①



PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



PLAN OF ANGLE SECTION ~ OVER 30° TO 45°

① For skewed box culverts with less than 2'–0" of fill, break back the top slab to provide a 1'–10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension.

For non–skewed box culverts with less than 2'–0" of fill and for skewed or non–skewed culverts with a fill depth of 2'–0" or greater, break back the top slab to provide a 1'–10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is non–skewed, embed #6 anchor bars with a Type III, C, D , E, or F anchor adhesive into the existing walls, top and bottom slab at 1'–6" center–to–center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 26.4 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing." Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.

Break back wings and apron as necessary to install the extension. Clean and extend the exposed wingwall and apron reinforcing into the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, form horizontal and vertical transitions as directed by the Engineer. Match bottom slabs to maintain an uninterrupted flow line. Field bend existing and new reinforcing into transitions and maintain specified cover requirements. For top slabs of culverts with overlay, with 1–to–2 course surface treatment, or with the top slab as the final riding surface, adjust the "H" dimension to provide a smooth riding surface.

② When the spacing between Bars B becomes less than half of the normal spacing, cut bars to avoid conflict.

③ The length of Bars B vary in the skewed end sections.

④ [One half of overall width] x [tangent of the skew angle]

⑤ Place Bars F1 and F2 continuously through the angle section. Bend Bars F1 and F2 to remain parallel to the walls of the box culvert.

⑥ When necessary to avoid conflict in acute corners, shorten the slab extension leg of Bars C and Bars D to a minimum of 1'–6" for skews of 30° thru 45°.

⑦ At the Contractor's option, for skews of 15° or less, place Bars B, C, and D parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B shown on the Single Box Culverts Cast–In–Place (SCC) standards sheets to accommodate the skew.

CONSTRUCTION NOTES:

Do not use permanent forms.

When required, lap Bars H 1'–8" for uncoated or galvanized bars.

Provide a minimum of 1 ½" clear cover.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

Provide galvanized reinforcing steel, if required elsewhere in the plans.

Provide Class C concrete (f'c = 3,600 psi) with these exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of culverts with overlay, with 1–to–2 course surface treatment, or with the top slab as the final riding surface.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Refer to Single Box Culverts Cast–in–Place (SCC) standard sheets for details of straight sections of culvert.

For skewed sections and angle sections, refer to Single Box Culverts Cast–in–Place (SCC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.

For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the culvert Single Box Culverts Cast–In–Place (SCC) standard sheets by the cosine of the skew angle.

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation
Bridge Division Standard

SINGLE BOX CULVERTS
CAST-IN-PLACE
MISCELLANEOUS DETAILS

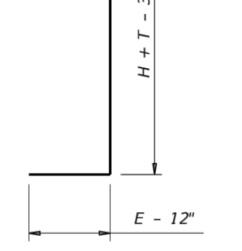
SCC-MD

FILE: CD-SCC-MD-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

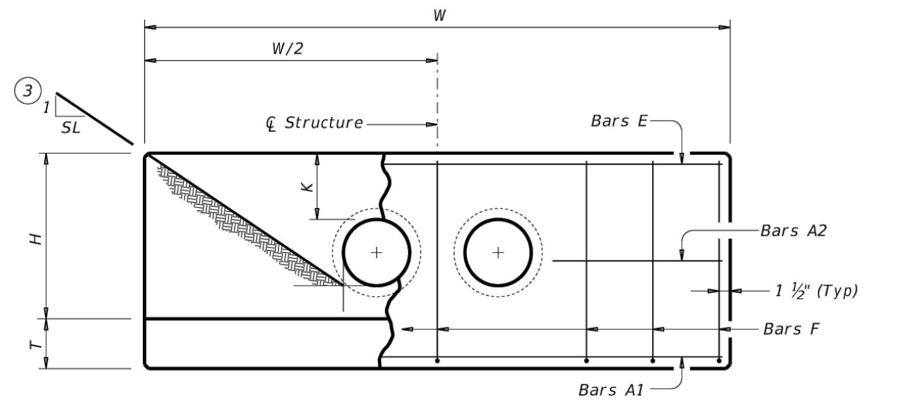
DATE:
FILE:

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL ⑤

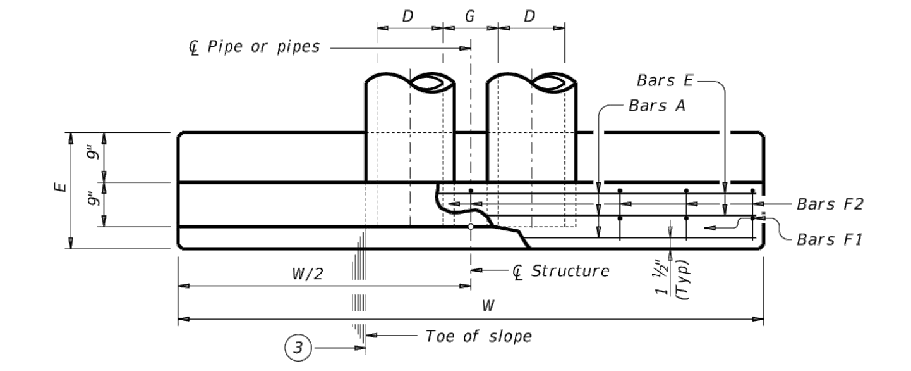
Slope	Dia of Pipe (D)	Values for One Pipe			Values To Be Added for Each Addt'l Pipe		
		W	Reinf (Lbs) ①	Conc (CY) ②	W	Reinf (Lbs) ①	Conc (CY) ②
2:1	12"	9' – 0"	122	1.1	1' – 9"	15	0.2
	15"	10' – 3"	136	1.3	2' – 2"	16	0.2
	18"	11' – 6"	163	1.5	2' – 8"	19	0.3
	21"	12' – 9"	200	1.8	3' – 1"	31	0.4
	24"	14' – 0"	217	2.1	3' – 7"	34	0.4
	27"	15' – 3"	254	2.4	3' – 11"	37	0.5
	30"	16' – 6"	272	2.7	4' – 4"	40	0.6
	33"	17' – 9"	314	3.1	4' – 8"	43	0.6
	36"	19' – 0"	371	3.9	5' – 1"	46	0.8
	42"	21' – 6"	442	4.9	5' – 10"	52	1.0
	48"	25' – 0"	569	6.4	6' – 7"	59	1.3
	54"	27' – 6"	701	7.5	7' – 6"	82	1.6
	60"	30' – 0"	794	8.8	8' – 3"	90	1.8
	66"	32' – 6"	894	10.2	8' – 9"	96	2.0
	72"	35' – 0"	1,055	11.7	9' – 4"	103	2.3
3:1	12"	13' – 0"	175	1.6	1' – 9"	14	0.2
	15"	14' – 9"	193	1.9	2' – 2"	17	0.2
	18"	16' – 6"	228	2.2	2' – 8"	19	0.3
	21"	18' – 3"	299	2.6	3' – 1"	31	0.4
	24"	20' – 0"	323	3.0	3' – 7"	33	0.4
	27"	21' – 9"	371	3.5	3' – 11"	37	0.5
	30"	23' – 6"	415	4.0	4' – 4"	40	0.5
	33"	25' – 3"	469	4.6	4' – 8"	43	0.6
	36"	27' – 0"	556	5.7	5' – 1"	46	0.8
	42"	30' – 6"	675	7.1	5' – 10"	52	1.0
	48"	35' – 6"	837	9.2	6' – 7"	59	1.3
	54"	39' – 0"	1,015	11.0	7' – 6"	84	1.6
	60"	42' – 6"	1,171	12.9	8' – 3"	91	1.8
	66"	46' – 0"	1,298	14.9	8' – 9"	98	2.0
	72"	49' – 6"	1,561	17.1	9' – 4"	103	2.3
4:1	12"	17' – 0"	229	2.0	1' – 9"	15	0.2
	15"	19' – 3"	266	2.4	2' – 2"	17	0.2
	18"	21' – 6"	308	2.9	2' – 8"	19	0.3
	21"	23' – 9"	382	3.5	3' – 1"	31	0.3
	24"	26' – 0"	430	3.9	3' – 7"	34	0.4
	27"	28' – 3"	486	4.7	3' – 11"	37	0.5
	30"	30' – 6"	539	5.2	4' – 4"	40	0.6
	33"	32' – 9"	603	6.0	4' – 8"	42	0.6
	36"	35' – 0"	738	7.5	5' – 1"	47	0.8
	42"	39' – 6"	881	9.3	5' – 10"	52	1.0
	48"	46' – 0"	1,102	12.1	6' – 7"	61	1.3
	54"	50' – 6"	1,364	14.4	7' – 6"	84	1.6
	60"	55' – 0"	1,547	16.9	8' – 3"	91	1.8
	66"	59' – 6"	1,741	19.5	8' – 9"	98	2.0
	72"	64' – 0"	2,077	22.4	9' – 4"	102	2.3
6:1	12"	25' – 0"	336	3.0	1' – 9"	14	0.2
	15"	28' – 3"	384	3.6	2' – 2"	17	0.2
	18"	31' – 6"	452	4.2	2' – 8"	19	0.3
	21"	34' – 9"	581	5.1	3' – 1"	31	0.4
	24"	38' – 0"	644	5.8	3' – 7"	34	0.4
	27"	41' – 3"	737	6.9	3' – 11"	37	0.5
	30"	44' – 6"	807	7.7	4' – 4"	39	0.6
	33"	47' – 9"	912	8.9	4' – 8"	44	0.6
	36"	51' – 0"	1,108	11.0	5' – 1"	48	0.8
	42"	57' – 6"	1,318	13.7	5' – 10"	54	1.0
	48"	67' – 0"	1,682	17.9	6' – 7"	59	1.3
	54"	73' – 6"	2,072	21.3	7' – 6"	83	1.6
	60"	80' – 0"	2,351	24.9	8' – 3"	89	1.8
	66"	86' – 6"	2,643	28.9	8' – 9"	96	2.0
	72"	93' – 0"	3,121	33.1	9' – 4"	101	2.3



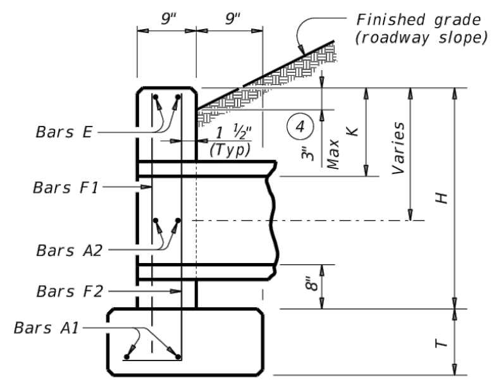
BARS F2



ELEVATION



PLAN OF NON-SKEWED PIPES



SECTION AT CENTER OF PIPE

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K ⑤	H	T	E
12"	0' – 9"	1' – 0"	2' – 8"	0' – 9"	1' – 9"
15"	0' – 11"	1' – 0"	2' – 11"	0' – 9"	1' – 9"
18"	1' – 2"	1' – 0"	3' – 2"	0' – 9"	1' – 9"
21"	1' – 4"	1' – 0"	3' – 5"	0' – 9"	2' – 0"
24"	1' – 7"	1' – 0"	3' – 8"	0' – 9"	2' – 0"
27"	1' – 8"	1' – 0"	3' – 11"	0' – 9"	2' – 3"
30"	1' – 10"	1' – 0"	4' – 2"	0' – 9"	2' – 3"
33"	1' – 11"	1' – 0"	4' – 5"	0' – 9"	2' – 6"
36"	2' – 1"	1' – 0"	4' – 8"	1' – 0"	2' – 6"
42"	2' – 4"	1' – 0"	5' – 2"	1' – 0"	2' – 9"
48"	2' – 7"	1' – 3"	5' – 11"	1' – 0"	3' – 0"
54"	3' – 0"	1' – 3"	6' – 5"	1' – 0"	3' – 3"
60"	3' – 3"	1' – 3"	6' – 11"	1' – 0"	3' – 6"
66"	3' – 3"	1' – 3"	7' – 5"	1' – 0"	3' – 9"
72"	3' – 4"	1' – 3"	7' – 11"	1' – 0"	4' – 0"

TABLE OF REINFORCING STEEL ⑥

Bar	Size	Spa	No.
A1	#5	~	2
A2	#5	1' – 6"	~
E	#5	~	2
F	#5	1' – 0"	~

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Do not mount bridge rails of any type directly to these culvert headwalls.

This standard may not be used for wall heights, H, exceeding the values shown.

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

① Total quantities include one 3'–1" lap for bars over 60' in length.

② Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

③ Indicated slope is perpendicular to centerline pipe or pipes.

④ For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

⑤ Dimensions shown are usual and maximum.

⑥ Quantities shown are for one structure end only (one headwall).

Texas Department of Transportation
Bridge Division Standard

CONCRETE HEADWALLS
WITH PARALLEL WINGS FOR
NON-SKEWED PIPE CULVERTS

CH-PW-0

FILE: CD-CH-PW0-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

CUDEENGINEERS.COM

EST. 1980
CUDE
ENGINEERS

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

DRAINAGE DETAILS

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C62

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P:\04037\003\2-DWG\4-Plans\C62 DRAINAGE DETAILS.dwg 2025/05/12 1:52pm tduano

GREEN VALLEY SPECIAL UTILITY DISTRICT
SANITARY SEWER SYSTEM GENERAL NOTES

GREEN VALLEY SPECIAL UTILITY DISTRICT SANITARY SEWER SYSTEM GENERAL NOTES:

THE STANDARD SPECIFICATIONS AND DRAWING (DD) ARE PROVIDED AS A TECHNICAL RESOURCE FOR ENGINEERING PROFESSIONALS FOR USE IN DESIGN AND CONSTRUCTION OF SEWER COLLECTION SYSTEMS PROJECTS MANAGED AND CONTRACTED BY THE GREEN VALLEY SPECIAL UTILITY DISTRICT (GVSUD)

GENERAL: THE OWNER, DEVELOPER, ENGINEERING FIRM SHALL SUBMIT TO THE GREEN VALLEY SPECIAL UTILITY DISTRICT (GVSUD) ENGINEER, FOR APPROVAL, TWO (2) COPIES OF ALL PLATES, PLANS AND PROFILES, PLUMBING LAYOUT, WHICH HAVE BEEN DESIGNED AND THE DRAWINGS SEALED BY A REGISTERED PROFESSIONAL ENGINEER. WHEN APPROVED, ONE (1) COPY WILL BE RETURNED TO THE OWNER, DEVELOPER, ENGINEERING FIRM, SO MARKED. THE OWNER WILL BE REQUIRED TO MAKE ALL CHANGES INDICATED BY THE GVSUD ENGINEER, AND RETURN WITH ALL CHANGES, CORRECTIONS, BACK TO GVSUD FOR APPROVAL.

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE APPROVED BY THE GVSUD AND COMPLY WITH:
   A. CURRENT GVSUD TECHNICAL SPECIFICATIONS FOR UTILITIES CONSTRUCTION.
   B. TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ), FORMERLY TEXAS NATURAL RESOURCE CONSERVATION COMMISSION (TNRCC), DESIGN CRITERIA FOR SEWAGE SYSTEMS 31 TAC 317.1, 31 TAC 317.2 AND 31 TAC 317.3, 30 TAC & 213 40 TAC &217.
2. THE CONTRACTOR IS TO NOTIFY AND MAKE ARRANGEMENTS WITH THE GVSUD INSPECTIONS DIVISION AT (830)914-2330 OR (210)372-2228 - 48 HOURS PRIOR TO ANY EXCAVATION. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD BEFORE ANY EXCAVATION OR START OF PROJECT.
3. WORK SHALL NOT BE PERFORMED ON SATURDAYS, SUNDAYS OR HOLIDAYS BEFORE 7:30 A.M. OR AFTER 4:30 P.M., UNLESS PRIOR APPROVAL IS GRANTED BY THE GVSUD ENGINEER.
   A. THE LOCATIONS AND DEPTHS OF EXISTING UTILITIES TO INCLUDE SURFACE LATERALS, SHOWN IN THESE PLANS ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO LOCATION (POT HOLE, VERIFY LOCATION, ELEVATIONS OF ALL) UTILITY SERVICE LINES 48 HOURS PRIOR TO EXCAVATION AND TO PROTECT THE SAME DURING CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGES OF EXISTING UTILITIES AND REPAIRS WILL BE AT THE CONTRACTORS EXPENSE.

EXISTING MANHOLES/SEWER

4. CONTRACTOR WILL MAINTAIN SERVICE TO ALL EXISTING SANITARY SEWERS AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR WILL MARK, CLEAN ALL DEBRIS, GRAVEL, DIRT, ETC. OUT OF MANHOLES AND ANY STOPPAGES CAUSED BY DEBRIS DURING CONSTRUCTION. CONTRACTOR WILL UNPLUG STOPPAGE AT CONTRACTORS EXPENSE. ANY DAMAGE TO EXISTING MANHOLES OR SEWER MAIN WILL BE CORRECTED AT THE CONTRACTORS EXPENSE. CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PREVENT DAMAGE TO EXISTING OR NEW RINGS, COVERS, OR CONES FROM EQUIPMENT AND MATERIALS USED OR TAKEN THROUGH THE WORK AREA. IF AN EXISTING OR NEW MANHOLE COVER, RING, OR CONE IS DAMAGED BY THE CONTRACTOR IT SHALL BE REPLACED AS DIRECTED BY THE GVSUD INSPECTOR. MANHOLES WILL NEED TO BE RESEALED WITH THE GVSUD APPROVED SEALING. IF SEAL COATING IS BROKEN, CONTRACTOR WILL HAVE MANHOLE RECOATED. RESEAL ALL LEAKS AT CONTRACTORS EXPENSE.
   A. CONTRACTOR TO ENSURE ALL PLUGS USED TO PLUG SEWER LINES, WHILE TESTING THE PROJECT (SUCH AS AIR PLUGS, SCREW TYPE PLUGS, ETC.) ARE LABELED, MARKED OR TAGGED. PROJECT INSPECTOR WILL RECORD HOW MANY PLUGS ARE BEING USED, LOCATION AND I.D., WITHIN COLLECTION SYSTEM. CONTRACTOR WILL REPORT TO PROJECT INSPECTOR OF ANY LOST OR UNRESTRAINED PLUGS INTO SEWER COLLECTION SYSTEM.
   B. CONTRACTOR WILL BE HELD LIABLE FOR ANY DAMAGES TO SEWER COLLECTION SYSTEM STOPPAGES, OVER-FLOWS, BACKUP INTO HOMES CAUSED BY LOST RUN-AWAY SEWER PLUGS THAT WERE USED ON THAT PROJECT OR OUTFALL LINE WASTEWATER TREATMENT PLANTS.
   C. CONTRACTOR WILL ALSO BE RESPONSIBLE FOR ANY DAMAGE TO WASTEWATER TREATMENT APPARATUS, SUCH AS SCREW PUMPS, ETC. CAUSED BY LOST OF RUN-AWAY SEWER PLUGS. CONTRACTOR WILL BE HELD LIABLE FOR DAMAGES, AS WELL AS COST OF REPAIRS.
5. ALL WORK IN THE TEXAS HIGHWAY DEPARTMENT, BEXAR COUNTY, GUADALUPE COUNTY, AND CITY OF CIBOLO RIGHT OF WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT.
6. ALL WORK IN PUBLIC STREETS SHALL BE COORDINATED WITH AND APPROVED BY THE BEXAR COUNTY OR GUADALUPE COUNTY PUBLIC WORKS DEPARTMENT TRAFFIC DIVISION AND STREET ENGINEER.
7. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.161, CITY PUBLIC SERVICE MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND VALVES THAT ARE IN THE PROTECTED AREAS.
8. NO TESTING WILL BE PERFORMED PRIOR TO 30 DAYS FROM THE COMPLETE INSTALLATION OF THE SANITARY SEWER LINES.

   THE FOLLOWING SEQUENCE WILL BE STRICTLY ADHERED TO:
   A. PULL MANDREL - AFTER 30 DAYS OF INSTALLATION
   B. PERFORM AIR TEST
   C. PULL WIPER (AFTER STREET HAS BE ASPHALTED IN NEW SUBDIVISIONS)
   D. VACUUM TEST ALL MANHOLES WITHIN THE PROJECT
   E. CCTV-ALL NEW LINE-PAN (TILL ALL SERVICE LATERALS TO 6"X6" CLEAN OUT. FLOOD ALL LINES BEFORE CCTV, SUMMIT DVD)
9. CONTRACTOR SHALL SUBMIT FIELD COPY PLANS AND PROFILES SHOWING AS-BUILT WORK AT END OF PROJECT, CCTV DVD AND COMPACTION DENSITY REPORTS FOR MAIN SEWER LINE AND ALL SERVICE LATERALS TRENCHES. WARRANTY LETTERS ON MATERIALS, WORKMANSHIP FOR 24 MONTHS AFTER FINAL ACCEPTANCE.
10. ALL MANHOLES SHALL BE CONSTRUCTED SO THAT THE TOP OF THE RING IS AT LEAST TWELVE (12) INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND EXCEPT WHEN LOCATED IN PAVED AREAS. IN PAVED AREAS THE MANHOLE RING SHALL BE FLUSH WITH THE PAVEMENT. ALL NEW INSTALLED MANHOLES WILL BE WITH A 30" INCH OPENING, MINIMUM, WITH THE GVSUD LOGO ON THE COVER. EVERY THIRD MANHOLE COVER WILL HAVE A 1" HOLE FOR A VENT.
11. ALL MANHOLES SHALL BE WITH A 30" INCH OPENING, HAVE WATERTIGHT RING AND COVERS, WITH THE GVSUD LOGO. ON PRIVATE PROPERTY, MANHOLE RING AND COVER SHALL BE TYPICAL MANHOLE COVER WATER TIGHT.
   A. BEFORE BACK FILLING/COMPACTION/CONCRETE ENCASEMENT

      ALL MANHOLE JOINT SECTION RISERS, CONE SECTIONS AND GRADE RING SHALL BE WRAPPED WITH GATOR WRAP SEALING SYSTEMS, BUTYL ADHESIVE SEALANT WITH A MINIMUM THICKNESS OF 30 MILS. INFI-SHIELD WRAPPED WITH RISER-WRAP SEALING SYSTEM, GATOR WRAP

      MATERIAL: RUBBER MEETS ASTM C923/MASTIC MEETS ASTM C 990 OR APPROVE BY THE GVSUD ENGINEER SUBSTITUTION ON OUTSIDE FOR I/I, GROUND WATER TABLE.

12. IF CONCRETE THROAT RINGS ARE TO BE INSTALLED, A MINIMUM OF TWO AND A MAXIMUM OF FOUR THROAT RINGS WILL BE USED AT EACH MANHOLE FOR ADJUSTMENT.
13. INFILTRATION DISHES WILL BE REQUIRED IN MANHOLES WHERE APPLICABLE (I.E., SUCH AS LOW DRAINAGE AREAS) AND EVERY THIRD MANHOLE SHALL BE VENTED. 30" INCH MANHOLE COVER WITH 1" INCH HOLE CENTER OF COVER WHERE APPLICABLE.

Note: Manhole cover inserts shall be FRW Industries, inc., "Inflow Protector-Cover" "Preco Industries Ltd.", "Sewer Guard", or approved equal, and shall be installed in strict accordance with the manufacturer's recommendations. The contractor shall be responsible for making the necessary field measurements for the manufacturer prior to construction.

   A. ALL MANHOLES MUST HAVE 350-400 FEET SPACING BETWEEN MANHOLES TO PROVIDE ACCESS TO SEWER LINES FOR CLEANING, ON THE GVSUD PUBLIC SEWER EASEMENT. A 16 FOOT GATE WITH LOCK WILL BE PROVIDED BY THE CONTRACTOR FOR ACCESS TO CLEANING AND MAINTAINING SEWER LINES.
   B. DROP MANHOLES SHALL BE REQUIRED WHEN THE INFLOW ELEVATION IS MORE THAN TWENTY-FOUR (24) INCHES ABOVE THE OUTFLOW ELEVATION. DROP SHALL BE LOCATED OUTSIDE THE MANHOLE WITH ITS FLOW LINE ELEVATION LOCATED BETWEEN THE CENTER LINE AND TOP OF SEWER LINE.
14. ALL MANHOLES WILL BE CONCRETE ENCASEMENT 1 FOOT AROUND RING, 28-INCH DEEP AFTER GATOR WRAP SEALING SYSTEM HAS BEEN APPLIED.
15. NEW MANHOLE PROTECTIVE COATING, LINER IS FOR THE PURPOSE OF INFILTRATION BECAUSE OF HIGH WATER TABLE. APPLICATION PROCEDURES ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION AND PER THE FOLLOWING SPECIFICATIONS:
   A. MANHOLE PROTECTIVE COATING: CONTRACTOR WILL BE RESPONSIBLE FOR MANHOLES ON PROJECT SAFETY ASSESSMENT; CONFINED SPACE ENTRY SET BY OCCUPATIONAL SAFETY AND HEALTH STANDARDS, 29 CFR 1910.146 APP E.
   B. THE CONTRACTOR, SHALL NOTIFY THE GVSUD UTILITIES INSPECTIONS DEPARTMENT WITH A MINIMUM OF 2 DAYS ADVANCE NOTICE OF THE START OF ANY FIELD SURFACE PREPARATION WORK OF COATING APPLICATION WORK OF MANHOLES.
   C. ALL NEW MANHOLES IN NEW DEVELOPMENTS SHALL BE 30" INCH OPENING, WATERTIGHT AND THE INTERIOR WALL COATED WITH A GVSUD APPROVED SEWER STRUCTURE FOR ALL MANHOLES, SEWPERCOAT 2000 HR REGULAR, WITH THE REQUIRED ONE-INCH THICK APPLICATION.

APPROVED MATERIALS ARE AS FOLLOWS:
CEMENTITIOUS COATING WITH REQUIRED HALF-INCH THICK APPLICATION

- SEWPERCOAT 2000 HR REGULAR
- REFRATTA HAC 100
- MAXIMUM CA PLUS

EPOXY COATING: WITH SPECIFIED THICKNESS APPLICATION

- AROMATIC POLYUREA SCP DROPLINER REQUIRED THICKNESS 125 MILS

   D. WARRANTY LETTER ON MANHOLE PROTECTIVE COATING FOR 10 YEARS AFTER FINAL ACCEPTANCE OF PROTECTIVE COATINGS CONTRACTOR IS NOT RELIEVED OF ITS RESPONSIBILITIES UNDER THE CONTRACT DOCUMENTS.
      i. ANY CONNECTIONS TO EXISTING MANHOLES WILL REQUIRE A 36-INCH CRADLE TO SUPPORT INCOMING PIPE. A RUBBER GASKET WILL ALSO BE REQUIRED (CENTERED AT MANHOLE WALL) WITH GROUTING AT INTERIOR AND EXTERIOR PENETRATIONS.

         PENETRATION INTO MANHOLE WILL BE CORE DRILLED. ANY DAMAGE EXITING THE MANHOLE WILL BE REPLACED AT CONTRACTOR'S EXPENSE. IF COATING SEAL IS BROKEN, THE MANHOLE WILL BE RECOATED WITH THE SAME MATERIALS. IF EXISTING SEWER MANHOLE SEAL COATING IS BROKEN, ALL OF MANHOLE WILL BE RELEASED WITH SAME MATERIALS AND ONE-INCH THICKNESS.
      ii. ANY AND ALL EXISTING MANHOLES WITHIN CONSTRUCTION PROJECT THAT TIE IN, ARE DONE BY CONTRACTOR TO STUB-OUT ADJUSTMENT, RECONSTRUCTION, OR LEAKING. MANHOLE WILL BE COAT SEALED AT CONTRACTOR'S EXPENSE.
      iii. MANHOLES WITH STUB-OUTS (8") INCH OR LARGER MUST BE LOCATED AT THE END OF ALL SEWER LINES THAT MAY BE EXTENDED IN THE FUTURE. MANHOLES PLACED AT THE END OF THE WASTEWATER COLLECTION SYSTEM PIPES THAT MAY BE EXTENDED IN THE FUTURE MUST INCLUDE STUB-OUTS WITH PLUGS.

PIPING

16. THE KIND AND DESCRIPTION OF THE PIPE CONDUIT IS SHOWN ON THE PLANS (IF PVC, SDR AND ASTM/ANSI DESIGNATION CLASS). AS SDR 26 PVC, ASTM D-3034 WITH A MINIMUM STIFFNESS OF 115 PSI TEXAS ADMINISTRATIVE CODE (TAC) RULES TO INCLUDE30 TAC & 213, OR ANY REVISIONS THERE TO APPLICABLE TECQ, 30 TAC 7 217, FOR ALL NEW DEVELOPMENT.
17. THE USE OF ASBESTOS CEMENT PIPE WILL BE PROHIBITED UNDER THIS CONTRACT. ALL DUCTILE IRON PIPE USED IN THIS SYSTEM SHALL BE CORROSION PROTECTED ON BOTH THE INTERIOR AND EXTERIOR SURFACES. ALL CORROSION PROTECTION SHALL BE APPLIED AND INSTALLED IN SUCH A MANNER AS TO MAINTAIN A CONTINUOUSLY PROTECTED SURFACE AFTER FINAL PIPE INSTALLATION.
18. ALL PVC SEWER PIPE WITH OVER 14 FEET OF COVER SHALL BE EXTRA STRENGTH; MINIMUM PIPE STIFFNESS OF 150 PSI.
19. ALL SEWER PIPES SHALL HAVE COMPRESSION OR MECHANICAL JOINTS.
20. SEWER PIPE CONNECTIONS TO PRECAST MANHOLES SHALL BE APPROVED BY THE GVSUD. THIS CONNECTION SHALL USE FLEXIBLE "BOOT" TYPE CONNECTOR SUCH AS THE PSX POSITIVE SEAL SYSTEM OR ENGINEER APPROVED EQUAL AND COMPLY WITH ASTM C-923. SEWER PIPE CONNECTIONS TO MONOLITHIC MANHOLES WILL BE AS SHOWN ON THE STANDARD DETAIL SHEET. ANY CHANGES IN THESE METHODS MUST BE APPROVED BY GVSUD ENGINEER.
21. ALL PIPE TRENCHING, BEDDING AND BACKFILL SHALL BE DONE IN ACCORDANCE WITH APPROPRIATE ASTM/ANSI SPECIFICATIONS [REFERENCE 31 TAC 317.2(A)(5)(A); ASTMC-12 (ANSI A106.2) OR ASTM D-2321 (ANSI K65.171)]. ALL COMPACTION @ 98% DENSITY TESTS ACROSS THE BOARD, 1 RANDOM DENSITY TEST PER LIFT FOR EVERY 400 FEET.
   A. SAND MIGRATION, SEEPAGE PREVENTION COLLAR WHEN CHANGING THE INITIAL BACKFILL FROM SELECT INITIAL BACKFILL TO OPTIONAL SELECT INITIAL BACKFILL. A TWO (2) FOOT LONG CLASS D CONCRETE ENCASEMENT, EVERY 180 FEET ALONG PIPE AND 20 FEET FROM WALL OF MANHOLE IN EACH DIRECTION. NO EXTRA PAY ITEM.
   B. BEDDING SHALL CONSIST OF TXDOT-GRADE 4 (1 1/2"-1 5/8") COMMONLY KNOWN AS SEWER GRAVEL.
      i. THE BEDDING SHALL MEET THE FOLLOWING GRADATION:

a.	2"	100.0%
b.	1 ¾"	100.0%
c.	1 ½"	100.0%
d.	1"	52.6%
e.	¾"	10.7%
f.	⅜"	1.3%

   C. SEWER LINE LOCATION
      i. SEWER LINES SHALL BE SIZED AND EXTENDED THROUGH THE LIMITS OF A DEVELOPMENT TO SERVE ADJACENT PROPERTY, WITH MANHOLE AND STUB-OUT AT END OF SEWER LINE.
         a. IN PHASED CONSTRUCTION OF THOROUGHFARES, THE SEWER LINE SHALL BE EXTENDED THE ENTIRE LENGTH OF THE THOROUGHFARE BEING CONSTRUCTED.
      ii. NO PUBLIC SEWER LINE SHALL BE LOCATED NEARER THAN FIVE (5) FEET FROM ANY TREE.
      iii. SIZES AND GRADES FOR SANITARY SEWER SHALL BE AS REQUIRED BY THE GVSUD ENGINEER AND CONSIDERATION SHALL BE GIVE AS TO POSSIBLE EXTENSIONS FOR FUTURE DEVELOPMENT. NO SANITARY SEWERS, OTHER THAN LATERALS AND FORCE MAINS, SHALL BE LESS THAN EIGHT (8) INCH IN DIAMETER.
22. WHEN SEWER LATERALS ARE TO BE CONNECTED TO EXISTING SEWER MAINS AND NO STUB-OUT HAS BEEN EARLIER PROVIDED, THE CONNECTION MUST BE MADE WITH AN APPROVED SERVICE SADDLE AS PER 31 TAC 313.5(C) (7). NEW INVERT TO BE BUILT, SMOOTH CHANNEL FOR NEW PIPE/SLOPE AT 2% FLOW.
23. ALL RESIDENTIAL SERVICE LATERALS SHALL BE SDR 26 WITH RATING OF 115 PSI, BE EXTENDED TO THE PROPERTY LINE AT (6 X 6) CAPPED AND SEALED. ATTACH SEWER BURIAL TAPE TO THE END OF ALL SEWER LATERALS AND BRING UP TO THE GROUND LEVEL FOR MARKER (GREEN). (SEE HOUSE LATERALS DETAILS)
   AA. SEWER SERVICE LATERALS. THE SIZES AND LOCATIONS OF LATERALS SHALL BE DESIGNATED AS FOLLOWS UNLESS OTHERWISE DIRECTED BY THE GVSUD ENGINEER:
      i. IN GENERAL FOR SINGLE FAMILY DWELLING, THE LATERAL SIZE SHALL BE FOUR (4) INCH MINIMUM. HOUSE LATERALS SHALL BE IN STALL CENTER OF THE LOT AND SHALL HAVE A TEN(10) FOOT SEPARATION FROM THE WATER SERVICE. THE SERVICE SHALL THEN BE EXTENDED AT A FORTY-FIVE (45) DEGREE ANGLE TO FOUR (4) FEET ABOVE THE FINISHED GRADE AND CAPPED. USE SEWER BURIAL TAPE TO MARK ALL SEWER SERVICE LATERALS.
      ii. MULTIPLE UNITS, APARTMENTS, LOCAL RETAIL AND COMMERCIAL SIX (6) INCH MINIMUM, MANUFACTURING AND INDUSTRIAL - EIGHT (8) INCH MINIMUM, OR LARGER AS REQUIRED.

TRAPS AND INTERCEPTORS (FOG - TECQ)

UNIFORM PLUMBING CODE, CITY OF SAN ANTONIO BUILDING INSPECTIONS DEPARTMENT. ALL COMMERCIAL BUILDINGS WILL HAVE TRAPS (FOG-TECQ).

OIL SEPARATORS

WHICH INCLUDE OIL SEPARATOR-GASOLINE SERVICE STATIONS, CAR WASHES, GARAGES, DRY CLEANERS, CHEMICAL PLANTS, GAS PLANTS, HIDE PROCESSORS, TESTING LABORATORIES, OR ANY PLACE WHERE OIL OR SOLVENTS MAY BE INTRODUCED IN TO THE SANITARY SEWER SYSTEM. THE SIZING CRITERIA FOR OIL SEPARATORS SHALL BE BASED ON THE G.P.M. RATE OF ALL FIXTURES, APPLIANCE OR APPURTENANCE, DRAINING INTO SEWER SYSTEM.

SAND INTERCEPTORS

SAND INTERCEPTORS SHALL BE INSTALLED IN THE SEWER SYSTEM OF THE FOLLOWING ESTABLISHMENTS, GARAGES, CAR WASHES, SERVICE STATIONS, OR ANY PLACE OF BUSINESS WHERE HEAVY SOLIDS MAY BE INTRODUCED INTO THE SANITARY SEWER SYSTEM. THE SIZING CRITERIA FOR A SAND INTERCEPTOR SHALL BE BASED ON THE REQUIRED G.P.M. X 12 MINUTE RETENTION TIMES TO OBTAIN THE TANK SIZE IN GALLONS CAPACITY.

AUTOMATIC CAR WASHES

WITH HIGH PRESSURE SPRAYS AND/OR BRUSHES INSTALL A 50 G.P.M. INTERCEPTOR. MINIMUM, FOR A 4-BAY VEHICLE WASH, THE SIZE OF THE INTERCEPTOR SHALL INCREASE 10 G.P.M. FOR EACH ADDITIONAL WASH BAY OVER 4. SINGLE BAY OR PORTABLE WASHER TYPE VEHICLE WASHES SHALL INSTALL A 20 G.P.M. INTERCEPTOR MINIMUM.

NEUTRALIZING DEVICES

IN NO CASE SHALL CORROSIVE LIQUIDS, SPENT ACIDS, OR OTHER HARMFUL CHEMICALS WHICH MIGHT DESTROY OR INJURE A DRAIN, SEWER, SOIL, OR WASTE PIPE, OR WHICH MIGHT CREATE NOXIOUS OR TOXIC FUMES, DISCHARGE INTO THE SANITARY SEWER SYSTEM WITH OUT BEING THOROUGHLY NEUTRALIZED BY PASSING THOROUGHLY CONSTRUCTED AND ACCEPTABLE NEUTRALIZING DEVICE. SUCH DEVICE SHALL BE PROVIDED WITH A SUFFICIENT INTAKE OF NEUTRALIZING MEDIUM, CONSISTING OF LIMESTONE OR MARBLE CHIPS, SO AS THE MAKE ITS CONTENTS NON-INJURIOUS BEFORE BEING DISCHARGED INTO THE SANITARY SEWER SYSTEM.

LINT TRAPS

PUBLIC AND PRIVATE WASHATERIAS AND COMMERCIAL LAUNDRIES SHALL INSTALL A LINT TRAP EQUIPPED WITH A CONVENIENTLY LOCATED AND EASILY REMOVABLE WIRE BASKET OR OTHER SIMILAR DEVICE THAT WILL PREVENT THE STRINGS, RAGS, BUTTONS, OR OTHER PROHIBITED MATERIAL FROM ENTERING THE SANITARY SEWER SYSTEM. THE BASKET OR OTHER SIMILAR DEVICE SHALL PREVENT PASSAGE TO THE SANITARY SEWER SYSTEM OF SOLIDS GREATER THAN 1/2" INCH DIAMETER. THE LINT TRAP SIZE SHALL BE BASED ON THE TOTAL G.P.M. OF ALL FIXTURES, APPLIANCES AND APPURTENANCES DRAINING TO IT IN LIEU OF A LINT TRAP, A LINT INTERCEPTOR MAY BE INSTALL. THE INTERCEPTOR SHALL BE SIZED AND DESIGNED BY A TEXAS REGISTERED ENGINEER WITH HIS SEAL AND SIGNATURE ON THE DRAWINGS.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
SANITARY SEWER SYSTEM
GENERAL NOTES (1 OF 2)
REVISED: OCTOBER 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. G-1

SILVER RECOVERY UNITS

SILVER RECOVERY UNITS SHALL BE INSTALLED IN WASTE LINES(S) LEADING FROM X-RAY PROCESSING, PHOTOGRAPHIC PROCESSING, AND/OR ANY PROCEDURES IN ESTABLISHMENT SUCH AS MEDICAL LABS, DENTAL LABS, PHOTO FINISHERS, PRINTERS, GRAPHIC ARTS PRODUCTION FACILITIES, HOSPITAL FACILITIES, VETERINARY HOSPITALS, OR OTHER ESTABLISHMENTS WHERE SILVER MAY BE INTRODUCED INTO THE SANITARY SEWER SYSTEM.

SOLID INTERCEPTORS

SOLIDS INTERCEPTORS SHALL BE INSTALLED WHEN PRE-TREATMENT OF WASTE STREAMS IS NECESSARY TO PREVENT SOLIDS GREATER THAN ½" IN DIAMETER, WHICH MAY CAUSE LINE STOPPAGE FROM ENTERING THE SANITARY SEWER SYSTEM.

INTERCEPTORS

   a. INTERCEPTORS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN APPROVED BY THE GVSUD CONSISTING OF A MINIMUM OF TWO COMPARTMENTS WITH FITTINGS DESIGNED FOR GREASE RETENTION AND PROVIDE FOR A MINIMUM OF TWELVE (12) MINUTES RETENTION
   b. THERE SHALL BE AN ADEQUATE NUMBER OF MANHOLES TO PROVIDE ACCESS FOR CLEANING ALL AREAS OF AN INTERCEPTOR, ONE MANHOLE PER TRAP COMPARTMENT. MANHOLE COVERS SHALL BE GAS TIGHT IN CONSTRUCTION HAVING A MINIMUM OPENING DIMENSION OF 20 INCHES (0.5 M).
   c. IN AREAS WHERE TRAFFIC MAY EXIST THE INTERCEPTOR SHALL BE DESIGNED TO HAVE ADEQUATE REINFORCEMENT AND COVER.
   d. ALL INTERCEPTORS SHALL HAVE THE SIZE OF THE INTERCEPTOR (IN GALLON PER MINUTE OR GALLON CAPACITY) PERMANENTLY AFFIXED TO THE DEVICE.
   e. ALL CONCRETE UTILIZED IN THE CONSTRUCTION OF INTERCEPTOR SHALL HAVE A MINIMUM STRENGTH OF 3000 PSI.
   f. AN EFFLUENT SAMPLING WELL ON ALL INTERCEPTORS SHALL BE REQUIRED. THE SAMPLE WELL SHALL HAVE A RISER A MINIMUM OF 6" INCHES IN DIAMETER AND SHALL BE INSTALLED AFTER THE CONFLUENCE OF ALL WASTE STREAMS FROM THE FACILITY AND PRIOR TO DISCHARGING INTO SANITARY SEWER COLLECTION SYSTEM. THE WELL SHALL BE PERPENDICULAR TO THE EFFLUENT LATERAL TO ALLOW VISUAL OBSERVATION OF THE FLOW STREAM AND PROVIDE FOR SAMPLING OF WASTEWATER.

WATERTIGHT TESTING (24 HOURS)

   g. ALL INTERCEPTORS SHALL BE WATER TESTED OUT AT JOB SITE AFTER BEING INSTALLED (PLUG BOTH ENDS AND FILL TO TOP OF INTERCEPTOR). INTERCEPTOR SHALL SHOW NO LEAKAGE FROM SECTION SEAMS, PINHOLES, OR OTHER IMPERFECTIONS. ANY LEAKAGE IS CAUSE FOR REJECTION. WHEN LEAKAGE OCCURS, ADDITIONAL WATER TESTING SHALL BE MADE. AFTER CORRECTING MEASURE TEST, REPORTS SHALL SHOW TOTAL NUMBER OF INTERCEPTORS TESTED. WHEN LEAKAGE OCCURS, CORRECTIVE MEASURES TAKEN SHALL BE REPORTED BY GVSUD INSPECTORS. GVSUD INSPECTORS SHALL RECORD IN DAILY LOG WITH PROJECT NAME, DATE IT WAS TESTED AND COMPLETED.

B. MANHOLES WILL BE REQUIRED ON SIX (6) INCH AND LARGER LATERALS WHERE THEY CONNECT TO THE MAIN.
   a. LATERALS WILL NOT BE ATTACHED TO SEWER MAINS THAT ARE DEEPER THAN TWELVE (12) FEET.
   b. FITTINGS ARE NOT PERMITTED ON LATERALS BETWEEN THE WYE AND THE PROPERTY LINE.
   c. DEEP CUT OR DROP CONNECTIONS SHALL NOT BE PERMITTED.
   d. A MINIMUM OF ONE (1) LATERAL PER BUILDING SHALL BE REQUIRED. ALSO, A MINIMUM OF ONE (1) LATERAL PER RESIDENTIAL LOT SHALL BE REQUIRED. DUPLEXES SHALL HAVE TWO (2) LATERALS THAT SHALL BE INDEPENDENTLY ATTACHED TO THE MAIN.
   e. ALL SEWER LATERAL CROSSING WATER MAINS SHALL CONFORM TO THE REQUIREMENTS OF THE TCEQ CHAPTER 317 (DESIGN CRITERIA FOR SEWERAGE SYSTEMS) LATEST REVISION, SDR 26 150 PSI, OR DUCTILE IRON PIPE, CONCRETE ENCASEMENT.

24. WHERE REQUIRED CONCRETE ENCASEMENT SHALL BE PLACED FOR FULL WIDTH OF THE TRENCH TO A PLAIN SIX (6) INCHES ABOVE THE TOP OF THE PIPE WITH PAY UNITS AS SHOWN ON THE STANDARD DETAILS SHEET.
25. A MINIMUM OF FOUR (4) FEET OF COVER IS TO BE MAINTAINED OVER THE SANITARY SEWER MAIN AND LATERALS AT GRADE, OTHERWISE CONCRETE ENCASEMENT IS REQUIRED.
26. WHERE POROUS MATERIAL , INCLUDING "SUBGRADE FILLER" IS USED FOR BACKFILL IN THE BEDDING AND INITIAL BACKFILL ZONES, SEEPAGE RETAINERS ARE REQUIRED AT AN APPROXIMATE OF 180 FEET. RETAINERS SHALL CONSIST OF CLASS "D" CONCRETE ENCASEMENT. THE RETAINERS SHALL EXTEND FROM THE BOTTOM OF THE TRENCH TO THE TOP OF THE GRANULAR MATERIAL FOR THE ENTIRE TRENCH WIDTH. ENCASEMENT SHALL BE 24 INCHES LONG. NO EXTRA PAY ITEM

BLASTING

27. WHEN ALLOWABLE, BLASTING SHALL BE PREFORMED IN ACCORDANCE WITH THE ABOVE CRITERIA ESTABLISHED BY THE NATIONAL FIRE PROTECTION ASSOCIATION 312 TAC 313.5(C) (6).
28. BLASTING SEWER LINE EXCAVATION MUST BE DONE IN SUCH A MANNER AS TO MINIMIZE THE FRACTURING OF ROCK BEYOND THE REQUIRED EXCAVATION. THE CONTRACTOR SHALL CONSIDER THE ELEVATION OF THE EXISTING SANITARY SEWER MAIN IN RELATION TO THE BLASTING CHARGE AND RELATIVE DIRECTION OF EXISTING AND PROPOSED TRENCHES. BLASTING WITHIN SUCH AREAS SHALL BE ACCOMPLISHED ONLY BY QUALIFIED BLASTING CONTRACTORS WHO HOLD BLASTING LICENSES FROM A QUALIFIED AGENCY SUCH AS THE SAN ANTONIO FIRE DEPARTMENT IN BEXAR COUNTY. ANY DAMAGE TO EXISTING SANITARY SEWERS RESULTING FROM BLASTING SHALL BE REPAIRED AND RESTORED BY THE CONTRACTOR AT HIS OWN EXPENSE.
29. NO BLASTING SHALL BE PERFORMED WITHIN 75 FEET OF EXISTING UTILITIES.

TESTING

30. ALL SEWER LINES MUST BE TESTED IN ACCORDANCE WITH THE FOLLOWING:
   A. 317.2(A)(5)(B); DEFLECTION TEST FOR FLEXIBLE AND SEMI-RIGID PIPE CONDUCTED AFTER FINAL BACKFILL AS BEEN IN PLACE AT LEAST 30 DAYS.
   B. 317.2(A)(4)(A) & (B) OR GVSUD SPECIFICATIONS INFILTRATION AND OR EXFILTRATION AND OR LOW-PRESSURE AIR TEST.
   C. 313.5(C)(10)(C) OR GVSUD SPECIFICATIONS: ALL MANHOLES AND WET WELLS MUST BE TESTED SEPARATELY AND INDEPENDENTLY OF THE COLLECTION LINES.
   D. IN THE EVENT THAT TESTING REQUIREMENTS CONFLICT, THE LATEST TCEQ DESIGN CRITERIA SHALL BE USED.
31. SEWER LINES SHALL BE TESTED FROM MANHOLE TO MANHOLE.
32. SANITARY SEWER CONNECTIONS MADE DIRECTLY TO EXISTING MANHOLES WHICH REQUIRE PENETRATION INTO MANHOLE WILL BE CORE DRILLED. ANY DAMAGE TO EXISTING MANHOLE WILL BE REPLACED AT CONTRACTORS EXPENSE AND WILL REQUIRE SUCCESSFUL TESTING OF THE EXISTING MANHOLE IN ACCORDANCE WITH THE GVSUD SPECIFICATIONS. HANG A GOLF BALL IN FRONT OF CAMERA, PIPE GRADE IS OUT OF TOLERANCE IF GOLF BALL BECOMES 50% SUBMERGED.
33. AFTER CONSTRUCTION, TESTING WILL BE DONE BY PAN/TILT TV CAMERA BY THE CONTRACTOR AND OBSERVED BY INSPECTOR, WASTEWATER ENGINEERING PERSONNEL AND CONTRACTOR AS CAMERA IS RUN THROUGH THE LINES. PAN/TILT ALL 6" SERVICE LATERALS TO 6"X6" STUB-OUT. VIDEOS MUST INCLUDE SUBDIVISION NAME, MANHOLE NUMBER, SERVICE LATERAL STATION NUMBER, FLOW DIRECTION, LOCATION ANY ABNORMALITIES, SUCH AS BROKEN PIPE OR MISALIGNED, JOINT, GRAVEL, DIRT, MUST BE CLEANED OUT, REPLACE AT CONTRACTOR'S EXPENSE. NEW SEWER SYSTEM WILL BE FLOODED WITH H20 BEFORE BEING TV. ALL SEWER LINES MUST BE PRESSURE CLEANED TO INCLUDE SERVICE LATERALS 6" INCH TO STUB-OUT. ALL VIDEOS SHALL BE SUBMITTED IN DVD FORMAT WITH WRITTEN REPORTS.
34. A COPY OF ALL TESTING REPORTS INCLUDING BACKFILL COMPACTION TESTS SHALL BE FORWARDED TO GVSUD.
   A. DENSITY TEST WILL BE REQUIRED ON ALL SANITARY SEWER TRENCHES INCLUDING SERVICE LATERALS. SERVICE LATERALS TO BE CHOSEN RANDOMLY BY FIELD INSPECTOR. DENSITIES ON SERVICE LATERAL SHALL NOT EXCEED 25% OF TOTAL NUMBER OF SERVICES.

EXCAVATION

35. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY , SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTORS TRENCH EXCAVATION SAFETY SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTORS IMPLEMENTATION OF THE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITHIN OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
36. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION. THE CONTRACTOR SHALL NOT PERMANENTLY PLACE ANY WASTE MATERIALS IN THE 100 YEAR FLOODPLAIN WITHOUT AN APPROVED FLOODPLAIN PERMIT.
37. WATER JETTING THE BACKFILL WITHIN A STREET WILL NOT BE PERMITTED. SANITARY SEWER TRENCHES SUBJECT TO TRAFFIC SHALL CONFORM TO GVSUD SPECIFICATIONS.

WATERLINE CROSSING

38. WHERE THE MINIMUM 9 FOOT SEPARATION DISTANCE BETWEEN SEWER LINES AND WATERLINES CANNOT BE MAINTAINED, THE INSTALLATION OF SEWER LINES SHALL BE IN STRICT ACCORDANCE WITH TCEQ RULES (31 TAC 317.3 APPENDIX E), SDR 26 ASTM 150 PSI OR CONCRETE ENCASEMENT DUCT IRON.

EROSION AND SEDIMENTATION

39. THE TCEQ AND THE ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIRE EROSION AND SEDIMENTATION CONTROL FOR CONSTRUCTION OF SEWER COLLECTION SYSTEMS. DEVELOPER OR AUTHORIZED REPRESENTATIVE SHALL PROVIDE EROSION AND SEDIMENTATION CONTROL AS NOTED ON THE PROJECT PLAN AND PROFILE SHEETS.
40. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED BY THE CONTRACTOR AT FINAL ACCEPTANCE OF THE PROJECT BY GVSUD.

SUPPLEMENTING

41. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON THE PLANS BUT NOT INCLUDED ON THE BID SCHEDULE. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED UNDER PAY ITEM 10 WHICH IT RELATES TO.
42. UNLESS THE DEVELOPMENT IS PRIVATELY OWNED, THE DEVELOPERS DEDICATES THE SANITARY SEWER MAIN AND MANHOLES TO THE GVSUD. UPON COMPLETION BY THE DEVELOPER AND FINAL ACCEPTANCE BY THE GVSUD. GVSUD WILL OWN AND MAINTAIN THE SANITARY SEWER MAINS AND MANHOLES WHICH ARE LOCATED WITHIN THIS PARTICULAR SUBDIVISION.
43. WORK COMPLETED BY CONTRACTOR WHICH HAS NOT RECEIVED A WORK ORDER OR THE CONSENT OF THE GVSUD CONSTRUCTION INSPECTION DIVISION WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.
44. GVSUD IS NOT TO BE RESPONSIBLE FOR ANY ABNORMALITIES ON STUB-OUT, INVERT, GRADE OR SLOPE FOR ANY EXISTING MANHOLE TIE IN OR SERVICE LATERAL TIE IN.
45. ENGINEER, DEVELOPER, AND BUILDER, WILL HAVE PLUMBER AND CONTRACTOR WITH BID PRICE ON NEW INSTALLATION OF ALL 4" INCH SEWER SERVICE LATERALS TO COMPLY WITH TRENCH SAFETY (OSHA) SHORING PROTECTION ON ALL NEW INSTALLATION OF 4" INCH SEWER SERVICE LATERALS. GVSUD WILL NOT BE HELD RESPONSIBLE FOR ANY INJURIES OR DEATH CAUSED BY TRENCH FAILURE OR A WRONG OR DAMAGE DONE TO A PERSON OR TO HIS PROPERTY, OSHA GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
46. ALL 4" INCH SEWER SERVICE LATERALS WILL BE HYDRAULIC TESTED AND OR LOW AIR PRESSURE TESTED. ALL 4" INCH SEWER SERVICE LATERALS WILL BE TELEVISED (TV) FROM 4" INCH CLEAN OUT AT OUTSIDE EACH RESIDENCE TO 6"X6" CLEAN OUT. CONTRACTOR AND PLUMBER WILL SUBMIT REPORTS AND/OR VIDEOS TO GVSUD, WITH THE FOLLOWING INFORMATION: SUBDIVISION NAME, LOT NUMBER, BLOCK NUMBER, STATION NUMBER, STREET NAME AND ADDRESS OF EACH SEWER SERVICE LATERAL.

    PLUMBER WILL BE PROVIDED PLAN/PROFILE BY ENGINEER/BUILDER. PLUMBER WILL WORK CLOSELY WITH THE GVSUD INSPECTOR ON DAILY TESTING AND TELEVISION BY MAKING ARRANGEMENTS 48 HOURS IN ADVANCE. SEWER SERVICE LATERALS THAT HAVE NOT BEEN INSPECTED OR APPROVED AND/OR COVERED UP, WILL HAVE TO BE RE-DUG AT CONTRACTOR/PLUMBER EXPENSE AND RE-INSPECTED.
   A. A PROPERTY LINE CLEAN OUT (6"X6") SHALL BE INSTALLED FOR RESIDENTIAL SERVICES. CLEAN OUTS IN THE SIDEWALK OR DRIVEWAY SHALL HAVE A CAST IRON BOOT. CLEAN OUT NOT LOCATED IN A SIDEWALK OR DRIVEWAY SHALL BE LOCATED ON REINFORCED CONCRETE PAD A MINIMUM OF TWELVE (12") INCHES BY TWELVE (12") INCHES BY SIX (6") INCHES THICK. ALL PROPERTY LINE CLEAN OUTS SHALL INCLUDE A LID WITH SEWER IN GREEN COLOR.
47. N1 FENCING: ANY AND ALL FENCING, INCLUDING ELECTRIC FENCE, WHETHER OR NOTE IDENTIFIED ON THE PLANS, MUST BE MAINTAINED AT ALL TIMES. ANY AND ALL DAMAGES DIRECTLY ATTRIBUTED TO THE CONTRACTOR MUST BE REPLACED TO EQUAL OR BETTER CONDITIONS AT THE CONTRACTOR'S EXPENSE AND AS APPROVED BY THE PROJECT MANAGER. GAPS IN THE FENCING MUST BE PROVIDED AT ALL LOCATIONS WHERE THE SEWER LINE EASEMENT CROSSES FENCING. FENCING REQUIRED TO MAINTAIN LIVESTOCK MUST BE MAINTAINED AT ALL TIMES.
48. N2 DAMAGE TO ADJACENT LAND: THE CONTRACTOR MUST AVOID DAMAGE TO ADJACENT LAND OUTSIDE THE IDENTIFIED CONSTRUCTION LIMITS. ANY AND ALL CLAIMS DIRECTORY ATTRIBUTED TO THE CONTRACTOR RESULTING FROM HIS STRAYING BEYOND THE CONSTRUCTION LIMITS MUST BE SETTLED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER WITH THE APPROPRIATE LANDOWNER.
49. N3 PROPERTY OWNER ACCESS: THE CONTRACTOR MUST MAINTAIN ACCESS FOR PRIVATE INDIVIDUALS AT ALL TIMES. IF NORMAL ACCESS IS DAMAGED DURING CONSTRUCTION THE CONTRACTOR MUST REPLACE THE ACCESS TO EQUAL OR BETTER CONDITIONS AT THE CONTRACTOR'S EXPENSE, AS APPROVED BY THE ENGINEER.
50. N4 CONTRACTOR IS RESPONSIBLE FOR LOCATION AND PROTECTION ALL UTILITIES WHETHER OR NOT SHOWN ON THE PLANS. SHOULD THE CONTRACTOR DAMAGE ANY UTILITIES THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL COSTS TO REPAIR THE UTILITIES TO THEIR ORIGINAL CONDITION. CONTRACTOR IS SOLELY RESPONSIBLE FOR LOST REVENUE, LOSSES, ETC CLAIMED BY UTILITY COMPANIES DUE TO CONTRACTORS WORK. CONTRACTOR SHALL NOTIFY GVSUD AND IMPACTED UTILITY COMPANIES 48 HRS. PRIOR TO BEGINNING WORK. CONTRACTOR SHALL VERIFY THE LOCATION OF UTILITIES AND REPORT ANY DISCREPANCIES TO THE ENGINEER.
51. N5 CLEARING PERMANENT EASEMENTS: THE LIMITS OF BOTH THE EXISTING AND PARALLEL SEWER LINES PERMANENT EASEMENTS, AS DELINEATED IN THESE PLANS, MUST BE CLEARED IN ACCORDANCE WITH THE SPECIFICATION. THE CONTRACTOR MAY BE DIRECTED BY THE ENGINEER TO PROTECT AND AVOID CERTAIN TRESS WITHIN THE LIMITS OF THE PERMANENT CONSTRUCTION EASEMENTS. ALL BRUSH MUST BE REMOVED FROM SITE. NO BRUSH PILES TO REMAIN AFTER CONSTRUCTION. BURNING OF BRUSH OR TRASH WILL NOT BE ACCEPTABLE.
52. N7 CONTRACTOR SHALL PROVIDE APPROPRIATE SAFE ACCESS AND BARRICADE WORK AT ALL TIMES TO PROTECT THE PUBLIC. THIS INCLUDES SUBSTANTIAL BARRICADES AROUND ALL TRENCHES, BORE PITS, OPEN EXCAVATIONS, EQUIPMENT, ETC. THE SITE MUST BE LEFT IN SECURE SAFE CONDITION AT NIGHT. IT IS THE CONTRACTORS RESPONSIBILITY TO TAKE NECESSARY PRECAUTIONS TO PROTECT THE PUBLIC THROUGHOUT THE DURATION OF THE PROJECT.
53. N14 SHOULD CONTRACTOR SELECT A TRENCH EXCAVATION PROCEDURE THAT EXTENDS THE LIMITS OF SEEDING OR PAVING AND FINAL SITE PREPARATION (I.E. SLOPE BACK PROTECTION SYSTEM) HE WILL BE RESPONSIBLE FOR MEETING PLAN AND SPECIFICATION REQUIREMENTS TO THE NEW LIMITS AT NO ADDITIONAL COST TO GVSUD.
54. N16 WARNING: NOTE THAT CERTAIN PORTIONS OF THE PROJECT MAY PARALLEL AND/OR CROSS EXISTING UTILITIES. THE CONTRACTORS WILL BE REQUIRED TO PROTECT EXISTING UTILITIES. ADDITIONAL SUPPORTIVE SHORING MAY BE REQUIRED. IT IS SPECIFICALLY THE CONTRACTORS RESPONSIBILITY TO PROTECT HIS WORKERS, EXISTING UTILITIES, AND FINISHED WORK THROUGHOUT THE JOB.
55. N17 OVERHEAD ELECTRIC, CITY PUBLIC SERVICE (CPS) AN APPROPRIATELY SAFE OVERHEAD CLEARANCE MUST BE MAINTAINED BETWEEN ALL EQUIPMENT AND PERSONNEL. THE CONTRACTOR SHALL NOTIFY CITY PUBLIC SERVICE AT 353-2700 AT LEAST 48 HOURS PRIOR TO ANY CONSTRUCTION IN THE VICINITY OF THE CPS OVERHEAD ELECTRIC LINE CONTRACTOR SHALL MAINTAIN CPS RECOMMENDED CLEARANCE REQUIREMENTS.
56. N23 BYPASS PUMPING: THE CONTRACTOR IS RESPONSIBLE FOR ALL BYPASS PUMPING REQUIRED TO COMPLETE THE WORK. BYPASS PUMPS SHALL BE ADEQUATE TO HANDLE PEAK FLOW EVENTS DURING STORM EVENTS. CONTRACTOR SHALL HAVE STANDBY PUMPS AVAILABLE TO BYPASS FLOW IN CASE PRIMARY PUMP FAILS. CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR ALL COSTS FOR CLEANUP OF AN UNAUTHORIZED DISCHARGE AND ANY ASSOCIATED FINES.
57. N26 CONTRACTOR SHALL BACKFILL ALL OPEN TRENCHES AT THE END OF THE DAY. CONTRACTOR SHALL NO INSTALL MORE PIPE THAN CAN BE COVERED. NO OPEN TRENCHES WILL BE PERMITTED OVERNIGHT ALL END OF OPEN PIPE WILL BE PLUGGED OVERNIGHT.
58. N33 THE PROJECT AREA MAY BE SUBJECT TO ARCHEOLOGICAL MONITORING, SHOULD THE CONTRACTOR ENCOUNTER ANY ARCHEOLOGICAL DEPOSITS DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL STOP ALL WORK IN THE AREA OF THE DEPOSITS AND IMMEDIATELY CALL THE PROJECT MANAGER.
59. N37 CONTRACTOR TO NOTE THAT PORTIONS OF THE CONSTRUCTION ARE WITHIN THE LIMITS OF THE 100 YEAR FLOODPLAIN. THE CONTRACTOR IS REQUIRED TO KEEP THE CHANNEL CLEAR OF POTENTIAL OBSTRUCTIONS TO FLOOD FLOWS. POTENTIAL OBSTRUCTIONS INCLUDE HEAVY CONSTRUCTION EQUIPMENT, TEMPORARY ROADS ACROSS CHANNEL, EXCAVATED MATERIAL, STOCKPILED DEBRIS, ETC. UNDER THREATENING WEATHER CONDITIONS WHERE FLOODING IS LIKELY, OBSTRUCTIONS SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR AT NO ADDITIONAL COST TO GVSUD. THE CONTRACTOR ASSUMES ALL RISK FOR UNFINISHED WORK.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
SANITARY SEWER SYSTEM
GENERAL NOTES (2 OF 2)
REVISED: OCTOBER 2021
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. G-2

TEXAS COMMISSION ON ENVIROMENTAL QUALITY
LIFT STATIONS AND FORCE MAINS
GENERAL CONSTRUCTION NOTES

1. THIS LIFT STATION AND/OR FORCE MAIN MUST BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY'S (TCEQ) EDWARDS AQUIFER RULES 30 TEXAS ADMINISTRATIVE CODE (TAC) §213.5(C), THE DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEMS 30 TAC CHAPTER 217, AND GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD SPECIFICATIONS.
2. ANY MODIFICATION TO THE ACTIVITIES DESCRIBED IN THE REFERENCED LIFT STATION/FORCE MAIN SYSTEM APPLICATION FOLLOWING THE DATE OF APPROVAL MAY REQUIRE THE SUBMITTAL OF A LIFT STATION/FORCE MAIN SYSTEM APPLICATION TO MODIFY THIS APPROVAL, INCLUDING THE PAYMENT OF APPROPRIATE FEES AND ALL INFORMATION NECESSARY FOR ITS REVIEW AND APPROVAL.
3. PRIOR TO COMMENCING ANY REGULATED ACTIVITY, THE APPLICANT OR HIS AGENT MUST NOTIFY THE SAN ANTONIO REGIONAL OFFICE, IN WRITING, OF THE DATE ON WHICH THE REGULATED ACTIVITY WILL BEGIN.
4. UPON COMPLETION OF THE WET WELL EXCAVATION, A GEOLOGIST MUST CERTIFY THAT THE EXCAVATION HAS BEEN INSPECTED FOR THE PRESENCE OF SENSITIVE FEATURES AND THE CERTIFICATION MUST BE SUBMITTED TO THE APPROPRIATE REGIONAL OFFICE. FURTHER ACTIVITIES MAY NOT PROCEED UNTIL THE EXECUTIVE DIRECTOR HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT ANY SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY FROM THE LIFT STATION. CONSTRUCTION MAY CONTINUE IF THE GEOLOGIST CERTIFIES THAT NO SENSITIVE FEATURE OR FEATURES ARE PRESENT.
5. IF ANY SENSITIVE FEATURES ARE DISCOVERED DURING THE WASTEWATER LINE TRENCHING ACTIVITIES, ALL REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MUST BE SUSPENDED IMMEDIATELY. THE APPLICANT MUST IMMEDIATELY NOTIFY THE APPROPRIATE REGIONAL OFFICE OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY OF THE FEATURE DISCOVERY. A GEOLOGIST'S ASSESSMENT OF THE LOCATION AND EXTENT OF THE FEATURE DISCOVERED MUST BE REPORTED TO THAT REGIONAL OFFICE IN WRITING WITHIN TWO WORKING DAYS. THE APPLICANT MUST SUBMIT A PLAN FOR ENSURING THE STRUCTURAL INTEGRITY OF THE SEWER LINE OR FOR MODIFYING THE PROPOSED COLLECTION SYSTEM ALIGNMENT AROUND THE FEATURE. THE REGULATED ACTIVITIES NEAR THE SENSITIVE FEATURE MAY NOT PROCEED UNTIL THE EXECUTIVE DIRECTOR HAS REVIEWED AND APPROVED THE METHODS PROPOSED TO PROTECT THE SENSITIVE FEATURE AND THE EDWARDS AQUIFER FROM ANY POTENTIALLY ADVERSE IMPACTS TO WATER QUALITY WHILE MAINTAINING THE STRUCTURAL INTEGRITY OF THE LINE.
6. LIFT STATIONS SHALL BE DESIGNED TO WITHSTAND AND OPERATE DURING A 100-YEAR FLOOD EVENT AND SHALL BE ACCESSIBLE DURING A 25-YEAR FLOOD. ALL LIFT STATIONS SHALL BE INTRUDER-RESISTANT WITH A CONTROLLED ACCESS.
7. DRY WELL SUMP PUMPS:
   (a) A DRY WELL MUST USE DUAL SUMP PUMPS, EACH WITH A MINIMUM CAPACITY OF 1,000 GALLONS PER HOUR AND CAPABLE OF HANDLING THE VOLUME OF LIQUID GENERATED DURING PEAK OPERATIONS.
   (b) A PUMP MUST HAVE A SUBMERSIBLE MOTOR AND WATERTIGHT WIRING.
   (c) A DRY WELL FLOOR MUST SLOPE TOWARD A SUMP SIZED FOR PROPER DRAINAGE.
   (d) THE MINIMUM SUMP DEPTH IS 6.0 INCHES AND MUST PREVENT STANDING WATER ON A DRY WELL FLOOR UNDER NORMAL OPERATION.
   (e) A SUMP PUMP MUST OPERATE AUTOMATICALLY BY USE OF A FLOAT SWITCH OR OTHER LEVEL-DETECTING DEVICE.
   (f) A SUMP PUMP MUST USE SEPARATE PIPES CAPABLE OF DISCHARGING MORE THAN THE MAXIMUM LIQUID LEVEL OF AN ASSOCIATED WET WELL.
   (g) A SUMP PUMP OUTLET PIPE MUST BE AT LEAST 1.5 INCHES IN DIAMETER AND HAVE AT LEAST TWO CHECK VALVES IN SERIES.
8. PUMP CONTROLS.
   (a) A LIFT STATION PUMP MUST OPERATE AUTOMATICALLY, BASED ON THE WATER LEVEL IN A WET WELL.
   (b) THE LOCATION OF A WET WELL LEVEL MECHANISM MUST ENSURE THAT THE MECHANISM IS UNAFFECTED BY CURRENTS, RAGS, GREASE, OR OTHER FLOATING MATERIALS.
   (c) A LEVEL MECHANISM MUST BE ACCESSIBLE WITHOUT ENTERING THE WET WELL.
   (d) WET WELL CONTROLS WITH A BUBBLER SYSTEM REQUIRE DUAL AIR SUPPLY AND DUAL CONTROLS.
   (e) MOTOR CONTROL CENTERS MUST BE MOUNTED AT LEAST 4.0 INCHES ABOVE GRADE TO PREVENT WATER INTRUSION AND CORROSION FROM STANDING WATER IN THE ENCLOSURE.
   (f) ELECTRICAL EQUIPMENT AND ELECTRICAL CONNECTIONS IN A WET WELL OR A DRY WELL MUST MEET NATIONAL FIRE PREVENTION ASSOCIATION 70 NATIONAL ELECTRIC CODE EXPLOSION PREVENTION REQUIREMENTS, UNLESS CONTINUOUS VENTILATION IS PROVIDED.
9. WET WELLS.
   (a) A WET WELL MUST BE ENCLOSED BY WATERTIGHT AND GAS TIGHT WALLS.
   (b) A PENETRATION THROUGH A WALL OF A WET WELL MUST BE GAS TIGHT.
   (c) A WET WELL MUST NOT CONTAIN EQUIPMENT REQUIRING REGULAR OR ROUTINE INSPECTION OR MAINTENANCE, UNLESS INSPECTION AND MAINTENANCE CAN BE DONE WITHOUT STAFF ENTERING THE WET WELL.
   (d) A GRAVITY PIPE DISCHARGING TO A WET WELL MUST BE LOCATED SO THAT THE INVERT ELEVATION IS ABOVE THE LIQUID LEVEL OF A PUMP'S "ON" SETTING.
   (e) GATE VALVES AND CHECK VALVES ARE PROHIBITED IN A WET WELL.
   (f) GATE VALVES AND CHECK VALVES MAY BE LOCATED IN A VALVE VAULT NEXT TO A WET WELL OR IN A DRY WELL.
   (g) PUMP CYCLE TIME, BASED ON PEAK FLOW, MUST EQUAL OR EXCEED THOSE IN THE FOLLOWING TABLE:

PUMP HORSEPOWER	MINIMUM CYCLE TIMES (MINS)
< 50	6
50-100	10
> 100	15

   (h)AN EVALUATION OF MINIMUM WET WELL VOLUME REQUIRES THE FOLLOWING FORMULA:

$$V = \frac{T \times Q}{4 \times 7.48}$$

WHERE:
V = ACTIVE VOLUME (CUBIC FEET)
Q = PUMP CAPACITY (GALLONS PER MINUTE)
T = CYCLE TIME (MINUTES)
7.48 = CONVERSION FACTOR (GALLONS/CUBIC FOOT)

10. WET WELL SLOPES.
   (a) A WET WELL FLOOR MUST HAVE A SMOOTH FINISH AND MINIMUM SLOPE OF 10% TO A PUMP INTAKE.
   (b) A WET WELL DESIGN MUST PREVENT DEPOSITION OF SOLIDS UNDER NORMAL OPERATING CONDITIONS.
   (c) A LIFT STATION WITH GREATER THAN 5.0 MILLION GALLONS PER DAY FIRM PUMPING CAPACITY MUST HAVE ANTI-VORTEX BAFFLING
11. DRY WELL ACCESS
   (a) AN UNDERGROUND DRY WELL MUST BE ACCESSIBLE.
   (b) A STAIRWAY IN A DRY WELL MUST USE NON-SLIP STEPS AND CONFORM TO OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REGULATIONS WITH RESPECT TO RISE AND RUN.
   (c) A LADDER IN A DRY WELL MUST MADE OF NON-CONDUCTIVE MATERIAL AND RATED FOR THE LOAD NECESSARY FOR STAFF AND EQUIPMENT TO DESCEND AND ASCEND.
12. VENTILATION SHALL BE PROVIDED FOR LIFT STATIONS, INCLUDING BOTH WET AND DRY WELLS.
13. HOISTING EQUIPMENT. A LIFT STATION MUST HAVE PERMANENT HOISTING EQUIPMENT OR BE ACCESSIBLE TO PORTABLE HOISTING EQUIPMENT FOR REMOVAL OF PUMPS, MOTORS, VALVES, PIPES, AND OTHER SIMILAR EQUIPMENT.
14. A FLOOR DRAIN FROM A VALVE VAULT TO A WET WELL MUST PREVENT GAS FROM ENTERING A VALVE VAULT BY INCLUDING FLAP VALVES, "P" TRAPS, SUBMERGED OUTLETS, OR A COMBINATION OF THESE DEVICES.
15. PUMPS.
   (a) GENERAL REQUIREMENTS. A RAW WASTEWATER PUMP, WITH THE EXCEPTION OF A GRINDER PUMP, MUST:
      (1) BE DESIGNED TO PREVENT CLOGGING;
      (2) BE CAPABLE OF PASSING A SPHERE OF 2.5 INCHES IN DIAMETER OR GREATER; AND
      (3) HAVE GREATER THAN 3.0 INCH DIAMETER SUCTION AND DISCHARGE OPENINGS.
   (b) SUBMERSIBLE AND NON-SUBMERSIBLE PUMPS.
      (1) A NON-SUBMERSIBLE PUMP MUST HAVE INSPECTION AND CLEANOUT PLATES ON BOTH THE SUCTION AND DISCHARGE SIDES OF EACH PUMPING UNIT THAT FACILITATE LOCATING AND REMOVING BLOCKAGE-CAUSING MATERIALS, UNLESS THE PUMP DESIGN ACCOMMODATES EASY REMOVAL OF THE ROTATION ELEMENTS.
      (2) A PUMP SUPPORT MUST PREVENT MOVEMENT AND VIBRATION DURING OPERATION.
      (3) A SUBMERSIBLE PUMP MUST USE A RAIL-TYPE PUMP SUPPORT SYSTEM WITH MANUFACTURER-APPROVED MECHANISMS DESIGNED TO ALLOW PERSONNEL TO REMOVE AND REPLACE ANY SINGLE PUMP WITHOUT ENTERING OR DEWATERING THE WET WELL.
      (4) SUBMERSIBLE PUMP RAILS AND LIFTING CHAINS MUST BE CONSTRUCTED OF A MATERIAL THAT PERFORMS TO AT LEAST THE STANDARD OF SERIES 300 STAINLESS STEEL.
   (c) LIFT STATION PUMPING CAPACITY. THE FIRM PUMPING CAPACITY OF A LIFT STATION MUST HANDLE THE EXPECTED PEAK FLOW.
   (d) PUMP HEAD CALCULATIONS.
      (1) AN OWNER SHALL SELECT A PUMP BASED UPON ANALYSIS OF THE SYSTEM HEAD AND PUMP CAPACITY CURVES THAT DETERMINE THE PUMPING CAPACITIES ALONE AND WITH OTHER PUMPS AS THE TOTAL DYNAMIC-HEAD INCREASES DUE TO ADDITIONAL FLOWS PUMPED THROUGH A FORCE MAIN.
      (2) THE PIPE HEAD LOSS CALCULATIONS, USING THE HYDRAULIC INSTITUTE STANDARDS, PERTAINING TO HEAD LOSSES THROUGH PIPES, VALVES, AND FITTINGS, MUST BE INCLUDED IN THE REPORT.
      (3) THE SELECTED FRICTION COEFFICIENT (HAZEN-WILLIAMS "C" VALUE) USED IN FRICTION HEAD LOSS CALCULATIONS MUST BE BASED ON THE PIPE MATERIAL SELECTED.
      (4) FOR A LIFT STATION WITH MORE THAN TWO PUMPS, A FORCE MAIN IN EXCESS OF ONE-HALF MILE, OR FIRM PUMPING CAPACITY OF 100 GALLONS PER MINUTE OR GREATER, SYSTEM CURVES MUST BE PROVIDED FOR BOTH THE NORMAL AND PEAK OPERATING CONDITIONS AT C VALUES FOR PROPOSED AND EXISTING PIPE.
   (e) FLOW CONTROL.
      (1) A LIFT STATION OR A TRANSFER PUMPING STATION LOCATED AT OR DISCHARGING DIRECTLY TO A WASTEWATER TREATMENT SYSTEM MUST HAVE A PEAK PUMP CAPACITY EQUAL TO OR LESS THAN THE PEAK DESIGN FLOW, UNLESS EQUALIZATION IS PROVIDED.
      (2) A WASTEWATER TREATMENT SYSTEM WITH A PEAK FLOW THAT IS GREATER THAN 300,000 GALLON PER DAY MUST USE THREE OR MORE PUMPS, UNLESS DUPLEX, AUTOMATICALLY CONTROLLED, VARIABLE CAPACITY PUMPS ARE PROVIDED.
   (f) SELF-PRIMING PUMPS.
      (1) A SELF-PRIMING PUMP MUST BE CAPABLE OF PRIMING WITHOUT RELIANCE UPON A SEPARATE PRIMING SYSTEM, AN INTERNAL FLAP VALVE, OR ANY EXTERNAL MEANS FOR PRIMING.
      (2) A SELF-PRIMING PUMP MUST USE A SUCTION PIPE VELOCITY AT LEAST 3.0 FEET PER SECOND BUT NOT MORE THAN 7.0 FEET PER SECOND, AND MUST INCORPORATE ITS OWN SUCTION PIPE.
      (3) A SELF-PRIMING PUMP MUST VENT AIR BACK INTO THE WET WELL DURING PRIMING.
   (g) VACUUM-PRIMING PUMPS.
      (1) A VACUUM-PRIMED PUMP MUST BE CAPABLE OF PRIMING BY USING A SEPARATE POSITIVE PRIMING SYSTEM WITH A DEDICATED VACUUM PUMP FOR EACH MAIN WASTEWATER PUMP.
      (2) A VACUUM-PRIMING PUMP MUST USE A SUCTION PIPE VELOCITY AT LEAST 3.0 FEET PER SECOND BUT LESS THAN 7.0 FEET PER SECOND AND MUST HAVE ITS OWN SUCTION PIPE.
   (h) VERTICAL POSITIONING OF PUMPS. A RAW WASTEWATER PUMP MUST HAVE POSITIVE STATIC SUCTION HEAD DURING NORMAL ON-OFF CYCLING, EXCEPT A SUBMERSIBLE PUMP WITH "NO SUCTION" PIPES, A VACUUM-PRIMED PUMP, OR A SELF-PRIMING UNIT CAPABLE OF SATISFACTORY OPERATION UNDER ANY NEGATIVE SUCTION HEAD ANTICIPATED FOR THE LIFT STATION.
   (i) INDIVIDUAL GRINDER PUMPS. A GRINDER PUMP SERVING ONLY ONE RESIDENTIAL OR COMMERCIAL STRUCTURE THAT IS PRIVATELY OWNED, MAINTAINED, AND OPERATED IS NOT SUBJECT TO THE RULES OF THIS CHAPTER.
   (j) PUMP FOR LOW-FLOW LIFT STATION. A PUMP USED FOR A LIFT STATION WITH A PEAK FLOW OF LESS THAN 120 GALLONS PER MINUTE MUST BE SUBMERSIBLE AND INCLUDE A GRINDER.UCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE IMMEDIATELY REPORTED TO THE OWNER AND THE ENGINEER.
16. PIPING.
   a) HORIZONTAL PUMP SUCTIONS.
      (1) EACH PUMP MUST HAVE A SEPARATE SUCTION PIPE THAT USES AN ECCENTRIC REDUCER.
      (2) PIPES IN A WET WELL MUST HAVE A TURNDOWN TYPE FLARED INTAKE.
   b) VALVES.
      (1) THE DISCHARGE SIDE OF EACH PUMP FOLLOWED BY A FULL-CLOSING ISOLATION VALVE MUST ALSO HAVE A CHECK VALVE.
         (A) A CHECK VALVE MUST BE A SWING TYPE VALVE WITH AN EXTERNAL LEVER.
         (B) A VALVE MUST INCLUDE A POSITION INDICATOR TO SHOW ITS OPEN AND CLOSED POSITIONS, UNLESS A FULL-CLOSING VALVE IS A RISING-STEM GATE VALVE.
      (2) A GRINDER PUMP INSTALLATION MAY USE A RUBBER-BALL CHECK VALVE OR A SWING-TYPE CHECK VALVE.
      (3) A BUTTERFLY VALVE, TILTING-DISC CHECK VALVE, OR ANY OTHER VALVE USING A TILTING-DISC IN A FLOW PIPE IS PROHIBITED.
   c) PIPES.
      (1) A LIFT STATION PIPE MUST HAVE FLANGED OR FLEXIBLE CONNECTIONS TO ALLOW FOR REMOVAL OF PUMPS AND VALVES WITHOUT INTERRUPTION OF THE LIFT STATION OPERATIONS.
      (2) WALL PENETRATIONS MUST ALLOW FOR PIPE FLEXURE WHILE EXCLUDING EXFILTRATION OR INFILTRATION.
      (3) PIPE SUCTION VELOCITIES MUST BE AT LEAST 3.0 FEET PER SECOND BUT NOT MORE THAN 7.0 FEET PER SECOND.
17. EMERGENCY PROVISIONS FOR LIFT STATIONS.
   a) A COLLECTION SYSTEM LIFT STATION MUST BE EQUIPPED WITH A TESTED QUICK-CONNECT MECHANISM OR A TRANSFER SWITCH PROPERLY SIZED TO CONNECT TO A PORTABLE GENERATOR, IF NOT EQUIPPED WITH AN ONSITE GENERATOR.
   b) LIFT STATIONS MUST INCLUDE AN AUDIOVISUAL ALARM SYSTEM AND THE SYSTEM MUST TRANSMIT ALL ALARM CONDITIONS THROUGH USE OF AN AUTO-DIALER SYSTEM, SUPERVISORY CONTROL AND DATA ACQUISITION SYSTEM, OR TELEMETERING SYSTEM CONNECTED TO A CONTINUOUSLY MONITORED LOCATION.
   c) AN ALARM SYSTEM MUST SELF-ACTIVATE FOR A POWER OUTAGE, PUMP FAILURE, OR A HIGH WET WELL WATER LEVEL.
   d) A LIFT STATION CONSTRUCTED TO PUMP RAW WASTEWATER MUST HAVE SERVICE RELIABILITY BASED ON:
      (1) RETENTION CAPACITY.
         (A) THE RETENTION CAPACITY IN A LIFT STATION'S WET WELL AND INCOMING GRAVITY PIPES MUST PREVENT DISCHARGES OF UNTREATED WASTEWATER AT THE LIFT STATION OR ANY POINT UPSTREAM FOR A PERIOD OF TIME EQUAL TO THE LONGEST ELECTRICAL OUTAGE RECORDED DURING THE PAST 24 MONTHS, BUT NOT LESS THAN 20 MINUTES.
         (B) FOR CALCULATION PURPOSES, THE OUTAGE PERIOD BEGINS WHEN A LIFT STATION PUMP FINISHED ITS LAST NORMAL CYCLE, EXCLUDING A STANDBY PUMP.
      (2) ON-SITE GENERATORS. A LIFT STATION MAY BE PROVIDED EMERGENCY POWER BY ON-SITE, AUTOMATIC ELECTRICAL GENERATORS SIZED TO OPERATE THE LIFT STATION AT ITS FIRM PUMPING CAPACITY OR AT THE AVERAGE DAILY FLOW, IF THE PEAK FLOW CAN BE STORED IN THE COLLECTION SYSTEM.
      (3) PORTABLE GENERATORS AND PUMPS.
         (A) A LIFT STATION MAY USE PORTABLE GENERATORS AND PUMPS TO GUARANTEE SERVICE IF THE REPORT INCLUDES:
            i. THE STORAGE LOCATION OF EACH GENERATOR AND PUMP;
            ii. THE AMOUNT OF TIME THAT WILL BE NEEDED TO TRANSPORT EACH GENERATOR OR PUMP TO A LIFT STATION;
            iii. THE NUMBER OF LIFT STATIONS FOR WHICH EACH GENERATOR OR PUMP IS DEDICATED AS A BACKUP; AND
            iv. THE TYPE OF ROUTINE MAINTENANCE AND UPKEEP PLANNED FOR EACH PORTABLE GENERATOR AND PUMP TO ENSURE THAT THEY WILL BE OPERATIONAL WHEN NEEDED.
         (A) AN OPERATOR THAT IS KNOWLEDGEABLE IN OPERATION OF THE PORTABLE GENERATORS AND PUMPS SHALL BE ON CALL 24 HOURS PER DAY EVERY DAY.
         (B) THE SIZE OF A PORTABLE GENERATOR MUST HANDLE THE FIRM PUMPING CAPACITY OF THE LIFT STATION.
   e) SPILL CONSTAINMENT STRUCTURES
      (1) THE USE OF A SPILL CONTAINMENT STRUCTURE AS A SOLE MEANS OF PROVIDING SERVICE RELIABILITY IS PROHIBITED.
      (2) A LIFT STATION MAY USE A SPILL CONTAINMENT STRUCTURE IN ADDITION TO ONE OF THE SERVICE RELIABILITY OPTIONS DETAILED IN THIS IN SUBSECTION (A) OF THIS SECTION.
      (3) THE REPORT MUST INCLUDE A DETAILED MANAGEMENT PLAN FOR CLEANING AND MAINTAINING EACH SPILL CONTAINMENT STRUCTURE.
      (4) A SPILL CONTAINMENT STRUCTURE MUST HAVE A LOCKED GATE AND BE SURROUNDED AN INTRUDER RESISTANT FENCE THAT IS 6.0 FEET HIGH CHAIN LINK, MASONRY, OR BOARD FENCE WITH AT LEAST THREE STRANDS OF BARBED WIRE OR 8.0 FEET HIGH CHAIN LINK, MASONRY, OR BOARD FENCE WITH AT LEAST ONE STRAND OF BARBED WIRE.
   f) A LIFT STATION MUST BE FULLY ACCESSIBLE DURING A 25-YEAR 24-HOUR RAINFALL EVENT.
   g) LIFT STATION SYSTEM CONTROLS MUST PREVENT OVER-PUMPING UPON RESUMPTION OF NORMAL POWER AFTER A POWER FAILURE. BACKUP OR STANDBY UNITS MUST BE ELECTRICALLY INTERLOCKED TO PREVENT OPERATION AT THE SAME TIME THAT OTHER LIFT STATIONS PUMPS ARE OPERATING ONLY ON THE RESUMPTION OF NORMAL POWER AFTER A POWER FAILURE.

CRITERIA FOR SEWER MAIN CONSTRUCTION IN THE VICINITY OF WATER MAINS

I. WHERE A SEWER MAIN CROSSES OVER A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE (9) FEET, ALL PORTIONS OF THE SEWER MAIN WITHIN NINE (9) FEET OF THE WATER LINE SHALL BE CONSTRUCTED USING 150 PSI PRESSURE RATED PIPE AT LEAST EIGHTEEN (18) FEET IN LENGTH MAY BE CENTERED ON THE WATER MAIN IN LIEU OF PIPE CONNECTION REQUIREMENTS (NO SEPARATE PAY ITEM)

II. WHERE SEMI-RIGID OR RIGID SEWER MAIN CROSSES UNDER A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE FEET BUT GREATER THAN TWO FEET, THE INITIAL BACKFILL SHALL BE CEMENT STABILIZED SAND (TWO OR MORE BAGS OF CEMENT PER CUBIC YARD OF SAND) FOR ALL SECTIONS OF THE SEWER WITHIN NINE FEET OF THE WATER MAIN.

III. WHERE A SEWER MAIN CROSSES UNDER A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN TWO FEET, THE SEWER MAIN SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON, OR PVC WITH A MINIMUM PRESSURE RATING OF 150 PSI WITHIN NINE FEET OF THE WATER MAIN, SHALL BE PLACED NO CLOSER THAN SIX (6") INCHES BETWEEN OUTER DIAMETERS, AND SHALL BE JOINED WITH PRESSURE RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVISES OR A CAST IRON OR DUCTILE IRON MATERIAL. A SECTION OF PSI PRESSURE RATE PIPE OF A LENGTH GREATER THAN EIGHTEEN (18) FEET MAY BE CENTERED ON THE WATER MAIN IN LIEU OF PIPE CONNECTION REQUIREMENTS. (NO SEPARATE PAY ITEM).

IV. WHERE A SEWER MAIN PARALLELS A WATER MAIN AND THE SEPARATION DISTANCE IS LESS THAN NINE FEET, THE SEWER MAIN SHALL BE BELOW THE WATER MAIN, SHALL BE CONSTRUCTED OF CAST IRON, DUCTILE IRON OR PVC WITH A MINIMUM PRESSURE RATING OF 150 PSI FOR BOTH PIPE AND JOINTS FOR A DISTANCE OF NINE FEET BEYOND THE POINT OF CONFLICT, SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE BETWEEN OUTER DIAMETERS OF TWO FEET VERTICALLY AND FOUR FEET HORIZONTALLY, AND SHALL BE JOINED WITH PRESSURE RING GASKET CONNECTIONS OR CORROSION PROTECTED MECHANICAL COUPLING DEVICES OF A CAST IRON OF DUCTILE IRON MATERIALS.

V. SANITARY SEWER MANHOLES SHALL NOT BE INSTALLED ANY CLOSER THAN NINE FEET TO WATER MAINS.

VI. PLAN AND PROFILE MUST SHOW TYPE OF CROSSING AND MATERIAL TO USE.

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LANTANA SUBDIVISION UNIT 1

SANITARY SEWER GENERAL NOTES

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE

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JAVIER CASTELLO
122170
5/12/2025

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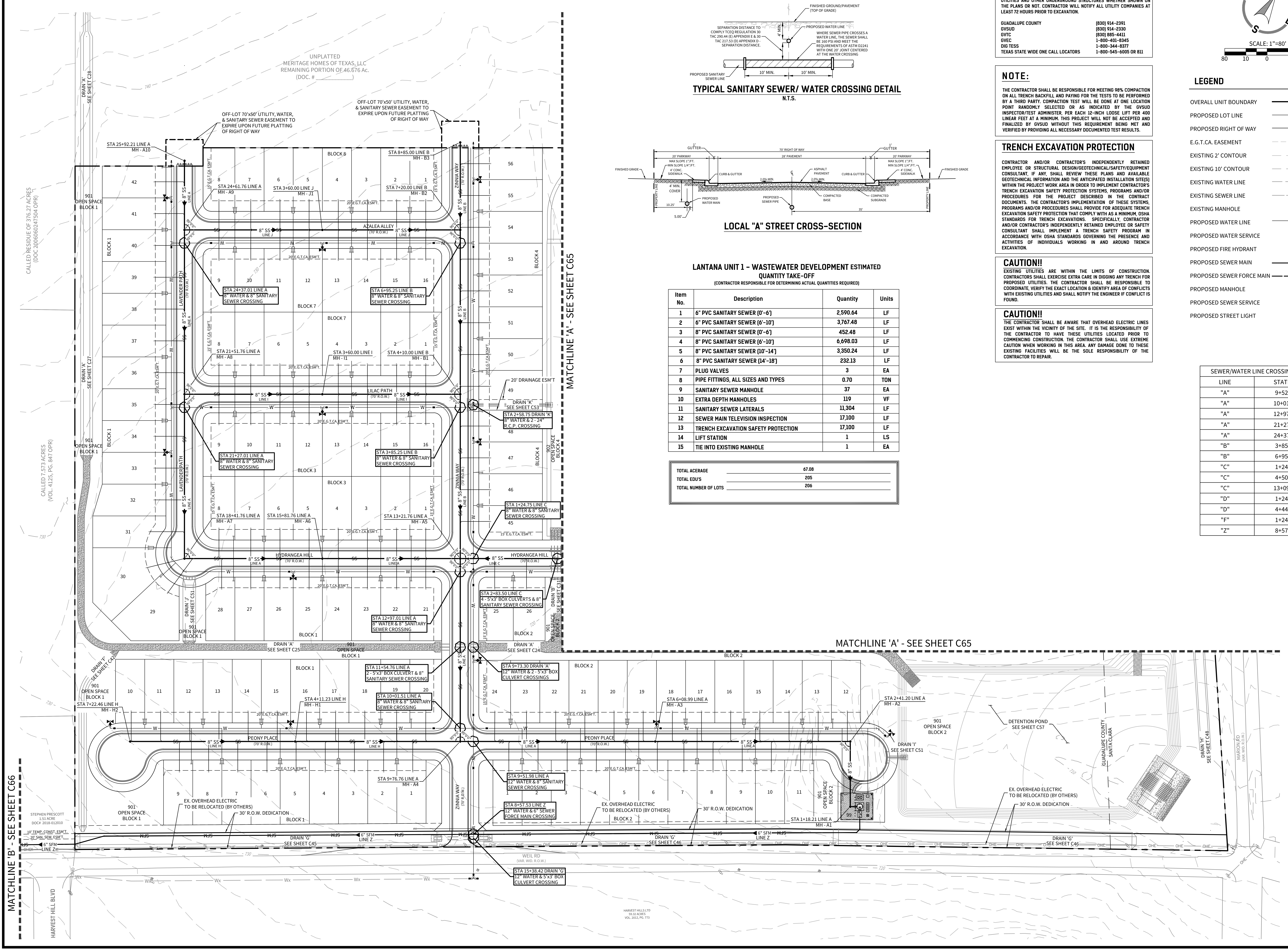
UNPLATTED
MERITAGE HOMES OF TEXAS, LLC
REMAINING PORTION OF 46.676 Ac.
(DOC. #
OFF-LOT 70'x50' UTILITY, WATER, & SANITARY SEWER EASEMENT TO EXPIRE UPON FUTURE PLATTING OF RIGHT OF WAY
OFF-LOT 70'x50' UTILITY, WATER, & SANITARY SEWER EASEMENT TO EXPIRE UPON FUTURE PLATTING OF RIGHT OF WAY
DRAIN 'A' SEE SHEET C28
CALLED RESIDUE OF 376.27 ACRES (DOC 2006060247504 OPR)
CALLED 7.573 ACRES (VOL. 4125, PG. 847 OPR)
STA 25+92.21 LINE A MH - A10
STA 8+85.00 LINE B MH - B3
STA 24+61.76 LINE A MH - A9
STA 3+60.00 LINE J MH - J1
STA 7+20.00 LINE B MH - B2
901 OPEN SPACE BLOCK 1
BLOCK 8
BLOCK 7
BLOCK 4
BLOCK 3
BLOCK 2
BLOCK 1
AZALEA ALLEY (70' R.O.W.)
LAVENDER PATH (70' R.O.W.)
ZINNIA WAY (70' R.O.W.)
LILAC PATH (70' R.O.W.)
HYDRANGEA HILL (70' R.O.W.)
PEONY PLACE (70' R.O.W.)
8" SS LINE J
8" SS LINE A
8" SS LINE B
8" SS LINE C
8" SS LINE H
8" SS LINE I
20' E.G.T.CA. ESM'T.
15' E.G.T.CA. ESM'T.
STA 24+37.01 LINE A 8" WATER & 8" SANITARY SEWER CROSSING
STA 6+95.25 LINE B 8" WATER & 8" SANITARY SEWER CROSSING
STA 21+51.76 LINE A MH - A8
STA 3+60.00 LINE I MH - I1
STA 4+10.00 LINE B MH - B1
20' DRAINAGE ESM'T
DRAIN 'K' SEE SHEET C53
STA 2+58.75 DRAIN 'K' 8" WATER & 2 - 24" R.C.P. CROSSING
STA 21+27.01 LINE A 8" WATER & 8" SANITARY SEWER CROSSING
STA 3+85.25 LINE B 8" WATER & 8" SANITARY SEWER CROSSING
902 OPEN SPACE BLOCK 4
STA 1+24.75 LINE C 8" WATER & 8" SANITARY SEWER CROSSING
STA 18+41.76 LINE A MH - A7
STA 15+81.76 LINE A MH - A6
STA 13+21.76 LINE A MH - A5
MATCHLINE 'A' - SEE SHEET C65
DRAIN 'J' SEE SHEET C51
DRAIN 'B' SEE SHEET C31
STA 2+83.50 LINE C 4 - 5'x3' BOX CULVERTS & 8" SANITARY SEWER CROSSING
STA 12+97.01 LINE A 8" WATER & 8" SANITARY SEWER CROSSING
901 OPEN SPACE BLOCK 1
901 OPEN SPACE BLOCK 2
DRAIN 'A' SEE SHEET C25
DRAIN 'A' SEE SHEET C24
DRAIN 'F' SEE SHEET C41
STA 11+54.76 LINE A 2 - 5'x3' BOX CULVERT & 8" SANITARY SEWER CROSSING
STA 9+73.30 DRAIN 'A' 12" WATER & 2 - 5'x3' BOX CULVERT CROSSINGS
STA 10+01.51 LINE A 8" WATER & 8" SANITARY SEWER CROSSING
STA 7+22.46 LINE H MH - H2
STA 4+11.23 LINE H MH - H1
STA 6+08.99 LINE A MH - A3
STA 2+41.20 LINE A MH - A2
DETENTION POND SEE SHEET C57
DRAIN 'I' SEE SHEET C51
GUADALUPE COUNTY SANTA CLARA
DRAIN 'H' SEE SHEET C48
MARION RD (VAR. WID. R.O.W.)
STA 9+76.76 LINE A MH - A4
STA 9+51.98 LINE A 12" WATER & 8" SANITARY SEWER CROSSING
STA 8+57.53 LINE Z 12" WATER & 6" SEWER FORCE MAIN CROSSING
EX. OVERHEAD ELECTRIC TO BE RELOCATED (BY OTHERS)
30' R.O.W. DEDICATION
STA 1+18.21 LINE A MH - A1
6" SFM LINE Z
DRAIN 'G' SEE SHEET C45
DRAIN 'G' SEE SHEET C46
WEIL RD (VAR. WID. R.O.W.)
STA 15+38.42 DRAIN 'G' 12" WATER & 5'x3' BOX CULVERT CROSSING
STEPHEN PRESCOTT 1.51 ACRE DOC# 2018-012010
10' TEMP. CONST. ESM'T.
20' SAN. SEW. ESM'T.
HARVEST HILLS LTD 59.32 ACRES VOL. 2012, PG. 773
MATCHLINE 'B' - SEE SHEET C66
HARVEST HILL BLVD
FINISHED GROUND/PAVEMENT (TOP OF GRADE)
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
4' MIN.
PROPOSED WATER LINE
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.
1' GUTTER
70' RIGHT OF WAY
20' PARKWAY
28' PAVEMENT
MAX SLOPE 1"/FT.
MIN SLOPE 1/4"/FT.
FINISHED GRADE
4' CONC. SIDEWALK
CURB & GUTTER
ASPHALT PAVEMENT
2.0% MIN.
4' MIN. COVER
PROPERTY LINE
PROPOSED WATER MAIN
PROPOSED SEWER PIPE
COMPACTED BASE
COMPACTED SUBGRADE
10.25'
5.00'
35'
W
N
E
S
SCALE: 1"=80'
80
10
0
80

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

LOCAL "A" STREET CROSS-SECTION

CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. CONTRACTOR WILL NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS PRIOR TO EXCAVATION.

GUADALUPE COUNTY	(830) 914-2391
GVSUD	(830) 914-2330
GVTC	(830) 885-4411
GVEC	1-800-401-8345
DIG TESS	1-800-344-8377
TEXAS STATE WIDE ONE CALL LOCATORS	1-800-545-6005 OR 811

NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE GVSUD INSPECTOR/TEST ADMINISTER, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY GVSUD WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

TRENCH EXCAVATION PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) 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!!

EXISTING UTILITIES ARE WITHIN THE LIMITS OF CONSTRUCTION. CONTRACTORS SHALL EXERCISE EXTRA CARE IN DIGGING ANY TRENCH FOR PROPOSED UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE, VERIFY THE EXACT LOCATION & IDENTIFY AREA OF CONFLICTS WITH EXISTING UTILITIES AND SHALL NOTIFY THE ENGINEER IF CONFLICT IS FOUND.

CAUTION!!

THE CONTRACTOR SHALL BE AWARE THAT OVERHEAD ELECTRIC LINES EXIST WITHIN THE VICINITY OF THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

LANTANA UNIT 1 – WASTEWATER DEVELOPMENT ESTIMATED QUANTITY TAKE-OFF

(CONTRACTOR RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES REQUIRED)

Item No.	Description	Quantity	Units
1	6" PVC SANITARY SEWER (0'-6')	2,590.64	LF
2	6" PVC SANITARY SEWER (6'-10')	3,767.48	LF
3	8" PVC SANITARY SEWER (0'-6')	452.48	LF
4	8" PVC SANITARY SEWER (6'-10')	6,698.03	LF
5	8" PVC SANITARY SEWER (10'-14')	3,350.24	LF
6	8" PVC SANITARY SEWER (14'-18')	232.13	LF
7	PLUG VALVES	3	EA
8	PIPE FITTINGS, ALL SIZES AND TYPES	0.70	TON
9	SANITARY SEWER MANHOLE	37	EA
10	EXTRA DEPTH MANHOLES	119	VF
11	SANITARY SEWER LATERALS	11,304	LF
12	SEWER MAIN TELEVISION INSPECTION	17,100	LF
13	TRENCH EXCAVATION SAFETY PROTECTION	17,100	LF
14	LIFT STATION	1	LS
15	TIE INTO EXISTING MANHOLE	1	EA

TOTAL ACERAGE	67.08
TOTAL EDU'S	205
TOTAL NUMBER OF LOTS	206

LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	- - - -
EXISTING 2' CONTOUR	— 499 —
EXISTING 10' CONTOUR	— 500 —
EXISTING WATER LINE	— Wx —
EXISTING SEWER LINE	— SSx —
EXISTING MANHOLE	●
PROPOSED WATER LINE	— W —
PROPOSED WATER SERVICE	WW
PROPOSED FIRE HYDRANT	⧓
PROPOSED SEWER MAIN	— SS —
PROPOSED SEWER FORCE MAIN	— SFM —
PROPOSED MANHOLE	●
PROPOSED SEWER SERVICE	S
PROPOSED STREET LIGHT	◉

SEWER/WATER LINE CROSSINGS	
LINE	STATION
"A"	9+52.01
"A"	10+01.51
"A"	12+97.01
"A"	21+27.01
"A"	24+37.01
"B"	3+85.25
"B"	6+95.25
"C"	1+24.75
"C"	4+50.25
"C"	13+09.75
"D"	1+24.75
"D"	4+44.75
"F"	1+24.75
"Z"	8+57.71

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LANTANA SUBDIVISION UNIT 1

OVERALL SANITARY SEWER PLAN

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

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XV/AL

#	DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C64

CUDEENGINEERS.COM

P:\04037\003\2-DWG\4-Plans\C64 OVERALL SANITARY SEWER PLAN.dwg 2025/05/12 1:53pm tduano

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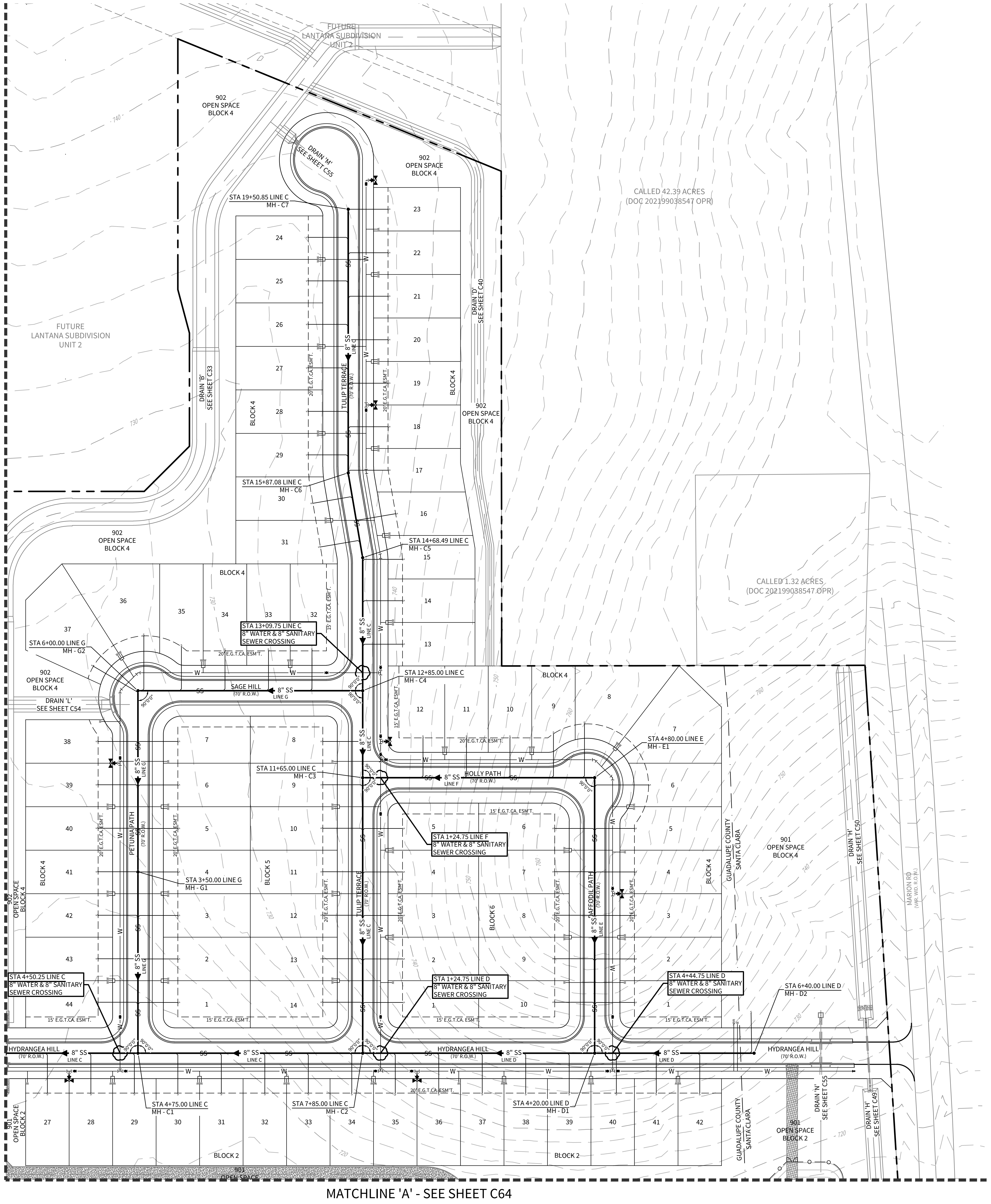

FUTURE LANTANA SUBDIVISION UNIT 2
902 OPEN SPACE BLOCK 4
DRAIN 'M' SEE SHEET C55
STA 19+50.85 LINE C MH - C7
STA 15+87.08 LINE C MH - C6
STA 14+68.49 LINE C MH - C5
STA 13+09.75 LINE C 8" WATER & 8" SANITARY SEWER CROSSING
STA 12+85.00 LINE C MH - C4
STA 11+65.00 LINE C MH - C3
STA 6+00.00 LINE G MH - G2
STA 3+50.00 LINE G MH - G1
STA 1+24.75 LINE F 8" WATER & 8" SANITARY SEWER CROSSING
STA 1+24.75 LINE D 8" WATER & 8" SANITARY SEWER CROSSING
STA 4+44.75 LINE D 8" WATER & 8" SANITARY SEWER CROSSING
STA 4+50.25 LINE C 8" WATER & 8" SANITARY SEWER CROSSING
STA 4+80.00 LINE E MH - E1
STA 6+40.00 LINE D MH - D2
STA 4+75.00 LINE C MH - C1
STA 7+85.00 LINE C MH - C2
STA 4+20.00 LINE D MH - D1
DRAIN 'B' SEE SHEET C33
DRAIN 'D' SEE SHEET C40
DRAIN 'L' SEE SHEET C54
DRAIN 'N' SEE SHEET C55
DRAIN 'H' SEE SHEET C50
DRAIN 'H' SEE SHEET C49
CALLED 42.39 ACRES (DOC 202199038547 OPR)
CALLED 1.32 ACRES (DOC 202199038547 OPR)
TULIP TERRACE (70' R.O.W.)
SAGE HILL (70' R.O.W.)
HOLLY PATH (70' R.O.W.)
PETUNIA PATH (70' R.O.W.)
MARIGOLD PATH (70' R.O.W.)
HYDRANGEA HILL (70' R.O.W.)
GUADALUPE COUNTY SANTA CLARA
MARION RD
901 OPEN SPACE BLOCK 4
901 OPEN SPACE BLOCK 2
903 OPEN SPACE
BLOCK 2
BLOCK 4
BLOCK 5
BLOCK 6
8" SS
20' E.G.T.CA. ESM'T.
15' E.G.T.CA. ESM'T.
MATCHLINE 'A' - SEE SHEET C64

MATCHLINE 'A' - SEE SHEET C64

CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. CONTRACTOR WILL NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS PRIOR TO EXCAVATION.

GUADALUPE COUNTY	(830) 914-2391
GVSUD	(830) 914-2330
GVTC	(830) 885-4411
GVEC	1-800-401-8345
DIG TESS	1-800-344-8377
TEXAS STATE WIDE ONE CALL LOCATORS	1-800-545-6005 OR 811

NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE GVSUD INSPECTOR/TEST ADMINISTER, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY GVSUD WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

TRENCH EXCAVATION PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) 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!!

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CAUTION!!

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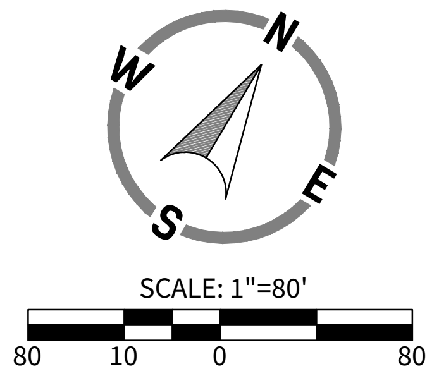
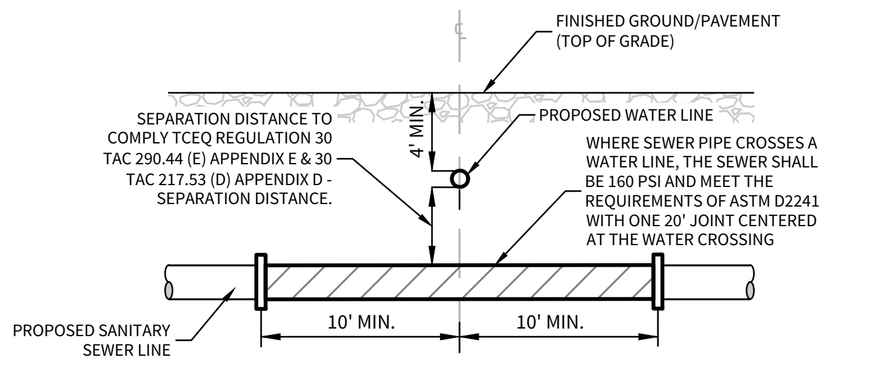


LEGEND

OVERALL UNIT BOUNDARY	
PROPOSED LOT LINE	
PROPOSED RIGHT OF WAY	
E.G.T.C.A. EASEMENT	
EXISTING 2' CONTOUR	499
EXISTING 10' CONTOUR	500
EXISTING WATER LINE	Wx
EXISTING SEWER LINE	SSx
EXISTING MANHOLE	●
PROPOSED WATER LINE	W
PROPOSED WATER SERVICE	
PROPOSED FIRE HYDRANT	
PROPOSED SEWER MAIN	SS
PROPOSED SEWER FORCE MAIN	SFM
PROPOSED MANHOLE	●
PROPOSED SEWER SERVICE	S
PROPOSED STREET LIGHT	◉

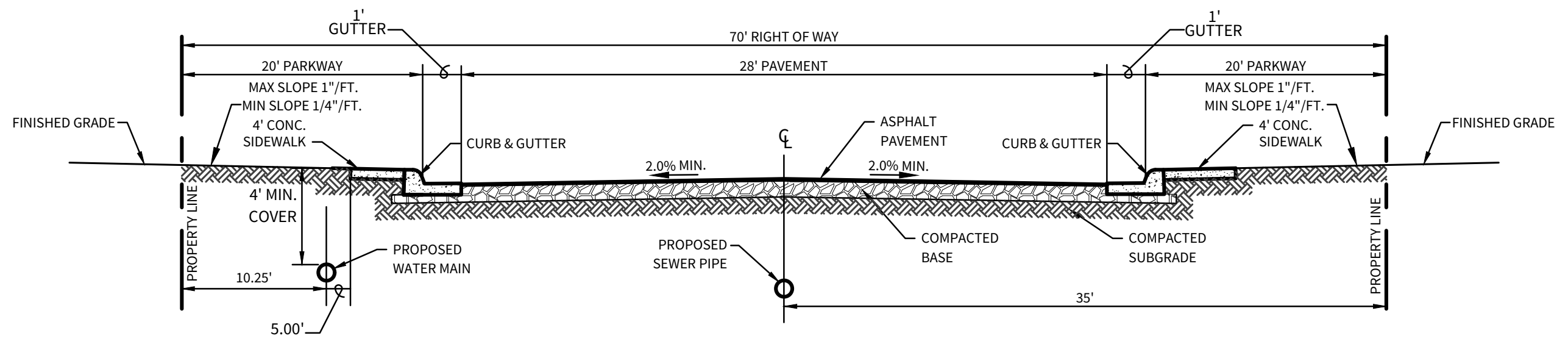
SEWER/WATER LINE CROSSINGS	
LINE	STATION
"A"	9+52.01
"A"	10+01.51
"A"	12+97.01
"A"	21+27.01
"A"	24+37.01
"B"	3+85.25
"B"	6+95.25
"C"	1+24.75
"C"	4+50.25
"C"	13+09.75
"D"	1+24.75
"D"	4+44.75
"F"	1+24.75
"Z"	8+57.71



FINISHED GROUND/PAVEMENT (TOP OF GRADE)
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
4' MIN.
PROPOSED WATER LINE
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
10' MIN.
10' MIN.
PROPOSED SANITARY SEWER LINE

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.



LOCAL "A" STREET CROSS-SECTION

LANTANA UNIT 1 - WASTEWATER DEVELOPMENT ESTIMATED QUANTITY TAKE-OFF

(CONTRACTOR RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES REQUIRED)

Item No.	Description	Quantity	Units
1	6" PVC SANITARY SEWER (0'-6')	2,590.64	LF
2	6" PVC SANITARY SEWER (6'-10')	3,767.48	LF
3	8" PVC SANITARY SEWER (0'-6')	452.48	LF
4	8" PVC SANITARY SEWER (6'-10')	6,698.03	LF
5	8" PVC SANITARY SEWER (10'-14')	3,350.24	LF
6	8" PVC SANITARY SEWER (14'-18')	232.13	LF
7	PLUG VALVES	3	EA
8	PIPE FITTINGS, ALL SIZES AND TYPES	0.70	TON
9	SANITARY SEWER MANHOLE	37	EA
10	EXTRA DEPTH MANHOLES	119	VF
11	SANITARY SEWER LATERALS	11,304	LF
12	SEWER MAIN TELEVISION INSPECTION	17,100	LF
13	TRENCH EXCAVATION SAFETY PROTECTION	17,100	LF
14	LIFT STATION	1	LS
15	TIE INTO EXISTING MANHOLE	1	EA

TOTAL ACERAGE 67.08
TOTAL EDU'S 205
TOTAL NUMBER OF LOTS 206

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION
UNIT 1

OVERALL SANITARY SEWER PLAN

DATE 05/12/2025

PROJECT NO. 04037.003

DRAWN BY CG/JG/LJ/TCD

CHECKED BY XV/AL

#	DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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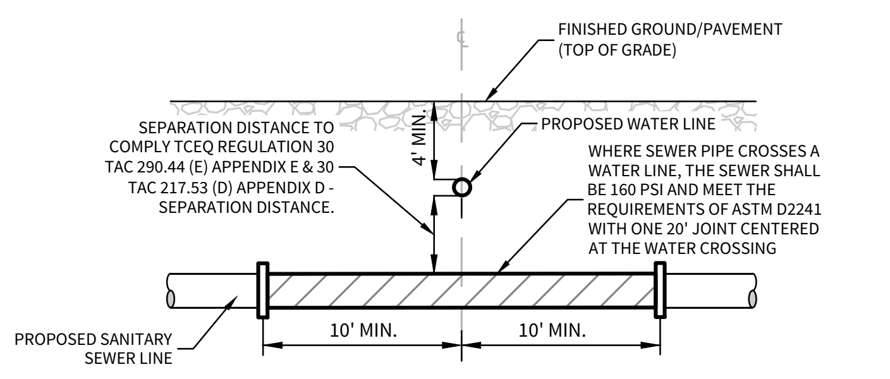
13	TRENCH EXCAVATION SAFETY PROTECTION	17,100	LF
14	LIFT STATION	1	LS
15	TIE INTO EXISTING MANHOLE	1	EA

TOTAL ACERAGE	67.08
TOTAL EDU'S	205
TOTAL NUMBER OF LOTS	206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PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

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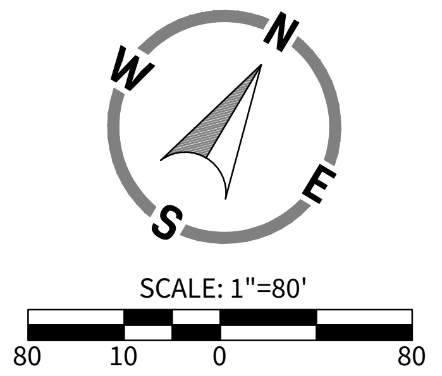
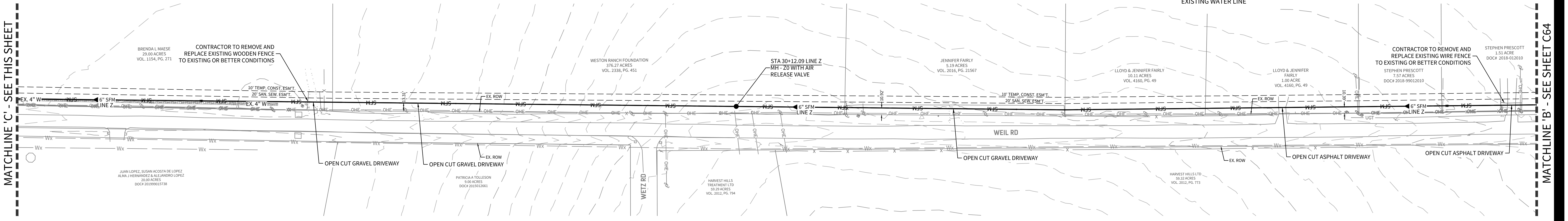
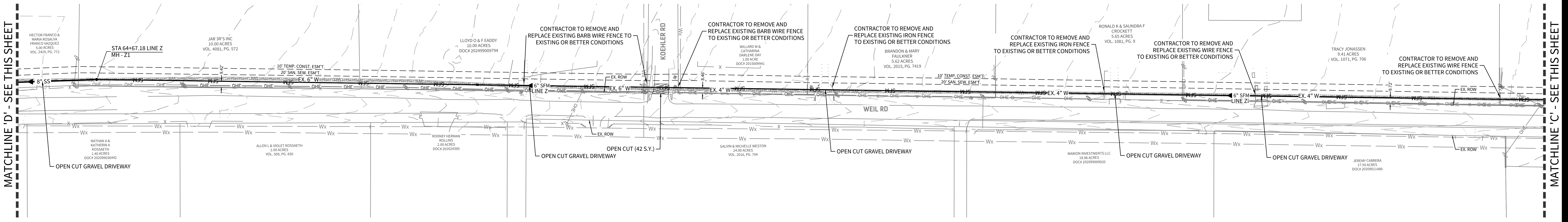
SEWER/WATER LINE CROSSINGS	
LINE	STATION
"A"	9+52.01
"A"	10+01.51
"A"	12+97.01
"A"	21+27.01
"A"	24+37.01
"B"	3+85.25
"B"	6+95.25
"C"	1+24.75
"C"	4+50.25
"C"	13+09.75
"D"	1+24.75
"D"	4+44.75
"F"	1+24.75
"Z"	8+57.71

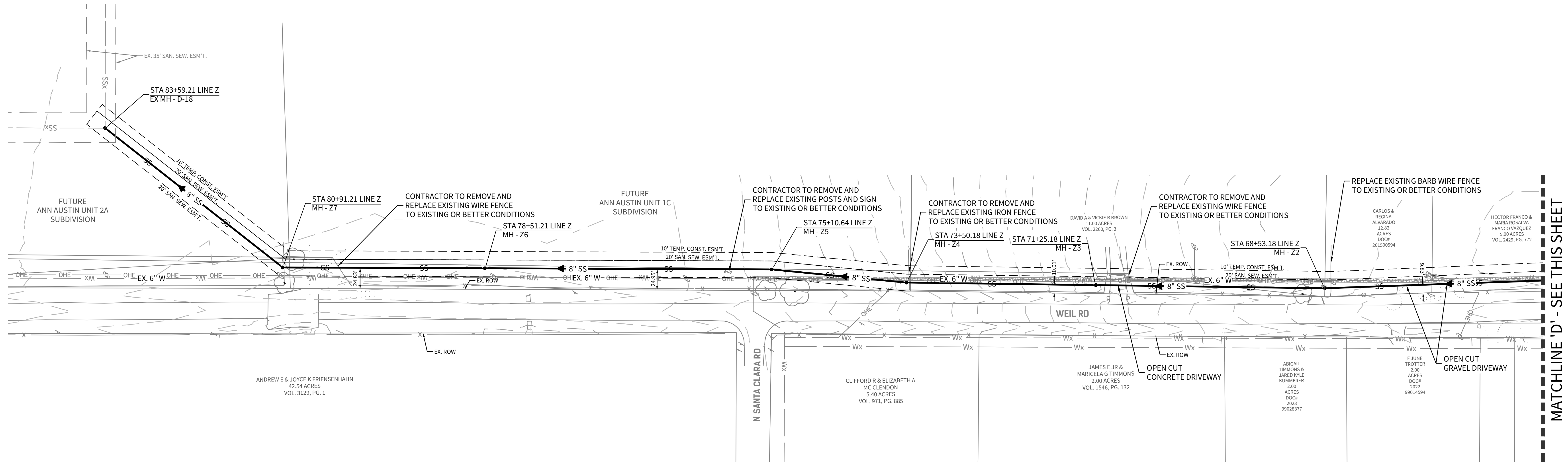
LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.CA. EASEMENT	- - - - -
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
EXISTING WATER LINE	— — Wx — —
EXISTING SEWER LINE	— — — SSx —
EXISTING MANHOLE	●
PROPOSED WATER LINE	——— W ———
PROPOSED WATER SERVICE	W W
PROPOSED FIRE HYDRANT	⧓
PROPOSED SEWER MAIN	——— SS ———
PROPOSED SEWER FORCE MAIN	— — — SFM —
PROPOSED MANHOLE	●
PROPOSED SEWER SERVICE	S ——⁄
PROPOSED STREET LIGHT	◉
ABANDON AND REMOVE EXISTING WATER LINE	▨ Wx ▨









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EST. 1980
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San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION
UNIT 1

OVERALL SANITARY SEWER PLAN

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

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JAVIER CASTELLO
122170
J. Castello 5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C66

CUDEENGINEERS.COM

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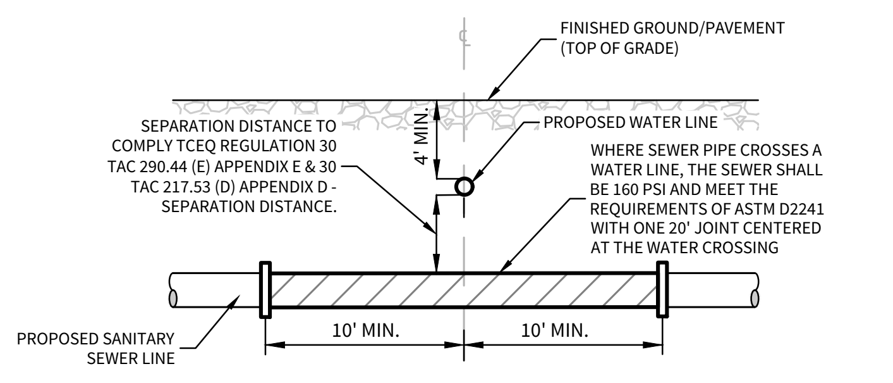
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.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SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
4' MIN.
PROPOSED WATER LINE
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

1. CONTRACTOR TO INSTALL WATERTIGHT MANHOLES WITH 30" OPENING AND INTERIOR WALL COATED WITH A GVSUD APPROVED SEWER STRUCTURE FOR ALL MANHOLES WITHIN THIS DEVELOPMENT.
2. ALL SEWER LATERALS AND PROPERTY LINE CLEANOUTS ARE TO BE LOCATED OUTSIDE OF DRIVEWAY PAVED AREAS.

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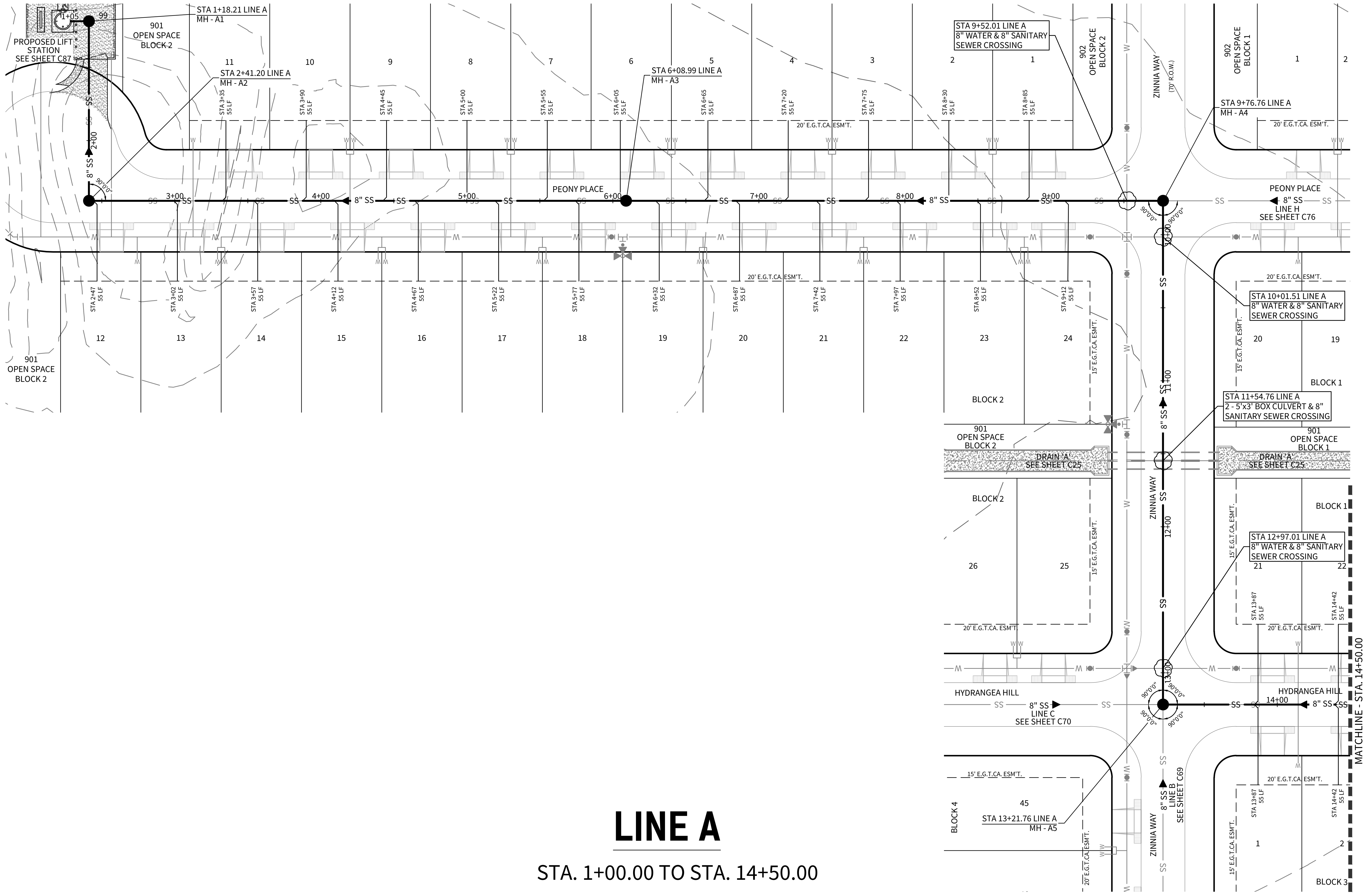
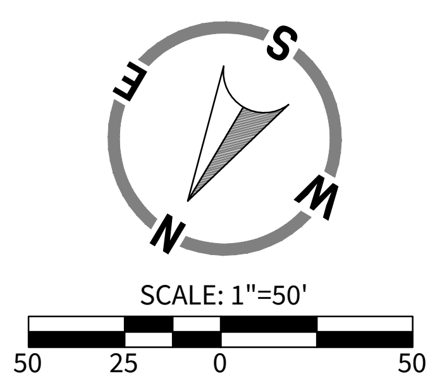


LINE A

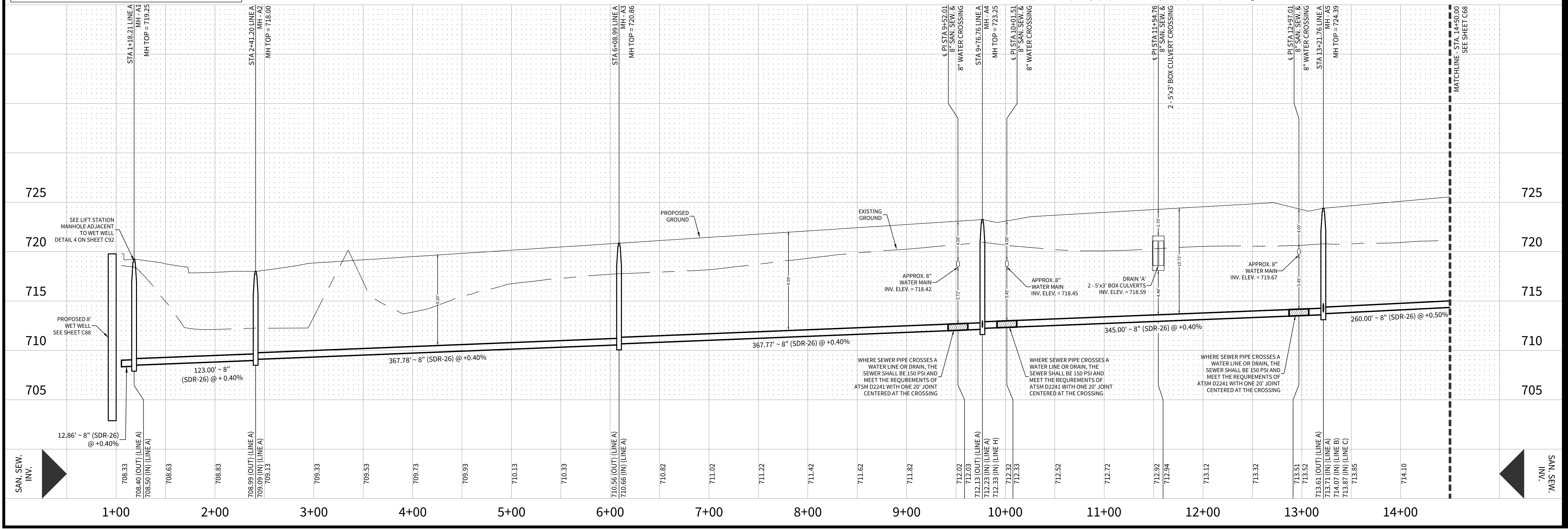
STA. 1+00.00 TO STA. 14+50.00



LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED WATER LINE
- PROPOSED SEWER MAIN
- PROPOSED MANHOLE ●
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING MANHOLE ●

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


STA 1+18.21 LINE A
MH - A1
MH TOP = 719.25
STA 2+41.20 LINE A
MH - A2
MH TOP = 718.00
STA 6+08.99 LINE A
MH - A3
MH TOP = 720.86
℄ PI STA 9+52.01 8" SAN. SEW. & 8" WATER CROSSING
STA 9+76.76 LINE A
MH - A4
MH TOP = 723.25
℄ PI STA 10+01.51 8" SAN. SEW. & 8" WATER CROSSING
℄ PI STA 11+54.76 8" SAN. SEW. & 2 - 5'x3' BOX CULVERT CROSSING
℄ PI STA 12+97.01 8" SAN. SEW. & 8" WATER CROSSING
STA 13+21.76 LINE A
MH - A5
MH TOP = 724.39
MATCHLINE - STA. 14+50.00 SEE SHEET C68
725
720
715
710
705
SEE LIFT STATION MANHOLE ADJACENT TO WET WELL DETAIL 4 ON SHEET C92
PROPOSED 8' WET WELL SEE SHEET C88
PROPOSED GROUND
EXISTING GROUND
12.86' ~ 8" (SDR-26) @ +0.40%
123.00' ~ 8" (SDR-26) @ + 0.40%
367.78' ~ 8" (SDR-26) @ +0.40%
367.77' ~ 8" (SDR-26) @ +0.40%
345.00' ~ 8" (SDR-26) @ +0.40%
260.00' ~ 8" (SDR-26) @ +0.50%
APPROX. 8" WATER MAIN INV. ELEV. = 718.42
APPROX. 8" WATER MAIN INV. ELEV. = 718.45
DRAIN 'A' 2 - 5'x3' BOX CULVERTS INV. ELEV. = 718.59
APPROX. 8" WATER MAIN INV. ELEV. = 719.67
4.00'
5.72'
5.45'
2.70'
4.48'
10.72'
5.49'
WHERE SEWER PIPE CROSSES A WATER LINE OR DRAIN, THE SEWER SHALL BE 150 PSI AND MEET THE REQUREMENTS OF ATSM D2241 WITH ONE 20' JOINT CENTERED AT THE CROSSING
WHERE SEWER PIPE CROSSES A WATER LINE OR DRAIN, THE SEWER SHALL BE 150 PSI AND MEET THE REQUREMENTS OF ATSM D2241 WITH ONE 20' JOINT CENTERED AT THE CROSSING
WHERE SEWER PIPE CROSSES A WATER LINE OR DRAIN, THE SEWER SHALL BE 150 PSI AND MEET THE REQUREMENTS OF ATSM D2241 WITH ONE 20' JOINT CENTERED AT THE CROSSING
SAN. SEW. INV.
708.33
708.40 (OUT) (LINE A)
708.50 (IN) (LINE A)
708.63
708.83
708.99 (OUT) (LINE A)
709.09 (IN) (LINE A)
709.13
709.33
709.53
709.73
709.93
710.13
710.33
710.56 (OUT) (LINE A)
710.66 (IN) (LINE A)
710.82
711.02
711.22
711.42
711.62
711.82
712.02
712.03
712.13 (OUT) (LINE A)
712.23 (IN) (LINE A)
712.33 (IN) (LINE H)
712.32
712.33
712.52
712.72
712.92
712.94
713.12
713.32
713.51
713.52
713.61 (OUT) (LINE A)
713.71 (IN) (LINE A)
714.07 (IN) (LINE B)
713.87 (IN) (LINE C)
713.85
714.10
SAN. SEW. INV.
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00
11+00
12+00
13+00
14+00

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San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE A

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C67

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P:\04037\003\2-DWG\4-Plans\C67 SANITARY SEWER PLAN & PROFILE - LINE A.dwg 2025/05/12 1:54pm tduano

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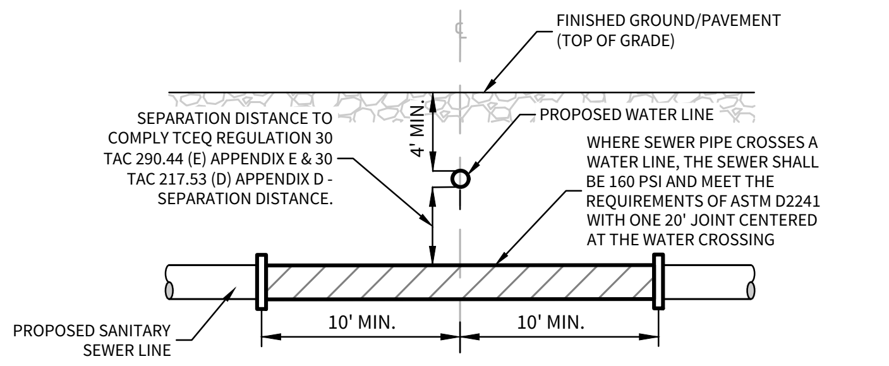
FINISHED GROUND/PAVEMENT (TOP OF GRADE)
PROPOSED WATER LINE
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
4' MIN.
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

1. CONTRACTOR TO INSTALL WATERTIGHT MANHOLES WITH 30" OPENING AND INTERIOR WALL COATED WITH A GVSUD APPROVED SEWER STRUCTURE FOR ALL MANHOLES WITHIN THIS DEVELOPMENT.
2. ALL SEWER LATERALS AND PROPERTY LINE CLEANOUTS ARE TO BE LOCATED OUTSIDE OF DRIVEWAY PAVED AREAS.

CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. CONTRACTOR WILL NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS PRIOR TO EXCAVATION.

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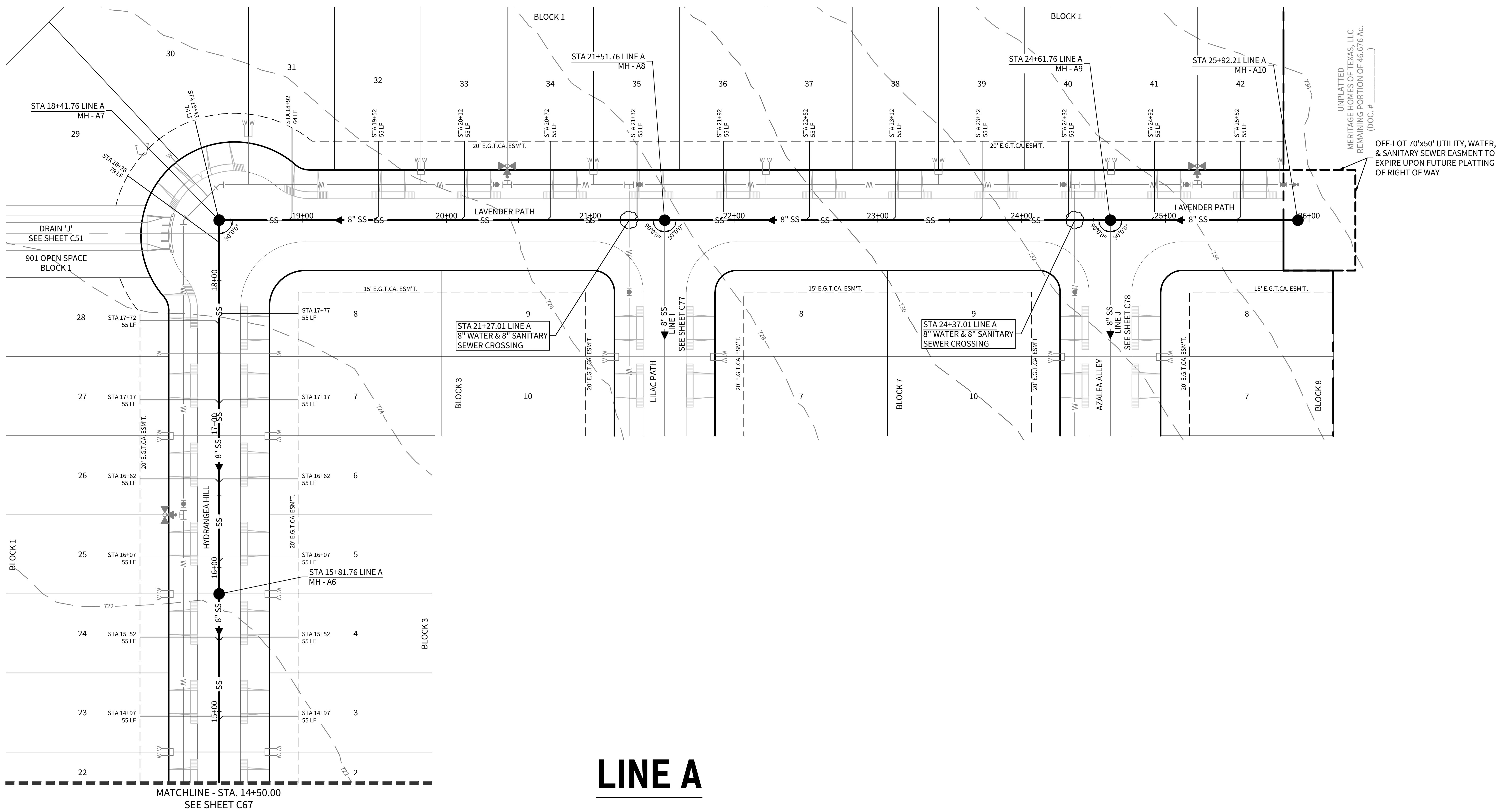
GVSUD	(830) 914-2330
GVTC	(830) 885-4411
GVEC	1-800-401-8345
DIG TESS	1-800-344-8377
TEXAS STATE WIDE ONE CALL LOCATORS	1-800-545-6005 OR 811

TRENCH EXCAVATION PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) 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.



SCALE: 1"=50'

50 25 0 50

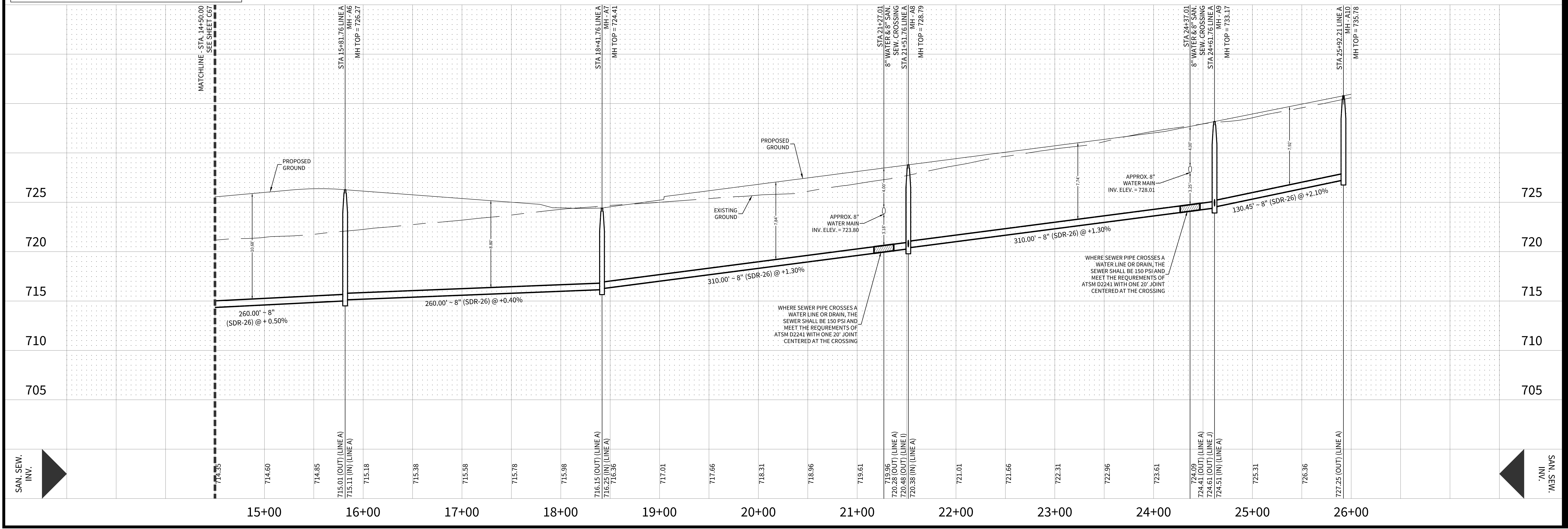
LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	- - - -
EXISTING 2' CONTOUR	— 499 —
EXISTING 10' CONTOUR	— 500 —
PROPOSED WATER LINE	— W —
PROPOSED SEWER MAIN	— SS —
PROPOSED MANHOLE	●
EXISTING WATER LINE	— Wx —
EXISTING SEWER LINE	— SSx —
EXISTING MANHOLE	●

LINE A

STA. 14+50.00 TO STA. 25+92.21

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


MATCHLINE - STA. 14+50.00 SEE SHEET C67
STA 15+81.76 LINE A MH - A6 MH TOP = 726.27
STA 18+41.76 LINE A MH - A7 MH TOP = 724.41
STA 21+27.01 8" WATER & 8" SAN. SEW. CROSSING
STA 21+51.76 LINE A MH - A8 MH TOP = 728.79
STA 24+37.01 8" WATER & 8" SAN. SEW. CROSSING
STA 24+61.76 LINE A MH - A9 MH TOP = 733.17
STA 25+92.21 LINE A MH - A10 MH TOP = 735.78
PROPOSED GROUND
PROPOSED GROUND
EXISTING GROUND
APPROX. 8" WATER MAIN INV. ELEV. = 723.80
APPROX. 8" WATER MAIN INV. ELEV. = 728.01
260.00' ~ 8" (SDR-26) @ + 0.50%
260.00' ~ 8" (SDR-26) @ +0.40%
310.00' ~ 8" (SDR-26) @ +1.30%
310.00' ~ 8" (SDR-26) @ +1.30%
130.45' ~ 8" (SDR-26) @ +2.10%
WHERE SEWER PIPE CROSSES A WATER LINE OR DRAIN, THE SEWER SHALL BE 150 PSI AND MEET THE REQUREMENTS OF ATSM D2241 WITH ONE 20' JOINT CENTERED AT THE CROSSING
WHERE SEWER PIPE CROSSES A WATER LINE OR DRAIN, THE SEWER SHALL BE 150 PSI AND MEET THE REQUREMENTS OF ATSM D2241 WITH ONE 20' JOINT CENTERED AT THE CROSSING
4.00'
3.18'
7.84'
7.74'
4.00'
3.25'
7.92'
725
720
715
710
705
SAN. SEW. INV.
714.35
714.60
714.85
715.01 (OUT) (LINE A)
715.11 (IN) (LINE A)
715.18
715.38
715.58
715.78
715.98
716.15 (OUT) (LINE A)
716.25 (IN) (LINE A)
716.36
717.01
717.66
718.31
718.96
719.61
719.96
720.28 (OUT) (LINE A)
720.48 (OUT) (LINE I)
720.38 (IN) (LINE A)
721.01
721.66
722.31
722.96
723.61
724.09
724.41 (OUT) (LINE A)
724.61 (OUT) (LINE J)
724.51 (IN) (LINE A)
725.31
726.36
727.25 (OUT) (LINE A)
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
25+00
26+00

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LANTANA SUBDIVISION
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE A

DATE	05/12/2025
PROJECT NO.	04037.003
DRAWN BY	CG/JG/LJ/TCD
CHECKED BY	XV/AL

#	DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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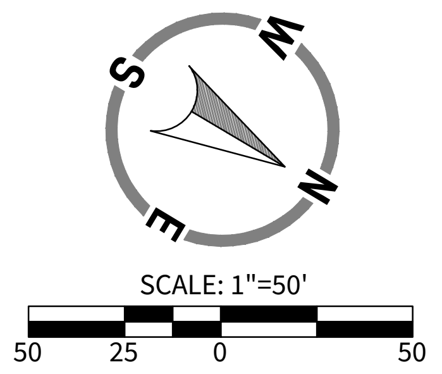
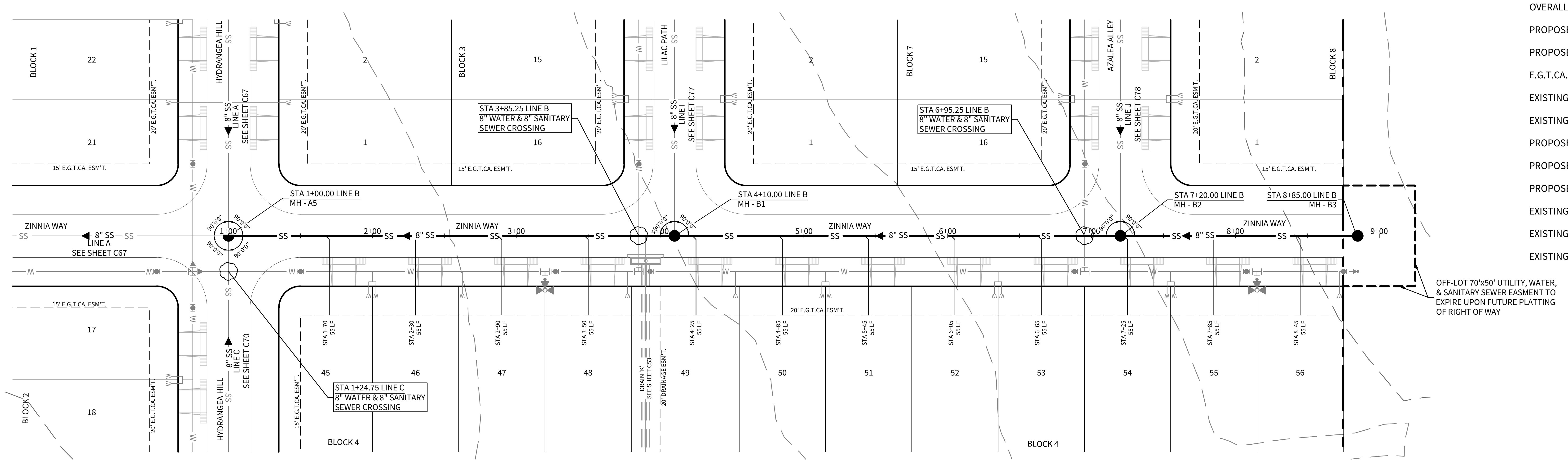
LANTANA SUBDIVISION UNIT 1

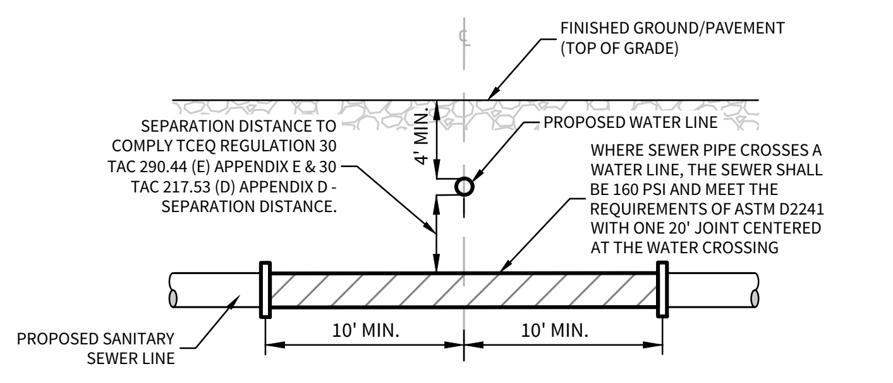
SANITARY SEWER PLAN & PROFILE - LINE B



LEGEND

OVERALL UNIT BOUNDARY	▬ ▬ ▬
PROPOSED LOT LINE	──
PROPOSED RIGHT OF WAY	──
E.G.T.CA. EASEMENT	— — — —
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
PROPOSED WATER LINE	—W—
PROPOSED SEWER MAIN	━SS━
PROPOSED MANHOLE	●
EXISTING WATER LINE	— —Wx— —
EXISTING SEWER LINE	— — —SSx—
EXISTING MANHOLE	●




FINISHED GROUND/PAVEMENT (TOP OF GRADE)
PROPOSED WATER LINE
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
4' MIN.
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

1. CONTRACTOR TO INSTALL WATERTIGHT MANHOLES WITH 30" OPENING AND INTERIOR WALL COATED WITH A GVSUD APPROVED SEWER STRUCTURE FOR ALL MANHOLES WITHIN THIS DEVELOPMENT.
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GVTC	(830) 885-4411
GVEC	1-800-401-8345
DIG TESS	1-800-344-8377
TEXAS STATE WIDE ONE CALL LOCATORS	1-800-545-6005 OR 811

TRENCH EXCAVATION PROTECTION

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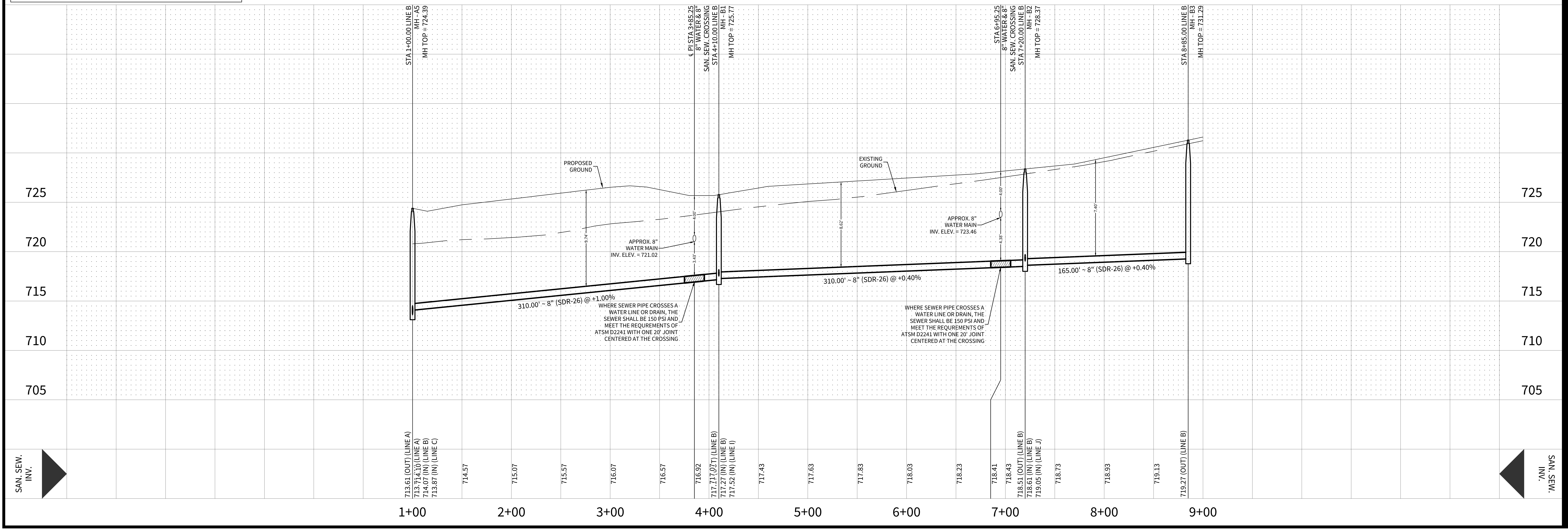
LINE B

STA. 1+00.00 TO STA. 8+85.00

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



DATE	05/12/2025
PROJECT NO.	04037.003
DRAWN BY	CG/JG/LJ/TCD
CHECKED BY	XV/AL

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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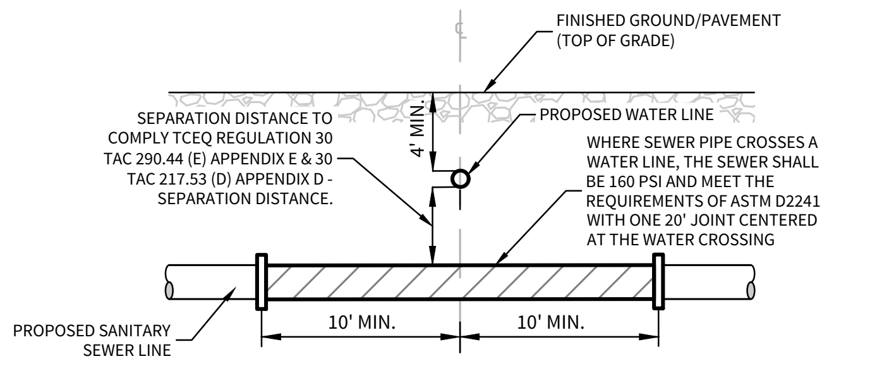
FINISHED GROUND/PAVEMENT (TOP OF GRADE)
℄
4' MIN.
PROPOSED WATER LINE
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
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PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

1. CONTRACTOR TO INSTALL WATERTIGHT MANHOLES WITH 30" OPENING AND INTERIOR WALL COATED WITH A GVSUD APPROVED SEWER STRUCTURE FOR ALL MANHOLES WITHIN THIS DEVELOPMENT.
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DIG TESS	1-800-344-8377
TEXAS STATE WIDE ONE CALL LOCATORS	1-800-545-6005 OR 811

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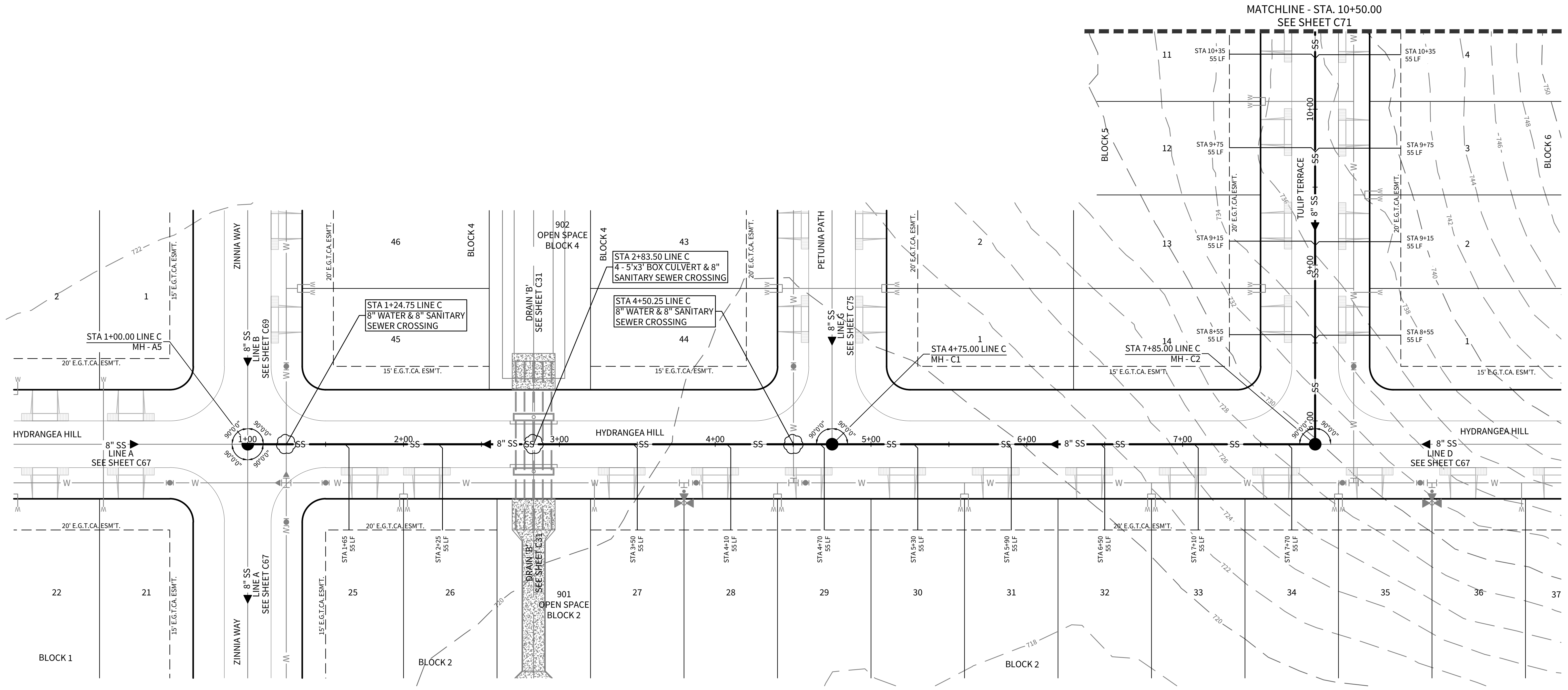
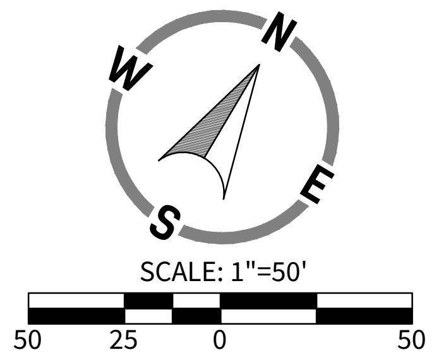




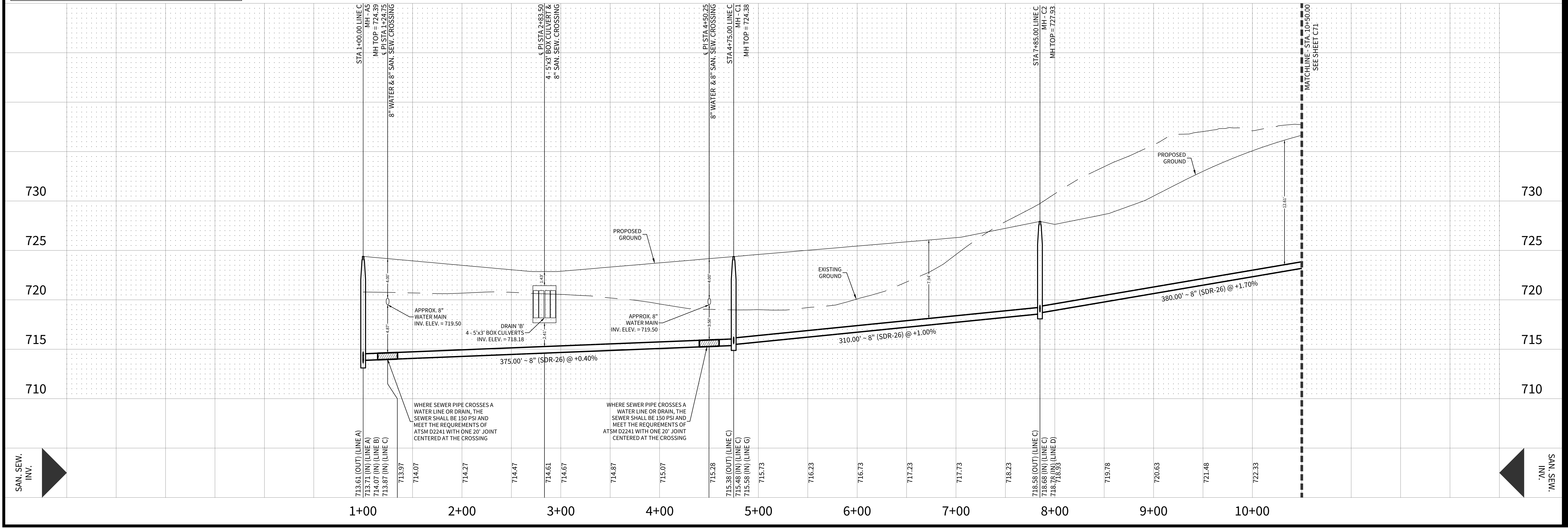
LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.CA. EASEMENT	- - - - - -
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
PROPOSED WATER LINE	——W——
PROPOSED SEWER MAIN	——SS——
PROPOSED MANHOLE	●
EXISTING WATER LINE	— — Wx — —
EXISTING SEWER LINE	— — SSx — —
EXISTING MANHOLE	●

LINE C

STA. 1+00.00 TO STA. 10+50.00

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



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LANTANA SUBDIVISION
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE C

DATE	05/12/2025
PROJECT NO.	04037.003
DRAWN BY	CG/JG/LJ/TCD
CHECKED BY	XV/AL

#	DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025

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P:\04037\003\2-DWG\4-Plans\C70 SANITARY SEWER PLAN & PROFILE - LINE C.dwg 2025/05/12 1:55pm tduano

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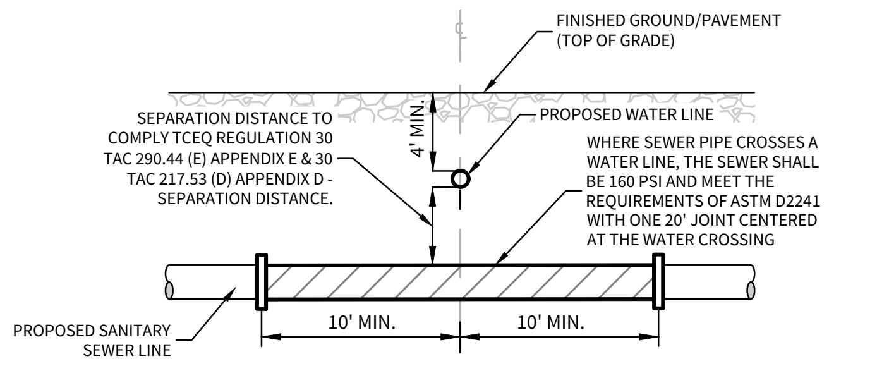

FINISHED GROUND/PAVEMENT (TOP OF GRADE)
PROPOSED WATER LINE
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
4' MIN.
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

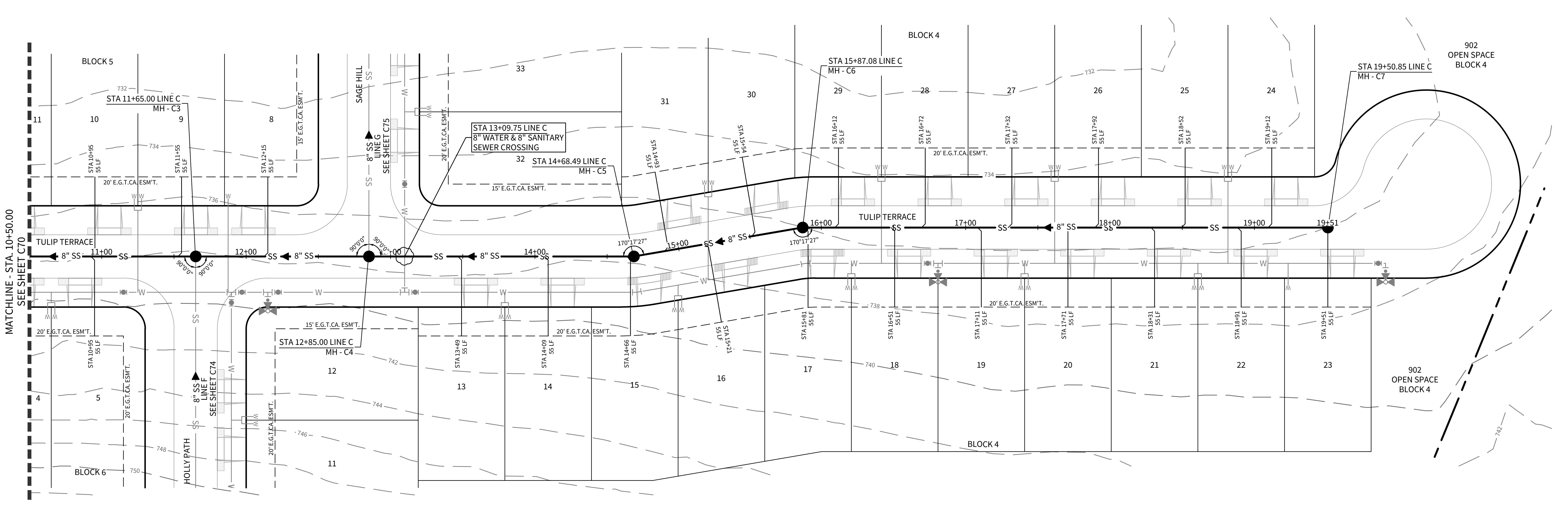
1. CONTRACTOR TO INSTALL WATERTIGHT MANHOLES WITH 30" OPENING AND INTERIOR WALL COATED WITH A GVSUD APPROVED SEWER STRUCTURE FOR ALL MANHOLES WITHIN THIS DEVELOPMENT.
2. ALL SEWER LATERALS AND PROPERTY LINE CLEANOUTS ARE TO BE LOCATED OUTSIDE OF DRIVEWAY PAVED AREAS.

CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. CONTRACTOR WILL NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS PRIOR TO EXCAVATION.

CITY OF MARION	(830) 914-2391
GVSUD	(830) 914-2330
GVTC	(830) 885-4411
GVEC	1-800-401-8345
DIG TESS	1-800-344-8377
TEXAS STATE WIDE ONE CALL LOCATORS	1-800-545-6005 OR 811

TRENCH EXCAVATION PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) 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.


S
W
N
E
SCALE: 1"=50'
50
25
0
50
MATCHLINE - STA. 10+50.00 SEE SHEET C70
BLOCK 5
BLOCK 4
BLOCK 6
STA 11+65.00 LINE C MH - C3
STA 12+85.00 LINE C MH - C4
STA 13+09.75 LINE C 8" WATER & 8" SANITARY SEWER CROSSING
STA 14+68.49 LINE C MH - C5
STA 15+87.08 LINE C MH - C6
STA 19+50.85 LINE C MH - C7
TULIP TERRACE
SAGE HILL
HOLLY PATH
8" SS LINE G SEE SHEET C75
8" SS LINE F SEE SHEET C74
902 OPEN SPACE BLOCK 4
20' E.G.T.CA. ESM'T.
15' E.G.T.CA. ESM'T.
8" SS
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
19+51

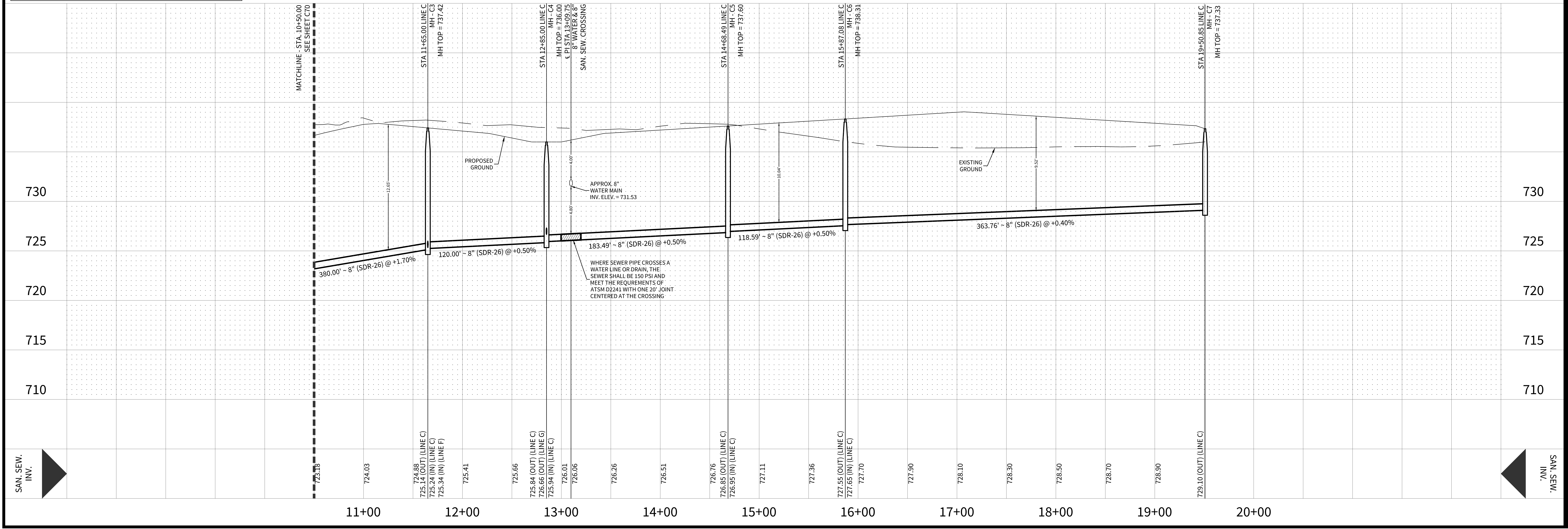
LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.CA. EASEMENT	- - - - - -
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
PROPOSED WATER LINE	—— W ——
PROPOSED SEWER MAIN	—— SS ——
PROPOSED MANHOLE	●
EXISTING WATER LINE	— — Wx — —
EXISTING SEWER LINE	— — SSx — —
EXISTING MANHOLE	●

LINE C

STA. 10+50.00 TO STA. 19+50.85

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



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LANTANA SUBDIVISION
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE C

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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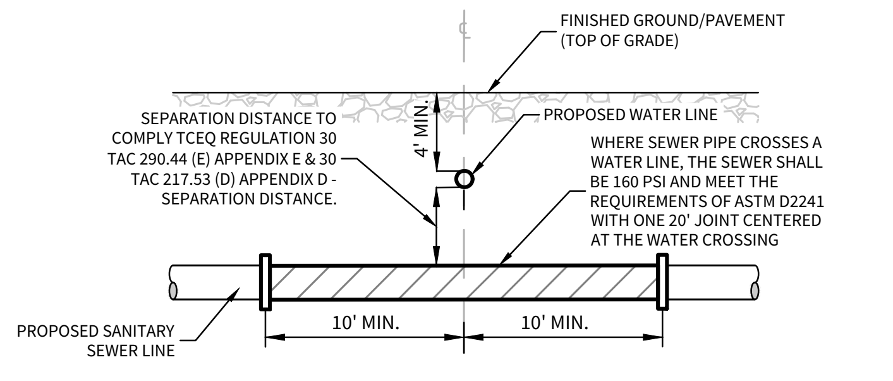
FINISHED GROUND/PAVEMENT (TOP OF GRADE)
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PROPOSED WATER LINE
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WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

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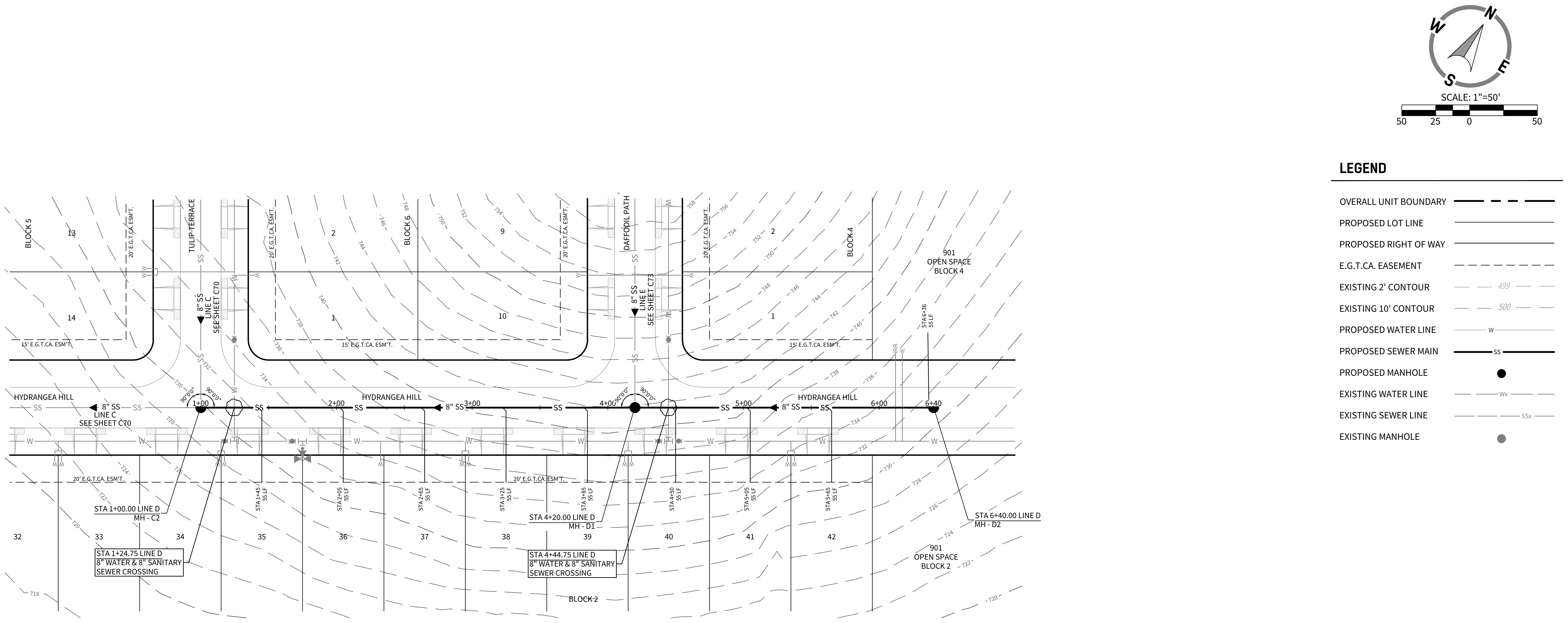


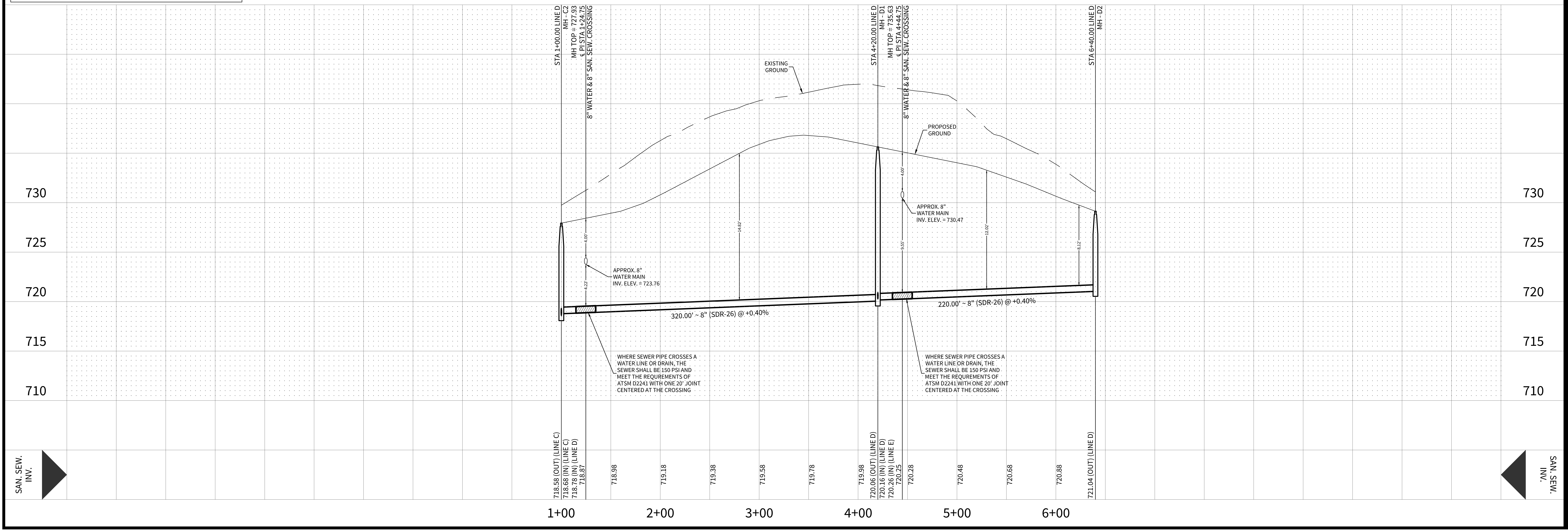
LEGEND

OVERALL UNIT BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	– – – –
EXISTING 2' CONTOUR	— 499 —
EXISTING 10' CONTOUR	— 500 —
PROPOSED WATER LINE	— W —
PROPOSED SEWER MAIN	— SS —
PROPOSED MANHOLE	●
EXISTING WATER LINE	— Ws —
EXISTING SEWER LINE	— SSx —
EXISTING MANHOLE	●

LINE D

STA. 1+00.00 TO STA. 6+40.00

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



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LANTANA SUBDIVISION
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE D

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

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JAVIER CASTELLO
122170
5/12/2025

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TBPE No. 455
TBPLS No. 10048500

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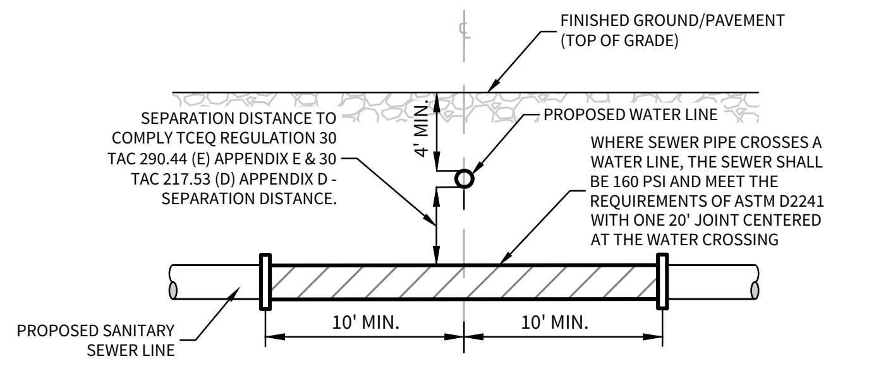
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PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

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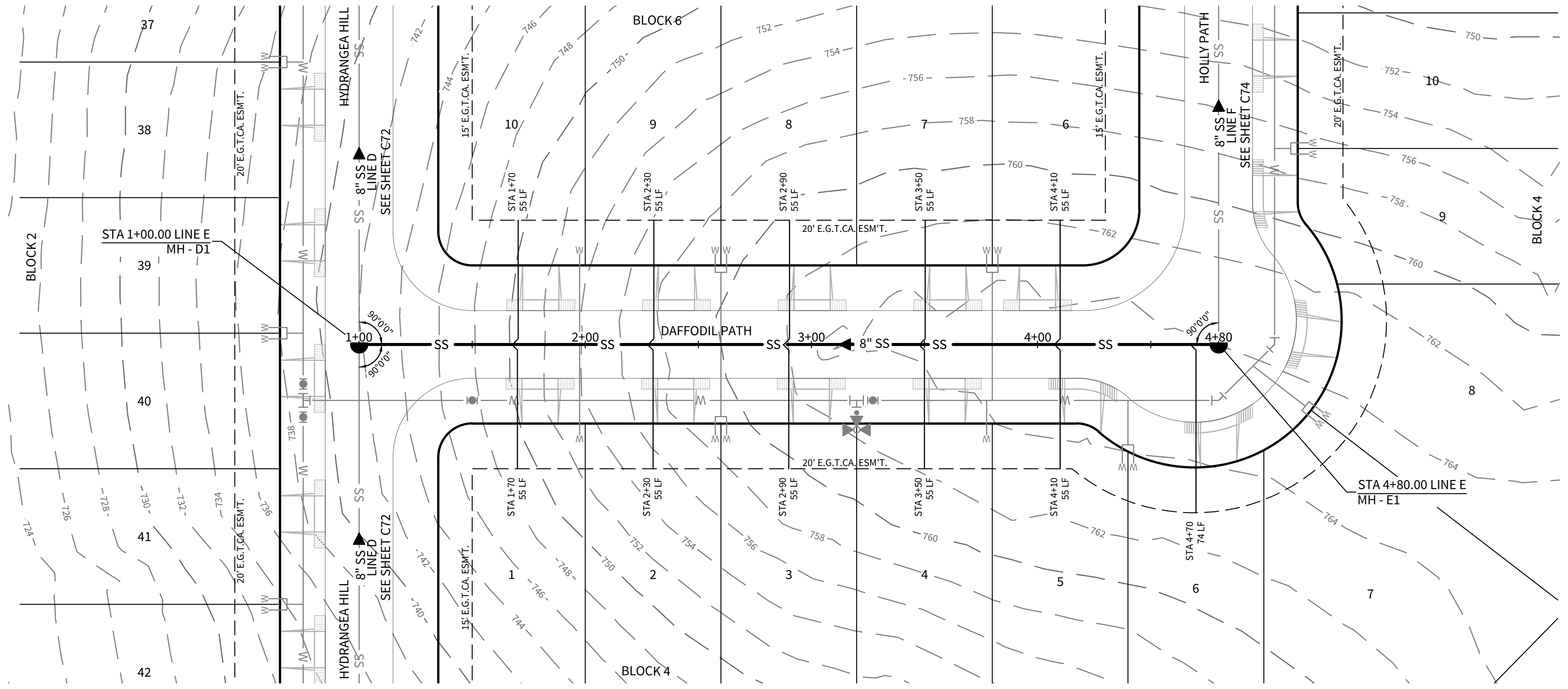


SCALE: 1"=50'

50 25 0 50

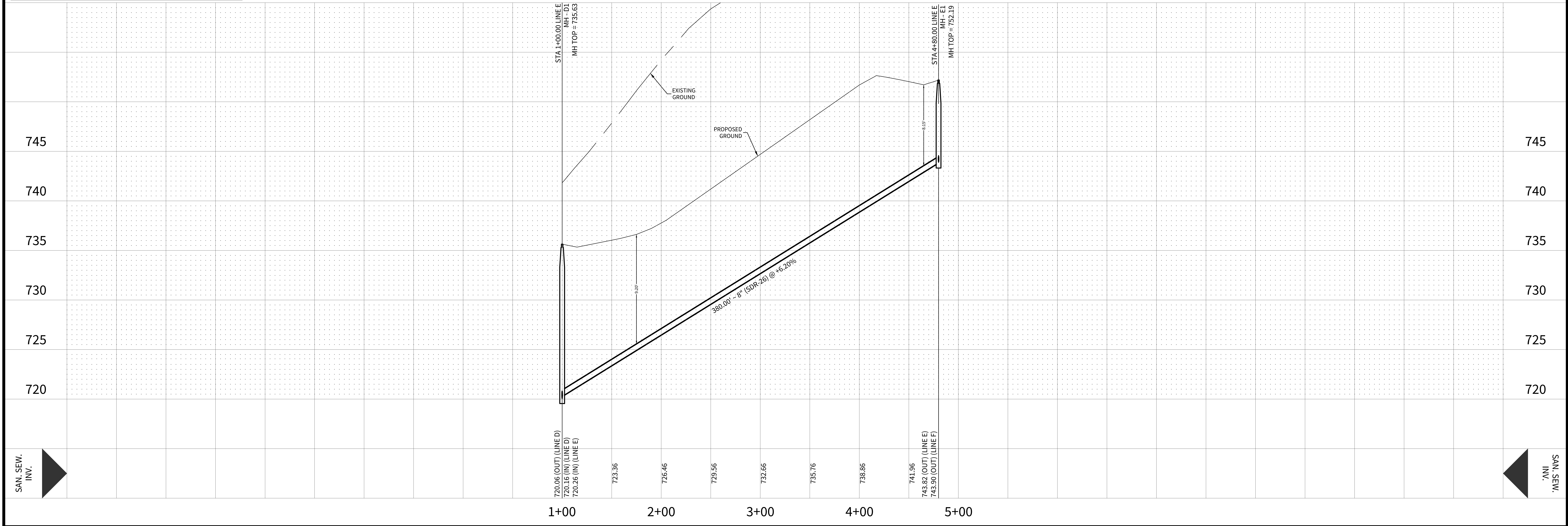
LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED WATER LINE
- PROPOSED SEWER MAIN
- PROPOSED MANHOLE ●
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING MANHOLE ●

LINE E

STA. 1+00.00 TO STA. 4+80.00

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



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LANTANA SUBDIVISION UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE E

DATE	05/12/2025
PROJECT NO.	04037.003
DRAWN BY	CG/JG/LJ/TCD
CHECKED BY	XV/AL

REVISIONS

DATE

1. 2. 3. 4. 5. 6. 7. 8. 9.

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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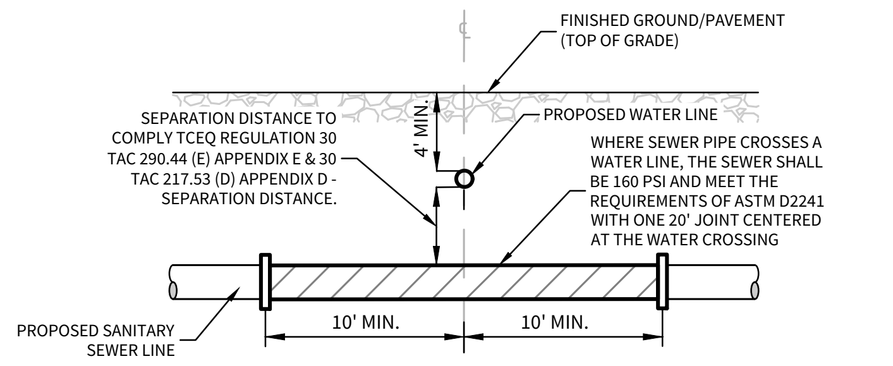
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PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

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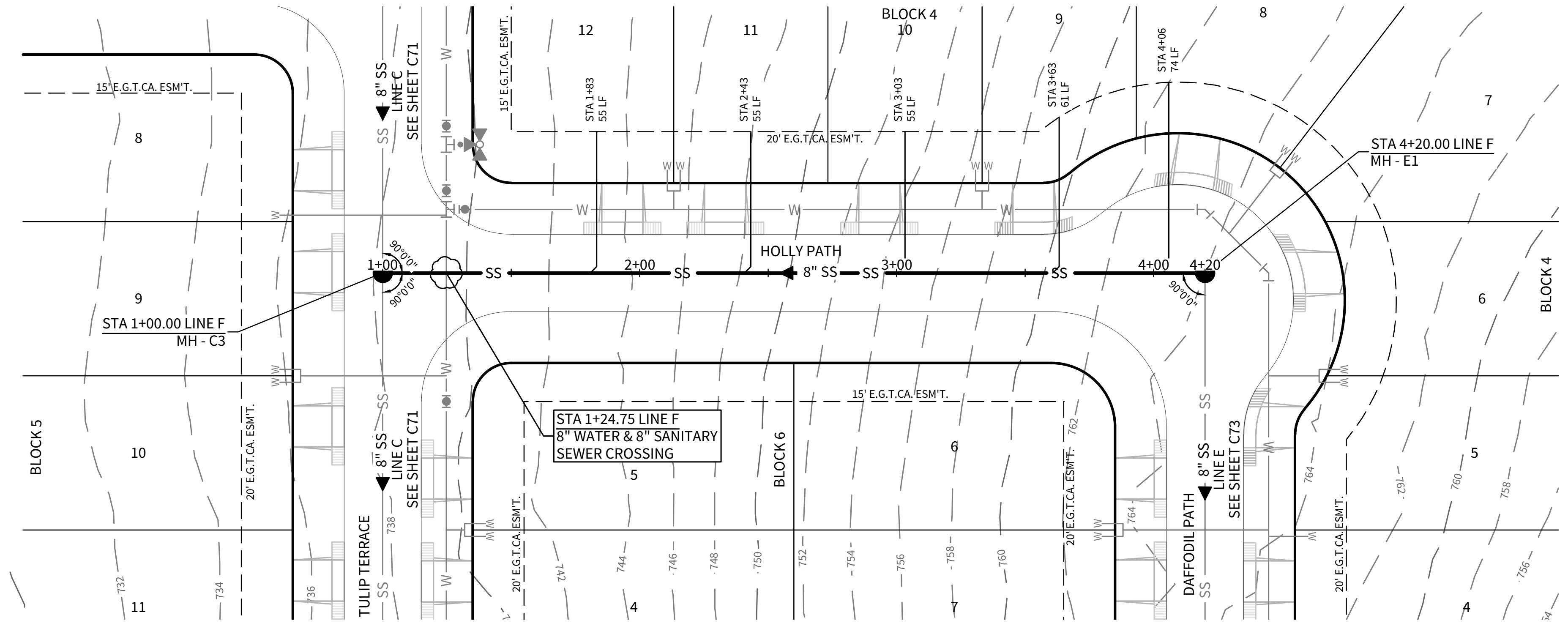
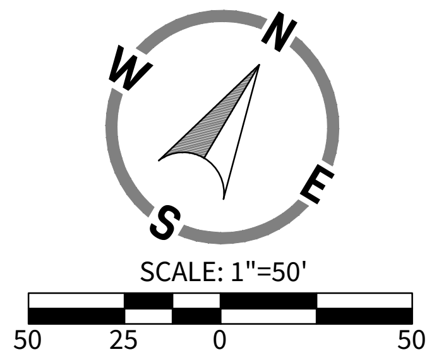




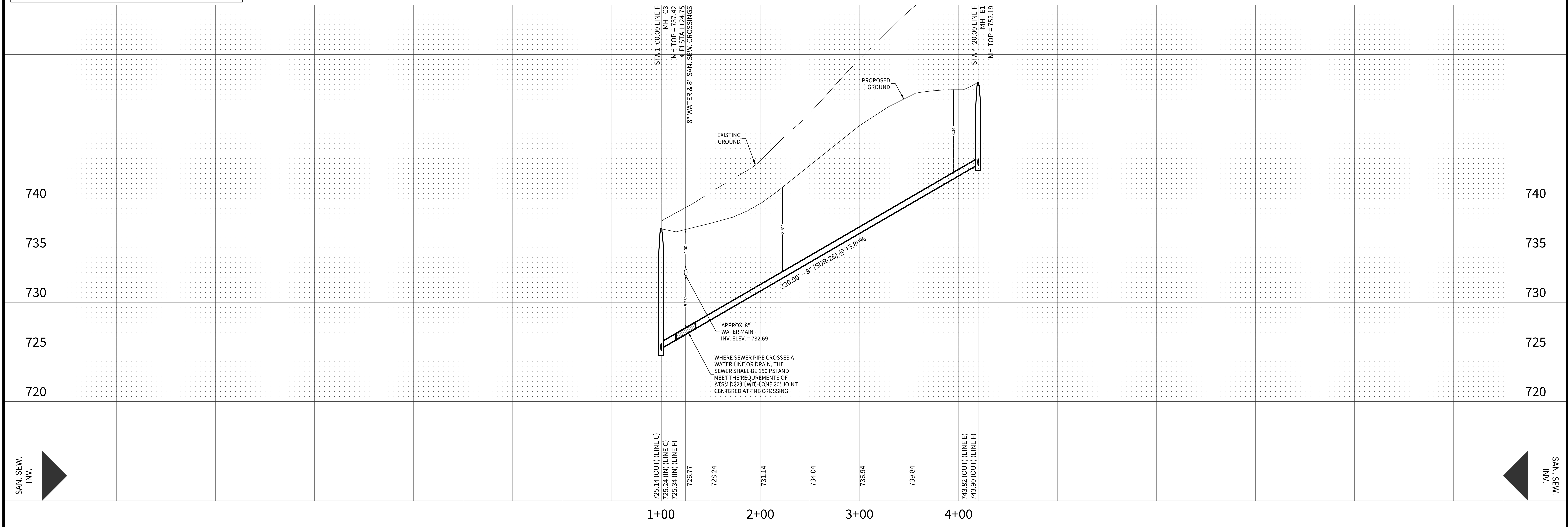
LEGEND

OVERALL UNIT BOUNDARY	━━ ━ ━ ━━
PROPOSED LOT LINE	────
PROPOSED RIGHT OF WAY	────
E.G.T.CA. EASEMENT	– – – – – – – –
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
PROPOSED WATER LINE	── W ──
PROPOSED SEWER MAIN	━━ SS ━━
PROPOSED MANHOLE	●
EXISTING WATER LINE	— — Wx — —
EXISTING SEWER LINE	— — — SSx —
EXISTING MANHOLE	●

LINE F

STA. 1+00.00 TO STA. 4+20.00

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



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LANTANA SUBDIVISION
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE F

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
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JAVIER CASTELLO
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5/12/2025

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TBPLS No. 10048500

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P:\04037\003\2-DWG\4-Plans\C74 SANITARY SEWER PLAN & PROFILE - LINE F.dwg 2025/05/12 1:56pm tduano

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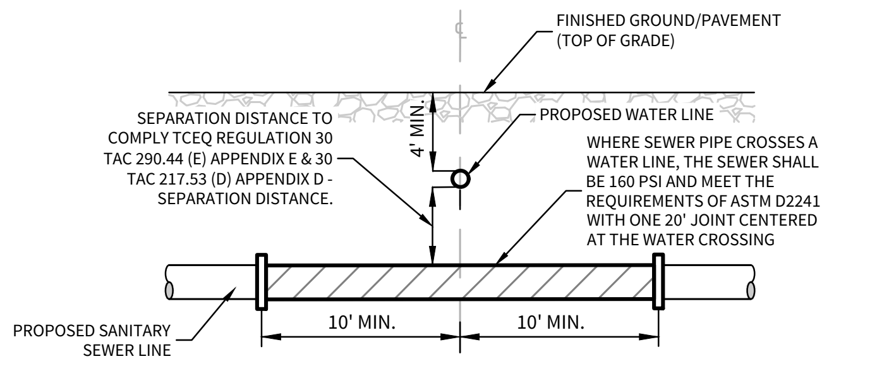

FINISHED GROUND/PAVEMENT (TOP OF GRADE)
PROPOSED WATER LINE
4' MIN.
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

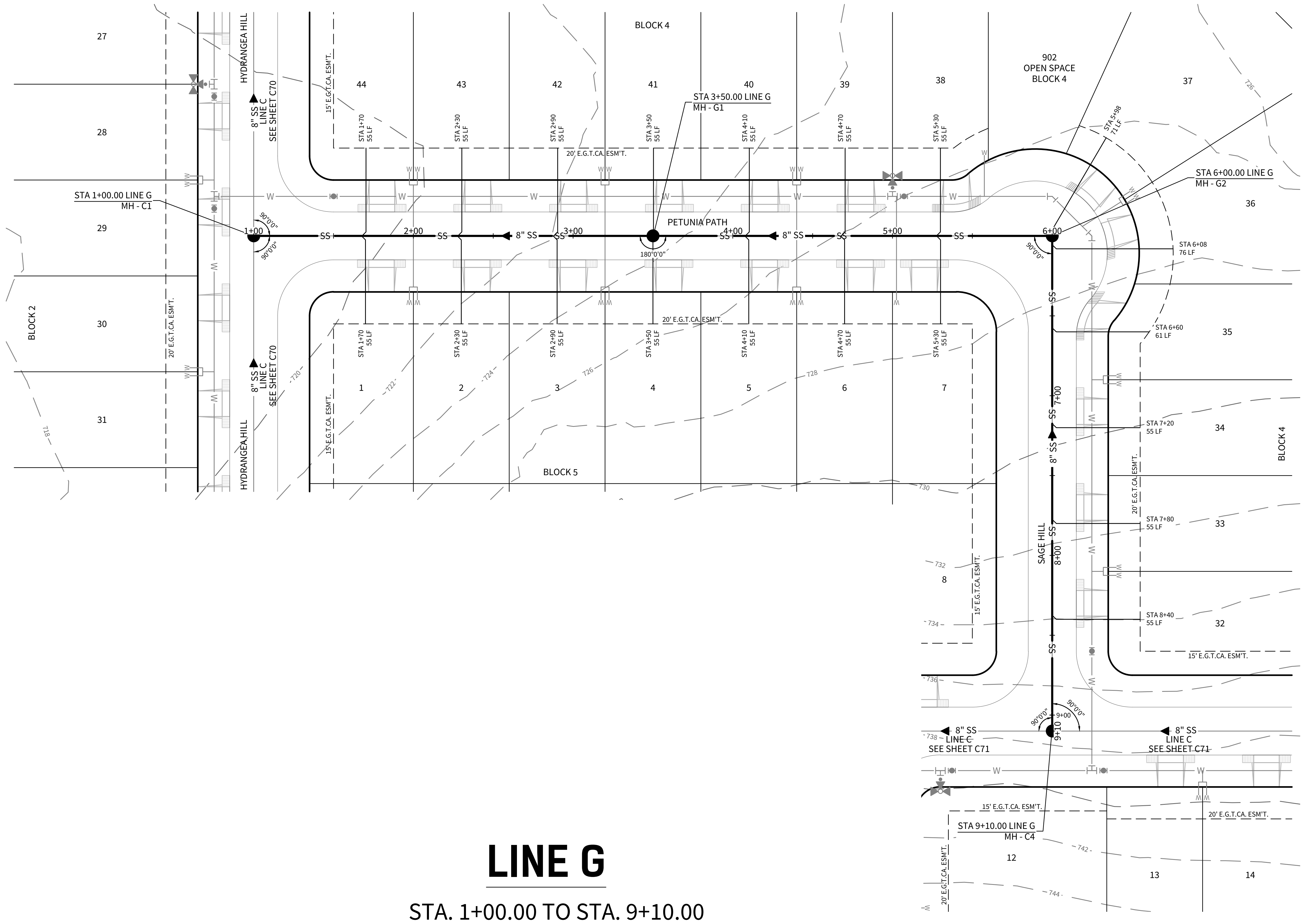
1. CONTRACTOR TO INSTALL WATERTIGHT MANHOLES WITH 30" OPENING AND INTERIOR WALL COATED WITH A GVSUD APPROVED SEWER STRUCTURE FOR ALL MANHOLES WITHIN THIS DEVELOPMENT.
2. ALL SEWER LATERALS AND PROPERTY LINE CLEANOUTS ARE TO BE LOCATED OUTSIDE OF DRIVEWAY PAVED AREAS.

CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. CONTRACTOR WILL NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS PRIOR TO EXCAVATION.

CITY OF MARION	(830) 914-2391
GVSUD	(830) 914-2330
GVTC	(830) 885-4411
GVEC	1-800-401-8345
DIG TESS	1-800-344-8377
TEXAS STATE WIDE ONE CALL LOCATORS	1-800-545-6005 OR 811

TRENCH EXCAVATION PROTECTION

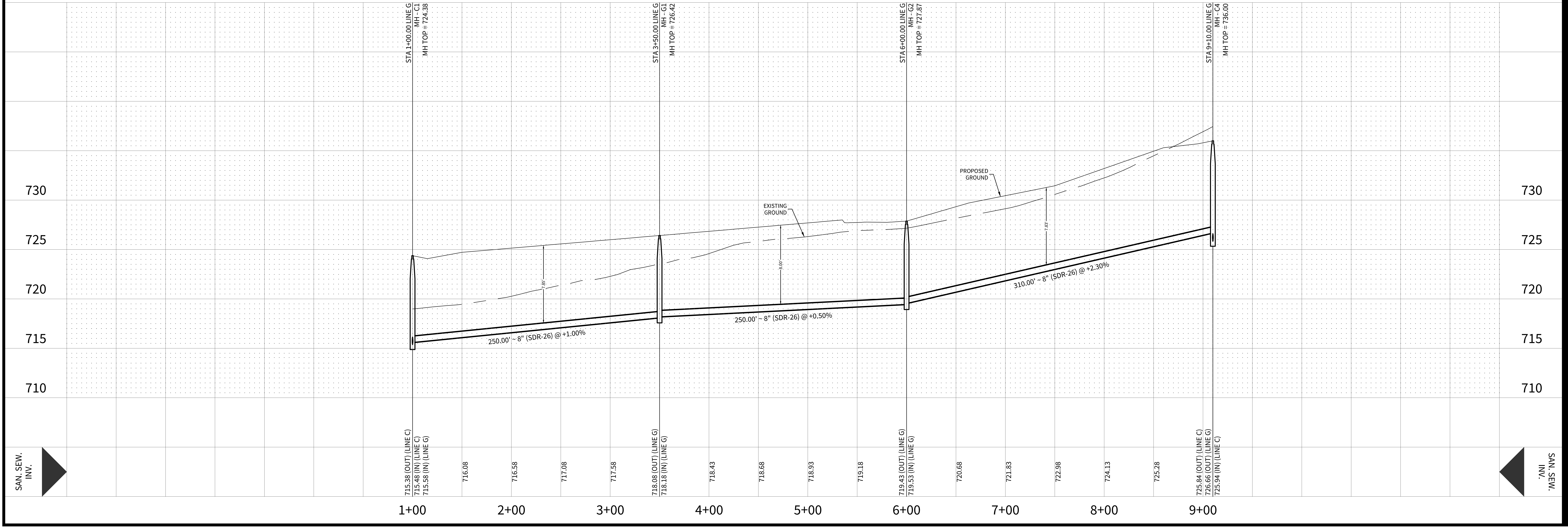
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S 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.



LINE G

STA. 1+00.00 TO STA. 9+10.00

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



SCALE: 1"=50'
50 25 0 50

LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.CA. EASEMENT	– – – –
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
PROPOSED WATER LINE	—— W ——
PROPOSED SEWER MAIN	—— SS ——
PROPOSED MANHOLE	●
EXISTING WATER LINE	— — Wx — —
EXISTING SEWER LINE	— — SSx — —
EXISTING MANHOLE	●

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LANTANA SUBDIVISION UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE G

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE

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JAVIER CASTELLO
122170

5/12/2025

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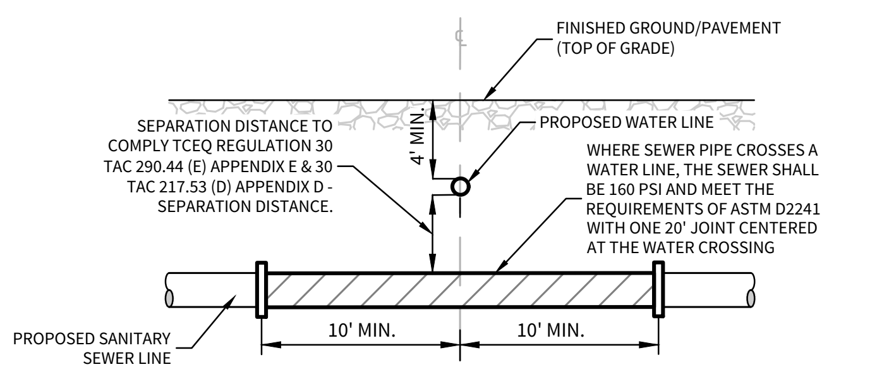
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10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

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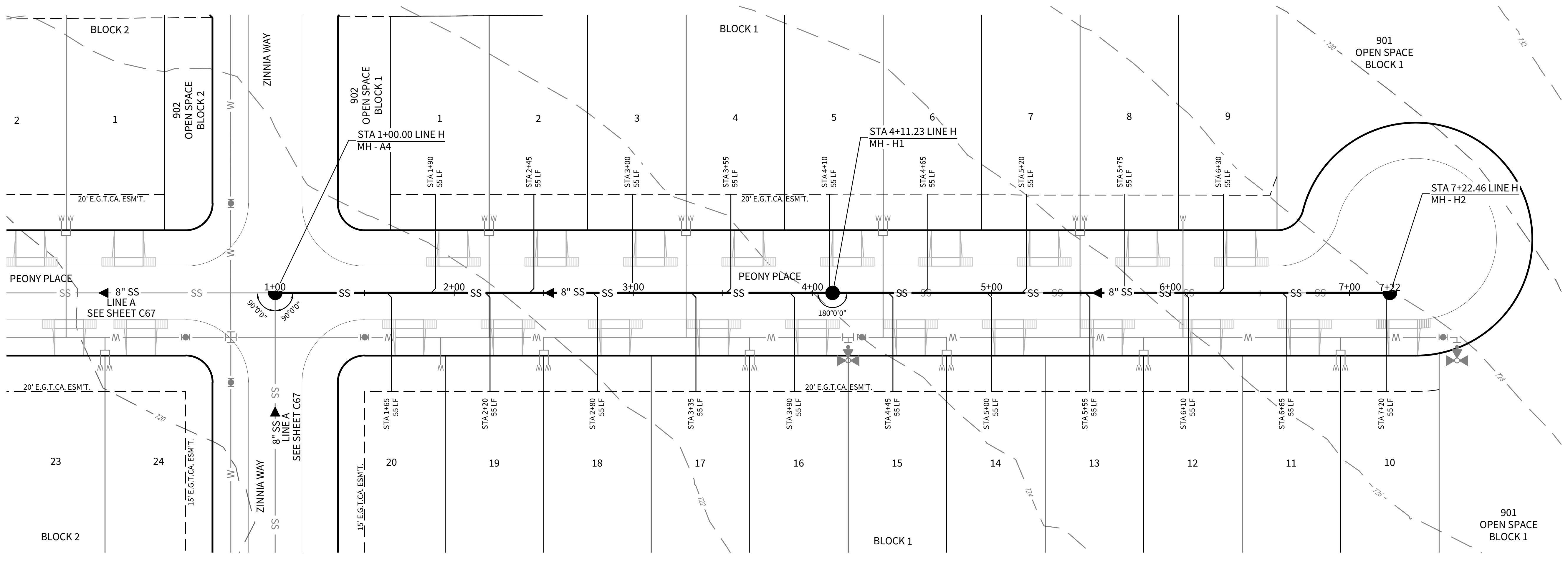
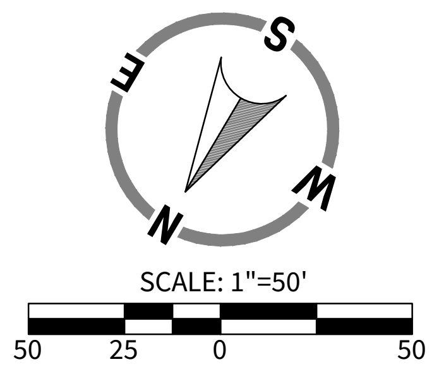




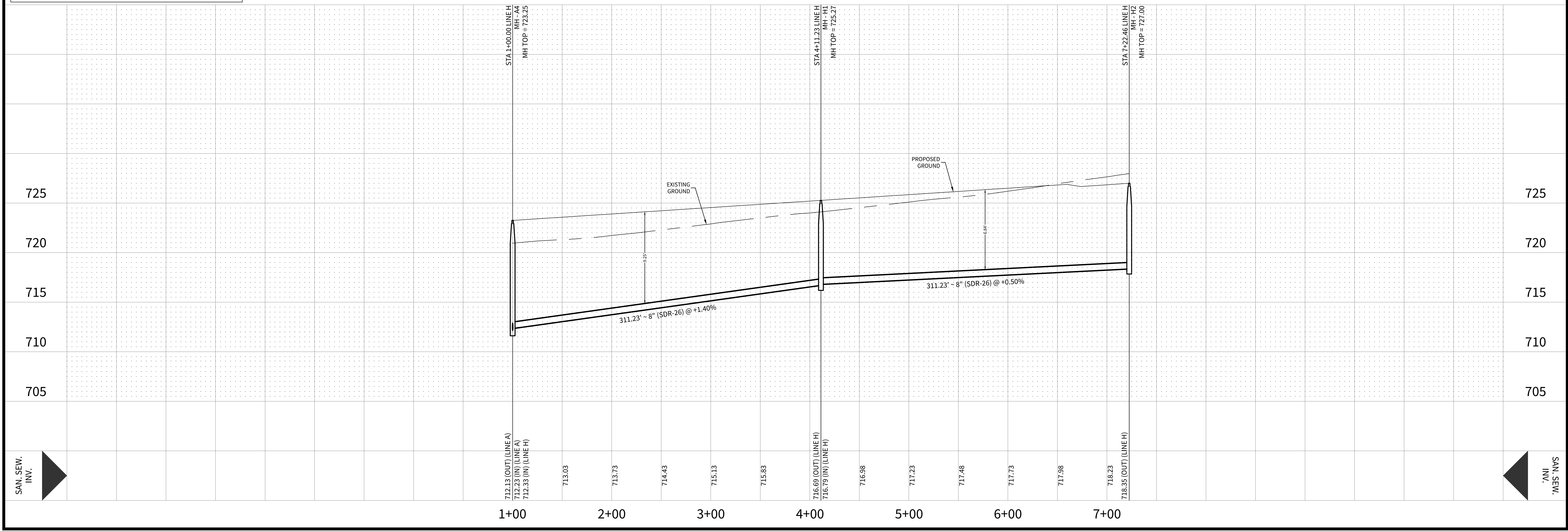
LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	- - - - - - - -
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
PROPOSED WATER LINE	—— W ——
PROPOSED SEWER MAIN	—— SS ——
PROPOSED MANHOLE	●
EXISTING WATER LINE	—— Wx ——
EXISTING SEWER LINE	—— SSx ——
EXISTING MANHOLE	●

LINE H

STA. 1+00.00 TO STA. 7+22.46

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



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LANTANA SUBDIVISION
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE H

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

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JAVIER CASTELLO
122170
5/12/2025

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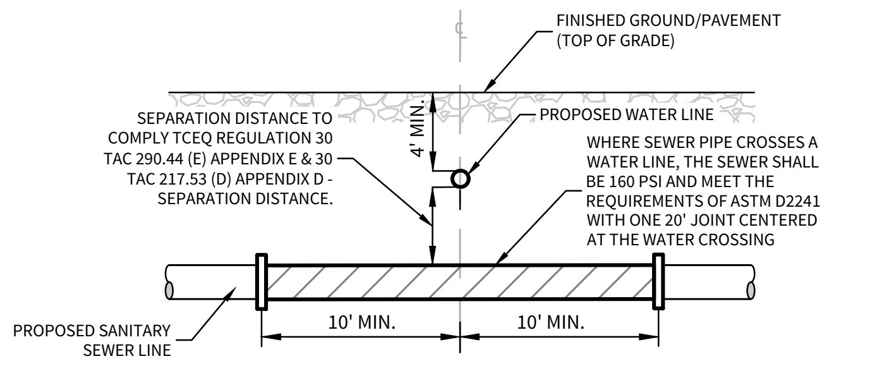
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4' MIN.
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PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

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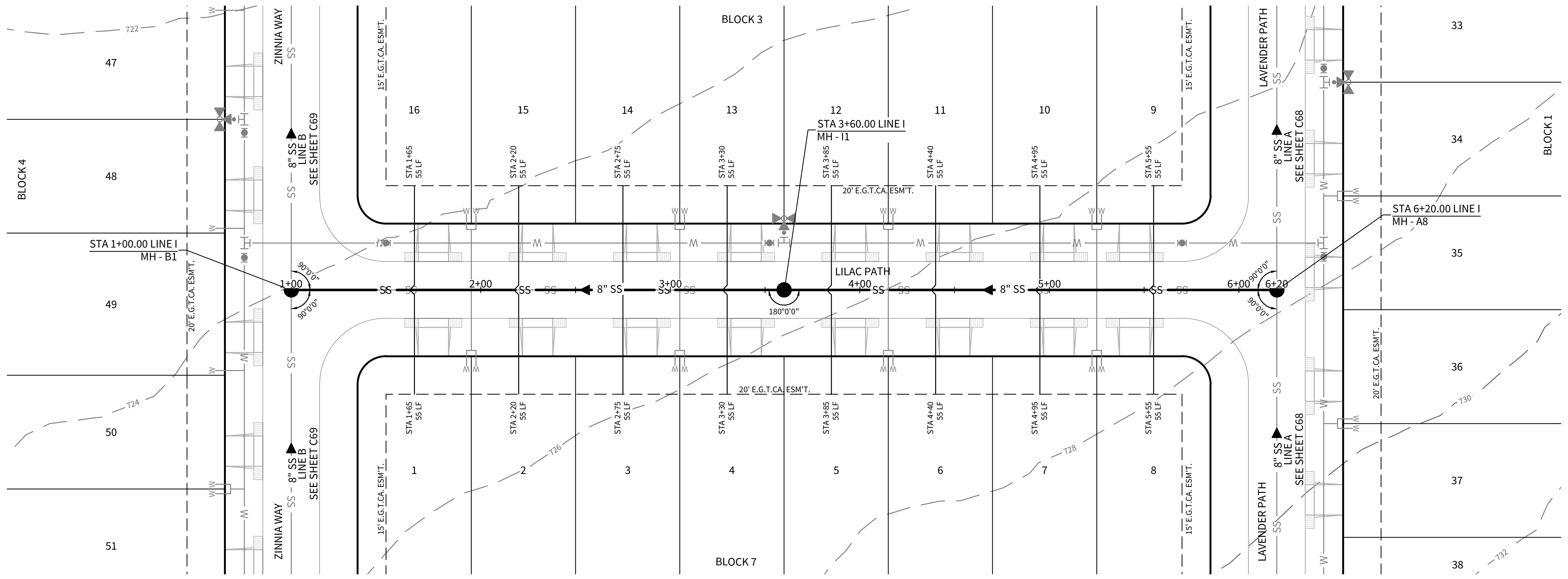


SCALE: 1"=50'

50 25 0 50

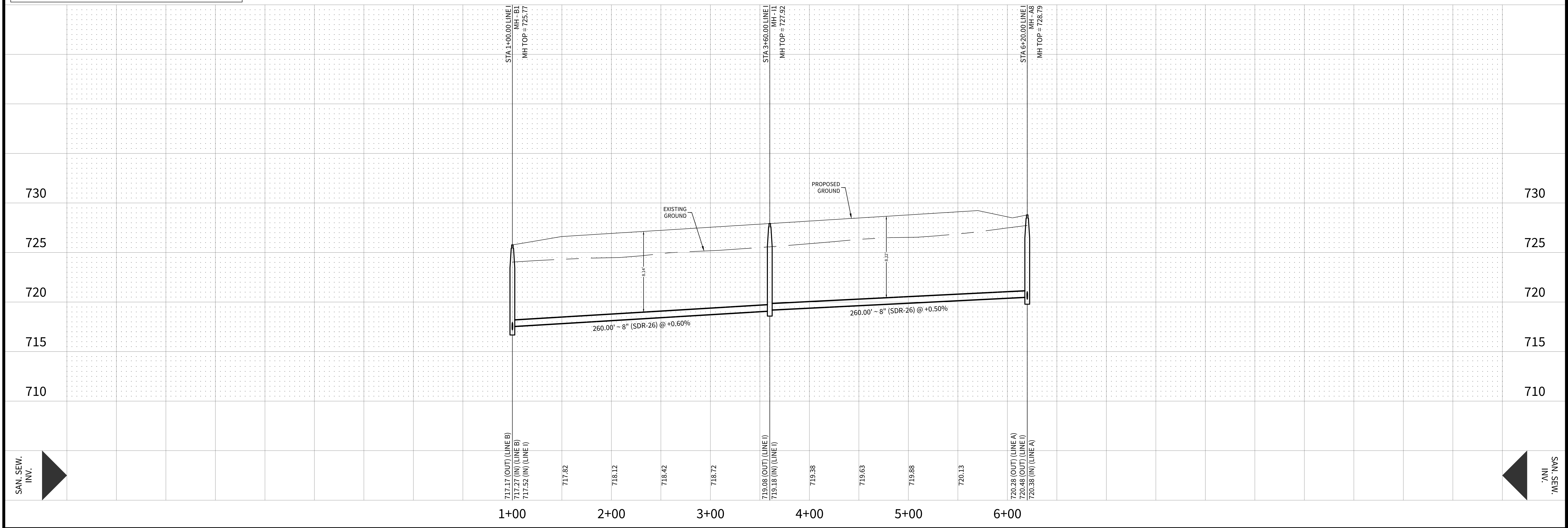
LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.CA. EASEMENT	– – – – – –
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
PROPOSED WATER LINE	—— W ——
PROPOSED SEWER MAIN	—— SS ——
PROPOSED MANHOLE	●
EXISTING WATER LINE	—— Wx ——
EXISTING SEWER LINE	—— SSx ——
EXISTING MANHOLE	●

LINE I

STA. 1+00.00 TO STA. 6+20.00

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



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LANTANA SUBDIVISION
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE I

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025

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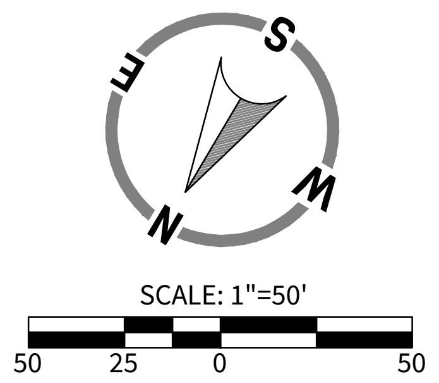
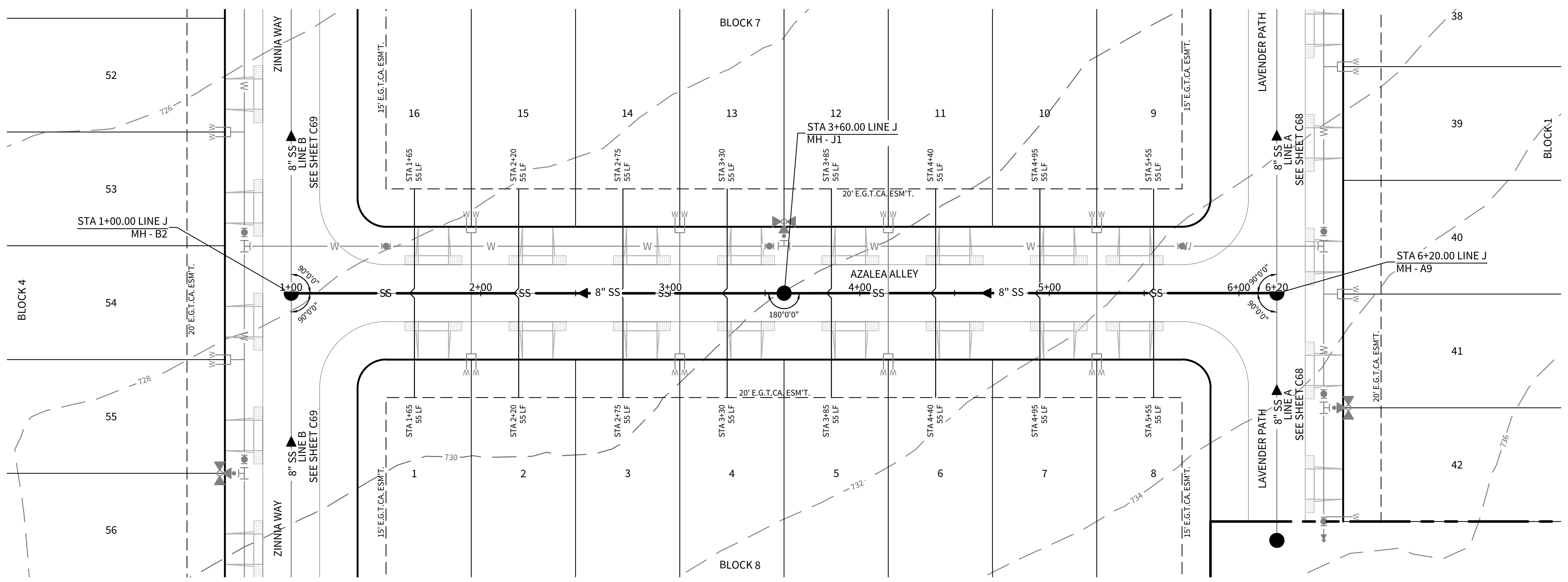
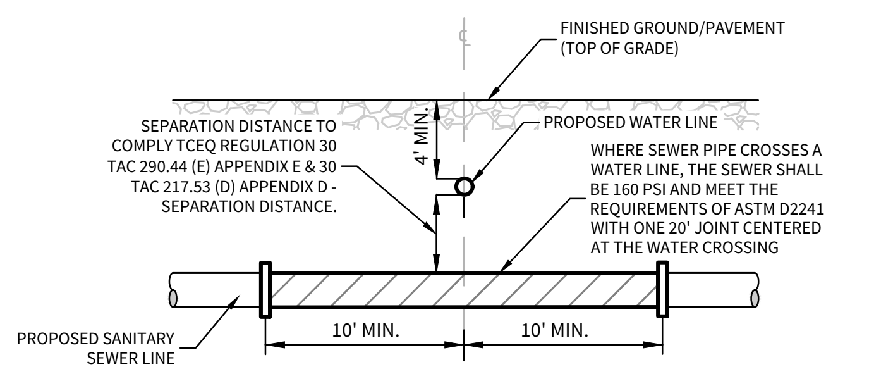


LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.C.A. EASEMENT
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED WATER LINE
- PROPOSED SEWER MAIN
- PROPOSED MANHOLE ●
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING MANHOLE ●

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10' MIN.
10' MIN.

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LINE J

STA. 1+00.00 TO STA. 6+20.00

HORIZONTAL SCALE: 1" = 50'
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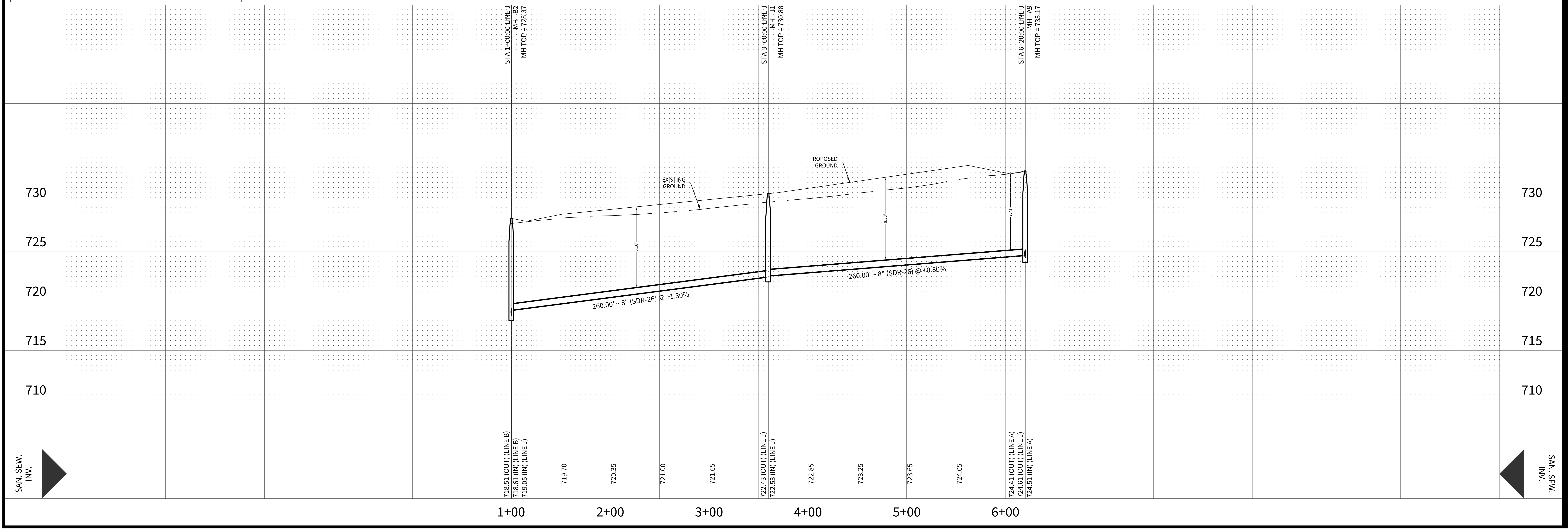

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LANTANA SUBDIVISION UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE J

DATE
05/12/2025

PROJECT NO.
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JAVIER CASTELLO
122170
J. Castello 5/12/2025

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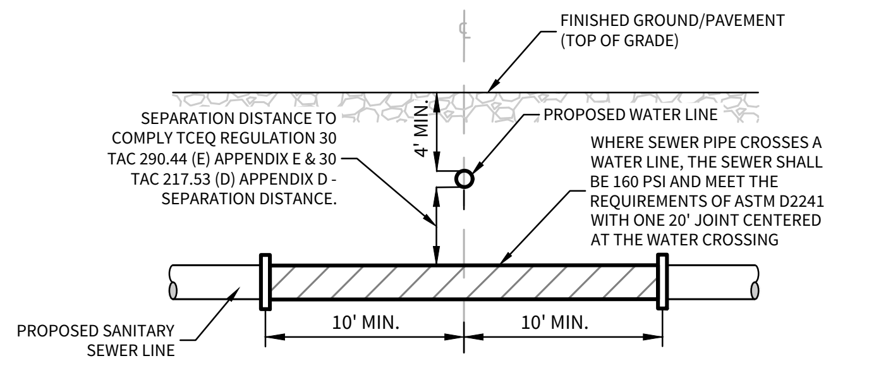
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PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

1. CONTRACTOR TO INSTALL WATERTIGHT MANHOLES WITH 30" OPENING AND INTERIOR WALL COATED WITH A GVSUD APPROVED SEWER STRUCTURE FOR ALL MANHOLES WITHIN THIS DEVELOPMENT.
2. ALL SEWER LATERALS AND PROPERTY LINE CLEANOUTS ARE TO BE LOCATED OUTSIDE OF DRIVEWAY PAVED AREAS.

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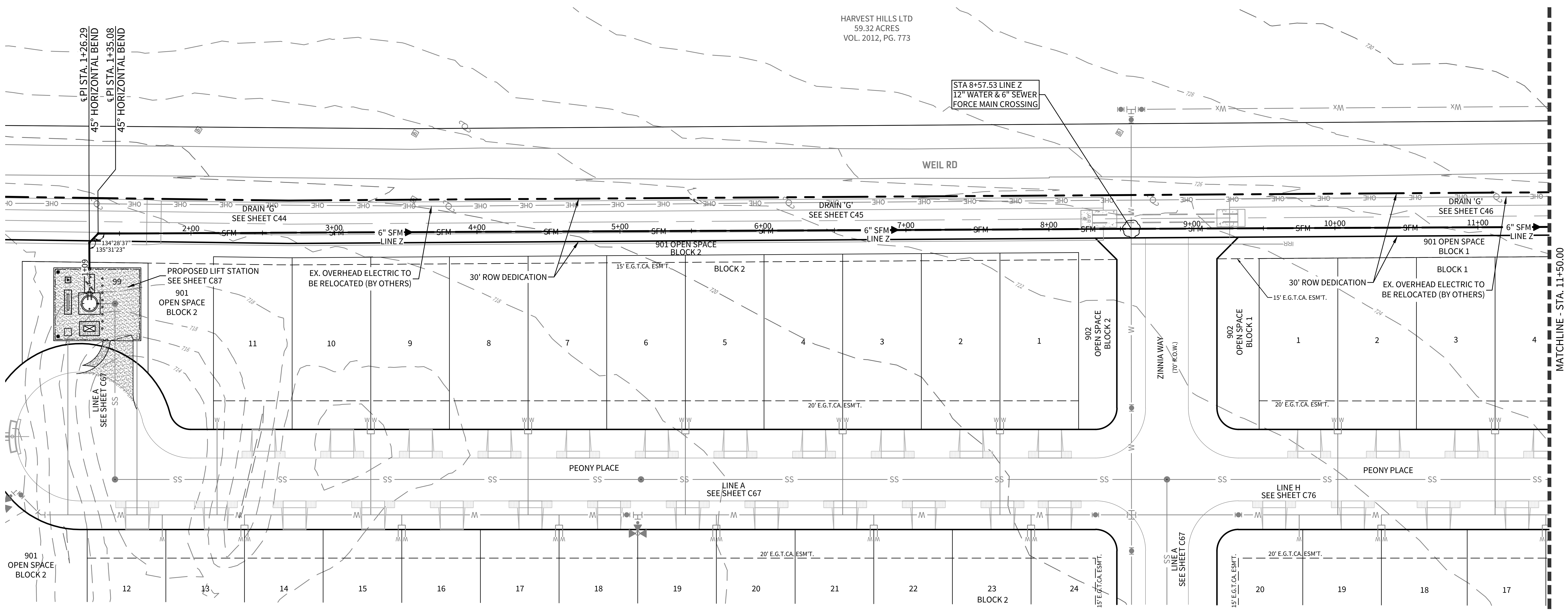
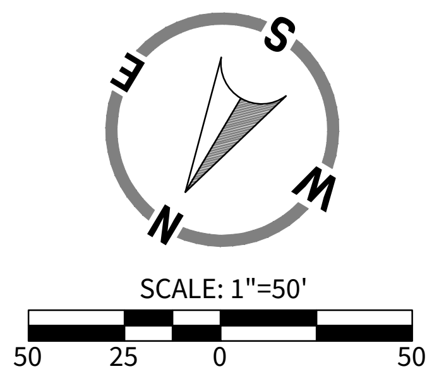
CITY OF MARION	(830) 914-2391
GVSUD	(830) 914-2330
GVTC	(830) 885-4411
GVEC	1-800-401-8345
DIG TESS	1-800-344-8377
TEXAS STATE WIDE ONE CALL LOCATORS	1-800-545-6005 OR 811

TRENCH EXCAVATION PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) 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.

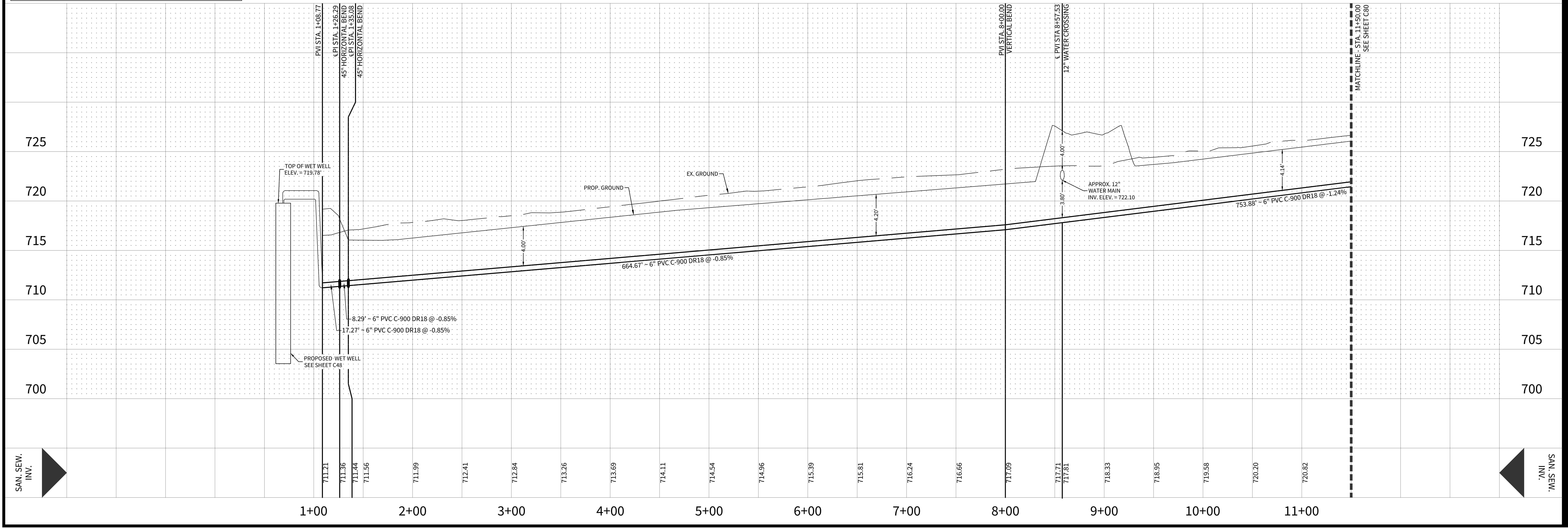




LINE Z - FORCE MAIN

STA. 1+08.77 TO STA. 11+50.00

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


PVI STA. 1+08.77
℄PI STA. 1+26.29 45° HORIZONTAL BEND
℄PI STA. 1+35.08 45° HORIZONTAL BEND
PVI STA. 8+00.00 VERTICAL BEND
℄ PVI STA 8+57.53 12" WATER CROSSING
MATCHLINE - STA. 11+50.00 SEE SHEET C80
TOP OF WET WELL ELEV. = 719.78'
PROP. GROUND
EX. GROUND
4.00'
4.20'
4.00'
3.80'
4.14'
APPROX. 12" WATER MAIN INV. ELEV. = 722.10
664.67' ~ 6" PVC C-900 DR18 @ -0.85%
753.88' ~ 6" PVC C-900 DR18 @ -1.24%
8.29' ~ 6" PVC C-900 DR18 @ -0.85%
17.27' ~ 6" PVC C-900 DR18 @ -0.85%
PROPOSED WET WELL SEE SHEET C48
725
720
715
710
705
700
SAN. SEW. INV.
711.21
711.36
711.44
711.56
711.99
712.41
712.84
713.26
713.69
714.11
714.54
714.96
715.39
715.81
716.24
716.66
717.09
717.71
717.81
718.33
718.95
719.58
720.20
720.82
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00
11+00

LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- EX. OFF SITE RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING 2' CONTOUR — 499 —
- EXISTING 10' CONTOUR — 500 —
- PROPOSED WATER LINE — W —
- PROPOSED SEWER MAIN — SS —
- PROPOSED FORCE MAIN — SFM —
- PROPOSED MANHOLE ●
- EXISTING WATER LINE — Wx —
- EXISTING SEWER LINE — SSx —
- EXISTING MANHOLE ●

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P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE Z

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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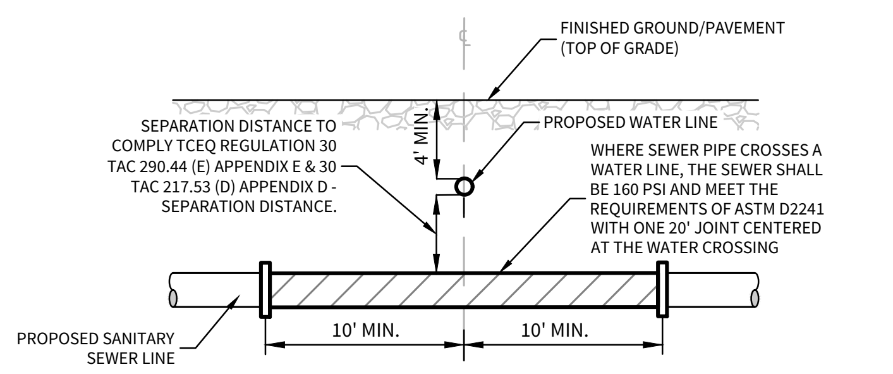
FINISHED GROUND/PAVEMENT (TOP OF GRADE)
PROPOSED WATER LINE
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
4' MIN.
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

1. CONTRACTOR TO INSTALL WATERTIGHT MANHOLES WITH 30" OPENING AND INTERIOR WALL COATED WITH A GVSUD APPROVED SEWER STRUCTURE FOR ALL MANHOLES WITHIN THIS DEVELOPMENT.
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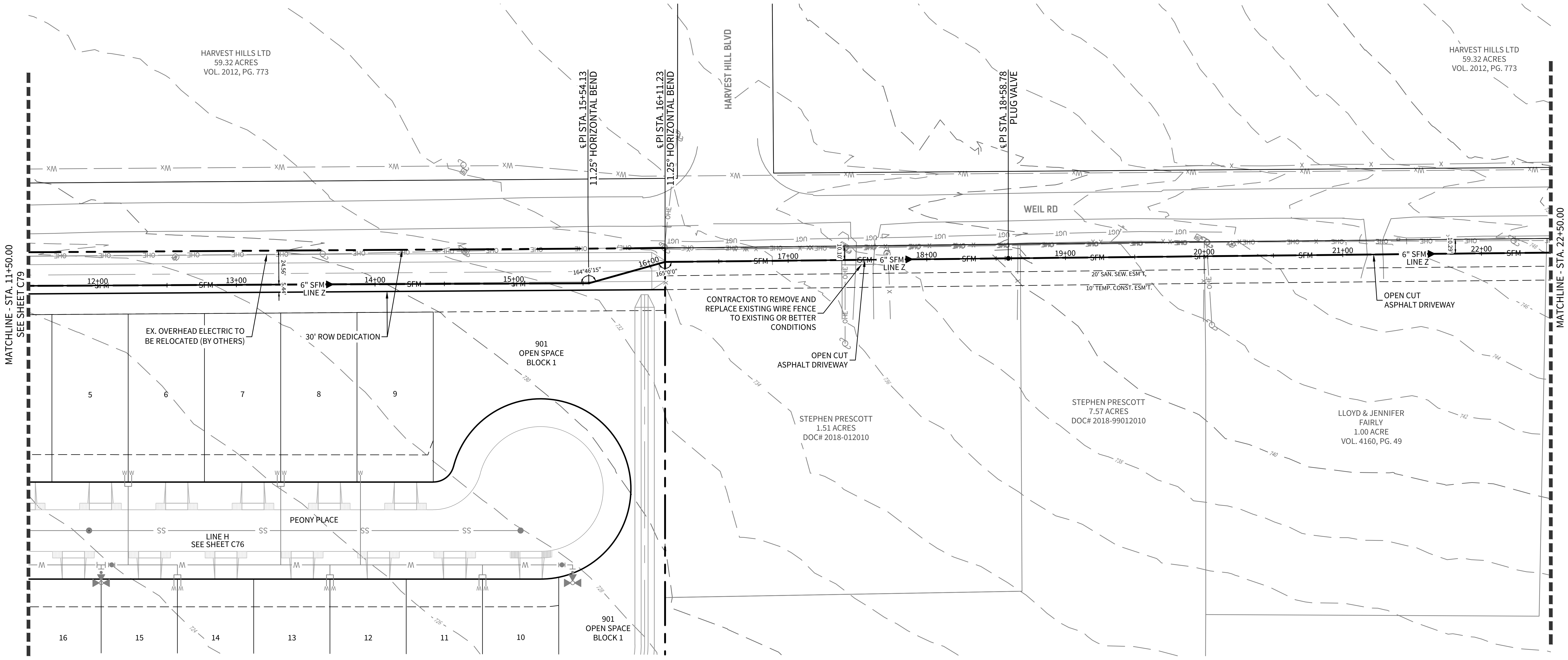
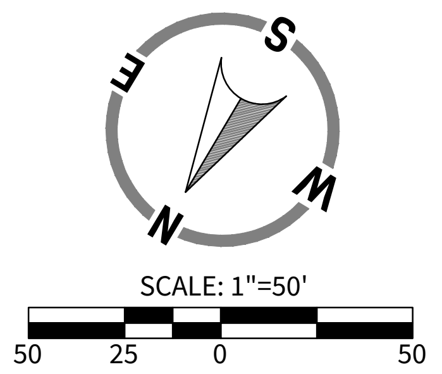




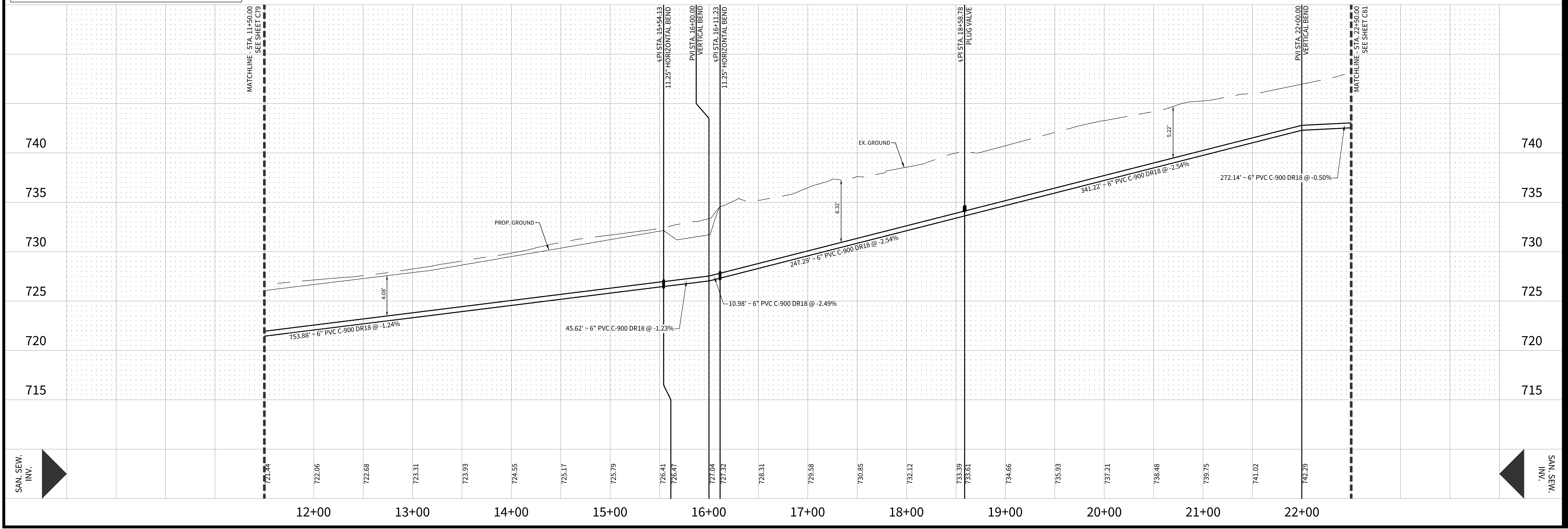
LEGEND

OVERALL UNIT BOUNDARY	— — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
EX. OFF SITE RIGHT OF WAY	——
E.G.T.C.A. EASEMENT	– – –
EXISTING 2' CONTOUR	— 499 —
EXISTING 10' CONTOUR	— 500 —
PROPOSED WATER LINE	— W —
PROPOSED SEWER MAIN	— SS —
PROPOSED FORCE MAIN	— SFM —
PROPOSED MANHOLE	●
EXISTING WATER LINE	— Wx —
EXISTING SEWER LINE	— SSx —
EXISTING MANHOLE	●

LINE Z - FORCE MAIN

STA. 11+50.00 TO STA. 22+50.00

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



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LANTANA SUBDIVISION UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE Z

DATE	05/12/2025
PROJECT NO.	04037.003
DRAWN BY	CG/JG/LJ/TCD
CHECKED BY	XV/AL

REVISIONS	DATE
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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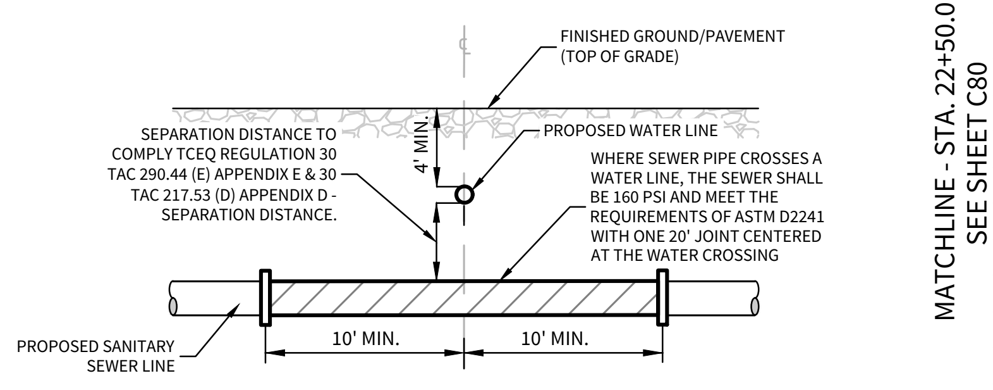
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PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

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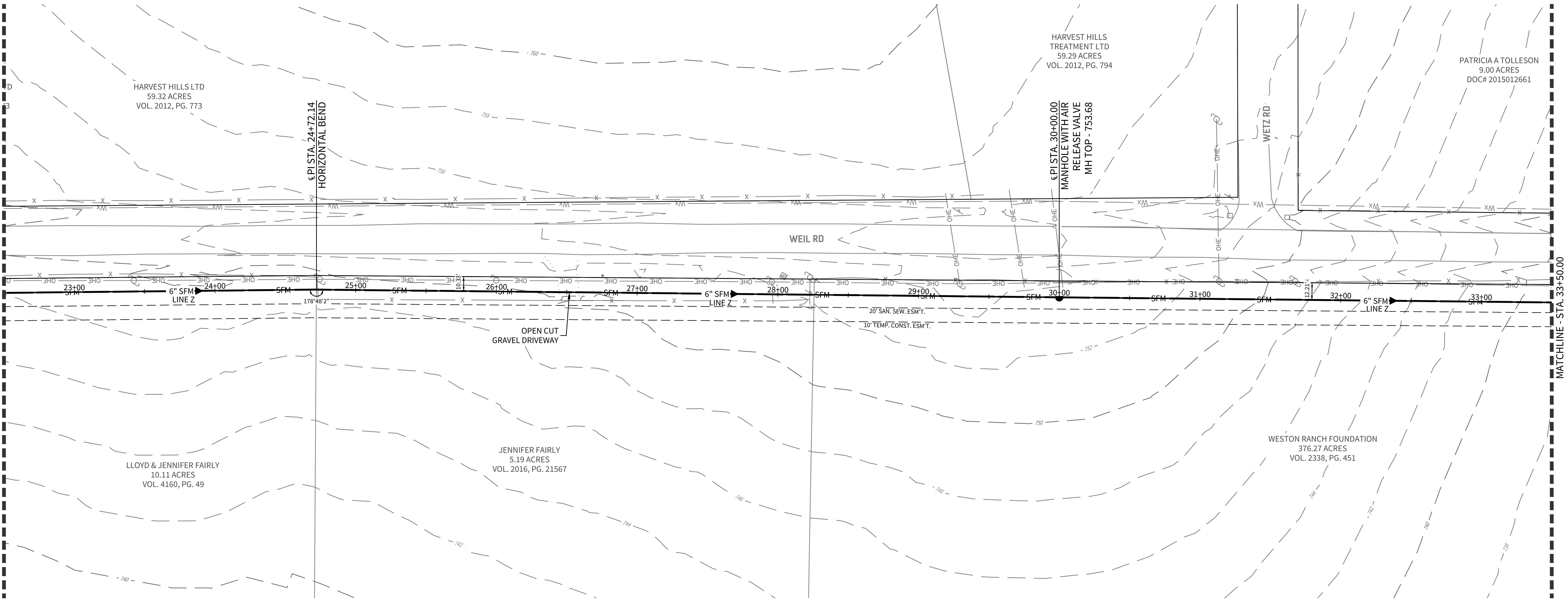
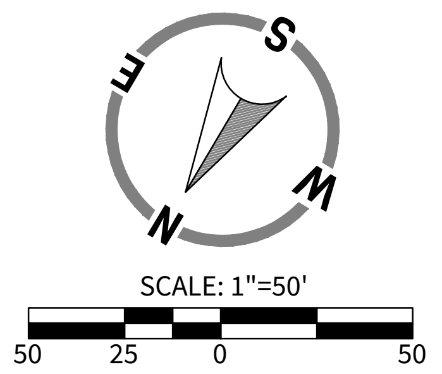




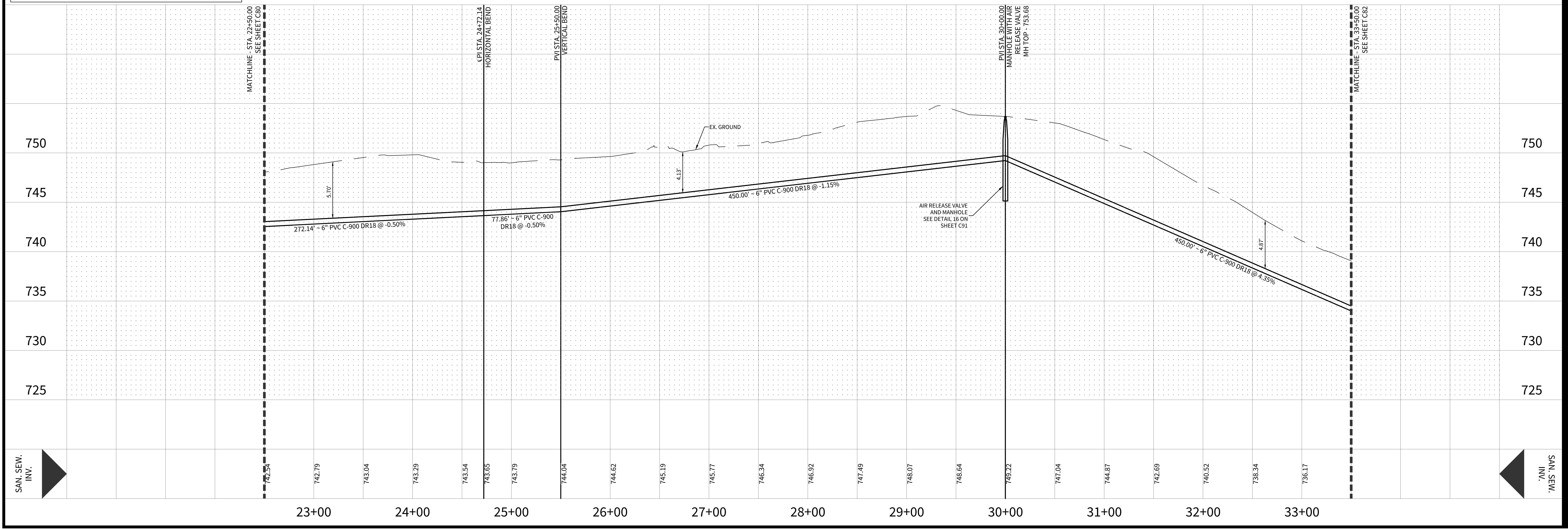
LEGEND

OVERALL UNIT BOUNDARY	— — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
EX. OFF SITE RIGHT OF WAY	———
E.G.T.CA. EASEMENT	— — — —
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
PROPOSED WATER LINE	—— W ——
PROPOSED SEWER MAIN	—— SS ——
PROPOSED FORCE MAIN	— — SFM —
PROPOSED MANHOLE	●
EXISTING WATER LINE	— — Wx — —
EXISTING SEWER LINE	— — SSx —
EXISTING MANHOLE	●

LINE Z - FORCE MAIN

STA. 22+50.00 TO STA. 33+50.00

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



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LANTANA SUBDIVISION
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE Z

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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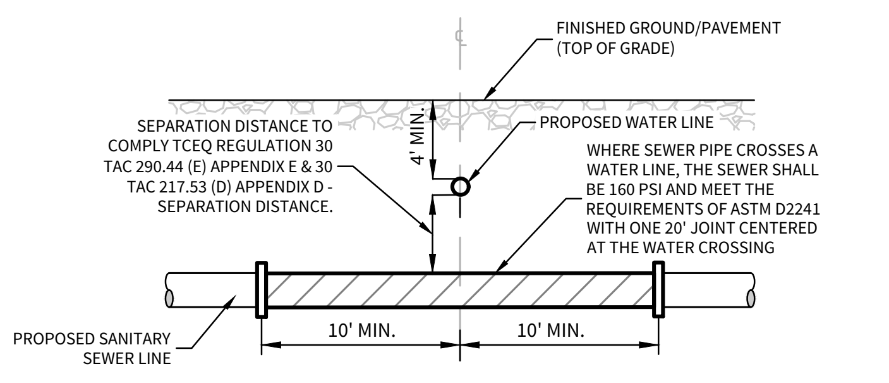
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SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
4' MIN.
PROPOSED WATER LINE
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

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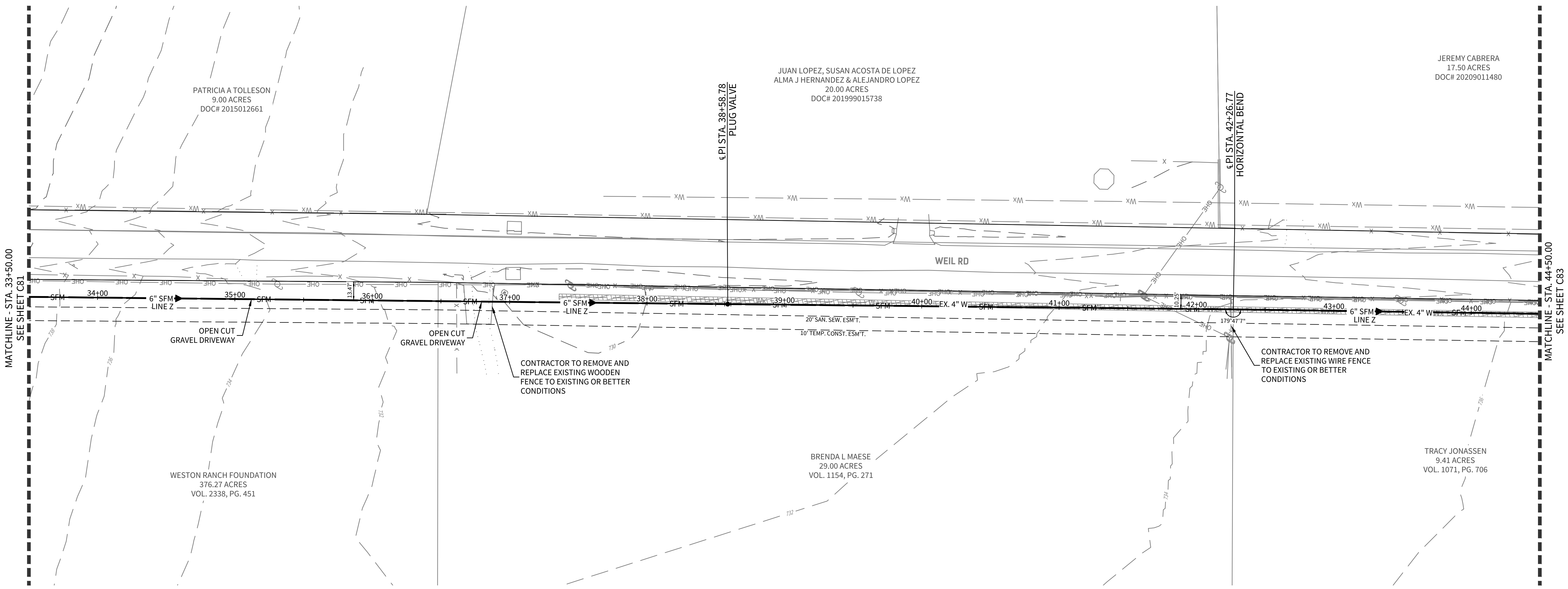


SCALE: 1"=50'

50 25 0 50

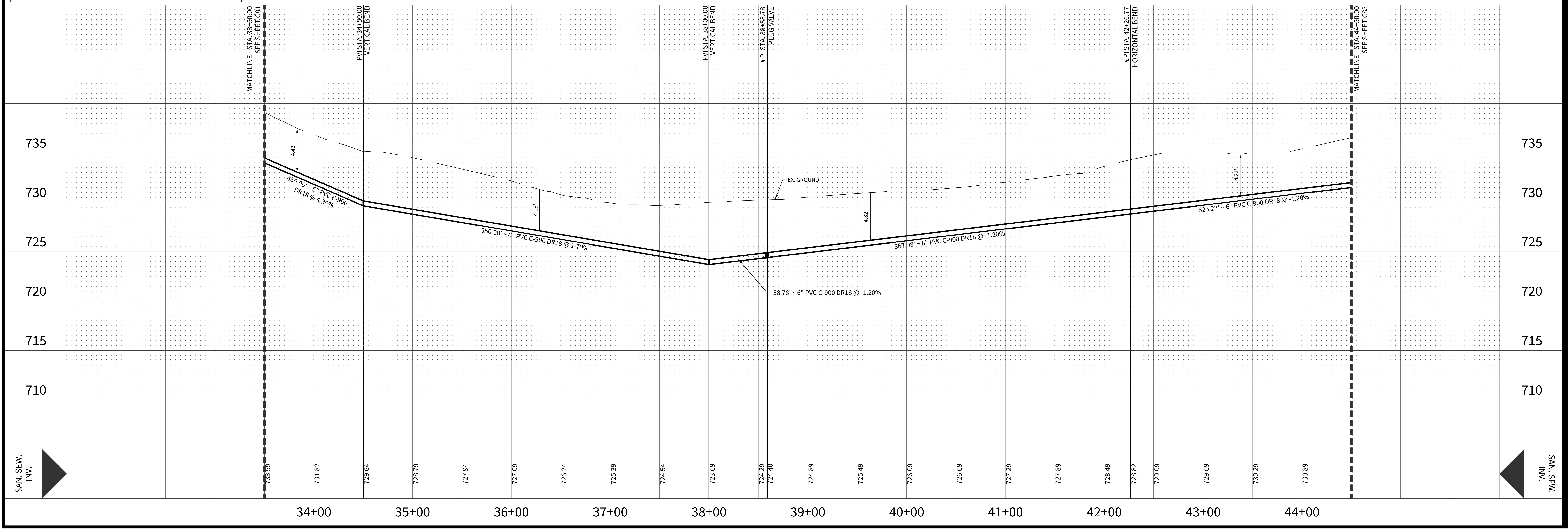
LEGEND

OVERALL UNIT BOUNDARY	▬ ‒ ‒ ▬
PROPOSED LOT LINE	───
PROPOSED RIGHT OF WAY	━━━
EX. OFF SITE RIGHT OF WAY	───
E.G.T.CA. EASEMENT	‒ ‒ ‒ ‒
EXISTING 2' CONTOUR	‒ ‒ 499 ‒ ‒
EXISTING 10' CONTOUR	‒ ‒ 500 ‒ ‒
PROPOSED WATER LINE	── W ──
PROPOSED SEWER MAIN	━━ SS ━━
PROPOSED FORCE MAIN	━ ━ SFM ━
PROPOSED MANHOLE	●
EXISTING WATER LINE	‒ ‒ Wx ‒ ‒
EXISTING SEWER LINE	‒ ‒ SSx ‒
EXISTING MANHOLE	●
ABANDON AND REMOVE EXISTING WATER LINE	▨ Wx ▨

LINE Z – FORCE MAIN

STA. 33+50.00 TO STA. 44+50.00

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



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LANTANA SUBDIVISION
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE Z

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PROJECT NO.	04037.003
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JAVIER CASTELLO
122170
5/12/2025

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TBPE No. 455
TBPLS No. 10048500

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P:\04037\003\2-DWG\4-Plans\C82 SANITARY SEWER PLAN & PROFILE - LINE Z.dwg 2025/05/12 1:59pm tduano

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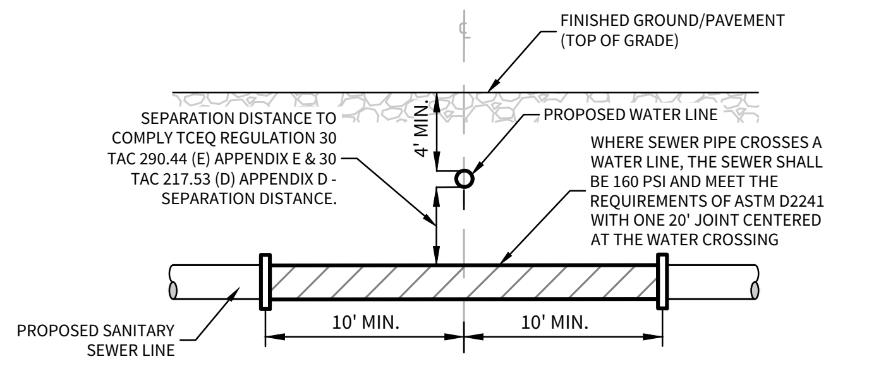

FINISHED GROUND/PAVEMENT (TOP OF GRADE)
℄
4' MIN.
PROPOSED WATER LINE
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

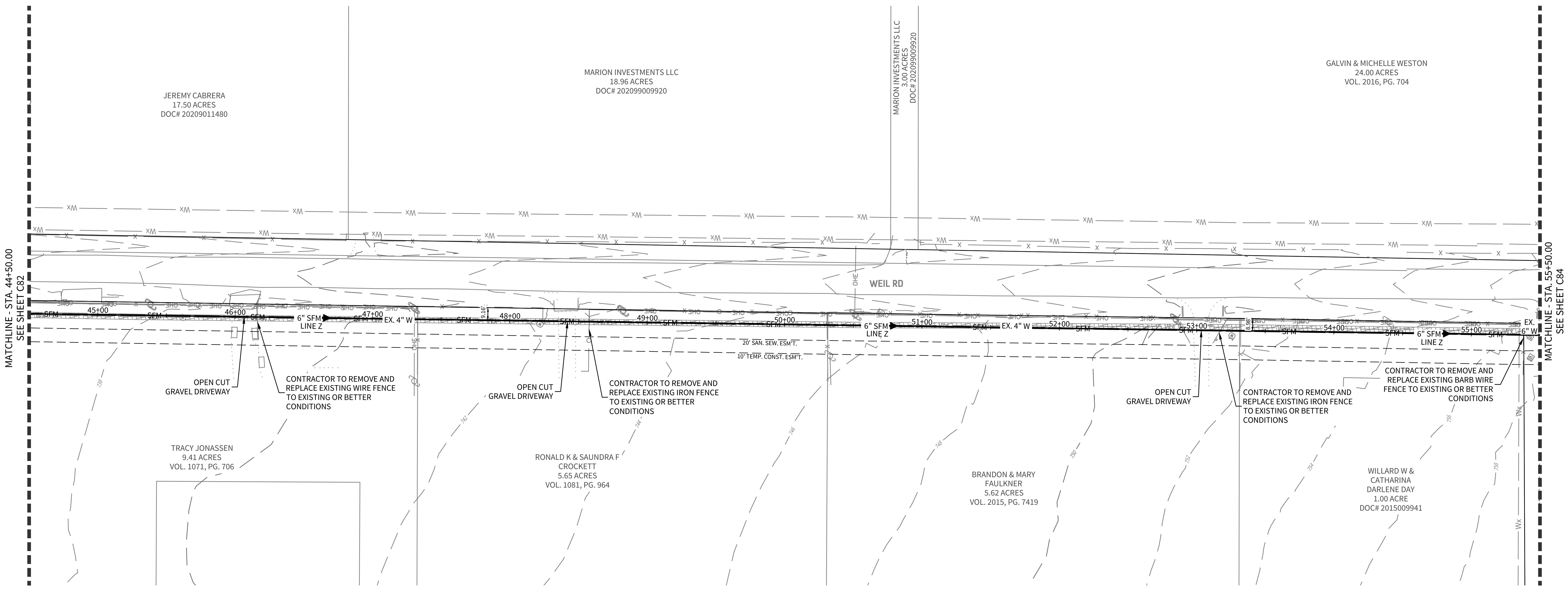
1. CONTRACTOR TO INSTALL WATERTIGHT MANHOLES WITH 30" OPENING AND INTERIOR WALL COATED WITH A GVSUD APPROVED SEWER STRUCTURE FOR ALL MANHOLES WITHIN THIS DEVELOPMENT.
2. ALL SEWER LATERALS AND PROPERTY LINE CLEANOUTS ARE TO BE LOCATED OUTSIDE OF DRIVEWAY PAVED AREAS.

CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. CONTRACTOR WILL NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS PRIOR TO EXCAVATION.

CITY OF MARION	(830) 914-2391
GVSUD	(830) 914-2330
GVTC	(830) 885-4411
GVEC	1-800-401-8345
DIG TESS	1-800-344-8377
TEXAS STATE WIDE ONE CALL LOCATORS	1-800-545-6005 OR 811

TRENCH EXCAVATION PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) 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.



SCALE: 1"=50'

50 25 0 50

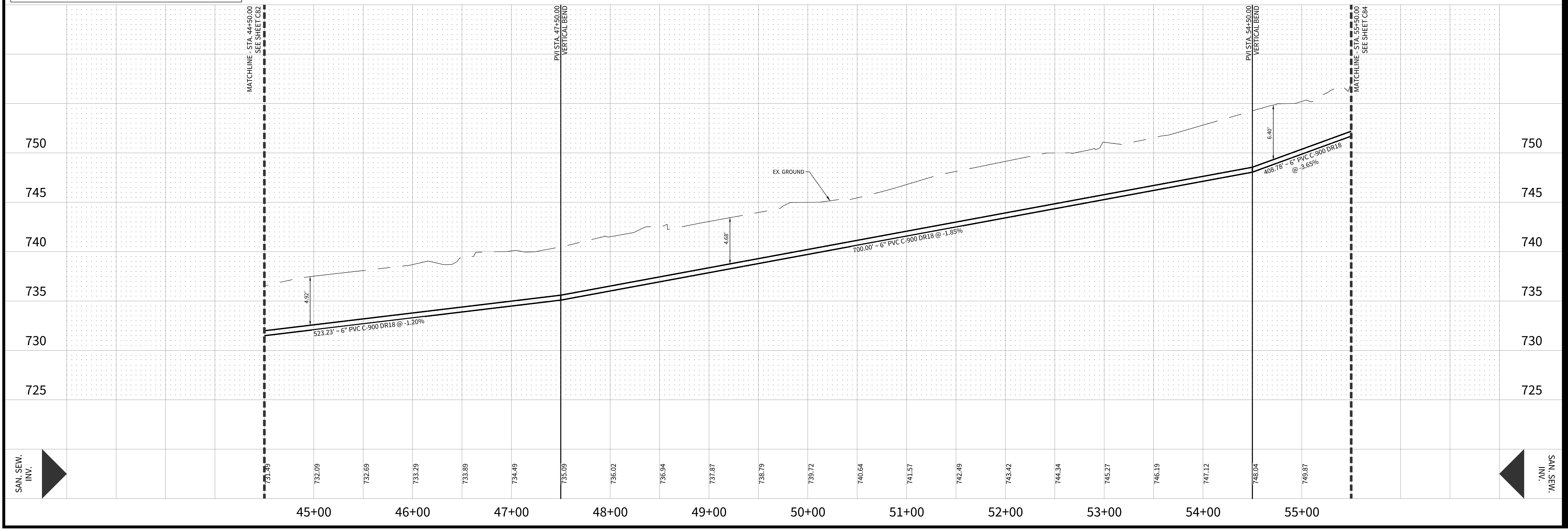
LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
EX. OFF SITE RIGHT OF WAY	———
E.G.T.CA. EASEMENT	— — — —
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
PROPOSED WATER LINE	—— W ——
PROPOSED SEWER MAIN	—— SS ——
PROPOSED FORCE MAIN	— — SFM —
PROPOSED MANHOLE	●
EXISTING WATER LINE	— — Wx — —
EXISTING SEWER LINE	— — SSx —
EXISTING MANHOLE	●
ABANDON AND REMOVE EXISTING WATER LINE	Wx

LINE Z - FORCE MAIN

STA. 44+50.00 TO STA. 55+50.00

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



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P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE Z

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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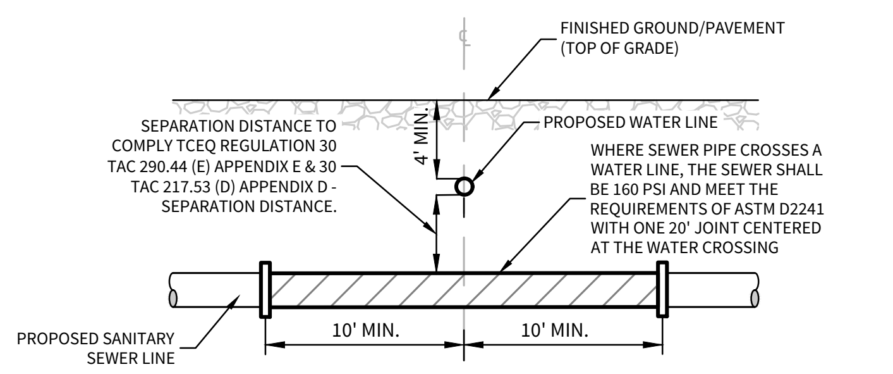
SANITARY SEWER PLAN & PROFILE - LINE Z.dwg 2025/05/12 2:00pm tduano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10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

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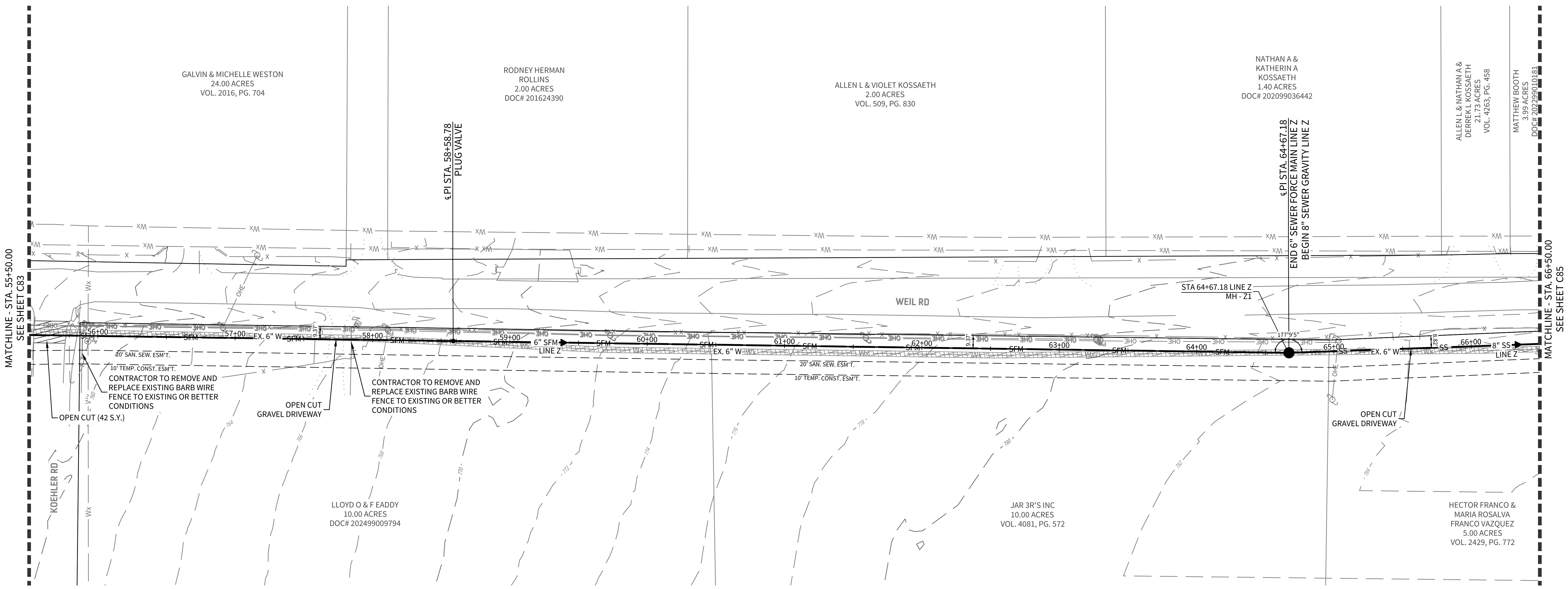
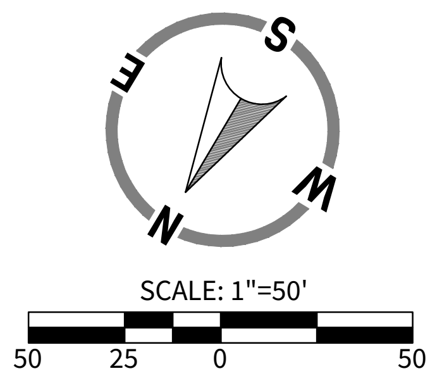




LEGEND

OVERALL UNIT BOUNDARY	▬ ▬ ▬ ▬
PROPOSED LOT LINE	───
PROPOSED RIGHT OF WAY	━━━
EX. OFF SITE RIGHT OF WAY	───
E.G.T.CA. EASEMENT	— — — —
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
PROPOSED WATER LINE	─── W ───
PROPOSED SEWER MAIN	━━━ SS ━━━
PROPOSED FORCE MAIN	━ ━ ━ SFM ━
PROPOSED MANHOLE	●
EXISTING WATER LINE	— — Wx — —
EXISTING SEWER LINE	— — — SSx —
EXISTING MANHOLE	●
ABANDON AND REMOVE EXISTING WATER LINE	▨ Wx ▨

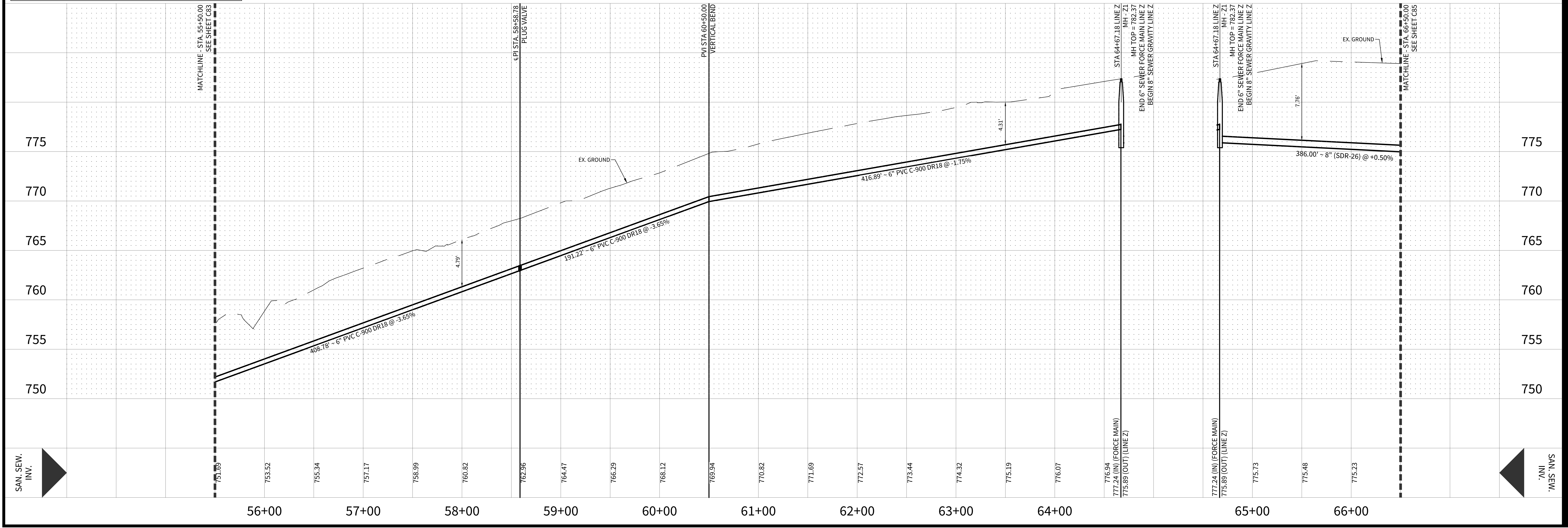
LINE Z - FORCE MAN

STA. 55+50.00 TO STA. 64+67.18

LINE Z - GRAVITY

STA. 64+67.18 TO STA. 66+50.00

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



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LANTANA SUBDIVISION
UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE Z

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

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JAVIER CASTELLO
122170
5/12/2025

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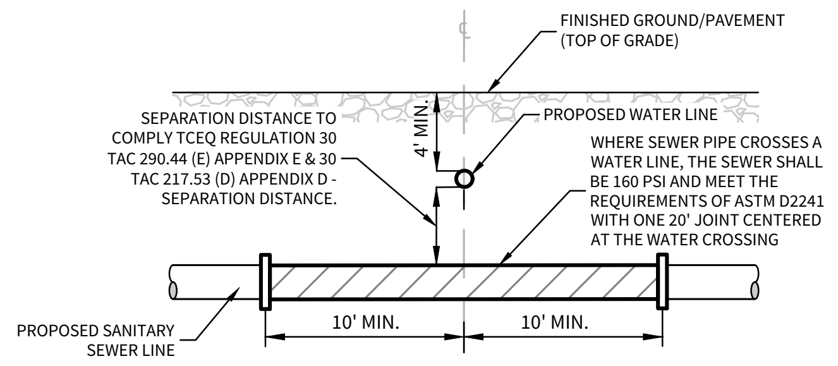
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10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

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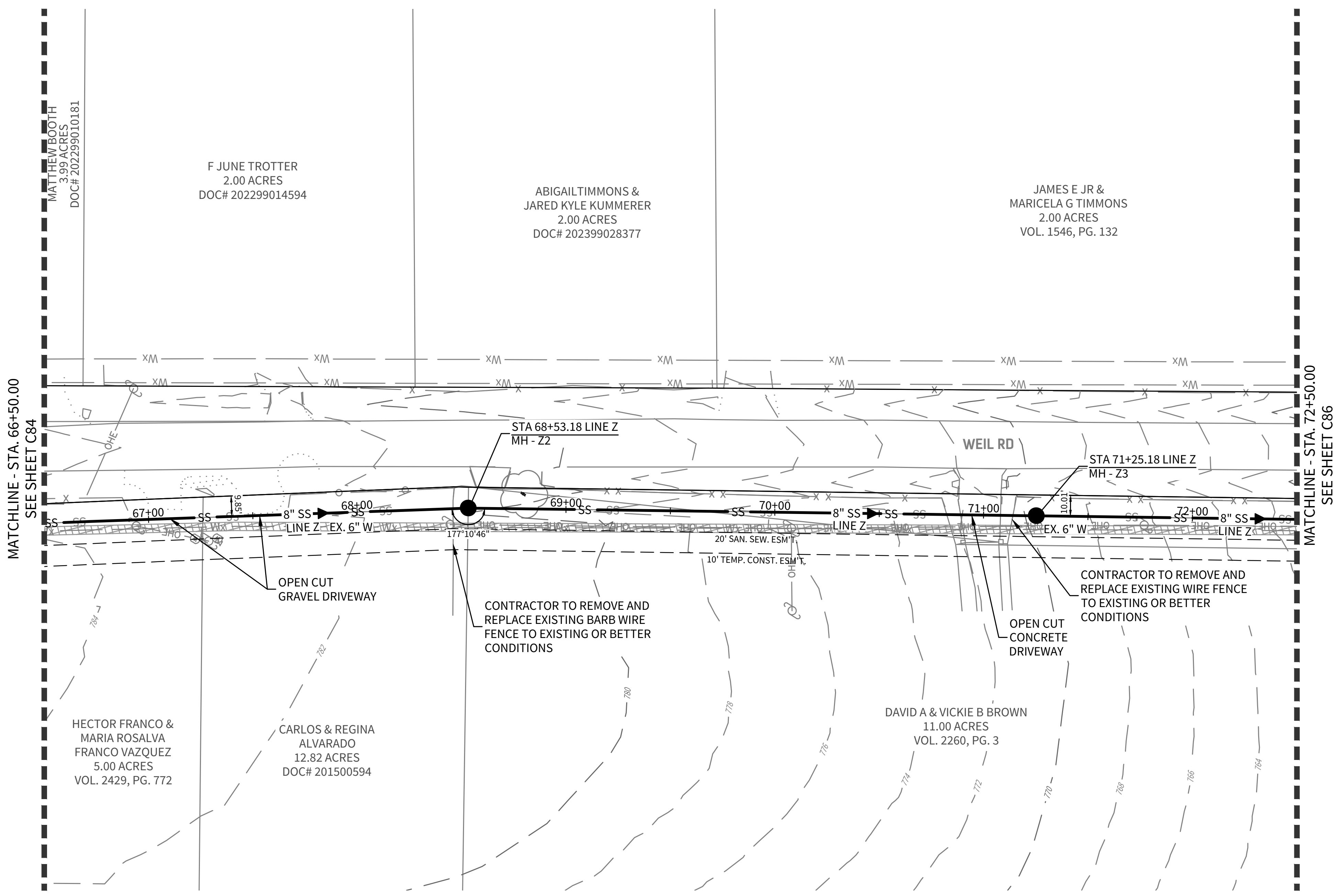
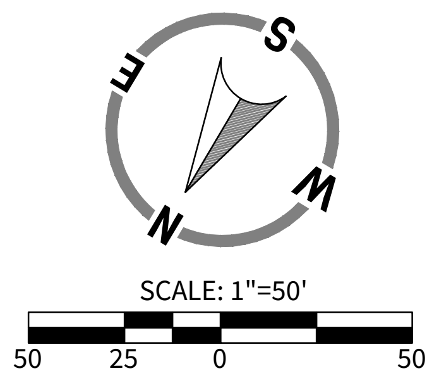




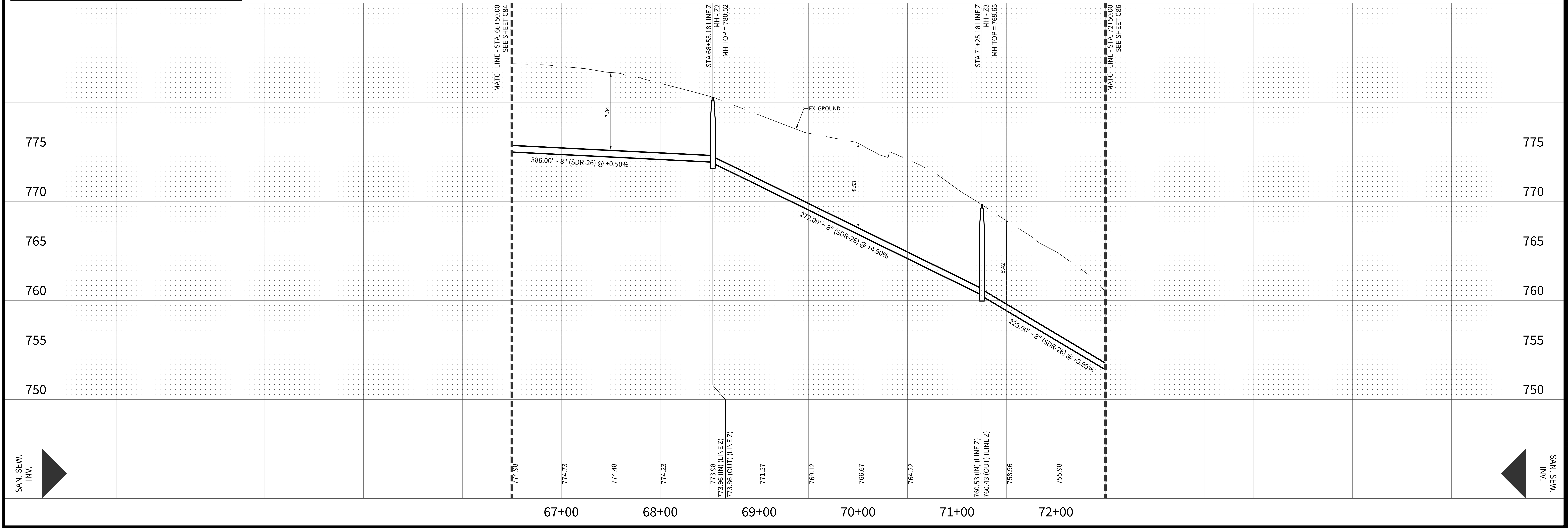
LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
EX. OFF SITE RIGHT OF WAY	——
E.G.T.CA. EASEMENT	— — — —
EXISTING 2' CONTOUR	— 499 —
EXISTING 10' CONTOUR	— 500 —
PROPOSED WATER LINE	— W —
PROPOSED SEWER MAIN	— SS —
PROPOSED FORCE MAIN	— SFM —
PROPOSED MANHOLE	●
EXISTING WATER LINE	— Wx —
EXISTING SEWER LINE	— SSx —
EXISTING MANHOLE	●
ABANDON AND REMOVE EXISTING WATER LINE	Wx

LINE Z – GRAVITY

STA. 66+50.00 TO STA. 72+50.00

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



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LANTANA SUBDIVISION UNIT 1

SANITARY SEWER PLAN & PROFILE - LINE Z

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

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JAVIER CASTELLO
122170
5/12/2025

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TBPE No. 455
TBPLS No. 10048500

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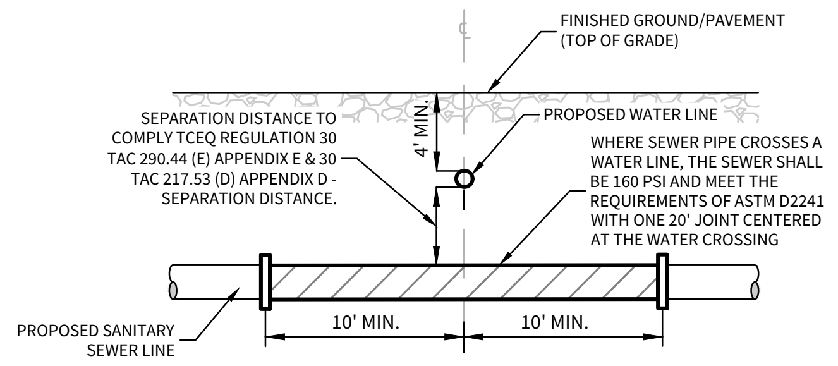
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TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

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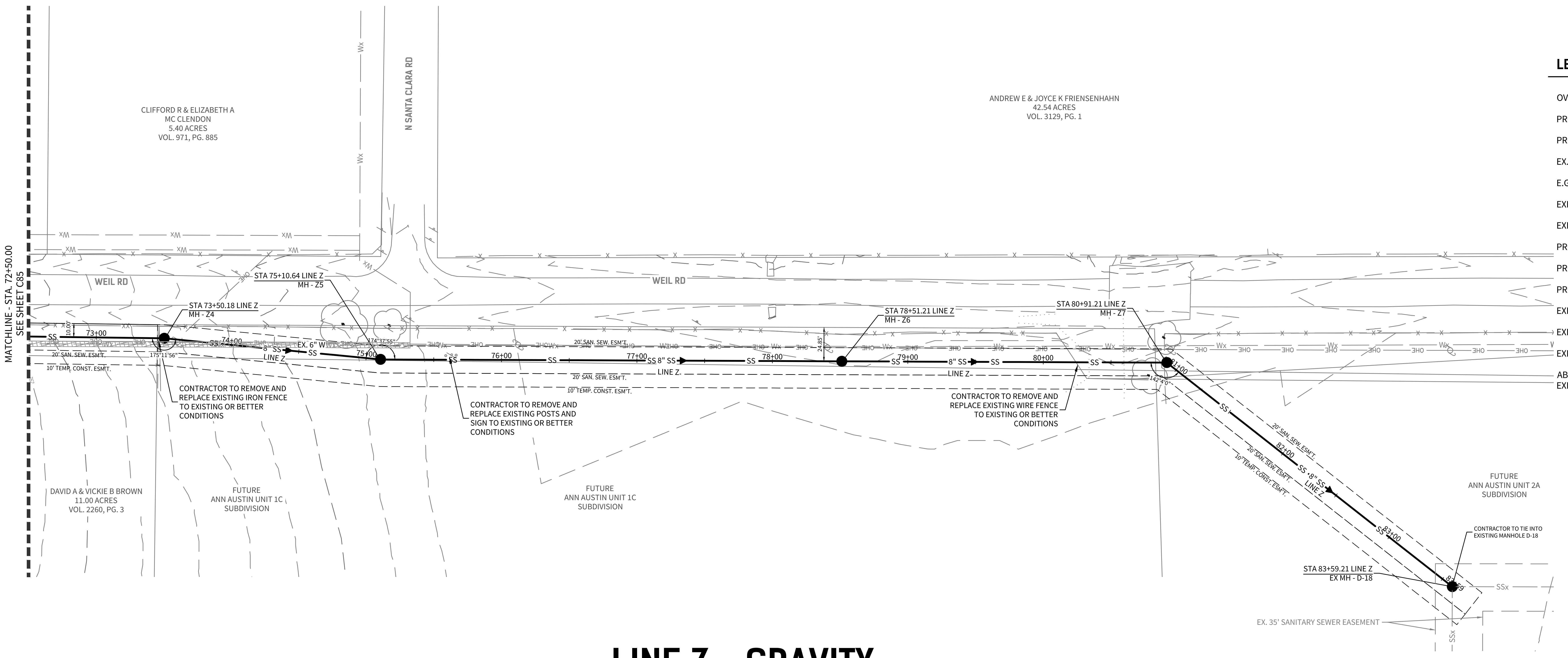

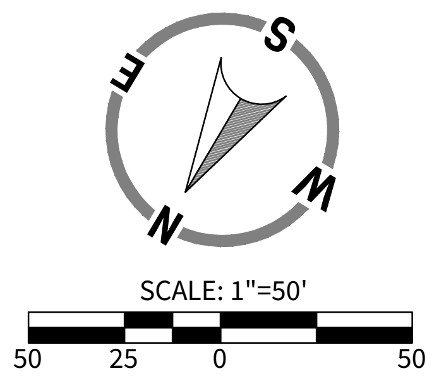

LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- EX. OFF SITE RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED WATER LINE
- PROPOSED SEWER MAIN
- PROPOSED MANHOLE ●
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING MANHOLE ●
- ABANDON AND REMOVE EXISTING WATER LINE

LINE Z - GRAVITY

STA. 72+50.00 TO END

HORIZONTAL SCALE: 1" = 50'
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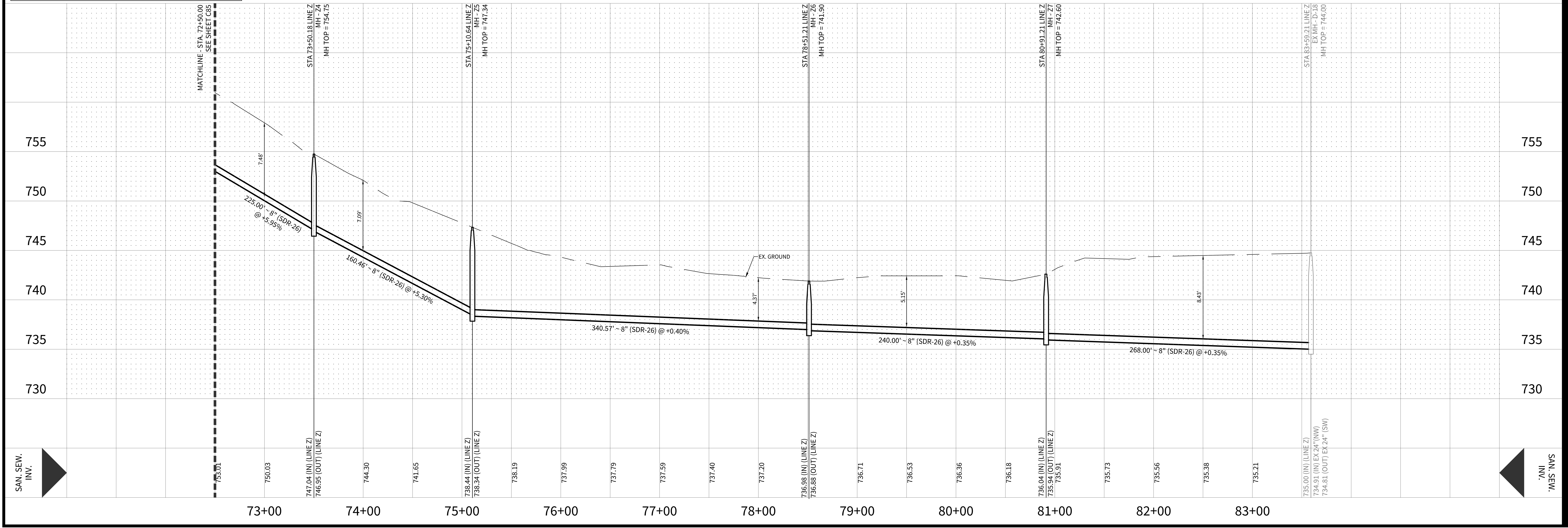

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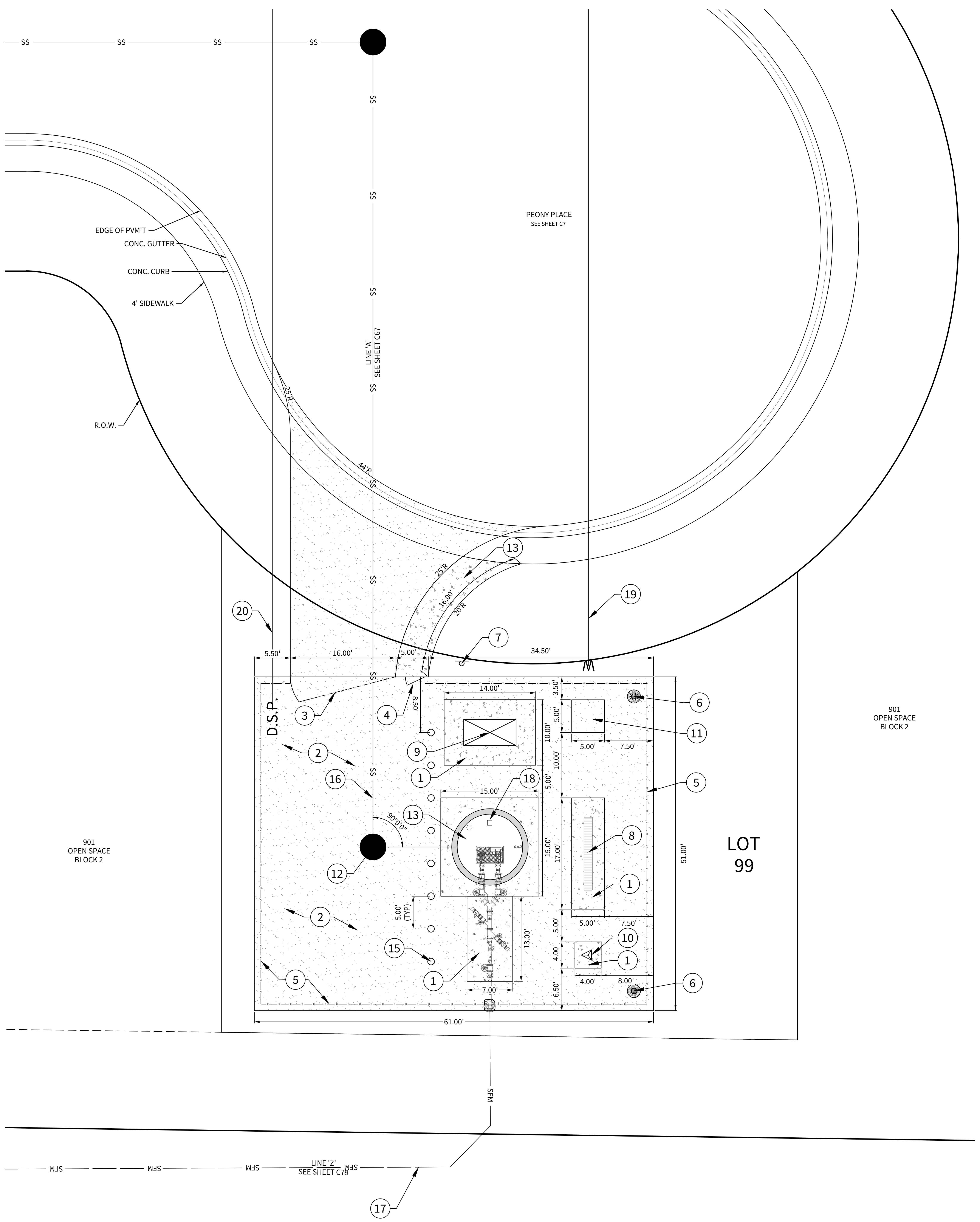

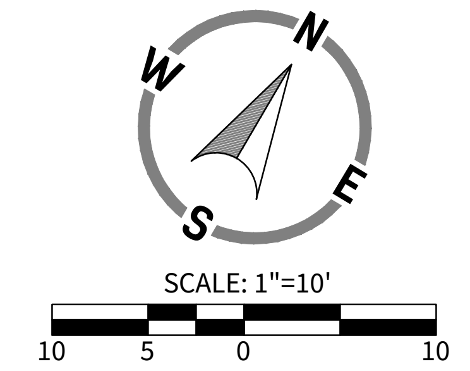

LEGEND

OVERALL UNIT BOUNDARY	— — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.CA. EASEMENT	- - - -
EXISTING WATER LINE	— Wx —
EXISTING SEWER LINE	— SSx —
EXISTING MANHOLE	●
PROPOSED WATER LINE	— W —
PROPOSED SEWER GRAVITY MAIN	— SS —
PROPOSED MANHOLE	●
PROPOSED SEWER FORCE MAIN	— SFM —
PROPOSED CHAINLINK FENCE	— x — x — x —
PROPOSED CONCRETE PAD	▨
PROPOSED CONCRETE PAVEMENT	▨

KEYNOTES:

① CONCRETE SLAB - SEE DETAIL 8 ON SHEET C91
② CONCRETE PAVEMENT - SEE DETAIL 14 ON SHEET C91
③ 2 - 8' WIDE DOUBLE SWING GATE - SEE DETAIL 6 ON SHEET C92
④ 5' PEDESTRIAN GATE -SEE DETAIL 14 ON SHEET C91
⑤ CHAINLINK FENCE - SEE DETAIL 13 ON SHEET C92
⑥ LIGHT POST - SEE ELECTRICAL PLANS
⑦ LIFT STATION SIGN (MUST BE VISIBLE FROM STREET)
⑧ SERVICE RACK AND CANOPY - SEE ELECTRICAL PLANS
⑨ EMERGENCY GENERATOR WITH SOUND ATTENUATION ENCLOSURE - SEE ELECTRICAL PLANS
⑩ SCADA TOWER FOR ANTENNA - SEE ELECTRICAL PLANS
⑪ BOND RPZ - SEE ELECTRICAL PLANS
⑫ 36" LID MANHOLE WITH SUMP ADJACENT TO WET WELL SEE DETAIL 17 ON SHEET C91 FOR DETAILS
⑬ 10' INSIDE DIAMETER WET WELL - SEE SHEET C88
⑭ CONCRETE SIDEWALK
⑮ REMOVABLE 6" GUARD POST - SEE DETAIL 7 ON SHEET C91
⑯ 8" SEWER GRAVITY MAIN - LINE 'A' SEE SHEET C67
⑰ 6" SEWER FORCE MAIN - LINE 'Z' SEE SHEET C79
⑱ ELECTRIC HOIST
⑲ WATER SERVICE
⑳ DISINFECTION SAMPLE PORT - SEE DETAIL W-33 ON SHEET C98

NOTES:

1. THE EXISTENCE AND LOCATION OF EXISTING UNDERGROUND CABLE INDICATED ON THESE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE, AND ARE NOT GUARANTEED TO BE ACCURATE. THE CONTRACTOR SHOULD CALL FOR LOCATES THROUGH THE "ONE CALL" UTILITY LOCATE SERVICE (1-800-344-8377) 48 HOURS PRIOR TO CONSTRUCTION/EXCAVATION WORK. CONTRACTORS HAVE THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY FACILITIES DURING CONSTRUCTION. CONTRACTOR SHALL COORDINATE EXISTING UNDERGROUND CABLE RELOCATION IF A ALIGNMENT CONFLICT ARISES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY.
3. REFERENCE ELECTRICAL PLANS AS NEEDED.
4. CONTRACTOR SHALL GRADE THE SITE TO PROVIDE DRAINAGE AROUND CONCRETE SLABS.
5. ALL CONCRETE PADS SHALL BE AT LEAST 6" ABOVE ADJACENT PROPOSED GROUND.
6. THE DESIGN AND CONSTRUCTION OF THIS LIFT STATION SHALL FOLLOW ALL GUIDELINES SET BY TCEQ.

CAUTION!!

EXISTING UTILITIES ARE WITHIN THE LIMITS OF CONSTRUCTION. CONTRACTORS SHALL EXERCISE EXTRA CARE IN DIGGING ANY TRENCH FOR PROPOSED UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE, VERIFY THE EXACT LOCATION & IDENTIFY AREA OF CONFLICTS WITH EXISTING UTILITIES AND SHALL NOTIFY THE ENGINEER IF CONFLICT IS FOUND.

CAUTION!!

THE CONTRACTOR SHALL BE AWARE THAT A OVERHEAD AND UNDERGROUND UTILITIES EXIST ALONG VALLERIE LANE ROAD AND IN THE VICINITY OF THE LIFT STATION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

TRENCH EXCAVATION PROTECTION

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

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LANTANA SUBDIVISION
UNIT 1

LIFT STATION SITE PLAN

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
1.		
2.		
3.		
4.		
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6.		
7.		
8.		
9.		

JAVIER CASTELLO
122170
5/12/2025

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TBPE No. 455
TBPLS No. 10048500

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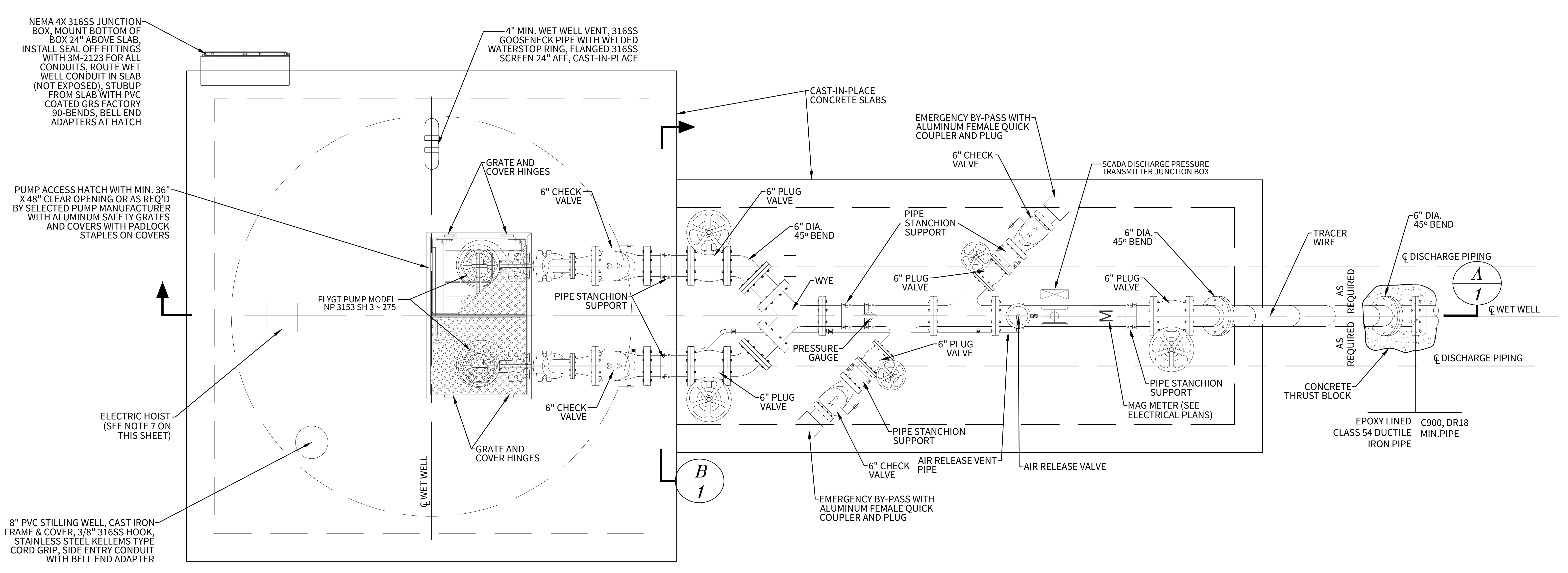
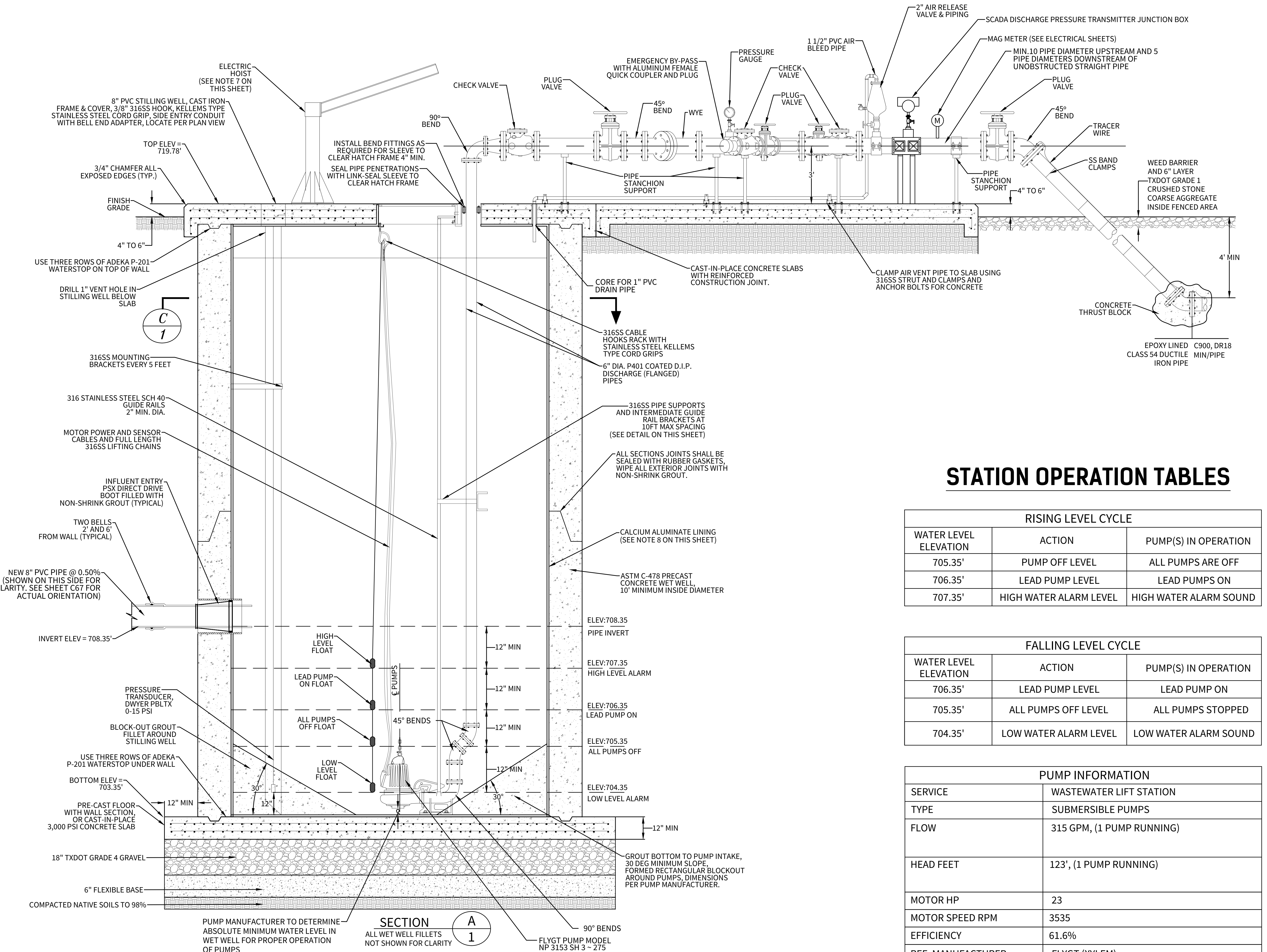

NEMA 4X 316SS JUNCTION BOX, MOUNT BOTTOM OF BOX 24" ABOVE SLAB, INSTALL SEAL OFF FITTINGS WITH 3M-2123 FOR ALL CONDUITS, ROUTE WET WELL CONDUIT IN SLAB (NOT EXPOSED), STUBUP FROM SLAB WITH PVC COATED GRS FACTORY 90-BENDS, BELL END ADAPTERS AT HATCH
4" MIN. WET WELL VENT, 316SS GOOSENECK PIPE WITH WELDED WATERSTOP RING, FLANGED 316SS SCREEN 24" AFF, CAST-IN-PLACE
CAST-IN-PLACE CONCRETE SLABS
EMERGENCY BY-PASS WITH ALUMINUM FEMALE QUICK COUPLER AND PLUG
6" CHECK VALVE
SCADA DISCHARGE PRESSURE TRANSMITTER JUNCTION BOX
GRATE AND COVER HINGES
PUMP ACCESS HATCH WITH MIN. 36" X 48" CLEAR OPENING OR AS REQ'D BY SELECTED PUMP MANUFACTURER WITH ALUMINUM SAFETY GRATES AND COVERS WITH PADLOCK STAPLES ON COVERS
6" PLUG VALVE
6" DIA. 45º BEND
PIPE STANCHION SUPPORT
TRACER WIRE
6" DIA. 45º BEND
℄ DISCHARGE PIPING
A
1
WYE
FLYGT PUMP MODEL NP 3153 SH 3 ~ 275
AS REQUIRED
℄ WET WELL
M
PRESSURE GAUGE
℄ DISCHARGE PIPING
PIPE STANCHION SUPPORT
CONCRETE THRUST BLOCK
MAG METER (SEE ELECTRICAL PLANS)
ELECTRIC HOIST (SEE NOTE 7 ON THIS SHEET)
EPOXY LINED CLASS 54 DUCTILE IRON PIPE
C900, DR18 MIN.PIPE
AIR RELEASE VENT PIPE
AIR RELEASE VALVE
B
1
℄ WET WELL
8" PVC STILLING WELL, CAST IRON FRAME & COVER, 3/8" 316SS HOOK, STAINLESS STEEL KELLEMS TYPE CORD GRIP, SIDE ENTRY CONDUIT WITH BELL END ADAPTER

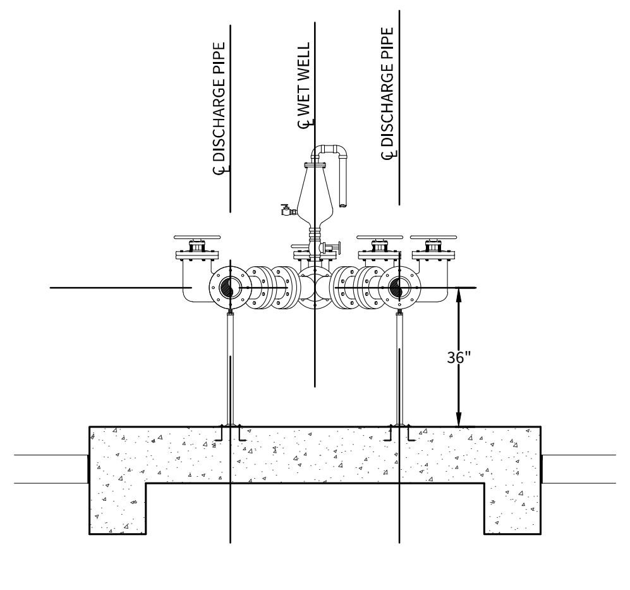
PLAN VIEW

SCALE: N.T.S.

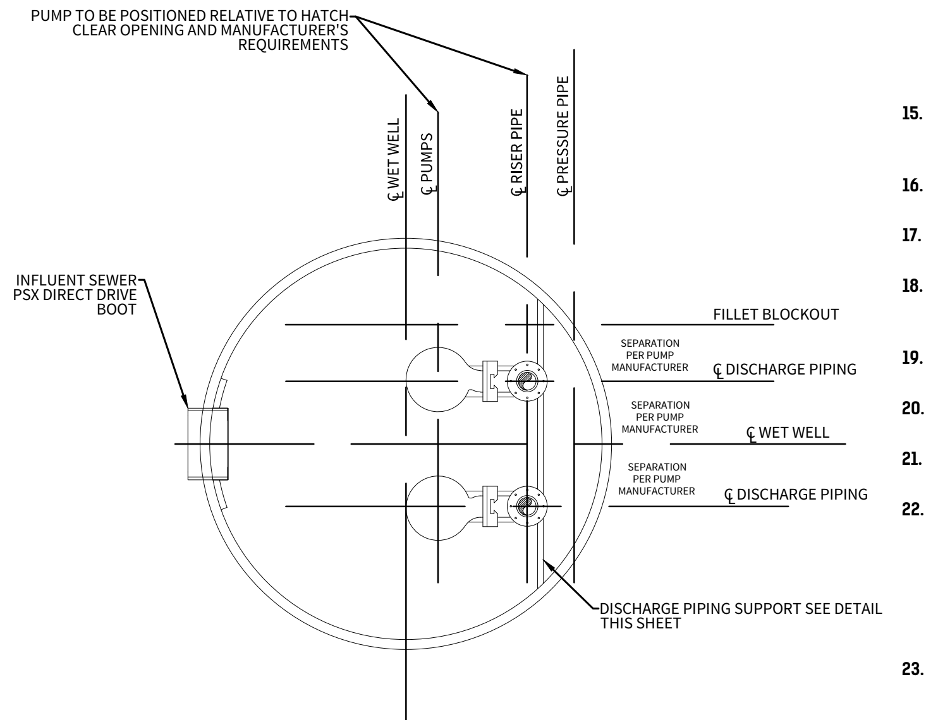

ELECTRIC HOIST (SEE NOTE 7 ON THIS SHEET)
8" PVC STILLING WELL, CAST IRON FRAME & COVER, 3/8" 316SS HOOK, KELLEMS TYPE STAINLESS STEEL CORD GRIP, SIDE ENTRY CONDUIT WITH BELL END ADAPTER, LOCATE PER PLAN VIEW
TOP ELEV = 719.78'
3/4" CHAMFER ALL EXPOSED EDGES (TYP.)
FINISH GRADE
4" TO 6"
USE THREE ROWS OF ADEKA P-201 WATERSTOP ON TOP OF WALL
DRILL 1" VENT HOLE IN STILLING WELL BELOW SLAB
C
1
316SS MOUNTING BRACKETS EVERY 5 FEET
316 STAINLESS STEEL SCH 40 GUIDE RAILS 2" MIN. DIA.
MOTOR POWER AND SENSOR CABLES AND FULL LENGTH 316SS LIFTING CHAINS
INFLUENT ENTRY PSX DIRECT DRIVE BOOT FILLED WITH NON-SHRINK GROUT (TYPICAL)
TWO BELLS 2' AND 6' FROM WALL (TYPICAL)
NEW 8" PVC PIPE @ 0.50% (SHOWN ON THIS SIDE FOR CLARITY. SEE SHEET C67 FOR ACTUAL ORIENTATION)
INVERT ELEV = 708.35'
PRESSURE TRANSDUCER, DWYER PBLTX 0-15 PSI
BLOCK-OUT GROUT FILLET AROUND STILLING WELL
USE THREE ROWS OF ADEKA P-201 WATERSTOP UNDER WALL
BOTTOM ELEV = 703.35'
PRE-CAST FLOOR WITH WALL SECTION, OR CAST-IN-PLACE 3,000 PSI CONCRETE SLAB
18" TXDOT GRADE 4 GRAVEL
6" FLEXIBLE BASE
COMPACTED NATIVE SOILS TO 98%
PUMP MANUFACTURER TO DETERMINE ABSOLUTE MINIMUM WATER LEVEL IN WET WELL FOR PROPER OPERATION OF PUMPS
SECTION A/1
ALL WET WELL FILLETS NOT SHOWN FOR CLARITY
CHECK VALVE
90º BEND
INSTALL BEND FITTINGS AS REQUIRED FOR SLEEVE TO CLEAR HATCH FRAME 4" MIN.
SEAL PIPE PENETRATIONS WITH LINK-SEAL SLEEVE TO CLEAR HATCH FRAME
PLUG VALVE
EMERGENCY BY-PASS WITH ALUMINUM FEMALE QUICK COUPLER AND PLUG
PRESSURE GAUGE
CHECK VALVE
PLUG VALVE
45º BEND
WYE
PIPE STANCHION SUPPORT
1 1/2" PVC AIR BLEED PIPE
2" AIR RELEASE VALVE & PIPING
SCADA DISCHARGE PRESSURE TRANSMITTER JUNCTION BOX
MAG METER (SEE ELECTRICAL SHEETS)
MIN. 10 PIPE DIAMETER UPSTREAM AND 5 PIPE DIAMETERS DOWNSTREAM OF UNOBSTRUCTED STRAIGHT PIPE
PLUG VALVE
45º BEND
TRACER WIRE
SS BAND CLAMPS
WEED BARRIER AND 6" LAYER TXDOT GRADE 1 CRUSHED STONE COARSE AGGREGATE INSIDE FENCED AREA
PIPE STANCHION SUPPORT
4" TO 6"
3'
4' MIN
CONCRETE THRUST BLOCK
EPOXY LINED CLASS 54 DUCTILE IRON PIPE
C900, DR18 MIN/PIPE
CAST-IN-PLACE CONCRETE SLABS WITH REINFORCED CONSTRUCTION JOINT.
CLAMP AIR VENT PIPE TO SLAB USING 316SS STRUT AND CLAMPS AND ANCHOR BOLTS FOR CONCRETE
CORE FOR 1" PVC DRAIN PIPE
316SS CABLE HOOKS RACK WITH STAINLESS STEEL KELLEMS TYPE CORD GRIPS
6" DIA. P401 COATED D.I.P. DISCHARGE (FLANGED) PIPES
316SS PIPE SUPPORTS AND INTERMEDIATE GUIDE RAIL BRACKETS AT 10FT MAX SPACING (SEE DETAIL ON THIS SHEET)
ALL SECTIONS JOINTS SHALL BE SEALED WITH RUBBER GASKETS, WIPE ALL EXTERIOR JOINTS WITH NON-SHRINK GROUT.
CALCIUM ALUMINATE LINING (SEE NOTE 8 ON THIS SHEET)
ASTM C-478 PRECAST CONCRETE WET WELL, 10' MINIMUM INSIDE DIAMETER
ELEV:708.35 PIPE INVERT
ELEV:707.35 HIGH LEVEL ALARM
ELEV:706.35 LEAD PUMP ON
ELEV:705.35 ALL PUMPS OFF
ELEV:704.35 LOW LEVEL ALARM
12" MIN
HIGH LEVEL FLOAT
LEAD PUMP ON FLOAT
ALL PUMPS OFF FLOAT
LOW LEVEL FLOAT
℄ PUMPS
45° BENDS
30°
12"
12" MIN
GROUT BOTTOM TO PUMP INTAKE, 30 DEG MINIMUM SLOPE, FORMED RECTANGULAR BLOCKOUT AROUND PUMPS, DIMENSIONS PER PUMP MANUFACTURER.
90° BENDS
FLYGT PUMP MODEL NP 3153 SH 3 ~ 275

PROFILE VIEW

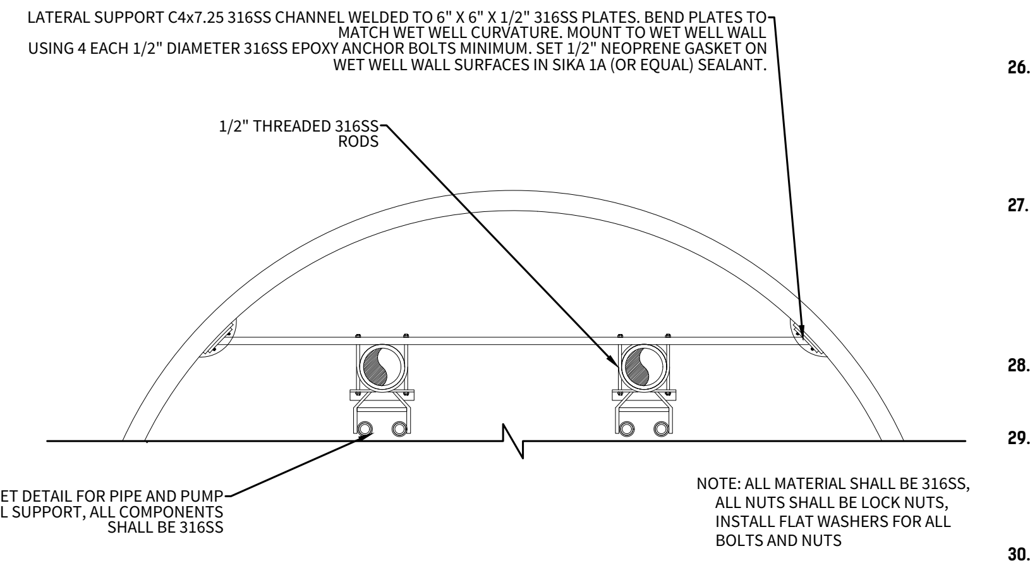
SCALE: N.T.S.



SECTION B/1


PUMP TO BE POSITIONED RELATIVE TO HATCH CLEAR OPENING AND MANUFACTURER'S REQUIREMENTS
℄ WET WELL
℄ PUMPS
℄ RISER PIPE
℄ PRESSURE PIPE
INFLUENT SEWER PSX DIRECT DRIVE BOOT
FILLET BLOCKOUT
SEPARATION PER PUMP MANUFACTURER
℄ DISCHARGE PIPING
℄ WET WELL
℄ DISCHARGE PIPING
DISCHARGE PIPING SUPPORT SEE DETAIL THIS SHEET

SECTION C/1


LATERAL SUPPORT C4x7.25 316SS CHANNEL WELDED TO 6" X 6" X 1/2" 316SS PLATES, BEND PLATES TO MATCH WET WELL CURVATURE, MOUNT TO WET WELL WALL USING 4 EACH 1/2" DIAMETER 316SS EPOXY ANCHOR BOLTS MINIMUM, SET 1/2" NEOPRENE GASKET ON WET WELL WALL SURFACES IN SIKA 1A (OR EQUAL) SEALANT.
1/2" THREADED 316SS RODS
BRACKET DETAIL FOR PIPE AND PUMP GUIDE RAIL SUPPORT, ALL COMPONENTS SHALL BE 316SS
NOTE: ALL MATERIAL SHALL BE 316SS, ALL NUTS SHALL BE LOCK NUTS, INSTALL FLAT WASHERS FOR ALL BOLTS AND NUTS

WET WELL PIPING SUPPORT DETAIL

SCALE: N.T.S.

STATION OPERATION TABLES

RISING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
705.35'	PUMP OFF LEVEL	ALL PUMPS ARE OFF
706.35'	LEAD PUMP LEVEL	LEAD PUMPS ON
707.35'	HIGH WATER ALARM LEVEL	HIGH WATER ALARM SOUND

FALLING LEVEL CYCLE		
WATER LEVEL ELEVATION	ACTION	PUMP(S) IN OPERATION
706.35'	LEAD PUMP LEVEL	LEAD PUMP ON
705.35'	ALL PUMPS OFF LEVEL	ALL PUMPS STOPPED
704.35'	LOW WATER ALARM LEVEL	LOW WATER ALARM SOUND

PUMP INFORMATION	
SERVICE	WASTEWATER LIFT STATION
TYPE	SUBMERSIBLE PUMPS
FLOW	315 GPM, (1 PUMP RUNNING)
HEAD FEET	123', (1 PUMP RUNNING)
MOTOR HP	23
MOTOR SPEED RPM	3535
EFFICIENCY	61.6%
REF. MANUFACTURER	FLYGT (XYLEM)
MODEL	NP 3153 SH 3 ~ 275

PUMP NOTES:

LOW FLOAT LEVEL SHALL BE NO LESS THAN THE MINIMUM WATER LEVEL PER PUMP SPECS.

CONNECTION BETWEEN PUMP DISCHARGE FLANGE & DISCHARGE PIPE FLANGE SHALL BE A MACHINED METAL TO METAL WATER TIGHT CONTACT.

NO PORTION OF THE PUMP SHALL BE IN CONTACT WITH THE FLOOR.

STRUCTURAL NOTES:

CONCRETE SLABS AND SUBGRADE FILLING SHALL BE DESIGNED BASED ON THE WET WELL DIMENSIONS, SOIL CONDITIONS, BUOYANCY, ETC.

GENERAL NOTES:

1. CONTRACTOR TO CONFIRM SIZE AND LOCATION OF WET WELL HATCHES PER SELECTED HATCH AND PUMP MANUFACTURERS' REQUIREMENTS (36" X 48" MIN. CLEAR OPENING)
2. INSTALL FLANGED JOINT ROUND PORT PLUG VALVES WITH HORIZONTAL SHAFT, CLOSING DOWNWARD.
3. INSTALL SWING TYPE CHECK VALVE WITH EXTERNAL LEVER AND WEIGHT.
4. ALL PUMP DISCHARGE PIPE AND FITTINGS WITH WET WELL SHALL BE FLANGED AND SHALL RECEIVE AFTER INSTALLATION A COAL TAR EPOXY COATING SYSTEM IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS
5. ALL PUMP DISCHARGE PIPE, VALVES AND FITTINGS OUTSIDE THE WET WELL, EXCEPT 316SS AND PVC, SHALL RECEIVE AFTER INSTALLATION A WHITE COLOR HIGH BUILD EPOXY COATING SYSTEM WITH A GREY PANTONE #431-U COLOR TOP COAT OF POLYURETHANE IN ACCORDANCE WITH MANUFACTURER INSTRUCTION.
6. ALL FASTENERS AND ANCHOR BOLTS SHALL BE 316SS WITH FIELD APPLIED ANTI-SEIZE COMPOUND. ANCHOR BOLTS INSIDE WET WELL SHALL BE EPOXY TYPE. DO NOT PAINT NUTS AND BOLTS.
7. ELECTRIC HOIST TO BE THERN MODEL 5124 OR EQUAL AND OF SUFFICIENT LOAD RATING CAPACITY TO LIFT PUMPS, WITH HOT DIP GALV. CRANE AND BASE, EPOXY COATED WINCH, 316SS HARDWARE AND FASTENERS, 316SS WIRE ROPE AND CHAIN GRIP EYE.
8. SAND BLAST AND LINE INTERIOR OF WET WELL WITH SEWPERCOAT,REFRATTA HAC 100, OR APPROVED EQUAL. MINIMUM 1"THICKNESS. SMOOTH TROWEL FINISH. SPRAY CURING COMPOUND.
9. ALL ANCHOR BOLTS INSIDE WET WELL TO BE EPOXY TYPE 316SS.
10. SLEEVED DISCHARGE PIPE SHALL BE SEALED WITH SEAL LINK AND BACKER ROD WITH SELF-LEVELING CAULK.
11. CONTRACTOR TO USE 8' DIAMETER CONCRETE FOR WET WELL (L.F. MANUFACTURING).
12. EPOXY GROUT SEAL PIPING GOING THROUGH WALLS.
13. PIPING TO BE PAINTED GRAY - PANTONE NUMBER 431U.
14. WET WELL MUST BE TESTED TO MEET OR EXCEED THE REQUIREMENTS OF 30 TAC 213.5(c) (3) (E) AND 30 TAC 317.2(c) (5) (H). CONTRACTOR SHALL FILL AROUND WET WELL WITH 3,000 PSI CONCRETE FOR THE FIRST 1/3 OF THE TOTAL WET WELL DEPTH (MEASURED FROM THE BOTTOM UP) WITH THE REMAINING 2/3 BEING FILLED WITH 600 PSI FLOWABLE FILL. SUITABLE MATERIAL CHOSEN FROM THE EXCAVATION MAY BE USED FOR THE REMAINDER OF THE BACKFILL. THE MATERIAL CHOSEN SHALL BE FREE OF LARGE LUMPS OR CLODS, WHICH WILL NOT READILY BREAK DOWN UNDER COMPACTION. FLOWABLE FILL SHALL BE PLACED IN LAYERS OF NOT MORE THAN 5 FEET AND VIBRATED TO ENSURE THAT VOIDS ARE FILLED . BACKFILL SHALL BE PLACED IN SUCH A MANNER AS TO NOT ALLOW ANY WEDGING ACTION AGAINST THE STRUCTURE. LOCATION OF ALL ANCHOR BOLTS, RELATIVE POSITION OF PUMPS AND ACCESS COVER, MUST BE MAINTAINED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
15. CONTRACTOR TO PROVIDE EXTRA CABLE FOR "HIGH WATER ALARM AND 2ND PUMP ON" FLOAT. THE CABLE LENGTH SHOULD BE SUFFICIENT TO ENABLE LOWERING THE FLOAT TO THE 1ST PUMP ON ELEVATION.
16. GATE VALVES AND CHECK VALVES SHALL BE FROM APPROVED MANUFACTURER.
17. TECHNICAL DATA FOR LIFT STATION EQUIPMENT & COMPONENTS SHALL BE SUBMITTED FOR APPROVAL.
18. ALL MATERIALS AND LIFT STATION COMPONENTS WITHIN THE SCOPE OF THIS PROJECT SHALL BE IN COMPLIANCE WITH THE LIFT STATION DESIGN & CONSTRUCTION GUIDELINES.
19. ALL D.I. & PVC FORCE MAIN PIPE OUTSIDE OF WET WELL LIMITS SHALL BE MECHANICALLY RESTRAINED.
20. ALL ABOVE GROUND PIPING 6" OR SMALLER SHALL HAVE FREEZE PROTECTION CONSISTING OF FOAM TUBING INSULATION.
21. ALL HARDWARE (LIFTING CHAINS,BRACKETS, SCREWS, ETC.) IN WETWELL SHALL BE 316 STAINLESS STEEL.
22. ALL EXPOSED PIPE, VALVES, AND FITTINGS OUTSIDE THE WET WELL SHALL RECEIVE AFTER INSTALLATION A 100% SOLIDS EPOXY COATING SYSTEM WITH A TOP COAT SYSTEM OF URETHANE, SUITABLE FOR THE ENVIRONMENT. PRIOR TO APPLICATION, PREPARE SURFACES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. ANY REFERENCE TO CLEANING IN THE MANUFACTURER'S INSTRUCTIONS SHALL BE UNDERSTOOD TO REFER TO THE APPLICABLE SSPC SPECIFICATIONS. THICKNESS, MIXING AND APPLICATION SHALL BE IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS. APPLY FINISH COAT IN ACCORDANCE WITH THE COLOR-CODING SET FORTH IN NOTE #3. APPROVED MANUFACTURERS ARE TNEMAC, CARBOLINE, SHERWIN-WILLIAMS, PPG AND M.A.B. PAINTS.
23. ALL PUMP DISCHARGE PIPE AND FITTINGS WITHIN WET WELL, EXCEPT SS 316 AND PVC, SHALL RECEIVE AFTER INSTALLATION, A 100% SOLIDS COAL TAR EPOXY COATING SYSTEM. THICKNESS, MIXING AND APPLICATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PRIOR TO APPLICATION, PREPARE SURFACES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. ANY REFERENCE TO CLEANING IN THE MANUFACTURER'S INSTRUCTIONS SHALL BE UNDERSTOOD TO REFER TO THE APPLICABLE SSPC SPECIFICATIONS. APPROVED MANUFACTURERS ARE TNEMAC, CARBOLINE, SHERWIN-WILLIAMS, PPG, AND M.A.B. PAINTS.
24. WHEN PERMITTED, CONSTRUCTION OF CONCRETE WELLS SHALL INCLUDE A PRECAST WET WELL STRUCTURE WITH MONOLITHIC BASE. DESIGN ENGINEER SHALL EVALUATE THE THICKNESS OF WET WELL WALL AND SLABS, BUT THE FOLLOWING THICKNESS SHALL BE MET AS MINIMUM: WET WELL WALL THICKNESS 10 INCHES, WET WELL BASE SLAB 12 INCHES, WET WELL BASE SLAB 12 INCHES AND WET WELL TOP SLAB 10 INCHES.
25. LINE INTERIOR OF CONCRETE WET WELLS WITH A 100% PURE CALCIUM ALUMINATE PREMIX LINING SYSTEM. SURFACE PREPARATION, THICKNESS, MIXING AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. WET WELL JOINTS SHALL BE SEALED PER THE MANUFACTURER'S RECOMMENDATIONS. APPROVED MANUFACTURER IS SEWPERCOAT, OR APPROVED EQUAL.
26. THE BOTTOM OF THE EXCAVATION FOR THE WET WELL STRUCTURE SHALL BE A LEVEL SUBGRADE APPROXIMATELY 18 INCHES OF CRUSHED STONE BELOW THE BOTTOM OF THE WET WELL STRUCTURE AND NATIVE SOILS SHALL BE COMPACTED WITH EXCAVATION EQUIPMENT FOR THE INSTALLATION OF 6 INCHES OF FLEXIBLE BASE TO SUPPORT THE BASE OF THE STRUCTURE. COMPACTION OF NATIVE SOILS AND FLEXIBLE BASE SHALL ACHIEVE MINIMUM NINETY-EIGHT (98%) OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE TXDOT TESTING METHOD TEX 113-E.
27. USE 16 MESH 316 STAINLESS STEEL SCREENS ON PASSIVE VENTILATION, GOOSENECK TYPE, TO PREVENT THE ENTRY OF BIRDS OR INSECTS INTO WET WELL. MECHANICAL AND ELECTRICAL EQUIPMENT IN THE WET WELL SHALL BE NFPA CLASS 1, DIVISION 1 CONSTRUCTION TYPE. SIZE THE PASSIVE VENTILATION TO VENT AT A RATE EQUAL TO THE MAXIMUM PUMPING RATE OF THE STATION AND NOT EXCEED 600 FPM THROUGH THE VENT PIPE. THE MINIMUM AIR VENT SIZE SHALL BE 4-INCH DIAMETER, AND IT SHALL BE MADE OF STAINLESS STEEL 316. VENT OUTLETS SHALL BE AT LEAST 1 FOOT ABOVE THE 100-YEAR FLOOD ELEVATION. ALL SCREENING SHALL BE INSTALLED IN A MANNER THAT WILL ALLOW FOR FUTURE REPLACEMENT.
28. ALL ACCESSORY HARDWARE IN WET WELL INCLUDING BUT NOT LIMITED TO CHAINS, CABLES, BOLTS, NUTS, FASTENERS, BRACKETS, ANCHOR BOLTS, WASHERS, CABLE HOLDERS AND SLIDE RAILS, SHALL BE 316 STAINLESS STEEL.
29. TRACER WIRE SHALL BE BURIED AT A MAXIMUM DEPTH OF 4 FEET ALONG ENTIRE LENGTH OF FORCE MAIN. TRACER WIRE SHALL BE OF SOLID CORE (14 GAUGE INSULATION) , AND SHALL BE CONNECTED TO THE MAIN AT 10" INCREMENTS. WIRE SHALL ALSO COME UP TO THE TOP OF AIR RELEASE, VACUUM VALVES, COMBINATION VALVES, AND TOP OF GROUND AT LIFT STATION SITE AND AT THE DISCHARGE POINT.
30. EACH PUMP SHALL BE SEPARATED AND IMMERSED ACCORDING TO MANUFACTURER RECOMMENDATION, AND HAVE A SEPARATE SUCTION PIPE (FOR NON-SUBMERSIBLE PUMPS IF APPROVED). PIPE REDUCERS INSTALLED AT DISCHARGE BASE OF SUBMERSIBLE PUMPS OR SUCTION PORT OF NON-SUBMERSIBLE PUMPS SHALL BE ECCENTRIC TYPE. ECCENTRIC REDUCERS INSTALLED HORIZONTALLY ON SUCTION PIPES SHALL BE INSTALLED WITH FLAT SIDE UP TO PRECLUDE AIR ENTRAPMENT. REDUCERS INSTALLED AT DISCHARGE HEADER SHALL BE CONCENTRIC REDUCER. PIPES IN WET WELLS OF SUCTION LIFT PUMPS SHALL BE EQUIPPED WITH A TURNDOWN TYPE FLARED INTAKE AND CONSIST OF DUCTILE IRON OR SS 316.
31. LIFT STATION PIPING SHALL BE D.I. AND SHALL HAVE FLANGED CONNECTIONS TO ALLOW FOR REMOVAL OF PUMPS AND VALVES WITHOUT INTERRUPTION OF THE LIFT STATION OPERATIONS. WALL PENETRATIONS SHALL BE DESIGNED TO ALLOW FOR PIPE FLEXURE WHILE EXCLUDING EXFILTRATION OR INFILTRATION.
32. USE FORTY-FIVE (45) DEGREE CAST IRON ELBOWS FOR PUMP DISCHARGE PIPING TUNS WHERE THE FORCE MAIN BENDS TOWARD THE GROUND.
33. DISCHARGE AND COMMON HEADER PIPE SHALL BE INSTALLED 3 FEET ABOVE CONCRETE SLAB, MEASURED FROM SLAB SURFACE TO PIPE CENTER LINE.
34. GATE VALVES: INSTALL A GATE VALVE ON THE UPSTREAM SIDE OF EACH CHECK VALVE. GATE VALVES SHALL BE RESILIENT WEDGE, FLANGED JOINTS, CONFORMING TO THE APPLICABLE REQUIREMENTS OF ANSI/AWWA C509, AND SHALL BE HANDLED AND INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS SET FORTH IN THE APPENDIX TO ANSI/AWWA C509 AND THE RECOMMENDATIONS OF THE MANUFACTURER. ALL INTERIOR AND EXTERIOR FERROUS METAL SURFACES OF VALVES AND ACCESSORIES SHALL BE SHOP COATED FOR CORROSION PROTECTION. IF THE FULL-CLOSING VALVE IS OTHER THAN A RISING STEM GATE VALVE, THE VALVES SHALL INCLUDE A POSITION INDICATOR TO SHOW ITS OPEN OR CLOSED POSITION. APPROVED MANUFACTURERS ARE CLOW F-6102, MUELLER A-2360, KENNEDY 4561/4701, AND AMERICAN FLOW CONTROL - SERIES 2500.
35. CHECK VALVES: A FLANGED, NON-SLAMMING CHECK VALVE SHALL BE INSTALLED ON THE DISCHARGE SIDE OF EACH PUMP AND ON BY-PASS QUICK CONNECTOR, FOLLOWED BY A FULL-CLOSING ISOLATION VALVE ON EACH PUMP. CHECK VALVES SHALL BE SWING TYPE WITH AN EXTERNAL LEVER AND MINIMUM PRESSURE RATING OF 250 PSI. APPROVED CHECK VALVE MAUFACTURERS ARE CLOW STYLE 106LW, MUELLER #2600-6-01, KENNEDY IBBM SWING CHECK VALVE, AMERICAN "50" LINE WEIGHT AND LEVER.
36. BUTTERFLY VALVES, TILTING DISC CHECK VALVES, OR OTHER VALVES UTILIZING A TILTING DISC IN THE FLOW LINES ARE NOT ALLOWED.
37. AIR/VACUUM RELEASE VALVES: SHALL BE MOUNTED ON COMMON HEADER AND ALL HIGH POINTS ALONG FORCE MAINS. AIR/VACUUM RELEASE VALVES HALL BE RATED FOR RAW SEWAGE, HAVE A MINIMUM 2" INLET, AND BE PROVIDED WITH FLUSH PORTS. VALVES SHALL BE SIZED FOR INTENDED SYSTEM HYDRAULICS, WITH RELATED SIZING CALCULATIONS INCLUDED IN ENGINEERING REPORT. AIR RELEASE VALVES SHALL BE MOUNTED ON ISOLATION VALVES. THE AIR RELEASE PIPE SHALL BE A MINIMUM OF 1-INCH PVC SCH. 40, AND IT SHALL BE INSTALLED IN A MANNER THAT DOESN'T REPRESENT A TRIPPING HAZARD, AND IT SHALL BE SOLIDLY FASTENED; UNLESS EMBEDDED IN CONCRETE SLAB, AND SHALL DISCHARGE INTO WET WELL. LIQUID SHALL NOT ACCUMULATE WITHIN AIR RELEASE PIPE. AIR/VACUUM RELEASE VALVES SHALL HAVE A PVC OR STAINLESS STEEL 316 BODY. APPROVED MANUFACTURER IS A.R.I. MODEL S-020.
38. SURGE RELIEF VALVES: WHEN REQUIRED, SURGE RELIEF VALVE SIZE SHALL BE SELECTED BASED ON FIRM PUMPING CAPACITY FLOW. IT SHALL BE RATED FOR RAW SEWAGE, AND IT SHALL HAVE ISOLATION VALVE ON THE INLET SIDE. OPENING SETTING SHALL NOT EXCEED 5 PSI ABOVE NORMAL OPERATING PRESSURE OF THE SYSTEM AT HEADER WHEN FIRM PUMPING CAPACITY FLOW IS BEING DISCHARGED. SURGE RELIEF PIPE SHALL BE ROUTED BACK TO EITHER WET WELL OR MANHOLE NEXT TO WET WELL. ENGINEER TO PROVIDE ENGINEERING REPORT THAT MUST INCLUDE ANALYSIS AND REFERENCE INFORMATION SHOWING HOW THE VALVE WAS SELECTED. WHEN THE ANALYSIS SHOWS DANGEROUS SURGE PRESSURE AT FIRM PUMPING CAPACITY, A SURGE RELIEF VALVE WILL BE INCLUDED IN THE DESIGN IN ADDITION TO THE SOFT STARTERS.
39. INSTALL AN ISOLATION GATE VALVE ON ALL FORCE MAINS, LOCATED IMMEDIATELY BEFORE THEY TURN TOWARD THE UNDERGROUND.
40. PRIMARY LEVEL MONITORING AND PUMP CONTROL MUST BE OF THE SUBMERSIBLE LEVEL TRANSMITTER TYPE. ACCEPTED MANUFACTURERS ARE SIEMENS (MILLTRONICS HYDRORANGER 200), GREYLINE INSTRUMENTS, AND DREXELBROOK FOR CONTROLLER. SUBMERSIBLE LEVEL TRANSMITTER APPROVED MANUFACTURER IS MERCOID MODEL PBLT2. SUBMERSIBLE LEVEL SENSORS MUST INCLUDE A 10 POUND WEIGHT MADE OF CARBON STEEL, AND THE INSTRUMENT SHALL BE SOLIDLY FASTENED TO THE WEIGHT TO PREVENT THE INSTRUMENT FROM BEING DRAGGED INTO A PUMP INTAKE. A STAINLESS STEEL 316 STRANDED CABLE MUST BE SOLIDLY FASTENED TO THE INSTRUMENT FOR REMOVAL EASE. A 24VDC POWER SUPPLY SHALL BE INCLUDED IN THE PUMP CONTROL PANEL TO FEED THE SUBMERSIBLE LEVEL TRANSMITTER. FEED POWER TO SUBMERSIBLE LEVEL TRANSMITTER MUST BE INDEPENDENTLY POWERED BY SEPARATE 120 VAC/24 VDC POWER SUPPLY MOUNTED WITHIN PUMP CONTROL PANEL.
41. ALL VALVES SHALL BE PLUG VALVES.

NOTES TO CONTRACTOR:

NO MODIFICATIONS CAN BE MADE TO THE LIFT STATION PRIOR TO APPROVAL BY THE ENGINEER AND TCEQ. CONTRACTOR SHALL NOTIFY THE ENGINEER AND TCEQ INSPECTOR WHEN LIFT STATION CONSTRUCTION HAS PROGRESSED TO THE FOLLOWING MILESTONES:

1. WHEN LIFT STATION PUMPS ARRIVED AT THE SITE.
2. PRIOR TO PLACEMENT OF HMAC, AND CONCRETE DRIVEWAY.
3. PIPELINE AND WET WELL HYDROSTATIC TESTING, FACILITY START UP, ALL FUNCTIONAL TESTING, PROJECT WALK THROUGH (S), AND FINAL ACCEPTANCE.
4. COMPLETION OF STRUCTURAL STEEL PLACEMENT AND ERECTION OF FOUNDATIONS, AND PADS.
5. UPON COMPLETION OF CONTROL PANEL CANOPY ERECTION.

WORK SHALL NOT CONTINUE ON THE LIFT STATION UNTIL THE ENGINEER AND TCEQ HAS HAD AN OPPORTUNITY TO OBSERVE THE STATUS OF CONSTRUCTION OF EACH STAGE. THE CONTRACTOR SHALL PROVIDE THE ENGINEER 48 HOURS ADVANCED NOTICE PRIOR THE TIME THAT THE LIFT STATION WILL BE AT THE REQUIRED STAGE.

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LANTANA SUBDIVISION
UNIT 1

WET WELL PLAN AND PROFILE

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

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JAVIER CASTELLO
122170
5/12/2025

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TBPE No. 455
TBPLS No. 10048500

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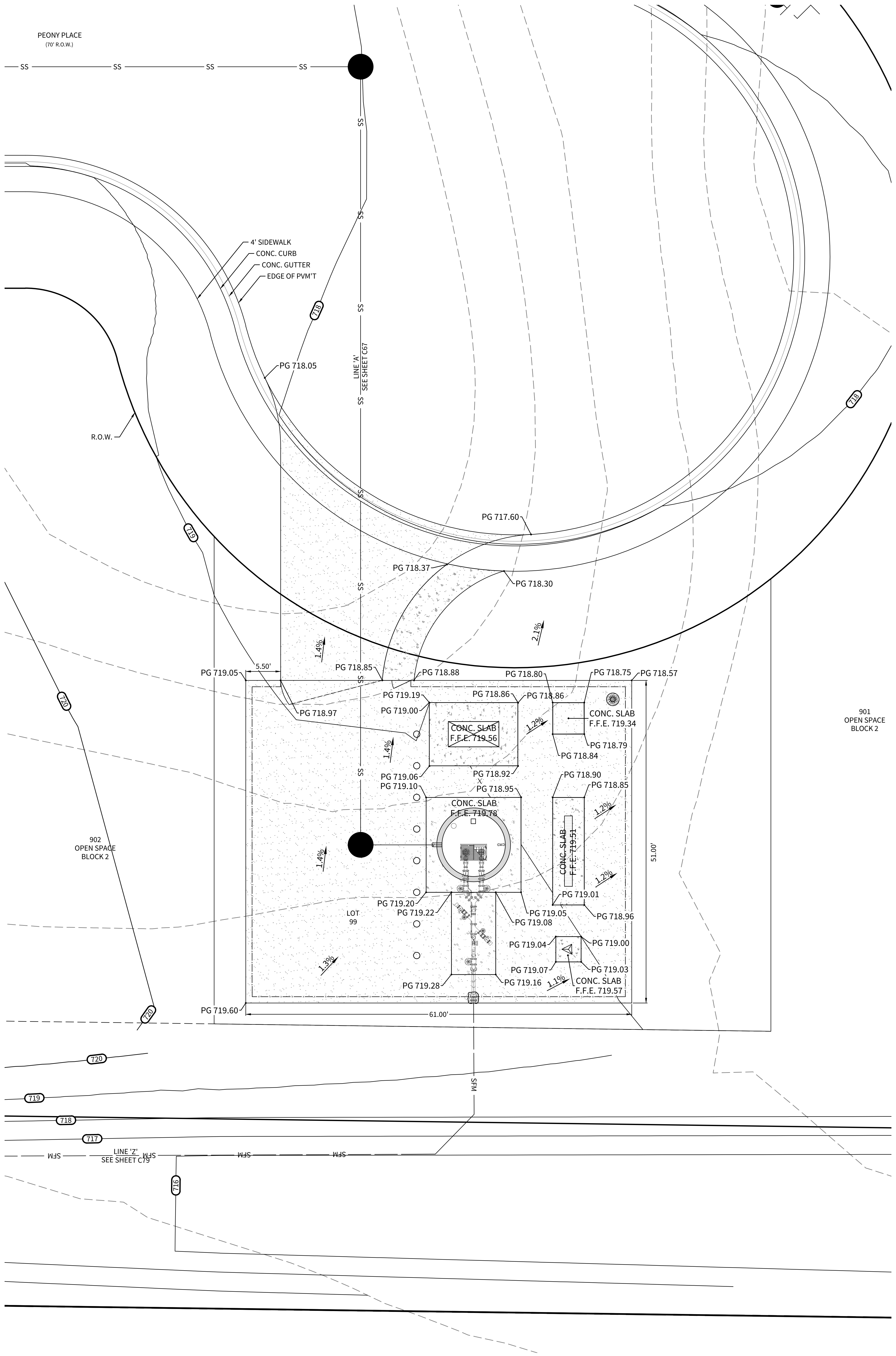

SCALE: 1"=10'

LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.CA. EASEMENT	- - - -
EXISTING WATER LINE	—— Wx ——
EXISTING SEWER LINE	—— SSx ——
EXISTING MANHOLE	●
PROPOSED WATER LINE	—— W ——
PROPOSED SEWER GRAVITY MAIN	—— SS ——
PROPOSED MANHOLE	●
PROPOSED SEWER FORCE MAIN	—— SFM ——
PROPOSED CHAINLINK FENCE	— X — X — X —
PROPOSED CONCRETE PAD	▨
PROPOSED CONCRETE PAVEMENT	▨

NOTES:

1. THE EXISTENCE AND LOCATION OF EXISTING UNDERGROUND CABLE INDICATED ON THESE PLANS ARE TAKEN FROM THE BEST RECORDS AVAILABLE, AND ARE NOT GUARANTEED TO BE ACCURATE. THE CONTRACTOR SHOULD CALL FOR LOCATES THROUGH THE "ONE CALL" UTILITY LOCATE SERVICE (1-800-344-8377) 48 HOURS PRIOR TO CONSTRUCTION/EXCAVATION WORK. CONTRACTORS HAVE THE RESPONSIBILITY TO PROTECT AND SUPPORT TELEPHONE COMPANY FACILITIES DURING CONSTRUCTION. CONTRACTOR SHALL COORDINATE EXISTING UNDERGROUND CABLE RELOCATION IF A ALIGNMENT CONFLICT ARISES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY.
3. REFERENCE ELECTRICAL PLANS AS NEEDED.
4. CONTRACTOR SHALL GRADE THE SITE TO PROVIDE DRAINAGE AROUND CONCRETE SLABS.
5. ALL CONCRETE PADS SHALL BE AT LEAST 6" ABOVE ADJACENT PROPOSED GROUND.
6. THE DESIGN AND CONSTRUCTION OF THIS LIFT STATION SHALL FOLLOW ALL GUIDELINES SET BY TCEQ.

CAUTION!!

EXISTING UTILITIES ARE WITHIN THE LIMITS OF CONSTRUCTION. CONTRACTORS SHALL EXERCISE EXTRA CARE IN DIGGING ANY TRENCH FOR PROPOSED UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE, VERIFY THE EXACT LOCATION & IDENTIFY AREA OF CONFLICTS WITH EXISTING UTILITIES AND SHALL NOTIFY THE ENGINEER IF CONFLICT IS FOUND.

CAUTION!!

THE CONTRACTOR SHALL BE AWARE THAT A OVERHEAD AND UNDERGROUND UTILITIES EXIST ALONG VALLERIE LANE ROAD AND IN THE VICINITY OF THE LIFT STATION. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

TRENCH EXCAVATION PROTECTION

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

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LANTANA SUBDIVISION
UNIT 1

LIFT STATION GRADING PLAN

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

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1.	2024-07-15	REVISED WET WELL LAYOUT
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JAVIER CASTELLO
122170
5/12/2025

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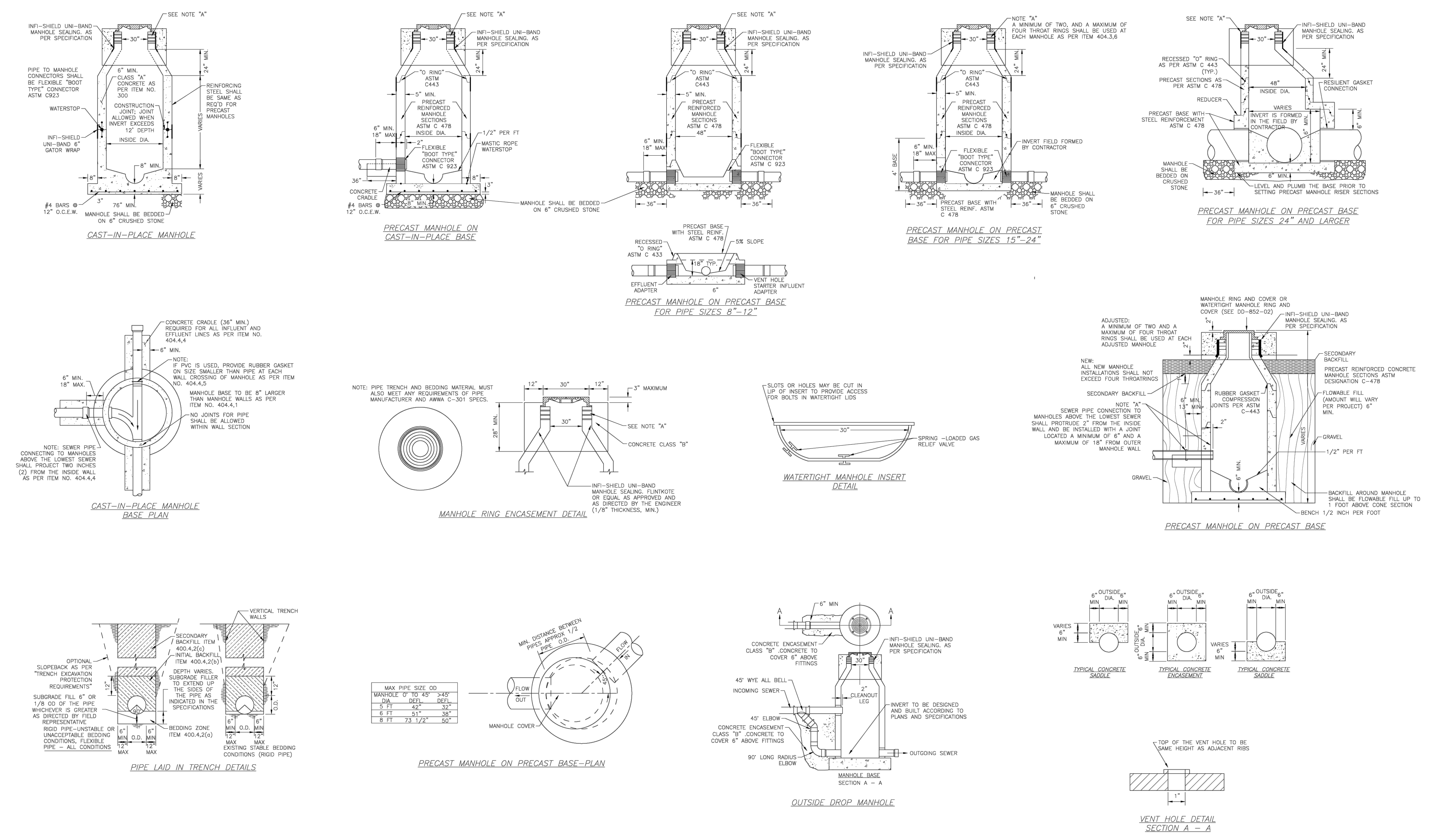

CAST–IN–PLACE MANHOLE

PRECAST MANHOLE ON CAST–IN–PLACE BASE

PRECAST MANHOLE ON PRECAST BASE FOR PIPE SIZES 8"–12"

PRECAST MANHOLE ON PRECAST BASE FOR PIPE SIZES 15"–24"

PRECAST MANHOLE ON PRECAST BASE FOR PIPE SIZES 24" AND LARGER

CAST–IN–PLACE MANHOLE BASE PLAN

MANHOLE RING ENCASEMENT DETAIL

WATERTIGHT MANHOLE INSERT DETAIL

PRECAST MANHOLE ON PRECAST BASE

PIPE LAID IN TRENCH DETAILS

PRECAST MANHOLE ON PRECAST BASE–PLAN

OUTSIDE DROP MANHOLE

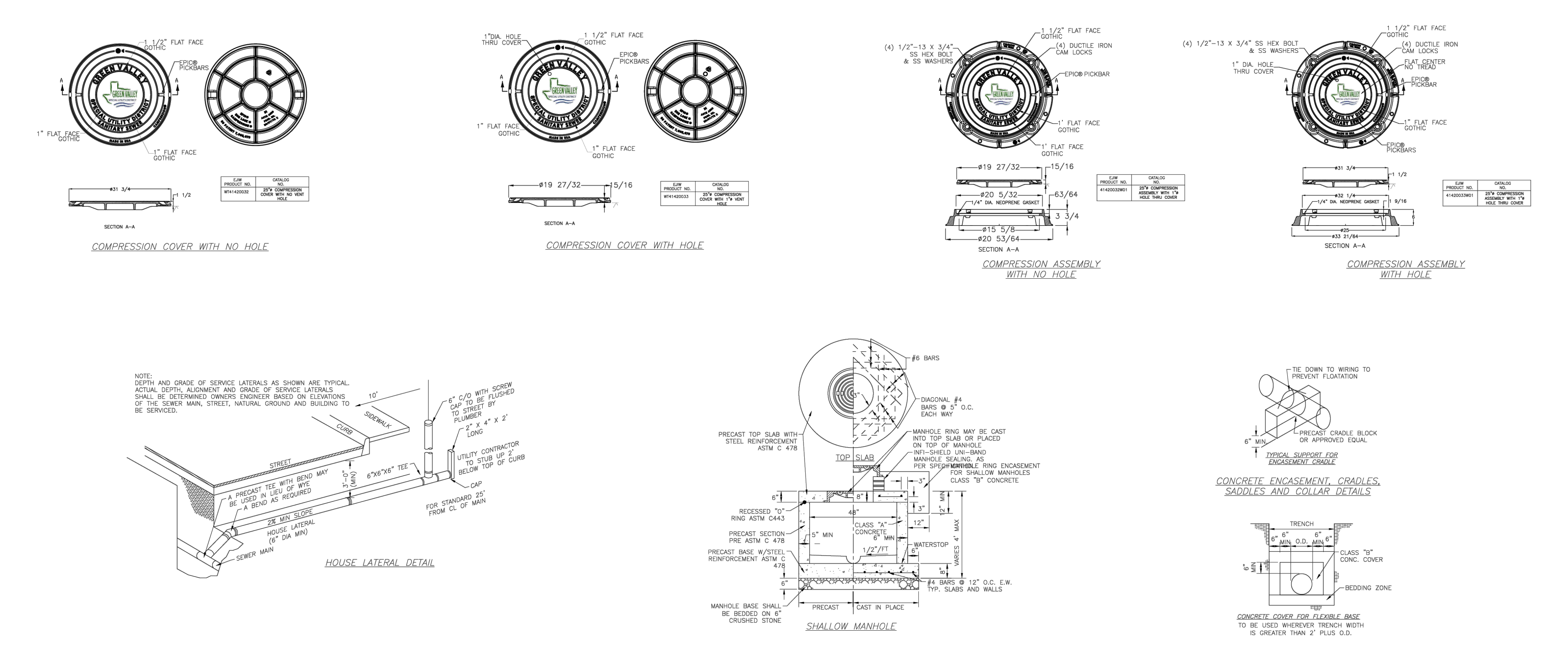
TYPICAL CONCRETE SADDLE

TYPICAL CONCRETE ENCASEMENT

TYPICAL CONCRETE SADDLE

VENT HOLE DETAIL
SECTION A – A

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	SANITARY SEWER SYSTEM STANDARD DETAILS (1 OF 2)	
REVISED: OCTOBER 2021	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. S-1


COMPRESSION COVER WITH NO HOLE

COMPRESSION COVER WITH HOLE

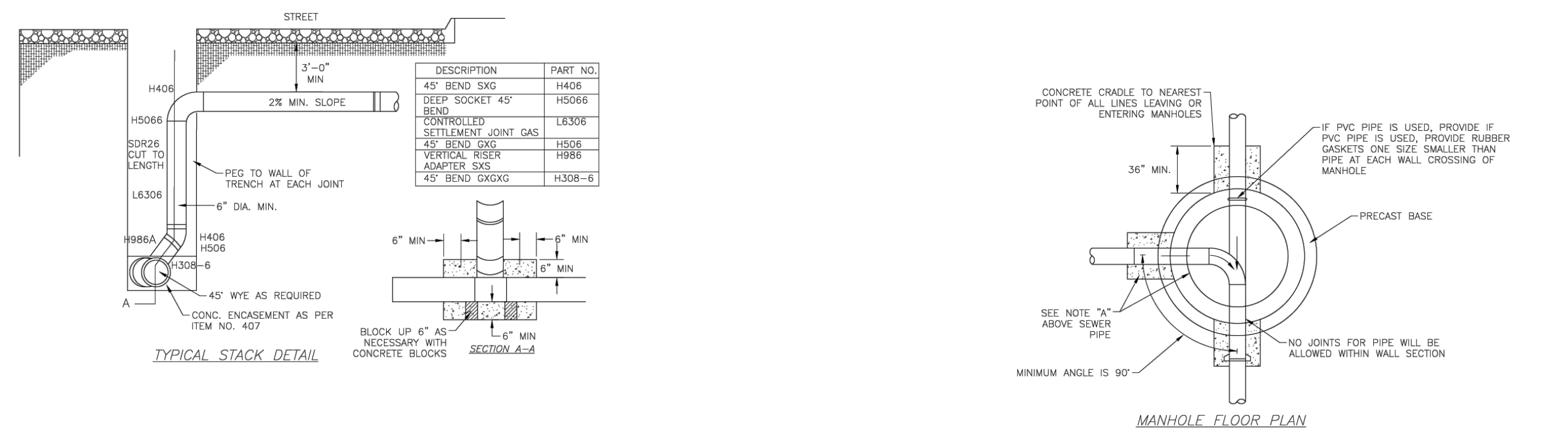
COMPRESSION ASSEMBLY WITH NO HOLE

COMPRESSION ASSEMBLY WITH HOLE

HOUSE LATERAL DETAIL

SHALLOW MANHOLE

CONCRETE ENCASEMENT, CRADLES, SADDLES AND COLLAR DETAILS


TYPICAL STACK DETAIL

MANHOLE FLOOR PLAN

SANITARY SEWER GENERAL NOTES

ALL NEW EXISTING SANITARY SEWER MAINS AND MANHOLES IN THIS PROJECT ARE TO REMAIN ACTIVE AND SHALL BE PROTECTED BY THE CONTRACTOR. ALL LINES AND MANHOLES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR RECONSTRUCTED BY THE CONTRACTOR AT NO ADDITIONAL COST. NOTIFY GVSUD'S UTILITY INSPECTORS AT (210)372–2223 PRIOR TO ENCASING.

THE EXISTING CONDITIONS OF SEWER MAINS AND MANHOLES HAVE BEEN DOCUMENTED BY GVSUD. A PRE–PRECONSTRUCTION VIDEO OF THE LINES AND PHYSICAL SURVEY OF THE MANHOLES WILL BE USED TO DETERMINE THE PRE–EXISTING CONDITION OF THE SEWER SYSTEM. IF POST CONSTRUCTION INSPECTION WORK SHOWS PORTIONS OF SANITARY SEWER MAINS OR MANHOLES DAMAGED BY THE CONTRACTOR, THE CONTRACTOR SHALL REPAIR OR REPLACE THE SEWER MAIN AT THEIR EXPENSE, TO THE APPROVAL OF GVSUD'S INSPECTORS OR ENGINEER.

GREEN VALLEY SPECIAL UTILITY DISTRICT STANDARD DETAILS	SANITARY SEWER SYSTEM STANDARD DETAILS (2 OF 2)	
REVISED: OCTOBER 2021	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	DETAIL NO. S-2

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LANTANA SUBDIVISION
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SANITARY SEWER DETAILS

DATE
05/12/2025

PROJECT NO.
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JAVIER CASTELLO
122170
5/12/2025

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P:\04037\003\2-DWG\4-Plans\C90 SANITARY SEWER DETAILS.dwg 2025/05/12 2:02pm tduano

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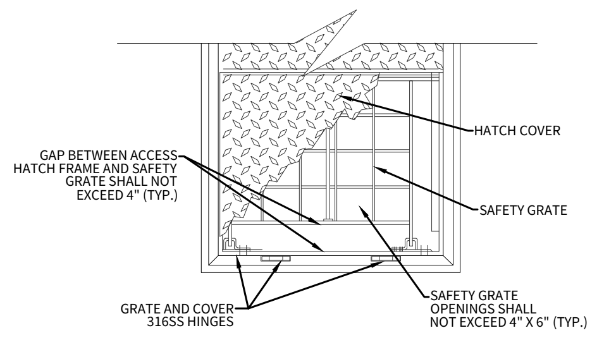
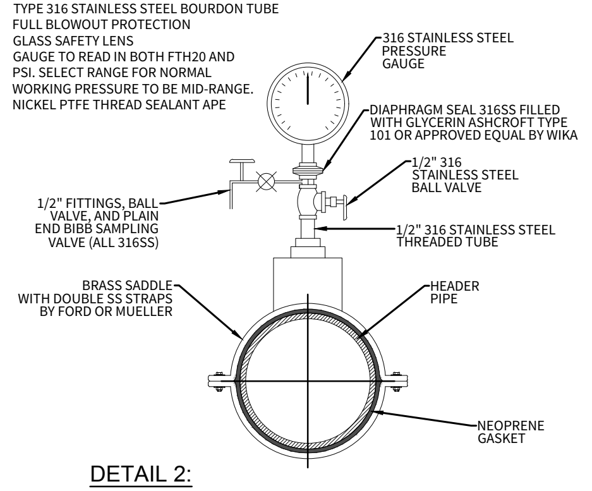

HATCH COVER
GAP BETWEEN ACCESS HATCH FRAME AND SAFETY GRATE SHALL NOT EXCEED 4" (TYP.)
SAFETY GRATE
GRATE AND COVER 316SS HINGES
SAFETY GRATE OPENINGS SHALL NOT EXCEED 4" X 6" (TYP.)

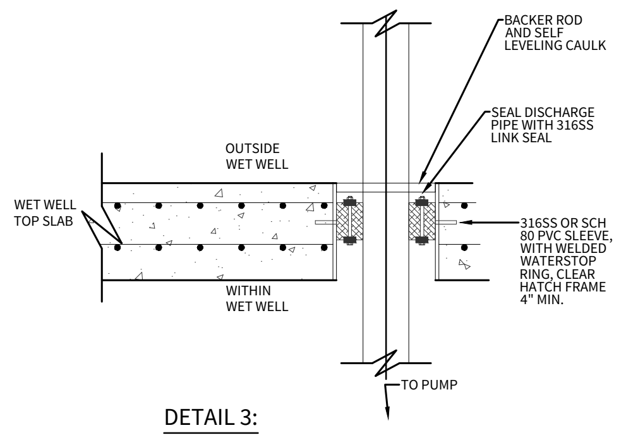
KEY NOTES:
- TOP OF SAFETY GRATES SHALL BE 1/2" MAXIMUM BELOW TOP OF CONCRETE SLAB.
- ACCESS HATCH COVER SHALL BE PERFECTLY LEVELED WITH TOP OF CONCRETE SLAB.
- HATCH ASSEMBLY SHALL BE EJ SAFE HATCH OR GBRA APPROVED EQUAL WITH ALUMINUM FRAME, GRATES, COVERS AND 316SS HARDWARE, FASTENERS, AND HINGES.
- COVERS SHALL BE EQUIPPED WITH PADLOCK STAPLES.
- HATCH ASSEMBLY SHALL BE RATED FOR 300 PSF LIVE LOAD.
- PROVIDE 2 EACH HATCH KEYS.

DETAIL 1:
SAFETY GRATE DETAILS
SCALE: N.T.S.

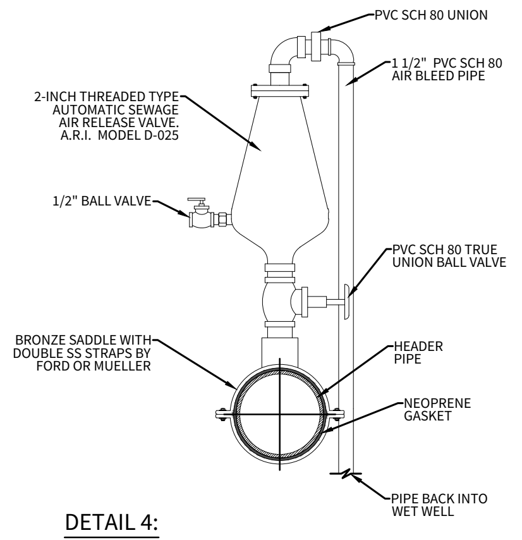
KEY NOTES:
- PRESSURE GAUGE SHALL BE RATED FOR CORROSIVE SERVICE
- 4" DIAL SIZE
- GRADE 1A
- LIQUID FILLED
- TYPE 316 STAINLESS STEEL BOURDON TUBE
- FULL BLOWOUT PROTECTION
- GLASS SAFETY LENS
- GAUGE TO READ IN BOTH FTH20 AND PSI. SELECT RANGE FOR NORMAL WORKING PRESSURE TO BE MID-RANGE.
- NICKEL PTFE THREAD SEALANT APE


316 STAINLESS STEEL PRESSURE GAUGE
DIAPHRAGM SEAL 316SS FILLED WITH GLYCERIN ASHCROFT TYPE 101 OR APPROVED EQUAL BY WIKA
1/2" 316 STAINLESS STEEL BALL VALVE
1/2" FITTINGS, BALL VALVE, AND PLAIN END BIBB SAMPLING VALVE (ALL 316SS)
1/2" 316 STAINLESS STEEL THREADED TUBE
BRASS SADDLE WITH DOUBLE SS STRAPS BY FORD OR MUELLER
HEADER PIPE
NEOPRENE GASKET

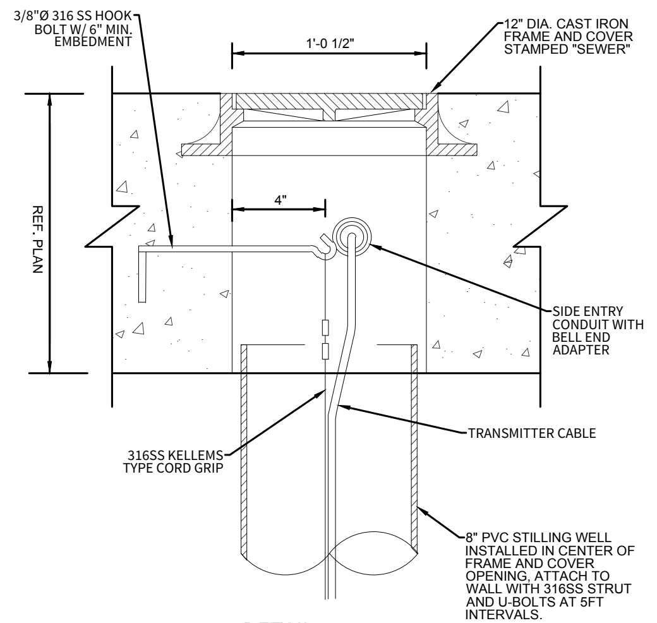
DETAIL 2:
PRESSURE GAUGE INSTALLATION DETAIL
SCALE: N.T.S.


BACKER ROD AND SELF LEVELING CAULK
SEAL DISCHARGE PIPE WITH 316SS LINK SEAL
OUTSIDE WET WELL
WET WELL TOP SLAB
316SS OR SCH 80 PVC SLEEVE, WITH WELDED WATERSTOP RING, CLEAR HATCH FRAME 4" MIN.
WITHIN WET WELL
TO PUMP

DETAIL 3:
TYPICAL PIPE PENETRATION DETAIL
SCALE: N.T.S.

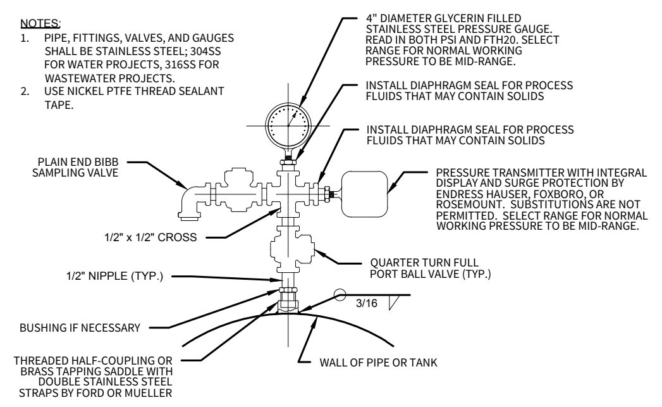

PVC SCH 80 UNION
1 1/2" PVC SCH 80 AIR BLEED PIPE
2-INCH THREADED TYPE AUTOMATIC SEWAGE AIR RELEASE VALVE. A.R.I. MODEL D-025
1/2" BALL VALVE
PVC SCH 80 TRUE UNION BALL VALVE
BRONZE SADDLE WITH DOUBLE SS STRAPS BY FORD OR MUELLER
HEADER PIPE
NEOPRENE GASKET
PIPE BACK INTO WET WELL

DETAIL 4:
AIR RELEASE VALVE INSTALLATION DETAIL
SCALE: N.T.S.

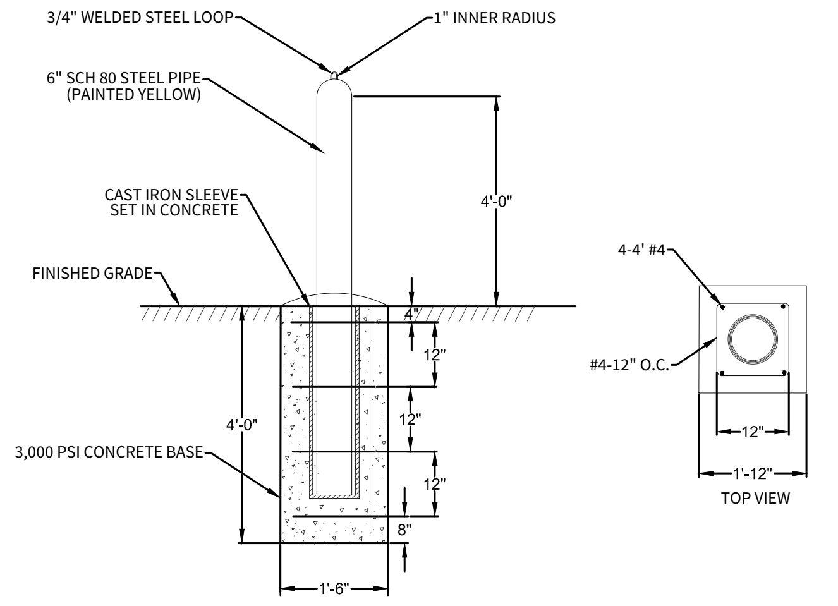

3/8"Ø 316 SS HOOK BOLT W/ 6" MIN. EMBEDMENT
1'-0 1/2"
12" DIA. CAST IRON FRAME AND COVER STAMPED "SEWER"
REF. PLAN
4"
SIDE ENTRY CONDUIT WITH BELL END ADAPTER
TRANSMITTER CABLE
316SS KELLEMS TYPE CORD GRIP
8" PVC STILLING WELL INSTALLED IN CENTER OF FRAME AND COVER OPENING, ATTACH TO WALL WITH 316SS STRUT AND U-BOLTS AT 5FT INTERVALS.

DETAIL 5:
STILLING WELL
SCALE: N.T.S.

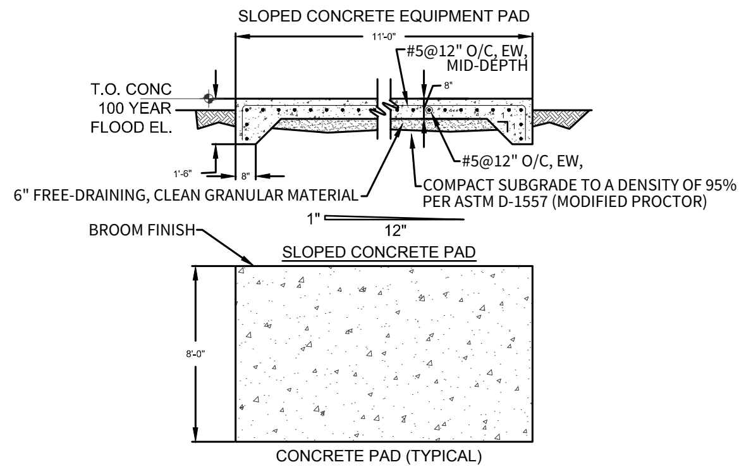
NOTES:
1. PIPE, FITTINGS, VALVES, AND GAUGES SHALL BE STAINLESS STEEL; 304SS FOR WATER PROJECTS, 316SS FOR WASTEWATER PROJECTS.
2. USE NICKEL PTFE THREAD SEALANT TAPE.


4" DIAMETER GLYCERIN FILLED STAINLESS STEEL PRESSURE GAUGE. READ IN BOTH PSI AND FTH20. SELECT RANGE FOR NORMAL WORKING PRESSURE TO BE MID-RANGE.
INSTALL DIAPHRAGM SEAL FOR PROCESS FLUIDS THAT MAY CONTAIN SOLIDS
INSTALL DIAPHRAGM SEAL FOR PROCESS FLUIDS THAT MAY CONTAIN SOLIDS
PLAIN END BIBB SAMPLING VALVE
PRESSURE TRANSMITTER WITH INTEGRAL DISPLAY AND SURGE PROTECTION BY ENDRESS HAUSER, FOXBORO, OR ROSEMOUNT. SUBSTITUTIONS ARE NOT PERMITTED. SELECT RANGE FOR NORMAL WORKING PRESSURE TO BE MID-RANGE.
1/2" x 1/2" CROSS
QUARTER TURN FULL PORT BALL VALVE (TYP.)
1/2" NIPPLE (TYP.)
3/16
BUSHING IF NECESSARY
THREADED HALF-COUPLING OR BRASS TAPPING SADDLE WITH DOUBLE STAINLESS STEEL STRAPS BY FORD OR MUELLER
WALL OF PIPE OR TANK

DETAIL 6:
PRESSURE TRANSMITTER AND GAUGE ASSEMBLY
SCALE: N.T.S.

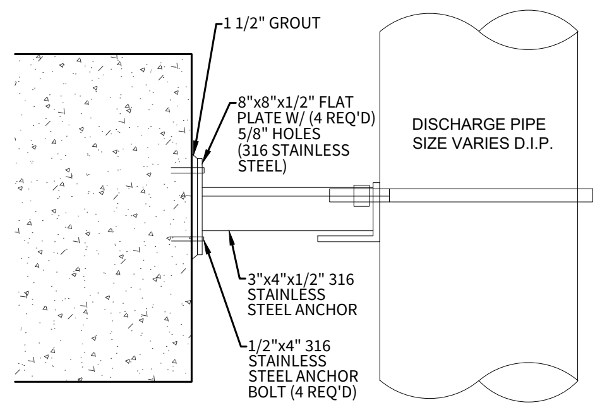


DETAIL 7:
REMOVABLE BOLLARD DETAIL
SCALE: N.T.S.

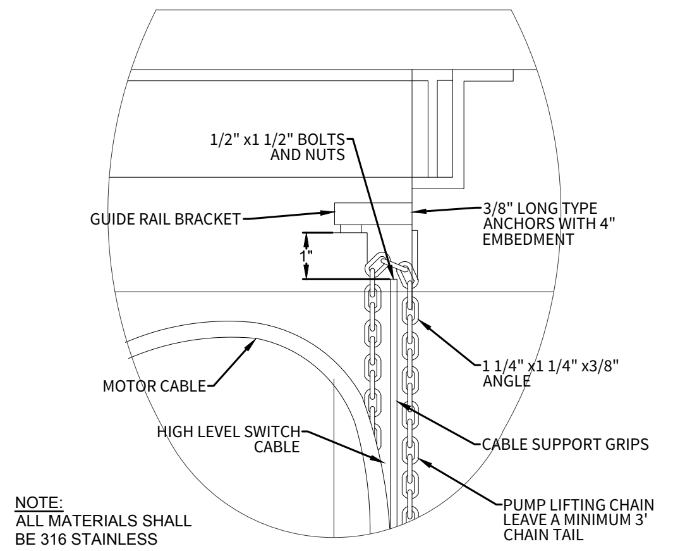

SLOPED CONCRETE EQUIPMENT PAD
11'-0"
#5@12" O/C, EW, MID-DEPTH
8"
T.O. CONC
100 YEAR FLOOD EL.
#5@12" O/C, EW,
1'-6"
8"
6" FREE-DRAINING, CLEAN GRANULAR MATERIAL
COMPACT SUBGRADE TO A DENSITY OF 95% PER ASTM D-1557 (MODIFIED PROCTOR)
1"
12"
BROOM FINISH
SLOPED CONCRETE PAD
8'-0"
CONCRETE PAD (TYPICAL)

STRUCTURAL NOTES:
1. ALL CONCRETE SHALL BE 4000 PSI MINIMUM COMPRESSIVE STRENGTH; W/C = 0.45, AIR CONTENT 6% (±) 1%; SLUMP = 4" BEFORE ADDING WATER REDUCING AGENT.
2. ALL STEEL SHALL BE ASTM A615, GR 60.
3. ALL DIMENSIONS SHOWN ARE TYPICAL ONLY. CONTRACTOR TO VERIFY OVERALL SLAB SIZE WITH EQUIPMENT MANUFACTURER AND ENGINEER PRIOR TO CONSTRUCTION.
4. ALL SLABS SHALL HAVE TOOLED EDGES ON ALL SIDES.

DETAIL 8:
EQUIPMENT PAD DETAIL
SCALE: N.T.S.

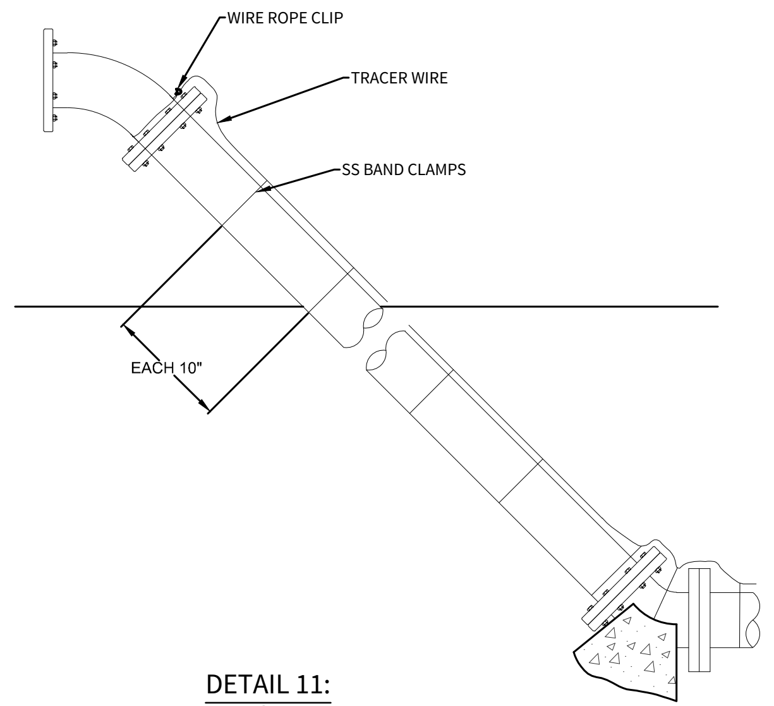

1 1/2" GROUT
8"x8"x1/2" FLAT PLATE W/ (4 REQ'D) 5/8" HOLES (316 STAINLESS STEEL)
DISCHARGE PIPE SIZE VARIES D.I.P.
3"x4"x1/2" 316 STAINLESS STEEL ANCHOR
1/2"x4" 316 STAINLESS STEEL ANCHOR BOLT (4 REQ'D)

DETAIL 9:
PIPE SUPPORT DETAIL
SCALE: N.T.S.

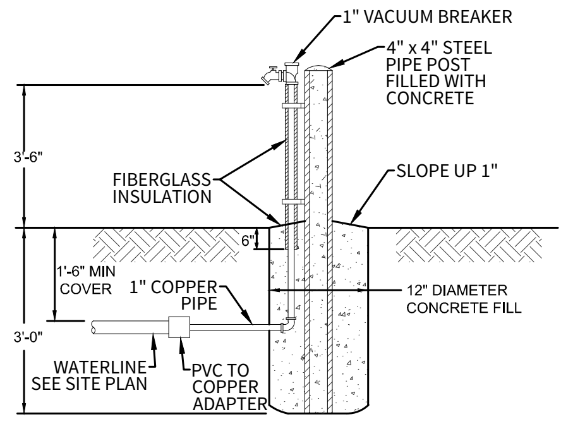

1/2" x1 1/2" BOLTS AND NUTS
GUIDE RAIL BRACKET
3/8" LONG TYPE ANCHORS WITH 4" EMBEDMENT
1"
MOTOR CABLE
1 1/4" x1 1/4" x3/8" ANGLE
HIGH LEVEL SWITCH CABLE
CABLE SUPPORT GRIPS
PUMP LIFTING CHAIN LEAVE A MINIMUM 3' CHAIN TAIL

NOTE:
ALL MATERIALS SHALL BE 316 STAINLESS STEEL

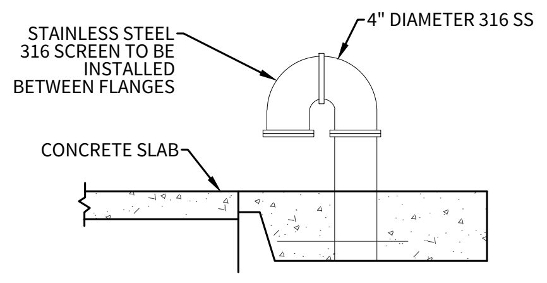
DETAIL 10:
CABLE AND LIFTING CHAIN HANGING DETAIL
SCALE: N.T.S.



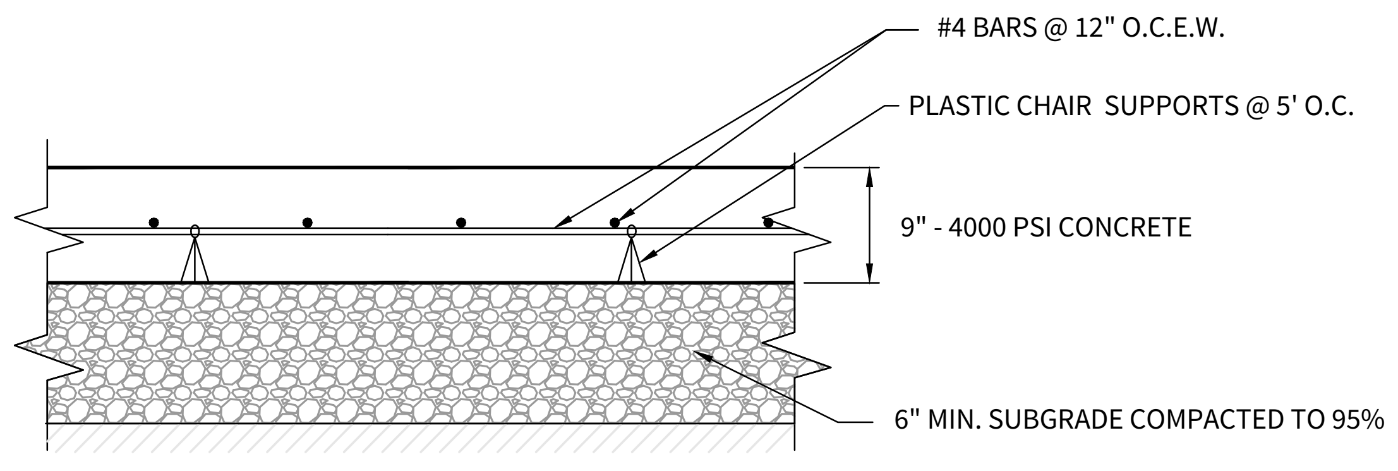
DETAIL 11:
TRACER WIRE DETAIL
SCALE: N.T.S.



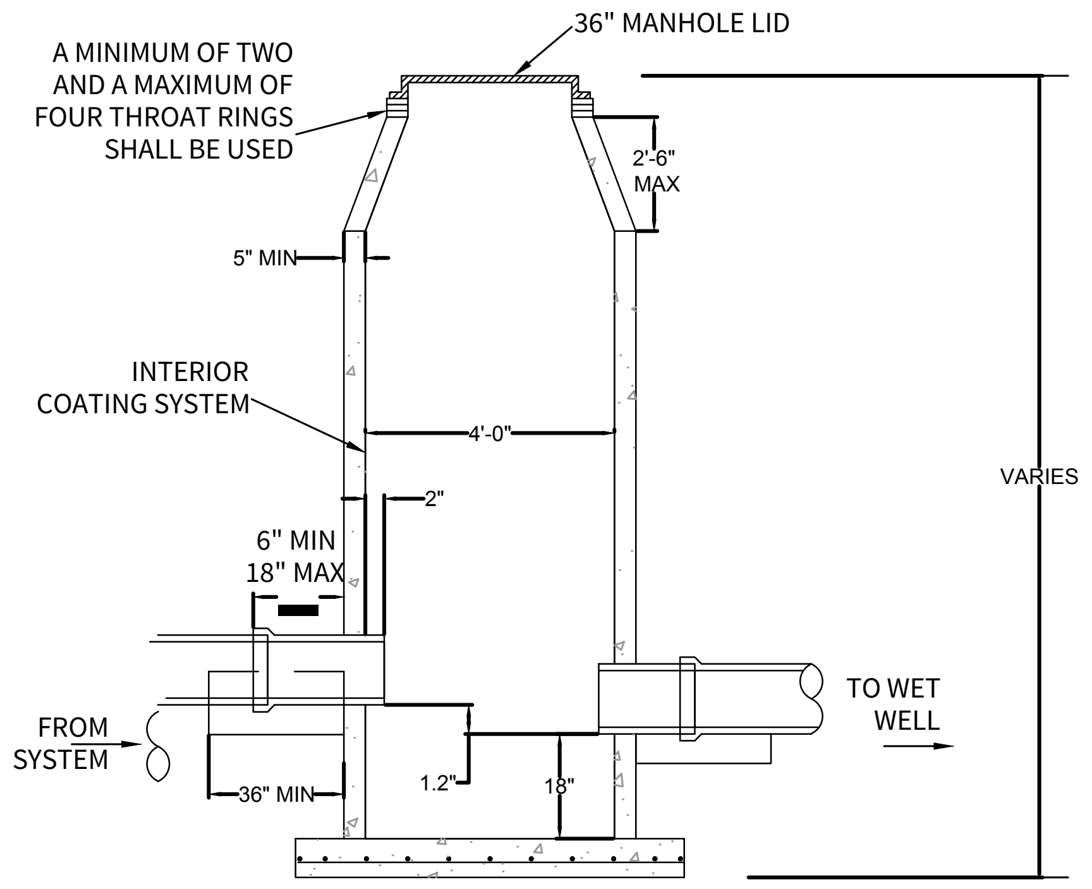
DETAIL 12:
HOSE BIB DETAIL
SCALE: N.T.S.



DETAIL 13:
VENT PIPE DETAIL
SCALE: N.T.S.


#4 BARS @ 12" O.C.E.W.
PLASTIC CHAIR SUPPORTS @ 5' O.C.
9" - 4000 PSI CONCRETE
6" MIN. SUBGRADE COMPACTED TO 95%

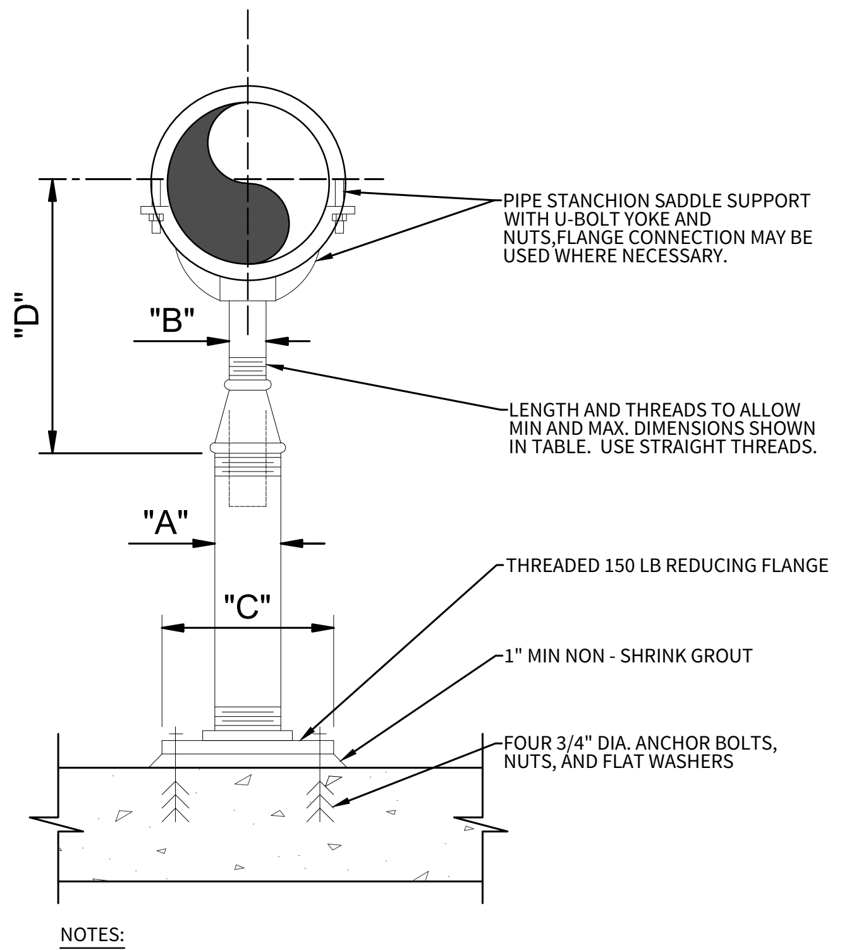
DETAIL 14:
CONCRETE PAVING DETAIL
SCALE: N.T.S.



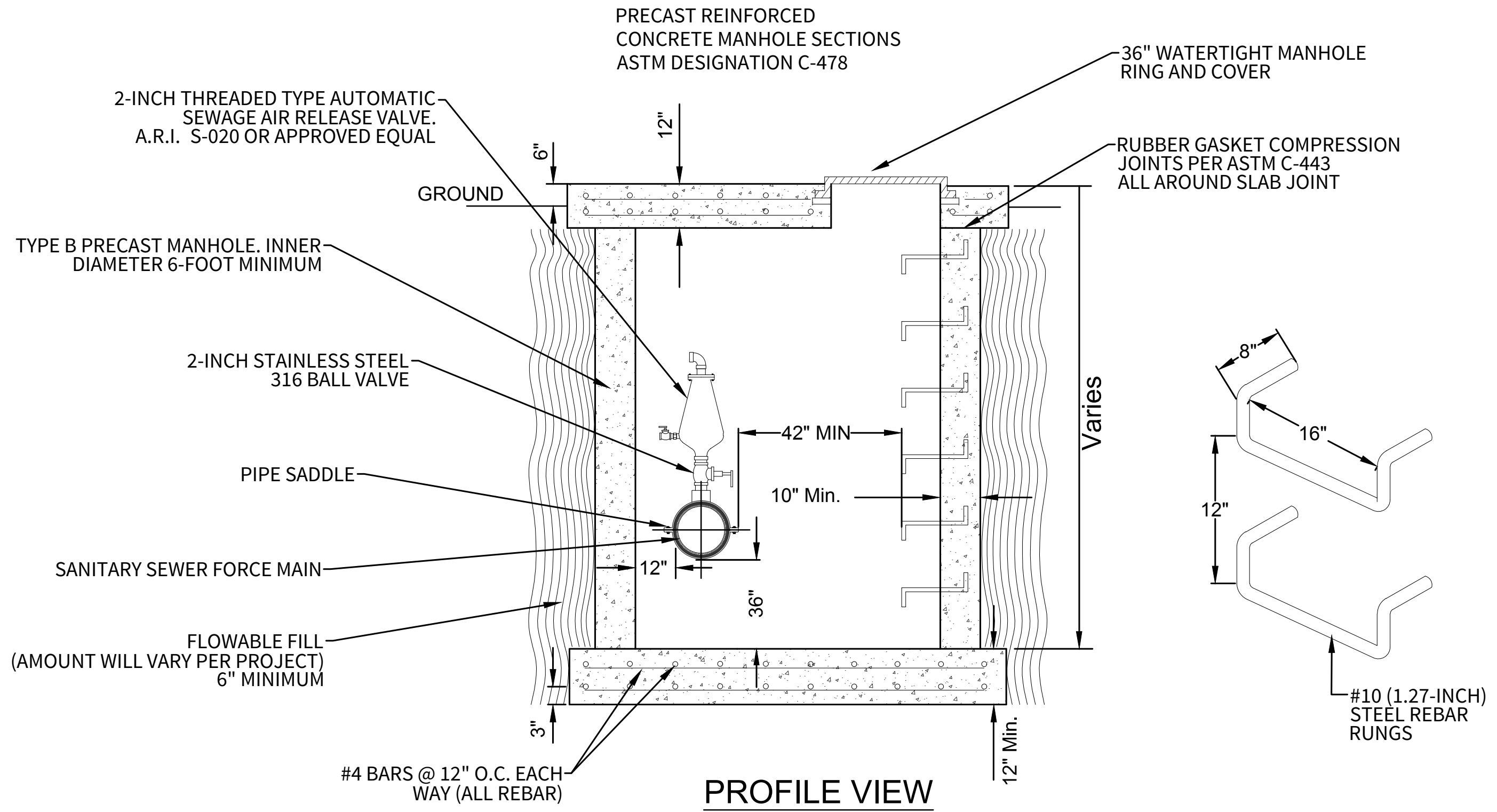
PRECAST REINFORCED CONCRETE MANHOLE SECTIONS ASTM DESIGNATION C-478.
MANHOLE TO BE COATED PER GVSID SPECIFICATIONS

DETAIL 17:
LIFT STATION SITE MANHOLE ADJACENT TO WET WELL
SCALE: N.T.S.

ADJUSTABLE PIPE SUPPORT SCHEDULE DIMENSIONS IN INCHES					
PIPE SIZE	"A"	"B"	"C"	"D"	
				MINIMUM	MAXIMUM
≤ 2 1/2	2 1/2	1 1/2	9	8	13
3	2 1/2	1 1/2	9	8 1/2	13 1/2
3 1/2	2 1/2	1 1/2	9	8 1/2	13 1/2
4	3	2 1/2	9	9 1/2	14
6	3	2 1/2	9	10 1/2	15 1/2
8	3	2 1/2	9	11 1/2	16 1/2
10	3	2 1/2	9	13 1/2	18 1/2
12	3	2 1/2	9	15	19 1/2
14	4	3	11	16 1/2	20 1/2
16	4	3	11	17 1/2	22 1/2
18	6	3 1/2	13 1/2	19 1/2	24
20	6	3 1/2	13 1/2	21	25 1/2
24	6	4	13 1/2	23 1/2	28 1/2
30	6	4	13 1/2	27	31 1/2
32	6	4	13 1/2	28 1/2	32 1/2
36	6	4	13 1/2	30 1/2	34 1/2


PIPE STANCHION SADDLE SUPPORT WITH U-BOLT YOKE AND NUTS,FLANGE CONNECTION MAY BE USED WHERE NECESSARY.
"D"
"B"
LENGTH AND THREADS TO ALLOW MIN AND MAX. DIMENSIONS SHOWN IN TABLE. USE STRAIGHT THREADS.
"A"
THREADED 150 LB REDUCING FLANGE
"C"
1" MIN NON - SHRINK GROUT
FOUR 3/4" DIA. ANCHOR BOLTS, NUTS, AND FLAT WASHERS

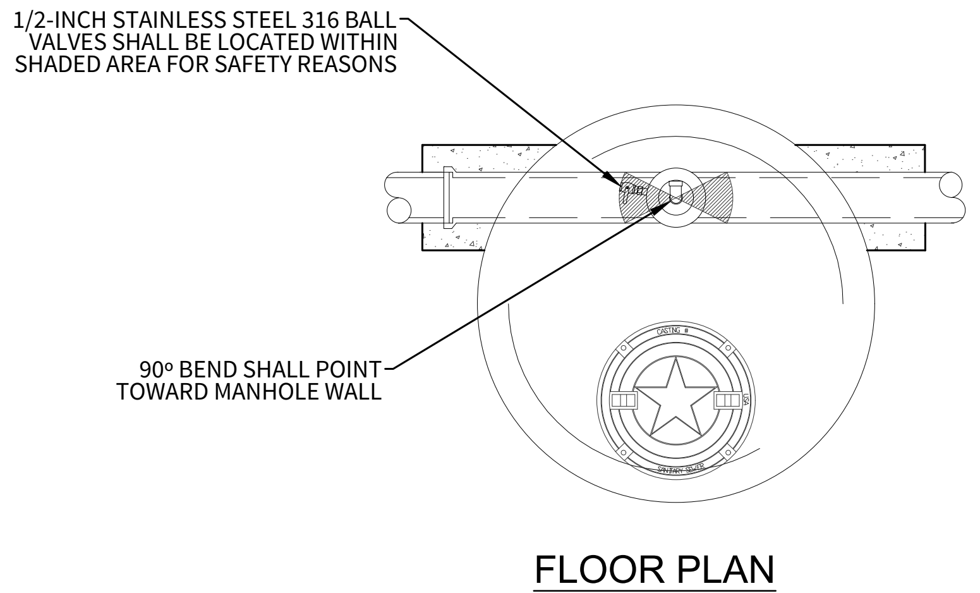
NOTES:
1. INSTALL WHERE SHOWN ON DRAWINGS.
2. ALL MATERIAL TO BE 316 STAINLESS STEEL.
3. PIPE SHALL BE SCHEDULE 40.


PRECAST REINFORCED CONCRETE MANHOLE SECTIONS ASTM DESIGNATION C-478
36" WATERTIGHT MANHOLE RING AND COVER
2-INCH THREADED TYPE AUTOMATIC SEWAGE AIR RELEASE VALVE. A.R.I. S-020 OR APPROVED EQUAL
12"
6"
GROUND
RUBBER GASKET COMPRESSION JOINTS PER ASTM C-443 ALL AROUND SLAB JOINT
TYPE B PRECAST MANHOLE. INNER DIAMETER 6-FOOT MINIMUM
2-INCH STAINLESS STEEL 316 BALL VALVE
42" MIN
10" Min.
Varies
PIPE SADDLE
SANITARY SEWER FORCE MAIN
12"
36"
FLOWABLE FILL (AMOUNT WILL VARY PER PROJECT) 6" MINIMUM
3"
12" Min.
#4 BARS @ 12" O.C. EACH WAY (ALL REBAR)

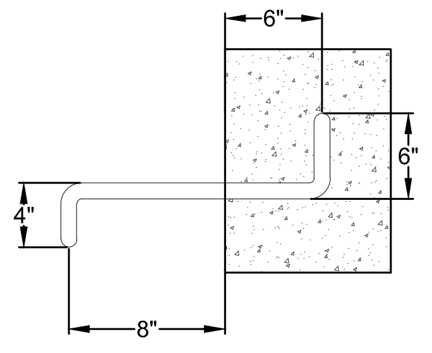
PROFILE VIEW
SCALE: N.T.S.

8"
16"
12"
#10 (1.27-INCH) STEEL REBAR RUNGS

RUNG DETAILS
SCALE: N.T.S.


1/2-INCH STAINLESS STEEL 316 BALL VALVES SHALL BE LOCATED WITHIN SHADED AREA FOR SAFETY REASONS
90º BEND SHALL POINT TOWARD MANHOLE WALL

FLOOR PLAN
SCALE: N.T.S.



RUNG DETAILS
SCALE: N.T.S.

GENERAL NOTES:
1. WATERTIGHT MANHOLE RINGS AND COVERS SHALL BE TRANS-TEX A77 "O" RING OR APPROVED EQUAL.
2. MOUNTING HARDWARE SHALL BE OF STAINLESS STEEL 316, UNLESS OTHERWISE NOTED.

DETAIL 16
AIR RELEASE VALVE INSTALLATION DETAIL AT FORCE MAIN
SCALE: N.T.S.

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LANTANA SUBDIVISION UNIT 1

LIFT STATION DETAILS

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

#	DATE
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	

JAVIER CASTELLO
122170
5/12/2025
J Castello

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C91

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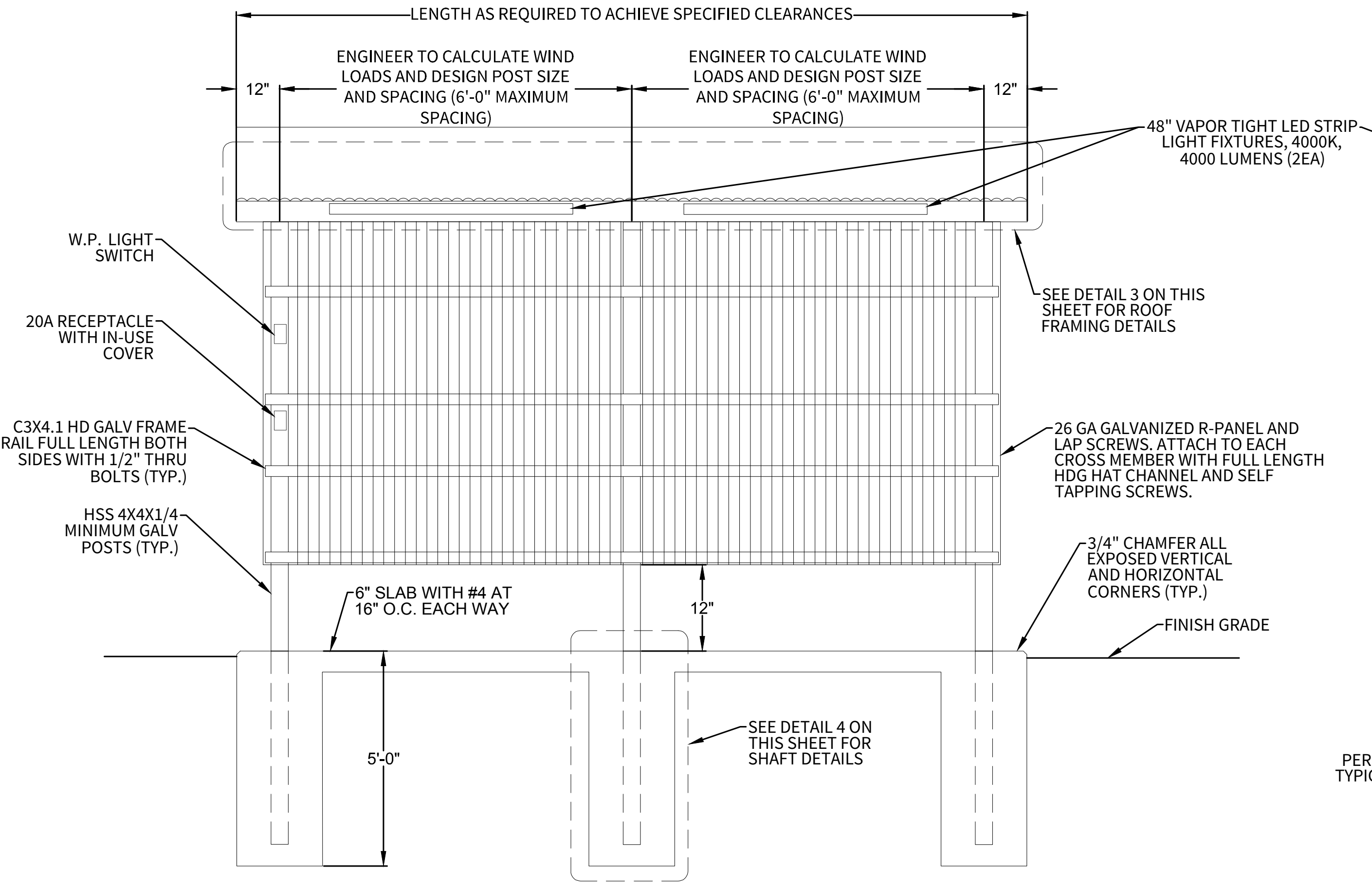
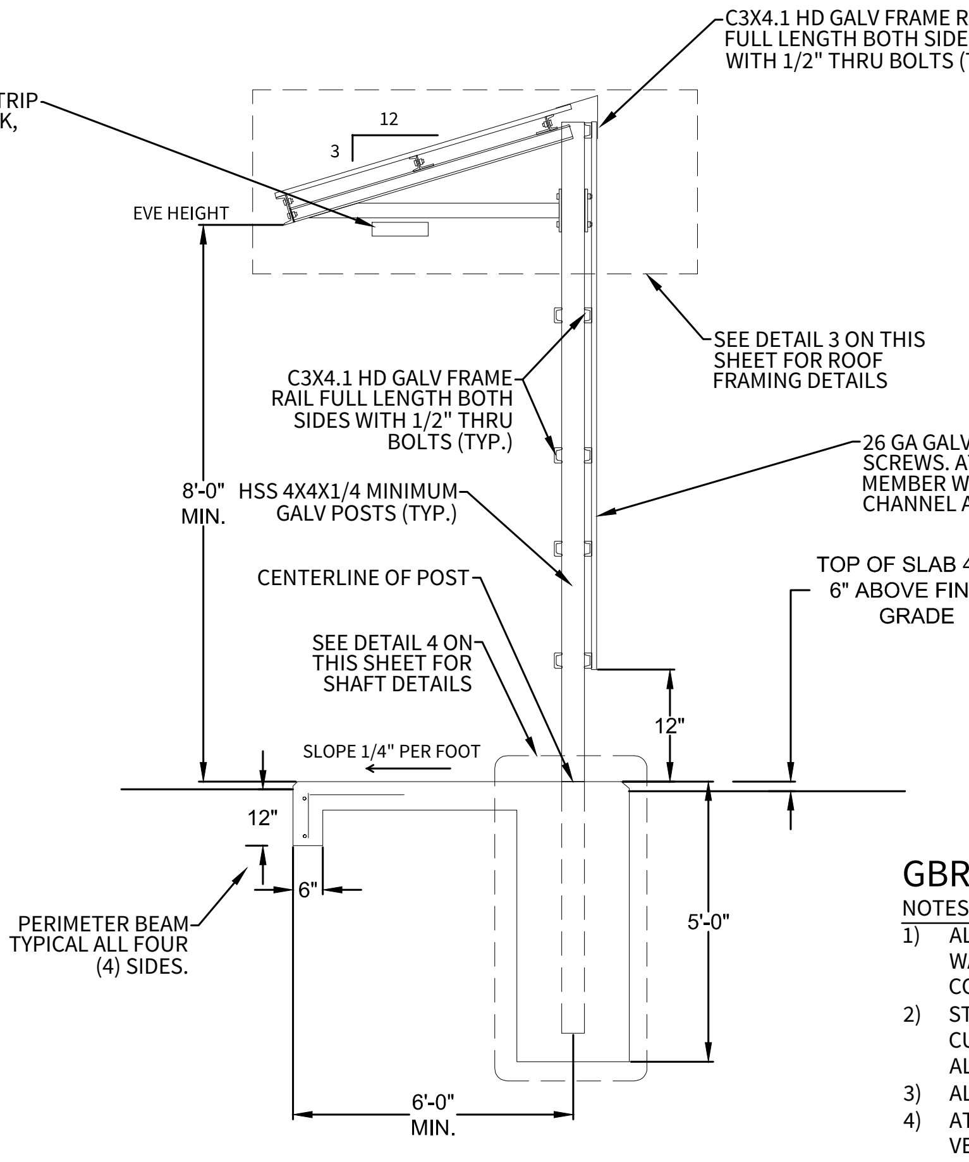
P:\04037\003\2-DWG\4-Plans\C91 LIFT STATION DETAILS.dwg 2025/05/12 2:02pm tduano


LENGTH AS REQUIRED TO ACHIEVE SPECIFIED CLEARANCES
12"
ENGINEER TO CALCULATE WIND LOADS AND DESIGN POST SIZE AND SPACING (6'-0" MAXIMUM SPACING)
ENGINEER TO CALCULATE WIND LOADS AND DESIGN POST SIZE AND SPACING (6'-0" MAXIMUM SPACING)
12"
48" VAPOR TIGHT LED STRIP LIGHT FIXTURES, 4000K, 4000 LUMENS (2EA)
W.P. LIGHT SWITCH
20A RECEPTACLE WITH IN-USE COVER
C3X4.1 HD GALV FRAME RAIL FULL LENGTH BOTH SIDES WITH 1/2" THRU BOLTS (TYP.)
HSS 4X4X1/4 MINIMUM GALV POSTS (TYP.)
SEE DETAIL 3 ON THIS SHEET FOR ROOF FRAMING DETAILS
26 GA GALVANIZED R-PANEL AND LAP SCREWS. ATTACH TO EACH CROSS MEMBER WITH FULL LENGTH HDG HAT CHANNEL AND SELF TAPPING SCREWS.
3/4" CHAMFER ALL EXPOSED VERTICAL AND HORIZONTAL CORNERS (TYP.)
6" SLAB WITH #4 AT 16" O.C. EACH WAY
12"
FINISH GRADE
5'-0"
SEE DETAIL 4 ON THIS SHEET FOR SHAFT DETAILS

1 SHELTER - FRONT VIEW

SCALE: N.T.S.


C3X4.1 HD GALV FRAME RAIL FULL LENGTH BOTH SIDES WITH 1/2" THRU BOLTS (TYP.)
12
3
EVE HEIGHT
SEE DETAIL 3 ON THIS SHEET FOR ROOF FRAMING DETAILS
C3X4.1 HD GALV FRAME RAIL FULL LENGTH BOTH SIDES WITH 1/2" THRU BOLTS (TYP.)
26 GA GALVANIZED R-PANEL AND LAP SCREWS. ATTACH TO EACH CROSS MEMBER WITH FULL LENGTH HDG HAT CHANNEL AND SELF TAPPING SCREWS.
8'-0" MIN.
HSS 4X4X1/4 MINIMUM GALV POSTS (TYP.)
CENTERLINE OF POST
TOP OF SLAB 4" TO 6" ABOVE FINISH GRADE
SEE DETAIL 4 ON THIS SHEET FOR SHAFT DETAILS
12"
SLOPE 1/4" PER FOOT
12"
6"
PERIMETER BEAM TYPICAL ALL FOUR (4) SIDES.
5'-0"
6'-0" MIN.

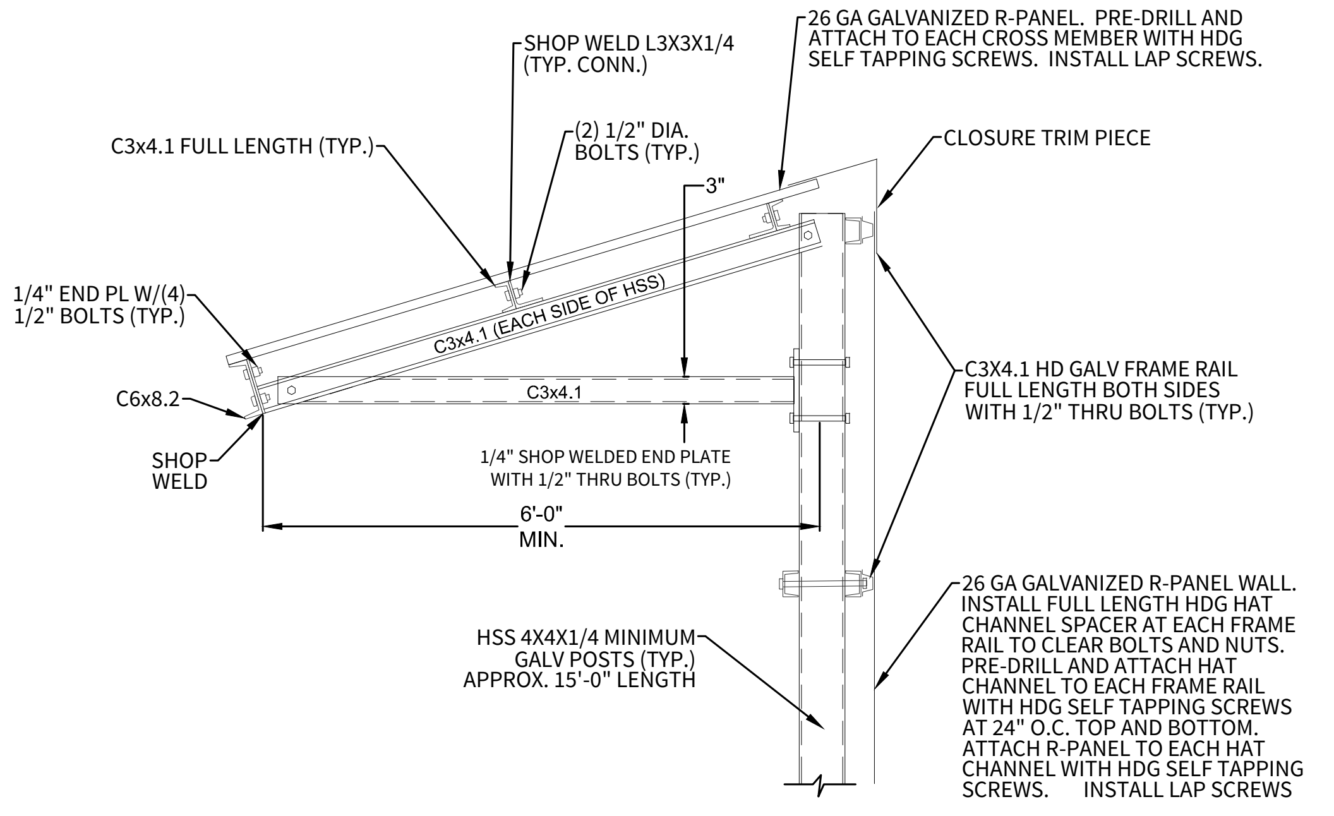
2 SHELTER - END VIEW

SCALE: N.T.S.

GBRA ELECTRICAL SHELTER

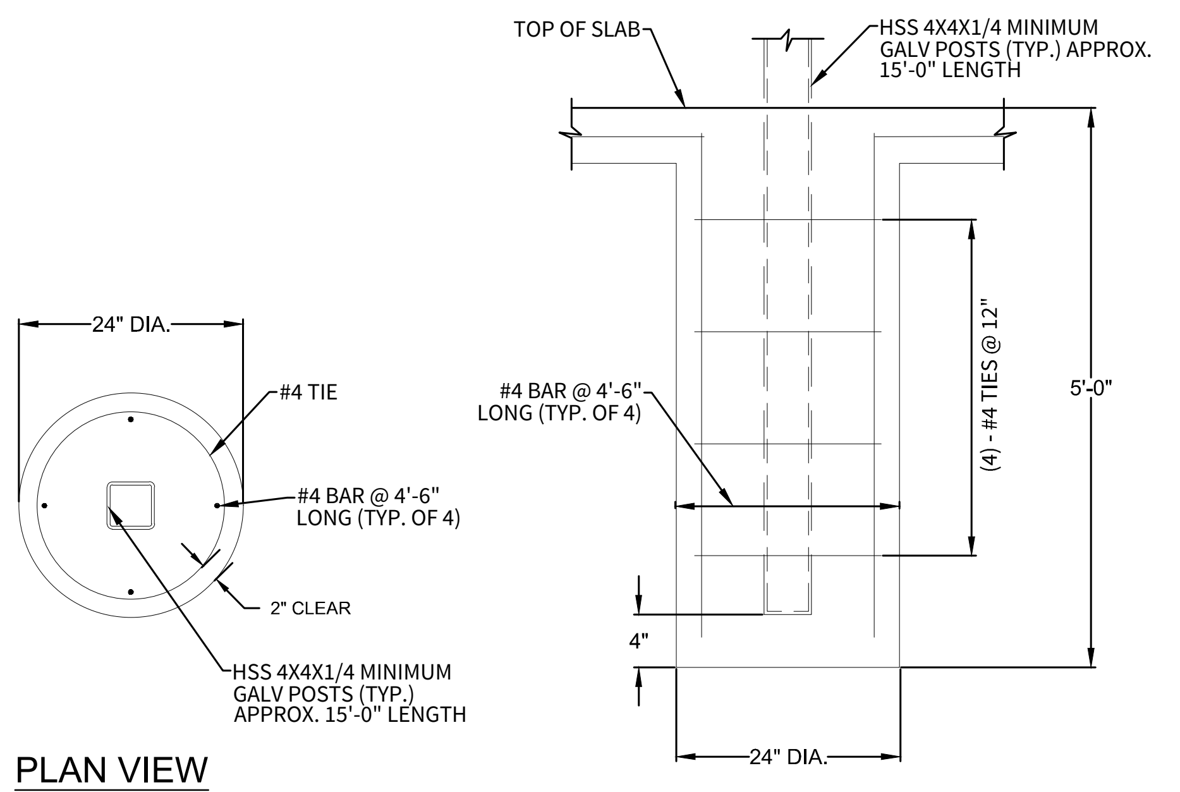
NOTES:

1) ALL BOLTS, NUTS, AND HARDWARE TO BE 316SS. FLAT WASHERS AND LOCK WASHERS ARE REQUIRED FOR ALL BOLTS AND NUTS. APPLY ANTI-SEIZE COMPOUND TO THREADS PRIOR TO INSTALLATION.
2) STRUCTURE TO BE HOT DIP GALVANIZED (HDG) AFTER FABRICATION. FIELD CUTTING AND WELDING IS NOT ALLOWED. SPLICING OF MATERIAL IS NOT ALLOWED.
3) ALL ELECTRICAL ENCLOSURES TO BE NEMA 4X 316SS.
4) ATTACH ALL ELECTRICAL ENCLOSURES AND DEVICES TO STRUCTURE WITH VERTICAL 316SS STRUT. CLAMPS AND HARDWARE TO BE 316SS.
5) VERTICAL STACKING OF ENCLOSURES IS NOT ALLOWED. PROVIDE 6" MINIMUM CLEARANCE BETWEEN ENCLOSURES. PROVIDE 12" MINIMUM CLEARANCE FROM CENTER OF END POSTS TO ENCLOSURES.
6) ALARM BEACON TO BE MOUNTED 12" ABOVE TOP OF ROOF AT END OF STRUCTURE. DO NOT PENETRATE ROOF OR WALL.


SHOP WELD L3X3X1/4 (TYP. CONN.)
26 GA GALVANIZED R-PANEL. PRE-DRILL AND ATTACH TO EACH CROSS MEMBER WITH HDG SELF TAPPING SCREWS. INSTALL LAP SCREWS.
C3x4.1 FULL LENGTH (TYP.)
(2) 1/2" DIA. BOLTS (TYP.)
CLOSURE TRIM PIECE
3"
1/4" END PL W/(4) 1/2" BOLTS (TYP.)
C3x4.1 (EACH SIDE OF HSS)
C6x8.2
C3x4.1
SHOP WELD
1/4" SHOP WELDED END PLATE WITH 1/2" THRU BOLTS (TYP.)
C3X4.1 HD GALV FRAME RAIL FULL LENGTH BOTH SIDES WITH 1/2" THRU BOLTS (TYP.)
6'-0" MIN.
HSS 4X4X1/4 MINIMUM GALV POSTS (TYP.) APPROX. 15'-0" LENGTH
26 GA GALVANIZED R-PANEL WALL. INSTALL FULL LENGTH HDG HAT CHANNEL SPACER AT EACH FRAME RAIL TO CLEAR BOLTS AND NUTS. PRE-DRILL AND ATTACH HAT CHANNEL TO EACH FRAME RAIL WITH HDG SELF TAPPING SCREWS AT 24" O.C. TOP AND BOTTOM. ATTACH R-PANEL TO EACH HAT CHANNEL WITH HDG SELF TAPPING SCREWS. INSTALL LAP SCREWS

3 ROOF & WALL DETAIL

SCALE: N.T.S.


24" DIA.
#4 TIE
#4 BAR @ 4'-6" LONG (TYP. OF 4)
2" CLEAR
HSS 4X4X1/4 MINIMUM GALV POSTS (TYP.) APPROX. 15'-0" LENGTH
TOP OF SLAB
HSS 4X4X1/4 MINIMUM GALV POSTS (TYP.) APPROX. 15'-0" LENGTH
#4 BAR @ 4'-6" LONG (TYP. OF 4)
(4) - #4 TIES @ 12"
5'-0"
4"
24" DIA.

PLAN VIEW

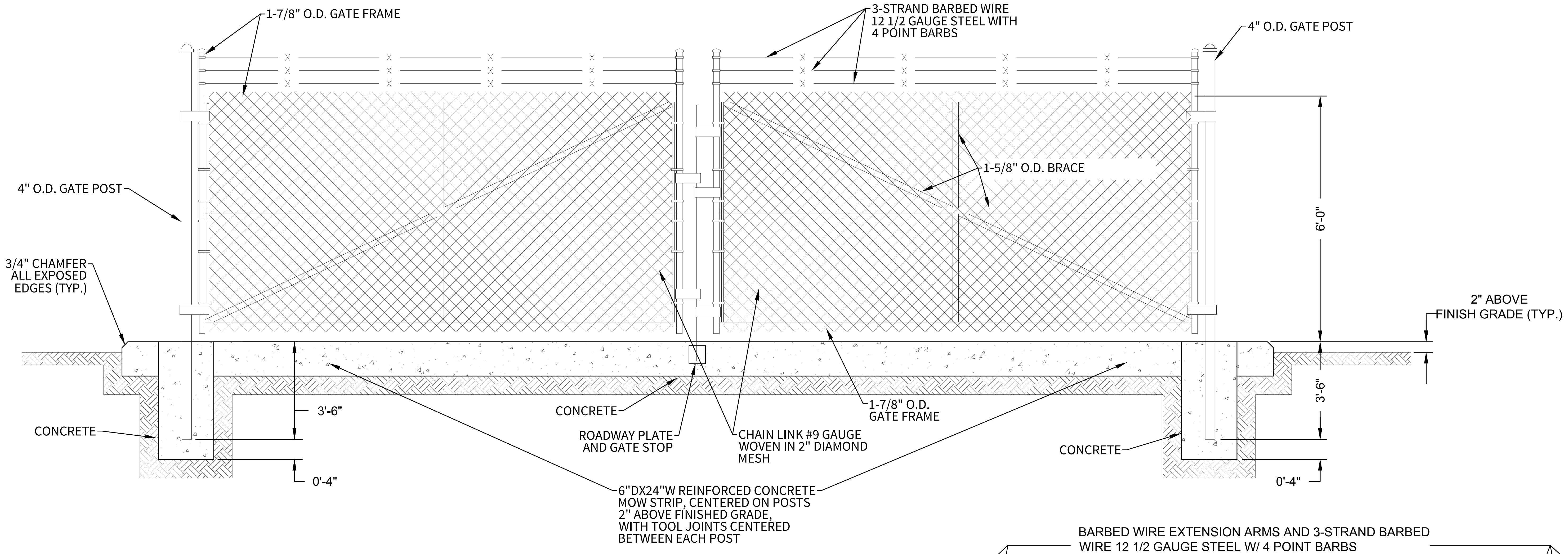
SCALE: N.T.S.

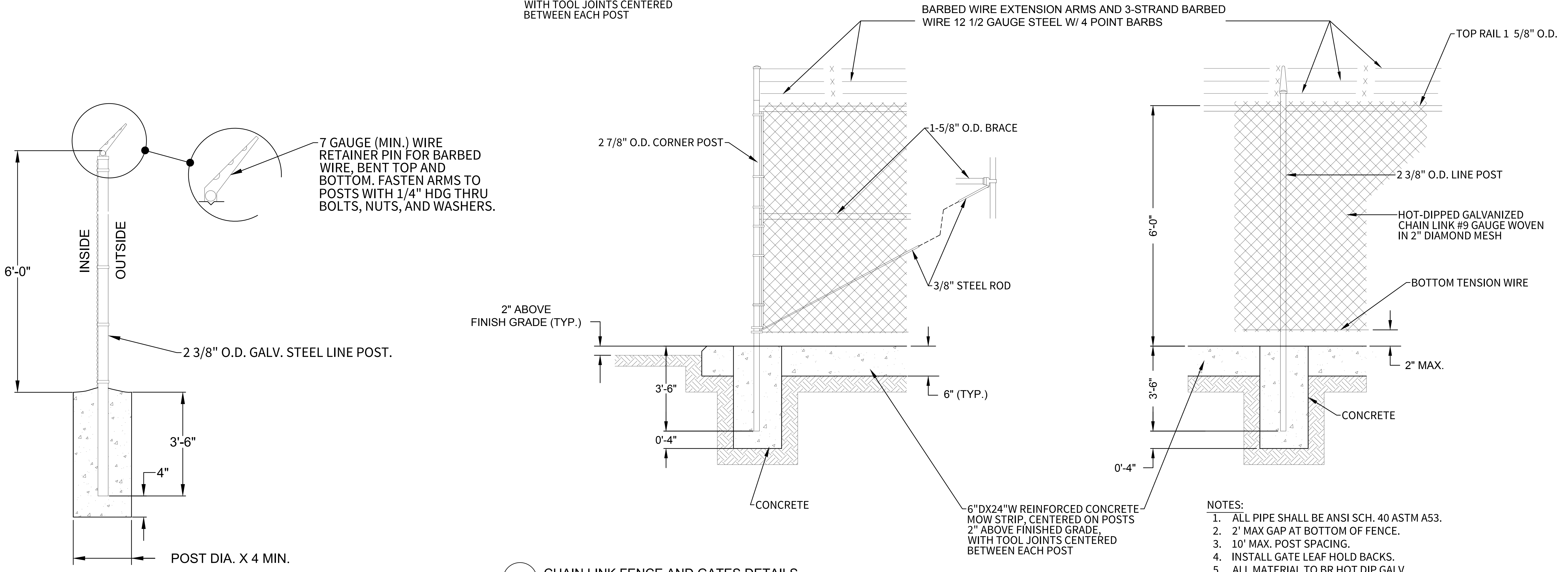
SECTION VIEW

SCALE: N.T.S.

4 SHAFT DETAIL

SCALE: N.T.S.


1-7/8" O.D. GATE FRAME
3-STRAND BARBED WIRE 12 1/2 GAUGE STEEL WITH 4 POINT BARBS
4" O.D. GATE POST
1-5/8" O.D. BRACE
4" O.D. GATE POST
6'-0"
3/4" CHAMFER ALL EXPOSED EDGES (TYP.)
2" ABOVE FINISH GRADE (TYP.)
3'-6"
3'-6"
CONCRETE
CONCRETE
ROADWAY PLATE AND GATE STOP
CHAIN LINK #9 GAUGE WOVEN IN 2" DIAMOND MESH
1-7/8" O.D. GATE FRAME
CONCRETE
0'-4"
0'-4"
6"DX24"W REINFORCED CONCRETE MOW STRIP, CENTERED ON POSTS 2" ABOVE FINISHED GRADE, WITH TOOL JOINTS CENTERED BETWEEN EACH POST

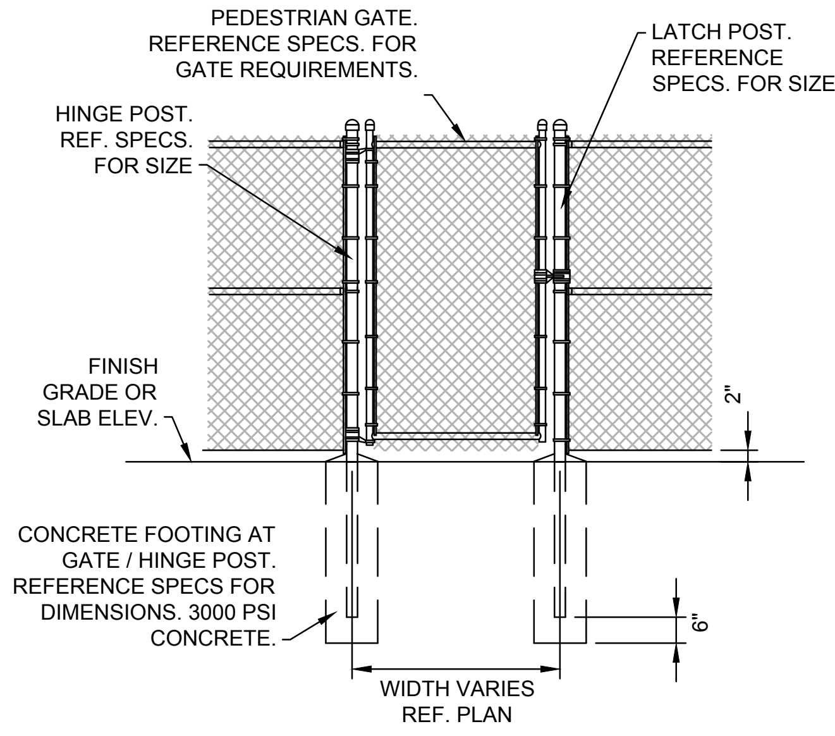

BARBED WIRE EXTENSION ARMS AND 3-STRAND BARBED WIRE 12 1/2 GAUGE STEEL W/ 4 POINT BARBS
TOP RAIL 1 5/8" O.D.
7 GAUGE (MIN.) WIRE RETAINER PIN FOR BARBED WIRE, BENT TOP AND BOTTOM. FASTEN ARMS TO POSTS WITH 1/4" HDG THRU BOLTS, NUTS, AND WASHERS.
2 7/8" O.D. CORNER POST
1-5/8" O.D. BRACE
2 3/8" O.D. LINE POST
HOT-DIPPED GALVANIZED CHAIN LINK #9 GAUGE WOVEN IN 2" DIAMOND MESH
INSIDE
OUTSIDE
6'-0"
6'-0"
3/8" STEEL ROD
BOTTOM TENSION WIRE
2" ABOVE FINISH GRADE (TYP.)
2 3/8" O.D. GALV. STEEL LINE POST.
2" MAX.
3'-6"
6" (TYP.)
3'-6"
CONCRETE
3'-6"
4"
0'-4"
0'-4"
CONCRETE
6"DX24"W REINFORCED CONCRETE MOW STRIP, CENTERED ON POSTS 2" ABOVE FINISHED GRADE, WITH TOOL JOINTS CENTERED BETWEEN EACH POST
POST DIA. X 4 MIN.

NOTES:

1. ALL PIPE SHALL BE ANSI SCH. 40 ASTM A53.
2. 2' MAX GAP AT BOTTOM OF FENCE.
3. 10' MAX. POST SPACING.
4. INSTALL GATE LEAF HOLD BACKS.
5. ALL MATERIAL TO BR HOT DIP GALV.

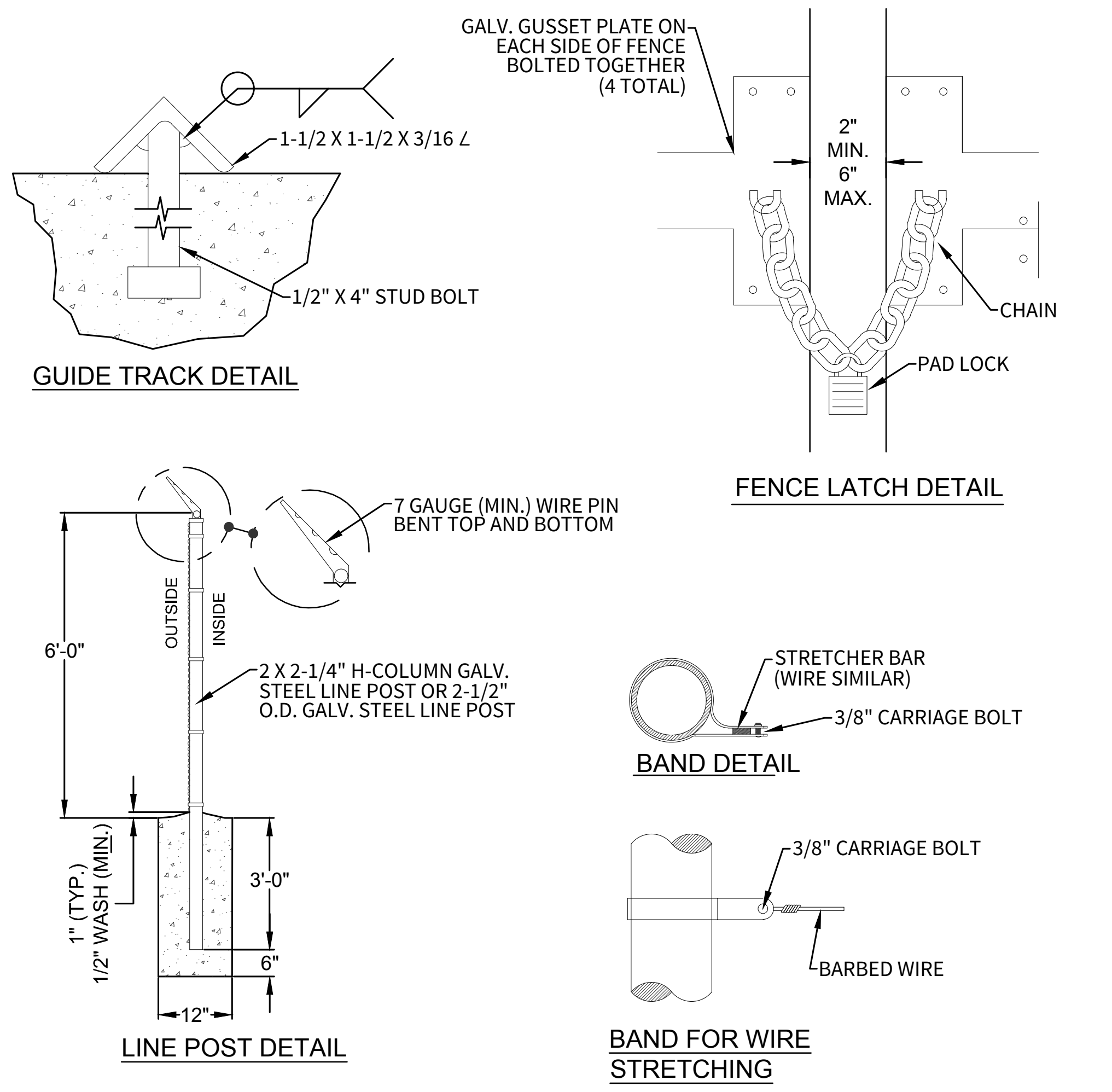
6 CHAIN LINK FENCE AND GATES DETAILS

SCALE: N.T.S.


PEDESTRIAN GATE. REFERENCE SPECS. FOR GATE REQUIREMENTS.
LATCH POST. REFERENCE SPECS. FOR SIZE
HINGE POST. REF. SPECS. FOR SIZE
FINISH GRADE OR SLAB ELEV.
2"
CONCRETE FOOTING AT GATE / HINGE POST. REFERENCE SPECS FOR DIMENSIONS. 3000 PSI CONCRETE.
6"
WIDTH VARIES REF. PLAN

5 CHAIN LINK PEDESTRIAN GATE DETAIL

SCALE: N.T.S.


1-1/2 X 1-1/2 X 3/16 ∠
1/2" X 4" STUD BOLT
GALV. GUSSET PLATE ON EACH SIDE OF FENCE BOLTED TOGETHER (4 TOTAL)
2" MIN. 6" MAX.
CHAIN
PAD LOCK
7 GAUGE (MIN.) WIRE PIN BENT TOP AND BOTTOM
OUTSIDE
INSIDE
6'-0"
2 X 2-1/4" H-COLUMN GALV. STEEL LINE POST OR 2-1/2" O.D. GALV. STEEL LINE POST
1" (TYP.) 1/2" WASH (MIN.)
3'-0"
6"
12"
STRETCHER BAR (WIRE SIMILAR)
3/8" CARRIAGE BOLT
3/8" CARRIAGE BOLT
BARBED WIRE

GUIDE TRACK DETAIL

FENCE LATCH DETAIL

LINE POST DETAIL

BAND DETAIL

BAND FOR WIRE STRETCHING

7 INSTALLATION OF POST AND GUID TRACK DETAIL

SCALE: N.T.S.

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EST. 1980 CUDE ENGINEERS

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

LIFT STATION DETAILS

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
1.		
2.		
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7.		
8.		
9.		

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C92

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P:\04037\003\2-DWG\4-Plans\C92 LIFT STATION DETAILS.dwg 2025/05/12 2:02pm tduano

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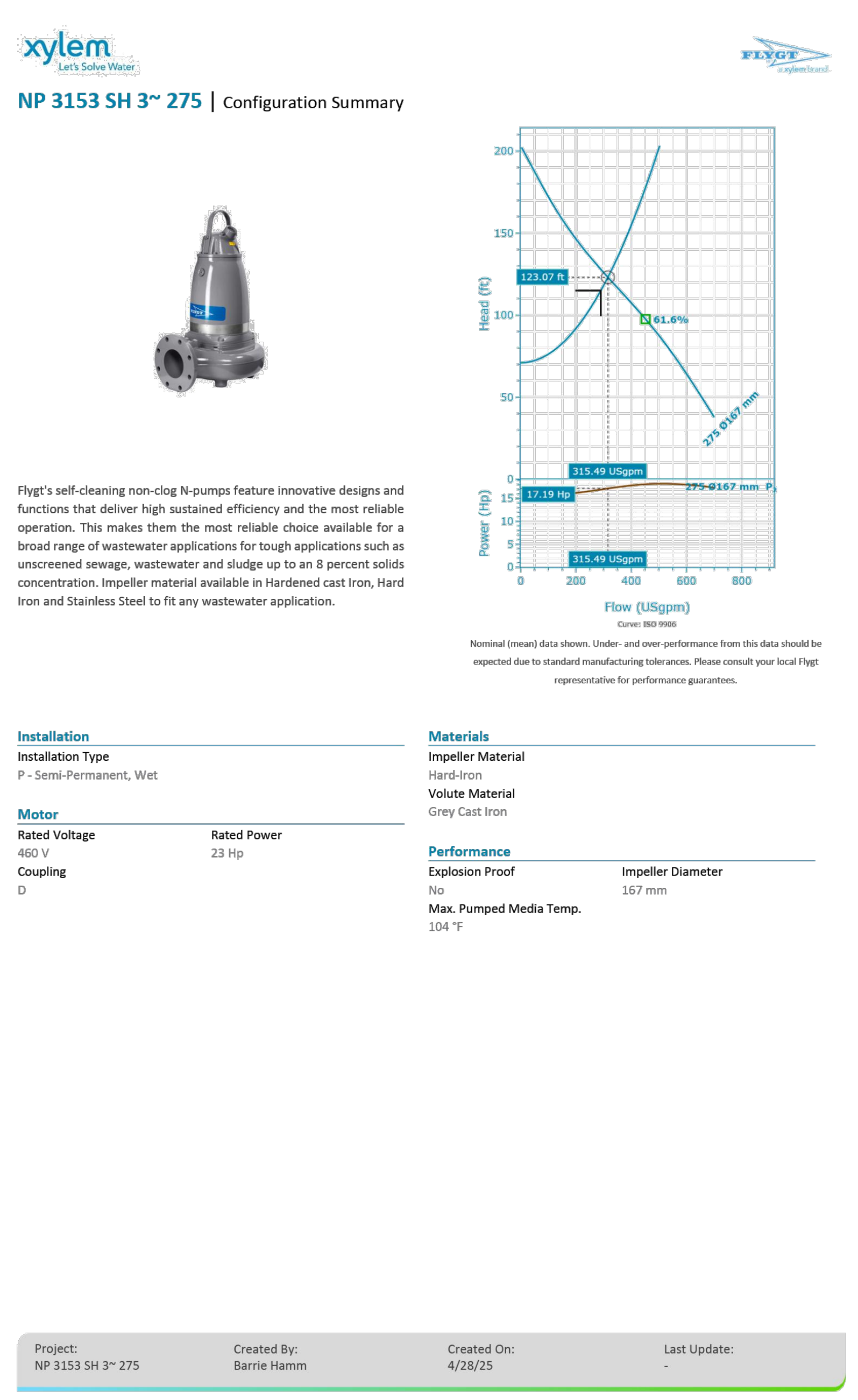


NP 3153 SH 3~ 275 | Configuration Summary

200
150
100
50
0
Head (ft)
123.07 ft
61.6%
275 Ø167 mm
315.49 USgpm
17.19 Hp
275 Ø167 mm P2
Power (Hp)
15
10
5
0
200
400
600
800
Flow (USgpm)
Curve: ISO 9906

Nominal (mean) data shown. Under- and over-performance from this data should be expected due to standard manufacturing tolerances. Please consult your local Flygt representative for performance guarantees.

Flygt's self-cleaning non-clog N-pumps feature innovative designs and functions that deliver high sustained efficiency and the most reliable operation. This makes them the most reliable choice available for a broad range of wastewater applications for tough applications such as unscreened sewage, wastewater and sludge up to an 8 percent solids concentration. Impeller material available in Hardened cast Iron, Hard Iron and Stainless Steel to fit any wastewater application.

Installation

Installation Type
P - Semi-Permanent, Wet

Motor

Rated Voltage	Rated Power
460 V	23 Hp
Coupling	
D	

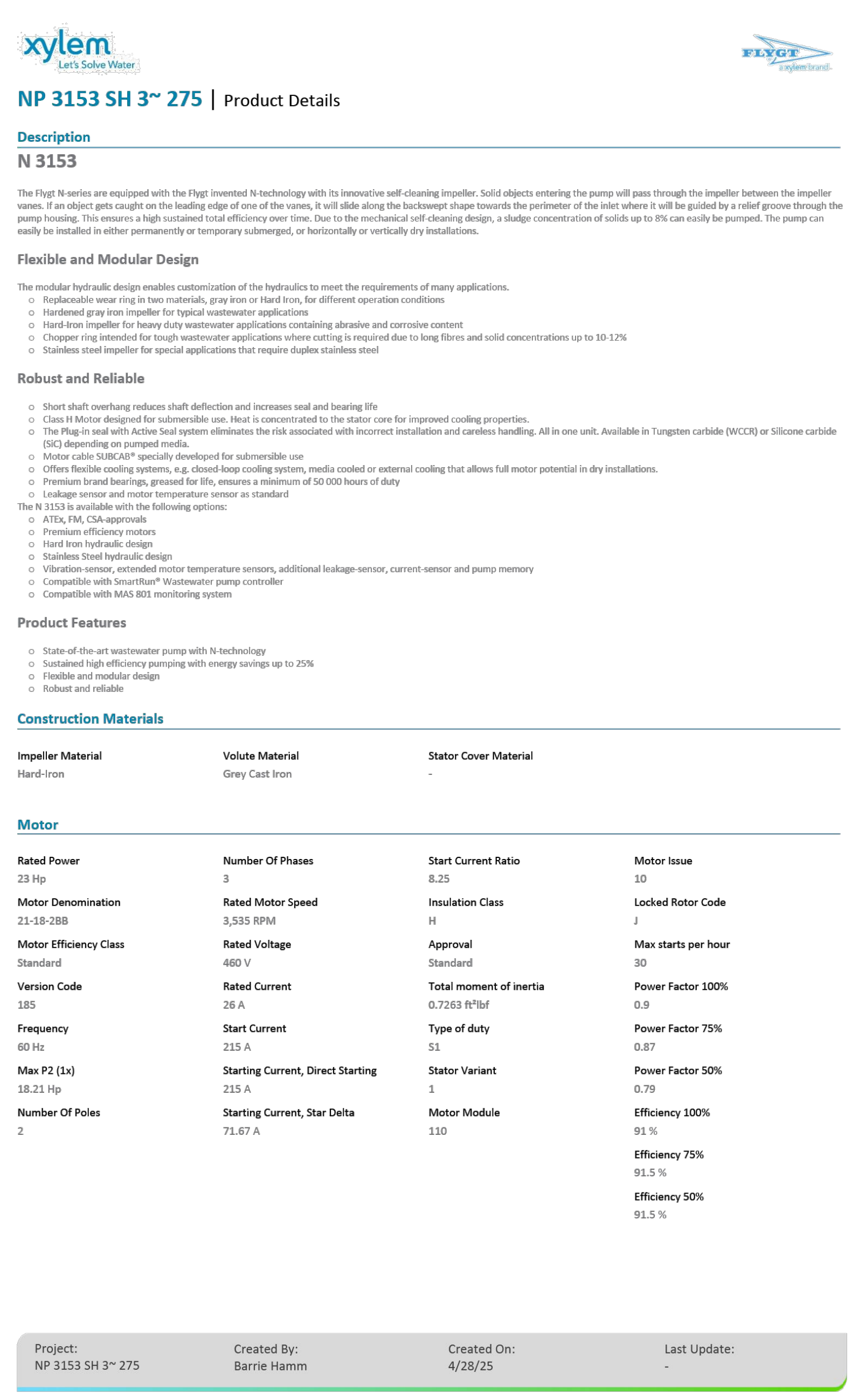
Materials

Impeller Material
Hard-Iron
Volute Material
Grey Cast Iron

Performance

Explosion Proof	Impeller Diameter
No	167 mm
Max. Pumped Media Temp.	
104 °F	

Project:	Created By:	Created On:	Last Update:
NP 3153 SH 3~ 275	Barrie Hamm	4/28/25	-



NP 3153 SH 3~ 275 | Product Details

Description

N 3153

The Flygt N-series are equipped with the Flygt invented N-technology with its innovative self-cleaning impeller. Solid objects entering the pump will pass through the impeller between the impeller vanes. If an object gets caught on the leading edge of one of the vanes, it will slide along the backswept shape towards the perimeter of the inlet where it will be guided by a relief groove through the pump housing. This ensures a high sustained total efficiency over time. Due to the mechanical self-cleaning design, a sludge concentration of solids up to 8% can easily be pumped. The pump can easily be installed in either permanently or temporary submerged, or horizontally or vertically dry installations.

Flexible and Modular Design

The modular hydraulic design enables customization of the hydraulics to meet the requirements of many applications.
- Replaceable wear ring in two materials, gray iron or Hard Iron, for different operation conditions
- Hardened gray iron impeller for typical wastewater applications
- Hard-Iron impeller for heavy duty wastewater applications containing abrasive and corrosive content
- Chopper ring intended for tough wastewater applications where cutting is required due to long fibres and solid concentrations up to 10-12%
- Stainless steel impeller for special applications that require duplex stainless steel

Robust and Reliable

- Short shaft overhang reduces shaft deflection and increases seal and bearing life
- Class H Motor designed for submersible use. Heat is concentrated to the stator core for improved cooling properties.
- The Plug-in seal with Active Seal system eliminates the risk associated with incorrect installation and careless handling. All in one unit. Available in Tungsten carbide (WCCR) or Silicone carbide (SiC) depending on pumped media.
- Motor cable SUBCAB® specially developed for submersible use
- Offers flexible cooling systems, e.g. closed-loop cooling system, media cooled or external cooling that allows full motor potential in dry installations.
- Premium brand bearings, greased for life, ensures a minimum of 50 000 hours of duty
- Leakage sensor and motor temperature sensor as standard

The N 3153 is available with the following options:
- ATEx, FM, CSA-approvals
- Premium efficiency motors
- Hard Iron hydraulic design
- Stainless Steel hydraulic design
- Vibration-sensor, extended motor temperature sensors, additional leakage-sensor, current-sensor and pump memory
- Compatible with SmartRun® Wastewater pump controller
- Compatible with MAS 801 monitoring system

Product Features

- State-of-the-art wastewater pump with N-technology
- Sustained high efficiency pumping with energy savings up to 25%
- Flexible and modular design
- Robust and reliable

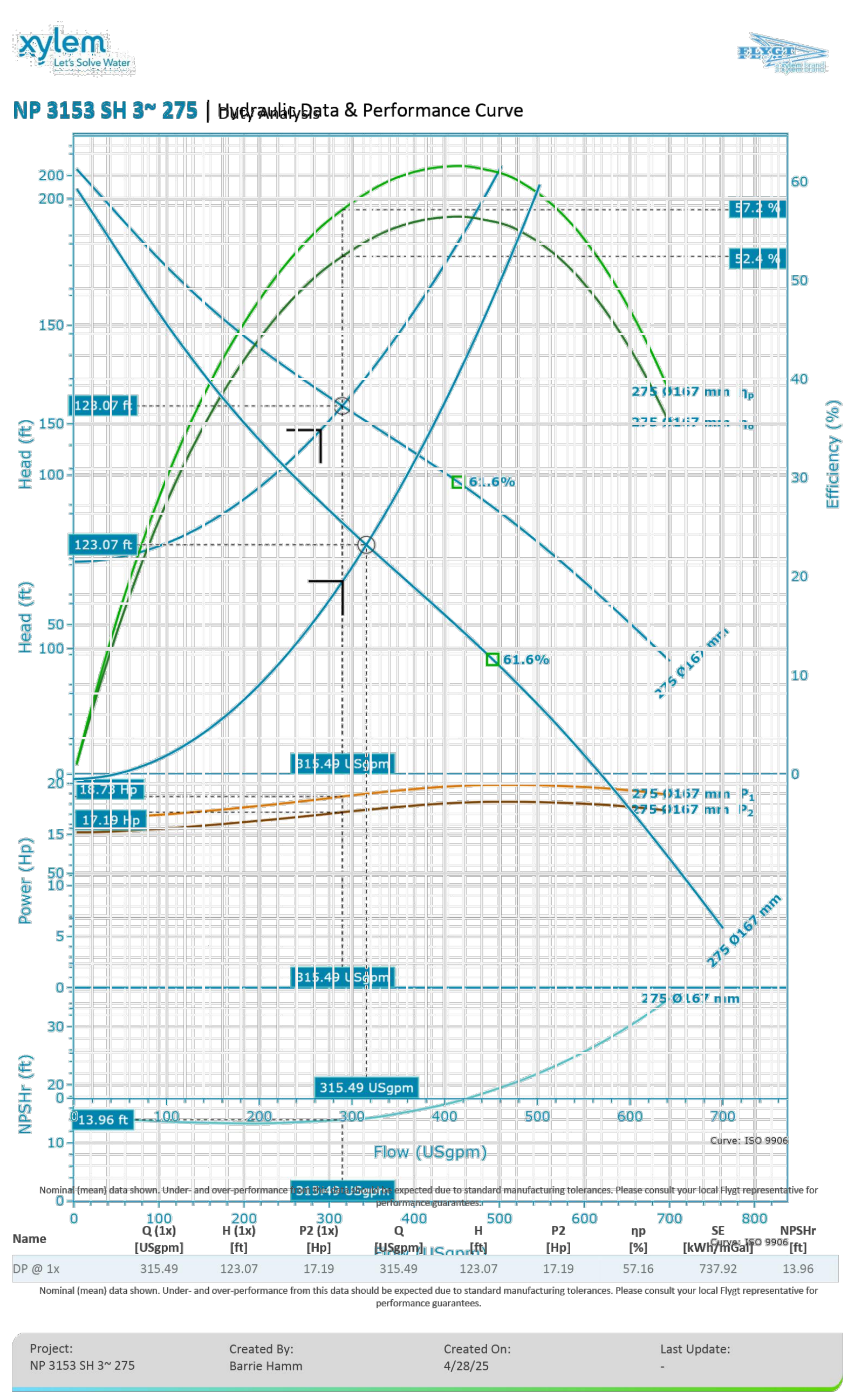
Construction Materials

Impeller Material	Volute Material	Stator Cover Material
Hard-Iron	Grey Cast Iron	-

Motor

Rated Power	Number Of Phases	Start Current Ratio	Motor Issue
23 Hp	3	8.25	10
Motor Denomination	Rated Motor Speed	Insulation Class	Locked Rotor Code
21-18-2BB	3,535 RPM	H	J
Motor Efficiency Class	Rated Voltage	Approval	Max starts per hour
Standard	460 V	Standard	30
Version Code	Rated Current	Total moment of inertia	Power Factor 100%
185	26 A	0.7263 ft²lbf	0.9
Frequency	Start Current	Type of duty	Power Factor 75%
60 Hz	215 A	S1	0.87
Max P2 (1x)	Starting Current, Direct Starting	Stator Variant	Power Factor 50%
18.21 Hp	215 A	1	0.79
Number Of Poles	Starting Current, Star Delta	Motor Module	Efficiency 100%
2	71.67 A	110	91 %
			Efficiency 75%
			91.5 %
			Efficiency 50%
			91.5 %

Project:	Created By:	Created On:	Last Update:
NP 3153 SH 3~ 275	Barrie Hamm	4/28/25	-



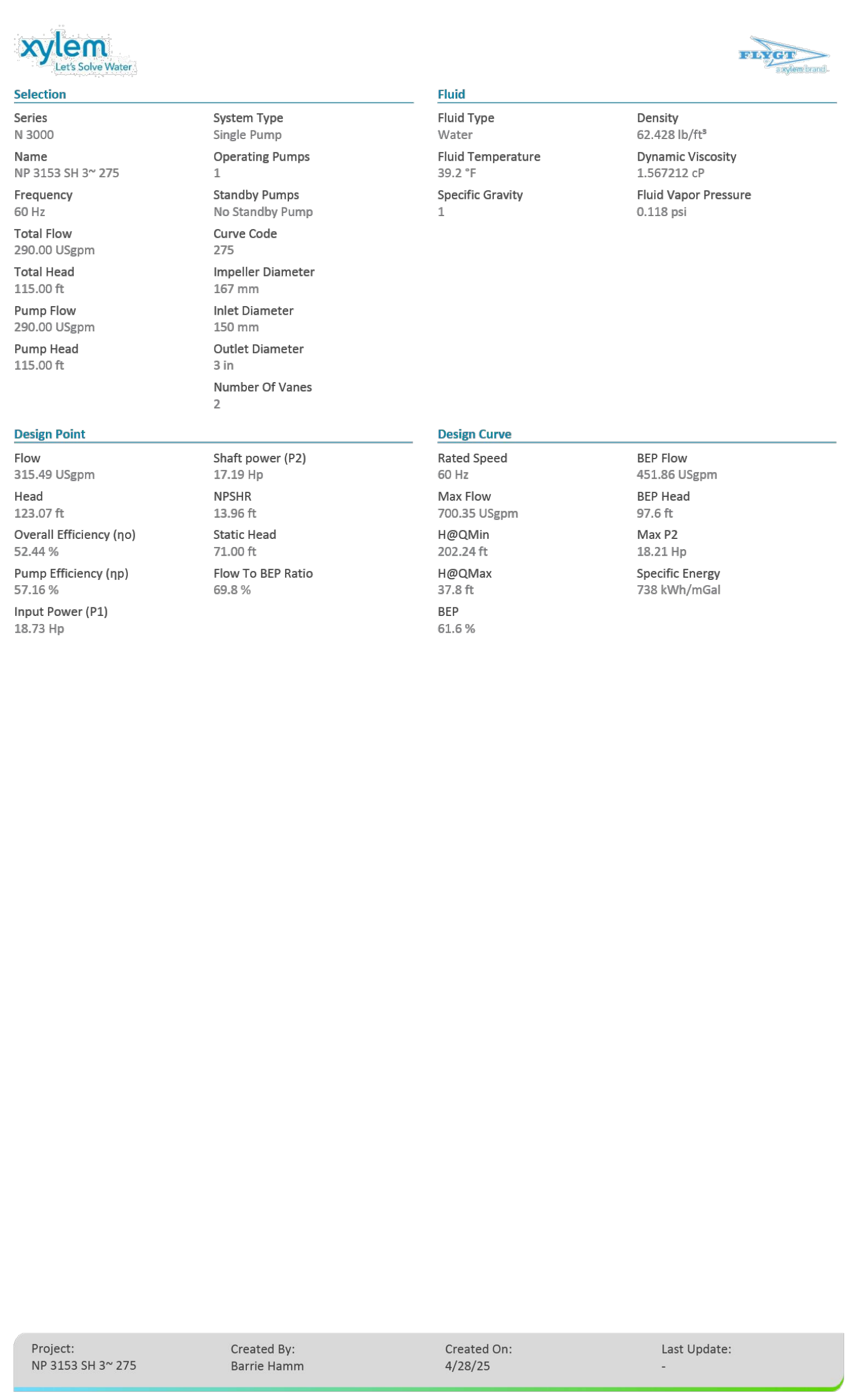
NP 3153 SH 3~ 275 | Hydraulic Data & Performance Curve

Duty Analysis

Name	Q (1x) [USgpm]	H (1x) [ft]	P2 (1x) [Hp]	Q [USgpm]	H [ft]	P2 [Hp]	ηp [%]	SE [kWh/mGal]	NPSHr [ft]
DP @ 1x	315.49	123.07	17.19	315.49	123.07	17.19	57.16	737.92	13.96

Nominal (mean) data shown. Under- and over-performance from this data should be expected due to standard manufacturing tolerances. Please consult your local Flygt representative for performance guarantees.

Project:	Created By:	Created On:	Last Update:
NP 3153 SH 3~ 275	Barrie Hamm	4/28/25	-



Selection

Series	System Type
N 3000	Single Pump
Name	Operating Pumps
NP 3153 SH 3~ 275	1
Frequency	Standby Pumps
60 Hz	No Standby Pump
Total Flow	Curve Code
290.00 USgpm	275
Total Head	Impeller Diameter
115.00 ft	167 mm
Pump Flow	Inlet Diameter
290.00 USgpm	150 mm
Pump Head	Outlet Diameter
115.00 ft	3 in
	Number Of Vanes
	2

Fluid

Fluid Type	Density
Water	62.428 lb/ft³
Fluid Temperature	Dynamic Viscosity
39.2 °F	1.567212 cP
Specific Gravity	Fluid Vapor Pressure
1	0.118 psi

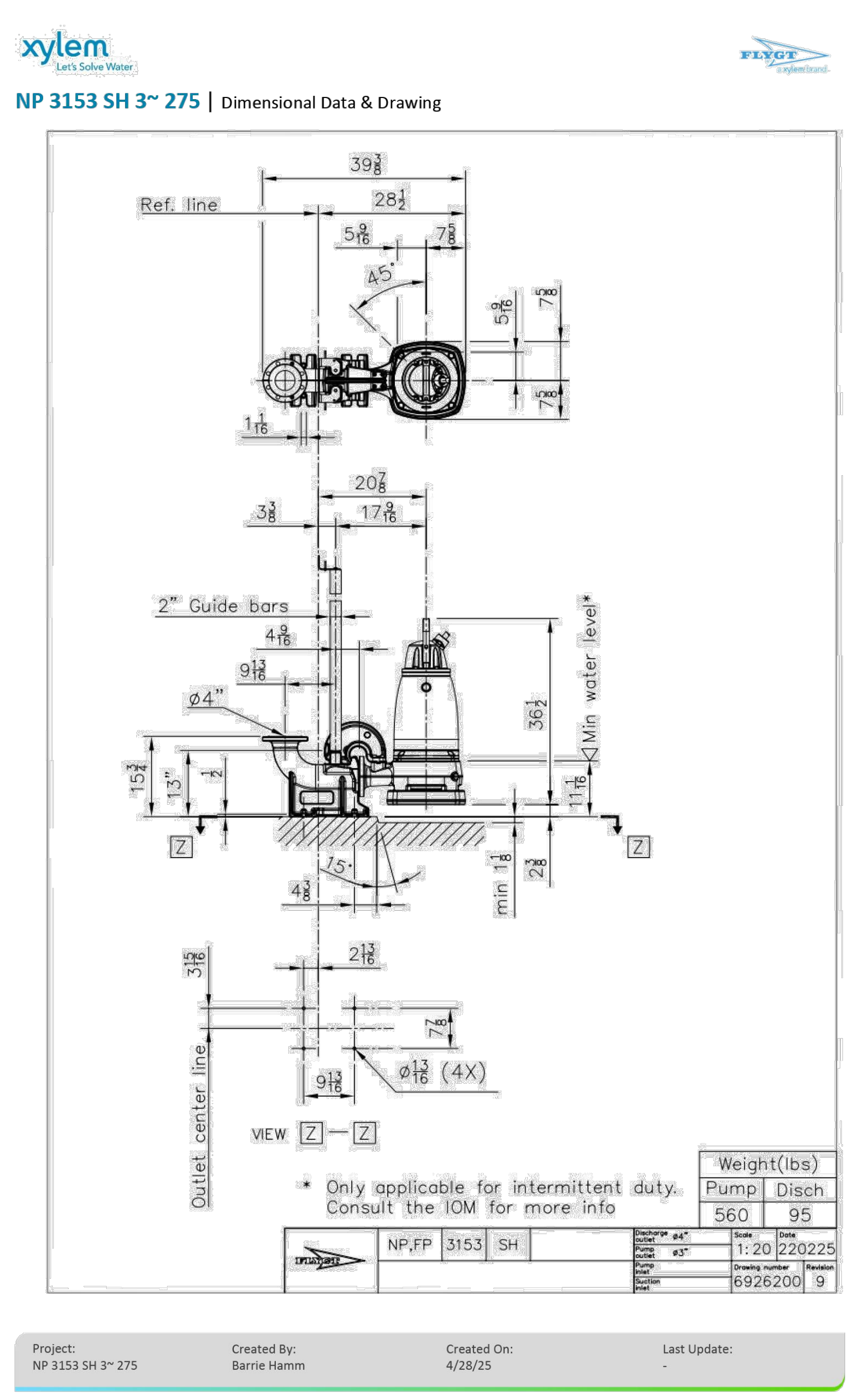
Design Point

Flow	Shaft power (P2)
315.49 USgpm	17.19 Hp
Head	NPSHR
123.07 ft	13.96 ft
Overall Efficiency (ηo)	Static Head
52.44 %	71.00 ft
Pump Efficiency (ηp)	Flow To BEP Ratio
57.16 %	69.8 %
Input Power (P1)	
18.73 Hp	

Design Curve

Rated Speed	BEP Flow
60 Hz	451.86 USgpm
Max Flow	BEP Head
700.35 USgpm	97.6 ft
H@QMin	Max P2
202.24 ft	18.21 Hp
H@QMax	Specific Energy
37.8 ft	738 kWh/mGal
BEP	
61.6 %	

Project:	Created By:	Created On:	Last Update:
NP 3153 SH 3~ 275	Barrie Hamm	4/28/25	-



NP 3153 SH 3~ 275 | Dimensional Data & Drawing

* Only applicable for intermittent duty. Consult the IOM for more info

Weight(lbs)	
Pump	Disch
560	95

NP,FP	3153	SH	Discharge outlet Ø4"	Scale 1:20	Date 220225
			Pump outlet Ø3"	Drawing number 6926200	Revision 9
			Pump inlet		
			Suction inlet		

Project:	Created By:	Created On:	Last Update:
NP 3153 SH 3~ 275	Barrie Hamm	4/28/25	-

LIFT STATION PUMP DETAILS

SCALE: N.T.S.

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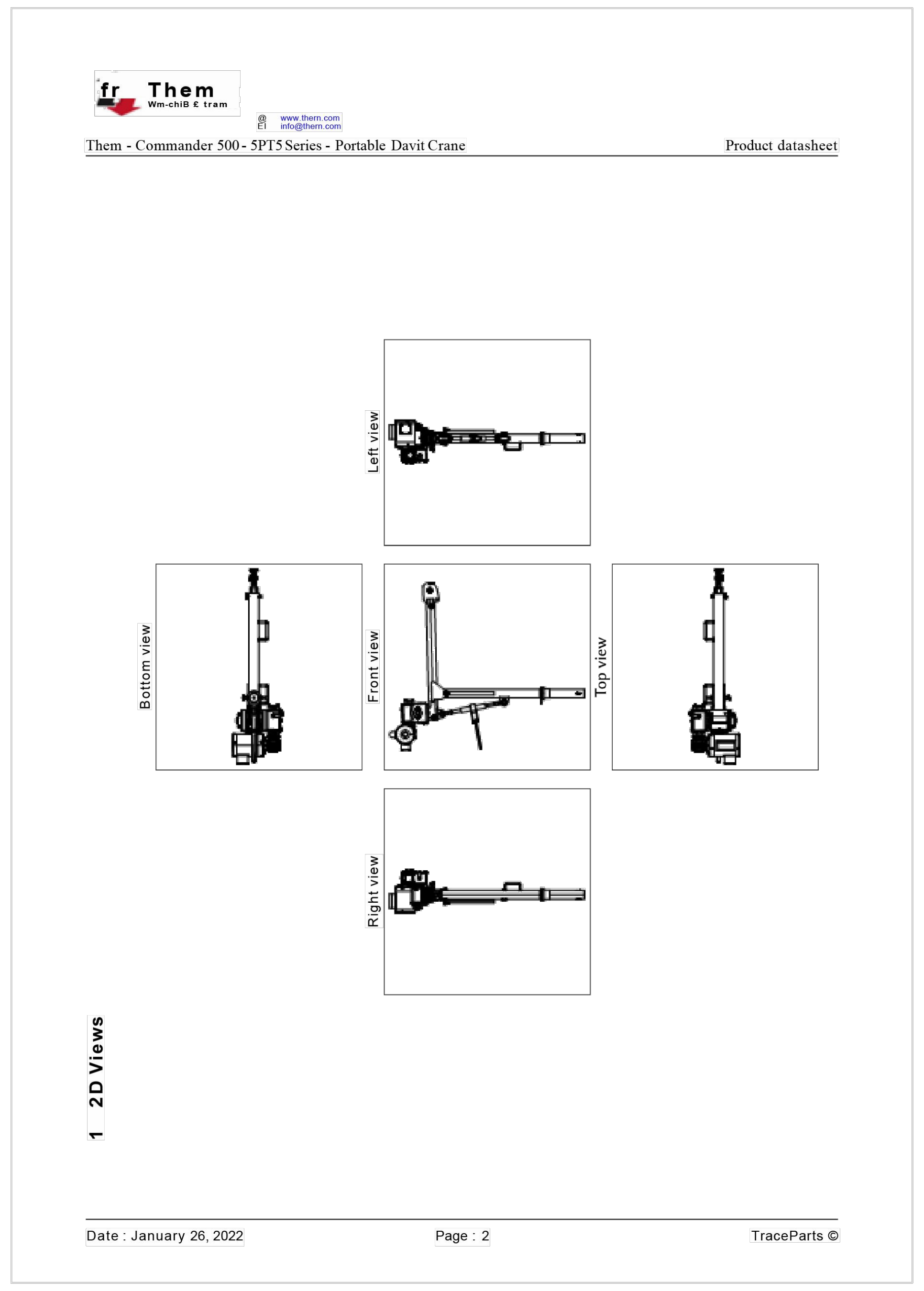
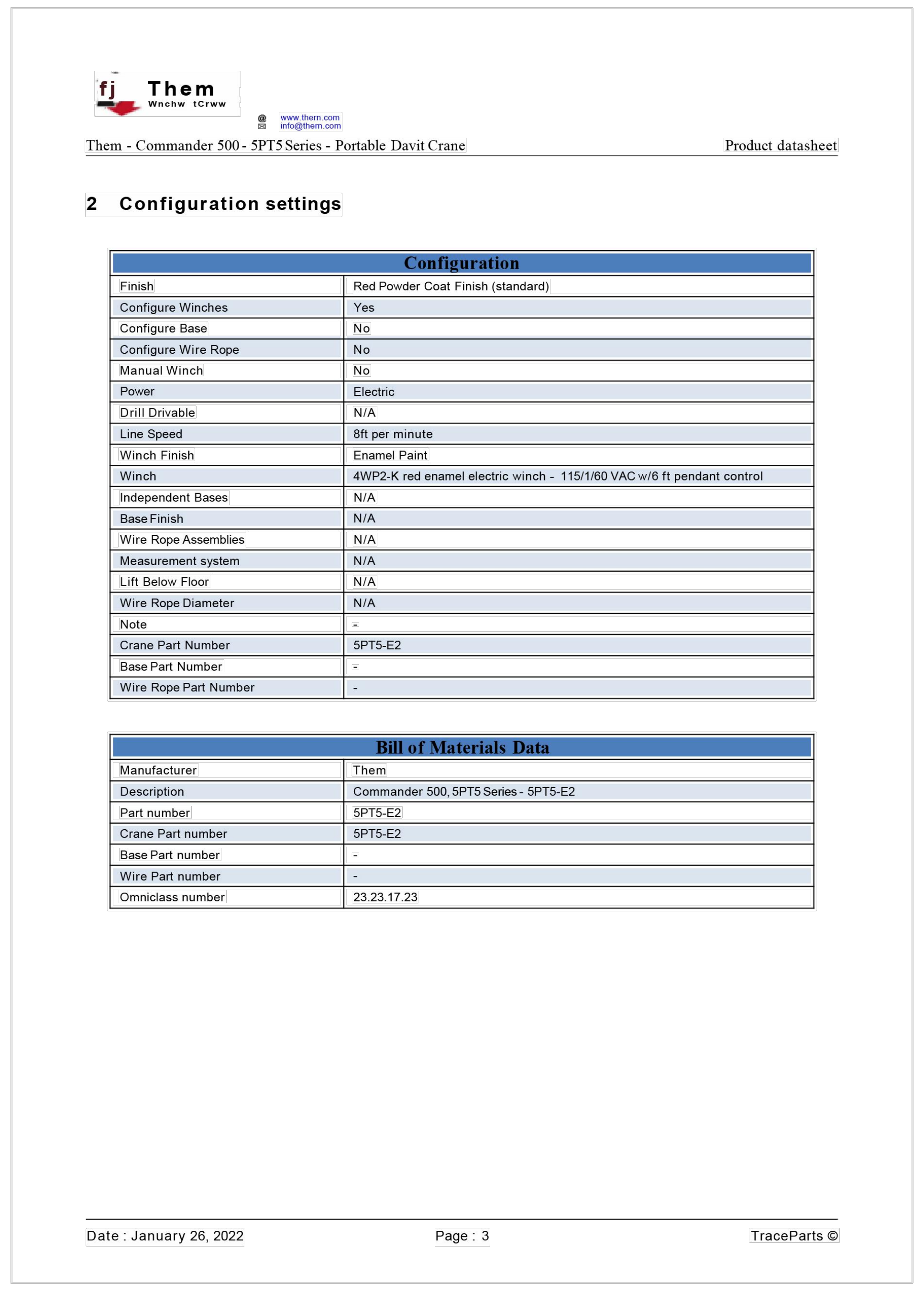


Them - Commander 500 - 5PT5 Series - Portable Davit Crane | Product datasheet

www.thern.com
info@thern.com

1 2D Views

Date : January 26, 2022 Page : 2 TraceParts ©



Them - Commander 500 - 5PT5 Series - Portable Davit Crane | Product datasheet

www.thern.com
info@thern.com

2 Configuration settings

Configuration	
Finish	Red Powder Coat Finish (standard)
Configure Winches	Yes
Configure Base	No
Configure Wire Rope	No
Manual Winch	No
Power	Electric
Drill Drivable	N/A
Line Speed	8ft per minute
Winch Finish	Enamel Paint
Winch	4WP2-K red enamel electric winch - 115/1/60 VAC w/6 ft pendant control
Independent Bases	N/A
Base Finish	N/A
Wire Rope Assemblies	N/A
Measurement system	N/A
Lift Below Floor	N/A
Wire Rope Diameter	N/A
Note	-
Crane Part Number	5PT5-E2
Base Part Number	-
Wire Rope Part Number	-

Bill of Materials Data	
Manufacturer	Them
Description	Commander 500, 5PT5 Series - 5PT5-E2
Part number	5PT5-E2
Crane Part number	5PT5-E2
Base Part number	-
Wire Part number	-
Omniclass number	23.23.17.23

Date : January 26, 2022 Page : 3 TraceParts ©

CRANE DETAILS

SCALE: N.T.S.

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P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION
UNIT 1

LIFT STATION DETAILS

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C93

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LANTANA UNIT 1 – WATER DEVELOPMENT
ESTIMATED QUANTITY TAKE-OFF
(CONTRACTOR RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES REQUIRED)

Item No.	Description	Quantity	Units
1	8" PVC C-909 PC 235	7,613	LF
2	8" GATE VALVES	38	EA
3	12" PVC C-909 PC 235	1,880	LF
4	12" GATE VALVES	14	EA
5	FIRE HYDRANTS	19	EA
6	PIPE FITTINGS, ALL SIZES AND TYPES	3.11	TON
7	2" BLOWOFF, PERMANENT	3	EA
8	1" IRRIGATION SERVICE (W/ 1" METER)	1	EA
9	1" DUAL LONG SERVICE (5/8" METER)	36	EA
10	1" DUAL SHORT SERVICE (5/8" METER)	54	EA
11	1" LONG SERVICE (5/8" METER)	9	EA
12	1" LONG SERVICE (1" METER)	1	EA
13	1" SHORT SERVICE (5/8" METER)	16	EA
14	TRENCH EXCAVATION SAFETY PROTECTION	9,493	LF
15	HYDROSTATIC TESTING	1	EA
16	METER BOX (NON-STANDARD METER BOX)	206	EA
17	DISINFECTION SAMPLE PORT	1	EA
18	TIE INTO EXISTING WATER MAIN	1	EA
19	24" STEEL CASING	44	LF
20	36" STEEL CASING	48	LF
21	OPEN CUT (WEIL ROAD)	38	LF

TOTAL ACERAGE	67.08
TOTAL EDU'S	208
TOTAL NUMBER OF LOTS	206

CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. CONTRACTOR WILL NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS PRIOR TO EXCAVATION.

GVSUD	(830) 914-2330
GVTC	(830) 885-4411
GVEC	1-800-401-8345
DIG TESS	1-800-344-8377
TEXAS STATE WIDE ONE CALL LOCATORS	1-800-545-6005 OR 811

NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE GVSUD INSPECTOR/TEST ADMINISTER, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY GVSUD WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

NOTES:

1. MOISTURE DENSITY COMPACTION TESTING FREQUENCY- WATER MAIN TRENCHES REQUIRED EVERY 300 LF FOR EACH VERTICAL FOOT OF COMPACTED BACKFILL. SERVICES RANDOMLY SELECTED AS REQUIRED BY GVSUD INSPECTOR.

2. ALL DUCTILE IRON PIPE TO BE AMERICAN, ZINC COATED, AWWA/ANSI C-151.

3. FIRE HYDRANTS SHALL BE MUELLER OR EJ TYPE AND SHALL BE 1' MINIMUM AND 7' MAXIMUM FROM THE BACK OF CURB.

4. DISINFECTION SHALL BE BY MACHINE CHLORINATION.

5. ALL TESTING AND TEST REPORTS SHALL BE COORDINATED WITH GVSUD INSPECTOR BY CONTRACTOR.

TRENCH EXCAVATION PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) 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!!

EXISTING UTILITIES ARE WITHIN THE LIMITS OF CONSTRUCTION. CONTRACTORS SHALL EXERCISE EXTRA CARE IN DIGGING ANY TRENCH FOR PROPOSED UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE, VERIFY THE EXACT LOCATION & IDENTIFY AREA OF CONFLICTS WITH EXISTING UTILITIES AND SHALL NOTIFY THE ENGINEER IF CONFLICT IS FOUND.

CAUTION!!

THE CONTRACTOR SHALL BE AWARE THAT OVERHEAD ELECTRIC LINES EXIST WITHIN THE VICINITY OF THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

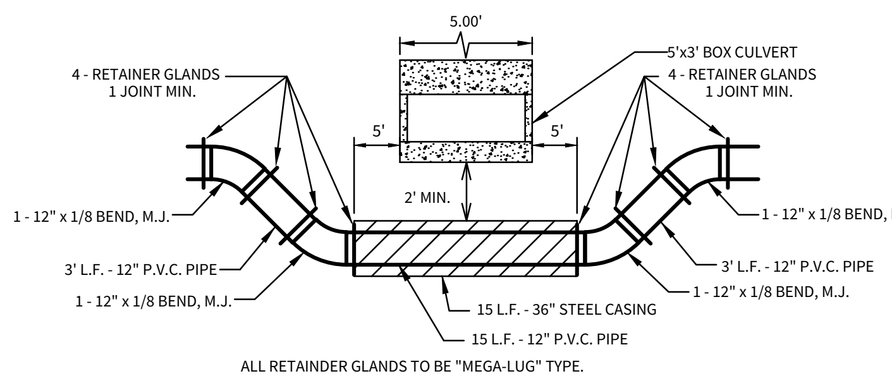
SCALE: 1"=80'

80 10 0 80

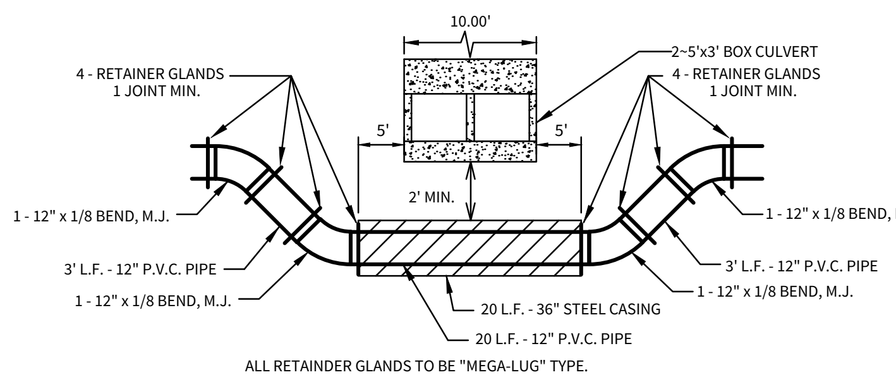
LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	- - - -
EXISTING 2' CONTOUR	— 499 —
EXISTING 10' CONTOUR	— 500 —
EXISTING WATER LINE	— Wx —
EXISTING SEWER LINE	— SSx —
EXISTING MANHOLE	●
PROPOSED WATER LINE	— W —
PROPOSED WATER SERVICE	W
PROPOSED FIRE HYDRANT	
PROPOSED SEWER MAIN	— SS —
PROPOSED SEWER FORCE MAIN	— SFM —
PROPOSED MANHOLE	●
PROPOSED SEWER SERVICE	S
PROPOSED STREET LIGHT	◉
RESTRAINT LENGTH	77

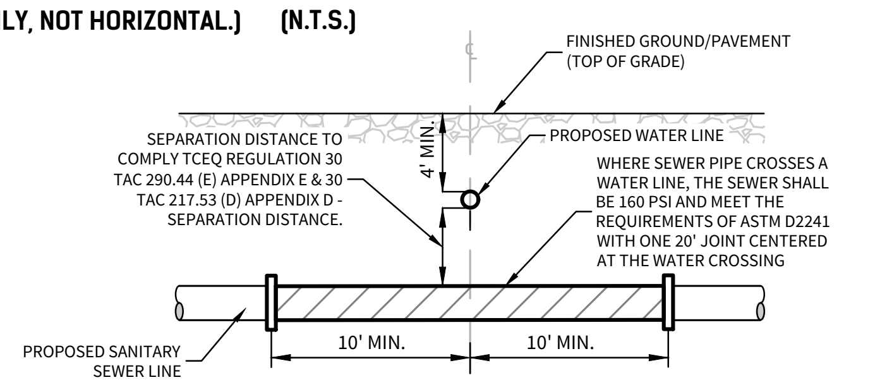
SEWER/WATER LINE CROSSINGS	
LINE	STATION
"A"	9+52.01
"A"	10+01.51
"A"	12+97.01
"A"	21+27.01
"A"	24+37.01
"B"	3+85.25
"B"	6+95.25
"C"	1+24.75
"C"	4+50.25
"C"	13+09.75
"D"	1+24.75
"D"	4+44.75
"F"	1+24.75
"Z"	8+57.71


5.00'
5'x3' BOX CULVERT
4 - RETAINER GLANDS 1 JOINT MIN.
5'
2' MIN.
1 - 12" x 1/8 BEND, M.J.
3' L.F. - 12" P.V.C. PIPE
15 L.F. - 36" STEEL CASING
15 L.F. - 12" P.V.C. PIPE
ALL RETAINDER GLANDS TO BE "MEGA-LUG" TYPE.

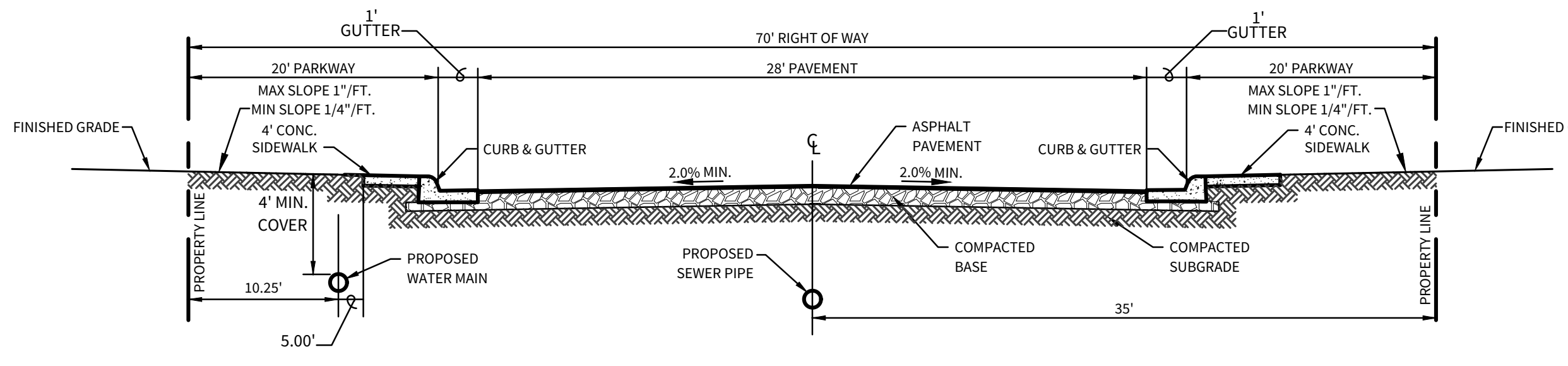
WATER / DRAIN G CROSSING DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)


10.00'
2-5'x3' BOX CULVERT
4 - RETAINER GLANDS 1 JOINT MIN.
5'
2' MIN.
1 - 12" x 1/8 BEND, M.J.
3' L.F. - 12" P.V.C. PIPE
20 L.F. - 36" STEEL CASING
20 L.F. - 12" P.V.C. PIPE
ALL RETAINDER GLANDS TO BE "MEGA-LUG" TYPE.

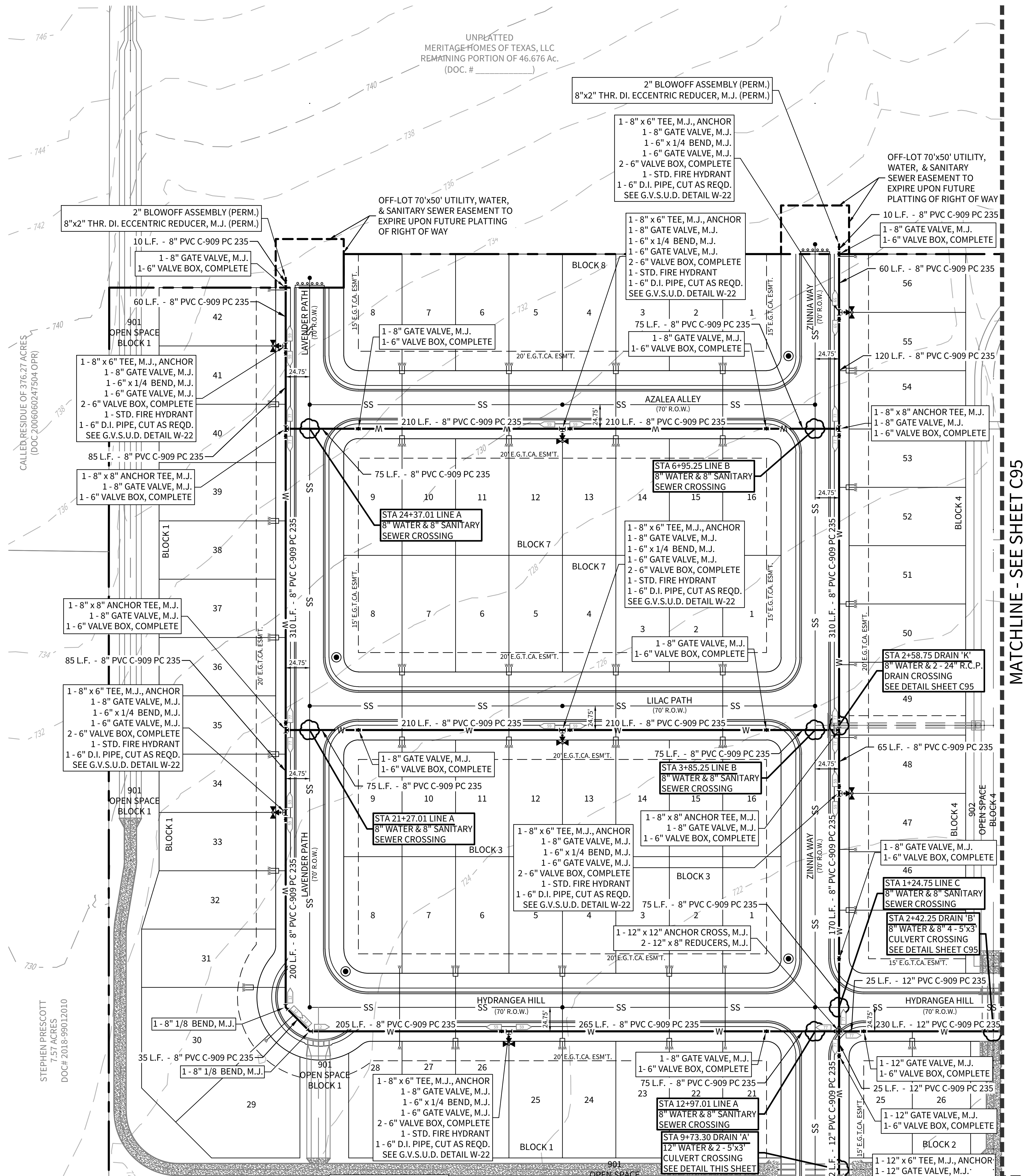
WATER / DRAIN A CROSSING DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)

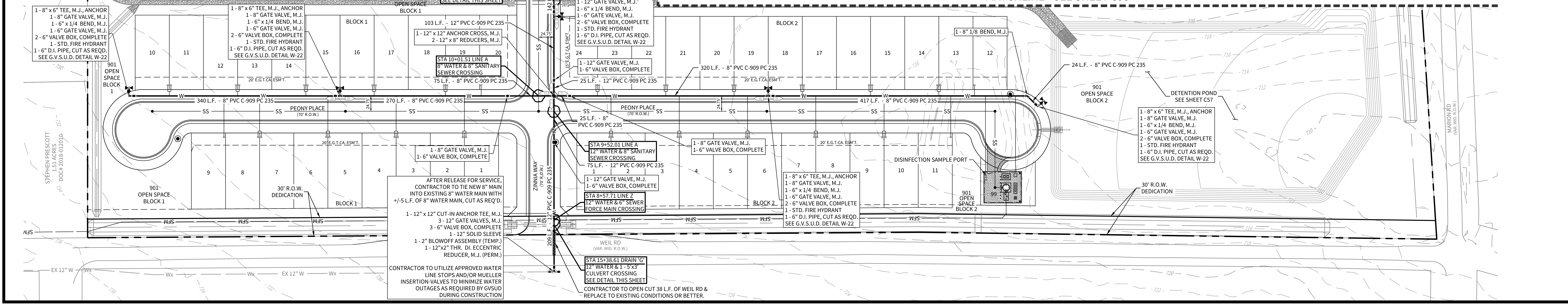

FINISHED GROUND/PAVEMENT (TOP OF GRADE)
PROPOSED WATER LINE
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
4' MIN.
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.



LOCAL "A" STREET CROSS-SECTION


UNPLATTED MERITAGE HOMES OF TEXAS, LLC REMAINING PORTION OF 46.676 Ac. (DOC. #
CALLED RESIDUE OF 376.27 ACRES (DOC 200606024750 OPR)
STEPHEN PRESCOTT 7.57 ACRES DOC# 2018-99012010
2" BLOWOFF ASSEMBLY (PERM.) 8"x2" THR. DI. ECCENTRIC REDUCER, M.J. (PERM.)
OFF-LOT 70'x50' UTILITY, WATER, & SANITARY SEWER EASEMENT TO EXPIRE UPON FUTURE PLATTING OF RIGHT OF WAY
LAVENDER PATH (70' R.O.W.)
ZINNIA WAY (70' R.O.W.)
AZALEA ALLEY (70' R.O.W.)
LILAC PATH (70' R.O.W.)
HYDRANGEA HILL (70' R.O.W.)
BLOCK 1
BLOCK 3
BLOCK 4
BLOCK 7
BLOCK 8
901 OPEN SPACE BLOCK 1
902 OPEN SPACE BLOCK 4
20' E.G.T.CA. ESM'T.
210 L.F. - 8" PVC C-909 PC 235
310 L.F. - 8" PVC C-909 PC 235
200 L.F. - 8" PVC C-909 PC 235
1 - 8" x 6" TEE, M.J., ANCHOR
1 - 8" GATE VALVE, M.J.
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE
1 - STD. FIRE HYDRANT
1 - 6" D.I. PIPE, CUT AS REQD.
SEE G.V.S.U.D. DETAIL W-22
STA 24+37.01 LINE A 8" WATER & 8" SANITARY SEWER CROSSING
STA 6+95.25 LINE B 8" WATER & 8" SANITARY SEWER CROSSING
STA 3+85.25 LINE B 8" WATER & 8" SANITARY SEWER CROSSING
STA 21+27.01 LINE A 8" WATER & 8" SANITARY SEWER CROSSING
STA 2+58.75 DRAIN 'K' 8" WATER & 2 - 24" R.C.P. DRAIN CROSSING SEE DETAIL SHEET C95
STA 1+24.75 LINE C 8" WATER & 8" SANITARY SEWER CROSSING
STA 2+42.25 DRAIN 'B' 8" WATER & 4 - 5'x3' CULVERT CROSSING SEE DETAIL SHEET C95
STA 12+97.01 LINE A 8" WATER & 8" SANITARY SEWER CROSSING
STA 9+73.30 DRAIN 'A' 12" WATER & 2 - 5'x3' CULVERT CROSSING SEE DETAIL THIS SHEET
1 - 12" x 12" ANCHOR CROSS, M.J. 2 - 12" x 8" REDUCERS, M.J.
MATCHLINE - SEE SHEET C95


MATCHLINE - SEE SHEET C95
PEONY PLACE (70' R.O.W.)
WEIL RD (VAR. WID. R.O.W.)
MARION RD (VAR. WID. R.O.W.)
STEPHEN PRESCOTT 1.51 ACRES DOC# 2018-0120110
BLOCK 1
BLOCK 2
901 OPEN SPACE BLOCK 2
DETENTION POND SEE SHEET C57
DISINFECTION SAMPLE PORT
30' R.O.W. DEDICATION
340 L.F. - 8" PVC C-909 PC 235
270 L.F. - 8" PVC C-909 PC 235
417 L.F. - 8" PVC C-909 PC 235
320 L.F. - 8" PVC C-909 PC 235
STA 10+01.51 LINE A 8" WATER & 8" SANITARY SEWER CROSSING
STA 9+52.01 LINE A 12" WATER & 8" SANITARY SEWER CROSSING
STA 8+57.71 LINE Z 12" WATER & 6" SEWER FORCE MAIN CROSSING
STA 15+38.61 DRAIN 'G' 12" WATER & 1 - 5'x3' CULVERT CROSSING SEE DETAIL THIS SHEET
AFTER RELEASE FOR SERVICE, CONTRACTOR TO TIE NEW 8" MAIN INTO EXISTING 8" WATER MAIN WITH +/-5 L.F. OF 8" WATER MAIN, CUT AS REQ'D.
1 - 12" x 12" CUT-IN ANCHOR TEE, M.J.
3 - 12" GATE VALVES, M.J.
3 - 6" VALVE BOX, COMPLETE
1 - 12" SOLID SLEEVE
1 - 2" BLOWOFF ASSEMBLY (TEMP.)
1 - 12"x2" THR. DI. ECCENTRIC REDUCER, M.J. (PERM.)
CONTRACTOR TO UTILIZE APPROVED WATER LINE STOPS AND/OR MUELLER INSERTION-VALVES TO MINIMIZE WATER OUTAGES AS REQUIRED BY GVSUD DURING CONSTRUCTION
CONTRACTOR TO OPEN CUT 38 L.F. OF WEIL RD & REPLACE TO EXISTING CONDITIONS OR BETTER.
EX 12" W

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CUDE ENGINEERS EST. 1980

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

WATER DISTRIBUTION PLAN

DATE	05/12/2025
PROJECT NO.	04037.003
DRAWN BY	CG/JG/LJ/TCD
CHECKED BY	XV/AL

#	DATE	REVISIONS
1.		
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9.		

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C94

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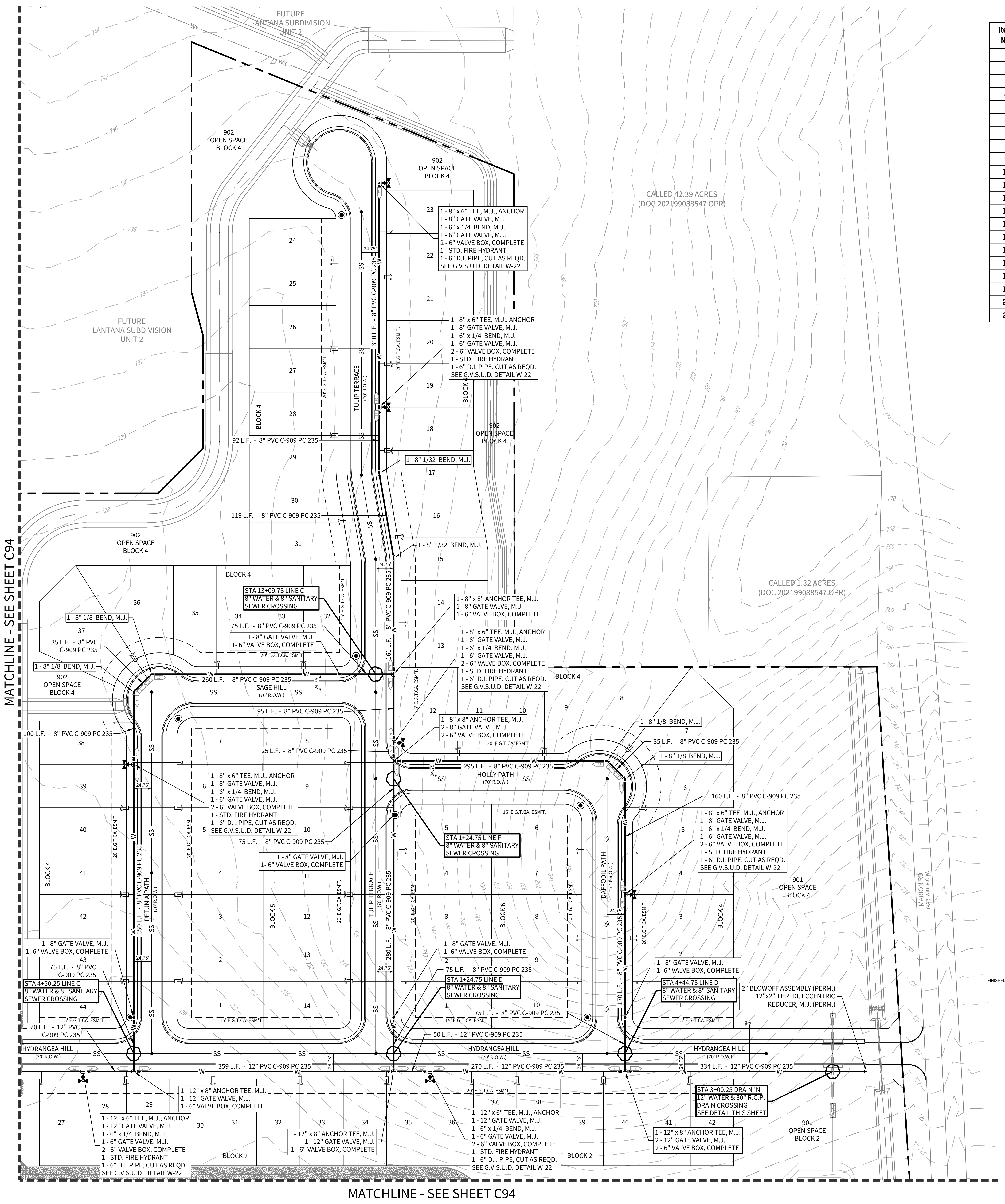

FUTURE LANTANA SUBDIVISION UNIT 2
FUTURE LANTANA SUBDIVISION UNIT 2
902 OPEN SPACE BLOCK 4
902 OPEN SPACE BLOCK 4
902 OPEN SPACE BLOCK 4
902 OPEN SPACE BLOCK 4
902 OPEN SPACE BLOCK 4
901 OPEN SPACE BLOCK 4
901 OPEN SPACE BLOCK 2
CALLED 42.39 ACRES (DOC 202199038547 OPR)
CALLED 1.32 ACRES (DOC 202199038547 OPR)
BLOCK 4
BLOCK 5
BLOCK 6
BLOCK 2
TULIP TERRACE (70' R.O.W.)
SAGE HILL (70' R.O.W.)
HOLLY PATH (70' R.O.W.)
PETUNIA PATH (70' R.O.W.)
DAFFODIL PATH (70' R.O.W.)
HYDRANGEA HILL (70' R.O.W.)
MARION RD (VAR. WID. R.O.W.)
20' E.G.T.CA. ESM'T.
15' E.G.T.CA. ESM'T.
24.75'
310 L.F. - 8" PVC C-909 PC 235
161 L.F. - 8" PVC C-909 PC 235
92 L.F. - 8" PVC C-909 PC 235
119 L.F. - 8" PVC C-909 PC 235
75 L.F. - 8" PVC C-909 PC 235
35 L.F. - 8" PVC C-909 PC 235
260 L.F. - 8" PVC C-909 PC 235
95 L.F. - 8" PVC C-909 PC 235
100 L.F. - 8" PVC C-909 PC 235
25 L.F. - 8" PVC C-909 PC 235
295 L.F. - 8" PVC C-909 PC 235
160 L.F. - 8" PVC C-909 PC 235
350 L.F. - 8" PVC C-909 PC 235
280 L.F. - 8" PVC C-909 PC 235
170 L.F. - 8" PVC C-909 PC 235
70 L.F. - 12" PVC C-909 PC 235
50 L.F. - 12" PVC C-909 PC 235
359 L.F. - 12" PVC C-909 PC 235
270 L.F. - 12" PVC C-909 PC 235
334 L.F. - 12" PVC C-909 PC 235
1 - 8" x 6" TEE, M.J., ANCHOR
1 - 8" GATE VALVE, M.J.
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE
1 - STD. FIRE HYDRANT
1 - 6" D.I. PIPE, CUT AS REQD.
SEE G.V.S.U.D. DETAIL W-22
1 - 8" 1/32 BEND, M.J.
1 - 8" 1/8 BEND, M.J.
1 - 8" x 8" ANCHOR TEE, M.J.
1 - 8" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
1 - 8" x 8" ANCHOR TEE, M.J.
2 - 8" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE
1 - 12" x 8" ANCHOR TEE, M.J.
1 - 12" GATE VALVE, M.J.
1 - 6" VALVE BOX, COMPLETE
1 - 12" x 6" TEE, M.J., ANCHOR
1 - 12" GATE VALVE, M.J.
1 - 12" x 8" ANCHOR TEE, M.J.
2 - 12" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE
STA 13+09.75 LINE C 8" WATER & 8" SANITARY SEWER CROSSING
STA 1+24.75 LINE F 8" WATER & 8" SANITARY SEWER CROSSING
STA 4+50.25 LINE C 8" WATER & 8" SANITARY SEWER CROSSING
STA 1+24.75 LINE D 8" WATER & 8" SANITARY SEWER CROSSING
STA 4+44.75 LINE D 8" WATER & 8" SANITARY SEWER CROSSING
STA 3+00.25 DRAIN 'N' 12" WATER & 30" R.C.P. DRAIN CROSSING SEE DETAIL THIS SHEET
2" BLOWOFF ASSEMBLY (PERM.) 12"x2" THR. DI. ECCENTRIC REDUCER, M.J. (PERM.)
SS
W
Wx
MATCHLINE - SEE SHEET C94
MATCHLINE - SEE SHEET C94

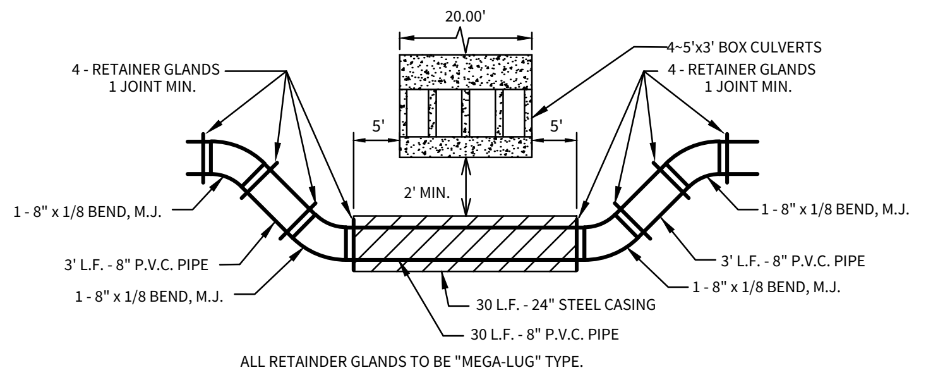
LANTANA UNIT 1 - WATER DEVELOPMENT

ESTIMATED QUANTITY TAKE-OFF

(CONTRACTOR RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES REQUIRED)

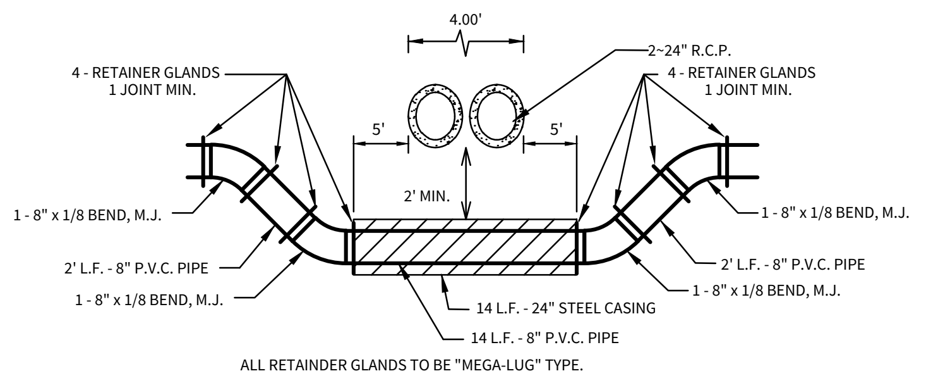
Item No.	Description	Quantity	Units
1	8" PVC C-909 PC 235	7,613	LF
2	8" GATE VALVES	38	EA
3	12" PVC C-909 PC 235	1,880	LF
4	12" GATE VALVES	14	EA
5	FIRE HYDRANTS	19	EA
6	PIPE FITTINGS, ALL SIZES AND TYPES	3.11	TON
7	2" BLOWOFF, PERMANENT	3	EA
8	1" IRRIGATION SERVICE (W/ 1" METER)	1	EA
9	1" DUAL LONG SERVICE (5/8" METER)	36	EA
10	1" DUAL SHORT SERVICE (5/8" METER)	54	EA
11	1" LONG SERVICE (5/8" METER)	9	EA
12	1" LONG SERVICE (1" METER)	1	EA
13	1" SHORT SERVICE (5/8" METER)	16	EA
14	TRENCH EXCAVATION SAFETY PROTECTION	9,493	LF
15	HYDROSTATIC TESTING	1	EA
16	METER BOX (NON-STANDARD METER BOX)	206	EA
17	DISINFECTION SAMPLE PORT	1	EA
18	TIE INTO EXISTING WATER MAIN	1	EA
19	24" STEEL CASING	44	LF
20	36" STEEL CASING	48	LF
21	OPEN CUT (WEIL ROAD)	38	LF

TOTAL ACERAGE	67.08
TOTAL EDU'S	208
TOTAL NUMBER OF LOTS	206


20.00'
4-5'x3' BOX CULVERTS
4 - RETAINER GLANDS 1 JOINT MIN.
4 - RETAINER GLANDS 1 JOINT MIN.
1 - 8" x 1/8 BEND, M.J.
3' L.F. - 8" P.V.C. PIPE
5'
2' MIN.
30 L.F. - 24" STEEL CASING
30 L.F. - 8" P.V.C. PIPE
ALL RETAINER GLANDS TO BE "MEGA-LUG" TYPE.

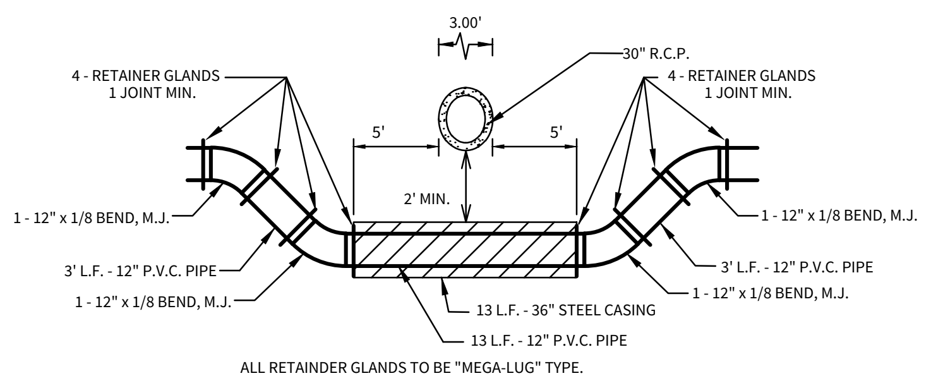
WATER / DRAIN B CROSSING DETAIL

SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)


4.00'
2-24" R.C.P.
4 - RETAINER GLANDS 1 JOINT MIN.
4 - RETAINER GLANDS 1 JOINT MIN.
1 - 8" x 1/8 BEND, M.J.
2' L.F. - 8" P.V.C. PIPE
5'
2' MIN.
14 L.F. - 24" STEEL CASING
14 L.F. - 8" P.V.C. PIPE
ALL RETAINER GLANDS TO BE "MEGA-LUG" TYPE.

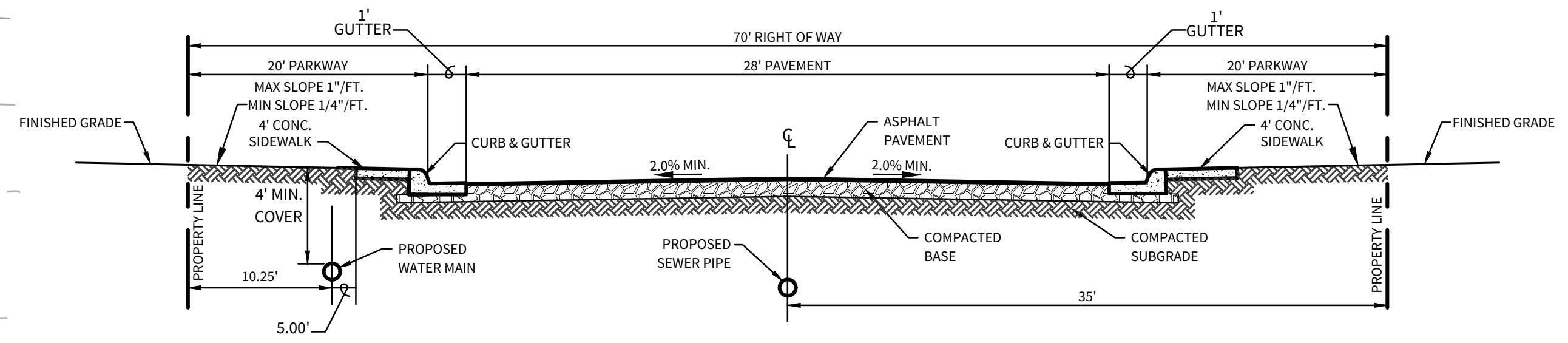
WATER / DRAIN K CROSSING DETAIL

SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)


3.00'
30" R.C.P.
4 - RETAINER GLANDS 1 JOINT MIN.
4 - RETAINER GLANDS 1 JOINT MIN.
1 - 12" x 1/8 BEND, M.J.
3' L.F. - 12" P.V.C. PIPE
5'
2' MIN.
13 L.F. - 36" STEEL CASING
13 L.F. - 12" P.V.C. PIPE
ALL RETAINER GLANDS TO BE "MEGA-LUG" TYPE.

WATER / DRAIN N CROSSING DETAIL

SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)



LOCAL "A" STREET CROSS-SECTION

CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. CONTRACTOR WILL NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS PRIOR TO EXCAVATION.

GVSUD	(830) 914-2330
GVTC	(830) 885-4411
GVEC	1-800-401-8345
DIG TESS	1-800-344-8377
TEXAS STATE WIDE ONE CALL LOCATORS	1-800-545-6005 OR 811

NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE GVSUD INSPECTOR/TEST ADMINISTER, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY GVSUD WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

TRENCH EXCAVATION PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) 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!!

EXISTING UTILITIES ARE WITHIN THE LIMITS OF CONSTRUCTION. CONTRACTORS SHALL EXERCISE EXTRA CARE IN DIGGING ANY TRENCH FOR PROPOSED UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE, VERIFY THE EXACT LOCATION & IDENTIFY AREA OF CONFLICTS WITH EXISTING UTILITIES AND SHALL NOTIFY THE ENGINEER IF CONFLICT IS FOUND.

CAUTION!!

THE CONTRACTOR SHALL BE AWARE THAT OVERHEAD ELECTRIC LINES EXIST WITHIN THE VICINITY OF THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

NOTES:

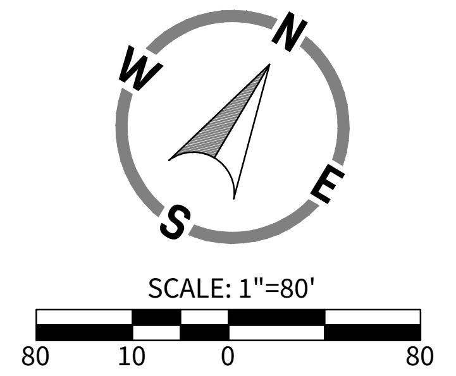
1. MOISTURE DENSITY COMPACTION TESTING FREQUENCY- WATER MAIN TRENCHES REQUIRED EVERY 300 LF FOR EACH VERTICAL FOOT OF COMPACTED BACKFILL. SERVICES RANDOMLY SELECTED AS REQUIRED BY GVSUD INSPECTOR.

2. ALL DUCTILE IRON PIPE TO BE AMERICAN, ZINC COATED, AWWA/ANSI C-151.

3. FIRE HYDRANTS SHALL BE MUELLER OR EJ TYPE AND SHALL BE 1' MINIMUM AND 7' MAXIMUM FROM THE BACK OF CURB.

4. DISINFECTION SHALL BE BY MACHINE CHLORINATION.

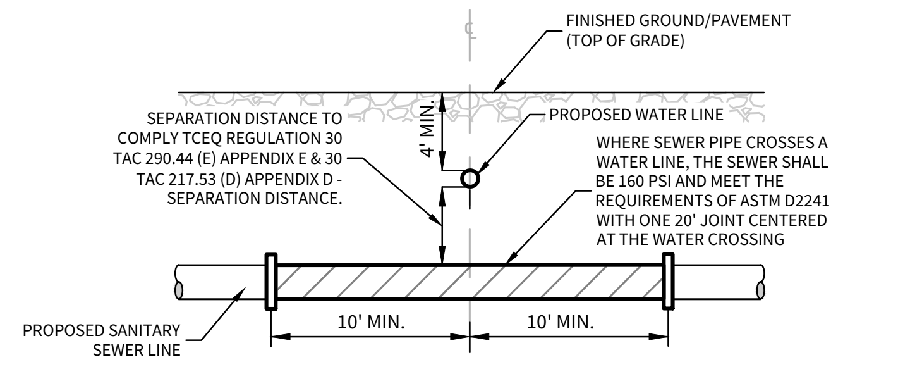
5. ALL TESTING AND TEST REPORTS SHALL BE COORDINATED WITH GVSUD INSPECTOR BY CONTRACTOR.



LEGEND

OVERALL UNIT BOUNDARY	—— — — ——
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.CA. EASEMENT	— — — —
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
EXISTING WATER LINE	—— Wx ——
EXISTING SEWER LINE	—— SSx ——
EXISTING MANHOLE	●
PROPOSED WATER LINE	—— W ——
PROPOSED WATER SERVICE	WW
PROPOSED FIRE HYDRANT	⧓
PROPOSED SEWER MAIN	—— SS ——
PROPOSED SEWER FORCE MAIN	— — SFM —
PROPOSED MANHOLE	●
PROPOSED SEWER SERVICE	S
PROPOSED STREET LIGHT	◉
RESTRAINT LENGTH	▭

SEWER/WATER LINE CROSSINGS	
LINE	STATION
"A"	9+52.01
"A"	10+01.51
"A"	12+97.01
"A"	21+27.01
"A"	24+37.01
"B"	3+85.25
"B"	6+95.25
"C"	1+24.75
"C"	4+50.25
"C"	13+09.75
"D"	1+24.75
"D"	4+44.75
"F"	1+24.75
"Z"	8+57.71


FINISHED GROUND/PAVEMENT (TOP OF GRADE)
PROPOSED WATER LINE
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
4' MIN.
10' MIN.
10' MIN.
PROPOSED SANITARY SEWER LINE

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

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LANTANA SUBDIVISION UNIT 1

WATER DISTRIBUTION PLAN

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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GVSUD CONSTRUCTION PLAN GENERAL NOTES

1. ALL WORKMANSHIP AND MATERIALS FOR THE WATER SYSTEM SHALL CONFORM TO THE WATER STANDARDS AND DESIGN CRITERIA OF GREEN VALLEY SPECIAL UTILITY DISTRICT (GVSUD).
2. PVC MAINS 12-INCHES AND BELOW SHALL CONFORM TO AWWA C-909 PRESSURE CLASS 235 OR ABOVE DEPENDING ON SYSTEM PRESSURES. PVC MAIN GREATER THAN 12 INCHES SHALL CONFORM TO AWWA C-900 DR 18 OR ABOVE DEPENDING ON SYSTEM PRESSURES. WATER MAINS SHALL HAVE AN ABSOLUTE MINIMUM DEPTH OF 5-FEET BELOW ROADWAY LEVEL AND 42-INCHES IN ALL OTHER AREAS.
3. ALL WATER MAIN DUCTILE IRON FITTINGS SHALL BE MECHANICAL JOINT AND CONFORM TO ANSI/AWWA C-153 OR C-110. ALL BOLTS SHALL HAVE KOPR KOTE OR APPROVED EQUAL ANTI-SEIZE CORROSION RESISTANT COATING. VALVES SHALL BE ATTACHED TO TEES BY FOSTER ADAPTOR OR ANCHOR NIPPLE. FOSTER ADAPTER, ANCHOR NIPPLE, OR FORD UNI-FLANGE RETAINER GLANDS AND THRUST BLOCKS SHALL BE USED ON ALL FITTINGS AND VALVES.
4. TRACER WIRE SHALL BE INSTALLED ON ALL PIPELINES INCLUDING SERVICE LINES AND BROUGHT INTO VALVE AND METER BOXES FOR LOCATING PURPOSES. INSULATED WATER PROOF CONNECTORS SHALL BE USED TO SPLICE WIRES TOGETHER. A 12-INCH-WIDE DETECTABLE METAL TAPE SHALL BE PLACED ABOVE BEDDING INITIAL BACKFILL.
5. EXCEEDING MAXIMUM DEFLECTION IS PROHIBITED. THE ANGULAR DEFLECTION AT BELL-SPIGOT JOINTS SHOULD NOT EXCEED ONE (1) DEGREE. THIS WILL PRODUCE A 4-INCH OFFSET FOR EVERY 20-FOOT SECTION OF PIPE. JOINT DEFLECTION IS ACHIEVED AFTER THE JOINT IS ASSEMBLED IN STRAIGHT ALIGNMENT AND DEFLECTED TO THE REFERENCE MARK. THE BELL SHOULD BE BRACED TO ALLOW THE FREE END TO MOVE LATERALLY UNDER STEADY PRESSURE USING A PRY BAR OR OTHER SUITABLE MEANS. CARE SHOULD BE TAKEN NOT TO EXCEED THE MAXIMUM DEFLECTION ALLOWED OR TO DAMAGE THE PIPE WITH MACHINERY. ABRUPT CHANGES IN DIRECTION SHALL BE ACCOMPLISHED WITH FITTINGS.
6. OVER STRESSING THE BELL BY OVER INSERTING THE JOINTS, OVERBELLING, AND PASSING THE INSERTION REFERENCE MARK IS PROHIBITED AND WILL REQUIRE REMOVAL AND REINSTALLATION.
7. STANDARD FIRE HYDRANT SHALL INCLUDE HYDRANT, 6-INCH RESILIENT GATE VALVE AND BOX, ANCHOR FITTINGS, DUCTILE IRON PIPE, AND ALL APPURTENANCES. HYDRANTS SHALL BE LIMITED TO THOSE MANUFACTURED BY MUELLER, AVK, AMERICAN FLOW, CLOW, OR EAST JORDAN. ONLY MUELLER HYDRANTS AND EJ SHALL BE USED IN CITY OF CIBOLO'S JURISDICTION. HYDRANT UPPER BARREL SHALL BE FACTORY PAINTED RED. HYDRANTS SHALL HAVE A STORTZ CONNECTION ON STEAMER NOZZLE. FITTINGS FOR PLUG SHALL BE FULLY RESTRAINED AND TIED TO VALVE.

GVSUD CONSTRUCTION PLAN GENERAL NOTES

8. VALVES SHALL BE AWWA APPROVED RESILIENT WEDGE SEATED GATE VALVE, OPEN LEFT, AND LIMITED TO THOSE MANUFACTURED BY MUELLER, AVK, AMERICAN FLOW, CLOW, OR EAST JORDAN.
9. VALVES ARE PROHIBITED IN ADA RAMPS, CURBS, AND ROADWAYS. VALVES ARE PROHIBITED IN SIDEWALKS IN CITY OF NEW BRAUNFELS.
10. METER BOXES ARE PROHIBITED IN ANY SIDEWALKS, DRIVEWAYS, OR ROADWAYS.
11. SMALL SERVICE TAPS SHALL BE EITHER 1-INCH OR 2 INCH AND SHALL BE REHAU MUNICIPEX WITH CTS 200 PSI PLASTIC INSERT. SMALL SERVICE TAPS TO BE MADE WITH SINGLE BRASS STRAP TAPPING SADDLE WITH IRON PIPE THREADS. EXCEPTION: IF LOCATED WITHIN CITY OF CIBOLO- SERVICE TAPS TO BE MADE WITH DOUBLE STAINLESS STRAP EPOXY COATING SADDLES WITH IRON PIPE THREADS.
12. CASING REQUIRED FOR ALL LONG SMALL SERVICES. 1 INCH SERVICE REQUIRES 3 INCH CASING AND 2 INCH SERVICE REQUIRES 4 INCH CASING. CASING SHALL BE PVC SCHEDULE 40 OR APPROVED EQUAL.
13. SINGLE 5/8” & ¾” METER BOXES SHALL BE DFW36C 16” X 11”. DUAL 5/8” & ¾” METER BOXES SHALL BE DFW38C 17” X 15”. 1-INCH METER BOXES SHALL BE DFW65C-14-1A 15 1/4" X 30 3/8”. ALL METER BOXES SHALL BE PLASTIC WITH LIDS HAVING REBAR, ARM, AND KNOCKOUT.
14. THE FORD U BRANCH IS TO BE USED ON ALL DUAL SERVICES (U48-43Q) WITH THE 5/8” X 3/4” FEMALE THREAD ANGLE HEAD. ALL OTHER ANGLE HEADS WILL BE THE FORD Q NUT. ALL CORPORATION STOPS WILL BE IPS X Q NUT. ALL BRASS VALVES TO BE ‘BALL’ TYPE MINIMUM 200 PSI PRESSURE RATING. "CC" THREADED CORPORATION STOPS PROHIBITED.
15. TAPPING MACHINES UTILIZED FOR INSTALLING ANY TYPE OF TAP 1-INCH TO 2-INCHES WILL BE OF THE PURGE TYPE, WHICH AT THE TIME OF TAPPING SHALL EXPEL ALL CHIPS AND RESIDUE TO ATMOSPHERE THROUGH AN APPROPRIATE OUTLET AND/OR BE ABLE TO RETAIN THE COUPON.
16. ALL WATER MAIN, PIPE, CASINGS, FITTINGS, AND VALVES SHALL BE LAID IN MANUFACTURED SAND EMBEDMENT PER DETAILS. THE SAND SHALL FULLY ENCASE ALL PIPES, INCLUDING FITTINGS AND VALVES, BY A MINIMUM OF 12-INCHES. ALL FITTINGS AND VALVES ARE TO RECEIVE THRUST BLOCKING, FOSTER ADAPTER, ANCHOR NIPPLE, FORD UNI-FLANGE RETAINER GLAND JOINT RESTRAINTS, AND BELL JOINT RESTRAINTS WHEN SPECIFIED BY GVSUD OR THE DISTRICT'S ENGINEER.
17. CONTRACTOR TO CURB CUT V'S FOR VALVES AND X'S FOR METERS.
18. PRIOR TO CONSTRUCTION OF THE SEWER AND WATER MAINS, ALL R.O.W. ROADWAYS AND PARKWAY SHALL HAVE REFERENCE SURVEY STAKING AND BE EXCAVATED OR PROPERLY FILLED TO SUB-GRADE ELEVATION.

GVSUD CONSTRUCTION PLAN GENERAL NOTES

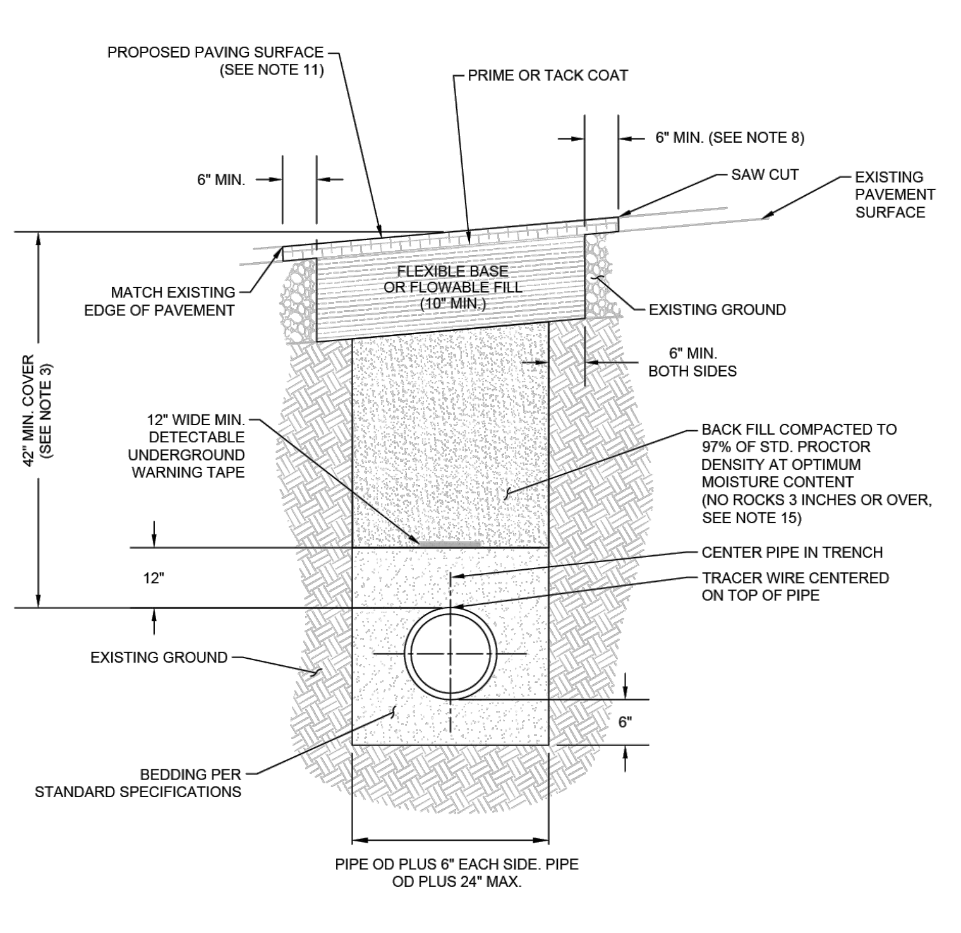
19. SURVEY STAKING OFFSETS ARE REQUIRED FOR ALL WATER MAIN AND APPURTENANCES.
20. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES INDICATED ON THE PLANS ARE TAKEN FROM AVAILABLE RECORDS AND ARE NOT GUARANTEED. CONTRACTOR SHALL INVESTIGATE AND FIELD VERIFY UTILITY LOCATIONS A MINIMUM OF 300 LF AHEAD OF CROSSING AND TIE-IN LOCATIONS. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY DAMAGE TO AND FOR MAINTENANCE PROTECTION OF THE EXISTING UTILITIES, WHETHER THEY ARE SHOWN ON THE PLANS OR NOT.
21. ALL WASTEWATER PIPES CROSSING THE POTABLE WATER DISTRIBUTION SYSTEM WILL BE HELD IN STRICT ACCORDANCE WITH TCEQ RULES AND REGULATIONS. PROPOSED SUB-GRADE LIMITS AND DIMENSIONS MUST BE SHOWN ON THE PLANS, AND CONSTRUCTION PROCEDURES WILL BE INSPECTED TO VERIFY COMPLIANCE WITH TCEQ 290.44(E).
22. OTHER UTILITIES SHALL NOT BE LOCATED CLOSER THAN 3-FEET TO WATER MAINS.
23. THE GREEN VALLEY INSPECTOR SHALL BE NOTIFIED AT LEAST FORTY-EIGHT HOURS PRIOR TO BACK FILLING OR TESTING.
24. A FIELD PRE-CONSTRUCTION MEETING SHALL BE HELD BEFORE CONSTRUCTION BEGINS AND MATERIAL SHALL BE AVAILABLE ON-SITE FOR INSPECTION.
25. CONTRACTOR SHALL CHLORINATE NEW MAINS PER TCEQ AND ANSI/AWWA C651 AND DECHLORINATE DURING FLUSHING PER ANSI/AWWA C655; THE CONTRACTOR SHALL COORDINATE WITH THE GVSUD INSPECTOR TO WITNESS CHLORINATING AND PRESSURE TESTING OF NEW MAINS. ALL TEST RESULTS MUST BE PROVIDED TO GVSUD.
26. OPERATION OF EXISITNG VALVES IN THE GVSUD WATER DISTRIBUTION SYSTEM SHALL ONLY BE AS APPROVED BY GVSUD AND IN THE PRESENCE OF GVSUD PERSONNEL. THE CONTRACTOR SHALL NOTIFY GVSUD WHEN A VALVE NEEDS TO BE OPERATED AND MAY ONLY OPERATE A VALVE IN THE PRESENCE OF THE GVSUD INSPECTOR.
27. NEW WATER MAINS AND APPURTENANCES SHALL PASS PRESSURE TESTING AND PASS THE MINIMUM PUBLIC HEALTH STANDARDS FOR BACTERIOLOGICAL QUALITY TESTING PRIOR TO ANY TIE IN TO THE EXISTING GVSUD WATER SYSTEM AS REQUIRED BY TCEQ AND ANSI/AWWA.
28. HYDROSTATIC PRESSURE TESTING SHALL BE EVERY 200 LF (MAX) OF LINE OR AS APPROVED BY THE ENGINEER. ALL ERRORS OF WORKMANSHIP SHALL BE CORRECTED IMMEDIATELY. ALL PARTS OF THE PIPELINE SHALL BE BACKFILLED AND BRACED SUFFICIENTLY TO PREVENT MOVEMENT UNDER PRESSURE.
29. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH AND CONFINED SPACE ENTRY SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION AND ALL RELATED WORK. ANY

GVSUD CONSTRUCTION PLAN GENERAL NOTES

TRENCH PROTECTION SAFETY VIOLATION WILL BE DOCUMENTED AND WILL RESULT IN AN IMMEDIATE WORK STOPPAGE BY THE GVSUD INSPECTOR AT MINUMUM UNTIL THE NEXT WORKDAY.

30. CONTRACTOR MUST PROTECT ALL UNATTENDED TRENCHES AND EXCAVATIONS WITH TEMPORARY FENCING.
31. NO TREES MAY BE PLANTED IN THE AREAS DESIGNATED AS WATER OR UTILITY EASEMENTS, OR AREAS WHERE WATER MAINS AND WATER SERVICE CROSSINGS EXIST OR ARE PLANNED TO BE CONSTRUCTED.
32. ALL GARBAGE OR SPOIL MATERIAL FROM THE WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE.
33. CONTRACTOR SHALL PROVIDE “AS-BUILT” WATER LINE PLANS AT THE PRELIMINARY WALK THRU FOR THE GVSUD INSPECTOR AND ENGINEER. THE PLANS SHALL LIST MATERIAL MANUFACTURERS, LINE LENGTH FROM FITTING TO FITTING, AND TAP LOCATIONS.
34. GPS FILES SHALL BE PROVIDED BY THE CONTRACTOR TO THE ENGINEER AND GVSUD INSPECTOR FOR THE PLAN OF RECORD. CONTRACTOR SHALL PROVIDE AN ASCII COMMA DELIMITED OR EXCEL FILE CONTAINING THREE-DIMENSIONAL GPS SURVEY POINTS WITH FOUR (4) DECIMAL PLACES OF PRECISION, LESS THAN FOUR (4) INCHES OF HORIZONTAL POSITION ACCURACY, AND LESS THAN EIGHT (8) INCHES OF VERTICAL POSITION ACCURACY. POINTS SHALL BE PROVIDED FOR A MINIMUM OF THREE (3) CONTROL POINTS AND ALL FITTINGS, APPURTENANCES, ENCASEMENTS, VAULTS, AND TANKS. THE ENGINEER SHALL FURNISH PLAN OF RECORD DRAWINGS TO GVSUD FOR APPROVAL HAVING FINAL MEASUREMENTS AND THAT MATCH THE GPS ‘X’, ‘Y’, AND ‘Z’ COORDINATES.
35. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH ALL THE INFORMATION AS REQUIRED SO THAT THE ENGINEER CAN SUPPLY GVSUD THE GIS PACKAGE FOR APPROVAL.
36. A FINAL WALK THRU FOR FINAL FIELD ACCPETANCE WILL BE SCHEDULED WITH THE CONTRACTOR AFTER THE PRELIMINARY WALK THRU PUNCH LIST ITEMS HAVE BEEN COMPLETED AND AFTER THE GIS PACKAGE IS APPROVED AND ACCEPTED BY GVSUD.
37. GVSUD CONTACT NUMBER: 830-914-2330

REVISED: JULY 22,2022

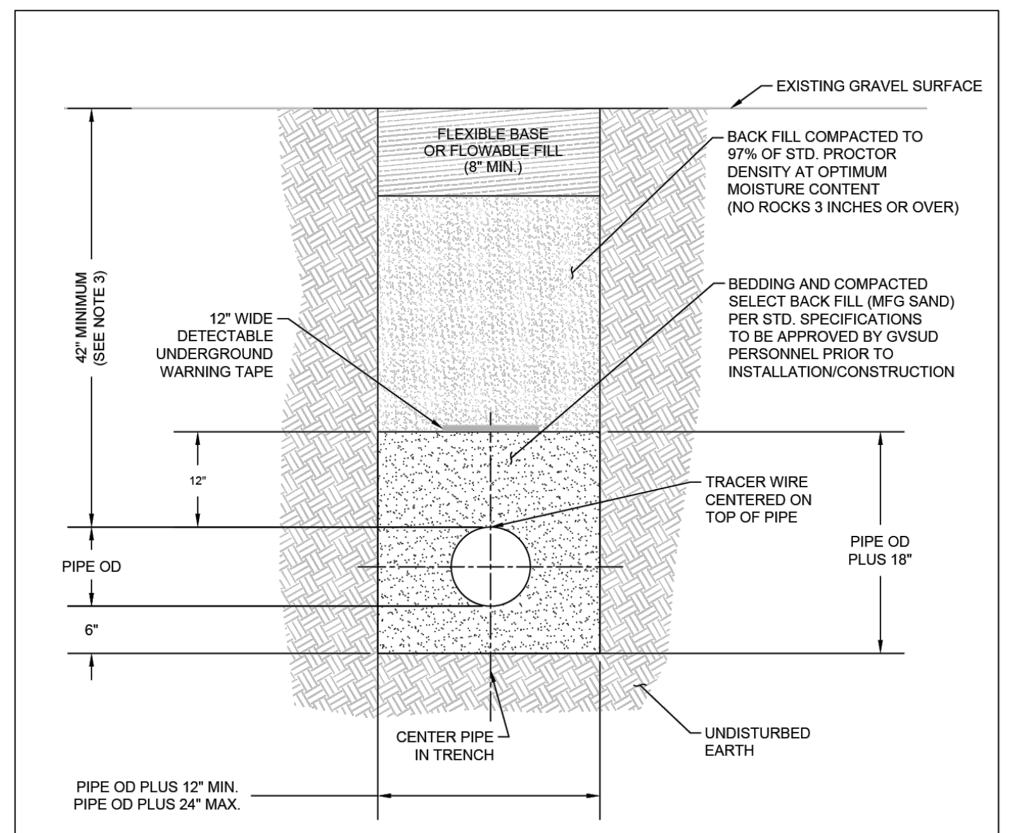

PROPOSED PAVING SURFACE (SEE NOTE 11)
PRIME OR TACK COAT
6" MIN. (SEE NOTE 8)
SAW CUT
EXISTING PAVEMENT SURFACE
6" MIN.
MATCH EXISTING EDGE OF PAVEMENT
FLEXIBLE BASE OR FLOWABLE FILL (10" MIN.)
EXISTING GROUND
6" MIN. BOTH SIDES
42" MIN. COVER (SEE NOTE 3)
12" WIDE MIN. DETECTABLE UNDERGROUND WARNING TAPE
BACK FILL COMPACTED TO 97% OF STD. PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT (NO ROCKS 3 INCHES OR OVER, SEE NOTE 15)
12"
CENTER PIPE IN TRENCH
TRACER WIRE CENTERED ON TOP OF PIPE
EXISTING GROUND
6"
BEDDING PER STANDARD SPECIFICATIONS
PIPE OD PLUS 6" EACH SIDE. PIPE OD PLUS 24" MAX.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
TRENCH DETAIL FOR PAVED AREAS
(1 OF 2)
REVISED:
JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO.
W-1

NOTES:

1. ALL WASTEWATER PVC PIPING SHALL BE GREEN IN COLOR. NO WATER DESIGNATED PIPE SHALL BE USED IN WASTEWATER WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
2. ALL WATER PIPING SHALL HAVE A MINIMUM PRESSURE CLASS OF 235 PSI WATER PVC PIPING SHALL BE BLUE IN COLOR.
3. ALL WATER LINES AND WASTEWATER FORCEMAIN SHALL HAVE 42 INCH MINIMUM COVER AND 72 INCH MAXIMUM COVER. WASTEWATER GRAVITY LINES SHALL HAVE 42 INCH MINIMUM COVER AND 15 FOOT MAXIMUM COVER.
4. GENERAL CONTRACTOR SHALL CONTACT THE APPROPRIATE STREET OWNER AND PROCESS, POST FISCAL SURETY, AND HAVE STREET CUT PERMIT ISSUED IN THEIR NAME.
5. CONTRACTOR TO REPAIR PAVED AREA TO STREET OWNER'S ROAD STANDARDS FOR ALL DISTURBED AREA. GREEN VALLEY SPECIAL UTILITY DISTRICT PAYS FOR QUANTITY OF REPAIR SHOWN IN DETAIL.
6. CONTRACTOR SHALL NOT EXCEED THE MAXIMUM TRENCH ALLOWED AS INDICATED IN THE PLANS AND SPECIFICATIONS.
7. THE EXISTING PAVED SURFACE SHALL BE SAW CUT IN A STRAIGHT LINE, A MINIMUM OF 12 INCHES WIDER THAN UNDISTURBED SIDES OF THE TRENCH AND SYMMETRICAL ABOUT THE CENTER LINE OF THE EXCAVATION.
8. ANY CONCRETE PAVING SHALL BE CUT 6 INCHES WIDER THAN UNDISTURBED SIDES OF EXCAVATION.
9. IF EXCAVATION AREA IS OPEN FOR TEMPORARY PUBLIC USE, THE SURFACE SHALL BE MAINTAINED LEVEL WITH ADJACENT RIDING SURFACE WITH TEMPORARY COLD MIX ASPHALT CONCRETE OR TEMPORARY HOT MIXED ASPHALT CONCRETE. TEMPORARY MIX SHALL BE PLACED OVER FLEXIBLE BASE.
10. FLEXIBLE BASE SHALL BE REPLACED IN KIND WITH BASE AND PAVEMENT THICKNESS WITH BASE EQUAL TO EXISTING BASE THICKNESS PLUS 3 INCHES, BUT IN NO CASE LESS THAN 10 INCHES.
11. DAMAGED PAVEMENT OUTSIDE THE TRENCH CUT SHALL BE REMOVED AND REPLACED WITH A MINIMUM OF 2 INCHES HOT MIXED ASPHALT CONCRETE AND A BASE OF 10 INCHES OR A THICKNESS MATCHING EXISTING, WHICHEVER IS GREATER.
12. TACK COAT ALL EXPOSED EDGES AND SURFACES.
13. TYPE AND THICKNESS OF PROPOSED PAVING SURFACE SHALL BE AS FOLLOWS:
    - TWO COURSE SURFACE TREATMENT: SHALL MATCH EXISTING SURFACE AND SHALL BE IN ACCORDANCE WITH SPECIFICATION 02770.
    - ASPHALT PAVING: SHALL BE IN ACCORDANCE WITH SPECIFICATION 02740. HOT MIXED ASPHALT CONCRETE TYPE 'D' SHALL BE USED FOR LIFT THICKNESS UP TO 2 INCHES, AND TYPE 'C' FOR LIFT THICKNESS OVER 2 INCHES AND UP TO 3 INCHES. LIFT THICKNESS SHALL NOT BE MORE THAN 3 INCHES.
14. DETECTABLE UNDERGROUND WARNING TAPE SHALL BE PLACED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE AND ABOVE BEDDING, IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. THE DETECTABLE UNDERGROUND WARNING TAPE SHALL CONFORM TO THE SPECIFICATIONS AND COLOR CODED IN ACCORDANCE WITH THE AMERICAN PUBLIC WORKS ASSOCIATION UNIFORM COLOR CODE.
15. PIPE BEDDING SHALL BE PLACED BEFORE PIPING IS LAID, UP TO BOTTOM OF PIPE, AND COMPACTED TO 97% STANDARD PROCTOR DENSITY.
16. PLACE PIPE BEDDING IN 12 INCH LIFTS AFTER PIPE IS LAID TO 12 INCHES ABOVE THE PIPE.
17. SELECT BACKFILL MATERIAL PLACED TO REQUIRED HEIGHT IN 6 INCH LIFTS.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
TRENCH DETAIL FOR PAVED AREAS
(2 OF 2)
REVISED:
JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO.
W-1

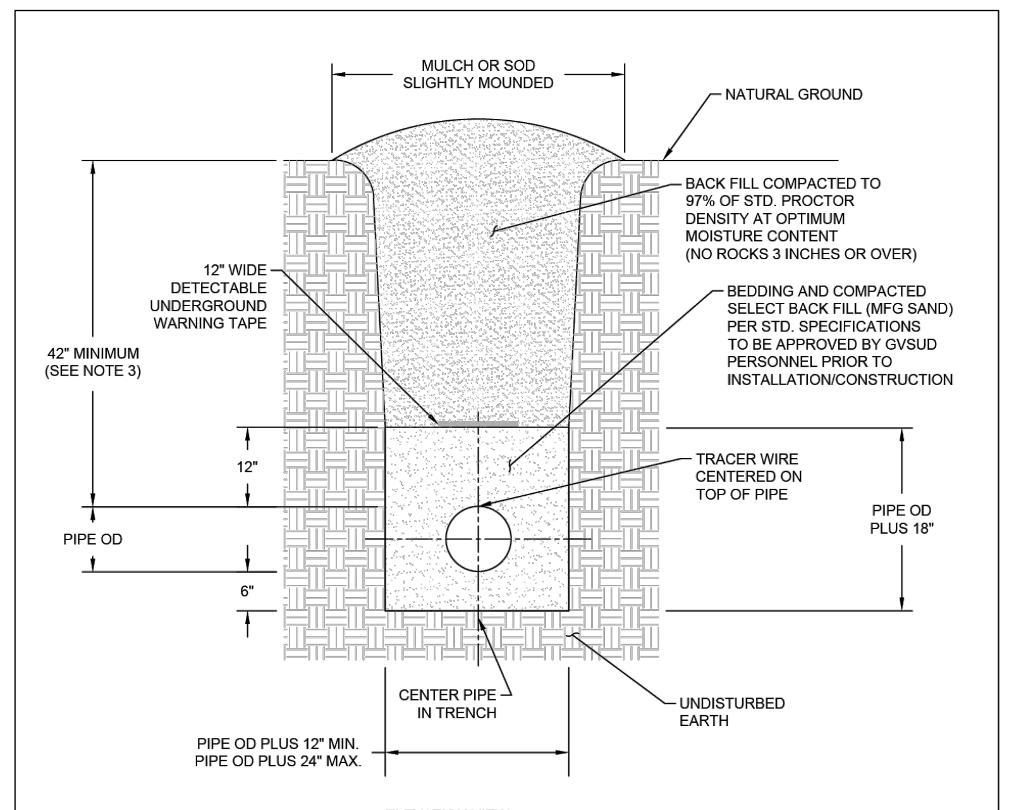

EXISTING GRAVEL SURFACE
FLEXIBLE BASE OR FLOWABLE FILL (8" MIN.)
BACK FILL COMPACTED TO 97% OF STD. PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT (NO ROCKS 3 INCHES OR OVER)
42" MINIMUM (SEE NOTE 3)
12" WIDE DETECTABLE UNDERGROUND WARNING TAPE
BEDDING AND COMPACTED SELECT BACK FILL (MFG SAND) PER STD. SPECIFICATIONS TO BE APPROVED BY GVSUD PERSONNEL PRIOR TO INSTALLATION/CONSTRUCTION
12"
TRACER WIRE CENTERED ON TOP OF PIPE
PIPE OD
PIPE OD PLUS 18"
6"
CENTER PIPE IN TRENCH
UNDISTURBED EARTH
PIPE OD PLUS 12" MIN.
PIPE OD PLUS 24" MAX.

ELEVATION VIEW

NOTES:

1. ALL WASTEWATER PVC PIPING SHALL BE GREEN IN COLOR. NO WATER DESIGNATED PIPE WILL BE USED IN WASTEWATER.
2. ALL WATER PIPING SHALL HAVE A MINIMUM PRESSURE CLASS OF 235 PSI. WATER PVC PIPING SHALL BE COLOR CODED BLUE.
3. ALL WATER LINES AND WASTEWATER FORCEMAIN SHALL HAVE 42 INCHES MINIMUM COVER AND 72 INCHES MAXIMUM COVER. WASTEWATER GRAVITY LINES SHALL HAVE 42 INCHES MINIMUM COVER AND 15 FEET MAXIMUM COVER.
4. CONTRACTOR SHALL NOT EXCEED THE MAXIMUM TRENCH ALLOWED AS INDICATED IN THE PLANS AND SPECIFICATIONS.
5. DETECTABLE UNDERGROUND WARNING TAPE SHALL BE PLACED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE AND ABOVE BEDDING, IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. THE TAPE SHALL CONFORM TO THE SPECIFICATIONS AND COLOR CODED IN ACCORDANCE WITH APWA UNIFORM COLOR CODE.
6. PIPE BEDDING PLACED BEFORE PIPING IS LAID UP TO BOTTOM OF PIPE COMPACTED TO 95% ASHTO DENSITY.
7. PLACE IN 12 INCH LIFTS AFTER PIPE IS LAID TO 12 INCHES ABOVE THE PIPE.
8. SELECT BACKFILL MATERIAL PLACED TO REQUIRED HEIGHT IN 6 INCH LIFTS.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
TRENCH DETAIL FOR GRAVEL SURFACED AREAS
REVISED:
JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO.
W-2

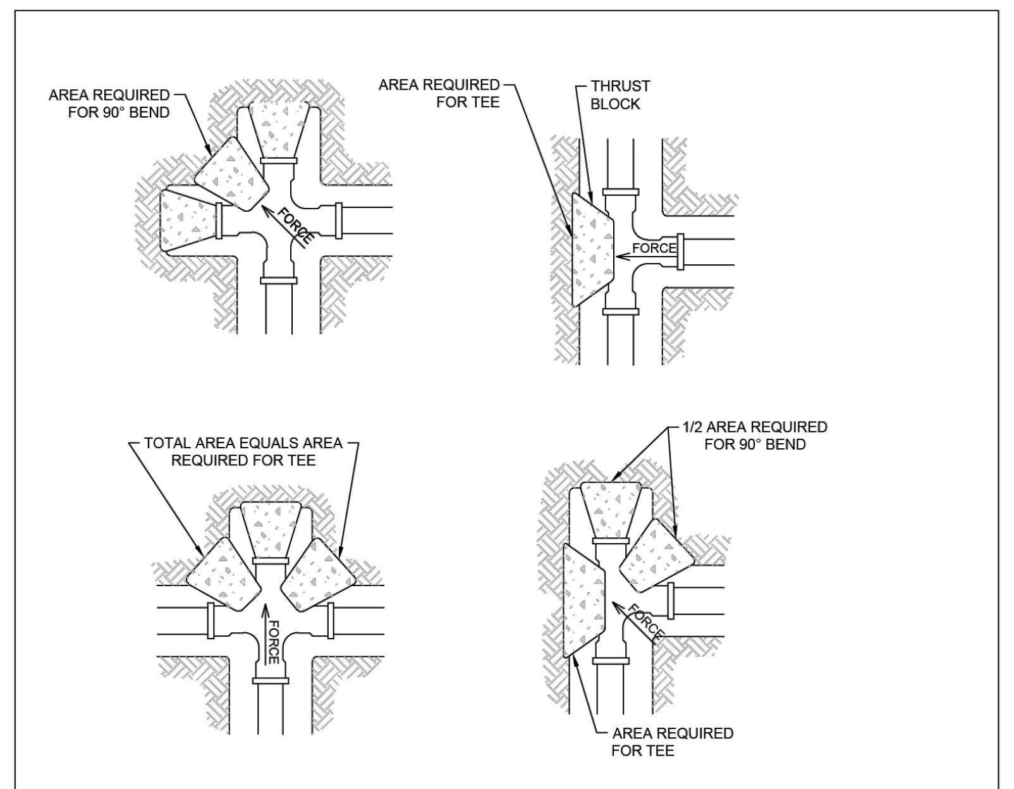

MULCH OR SOD SLIGHTLY MOUNDED
NATURAL GROUND
BACK FILL COMPACTED TO 97% OF STD. PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT (NO ROCKS 3 INCHES OR OVER)
12" WIDE DETECTABLE UNDERGROUND WARNING TAPE
BEDDING AND COMPACTED SELECT BACK FILL (MFG SAND) PER STD. SPECIFICATIONS TO BE APPROVED BY GVSUD PERSONNEL PRIOR TO INSTALLATION/CONSTRUCTION
42" MINIMUM (SEE NOTE 3)
12"
TRACER WIRE CENTERED ON TOP OF PIPE
PIPE OD
PIPE OD PLUS 18"
6"
CENTER PIPE IN TRENCH
UNDISTURBED EARTH
PIPE OD PLUS 12" MIN.
PIPE OD PLUS 24" MAX.

ELEVATION VIEW

NOTES:

1. ALL WASTEWATER PVC PIPING SHALL BE GREEN IN COLOR. NO WATER DESIGNATED PIPE WILL BE USED IN WASTEWATER.
2. ALL WATER PIPING SHALL HAVE A MINIMUM PRESSURE CLASS OF 235 PSI WATER PVC PIPING SHALL BE COLOR CODED BLUE.
3. ALL WATER LINES AND WASTEWATER FORCEMAIN SHALL HAVE 42 INCHES MINIMUM COVER AND 72 INCHES MAXIMUM COVER. WASTEWATER GRAVITY LINES SHALL HAVE 42 INCHES MINIMUM COVER AND 15 FEET MAXIMUM COVER.
4. CONTRACTOR SHALL NOT EXCEED THE MAXIMUM TRENCH ALLOWED AS INDICATED IN THE PLANS AND SPECIFICATIONS.
5. DETECTABLE UNDERGROUND WARNING TAPE SHALL BE PLACED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE AND ABOVE BEDDING, IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. THE TAPE SHALL CONFORM TO THE SPECIFICATIONS AND COLOR CODED IN ACCORDANCE WITH APWA UNIFORM COLOR CODE.
6. PIPE BEDDING PLACED BEFORE PIPING IS LAID UP TO BOTTOM OF PIPE COMPACTED TO 95% AASHTO DENSITY.
7. PLACE IN 12 INCH LIFTS AFTER PIPE IS LAID TO 12 INCHES ABOVE THE PIPE.
8. SELECT BACKFILL MATERIAL PLACED TO REQUIRED HEIGHT IN 6 INCH LIFTS.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
TRENCH DETAIL FOR NON-PAVED AREAS
REVISED:
JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO.
W-3

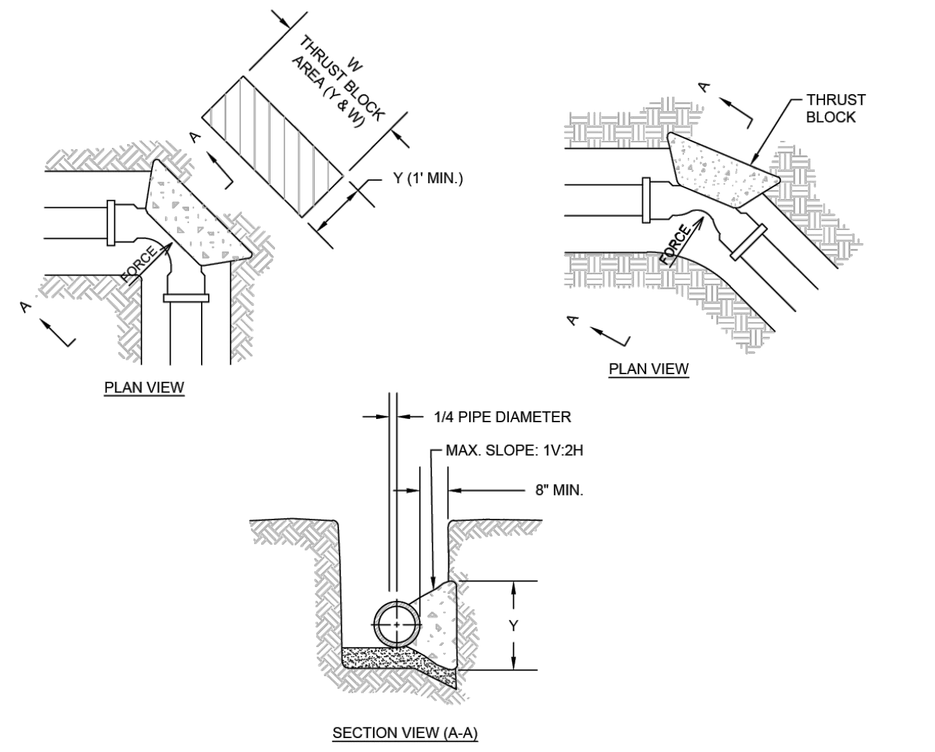

AREA REQUIRED FOR 90° BEND
AREA REQUIRED FOR TEE
THRUST BLOCK
FORCE
TOTAL AREA EQUALS AREA REQUIRED FOR TEE
1/2 AREA REQUIRED FOR 90° BEND
AREA REQUIRED FOR TEE

MINIMUM THRUST BLOCK AREA REQUIRED (Y AND W)		
PIPE SIZE	WATER PIPE	
	TEE, DEAD END, 90° BEND	45° AND 22.5° BENDS
4" & LESS	3 SQ. FEET	3 SQ. FEET
6"	4 SQ. FEET	3 SQ. FEET
8"	6 SQ. FEET	3 SQ. FEET
10"	9 SQ. FEET	5 SQ. FEET
12"	13 SQ. FEET	7 SQ. FEET
16"	23 SQ. FEET	12 SQ. FEET
18"	29 SQ. FEET	15 SQ. FEET

NOTES:

1. TABLE IS BASED ON SOILS WITH A MINIMUM BEARING CAPACITY OF 3,000 PSF. IF CONDITIONS ARE FOUND TO INDICATE SOIL BEARING IS LESS, THE AREAS SHALL BE INCREASED ACCORDINGLY.
2. AREAS FOR PIPE LARGER THAN 18 INCHES SHALL BE RESTRAINED.
3. THRUST BLOCKS SHALL EXTEND TO UNDISTURBED GROUND. CONCRETE SHALL BE CLASS "C" (MIN. 2,500 PSI).
4. FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT WITH A MINIMUM PRESSURE RATING OF 250 PSI AND SHALL CONFORM TO THE REQUIREMENTS OF ANSI/AWWA A21.10/C110 OR A21.53/C153.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
CONCRETE THRUST BLOCKING
(1 OF 2)
REVISED:
JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO.
W-4



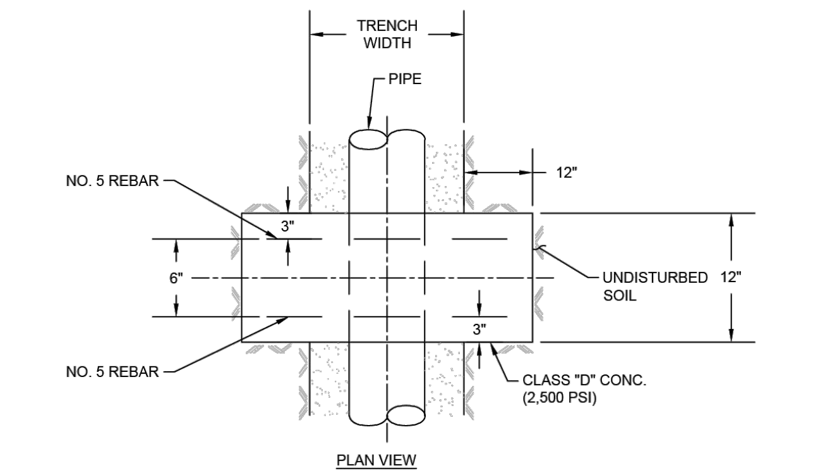
SECTION VIEW (A-A)

MINIMUM THRUST BLOCK AREA REQUIRED (Y AND W)		
PIPE SIZE	WATER PIPE	
	TEE, DEAD END, 90° BEND	45° AND 22.5° BENDS
4" & LESS	3 SQ. FEET	3 SQ. FEET
6"	4 SQ. FEET	3 SQ. FEET
8"	6 SQ. FEET	3 SQ. FEET
10"	9 SQ. FEET	5 SQ. FEET
12"	13 SQ. FEET	7 SQ. FEET
16"	23 SQ. FEET	12 SQ. FEET
18"	29 SQ. FEET	15 SQ. FEET

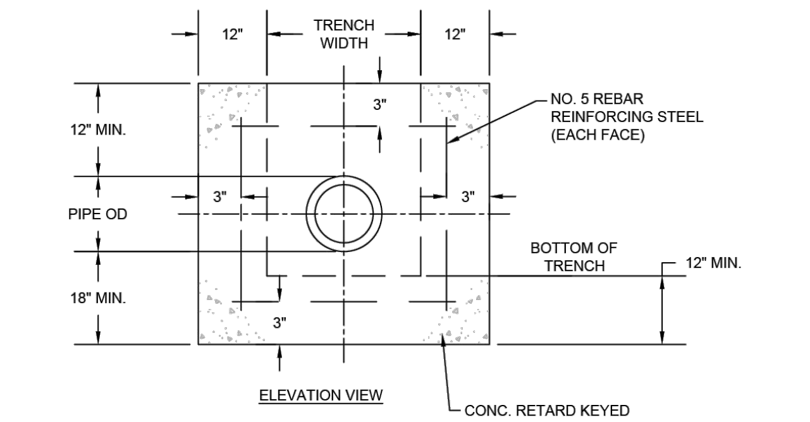
NOTES:

1. TABLE IS BASED ON SOILS WITH A MINIMUM BEARING CAPACITY OF 3,000 PSF. IF CONDITIONS ARE FOUND TO INDICATE SOIL BEARING IS LESS, THE AREAS SHALL BE INCREASED ACCORDINGLY.
2. AREAS FOR PIPE LARGER THAN 18 INCHES SHALL BE RESTRAINED.
3. THRUST BLOCKS SHALL EXTEND TO UNDISTURBED GROUND. CONCRETE SHALL BE CLASS "C" (MIN. 2,500 PSI).
4. FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT WITH A MINIMUM PRESSURE RATING OF 250 PSI AND SHALL CONFORM TO THE REQUIREMENTS OF ANSI/AWWA A21.10/C110 OR A21.53/C153.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
CONCRETE THRUST BLOCKING
(2 OF 2)
REVISED:
JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO.
W-4



PLAN VIEW



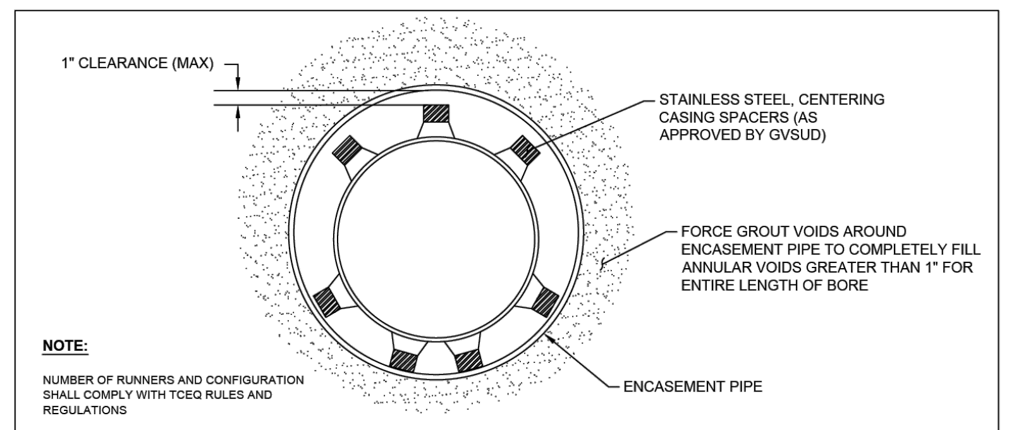
ELEVATION VIEW

CONC. RETARD KEYED INTO UNDISTURBED SOIL A MIN. OF 12"

NOTES:

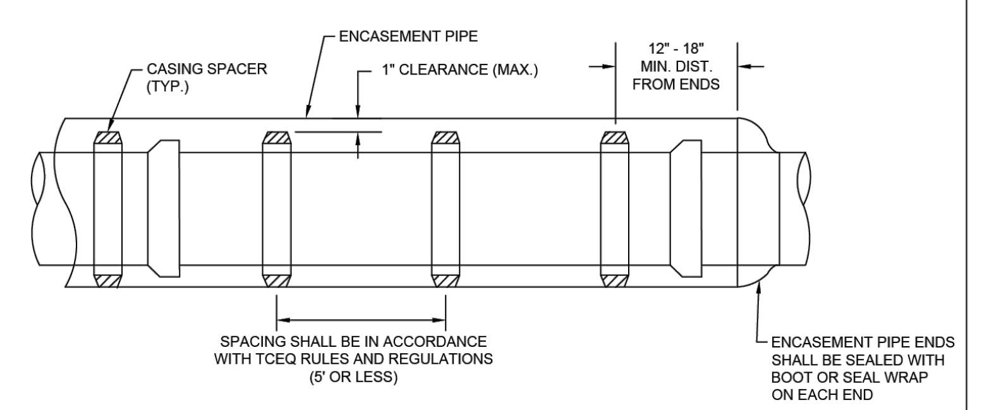
1. TO BE PLACED ON SLOPES GREATER THAN 10% WITH MAXIMUM SPACING OF 20 FEET.
2. WHEN TRENCHING IN ROCK CONDITIONS, WIDTH MAY BE REDUCED FROM 12 INCHES DOWN TO 6 INCHES.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
CONCRETE RETARD
REVISED:
JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO.
W-5


1" CLEARANCE (MAX)
STAINLESS STEEL, CENTERING CASING SPACERS (AS APPROVED BY GVSUD)
FORCE GROUT VOIDS AROUND ENCASEMENT PIPE TO COMPLETELY FILL ANNULAR VOIDS GREATER THAN 1" FOR ENTIRE LENGTH OF BORE.
ENCASEMENT PIPE

NOTE:

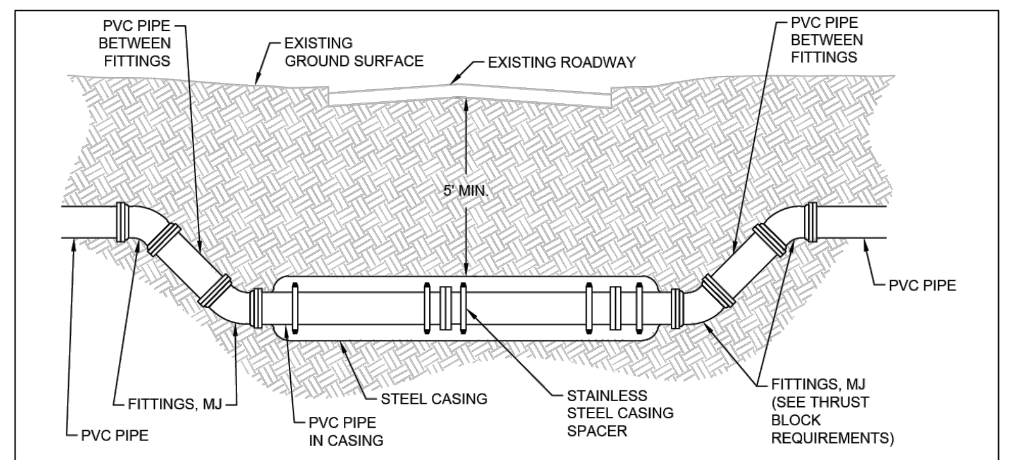
NUMBER OF RUNNERS AND CONFIGURATION SHALL COMPLY WITH TCEQ RULES AND REGULATIONS


ENCASEMENT PIPE
CASING SPACER (TYP.)
1" CLEARANCE (MAX.)
12" - 18" MIN. DIST. FROM ENDS
SPACING SHALL BE IN ACCORDANCE WITH TCEQ RULES AND REGULATIONS (5' OR LESS)
ENCASEMENT PIPE ENDS SHALL BE SEALED WITH BOOT OR SEAL WRAP ON EACH END

NOTES:

1. TCEQ RULES AND REGULATIONS ON SANITARY SEWER, STORM SEWER AND WATER MAIN CROSSING AND SEPARATIONS WILL BE STRICTLY ENFORCED TO TAC, CHAPTER 290, SUBCHAPTER D.
2. ALL PIPE IN ENCASEMENT PIPE SHALL BE RESTRAINED AT JOINTS FOR ENTIRE LENGTH OF THE ENCASEMENT PIPE PLUS 10 FEET ON EACH SIDE.
3. AT ANY CREEK CROSSING OR DRAINAGE DITCH THE PIPE SHALL BE ENCASED IN STEEL PIPE AND HAVE A MINIMUM OF 3 FEET OF COVER FROM THE BOTTOM OF THE CREEK/STREAM.
4. AT ANY ROADWAY CROSSING THE MAIN SHALL BE STEEL ENCASED AND HAVE A MINIMUM OF 5 FEET OF COVER FROM THE BOTTOM OF THE BASE MATERIAL.
5. BORE SHALL HAVE SUFFICIENT ROOM FOR 2" PVC O.D. (MIN) FOR FORCE GROUTING AS REQUIRED.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
ENCASEMENT DETAIL WITH ENCASEMENT SPACERS
REVISED:
JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO.
W-6


PVC PIPE BETWEEN FITTINGS
EXISTING GROUND SURFACE
EXISTING ROADWAY
PVC PIPE BETWEEN FITTINGS
5' MIN.
PVC PIPE
FITTINGS, MJ
STEEL CASING
STAINLESS STEEL CASING SPACER
FITTINGS, MJ (SEE THRUST BLOCK REQUIREMENTS)
PVC PIPE
PVC PIPE IN CASING

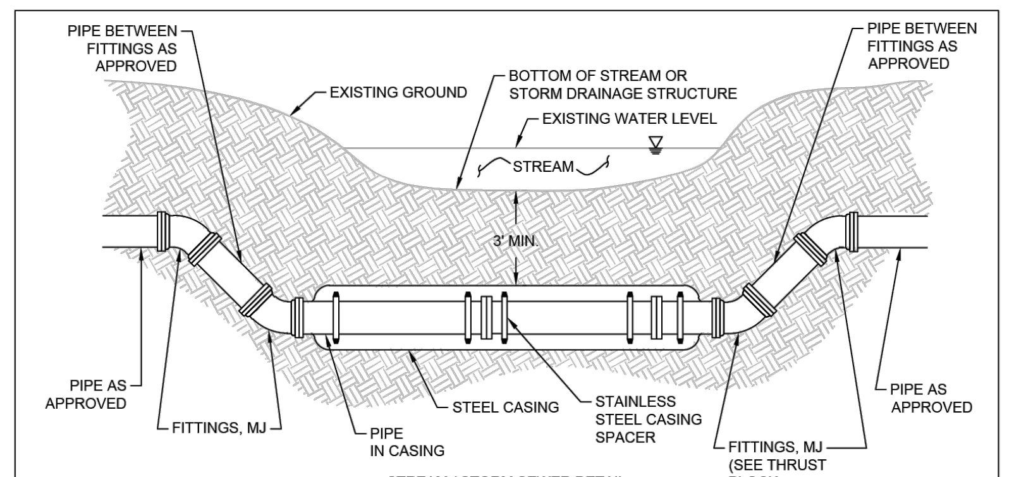
ROADWAY BORE DETAIL

NOTES:

1. ALL PIPE IN ENCASEMENT PIPE SHALL BE RESTRAINED WITH AN APPROVED METHOD FOR ENTIRE LENGTH OF THE ENCASEMENT PIPE PLUS 10 FEET ON EACH SIDE.
2. FOR A PIPE 20 FEET IN LENGTH, A MINIMUM OF 4 SPACERS ARE REQUIRED. FOR A PIPE 13 FEET IN LENGTH, A MINIMUM OF 3 SPACERS ARE REQUIRED.
3. FOR ENCASED PIPE LOCATED IN PROXIMITY TO SANITARY SEWERS, SPACERS SHALL CONFORM TO TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290, SUBCHAPTER D.
4. AT ANY ROADWAY CROSSING THE PIPE SHALL BE STEEL ENCASED AND HAVE A MINIMUM OF 5 FEET OF COVER FROM THE BOTTOM OF THE BASE MATERIAL.
5. FOR ROAD WAY CROSSINGS, THE ENDS OF THE CASING PIPE SHALL EXTEND TO THE RIGHT OF WAY LINES.
6. ALL PIPE FITTINGS, VALVES, AND APPURTENANCES SHALL MATCH OR EXCEED CLASS RATING OF PIPE AS SHOWN ON THE PLANS.
7. SEE ENCASEMENT DETAIL WITH ENCASEMENT SPACER DETAIL W-6.
8. DUCTILE IRON PIPE,AMERICAN ZINC COATED AWWA/ANSI C-151 MAY BE USED IN LIEU OF STEEL CASING WHEN APPROVED BY GVSUD.

WATER LINE IN ENCASEMENT PIPE			
WATER LINE SIZE (INCHES)	NOM. DIA. STEEL (INCHES)	ENCASEMENT PIPE THICKNESS (INCHES)	PIPE WEIGHT (LBS./FT.)
6	18	0.375	70.59
8	24	0.375	94.62
12	24	0.375	94.62
16	30	0.375	118.65
20	36	0.438	166.19
24	42	0.438	194.02
30	48	0.50	259.02
36	54	0.50	291.07

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
INSTALLATION OF PIPE IN STEEL ENCASEMENT UNDER ROADS
REVISED:
JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO.
W-7


PIPE BETWEEN FITTINGS AS APPROVED
EXISTING GROUND
BOTTOM OF STREAM OR STORM DRAINAGE STRUCTURE
EXISTING WATER LEVEL
STREAM
PIPE BETWEEN FITTINGS AS APPROVED
3' MIN.
PIPE AS APPROVED
FITTINGS, MJ
STEEL CASING
STAINLESS STEEL CASING SPACER
PIPE IN CASING
FITTINGS, MJ (SEE THRUST BLOCK REQUIREMENTS)
PIPE AS APPROVED

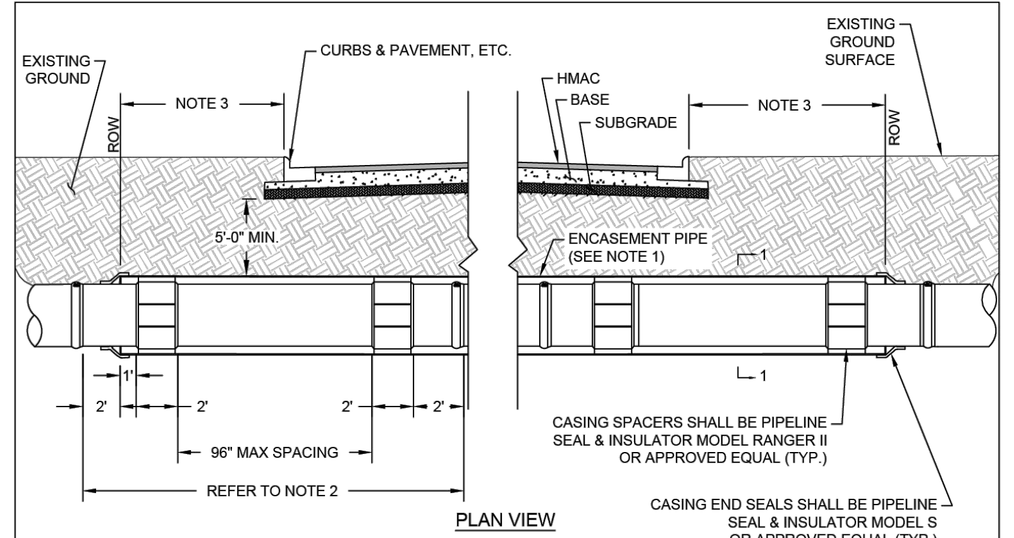
STREAM / STORM SEWER DETAIL

NOTES:

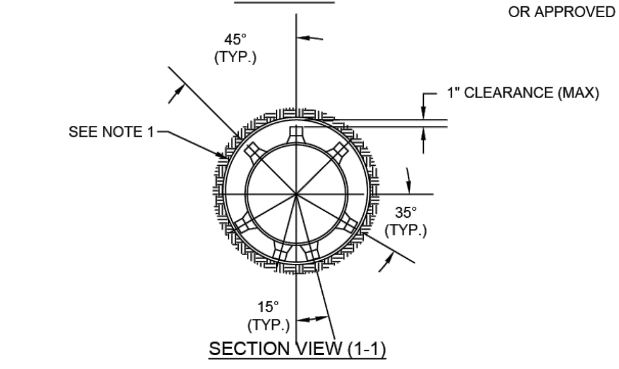
1. ALL PIPE IN ENCASEMENT PIPE SHALL BE RESTRAINED WITH AN APPROVED METHOD FOR ENTIRE LENGTH OF THE ENCASEMENT PIPE PLUS 10 FEET ON EACH SIDE.
2. FOR A PIPE 20 FEET IN LENGTH, A MINIMUM OF 4 SPACERS ARE REQUIRED. FOR A PIPE 13 FEET IN LENGTH, A MINIMUM OF 3 SPACERS ARE REQUIRED.
3. FOR ENCASED PIPE LOCATED IN PROXIMITY TO SANITARY SEWERS, SPACERS SHALL CONFORM TO TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290, SUBCHAPTER D.
4. AT ANY CREEK CROSSING OR DRAINAGE DITCH THE PIPE SHALL BE STEEL ENCASED AND HAVE A MINIMUM OF 3 FEET OF COVER FROM THE BOTTOM OF THE CREEK/STREAM.
5. SEE ENCASEMENT DETAIL WITH ENCASEMENT SPACER DETAIL W-6.
6. ANNULAR SPACE TO BE FILLED WITH SAND-CEMENT SLURRY.
7. MINIMUM DEPTH BETWEEN CASING PIPE AND BOX CULVERTS OR STORM SEWER PIPE IS 2 FEET.

WATER LINE IN ENCASEMENT PIPE			
WATER LINE SIZE (INCHES)	NOM. DIA. STEEL (INCHES)	ENCASEMENT PIPE THICKNESS (INCHES)	PIPE WEIGHT (LBS./FT.)
6	18	0.375	70.59
8	24	0.375	94.62
12	24	0.375	94.62
16	30	0.375	118.65
20	36	0.438	166.19
24	42	0.438	194.02
30	48	0.50	259.02
36	54	0.50	291.07

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
INSTALLATION OF PIPE IN STEEL ENCASEMENT UNDER STREAMS / STORM SEWERS
REVISED:
JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO.
W-8


EXISTING GROUND
CURBS & PAVEMENT, ETC.
EXISTING GROUND SURFACE
NOTE 3
NOTE 3
ROW
ROW
HMAC
BASE
SUBGRADE
5'-0" MIN.
ENCASEMENT PIPE (SEE NOTE 1)
2'
2'
2'
2'
96" MAX SPACING
REFER TO NOTE 2
CASING SPACERS SHALL BE PIPELINE SEAL & INSULATOR MODEL RANGER II OR APPROVED EQUAL (TYP.)
CASING END SEALS SHALL BE PIPELINE SEAL & INSULATOR MODEL S OR APPROVED EQUAL (TYP.)

PLAN VIEW



SECTION VIEW (1-1)

NOTES:

1. ENCASEMENT PIPE SHALL BE NEW STEEL PIPE MANUFACTURED IN ACCORDANCE WITH AWWA STANDARD C200, LATEST EDITION.
2. ALL PIPE JOINTS WITHIN THE CASING ARE TO BE RESTRAINED WITH AN APPROVED METHOD FOR ENTIRE LENGTH OF THE ENCASEMENT PIPE PLUS 10 FEET ON EACH SIDE.
3. FOR ROADWAY CROSSINGS, THE ENDS OF THE CASING PIPE SHALL EXTEND TO THE RIGHT OF WAY LINES.
4. ALL PIPE FITTINGS, VALVES, AND APPURTENANCES SHALL MATCH OR EXCEED PIPE CLASS RATING AS SHOWN ON THE PLANS.
5. REFER TO SPECIFICATION 02300 FOR CASING PIPE THICKNESS.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
TYPICAL JACKING, BORING, AND TUNNELING DETAIL
REVISED:
JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO.
W-9

CUDEENGINEERS.COM

EST. 1980
CUDE
ENGINEERS

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

WATER DISTRIBUTION PLAN DETAILS

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE

1.
2.
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5.
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8.
9.

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C96

CUDEENGINEERS.COM

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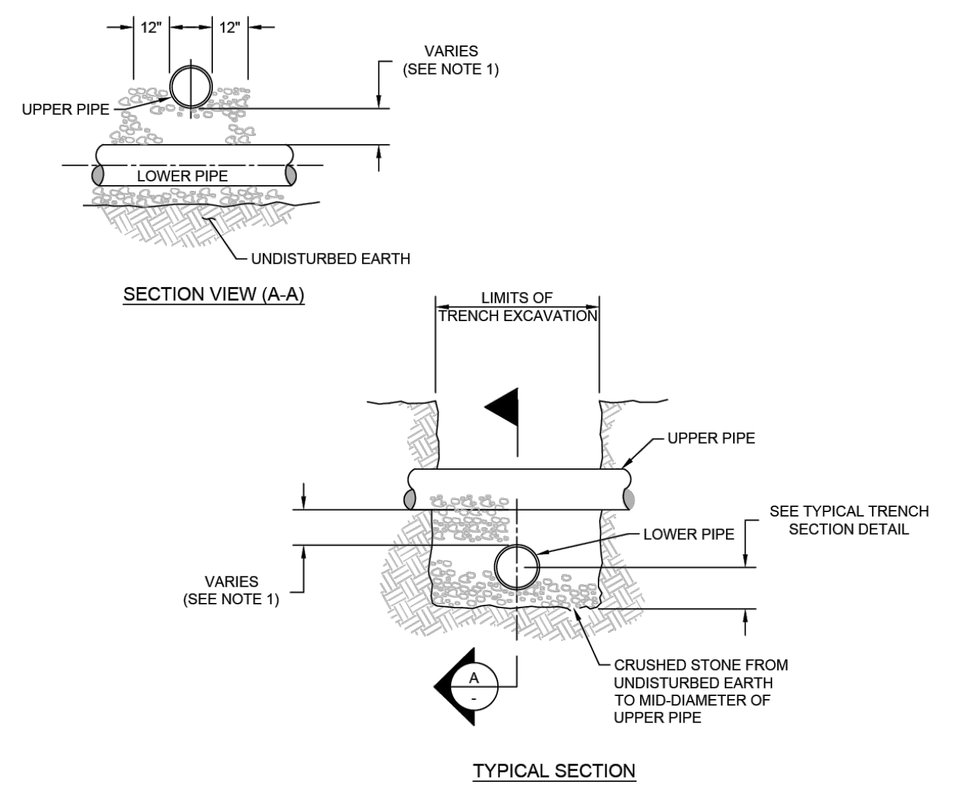
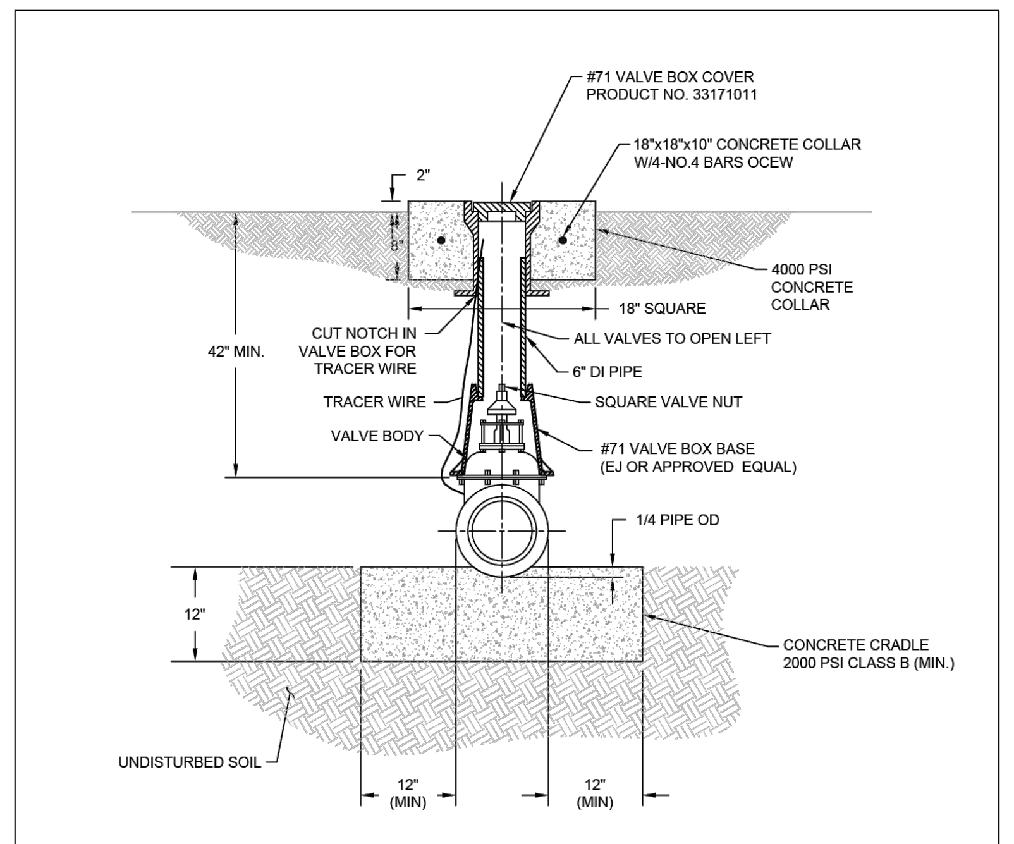


NOTES:

1. MAINTAIN A MINIMUM 5 FOOT HORIZONTAL AND 2 FOOT VERTICAL SEPARATION FROM BETWEEN UTILITIES AND WATER AND WASTEWATER PIPES AND SERVICES. GAS, ELECTRIC, CABLE, ETC. TO BE LOCATED OPPOSITE SIDES OF PROPERTIES.
2. UTILITY CROSSINGS SEPARATED BY LESS THAN 5 FEET SHALL BE ENCASED WITH A MINIMUM OF 6 INCHES OF CONCRETE.
3. SPECIFICATIONS: BEDDING MATERIAL MUST BE APPROVED BY AUTHORIZED GVSUD PERSONNEL, BEFORE START OF JOB.
4. AT ANY CREEK CROSSING OR DRAINAGE DITCH THE MAIN SHALL BE ENCASED WITH STEEL PIPE AND/OR 6 INCHES CONCRETE ENCASEMENT TO WITHIN 10 FEET OUTSIDE OF CREEK OR DRAINAGE DITCH AREA.
5. PIPE JOINTS SHALL BE AT LEAST 9 FEET HORIZONTALLY FROM CROSSINGS.

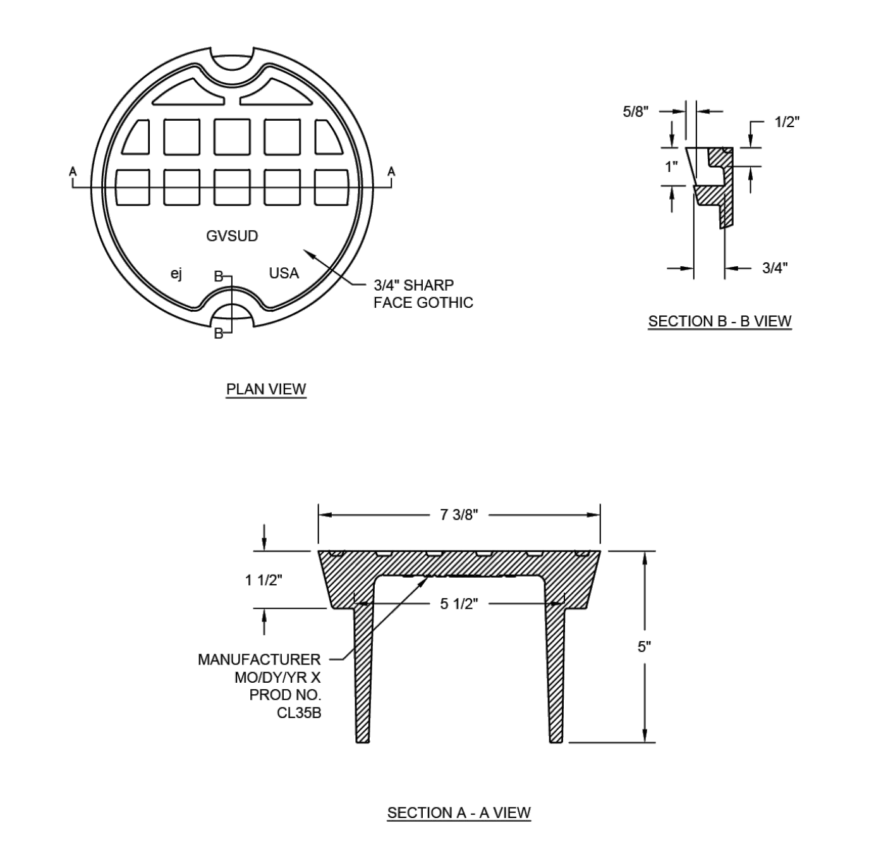
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
UTILITIES CROSSING DETAIL
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-10


#71 VALVE BOX COVER PRODUCT NO. 33171011
18"x18"x10" CONCRETE COLLAR W/4-NO.4 BARS OCEW
2"
4000 PSI CONCRETE COLLAR
18" SQUARE
42" MIN.
CUT NOTCH IN VALVE BOX FOR TRACER WIRE
ALL VALVES TO OPEN LEFT
6" DI PIPE
TRACER WIRE
SQUARE VALVE NUT
VALVE BODY
#71 VALVE BOX BASE (EJ OR APPROVED EQUAL)
1/4 PIPE OD
12"
CONCRETE CRADLE 2000 PSI CLASS B (MIN.)
UNDISTURBED SOIL
12" (MIN)
12" (MIN)

NOTES:

1. WELD 2 1/2 INCH X 2 INCH DEEP SOCKET TO 1 INCH (SCHEDULE 40) ROUND STEM EXTENSION AND ON OPERATING NUT. FOR PIPE EXTENSIONS OVER 10 FEET, STEM EXTENSION SHALL BE A SCHEDULE 80 PIPE.
2. VALVE EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 3 FEET DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SUCH THAT THE EXTENSION NUT IS BETWEEN 18 TO 24 INCHES FROM FINISHED GRADE.
3. CONCRETE COLLARS TO BE INSTALLED ON ALL VALVE BOXES LOCATED OUTSIDE PAVEMENT. SEE APPROPRIATE VALVE BOX ADJUSTMENT DETAILS.
4. GATE VALVES SHALL BE MUELLER TYPE OR APPROVED EQUAL.
5. FOR VALVE DEEPER THAN 5 FEET, ADD EXTENSION.
6. VALVE TURNS UNDERNEATH CAP.

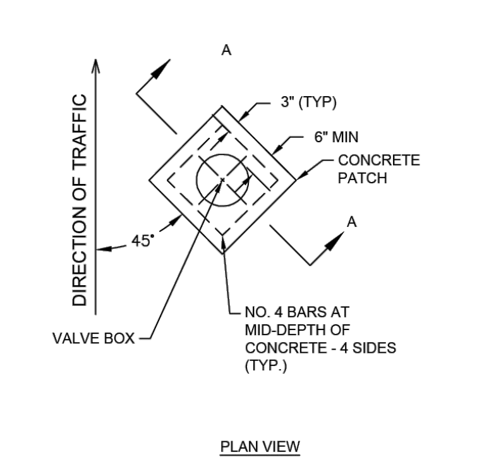
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
NON-RISING STEM VERTICAL GATE VALVE WITH BOX ASSEMBLY
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-11



NOTES:

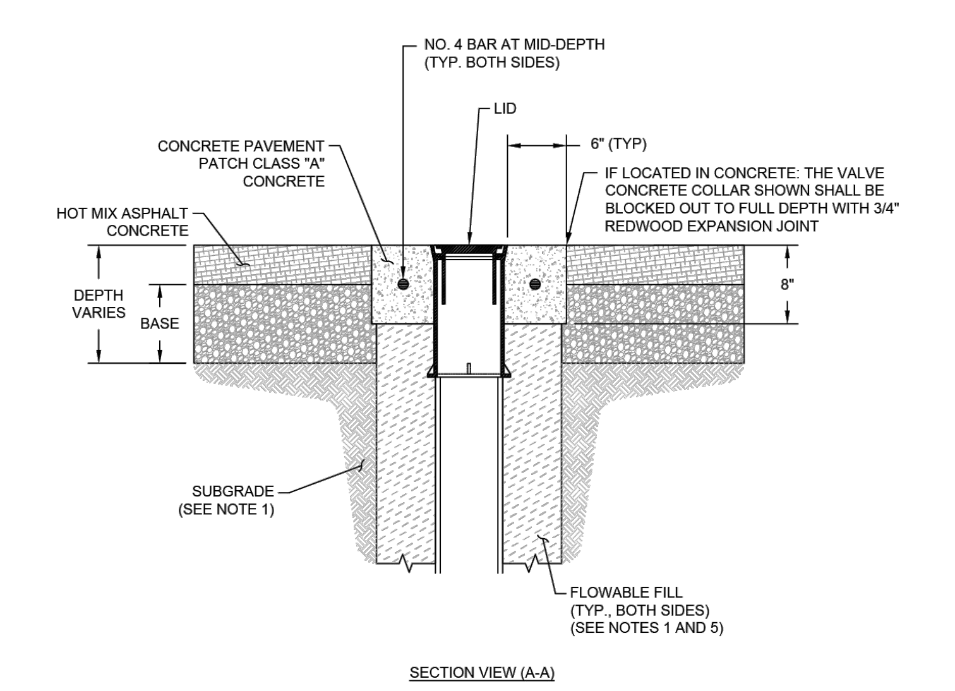
1. VALVE BOX COVER SHALL BE EJ GROUP, INC. $71 VALVE BOX COVER PRODUCT NUMBER 33171011, OR APPROVED EQUIVALENT WITH GVSUD LOGO.
2. TYPICAL FILLET IS 3/16 INCH RADIUS.
3. LETTERING SHALL BE 3/4 INCH SHARP FACE GOTHIC AND LOCATED AS SHOWN.
4. LID REQUIRES TWO (2) PICK SLOTS.
5. THE MANUFACTURER'S IDENTIFICATION, CASTING NUMBER, AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ONTO EACH LID.
6. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
7. FINISH BY REMOVING FINS AND FLASHING AND PAINT WITH BLACK ASPHALT COATING.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
VALVE BOX CASTING LID
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-12

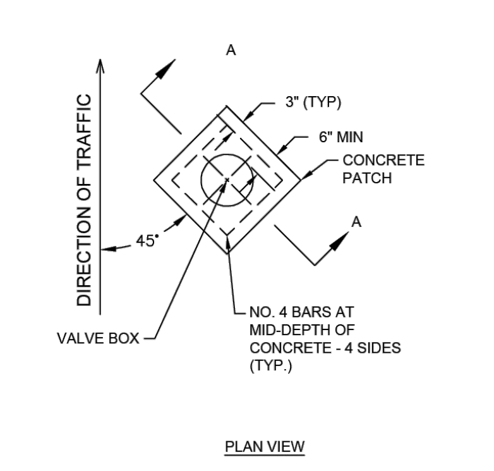


NOTES:

1. SUBGRADE SHALL BE COMPACTED PER SPECIFICATIONS, SUBGRADE PREPARATION.
2. VALVE BOXES SHALL BE ADJUSTED TO GRADE AFTER FINAL LIFT OF OVERLAY IS IN PLACE.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO BASE OF THE VALVE.
4. CONTRACTOR TO USE VALVE BOX ADJUSTING RISER TO ADJUST VALVE BOX TO GRADE.
5. WHERE CAST IRON CASTINGS ARE TO BE REMOVED IN EXCAVATION GREATER THAN 20 INCHES DEEP, CONTRACTOR MAY ELECT TO FILL EXCAVATION WITH CONTROLLED LOW STRENGTH MATERIAL TO THE UNDERSIDE OF THE CONCRETE PAVEMENT PATCH IN LIEU OF COMPACTED BACKFILL.
6. REINFORCING STEEL SHALL MEET SPECIFICATIONS FOR REINFORCING STEEL.

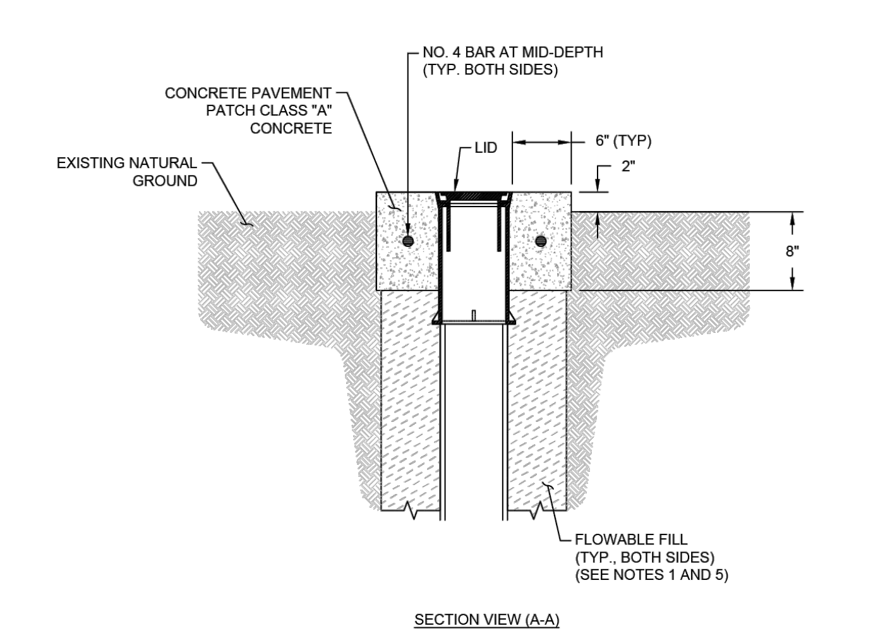

NO. 4 BAR AT MID-DEPTH (TYP. BOTH SIDES)
LID
6" (TYP)
IF LOCATED IN CONCRETE: THE VALVE CONCRETE COLLAR SHOWN SHALL BE BLOCKED OUT TO FULL DEPTH WITH 3/4" REDWOOD EXPANSION JOINT
CONCRETE PAVEMENT PATCH CLASS "A" CONCRETE
HOT MIX ASPHALT CONCRETE
DEPTH VARIES
BASE
8"
SUBGRADE (SEE NOTE 1)
FLOWABLE FILL (TYP., BOTH SIDES) (SEE NOTES 1 AND 5)
SECTION VIEW (A-A)

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
VALVE BOX ADJUSTMENT IN PAVEMENT
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-13



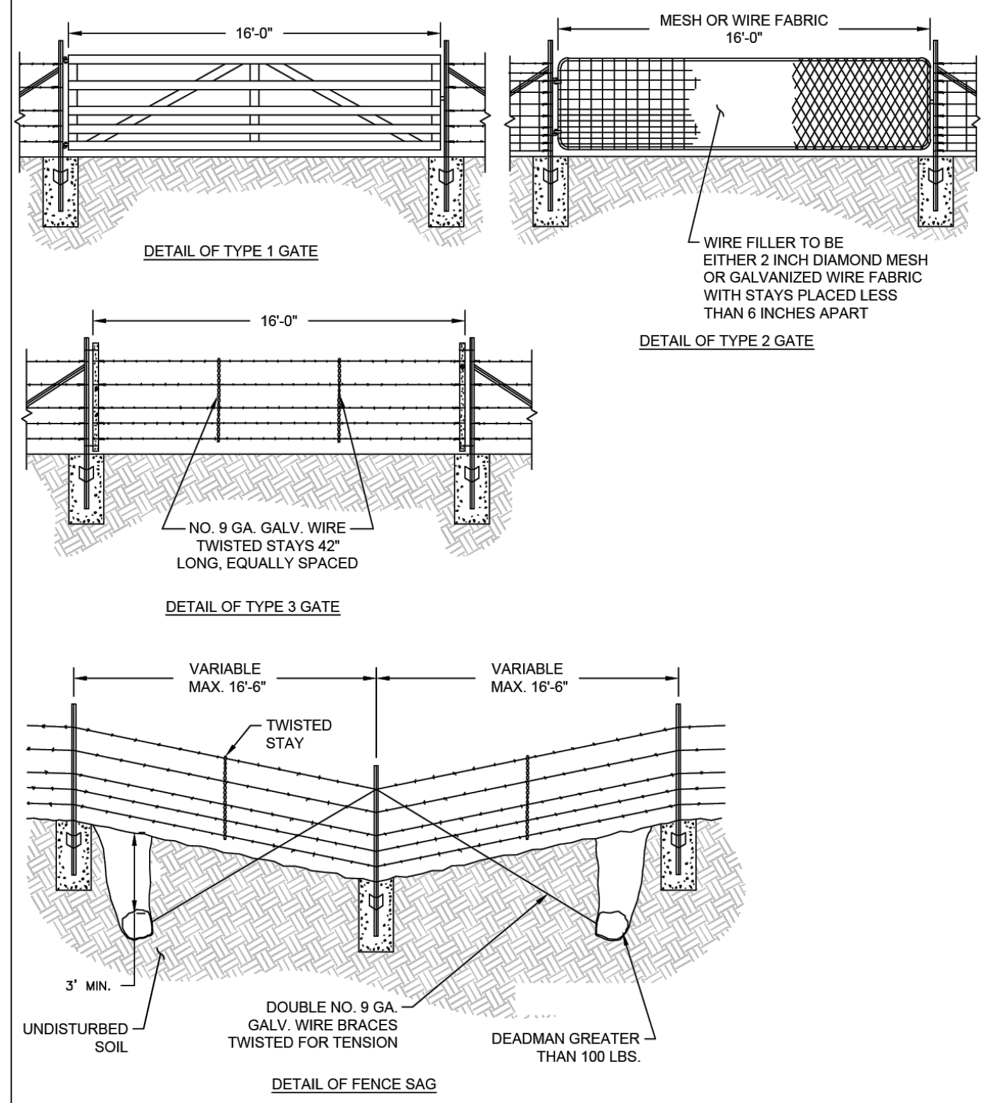
NOTES:

1. SUBGRADE SHALL BE COMPACTED PER SPECIFICATIONS, SUBGRADE PREPARATION.
2. VALVE CASTINGS SHALL BE ADJUSTED TO GRADE AFTER FINAL LIFT OF OVERLAY IS IN PLACE.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO BASE OF THE VALVE.
4. CONTRACTOR TO USE VALVE BOX ADJUSTING RISER TO ADJUST VALVE BOX TO GRADE.
5. WHERE CAST IRON CASTINGS ARE TO BE REMOVED IN EXCAVATION GREATER THAN 20 INCHES DEEP, CONTRACTOR MAY ELECT TO FILL EXCAVATION WITH CONTROLLED LOW STRENGTH MATERIAL TO THE UNDERSIDE OF THE CONCRETE PAVEMENT PATCH IN LIEU OF COMPACTED BACKFILL.
6. REINFORCING STEEL SHALL MEET SPECIFICATIONS FOR REINFORCING STEEL.

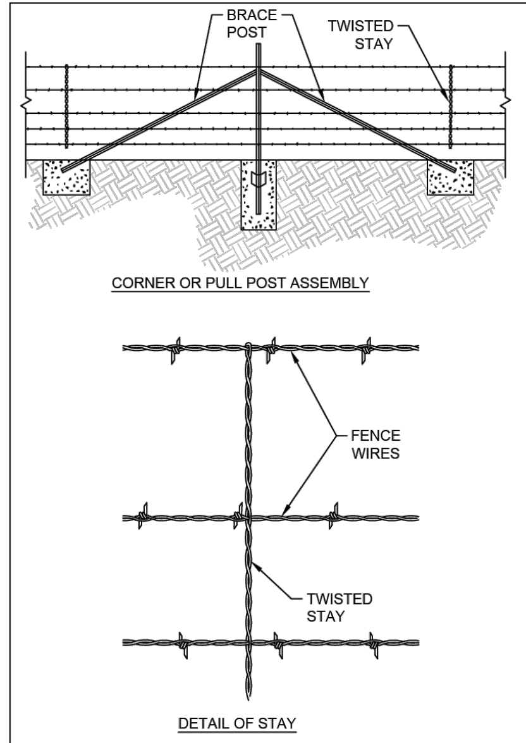

NO. 4 BAR AT MID-DEPTH (TYP. BOTH SIDES)
CONCRETE PAVEMENT PATCH CLASS "A" CONCRETE
LID
6" (TYP)
2"
EXISTING NATURAL GROUND
8"
FLOWABLE FILL (TYP., BOTH SIDES) (SEE NOTES 1 AND 5)
SECTION VIEW (A-A)

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
VALVE BOX ADJUSTMENT OUTSIDE OF PAVEMENT
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-14

NOTE:
METAL GATE SHALL CONSIST OF 5 PANELS NOT LESS THAN 4'-4" HIGH AND SHALL BE MANUFACTURED WITH 1 1/2" ALUMINUM OR GALVANIZED METAL PIPE. GATE AND HARDWARE SHALL MEET THE APPROVAL OF THE ENGINEER.

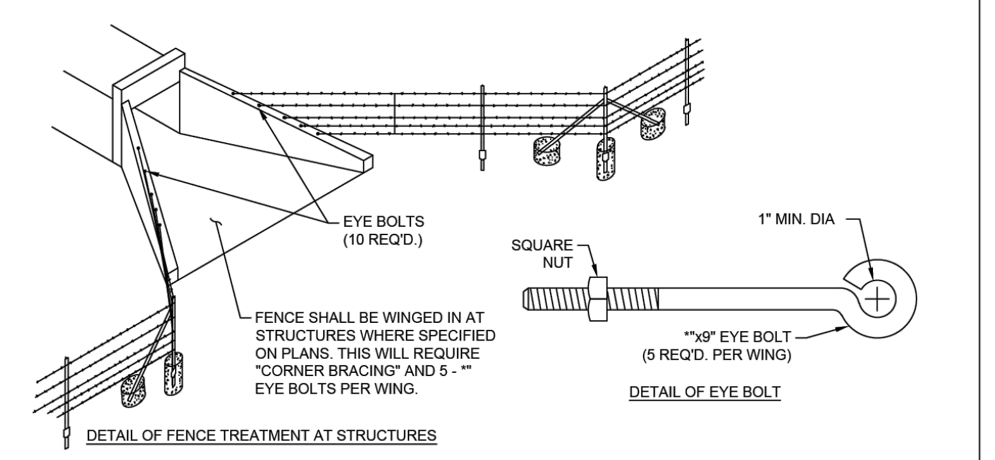

16'-0"
MESH OR WIRE FABRIC 16'-0"
DETAIL OF TYPE 1 GATE
WIRE FILLER TO BE EITHER 2 INCH DIAMOND MESH OR GALVANIZED WIRE FABRIC WITH STAYS PLACED LESS THAN 6 INCHES APART
DETAIL OF TYPE 2 GATE
16'-0"
NO. 9 GA. GALV. WIRE TWISTED STAYS 42" LONG, EQUALLY SPACED
DETAIL OF TYPE 3 GATE
VARIABLE MAX. 16'-6"
VARIABLE MAX. 16'-6"
TWISTED STAY
3" MIN.
UNDISTURBED SOIL
DOUBLE NO. 9 GA. GALV. WIRE BRACES TWISTED FOR TENSION
DEADMAN GREATER THAN 100 LBS.
DETAIL OF FENCE SAG

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
BARBED WIRE FENCE AND WOVEN WIRE FENCE WITH STEEL POSTS (1 OF 2)
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-15

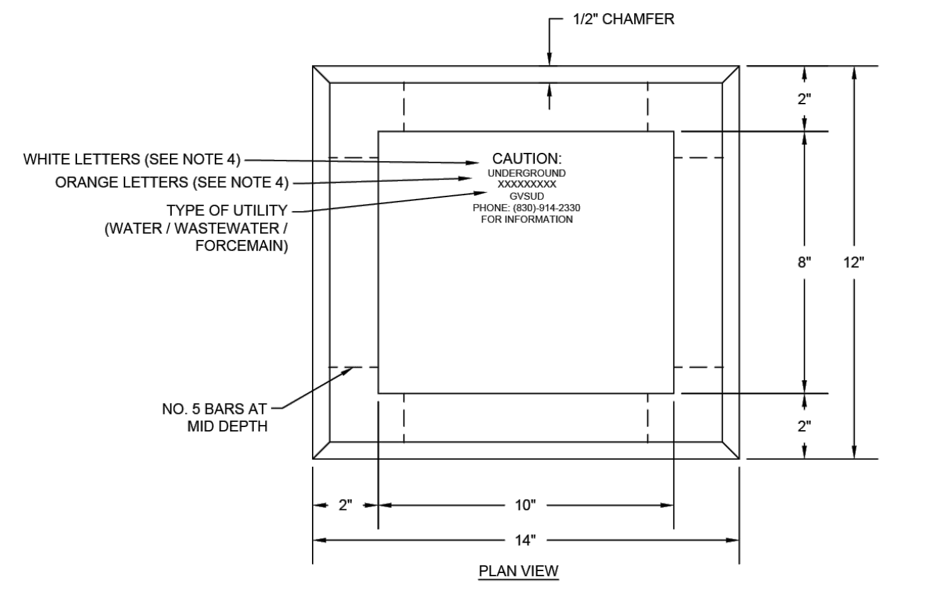


NOTES:

1. ANY HIGH POINT WHICH INTERFERES WITH THE PLACING OF WIRE MESH SHALL BE EXCAVATED TO PROVIDE A 2 INCH CLEARANCE.
2. LATCHES FOR TYPE 1 AND TYPE 2 GATES SHALL BE OF THE SPRING, FORK, OR CHAIN TYPE.
3. CONCRETE SHALL BE OF THE DESIGN AND CONSISTENCY APPROVED BY THE ENGINEER AND SHALL CONTAIN NOT LESS THAN 4 SACKS OF CEMENT PER CUBIC YARD.
4. ANCHOR PLATES SHALL BE OF A DESIGN AND THICKNESS SUFFICIENT TO PREVENT TURNING OF THE POST IN FIRM SOIL. METAL END, CORNER, AND PULL POST SHALL BE A MINIMUM OF 2 INCH INSIDE DIAMETER PIPE (3.65 LBS./L.F.), WITH A 1 INCH INSIDE DIAMETER PIPE BRACE (2.27 LBS./L.F.), 2"x2 "x," ANGLE (4.1 LBS./LIN.FT.) 2"x2"x," ANGLE BRACE (3.19 LBS./LIN.FT.) OR OTHER SECTION APPROVED BY THE ENGINEER. FASTENERS FOR SECURING BARBED WIRE OR WIRE MESH TO METAL POSTS SHALL BE A MINIMUM OF 11 GAUGE GALVANIZED STEEL WIRE. TUBULAR POSTS SHALL BE FITTED WITH WATER TIGHT MALLEABLE IRON CAPS.
5. METAL LINE POSTS SHALL BE NOT LESS THAN 6'-6" IN LENGTH AND SHALL WEIGH NOT LESS THAN 1.33 LBS./L.F.


EYE BOLTS (10 REQ'D.)
SQUARE NUT
1" MIN. DIA
FENCE SHALL BE WINGED IN AT STRUCTURES WHERE SPECIFIED ON PLANS. THIS WILL REQUIRE "CORNER BRACING" AND 5 - " EYE BOLTS PER WING.
"x9" EYE BOLT (5 REQ'D. PER WING)
DETAIL OF EYE BOLT
DETAIL OF FENCE TREATMENT AT STRUCTURES

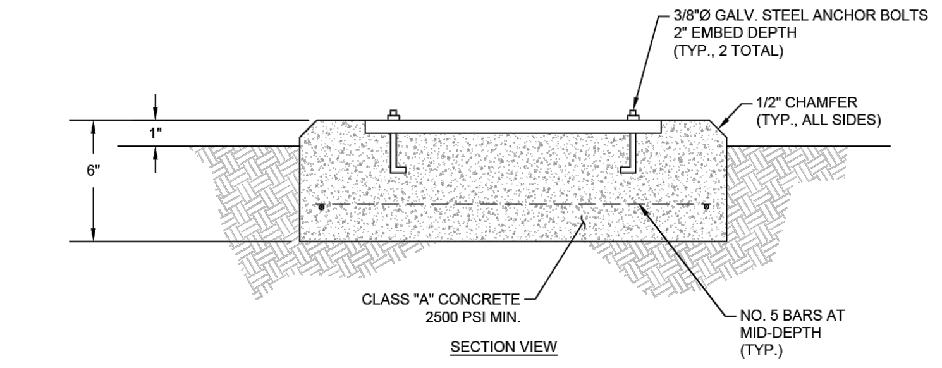
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
BARBED WIRE FENCE AND WOVEN WIRE FENCE WITH STEEL POSTS (2 OF 2)
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-15


1/2" CHAMFER
WHITE LETTERS (SEE NOTE 4)
ORANGE LETTERS (SEE NOTE 4)
TYPE OF UTILITY (WATER / WASTEWATER / FORCEMAIN)
CAUTION
2"
8"
12"
2"
NO. 5 BARS AT MID DEPTH
2"
10"
14"
PLAN VIEW

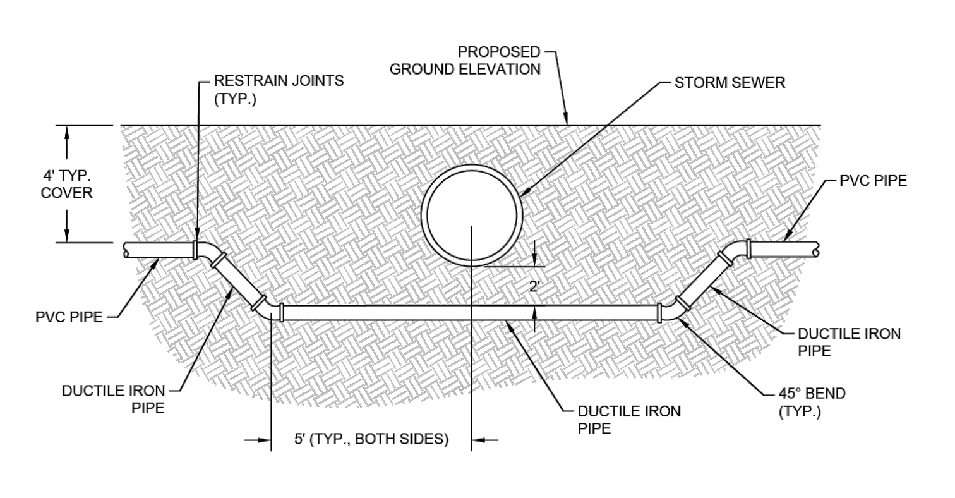
NOTES:

1. MARKERS SHALL BE PLACED AT VALVES, AIR VALVES, AND ACCESS PORTS.
2. PLACE WATER/WASTEWATER LINE MARKERS AT EVERY FENCE, ROAD CROSSING, AND AT 500' INTERVALS ALONG THE PIPELINE.
3. SIGNS SHALL BE 20 GA. WITH BLACK BACKGROUND FINISH.
4. LETTERS USED FOR "CAUTION" SHALL BE WHITE. ALL REMAINING LETTERS SHALL BE ORANGE.
5. MARKERS SHALL BE OBTAINED FROM:
   - 5.1. RURAL WATER SPECIALTY CO.
     POST OFFICE BOX 927
     TULSA, OKLAHOMA 74101

     OR APPROVED EQUAL.


3/8"Ø GALV. STEEL ANCHOR BOLTS 2" EMBED DEPTH (TYP., 2 TOTAL)
1/2" CHAMFER (TYP., ALL SIDES)
1"
6"
CLASS "A" CONCRETE 2500 PSI MIN.
NO. 5 BARS AT MID-DEPTH (TYP.)
SECTION VIEW

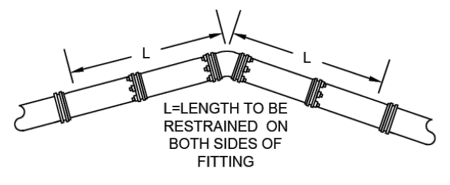
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
UTILITY MARKER DETAIL
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-16



NOTES:

1. MAINTAIN 24 INCH (MIN.) SEPARATION FROM STORM SEWER LINE.
2. 45° BENDS MUST BE THRUST BLOCKED AND RESTRAINED AT BOTTOM BENDS. SEE STANDARD DETAIL.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
STORM SEWER CROSSING
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-17



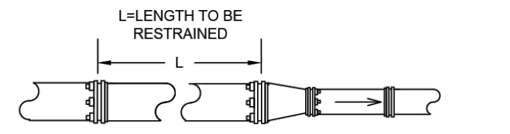
RESTRAINED LENGTH FOR BENDS

PIPE SIZE (INCHES)	BEND ANGLE (DEG)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI
6	90	23
6	45	9
6	22.5	5
6	11.25	2
8	90	30
8	45	12
8	22.5	6
8	11.25	3
12	90	43
12	45	18
12	22.5	8
12	11.25	4
16	90	63
16	45	26
16	22.5	13
16	11.25	7
24	90	85
24	45	35
24	22.5	17
24	11.25	9

NOTES:

1. RESTRAINED LENGTH CALCULATIONS FOR P.V.C PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE. NATIVE SOIL MATERIAL IS ASSUMED TO BE INORGANIC CLAY OF HIGH PLASTICITY. DEPTH OF BURY IS ASSUMED TO BE 4 FEET.
2. THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BASED UPON THE CONDITIONS ENCOUNTERED DURING INSTALLATION.
3. CONTRACTOR SHALL RESTRAIN ALL JOINTS WITHIN THE REQUIRED RESTRAINT DISTANCE PLUS THE NEXT JOINT OUTSIDE THE REQUIRED RESTRAINT DISTANCE.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
BEND RESTRAINED LENGTH DESIGN
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-18



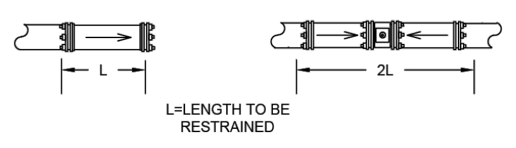
RESTRAINED LENGTH FOR REDUCERS

PIPE SIZE (INCHES)	SMALL SIZE (INCHES)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI
6	4	30
8	4	55
8	6	32
12	4	95
12	6	80
12	8	58
16	4	131
16	6	120
16	8	104
16	12	60
24	16	110

NOTES:

1. RESTRAINED LENGTH CALCULATIONS FOR P.V.C PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE. NATIVE SOIL MATERIAL IS ASSUMED TO BE INORGANIC CLAY OF HIGH PLASTICITY. DEPTH OF BURY IS ASSUMED TO BE 4 FEET.
2. THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BASED UPON THE CONDITIONS ENCOUNTERED DURING INSTALLATION.
3. CONTRACTOR SHALL RESTRAIN ALL JOINTS WITHIN THE REQUIRED RESTRAINT DISTANCE PLUS THE NEXT JOINT OUTSIDE THE REQUIRED RESTRAINT DISTANCE.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REDUCER RESTRAINED LENGTH DESIGN
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-19



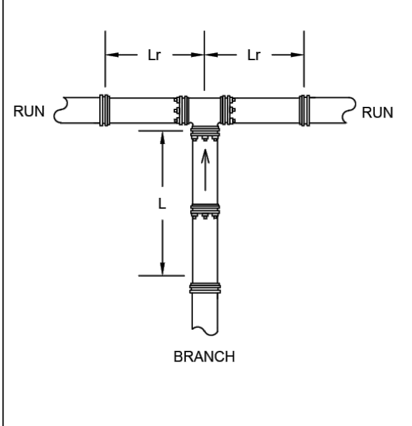
RESTRAINED LENGTH FOR DEAD ENDS/INLINE VALVES

PIPE SIZE (INCHES)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI
4	42
6	59
8	77
12	109
16	142
24	202

NOTES:

1. RESTRAINED LENGTH CALCULATIONS FOR P.V.C PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE. NATIVE SOIL MATERIAL IS ASSUMED TO BE INORGANIC CLAY OF HIGH PLASTICITY. DEPTH OF BURY IS ASSUMED TO BE 4 FEET.
2. THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BASED UPON THE CONDITIONS ENCOUNTERED DURING INSTALLATION.
3. CONTRACTOR SHALL RESTRAIN ALL JOINTS WITHIN THE REQUIRED RESTRAINT DISTANCE PLUS THE NEXT JOINT OUTSIDE THE REQUIRED RESTRAINT DISTANCE.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
VALVE AND DEAD END RESTRAINED LENGTH DESIGN
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-20



Lr=LENGTH OF PIPE ALONG THE RUN FREE OF JOINTS.
L=LENGTH TO BE RESTRAINED

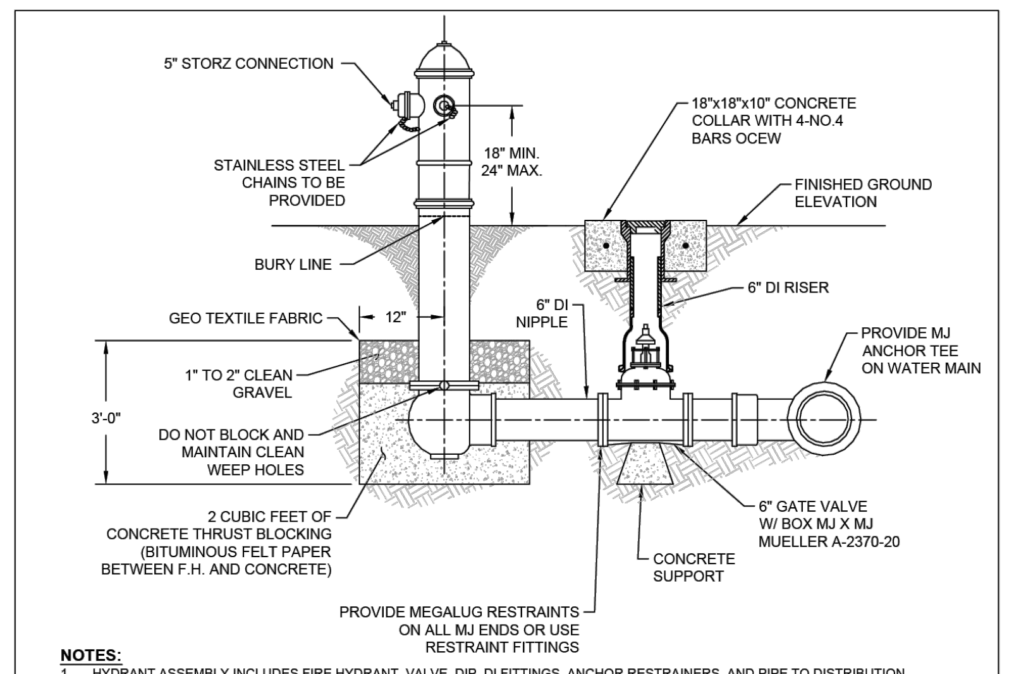
RESTRAINED LENGTH FOR TEES

PIPE SIZE (INCHES)	BRANCH SIZE (INCHES)	LENGTH OF RUN (FEET)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 PSI
6	4	0	42
6	4	5	7
6	4	10	1
6	6	0	59
6	6	5	35
6	6	10	11
8	4	0	42
8	4	5	1
8	6	0	59
8	6	5	28
8	6	10	1
8	8	0	77
8	8	5	53
8	8	10	30
8	8	15	6
12	4	0	42
12	4	5	1
12	6	0	59
12	6	5	13
12	6	10	1
12	8	0	77
12	8	5	42
12	8	10	7
12	8	15	1
12	12	0	109
12	12	5	86
12	12	10	63
12	12	15	39
16	4	0	42
16	4	5	1
16	6	0	59
16	6	5	1
16	8	0	78
16	8	5	39
16	8	10	1
16	12	0	110
16	12	5	84
16	12	10	59
16	12	15	33
16	12	20	7
16	16	0	142
16	16	5	123
16	16	10	104
16	16	15	85
16	16	20	65
24	24	5	169
24	24	10	136
24	24	15	103
24	24	20	70

NOTES:

1. RESTRAINED LENGTH CALCULATIONS FOR P.V.C PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE. NATIVE SOIL MATERIAL IS ASSUMED TO BE INORGANIC CLAY OF HIGH PLASTICITY. DEPTH OF BURY IS ASSUMED TO BE 4 FEET.
2. THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BASED UPON THE CONDITIONS ENCOUNTERED DURING INSTALLATION.
3. CONTRACTOR SHALL RESTRAIN ALL JOINTS WITHIN THE REQUIRED RESTRAINT DISTANCE PLUS THE NEXT JOINT OUTSIDE THE REQUIRED RESTRAINT DISTANCE.

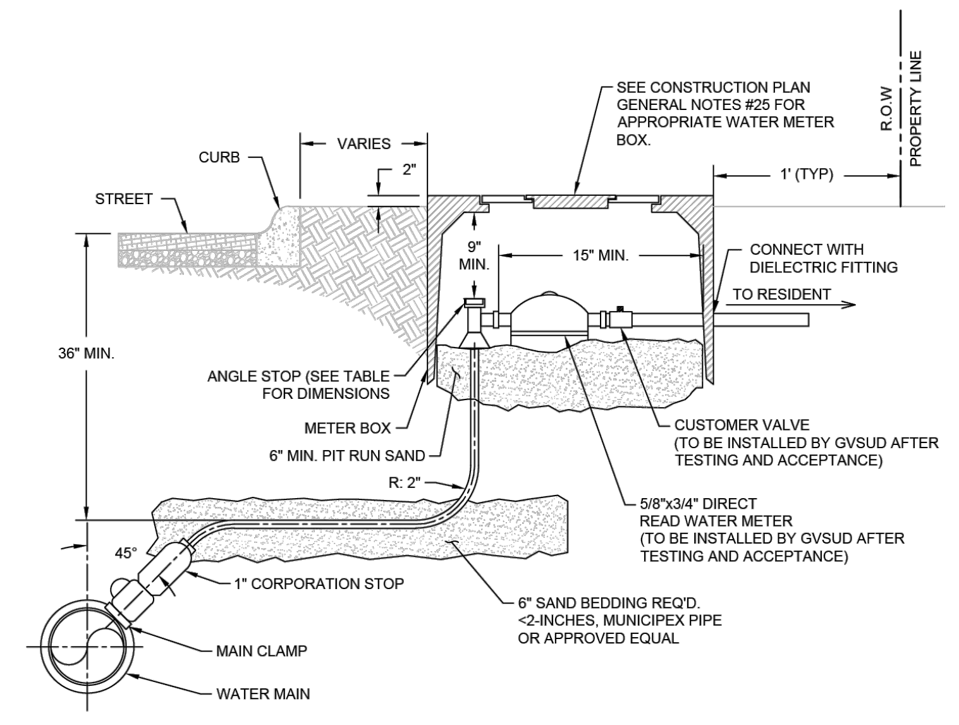
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
TEE RESTRAINED LENGTH DESIGN
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-21


5" STORZ CONNECTION
18"x18"x10" CONCRETE COLLAR WITH 4-NO.4 BARS OCEW
18" MIN. 24" MAX.
STAINLESS STEEL CHAINS TO BE PROVIDED
FINISHED GROUND ELEVATION
BURY LINE
6" DI RISER
GEO TEXTILE FABRIC
12"
6" DI NIPPLE
1/8 BEND
PROVIDE MJ ANCHOR TEE ON WATER MAIN
TO 2" CLEAN GRAVEL
3'-0"
DO NOT BLOCK AND MAINTAIN CLEAN WEEP HOLES
2 CUBIC FEET OF CONCRETE THRUST BLOCKING (BITUMINOUS FELT PAPER BETWEEN F.H. AND CONCRETE)
6" GATE VALVE W/ BOX MJ X MJ MUELLER A-2370-20
CONCRETE SUPPORT
PROVIDE MEGALUG RESTRAINTS ON ALL MJ ENDS OR USE RESTRAINT FITTINGS

NOTES:

1. HYDRANT ASSEMBLY INCLUDES FIRE HYDRANT, VALVE, DIP, DI FITTINGS, ANCHOR RESTRAINERS, AND PIPE TO DISTRIBUTION SYSTEM.
2. FIRE HYDRANTS SHALL HAVE A MINIMUM OF 3 FEET OF CLEARANCE SURROUNDING HYDRANT.
3. HYDRANTS SHALL BE A MINIMUM DISTANCE OF 3 FEET BEHIND THE CURB OR 3 FEET FROM THE R.O.W. UNDER NO CIRCUMSTANCES SHALL VALVES OR HYDRANTS BE PLACED IN A CURB OR SIDEWALK. IN AREAS WITHOUT CURBS OR SIDEWALKS, HYDRANT SHALL BE PLACED 3-6 FEET FROM THE DISTRIBUTION SYSTEM.
4. FOR BURY DEPTHS GREATER THAN 5 FEET, ONE BARREL EXTENSION NOT EXCEEDING 3 FEET IN LENGTH SHALL BE INSTALLED DIRECTLY BELOW THE FIRE HYDRANT.
5. 1 CU FOOT (MIN) OF CRUSHED STONE OR GRAVEL SHALL BE PLACED AROUND WEEP HOLE FOR A RADIUS OF 12 INCHES AND EXTEND 12 INCHES ABOVE THE OUTLET.
6. VALVE, DUCTILE IRON PIPE, AND STANDARD FIRE HYDRANT SYSTEM SHALL BE RESTRAINT JOINT CONTINUOUSLY TOGETHER.
7. FIRE HYDRANT SHALL BE 6 INCH (3) WAY HYDRANT WITH BREAK AWAY BOLTS (SHOE TYPES) PROVIDED WITH STORZ CONNECTION. DEPTH OF BURY SHALL BE 42 INCHES MINIMUM. FIRE HYDRANTS MUST BE SET PLUMB. HOSE CONNECTION MUST FACE ROADWAY.
8. HYDRANT ASSEMBLY SHALL BE RESTRAINED FROM TEE TO HYDRANT.
9. IN THE CITY OF CIBOLO'S CITY LIMITS, FIRE HYDRANTS SHALL BE MUELLER TYPE AND SHALL BE 1 FOOT MINIMUM AND 7 FEET MAXIMUM FROM THE BACK OF CURB.
10. HYDRANTS UPPER BARREL SHALL BE FACTORY PAINTED RED WITH BONNET AND CAPS COATED PER CURRENT NFPA 291 STANDARDS.
11. HYDRANTS LOCATED IN RURAL AREAS SHALL HAVE 6' TALL POLLARD WATER FLEXIFLAG #PP68802.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
STANDARD HYDRANT ASSEMBLY INSTALLATION
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-22


SEE CONSTRUCTION PLAN GENERAL NOTES #25 FOR APPROPRIATE WATER METER BOX
R.O.W. PROPERTY LINE
CURB
VARIES
2"
1' (TYP)
STREET
6" MIN.
15" MIN.
CONNECT WITH DIELECTRIC FITTING
TO RESIDENT
36" MIN.
ANGLE STOP (SEE TABLE FOR DIMENSIONS)
METER BOX
8" MIN. PIT RUN SAND
CUSTOMER VALVE (TO BE INSTALLED BY GVSUD AFTER TESTING AND ACCEPTANCE)
5/8"x3/4" DIRECT READ WATER METER (TO BE INSTALLED BY GVSUD AFTER TESTING AND ACCEPTANCE)
45°
1" CORPORATION STOP
6" SAND BEDDING REQ'D. <2-INCHES, MUNICIPEX PIPE OR APPROVED EQUAL
MAIN CLAMP
WATER MAIN

MAIN SIZE	METER SIZE	MAIN SADDLE	CORPORATION	ANGLE STOP
<12"	5/8" OR 3/4"	S-91804 IP	H-15028 IP 1"	B-24258N: 1"x 3/4"
<12"	1"	S-91804 IP	H-15028 IP 1"	B-24258N: 1"X1"

NOTES:

1. FITTINGS SHALL BE MUELLER OR APPROVED EQUAL.
2. A TRACER WIRE SHALL BE INSTALLED ON THE SERVICE LINE TAPED AT 10-INCH INCREMENTS.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
STANDARD SERVICE CONNECTION
REVISED: JANUARY 2024
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-23

CUDEENGINEERS.COM

EST. 1980
CUDE
ENGINEERS

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

WATER DISTRIBUTION PLAN DETAILS

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

#	DATE	
1.	2024-06-06	UPDATED DETAILS TO THE LATEST DETAILS
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C97

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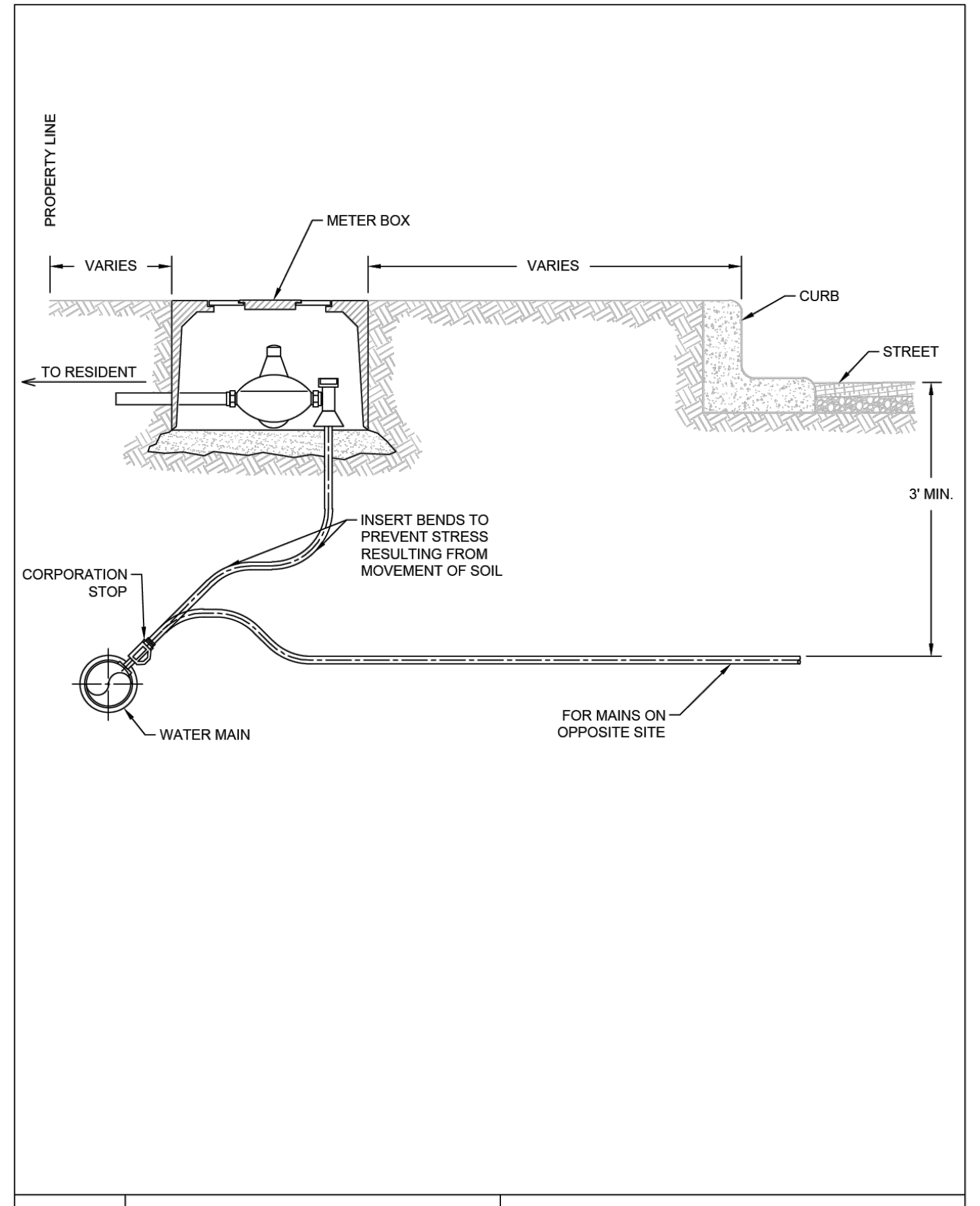
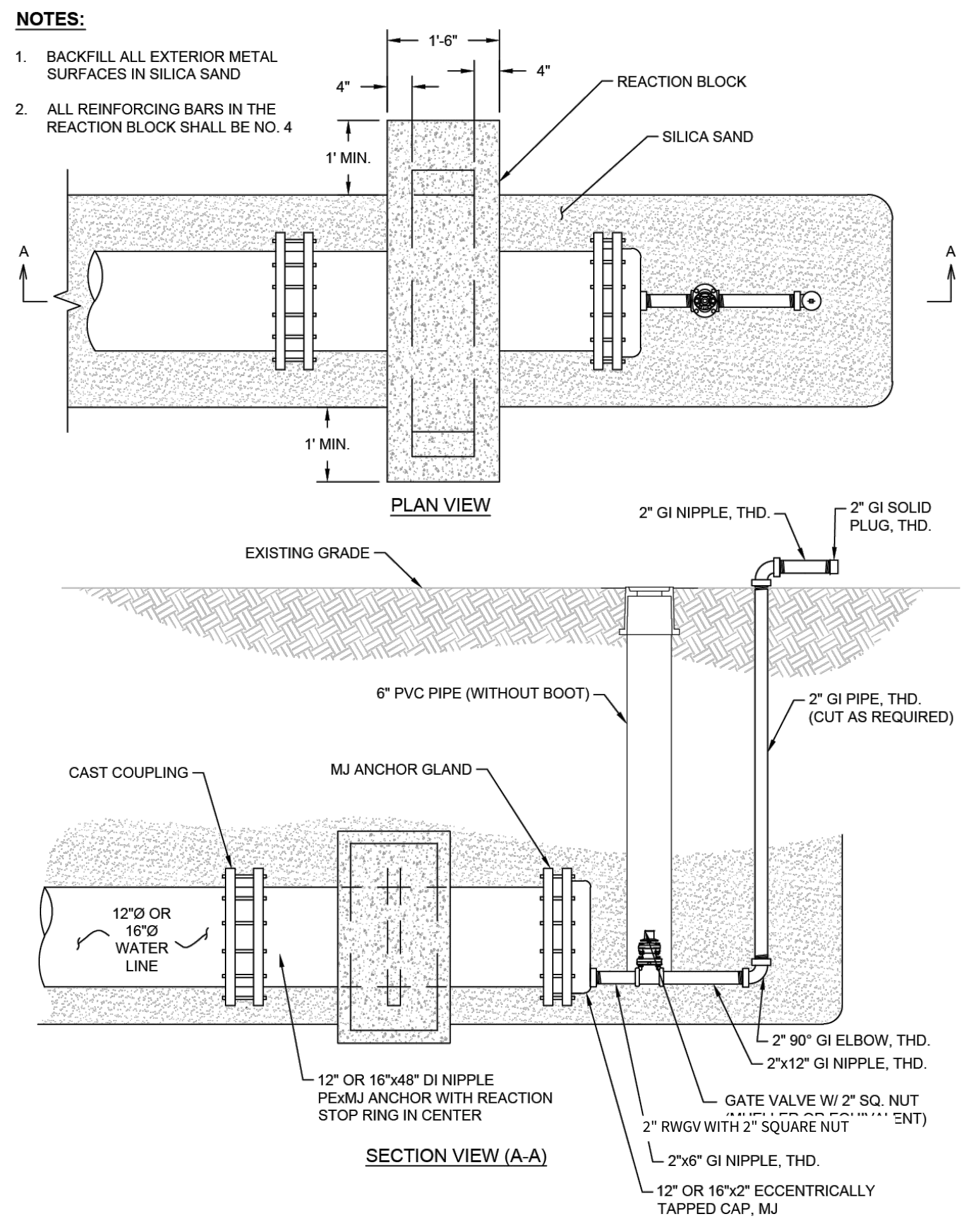

PROPERTY LINE
METER BOX
VARIES
VARIES
CURB
STREET
TO RESIDENT
3' MIN.
INSERT BENDS TO PREVENT STRESS RESULTING FROM MOVEMENT OF SOIL
CORPORATION STOP
WATER MAIN
FOR MAINS ON OPPOSITE SITE

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REVISED: JANUARY 2024
TYPICAL SERVICE LOCATION DETAIL
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-24

NOTES:

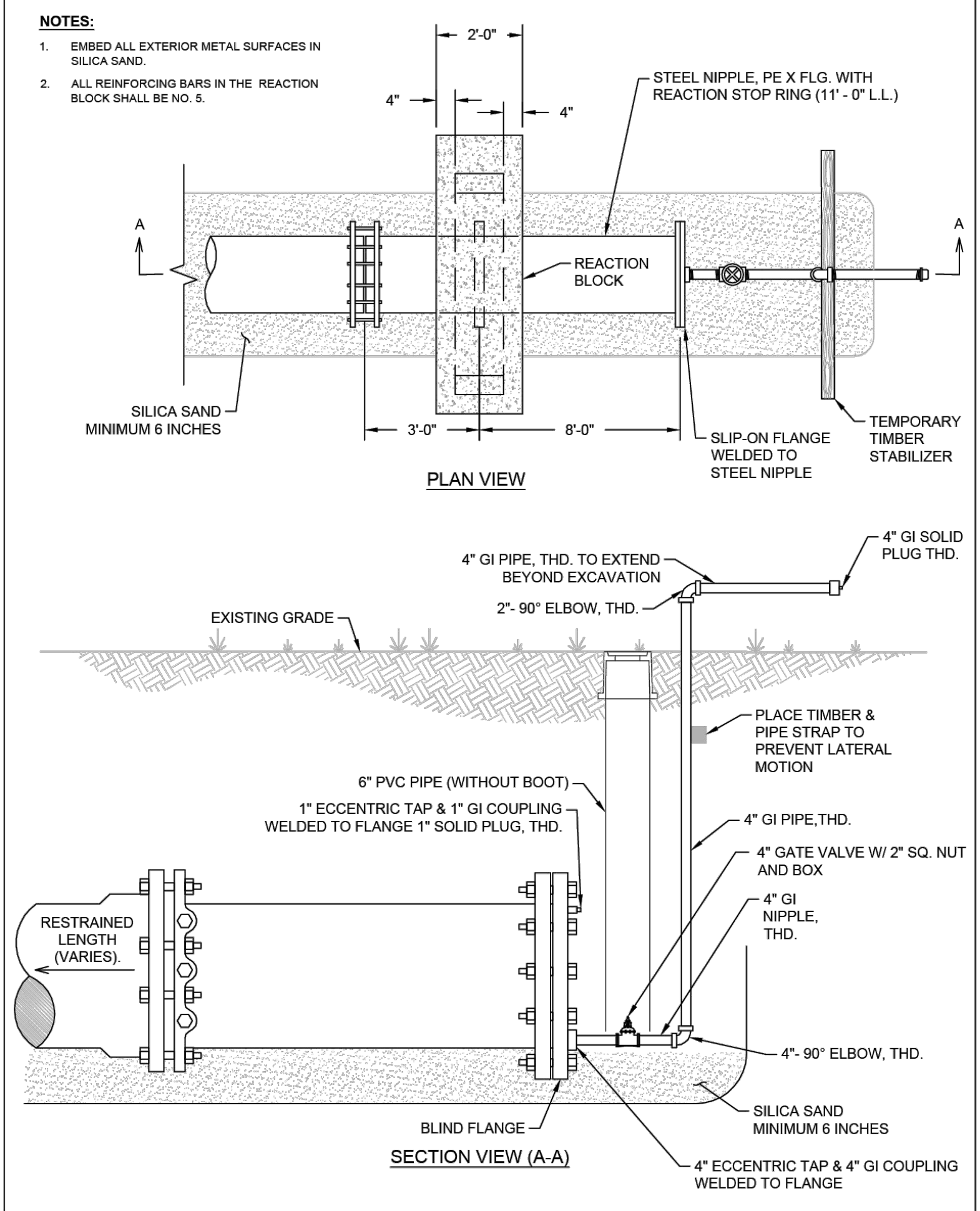
1. BACKFILL ALL EXTERIOR METAL SURFACES IN SILICA SAND
2. ALL REINFORCING BARS IN THE REACTION BLOCK SHALL BE NO. 4


1'-6"
4"
4"
REACTION BLOCK
SILICA SAND
1' MIN.
1' MIN.
A
A
PLAN VIEW
2" GI NIPPLE, THD.
2" GI SOLID PLUG, THD.
EXISTING GRADE
6" PVC PIPE (WITHOUT BOOT)
2" GI PIPE, THD. (CUT AS REQUIRED)
CAST COUPLING
MJ ANCHOR GLAND
12"Ø OR 16"Ø WATER LINE
2" 90° GI ELBOW, THD.
2"x12" GI NIPPLE, THD.
GATE VALVE W/ 2" SQ. NUT (MUELLER OR EQUIVALENT)
2" RWGV WITH 2" SQUARE NUT
12" OR 16"x48" DI NIPPLE PExMJ ANCHOR WITH REACTION STOP RING IN CENTER
2"x6" GI NIPPLE, THD.
12" OR 16"x2" ECCENTRICALLY TAPPED CAP, MJ
SECTION VIEW (A-A)

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REVISED: JANUARY 2024
2" TEMPORARY BLOW-OFF ASSEMBLY ON 12" TO 16" MAINS
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-25

NOTES:

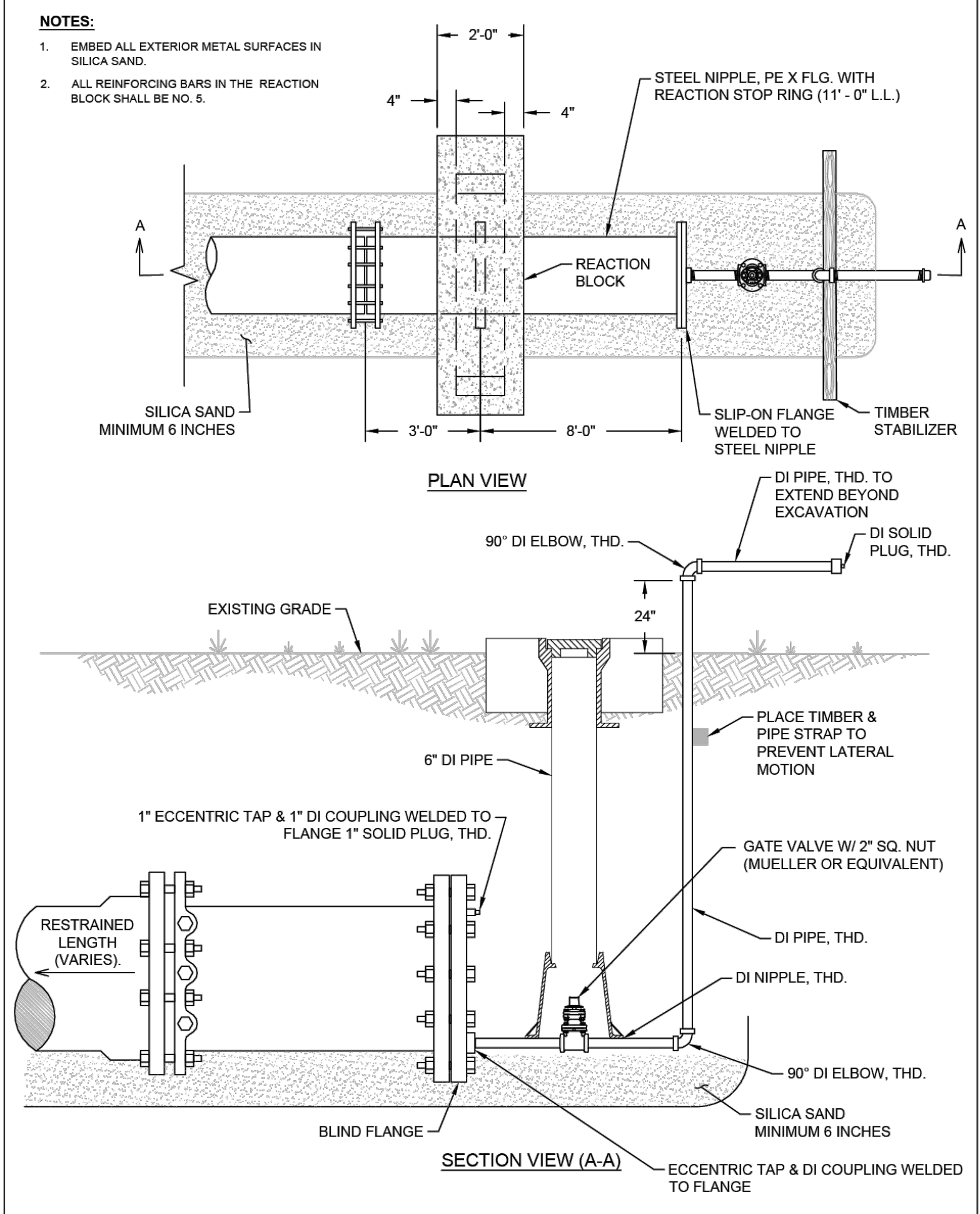
1. EMBED ALL EXTERIOR METAL SURFACES IN SILICA SAND.
2. ALL REINFORCING BARS IN THE REACTION BLOCK SHALL BE NO. 5.


2'-0"
4"
4"
STEEL NIPPLE, PE X FLG. WITH REACTION STOP RING (11' - 0" L.L.)
A
A
REACTION BLOCK
SILICA SAND MINIMUM 6 INCHES
3'-0"
8'-0"
SLIP-ON FLANGE WELDED TO STEEL NIPPLE
TEMPORARY TIMBER STABILIZER
PLAN VIEW
4" GI PIPE, THD. TO EXTEND BEYOND EXCAVATION
4" GI SOLID PLUG THD.
2"- 90° ELBOW, THD.
EXISTING GRADE
PLACE TIMBER & PIPE STRAP TO PREVENT LATERAL MOTION
6" PVC PIPE (WITHOUT BOOT)
1" ECCENTRIC TAP & 1" GI COUPLING WELDED TO FLANGE 1" SOLID PLUG, THD.
4" GI PIPE,THD.
4" GATE VALVE W/ 2" SQ. NUT AND BOX
4" GI NIPPLE, THD.
RESTRAINED LENGTH (VARIES).
4"- 90° ELBOW, THD.
SILICA SAND MINIMUM 6 INCHES
BLIND FLANGE
SECTION VIEW (A-A)
4" ECCENTRIC TAP & 4" GI COUPLING WELDED TO FLANGE

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REVISED: JANUARY 2024
4" TEMPORARY BLOW-OFF ASSEMBLY ON 20" OR LARGER MAINS (JOINT RESTRAINT)
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-26

NOTES:

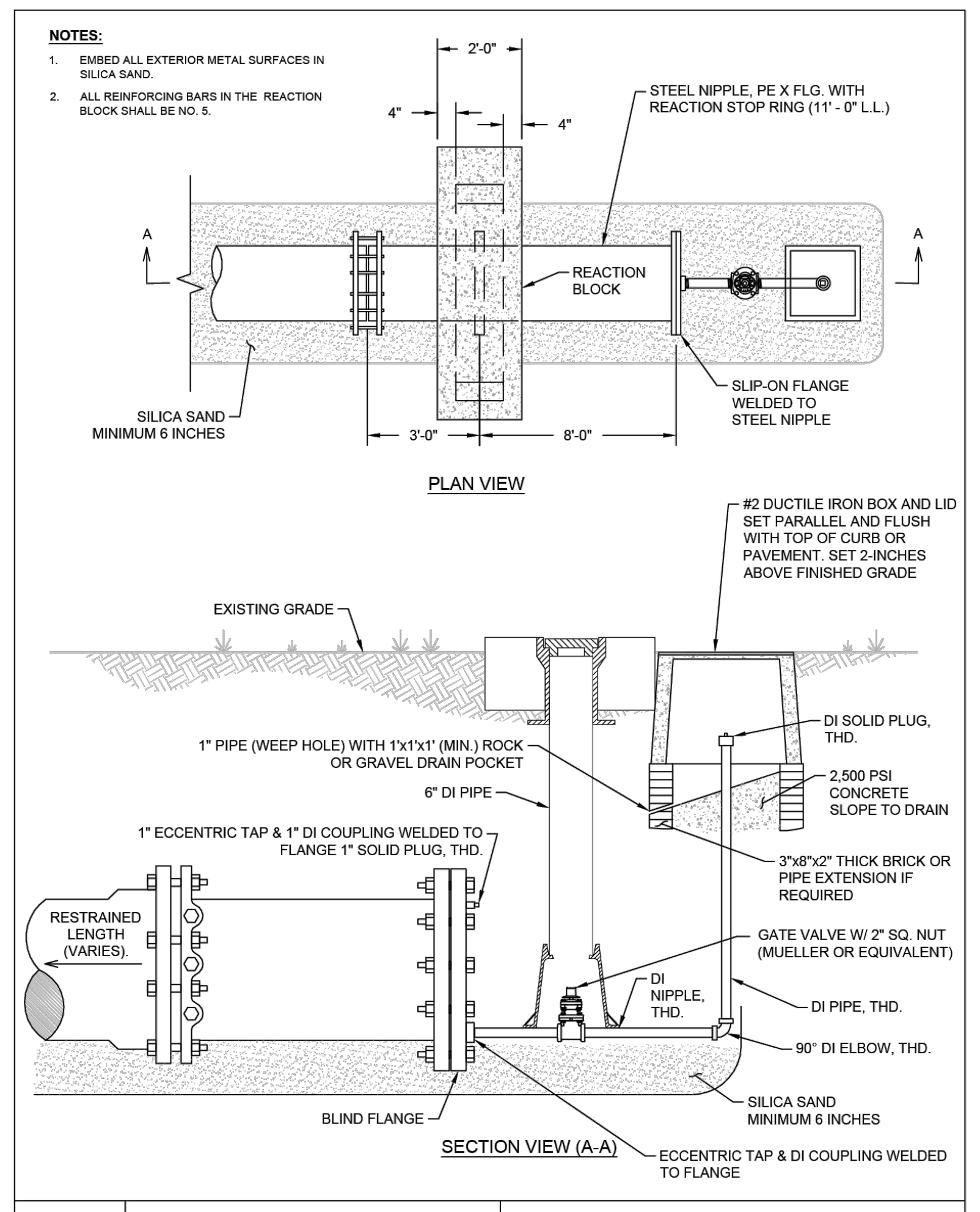
1. EMBED ALL EXTERIOR METAL SURFACES IN SILICA SAND.
2. ALL REINFORCING BARS IN THE REACTION BLOCK SHALL BE NO. 5.


2'-0"
4"
4"
STEEL NIPPLE, PE X FLG. WITH REACTION STOP RING (11' - 0" L.L.)
A
A
REACTION BLOCK
SILICA SAND MINIMUM 6 INCHES
3'-0"
8'-0"
SLIP-ON FLANGE WELDED TO STEEL NIPPLE
TIMBER STABILIZER
PLAN VIEW
DI PIPE, THD. TO EXTEND BEYOND EXCAVATION
90° DI ELBOW, THD.
DI SOLID PLUG, THD.
24"
EXISTING GRADE
PLACE TIMBER & PIPE STRAP TO PREVENT LATERAL MOTION
6" DI PIPE
1" ECCENTRIC TAP & 1" DI COUPLING WELDED TO FLANGE 1" SOLID PLUG, THD.
GATE VALVE W/ 2" SQ. NUT (MUELLER OR EQUIVALENT)
RESTRAINED LENGTH (VARIES).
DI PIPE, THD.
DI NIPPLE, THD.
90° DI ELBOW, THD.
SILICA SAND MINIMUM 6 INCHES
BLIND FLANGE
SECTION VIEW (A-A)
ECCENTRIC TAP & DI COUPLING WELDED TO FLANGE

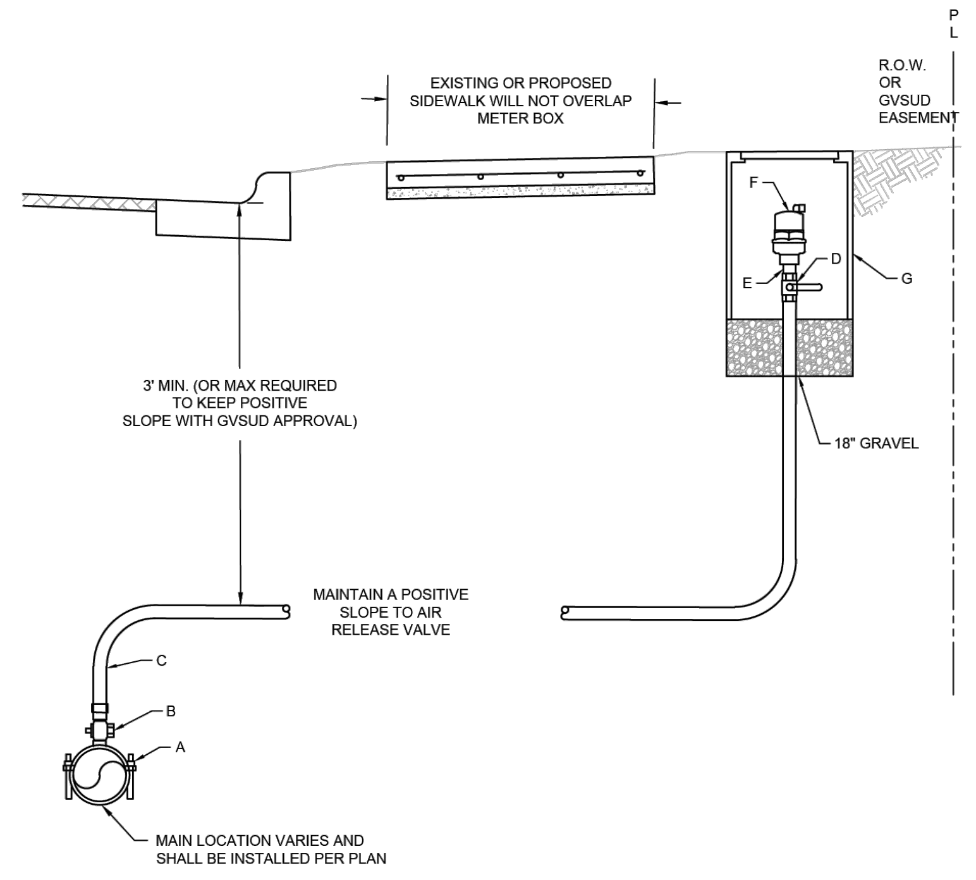
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REVISED: JANUARY 2024
2" & 4" PERMANENT RURAL BLOW-OFF ASSEMBLY
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-27

NOTES:

1. EMBED ALL EXTERIOR METAL SURFACES IN SILICA SAND.
2. ALL REINFORCING BARS IN THE REACTION BLOCK SHALL BE NO. 5.


2'-0"
4"
4"
STEEL NIPPLE, PE X FLG. WITH REACTION STOP RING (11' - 0" L.L.)
A
A
REACTION BLOCK
SILICA SAND MINIMUM 6 INCHES
3'-0"
8'-0"
SLIP-ON FLANGE WELDED TO STEEL NIPPLE
PLAN VIEW
#2 DUCTILE IRON BOX AND LID SET PARALLEL AND FLUSH WITH TOP OF CURB OR PAVEMENT. SET 2-INCHES ABOVE FINISHED GRADE
EXISTING GRADE
DI SOLID PLUG, THD.
1" PIPE (WEEP HOLE) WITH 1'x1'x1' (MIN.) ROCK OR GRAVEL DRAIN POCKET
2,500 PSI CONCRETE SLOPE TO DRAIN
6" DI PIPE
1" ECCENTRIC TAP & 1" DI COUPLING WELDED TO FLANGE 1" SOLID PLUG, THD.
3"x8"x2" THICK BRICK OR PIPE EXTENSION IF REQUIRED
RESTRAINED LENGTH (VARIES).
GATE VALVE W/ 2" SQ. NUT (MUELLER OR EQUIVALENT)
DI NIPPLE, THD.
DI PIPE, THD.
90° DI ELBOW, THD.
SILICA SAND MINIMUM 6 INCHES
BLIND FLANGE
SECTION VIEW (A-A)
ECCENTRIC TAP & DI COUPLING WELDED TO FLANGE

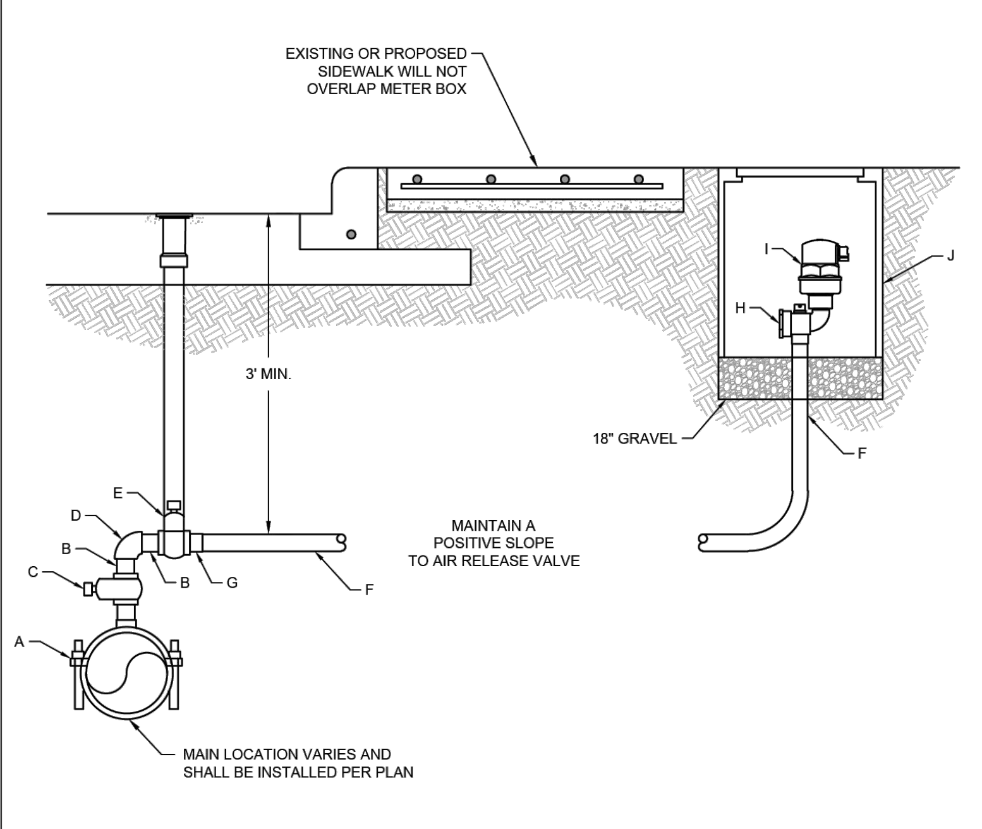
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REVISED: JANUARY 2024
2" & 4" PERMANENT URBAN BLOW-OFF ASSEMBLY
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-28


P L
R.O.W. OR GVSUD EASEMENT
EXISTING OR PROPOSED SIDEWALK WILL NOT OVERLAP METER BOX
F
D
E
G
3' MIN. (OR MAX REQUIRED TO KEEP POSITIVE SLOPE WITH GVSUD APPROVAL)
18" GRAVEL
MAINTAIN A POSITIVE SLOPE TO AIR RELEASE VALVE
C
B
A
MAIN LOCATION VARIES AND SHALL BE INSTALLED PER PLAN

MATERIAL LIST**	
LABEL	ITEM
A*	1" TAPPING SADDLE/SLEEVE
B	1" CORPORATION STOP (COMPRESSION-TYPE FITTING)
C	1" MUNICIPEX WATER SERVICE LINE
D	1" BRASS BALL VALVE WITH LEVER HANDLE
E	1" BRASS NIPPLE, THREADED
F	1" AIR RELEASE VALVE
G	DFW38CNP-J26-AFM1MS VALVE BOX

* SERVICE SADDLES SHALL BE WRAPPED COMPLETELY WITH 8 MIL. POLYETHYLENE FILM.
** MATERIAL LIST TO BE IN ACCORDANCE WITH GVSUD STANDARD PRODUCT LIST.

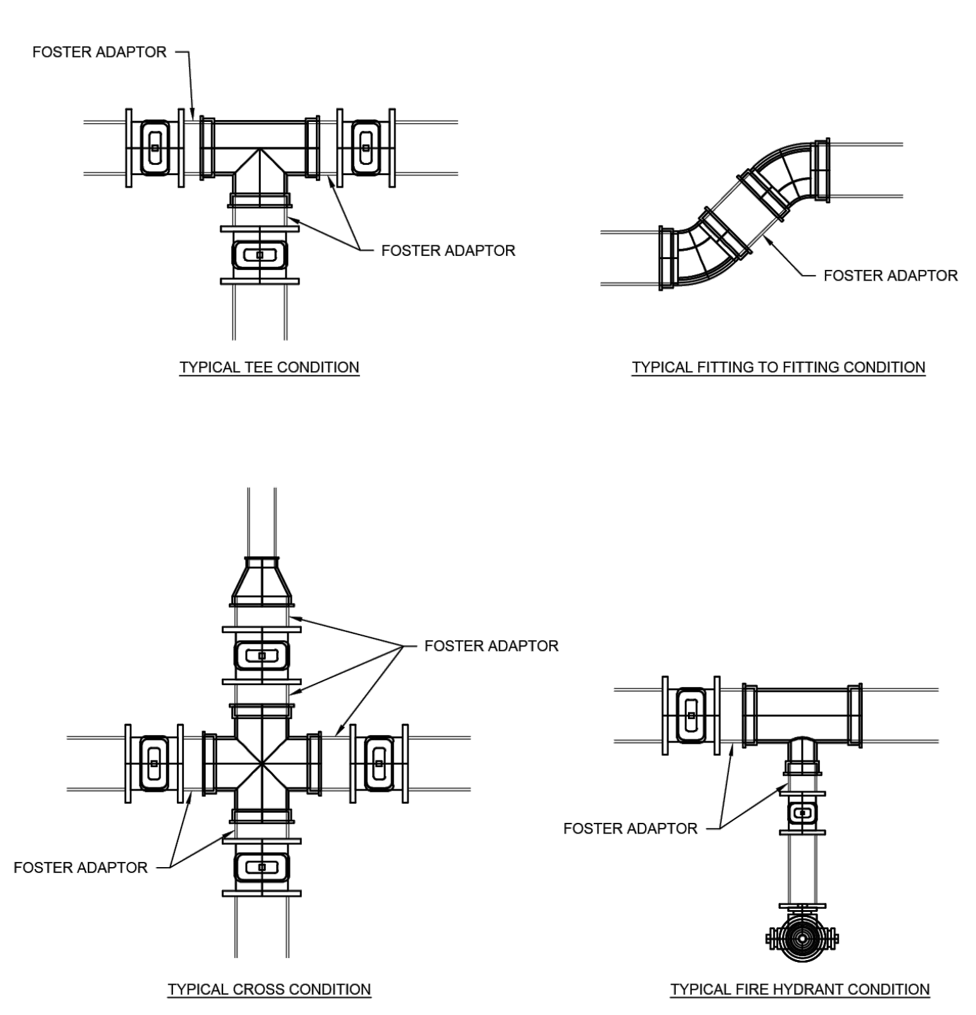
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REVISED: JANUARY 2024
1" AIR RELEASE VALVE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-29


EXISTING OR PROPOSED SIDEWALK WILL NOT OVERLAP METER BOX
I
H
J
3' MIN.
18" GRAVEL
F
E
D
B
C
B
G
F
A
MAINTAIN A POSITIVE SLOPE TO AIR RELEASE VALVE
MAIN LOCATION VARIES AND SHALL BE INSTALLED PER PLAN

MATERIAL LIST***	
LABEL	ITEM
A*	2" TAPPING SADDLE/SLEEVE
B	2" BRASS NIPPLE - THREADED
C**	2" BRASS CORPORATION STOP, MIP X FIP
D	2" BRASS 90° BEND, FIP
E	2" VALVE, RESILIENT WEDGE GATE, IRON BODY. FIP X FIP, WITH VALVE BOX
F	2" MUNICIPEX WATER SERVICE LINE
G	2" BRASS ADAPTER, MIP X CTS COMPRESSION
H	2" BRASS STOP, ANGLED OR STRAIGHT, CTS COMPRESSION X FIP
I	2" AIR RELEASE VALVE
J	DFW38CNP-J26-AF1MS VALVE BOX

* SERVICE SADDLES SHALL BE WRAPPED COMPLETELY WITH 8 MIL. POLYETHYLENE FILM.
** ALL FITTING CONNECTED TO POLYETHYLENE PIPE WILL REQUIRE A STAINLESS STEEL INSERT.
*** MATERIAL LIST TO BE IN ACCORDANCE WITH GVSUD STANDARD PRODUCT LIST.

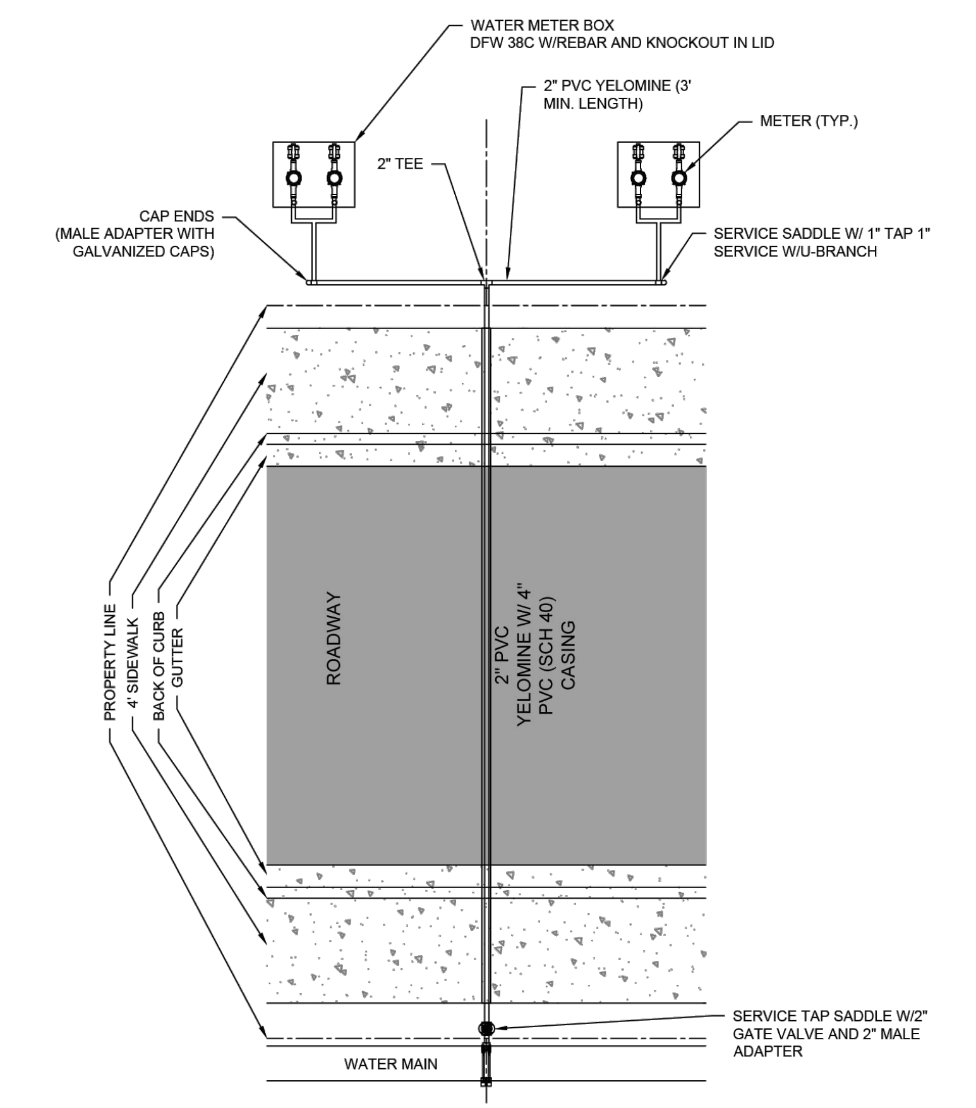
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REVISED: JANUARY 2024
2" AIR RELEASE VALVE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-30



NOTE:

1. FOSTER ADAPTORS, OR APPROVED EQUAL, REQUIRED AT ALL FITTING TO FITTING CONNECTIONS AND FITTING TO VALVE CONNECTIONS.
2. ANCHOR COUPLINGS MAY BE SUBSTITUTED FOR FOSTER ADAPTORS AT GVSUD'S DISCRETION.

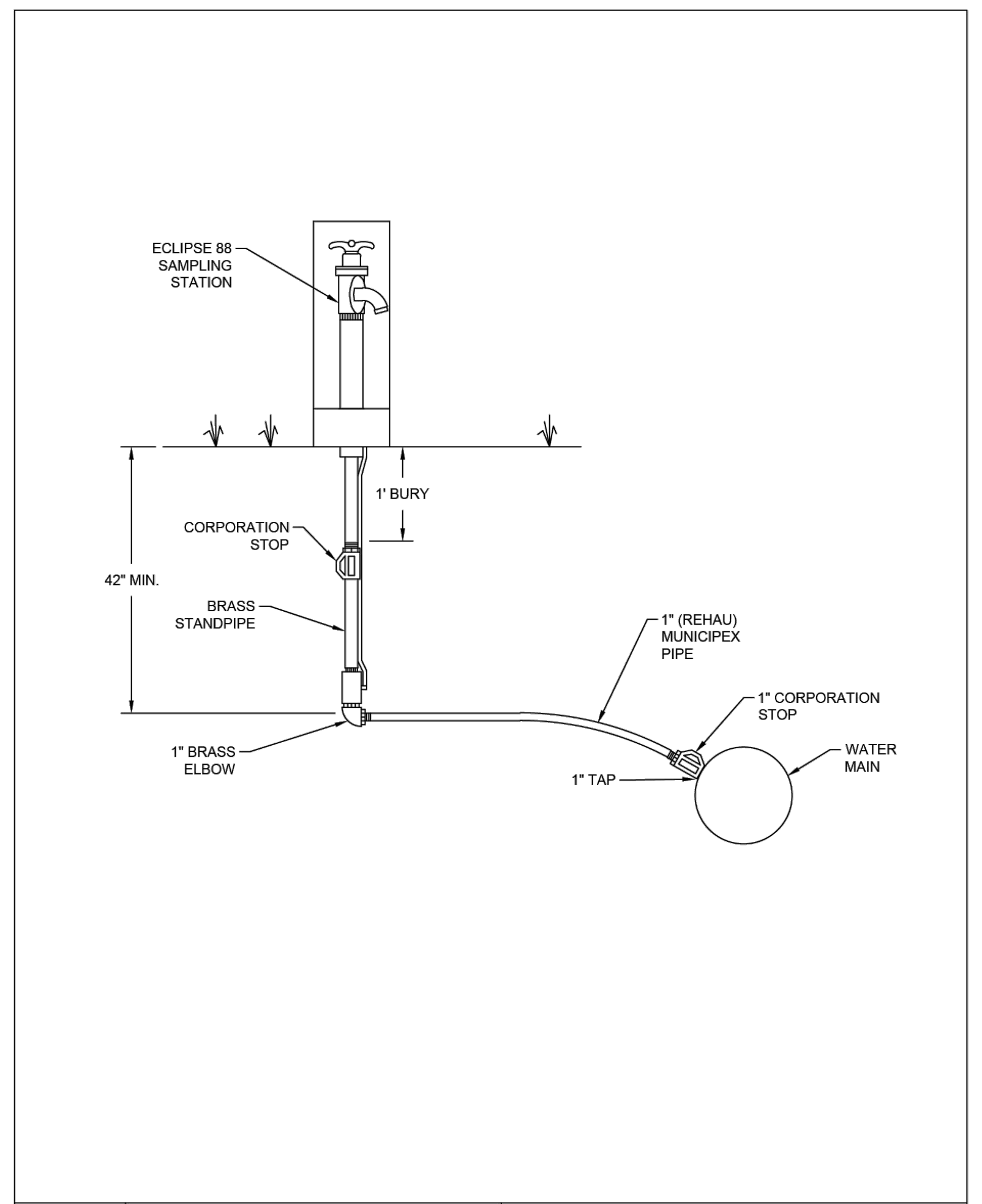
GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REVISED: JANUARY 2024
MECHANICAL JOINT ADAPTOR DETAIL
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-31


WATER METER BOX DFW 38C W/REBAR AND KNOCKOUT IN LID
2" PVC YELOMINE (3' MIN. LENGTH)
METER (TYP.)
2" TEE
CAP ENDS (MALE ADAPTER WITH GALVANIZED CAPS)
SERVICE SADDLE W/ 1" TAP 1" SERVICE W/U-BRANCH
PROPERTY LINE
4' SIDEWALK
BACK OF CURB
GUTTER
ROADWAY
2" PVC YELOMINE W/ 4" PVC (SCH 40) CASING
SERVICE TAP SADDLE W/2" GATE VALVE AND 2" MALE ADAPTER
WATER MAIN

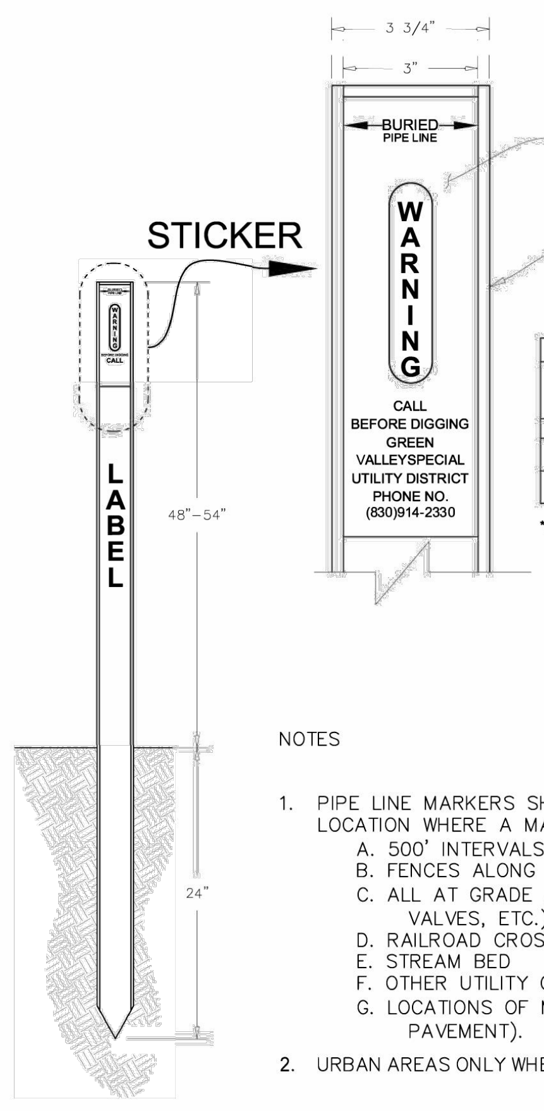
NOTE:

1. MALE ADAPTOR AND TEE SHALL BE HARCO TYPE FITTINGS OR APPROVED EQUAL.

GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REVISED: JANUARY 2024
MULTI-DWELLING UNIT WATER SERVICE DETAIL
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-32



GREEN VALLEY SPECIAL UTILITY DISTRICT
STANDARD DETAILS
REVISED: JANUARY 2024
WATER SAMPLING STATION DETAIL
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.
DETAIL NO. W-33


3 3/4"
3"
BURIED PIPE LINE
WARNING
CALL BEFORE DIGGING GREEN VALLEYSPECIAL UTILITY DISTRICT PHONE NO. (830)914-2330
STICKER
LABEL
48"–54"
24"
3" DECAL SHALL BE WITH WHITE LETTERING BACKGROUND PER UTILITY MARKER TABLE
LONG DURABLE AND FLEXIBLE UTILITY MARKER FOR PIPE LINE AND SHALL BE MANUFACTURED BY CARSONITE INTERNATIONAL UTILITY MARKERS (CRM) OR APPROVED EQUAL

UTILITY MARK TABLE			
PIPE LINE TYPE	STICKER BACKGROUND COLOR	LABEL (WHITE TEXT)	*UTILITY MARKER COLOR
WATER	BLUE	WATER	BLUE
SANITARY SEWER	GREEN	SEWER	GREEN
RECLAIMED WATER	PURPLE	RECYCLE	PURPLE

*NOTE IF UTILITY MARKER COLOR CAN NOT BE OBTAINED WHITE UTILITY MARKER WILL BE USED INSTEAD AND LABELTEXT WILL BE THE COLOR LISTED UNDER UTILITY MARKER COLOR.

NOTES

1. PIPE LINE MARKERS SHALL BE LOCATED AT THE FOLLOWING LOCATION WHERE A MAIN IS INSTALLED IN RURAL AREAS.
   A. 500' INTERVALS ALONG PIPE
   B. FENCES ALONG THE PIPE CENTERLINE
   C. ALL AT GRADE APPURTENANCES (VALVES, AIR RELEASE VALVES, ETC.).
   D. RAILROAD CROSSING
   E. STREAM BED
   F. OTHER UTILITY CROSSING
   G. LOCATIONS OF MAJOR CHANGES IN DIRECTION (OUT OF PAVEMENT).
2. URBAN AREAS ONLY WHEN REQUIRED PER APPROVED PLANS.

CURRENT AS OF 6/7/2022
PIPE LINE MARKER
6-7-2022 ADOPTED
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD
N.T.S. STANDARD DETAIL

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

WATER DISTRIBUTION PLAN DETAILS

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
1.	2024-08-06	UPDATED DETAILS TO BE THE LATEST DETAILS
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C98

CUDEENGINEERS.COM

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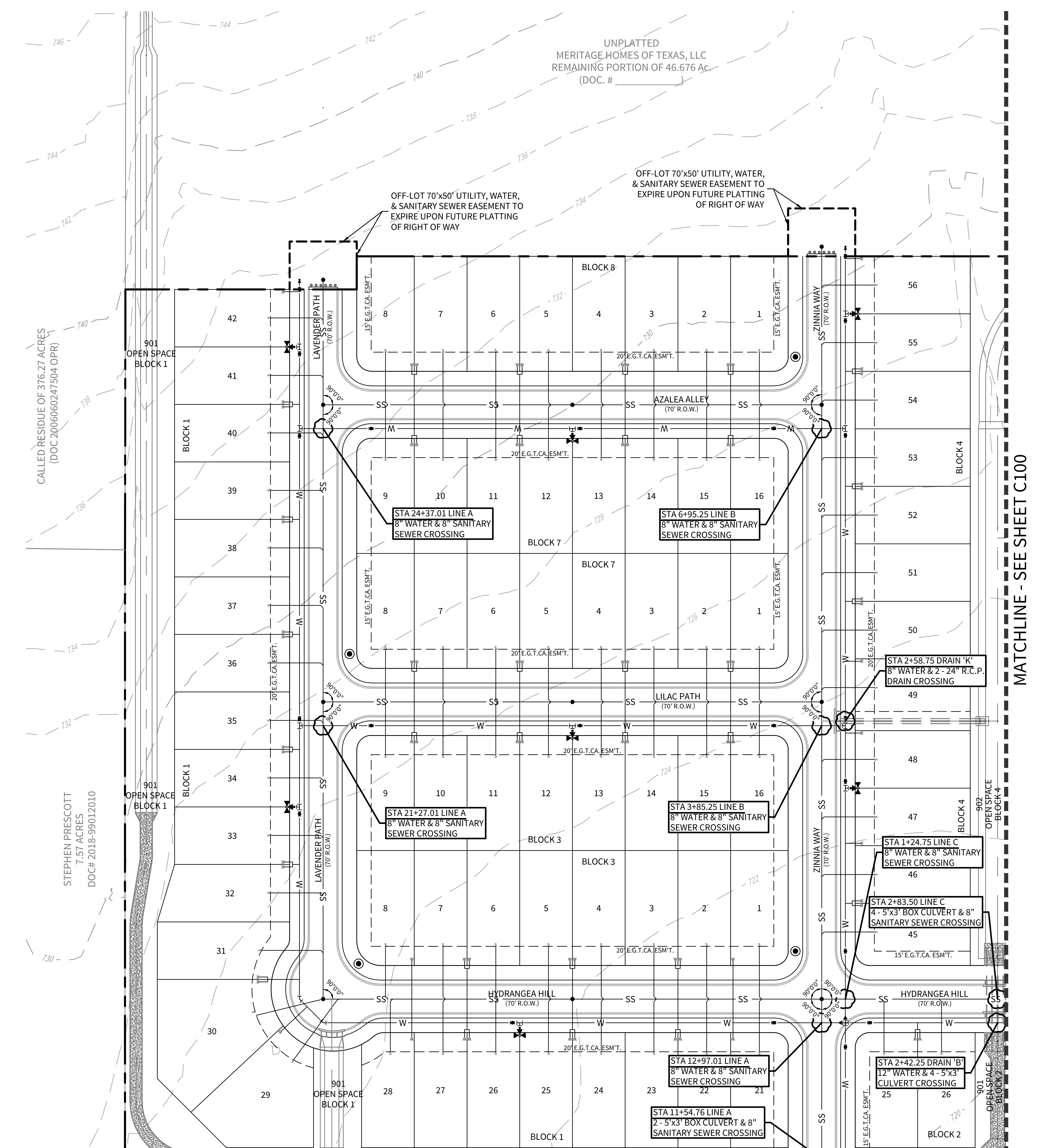
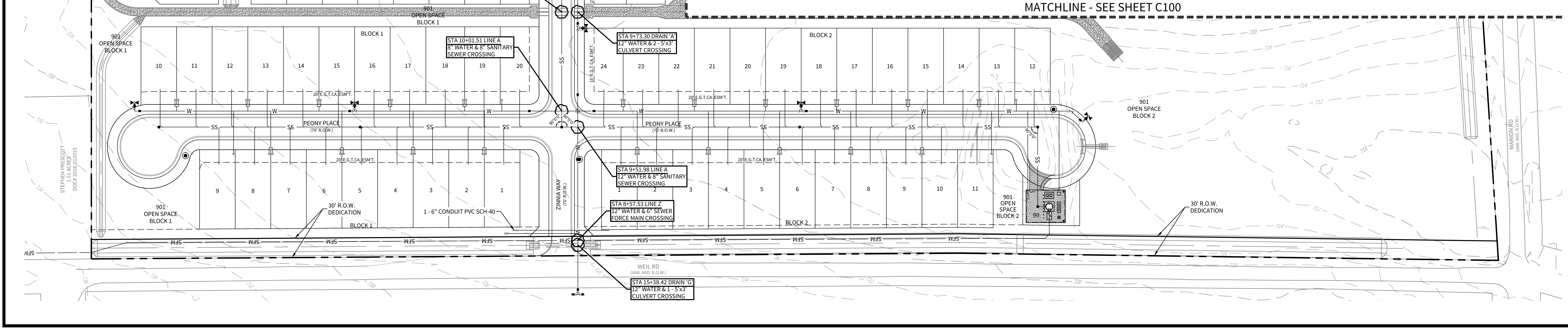
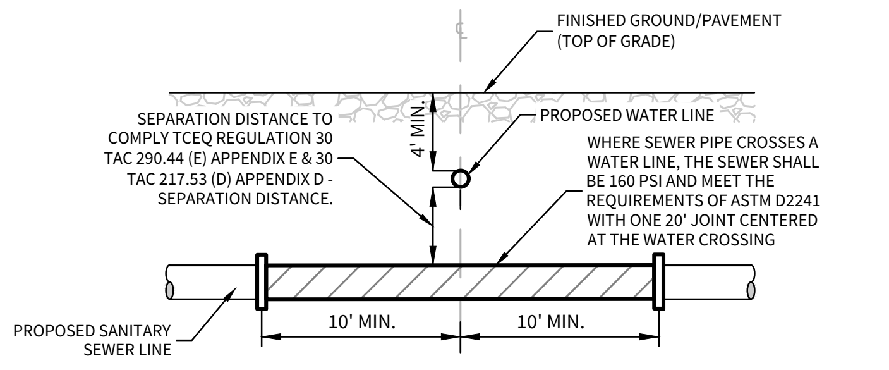
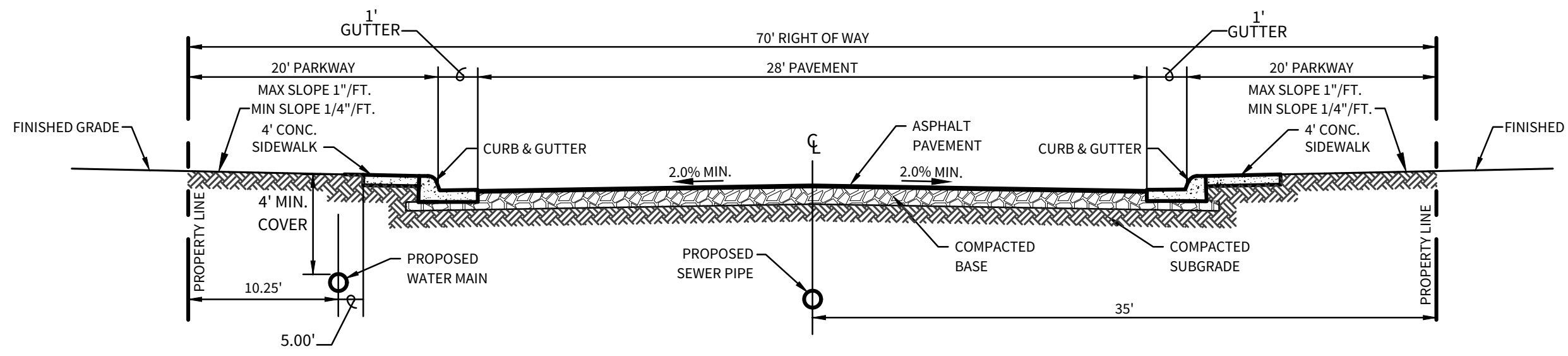


UNPLATTED
MERITAGE HOMES OF TEXAS, LLC
REMAINING PORTION OF 46.676 Ac.
(DOC. #
CALLED RESIDUE OF 376.27 ACRES
(DOC 20060602475O4 OPR)
STEPHEN PRESCOTT
7.57 ACRES
DOC# 2018-99012010
STEPHEN PRESCOTT
1.51 ACRES
DOC# 2018-012010
OFF-LOT 70'x50' UTILITY, WATER, & SANITARY SEWER EASEMENT TO EXPIRE UPON FUTURE PLATTING OF RIGHT OF WAY
MATCHLINE - SEE SHEET C100
LAVENDER PATH (70' R.O.W.)
AZALEA ALLEY (70' R.O.W.)
LILAC PATH (70' R.O.W.)
HYDRANGEA HILL (70' R.O.W.)
PEONY PLACE (70' R.O.W.)
ZINNIA WAY (70' R.O.W.)
WEIL RD (VAR. WID. R.O.W.)
MARION RD (VAR. WID. R.O.W.)
BLOCK 1
BLOCK 2
BLOCK 3
BLOCK 4
BLOCK 7
BLOCK 8
901 OPEN SPACE BLOCK 1
901 OPEN SPACE BLOCK 2
902 OPEN SPACE BLOCK 4
20' E.G.T.CA. ESM'T.
15' E.G.T.CA. ESM'T.
30' R.O.W. DEDICATION
1 - 6" CONDUIT PVC SCH-40
STA 24+37.01 LINE A 8" WATER & 8" SANITARY SEWER CROSSING
STA 6+95.25 LINE B 8" WATER & 8" SANITARY SEWER CROSSING
STA 2+58.75 DRAIN 'K' 8" WATER & 2 - 24" R.C.P. DRAIN CROSSING
STA 21+27.01 LINE A 8" WATER & 8" SANITARY SEWER CROSSING
STA 3+85.25 LINE B 8" WATER & 8" SANITARY SEWER CROSSING
STA 1+24.75 LINE C 8" WATER & 8" SANITARY SEWER CROSSING
STA 2+83.50 LINE C 4 - 5'x3' BOX CULVERT & 8" SANITARY SEWER CROSSING
STA 12+97.01 LINE A 8" WATER & 8" SANITARY SEWER CROSSING
STA 2+42.25 DRAIN 'B' 12" WATER & 4 - 5'x3' CULVERT CROSSING
STA 11+54.76 LINE A 2 - 5'x3' BOX CULVERT & 8" SANITARY SEWER CROSSING
STA 9+73.30 DRAIN 'A' 12" WATER & 2 - 5'x3' CULVERT CROSSING
STA 10+01.51 LINE A 8" WATER & 8" SANITARY SEWER CROSSING
STA 9+51.98 LINE A 12" WATER & 8" SANITARY SEWER CROSSING
STA 8+57.53 LINE Z 12" WATER & 6" SEWER FORCE MAIN CROSSING
STA 15+38.42 DRAIN 'G' 12" WATER & 1 - 5'x3' CULVERT CROSSING
SS
W
SFM


FINISHED GROUND/PAVEMENT (TOP OF GRADE)
PROPOSED WATER LINE
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
4' MIN.
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.



LOCAL "A" STREET CROSS-SECTION

CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. CONTRACTOR WILL NOTIFY ALL UTILITY COMPANIES AT LEAST 72 HOURS PRIOR TO EXCAVATION.

GVSUD	(830) 914-2330
GVTC	(830) 885-4411
GVEC	1-800-401-8345
DIG TESS	1-800-344-8377
TEXAS STATE WIDE ONE CALL LOCATORS	1-800-545-6005 OR 811

NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE GVSUD INSPECTOR/TEST ADMINISTER, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY GVSUD WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

TRENCH EXCAVATION PROTECTION

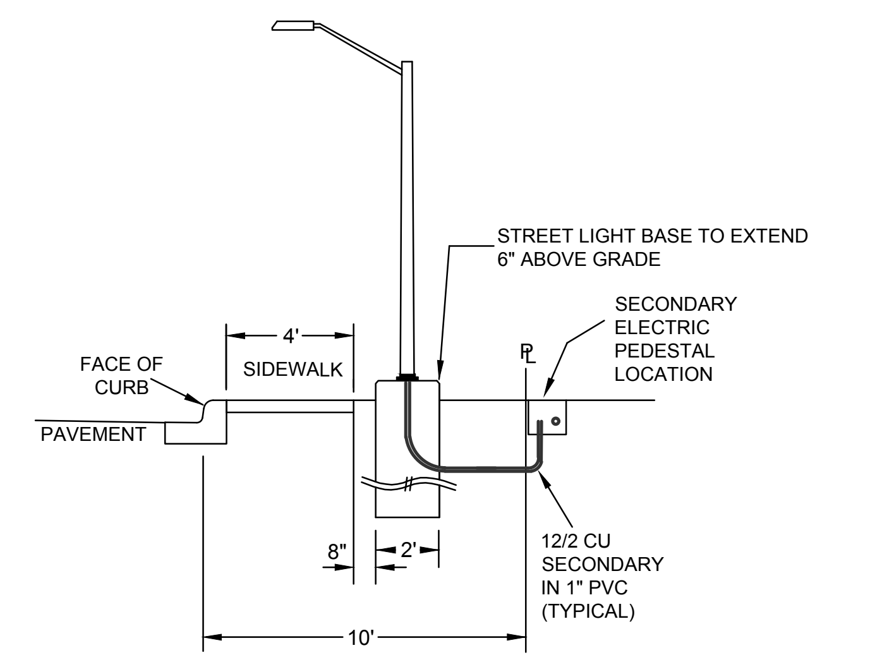
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S 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!!

EXISTING UTILITIES ARE WITHIN THE LIMITS OF CONSTRUCTION. CONTRACTORS SHALL EXERCISE EXTRA CARE IN DIGGING ANY TRENCH FOR PROPOSED UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE, VERIFY THE EXACT LOCATION & IDENTIFY AREA OF CONFLICTS WITH EXISTING UTILITIES AND SHALL NOTIFY THE ENGINEER IF CONFLICT IS FOUND.

CAUTION!!

THE CONTRACTOR SHALL BE AWARE THAT OVERHEAD ELECTRIC LINES EXIST WITHIN THE VICINITY OF THE SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE THESE UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING IN THIS AREA. ANY DAMAGE DONE TO THESE EXISTING FACILITIES WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.


STREET LIGHT BASE TO EXTEND 6" ABOVE GRADE
SECONDARY ELECTRIC PEDESTAL LOCATION
FACE OF CURB
PAVEMENT
4'
SIDEWALK
8"
2'
10'
PL
12/2 CU SECONDARY IN 1" PVC (TYPICAL)

STREET LIGHT NOTE:

CONT. ---- ---- (--) STREET LIGHTS, USE FLUSH-MOUNT PEDESTALS.

GVEC STREET LIGHT DETAIL

N.T.S.

SCALE: 1"=80'

80 10 0 80

LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	- - - -
EXISTING 2' CONTOUR	— 499 —
EXISTING 10' CONTOUR	— 500 —
EXISTING WATER LINE	— Wx —
EXISTING SEWER LINE	— SSx —
EXISTING MANHOLE	●
PROPOSED WATER LINE	— W —
PROPOSED WATER SERVICE	WW
PROPOSED FIRE HYDRANT	
PROPOSED SEWER MAIN	— SS —
PROPOSED SEWER FORCE MAIN	— SFM —
PROPOSED MANHOLE	●
PROPOSED SEWER SERVICE	S
PROPOSED STREET LIGHT	◉

SEWER/WATER LINE CROSSINGS	
LINE	STATION
"A"	9+52.01
"A"	10+01.51
"A"	12+97.01
"A"	21+27.01
"A"	24+37.01
"B"	3+85.25
"B"	6+95.25
"C"	1+24.75
"C"	4+50.25
"C"	13+09.75
"D"	1+24.75
"D"	4+44.75
"F"	1+24.75
"Z"	8+57.71

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4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION
UNIT 1

UTILITY LAYOUT PLAN

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
1.		
2.		
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6.		
7.		
8.		
9.		

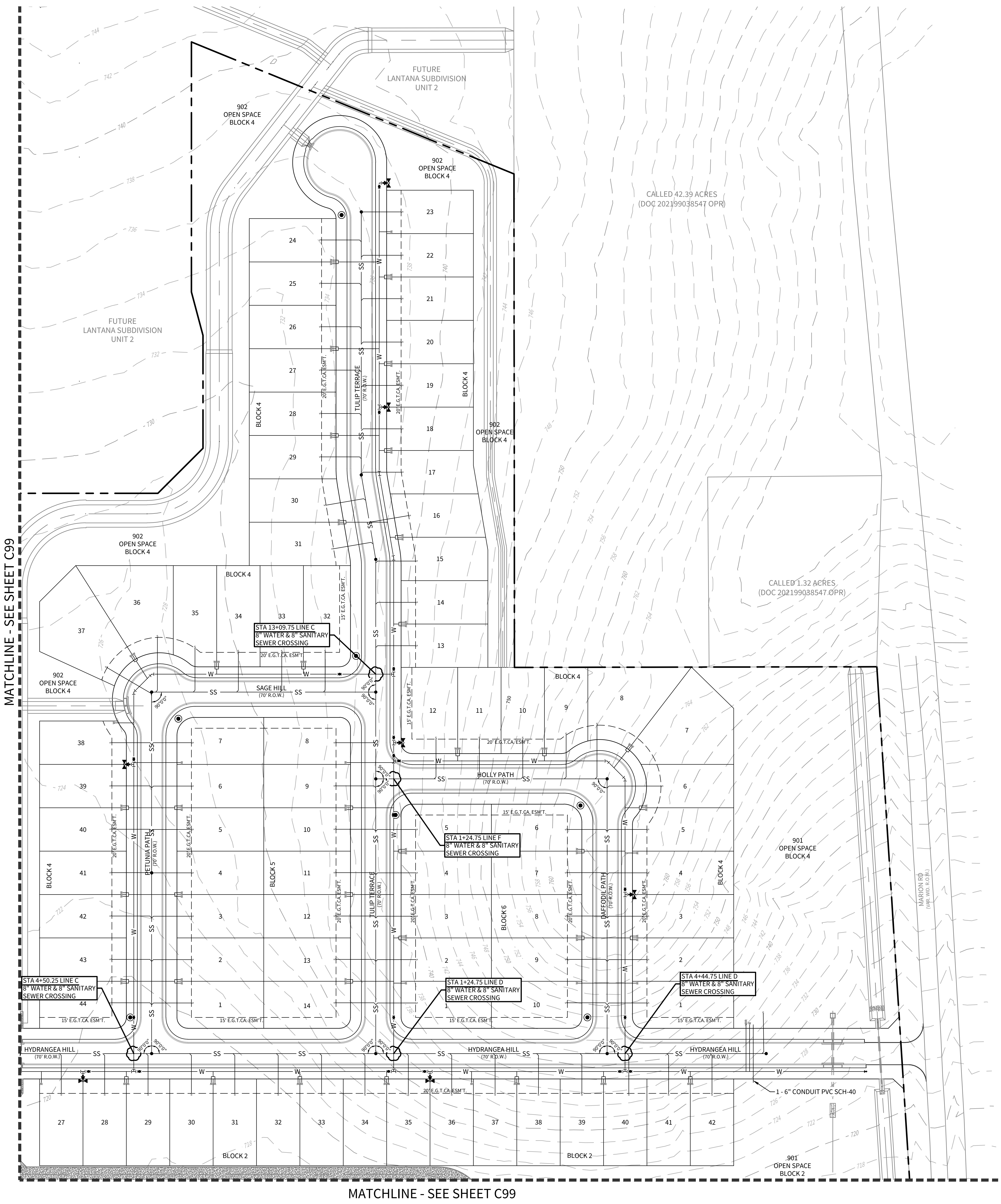
JAVIER CASTELLO
122170
5/12/2025

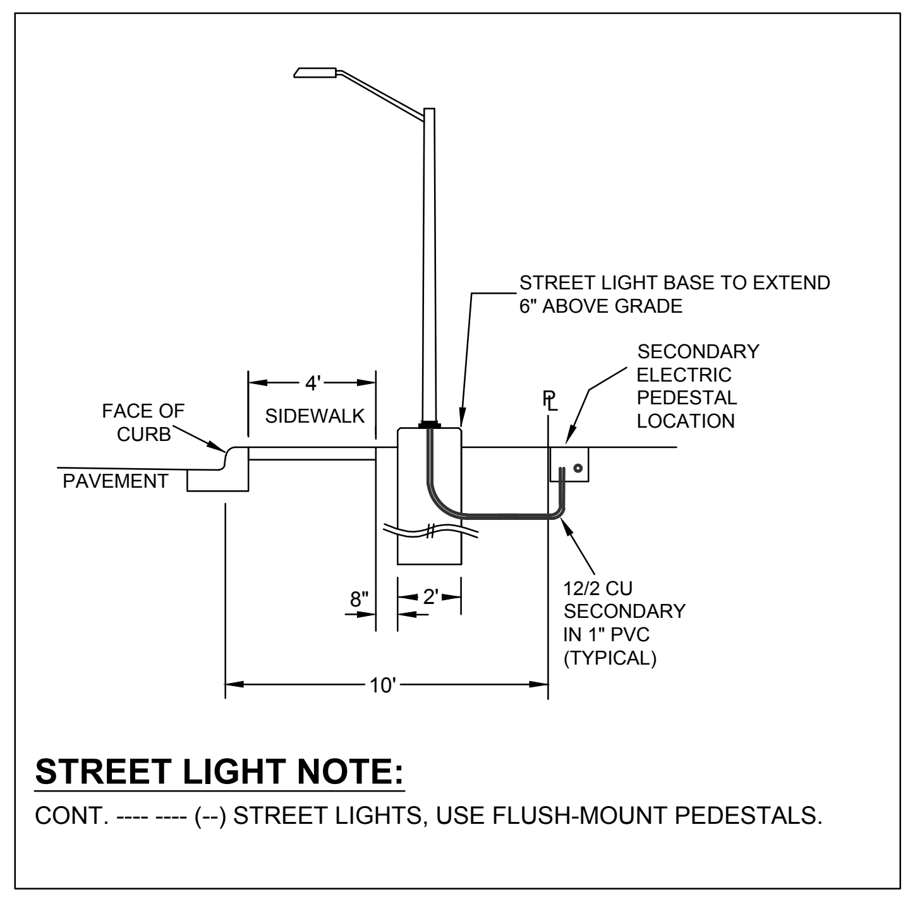
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C99

CUDEENGINEERS.COM

P:\04037\003\2-DWG\4-Plans\C99 UTILITY LAYOUT PLAN.dwg 2025/05/12 2:04pm tduano


MATCHLINE - SEE SHEET C99
MATCHLINE - SEE SHEET C99
FUTURE LANTANA SUBDIVISION UNIT 2
FUTURE LANTANA SUBDIVISION UNIT 2
902 OPEN SPACE BLOCK 4
CALLED 42.39 ACRES (DOC 202199038547 OPR)
CALLED 1.32 ACRES (DOC 202199038547 OPR)
TULIP TERRACE (70' R.O.W.)
SAGE HILL (70' R.O.W.)
HOLLY PATH (70' R.O.W.)
PETUNIA PATH (70' R.O.W.)
DAFFODIL PATH (70' R.O.W.)
HYDRANGEA HILL (70' R.O.W.)
BLOCK 2
BLOCK 4
BLOCK 5
BLOCK 6
901 OPEN SPACE BLOCK 4
901 OPEN SPACE BLOCK 2
MARION RD
20' E.G.T.CA. ESMT.
15' E.G.T.CA. ESMT.
STA 13+09.75 LINE C 8" WATER & 8" SANITARY SEWER CROSSING
STA 1+24.75 LINE F 8" WATER & 8" SANITARY SEWER CROSSING
STA 4+50.25 LINE C 8" WATER & 8" SANITARY SEWER CROSSING
STA 1+24.75 LINE D 8" WATER & 8" SANITARY SEWER CROSSING
STA 4+44.75 LINE D 8" WATER & 8" SANITARY SEWER CROSSING
1 - 6" CONDUIT PVC SCH-40
W
SS


STREET LIGHT BASE TO EXTEND 6" ABOVE GRADE
SECONDARY ELECTRIC PEDESTAL LOCATION
FACE OF CURB
PAVEMENT
4'
SIDEWALK
P̸L
8"
2'
10'
12/2 CU SECONDARY IN 1" PVC (TYPICAL)

STREET LIGHT NOTE:

CONT. ---- ---- (--) STREET LIGHTS, USE FLUSH-MOUNT PEDESTALS.

GVEC STREET LIGHT DETAIL

N.T.S.

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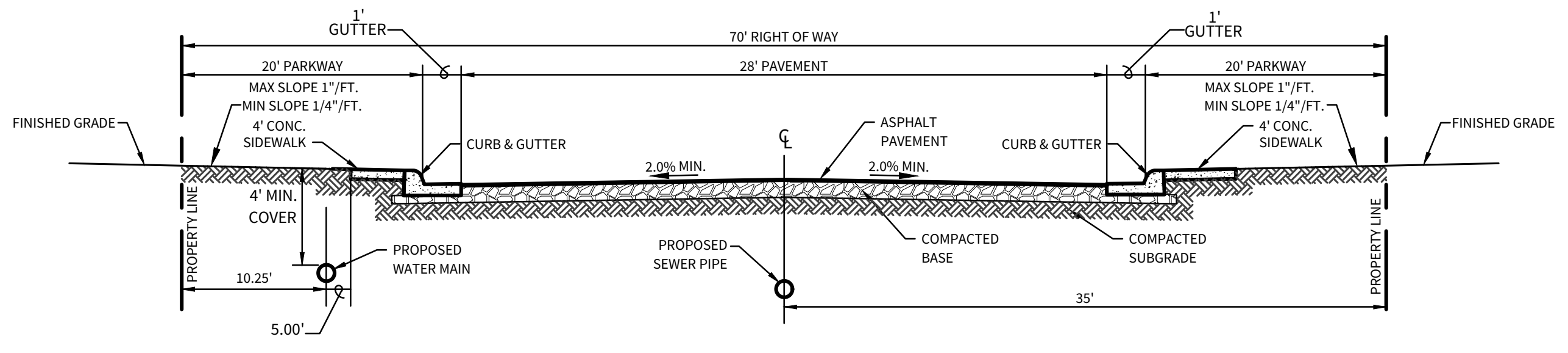
SCALE: 1"=80'

80 10 0 80

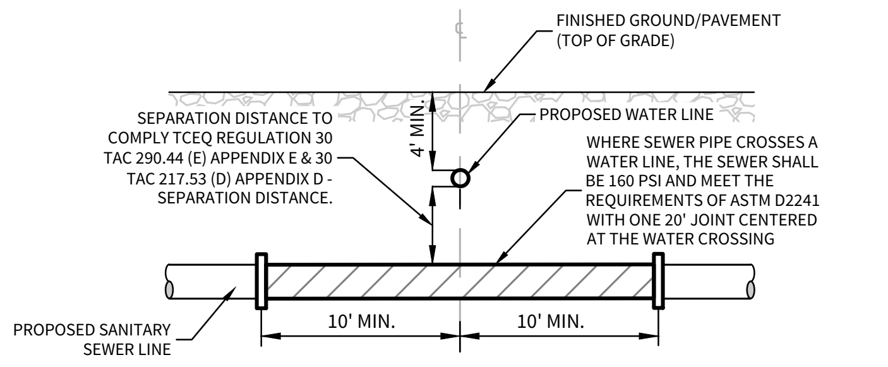
LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	——
PROPOSED RIGHT OF WAY	——
E.G.T.CA. EASEMENT	- - - -
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
EXISTING WATER LINE	—— Wx ——
EXISTING SEWER LINE	—— SSx ——
EXISTING MANHOLE	●
PROPOSED WATER LINE	—— W ——
PROPOSED WATER SERVICE	WW
PROPOSED FIRE HYDRANT	
PROPOSED SEWER MAIN	—— SS ——
PROPOSED SEWER FORCE MAIN	— — SFM —
PROPOSED MANHOLE	●
PROPOSED SEWER SERVICE	S
PROPOSED STREET LIGHT	◉

SEWER/WATER LINE CROSSINGS	
LINE	STATION
"A"	9+52.01
"A"	10+01.51
"A"	12+97.01
"A"	21+27.01
"A"	24+37.01
"B"	3+85.25
"B"	6+95.25
"C"	1+24.75
"C"	4+50.25
"C"	13+09.75
"D"	1+24.75
"D"	4+44.75
"F"	1+24.75
"Z"	8+57.71



LOCAL "A" STREET CROSS-SECTION


FINISHED GROUND/PAVEMENT (TOP OF GRADE)
SEPARATION DISTANCE TO COMPLY TCEQ REGULATION 30 TAC 290.44 (E) APPENDIX E & 30 TAC 217.53 (D) APPENDIX D - SEPARATION DISTANCE.
4' MIN.
PROPOSED WATER LINE
WHERE SEWER PIPE CROSSES A WATER LINE, THE SEWER SHALL BE 160 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT THE WATER CROSSING
PROPOSED SANITARY SEWER LINE
10' MIN.
10' MIN.

TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION UNIT 1

UTILITY LAYOUT PLAN

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C100

CUDEENGINEERS.COM

P:\04037\003\2-DWG\4-Plans\C99 UTILITY LAYOUT PLAN.dwg 2025/05/12 2:04pm tduano

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SWPPP MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

1. STORM WATER MANAGEMENT FACILITIES MUST BE INSTALLED PRIOR TO SITE CONSTRUCTION. SUBD. ORD. 6.01.003

2. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION

3. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.

4. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.

5. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE, ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

INSPECTIONS:

DESIGNATED AND QUALIFIED PERSON(S) SHALL INSPECT POLLUTION CONTROL MEASURES EVERY SEVEN DAYS AND WITHIN 24 HOURS AFTER A STORM EVENT GREATER THAN 0.5 INCHES OF RAINFALL, AN INSPECTION REPORT THAT SUMMARIZES THE SCOPE OF THE INSPECTION, NAMES AND QUALIFICATIONS OF PERSONNEL CONDUCTING THE INSPECTION, DATE OF THE INSPECTION, MAJOR OBSERVATIONS, AND ACTIONS TAKEN AS A RESULT OF THE INSPECTION SHALL BE RECORDED AND MAINTAINED AS PART OF STORM WATER TPDES DATA FOR A PERIOD OF THREE YEARS AFTER THE DATE OF THE INSPECTION. COPY OF THE INSPECTION REPORT FORM IS PROVIDED IN THIS STORM WATER POLLUTION PREVENTION PLAN.

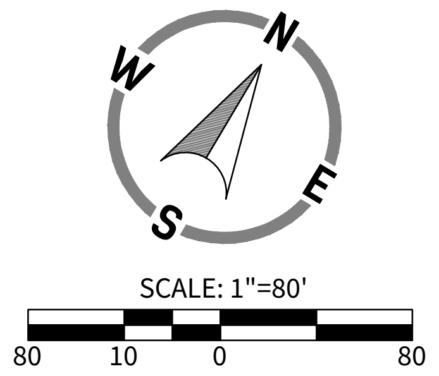
AS A MINIMUM, THE INSPECTOR SHALL OBSERVE: (1) SIGNIFICANT DISTURBED AREAS FOR EVIDENCE OF EROSION, (2) STORAGE AREAS FOR EVIDENCE OF LEAKAGE FROM THE EXPOSED STORED MATERIALS, (3) STRUCTURAL CONTROLS (ROCK BERM OUTLETS. SILT FENCES, DRAINAGE SWALES, ETC.) FOR EVIDENCE OF FAILURE OR EXCESS SILTATION (OVER 6 INCHES DEEP). (4) VEHICLE EXIT POINT FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING, (5) VEHICLE STORAGE AREAS FOR SIGNS OF LEAKING EQUIPMENT OR SPILLS, AND (6) CONCRETE TRUCK RINSE-OUT PIT FOR SIGNS OF POTENTIAL FAILURE. DEFICIENCIES NOTED DURING THE INSPECTION WILL BE CORRECTED AND DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION OR BEFORE THE NEXT ANTICIPATED STORM EVENT IF PRACTICABLE.

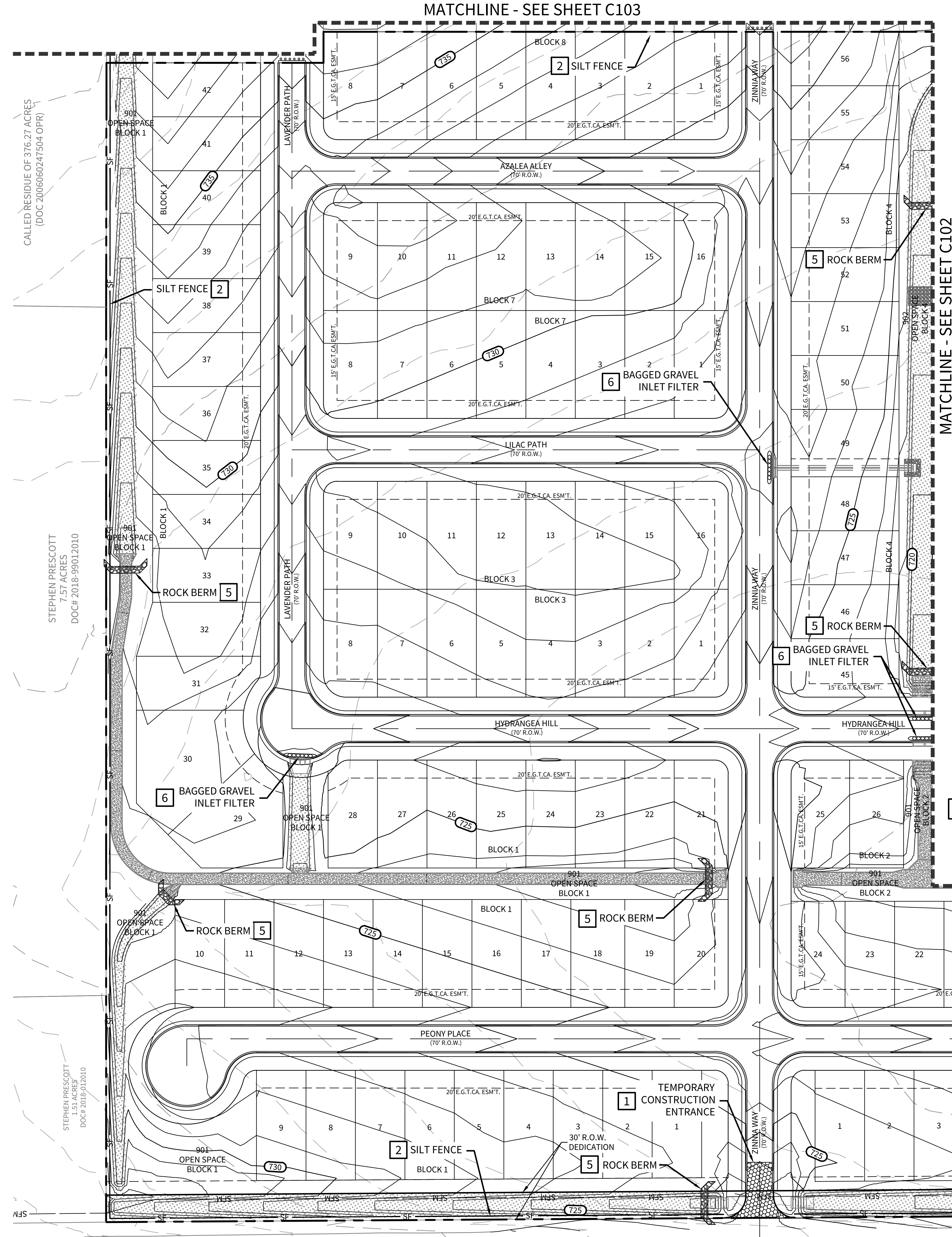
NOTES

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, EASEMENTS AND LOTS.
3. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
4. THE CITY AND/OR COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

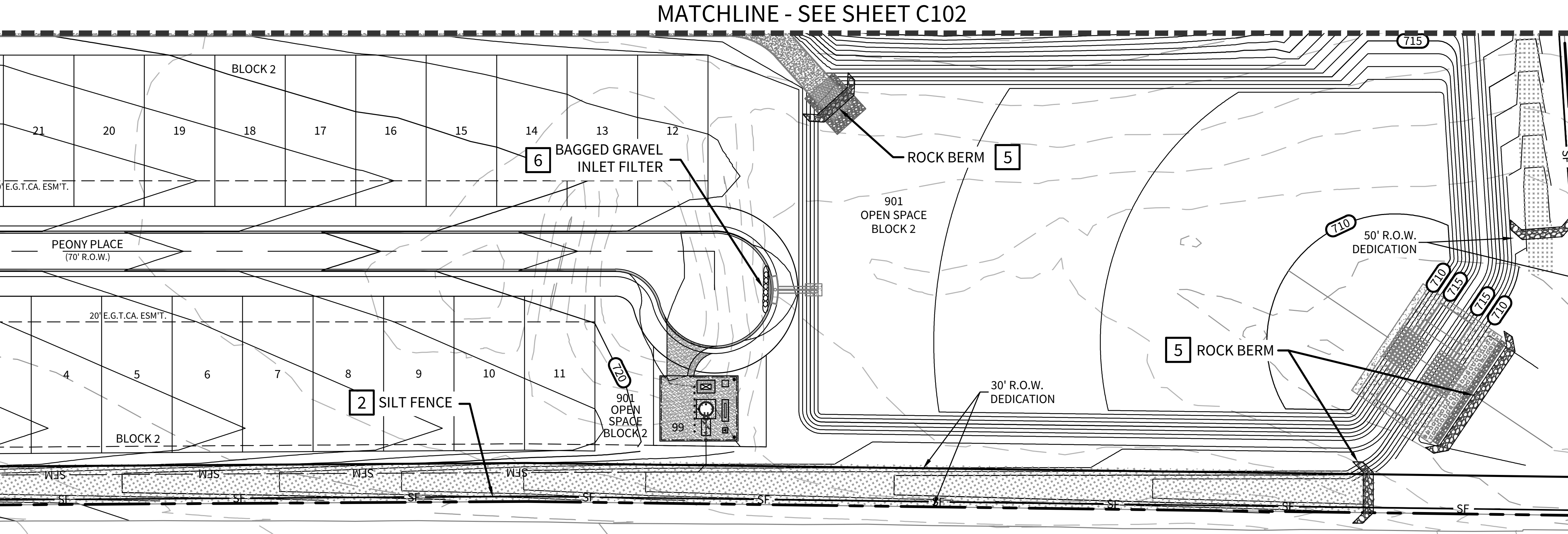
LEGEND

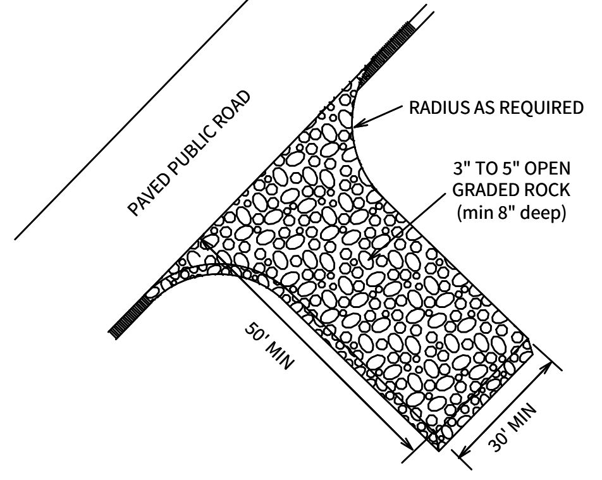
OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.CA. EASEMENT	- - - - -
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
PROPOSED 1' CONTOUR	——(499)——
PROPOSED 5' CONTOUR	——(500)——
BMP ITEM NUMBER	1
PROPOSED TEMPORARY CONSTRUCTION ENTRANCE/EXIT	▩
PROPOSED ROCK BERM	▩
PROPOSED SILT FENCE	—— SF ——
STAGING AREA	▨
CONCRETE WASHOUT PIT	■





MATCHLINE - SEE SHEET C103
MATCHLINE - SEE SHEET C102
BLOCK 8
BLOCK 7
BLOCK 3
BLOCK 1
BLOCK 2
BLOCK 4
901 OPEN SPACE BLOCK 1
902 OPEN SPACE BLOCK 4
901 OPEN SPACE BLOCK 2
AZALEA ALLEY (70' R.O.W.)
LILAC PATH (70' R.O.W.)
HYDRANGEA HILL (70' R.O.W.)
LAVENDER PATH (70' R.O.W.)
ZINNIA WAY (70' R.O.W.)
PEONY PLACE (70' R.O.W.)
20' E.G.T.CA. ESM'T.
15' E.G.T.CA. ESM'T.
2 SILT FENCE
5 ROCK BERM
6 BAGGED GRAVEL INLET FILTER
1 TEMPORARY CONSTRUCTION ENTRANCE
30' R.O.W. DEDICATION
CALLED RESIDUE OF 376.27 ACRES (DOC 2006060247504 OPR)
STEPHEN PRESCOTT 7.57 ACRES DOC# 2018-99012010
730
725
SF
SFN



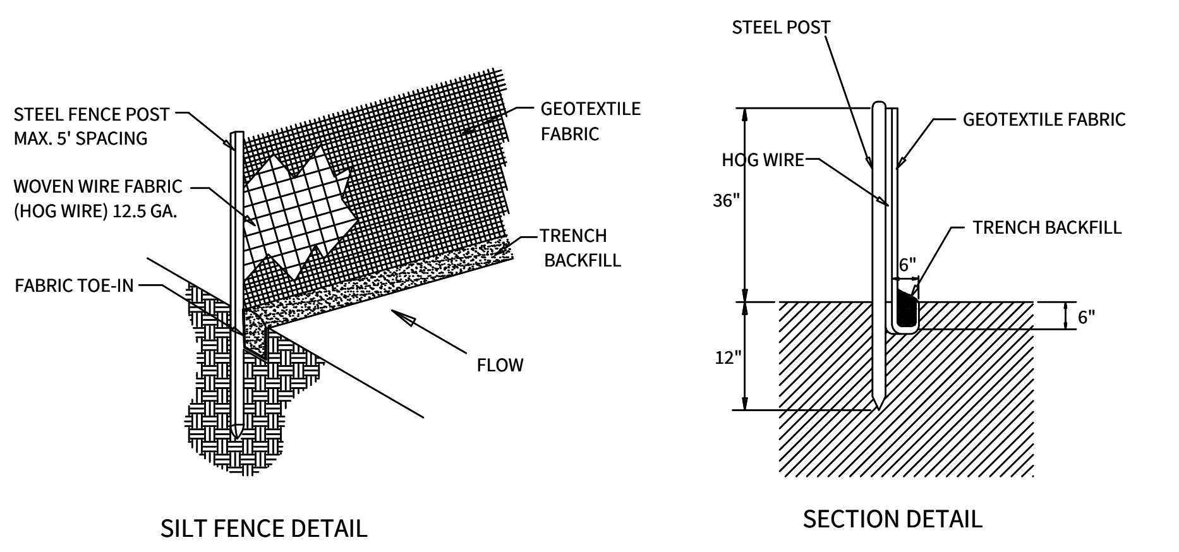


STABILIZED CONSTRUCTION EXIT NOTES:

1. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ON PUBLIC ROADWAY.
2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS MUST BE REMOVED IMMEDIATELY.

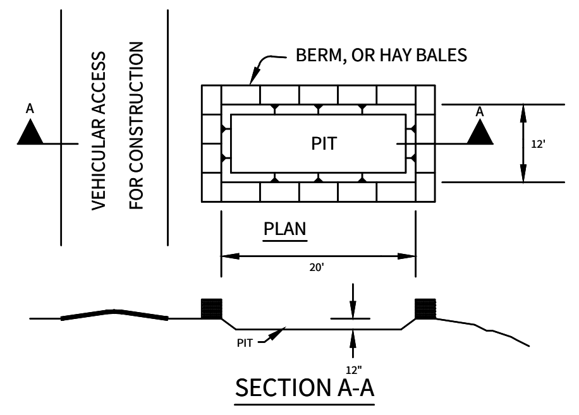
1 TEMPORARY CONSTRUCTION ENTRANCE/EXIT

N.T.S.



2 STANDARD SILT FENCE

N.T.S.



GENERAL NOTES:

- Detail above illustrates minimum dimensions. Pit can be increased in size depending on expected frequency of use. construction traffic.
- If hay bales are used, they shall be placed in accordance with details shown on Exhibit for hay bales.

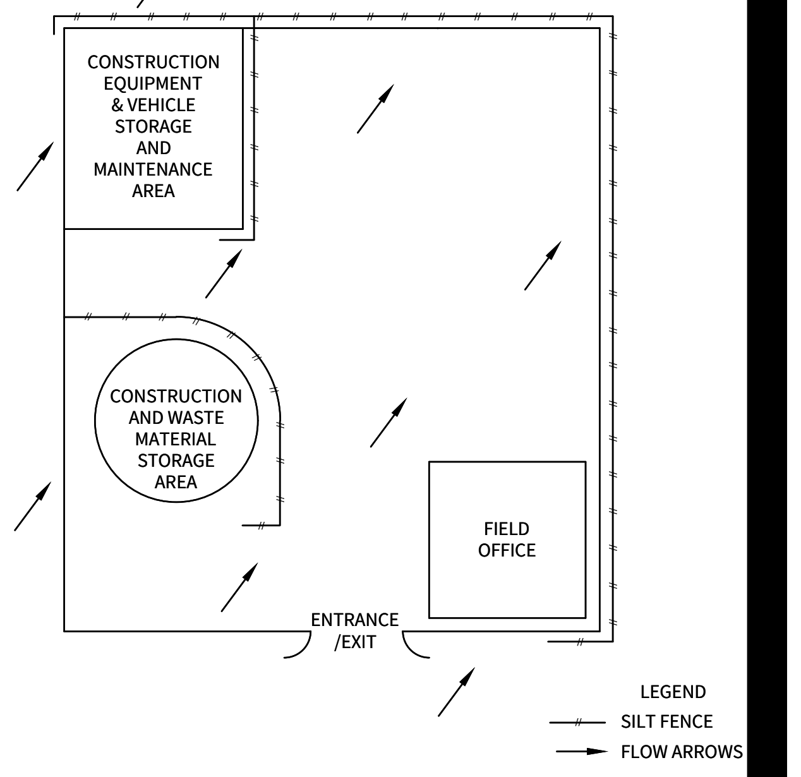
Washout pit shall be located in an area easily accessible to

Washout pit shall not be located in areas subject to inundation from storm water runoff.

- Washout pit shall be lined with a 10-mil thick polyethylene sheeting free of holes, tears and other defects.

3 CONCRETE TRUCK WASHOUT PIT

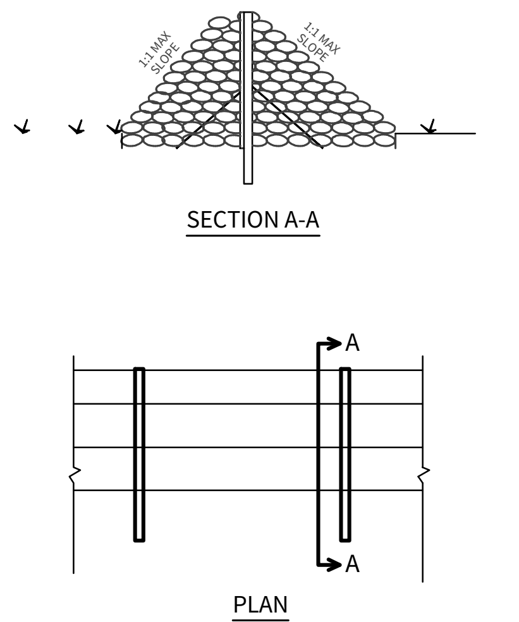
N.T.S.



CONSTRUCTION EQUIPMENT & VEHICLE STORAGE AND MAINTENANCE AREA
CONSTRUCTION AND WASTE MATERIAL STORAGE AREA
FIELD OFFICE
ENTRANCE /EXIT
LEGEND
SILT FENCE
FLOW ARROWS

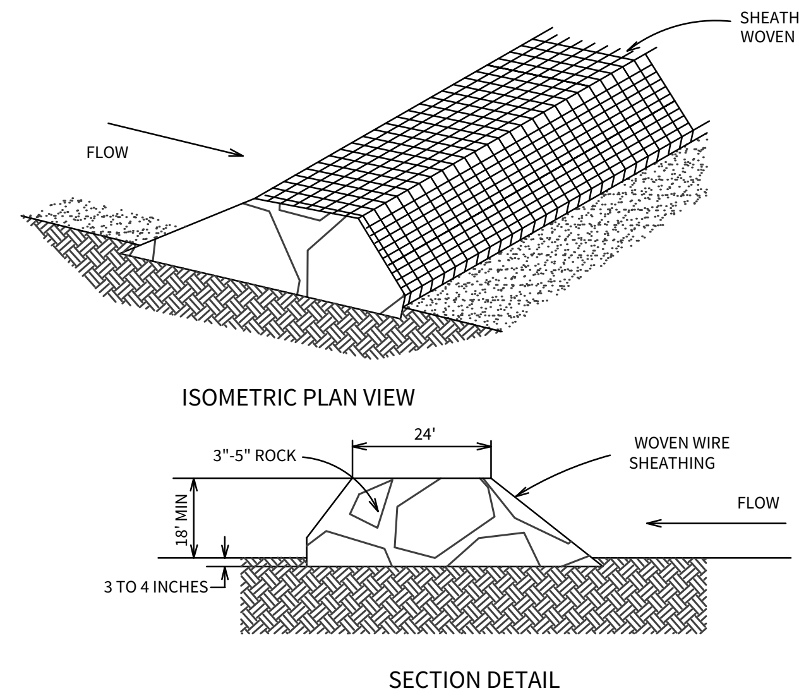
4 TYP. CONSTRUCTION STAGING AREA

N.T.S.



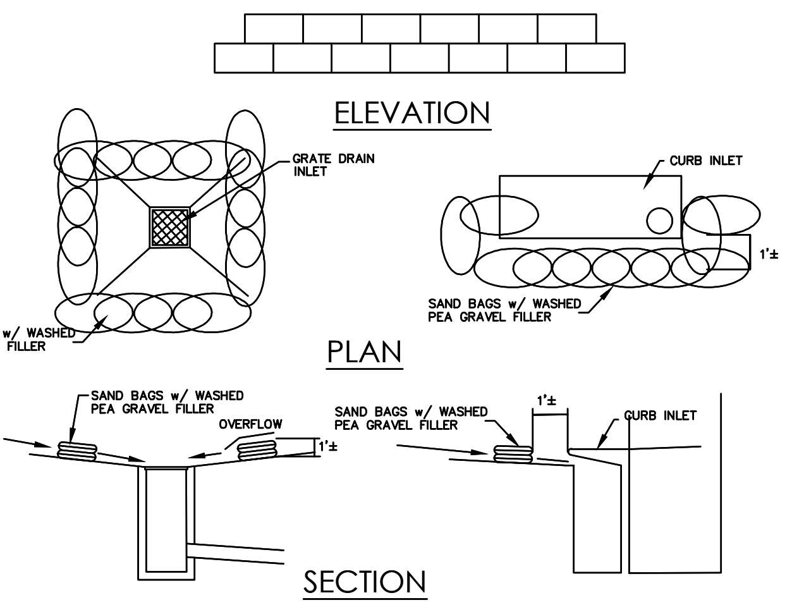
5 ROCK BERM W/ SILT FENCE DETAIL

N.T.S.



ROCK BERM

N.T.S.



BAGGED GRAVEL INLET FILTER NOTES

1. THE GRAVEL BAG MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, POLYAMIDE OR COTTON BURLAP WOVEN FABRIC, MINIMUM UNIT WEIGHT 4 OZ/YD 2 , MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT.
2. THE BAG LENGTH SHOULD BE 24 INCHES, WIDTH SHOULD BE 18 INCHES AND THICKNESS SHOULD BE 6 INCHES.
3. THE GRAVEL BAGS SHOULD BE FILLED WITH ¾" GRAVEL .
4. WHEN A GRAVEL BAG IS FILLED WITH GRAVEL, THE OPEN END OF THE GRAVEL BAG SHOULD BE STAPLED OR TIED WITH NYLON OR POLY CORD.
5. THE GRAVEL BAGS SHOULD BE PLACED AS SHOWN ON THE DETAIL. THE GRAVEL BAGS SHALL BE STACKED TO FORM A CONTINUOUS BARRIER AROUND THE INLETS. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.
6. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
7. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.
8. 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.
9. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

6 BAGGED GRAVEL INLET FILTER NOTES

N.T.S.

CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LANTANA SUBDIVISION
UNIT 1

STORM WATER POLLUTION PREVENTION PLAN

DATE
05/12/2025

PROJECT NO.
04037.003

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

#	DATE	REVISIONS
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9.		

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C101

CUDEENGINEERS.COM

P:\04037\003\2-DWG\4-Plans\C101 STORM WATER POLLUTION PREVENTION PLAN.dwg 2025/05/12 2:04pm tduano

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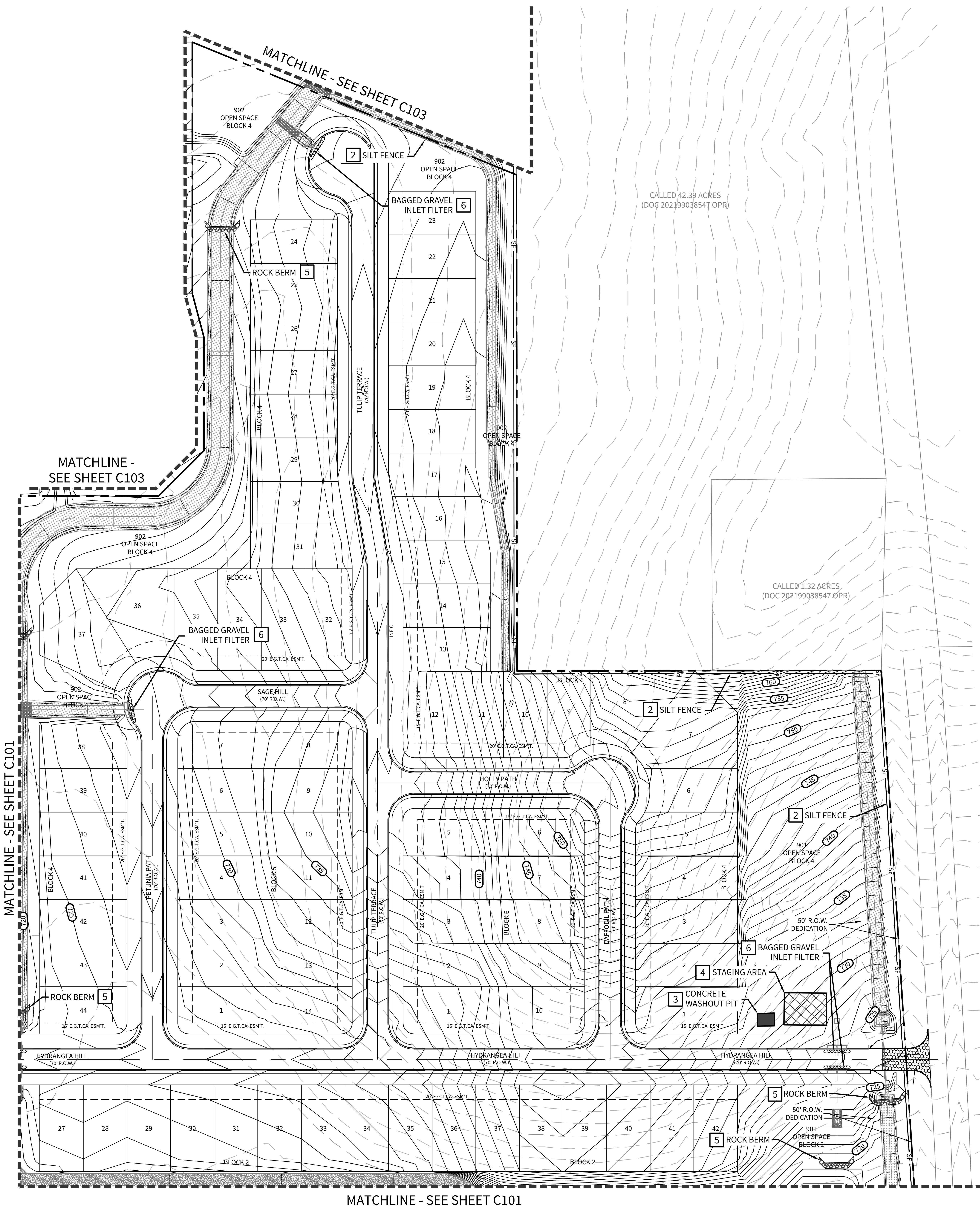
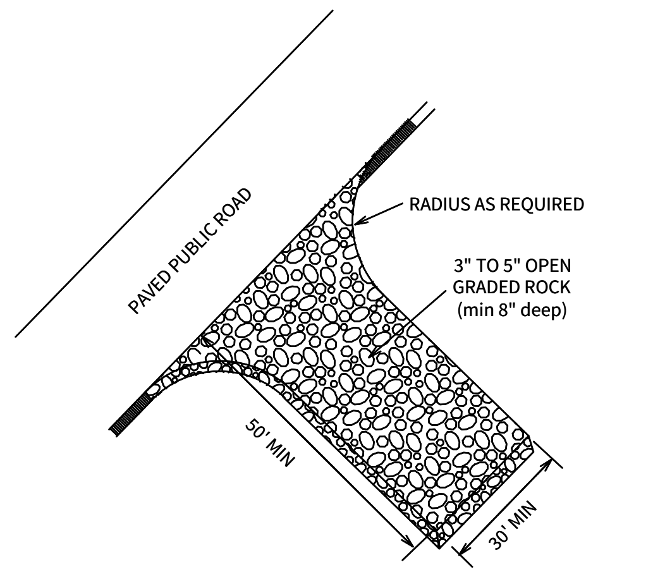

MATCHLINE - SEE SHEET C103
MATCHLINE - SEE SHEET C103
MATCHLINE - SEE SHEET C101
MATCHLINE - SEE SHEET C101
CALLED 42.39 ACRES (DOC 20219038547 OPR)
CALLED 1.32 ACRES (DOC 20219038547 OPR)
902 OPEN SPACE BLOCK 4
901 OPEN SPACE BLOCK 4
901 OPEN SPACE BLOCK 2
BLOCK 2
BLOCK 4
BLOCK 5
BLOCK 6
TULIP TERRACE (70' R.O.W.)
SAGE HILL (70' R.O.W.)
HOLLY PATH (70' R.O.W.)
PETUNIA PATH (70' R.O.W.)
DAFFODIL PATH
HYDRANGEA HILL (70' R.O.W.)
50' R.O.W. DEDICATION
2 SILT FENCE
3 CONCRETE WASHOUT PIT
4 STAGING AREA
5 ROCK BERM
6 BAGGED GRAVEL INLET FILTER
10' E.G.T.CA. ESMT.
15' E.G.T.CA. ESMT.
20' E.G.T.CA. ESMT.

SWPPP MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION



STABILIZED CONSTRUCTION EXIT NOTES:

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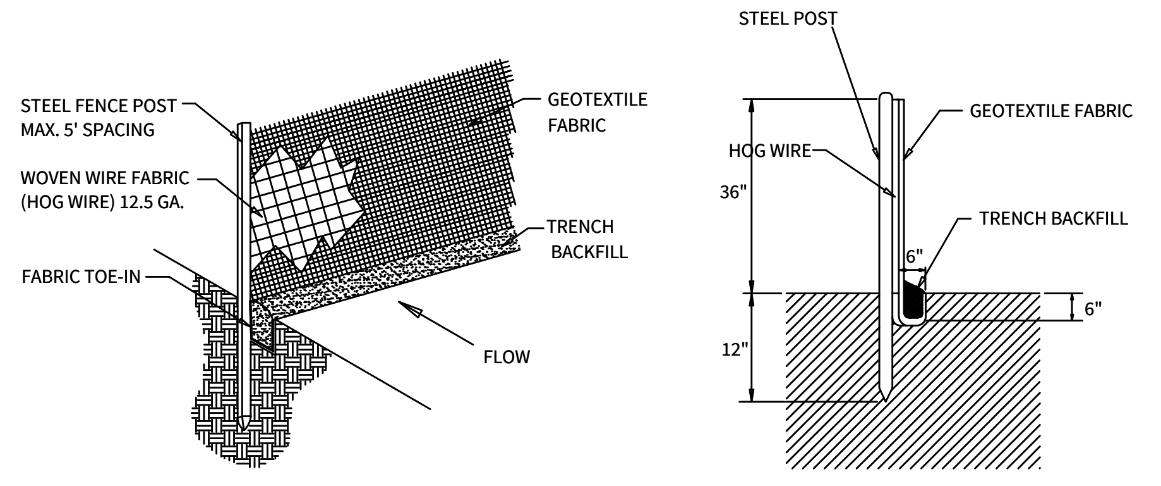
1 TEMPORARY CONSTRUCTION ENTRANCE/EXIT

N.T.S.

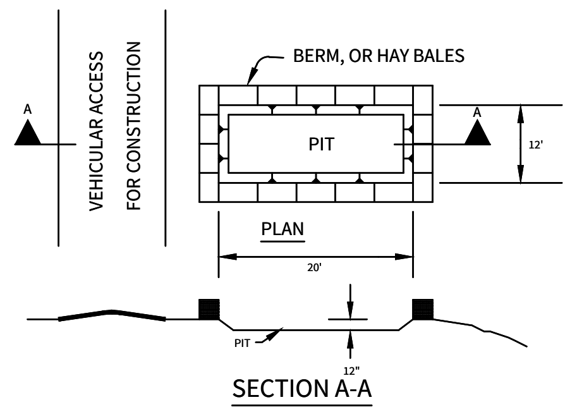


SILT FENCE DETAIL

SECTION DETAIL

2 STANDARD SILT FENCE

N.T.S.



SECTION A-A

GENERAL NOTES:

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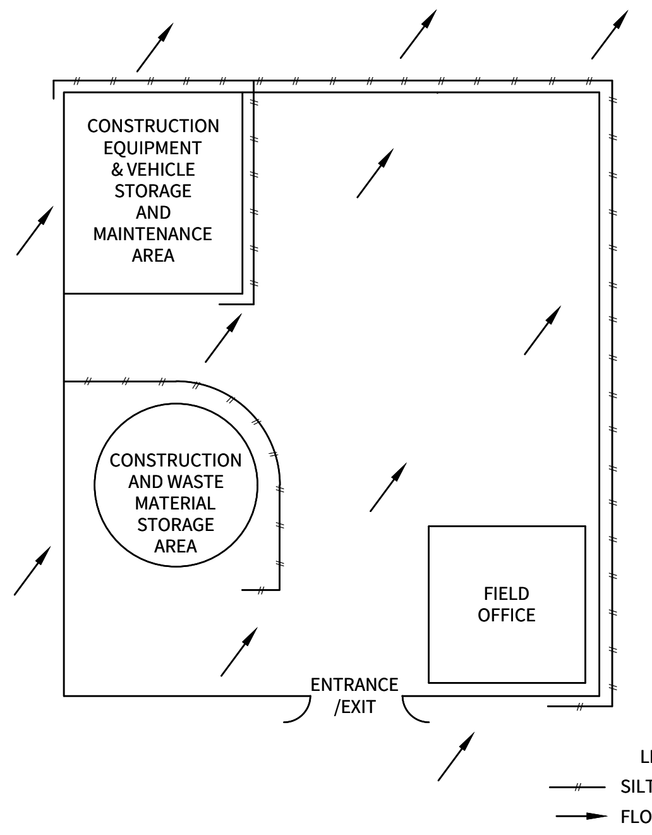
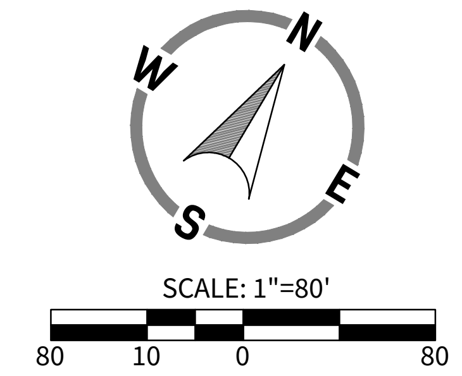
3 CONCRETE TRUCK WASHOUT PIT

N.T.S.


CONSTRUCTION EQUIPMENT & VEHICLE STORAGE AND MAINTENANCE AREA
CONSTRUCTION AND WASTE MATERIAL STORAGE AREA
FIELD OFFICE
ENTRANCE /EXIT
LEGEND
SILT FENCE
FLOW ARROWS

4 TYP. CONSTRUCTION STAGING AREA

N.T.S.



LEGEND

OVERALL UNIT BOUNDARY	— — —
PROPOSED LOT LINE	—
PROPOSED RIGHT OF WAY	—
E.G.T.CA. EASEMENT	- - - -
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
PROPOSED 1' CONTOUR	— 499 —
PROPOSED 5' CONTOUR	— 500 —
BMP ITEM NUMBER	1
PROPOSED TEMPORARY CONSTRUCTION ENTRANCE/EXIT	▩
PROPOSED ROCK BERM	▨
PROPOSED SILT FENCE	— SF —
STAGING AREA	▦
CONCRETE WASHOUT PIT	■

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

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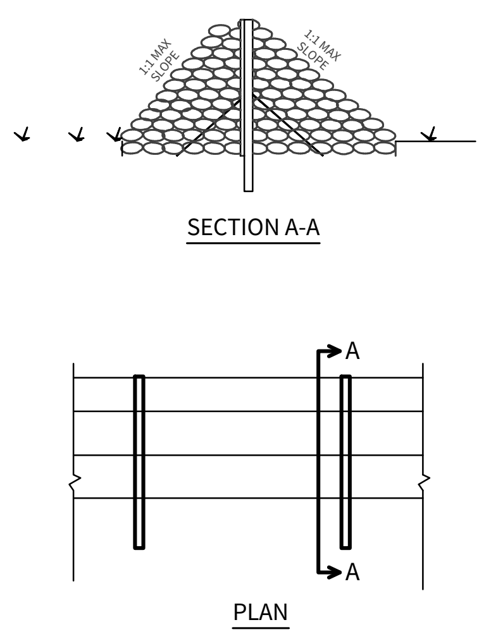
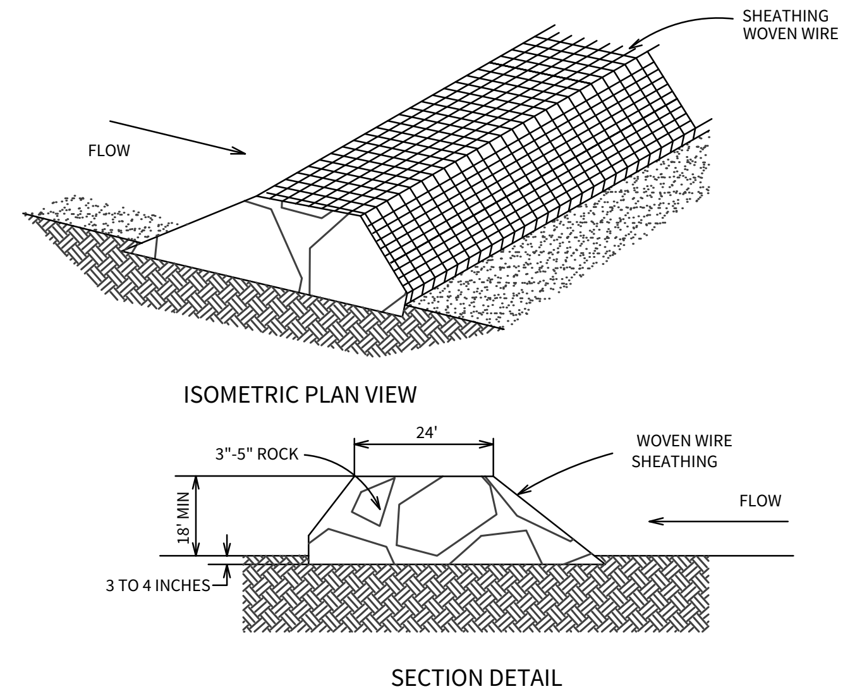


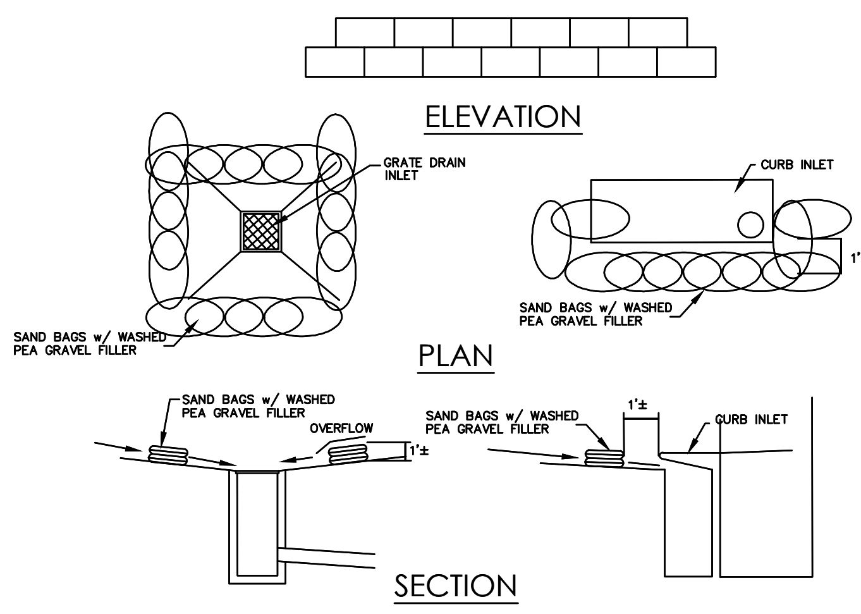
5 ROCK BERM W/ SILT FENCE DETAIL

N.T.S.



ROCK BERM

N.T.S.


ELEVATION
GRATE DRAIN INLET
CURB INLET
1'±
SAND BAGS w/ WASHED PEA GRAVEL FILLER
SAND BAGS w/ WASHED PEA GRAVEL FILLER
PLAN
SAND BAGS w/ WASHED PEA GRAVEL FILLER
OVERFLOW
1'±
SAND BAGS w/ WASHED PEA GRAVEL FILLER
1'±
CURB INLET
SECTION

BAGGED GRAVEL INLET FILTER NOTES

1. THE GRAVEL BAG MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, POLYAMIDE OR COTTON BURLAP WOVEN FABRIC, MINIMUM UNIT WEIGHT 4 OZ/YD 2 , MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT.
2. THE BAG LENGTH SHOULD BE 24 INCHES, WIDTH SHOULD BE 18 INCHES AND THICKNESS SHOULD BE 6 INCHES.
3. THE GRAVEL BAGS SHOULD BE FILLED WITH ¾" GRAVEL .
4. WHEN A GRAVEL BAG IS FILLED WITH GRAVEL, THE OPEN END OF THE GRAVEL BAG SHOULD BE STAPLED OR TIED WITH NYLON OR POLY CORD.
5. THE GRAVEL BAGS SHOULD BE PLACED AS SHOWN ON THE DETAIL. THE GRAVEL BAGS SHALL BE STACKED TO FORM A CONTINUOUS BARRIER AROUND THE INLETS. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.
6. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
7. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.
8. 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.
9. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

6 BAGGED GRAVEL INLET FILTER NOTES

N.T.S.

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LANTANA SUBDIVISION
UNIT 1
STORM WATER POLLUTION PREVENTION PLAN

DATE
05/12/2025
PROJECT NO.
04037.003
DRAWN BY
CG/JG/LJ/TCD
CHECKED BY
XV/AL

#	DATE	REVISIONS
1.		
2.		
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4.		
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6.		
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9.		

JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C102

CUDEENGINEERS.COM

P:\04037\003\2-DWG\4-Plans\C101 STORM WATER POLLUTION PREVENTION PLAN.dwg 2025/05/12 2:04pm tduano

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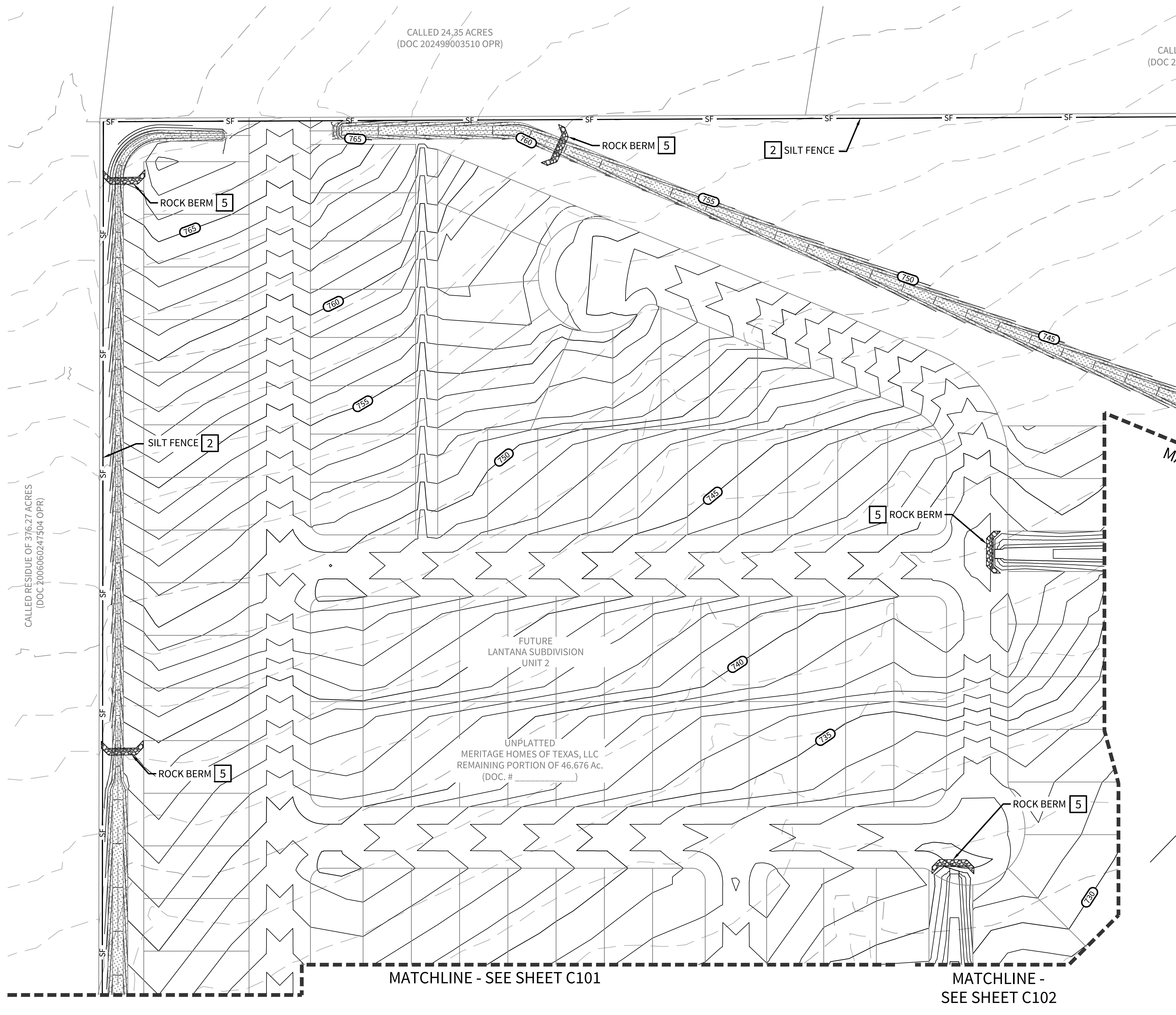


LEGEND

OVERALL UNIT BOUNDARY	— — — —
PROPOSED LOT LINE	———
PROPOSED RIGHT OF WAY	———
E.G.T.CA. EASEMENT	- - - - -
EXISTING 2' CONTOUR	— — 499 — —
EXISTING 10' CONTOUR	— — 500 — —
PROPOSED 1' CONTOUR	——(499)——
PROPOSED 5' CONTOUR	——(500)——
BMP ITEM NUMBER	1
PROPOSED TEMPORARY CONSTRUCTION ENTRANCE/EXIT	▨
PROPOSED ROCK BERM	▨
PROPOSED SILT FENCE	—— SF ——
STAGING AREA	▨
CONCRETE WASHOUT PIT	■

W N E S

SCALE: 1"=80'

80 10 0 80

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

1. STORM WATER MANAGEMENT FACILITIES MUST BE INSTALLED PRIOR TO SITE CONSTRUCTION. SUBD. ORD. 6.01.003
2. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION
3. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.
4. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.
5. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE, ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

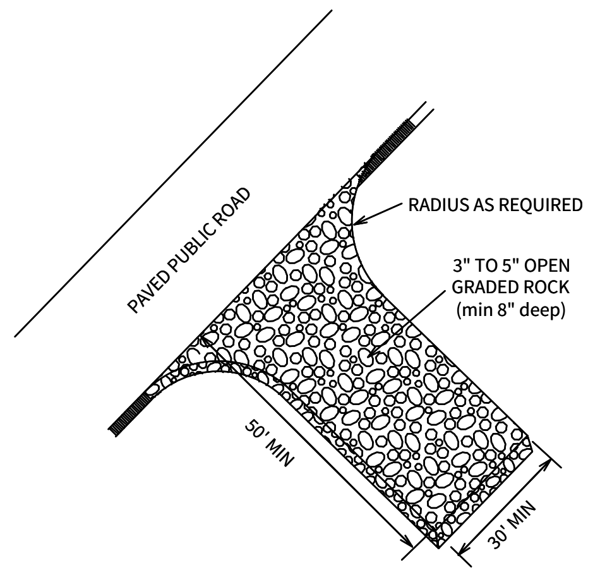
INSPECTIONS:

DESIGNATED AND QUALIFIED PERSON(S) SHALL INSPECT POLLUTION CONTROL MEASURES EVERY SEVEN DAYS AND WITHIN 24 HOURS AFTER A STORM EVENT GREATER THAN 0.5 INCHES OF RAINFALL, AN INSPECTION REPORT THAT SUMMARIZES THE SCOPE OF THE INSPECTION, NAMES AND QUALIFICATIONS OF PERSONNEL CONDUCTING THE INSPECTION, DATE OF THE INSPECTION, MAJOR OBSERVATIONS, AND ACTIONS TAKEN AS A RESULT OF THE INSPECTION SHALL BE RECORDED AND MAINTAINED AS PART OF STORM WATER TPDES DATA FOR A PERIOD OF THREE YEARS AFTER THE DATE OF THE INSPECTION. COPY OF THE INSPECTION REPORT FORM IS PROVIDED IN THIS STORM WATER POLLUTION PREVENTION PLAN.

AS A MINIMUM, THE INSPECTOR SHALL OBSERVE: (1) SIGNIFICANT DISTURBED AREAS FOR EVIDENCE OF EROSION, (2) STORAGE AREAS FOR EVIDENCE OF LEAKAGE FROM THE EXPOSED STORED MATERIALS, (3) STRUCTURAL CONTROLS (ROCK BERM OUTLETS. SILT FENCES, DRAINAGE SWALES, ETC.) FOR EVIDENCE OF FAILURE OR EXCESS SILTATION (OVER 6 INCHES DEEP). (4) VEHICLE EXIT POINT FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING, (5) VEHICLE STORAGE AREAS FOR SIGNS OF LEAKING EQUIPMENT OR SPILLS, AND (6) CONCRETE TRUCK RINSE-OUT PIT FOR SIGNS OF POTENTIAL FAILURE. DEFICIENCIES NOTED DURING THE INSPECTION WILL BE CORRECTED AND DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION OR BEFORE THE NEXT ANTICIPATED STORM EVENT IF PRACTICABLE.

NOTES

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, EASEMENTS AND LOTS.
3. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
4. THE CITY AND/OR COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.



STABILIZED CONSTRUCTION EXIT NOTES:

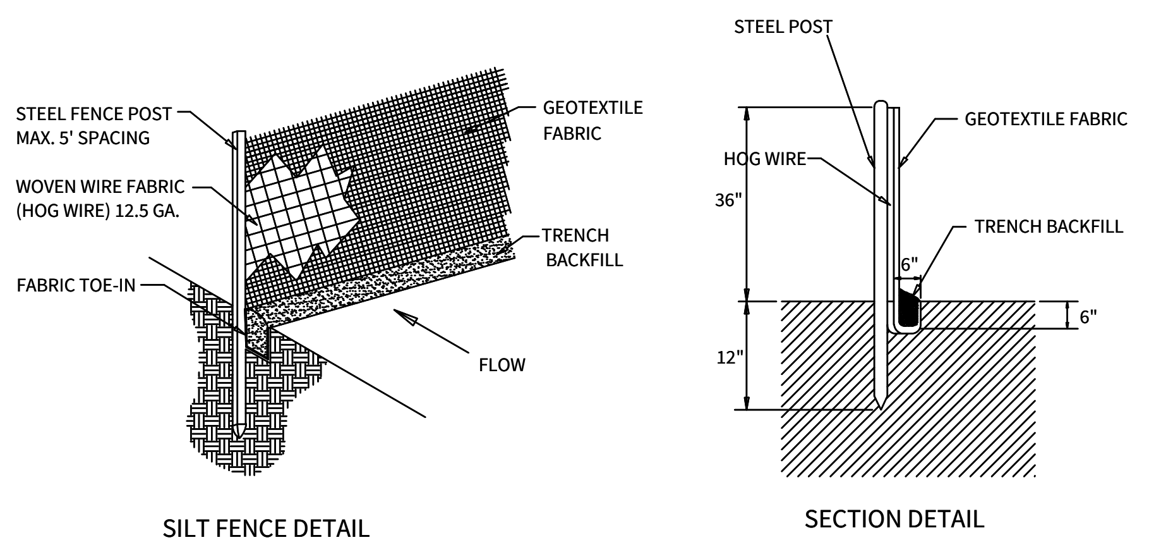
1. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ON PUBLIC ROADWAY.
2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS MUST BE REMOVED IMMEDIATELY.

1 TEMPORARY CONSTRUCTION ENTRANCE/EXIT

N.T.S.

SWPPP MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION

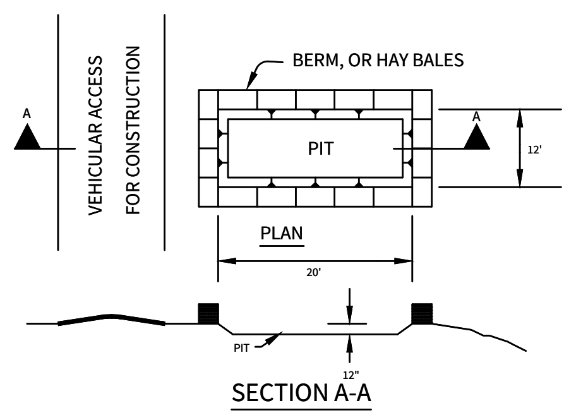


SILT FENCE DETAIL

SECTION DETAIL

2 STANDARD SILT FENCE

N.T.S.



SECTION A-A

GENERAL NOTES:

- Detail above illustrates minimum dimensions. Pit can be increased in size depending on expected frequency of use. construction traffic.
- If hay bales are used, they shall be placed in accordance with details shown on Exhibit for hay bales.

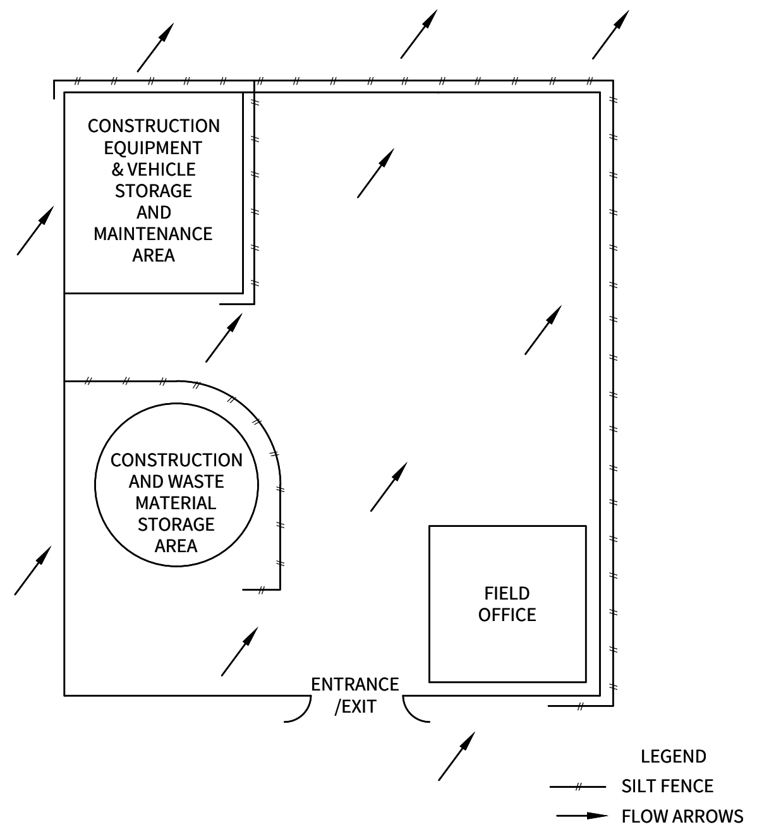
Washout pit shall be located in an area easily accessible to

Washout pit shall not be located in areas subject to inundation from storm water runoff.

- Washout pit shall be lined with a 10-mil thick polyethylene sheeting free of holes, tears and other defects.

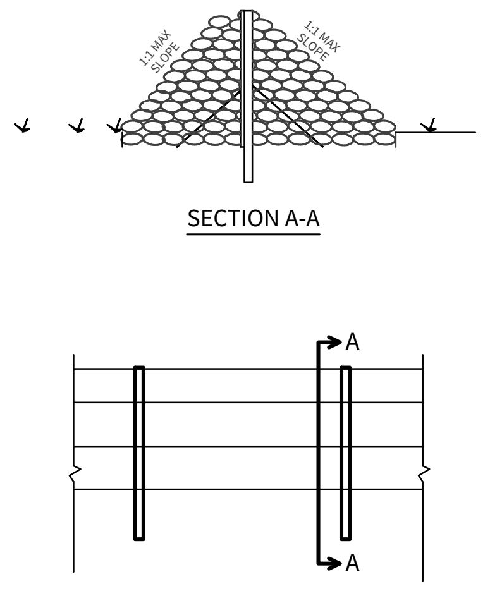
3 CONCRETE TRUCK WASHOUT PIT

N.T.S.



4 TYP. CONSTRUCTION STAGING AREA

N.T.S.

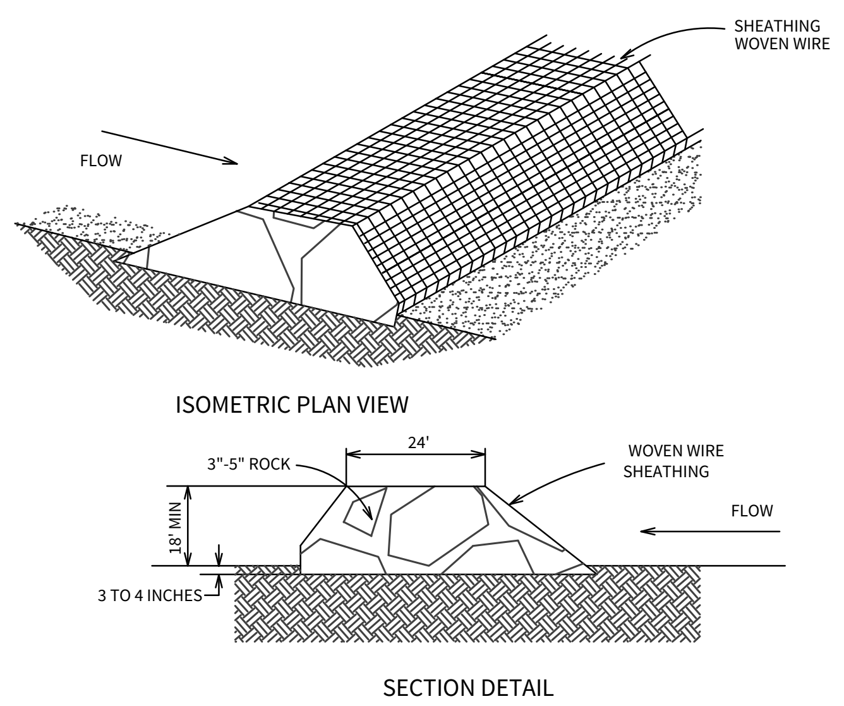


SECTION A-A

PLAN

5 ROCK BERM W/ SILT FENCE DETAIL

N.T.S.

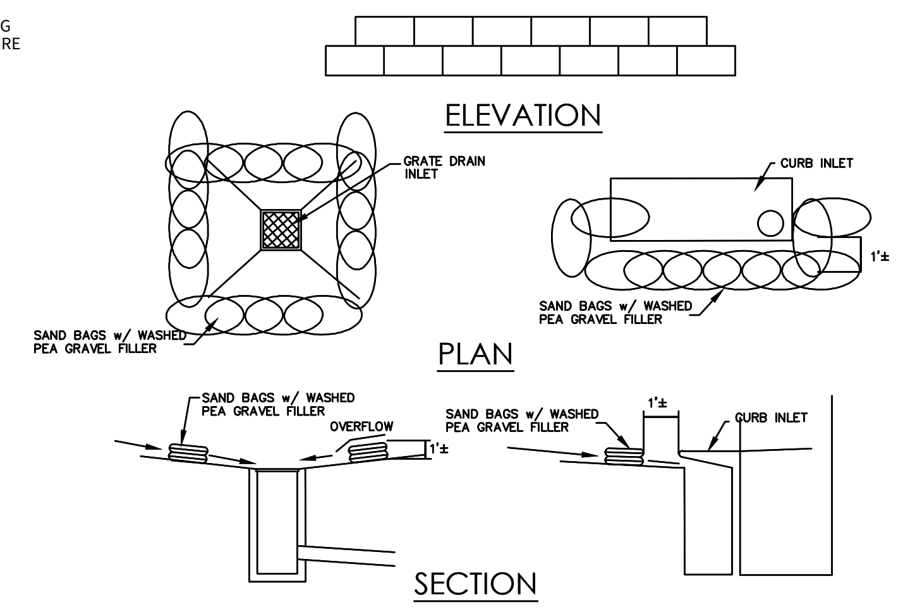


ISOMETRIC PLAN VIEW

SECTION DETAIL

ROCK BERM

N.T.S.



ELEVATION

PLAN

SECTION

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JAVIER CASTELLO
122170
5/12/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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PLAN LEGEND

	EQUIPMENT CONNECTION
J	JUNCTION OR CONNECTION BOX
LC	STARTER OR LIGHTING CONTACTOR
	DISCONNECT SWITCH
MH	MANHOLE
HH	HANDHOLE
#	KEYED NOTE. NUMBER MATCHES NOTE NUMBER
$	TOGGLE SWITCH, WALL MOUNTED, SINGLE POLE SINGLE THROW. MOUNTED 54 IN. AFF. UNLESS OTHERWISE NOTED.
$₄	TOGGLE SWITCH, WALL MOUNTED, FOUR WAY. MOUNTED 54 IN. AFF. UNLESS OTHERWISE NOTED.
$M	SWITCH MOTOR RATED WITH TERMINAL OVERLOADS
◆OS	OCCUPANCY SENSOR
	TERMINAL BOARD
	TELEPHONE OUTLET, PRIVATE. MOUNTED 12 IN. AFF.
▽	DATA OUTLET, SURFACED MOUNTED
#	MOTOR LOAD, NUMBER INDICATES HORSEPOWER
○	POLE
	TRANSFORMER , DRY TYPE, KVA RATING MAY BE DISPLAYED NEXT TO SYMBOL
	ANTENNA
###	HOMERUN, LETTERS INDICATE PANELBOARD, NUMBERS INDICATE CIRCUIT NUMBER IN PANELBOARD
	CONDUIT CAPPED FOR FUTURE USE
	CONDUIT GOING DOWN
	CONDUIT GOING UP
	CONDUIT ABOVE GROUND
	CONDUIT RUN UNDERGROUND OR CONCEALED
	CONDUIT RUN BELOW CONCRETE
	LIQUID TIGHT FLEXIBLE CONDUIT
⊥	SURFACE MOUNT
	120V RECEPTACLE FLUSH MOUNTED
	120V RECEPTACLE SURFACE MOUNTED
	120V QUAD RECEPTACLE FLUSH MOUNTED
	120V QUAD RECEPTACLE SURFACE MOUNTED
	208V RECEPTACLE FLUSH MOUNTED
	208V RECEPTACLE SURFACE MOUNTED
	WELDING OUTLET
T	THERMOSTAT
	PANELBOARD FLUSH MOUNTED
	PANELBOARD SURFACE MOUNTED
	NORTH ARROW
TS	TORQUE SWITCH
SV	SOLENOID SWITCH
LS	LIMIT SWITCH
AS	AMMETER SWITCH
VS	VOLTMETER SWITCH
PS	PRESSURE SWITCH
LC	LIGHTING CONTACTOR
PC	PHOTOCELL

GROUNDING LEGEND

⊙	A=GROUNDING RECEPTACLE; B=GROUND TEST WELL
	BARE COPPER GROUNDING CONDUCTOR
	GROUNDING CONNECTION
	COPPER CLAD GROUND ROD

ONE-LINE AND CONTROL SCHEMATIC LEGEND

	GROUND CONNECTION
	NORMALLY OPEN RELAY OR CONTACTOR CONTACTS
	NORMALLY CLOSED RELAY OR CONTACTOR CONTACTS
	CONDUCTOR CONNECTION
TEXT	CIRCUIT BREAKER, MOLDED CASE, TRIP CURRENT AND QUANTITY OF POLES (P) SHOWN NEXT TO SYMBOL
TEXT	DISCONNECT SWITCH NON-FUSED, LOAD BREAK. CONTINUOUS CURRENT RATING, QUANTITY OF POLES (P) SHOWN NEXT TO SYMBOL
TEXT	DISCONNECT SWITCHED FUSED, LOAD BREAK. CONTINUOUS CURRENT RATING, QUANTITY OF POLES (P), AND FUSE RATING SHOWN NEXT TO SYMBOL
TEXT	FUSE. RATING SHOWN NEXT TO SYMBOL
	MOTOR STARTER THERMAL OVERLOAD PROTECTOR
CR##	CONTACTOR OR RELAY COIL. LETTERS AND NUMBERS MATCH CONTACTS CONTROLLED
	LIMIT SWITCH NORMALLY CLOSED
	LIMIT SWITCH NORMALLY OPEN
	MOTOR OPERATED VALVE GEARED LIMIT SWITCH
	PRESSURE SWITCH NORMALLY CLOSED OPEN ON INCREASING PRESSURE
	PRESSURE SWITCH NORMALLY OPEN CLOSES ON INCREASING PRESSURE
	LEVEL SWITCH NORMALLY CLOSED OPEN ON INCREASING LEVEL
	LEVEL SWITCH NORMALLY OPEN CLOSES ON INCREASING LEVEL
	FLOW SWITCH NORMALLY CLOSED OPENS WITH FLOW
	FLOW SWITCH NORMALLY OPEN CLOSES ON PRESENCE OF FLOW
	SPACEHEATER
ØF	PHASE FAILURE RELAY
STOP START	MAINTAINED CONTACT START/STOP PUSHBUTTON
OFF HAND AUTO AUTO HAND	MAINTAINED CONTACT HAND-OFF-AUTO SELECTOR SWITCH
	NORMALLY CLOSED MOMENTARY CONTACT PUSHBUTTON
	NORMALLY OPEN MOMENTARY CONTACT PUSHBUTTON

WYE	WYE TRANSFORMER CONNECTION
DELTA	DELTA TRANSFORMER CONNECTION
CT ###:#	CURRENT TRANSFORMER WITH RATIO SHOWN
AIT	ANALYTICAL TRANSMITTER
FS	FLOW OR FLOAT SWITCH
LT	LEVEL TRANSMITTER
PT	PRESSURE TRANSMITTER
SV	SOLENOID VALVE
MOV	MOTOR OPERATED VALVE
ETM	ELAPSED TIME METER
TD 0-10 MIN. TOE	TIME DELAY RELAY. TIMES OUT AFTER ENERGIZATION. ADJUSTABLE TIME DELAY TIME INDICATED NEXT TO SYMBOL.
TD 0-10 MIN. TOD	TIME DELAY RELAY. TIMES OUT AFTER DE-ENERGIZATION. ADJUSTABLE TIME DELAY TIME INDICATED NEXT TO SYMBOL.
XXX###	CONDUIT TAG
?	PILOT LIGHT. R=RED, B=BLUE, G-GREEN, A=AMBER, Y=YELLOW
480V 120V	CONTROL POWER TRANSFORMER. PRIMARY AND SECONDARY VOLTAGE INDICATED
PT	CPT = CONTROLS POWER/INSTRUMENT TRANSFORMER
15 KVA 480V 120/240V	PT = POWER TRANSFORMER. VOLTAGE AND KVA RATING AS SHOWN
TV	TELEVISION CAMERA
TQ	TORQUE SWITCH
A	AMMETER
V	VOLTMETER
LA	LIGHTING ARRESTOR
CAP	SURGE CAPACITOR
MCP SIZE 1 FVNR	MOTOR STARTER FVNR = FULL VOLTAGE NON-REVERSING FVR = FULL VOLTAGE REVERSING MCP = MOTOR CIRCUIT PROTECTOR RVNR = REDUCED VOLTAGE NON-REVERSING RVSS = REDUCED VOLTAGE SOFT START SIZE = NEMA STARTER SIZE

LIGHTING FIXTURE LEGEND

"A"	LED STRIP LIGHT; LETTER IN OR BESIDE FIXTURE IDENTIFIES IN FIXTURE SCHEDULE
"A"	LED STRIP LIGHT WITH BATTERY BACKUP; LETTER IN OR BESIDE FIXTURE IDENTIFIES IN FIXTURE SCHEDULE
?	LED FIXTURE, SURFACE OR SUSPENDED, CEILING MOUNTED
?	LED FIXTURE, STANCHION MOUNTED
?	LED FIXTURE, WALL MOUNTED
"X"	LED LIGHTED EXIT SIGN; LETTER IN OR BESIDE FIXTURE IDENTIFIES IN FIXTURE SCHEDULE
"D"	REMOTE EMERGENCY LIGHTS

"D"	POLE MOUNTED LED LUMINAIRE. SEE SCHEDULE OR NOTES FOR FIXTURE TYPE. ORIENT FIXTURE FOR CUT-OFF TOWARDS AREA TO BE LIT. ORIENT HOUSE SHIELD TOWARDS BUILDING. SEE DETAILS FOR POLE BASE. PROVIDE POLE CASE GROUND ROD.
"E"	EMERGENCY LED LIGHT FIXTURE, SELF CONTAINED, BATTERY OPERATED
"D"	PAR LAMP HOLDER. NUMBER OF TRIANGLES INDICATE NUMBER OF FIXTURES.
"D"	POLE MOUNTED FLOOR LIGHT. NUMBER OF TRIANGLES INDICATE NUMBER OF FIXTURES. ARROW DENOTES FLOODING AND DIRECTION POLE FOLDS DOWN.

ABBREVIATIONS

1/C	ONE CONDUCTOR
3/C	THREE CONDUCTOR
A	AMPERES OR TRIP AMPERES
AC	ALTERNATING CURRENT
A/C	AIR CONDITIONING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	SYMMETRICAL AMPERES INTERRUPTING CAPACITY
BLDG	BUILDING
BKR	BREAKER
C	CONDUIT
CAP	CAPACITOR
CKT	CIRCUIT
CONT'D	CONTINUED
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRNASFORMER
CU	COPPER
DBL	DOUBLE
DISC SW.	DISCONNECT SWITCH
DC	DIRECT CURRENT
EMER.	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL.	ENCLOSURE
EP	EXPLOSION PROOF
EQUIP.	EQUIPMENT
FS	FLOAT SWITCH
G	GROUND WIRE
GALV.	GALVANIZED
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER CIRCUIT
GND	GROUND
HDG	HOT DIPPED GALVANIZED
HPS	HIGH PRESSURE SODIUM
HT	HEIGHT
HZ	HERTZ
INST.	INSTRUMENT
KV	KILOVOLTS
KVA	KILOVOLTS AMPERES
KWH	KILOWATT HOURS
LA	LIGHTNING ARRESTOR
LPR	LIGHTING PROTECTION RELAY
L-L	LINE TO LINE
L-N	LINE TO NEUTRAL

MCC	MOTOR CONTROL CENTER
MFR	MANUFACTURER
MIN.	MINIMUM
MPR	MOTOR PROTECTION RELAY
MTD	MOUNTED
MTG	MOUNTING
MRCT	MULTI-RATIO CURRENT TRANSFORMER
MV	MERCURY VAPOR
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NEUT.	NEUTRAL
N.O.	NORMALLY OPEN
N.T.S.	NOT TO SCALE
OC	ON CENTER
OH	OVERHEAD
P	POLE
PC	PHOTOCELL
PH	PHASE
PNL	PANEL
PRI	PRIMARY
PVC	POLYVINYL CHLORIDE
REQ'D	REQUIRED
SCH	SCHEDULE
SEC	SECONDARY
S/N	SOLID NEUTRAL
SPACE	SPACE(S) ONLY - NO BREAKER OR DEVICE
SPARE	SPARE BREAKER OR DEVICE
SPECS	SPECIFICATIONS
S.D. BARE	SOFT DRAWN BARE
SS HDWE	STAINLESS STEEL HARDWARE
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TB	TERMINAL BLOCK
TYP.	TYPICAL
UL	UNDERWRITERS LABORATORIES
V	VOLTS
VA	VOLT AMPERES
W	WATTS
W/	WITH
W/O	WITHOUT
WP	WEATHERPROOF
XFMR	TRANSFORMER

LEGEND & GENERAL NOTES:

1. BRANCH CIRCUIT NUMBERS MAY BE SHOWN NEXT TO SYMBOLS IN MULTIWIRE CIRCUITS.
2. SYMBOL SIZE DOES NOT IMPLY EQUIPMENT SIZE UNLESS OTHERWISE NOTED.
3. LOWER CASE LETTERS NEXT TO SYMBOLS INDICATE FIXTURE(S) CONTROLLED BY THE SWITCH DISPLAYING THE SAME LETTER.
4. THIS IS A STANDARD LEGEND LIST ALL SYMBOLS MAY NOT BE USED.
5. INSTALLATION SHALL BE PER LATEST VERSION OF NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL CODES, ORDINANCES. NOT ALL CODE AND STANDARD REQUIREMENTS MAY BE SHOWN ON PLANS. CONTRACTOR SHALL ADHERE TO CODES AND STANDARDS REGARDLESS OF BEING SHOWN ON PLANS OR SPECIFICATIONS IN DETAILED FASHION.

ISSUED FOR REVIEW

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LATANA
LIFT STATION

ELECTRICAL ABBREVIATIONS, LEGENDS, AND GENERAL NOTES

DATE
05-06-2025

PROJECT NO.
212-2402

DRAWN BY
TAD

CHECKED BY
JNO

REVISIONS

DATE

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INTERIM REVIEW
Not intended for construction, bidding or permit purposes.
Engineer: ERIC W. BURRER
P.E. Seal No.: 100158
Date: MAY 06, 2025
BURRER ENG, INC. (F–20420)

BURRER ENGINEERING
TBPE No. F-20420

E-001

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GENERAL NOTES:

1. INSTALLATION SHALL BE PER LATEST VERSION OF NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL CODES/ORDINANCES. NOT ALL CODE AND STANDARD REQUIREMENTS MAY BE SHOWN ON PLANS. CONTRACTOR SHALL ADHERE TO CODES AND STANDARDS REGARDLESS OF BEING SHOWN ON PLANS OR SPECIFICATIONS IN DETAILED FASHION.

2. THE NOTES CONTAINED ON THIS SHEET ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR WHEN WORKING IN THE FIELD.

3. ALL EQUIPMENT, WIRING, ETC. SHALL BE INSTALLED AND GROUNDED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, LOCAL CODES, AND INDUSTRY STANDARDS (I.E. UL, NEMA, IEEE, ANSI, ETC.) THE DRAWING NOTES AND DETAILS SHALL BE COMPLIED WITH, IN ADDITION TO THE REQUIREMENTS IN THE SPECIFICATIONS.

4. ALL RACEWAY INSTALLATIONS SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. ALL EXPOSED RACEWAY SHALL BE INSTALLED PARALLEL TO BEAMS, CEILINGS, FLOORS AND WALLS.

5. CONDUITS SHALL BE TERMINATED IN A NEAT AND WORKMANLIKE MANNER STRICTLY IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND THE NATIONAL ELECTRICAL CODE.

6. CONDUITS TERMINATED INTO ENCLOSURES SHALL BE PERPENDICULAR TO THE WALLS OF THE ENCLOSURE. THE USE OF SHORT SEAL TIGHT ELBOW FITTINGS FOR SUCH TERMINATIONS WILL NOT BE PERMITTED.

7. ALL RACEWAY INSTALLATIONS, CROSSING EXPANSION JOINTS OR TRANSITIONS FROM BELOW GRADE TO EXPOSED ABOVE GRADE, SHALL HAVE EXPANSION OR EXPANSION/DEFLECTION TYPE FITTINGS AS SPECIFIED FOR THE APPLICATION. CONTRACTOR SHALL COORDINATE WITH VENDORS AND MANUFACTURER'S AS REQUIRED.

8. NO CONDUIT SMALLER THAN 1 IN., NOR WIRE SMALLER THAN NO. 12 AWG CU, SHALL BE PERMITTED UNLESS SPECIFICALLY NOTED.

9. ALL UNDERGROUND SINGLE CONDUITS, AND DUCTBANKS WITH MULTIPLE CONDUITS, SHALL BE RIGID PVC SCHEDULE 80 CONDUIT ENCASED IN REINFORCED RED CONCRETE. CONCRETE SHALL BE DYED RED PRIOR TO PLACEMENT. THE CONTRACTOR SHALL FIELD VERIFY THE ROUTING OF ALL EXISTING UNDERGROUND UTILITIES. CONTRACTOR MAY UTILIZE MEDIUM WALL REINFORCED THERMOSETTING RESIN (MW--RTRC) IN LIEU OF PVC SCH 80.

10. ALL CHANGES OF DIRECTION GREATER THAN 20 DEGREES IN UNDERGROUND SINGLE, OR DUCTBANKS OF MULTIPLE CONDUITS, SHALL BE ACCOMPLISHED USING PVC COATED RGS LONG RADIUS BENDS. BENDS OF PVC CONDUIT GREATER THAN 20 DEGREES, OR THE USE OF FLEXIBLE CONDUIT OF ANY TYPE, WILL NOT BE PERMITTED.

11. LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT SHALL BE USED FOR THE PRIMARY AND SECONDARY OF TRANSFORMERS, GENERATOR TERMINATIONS, AND OTHER EQUIPMENT WHERE VIBRATION IS PRESENT. USE IN OTHER LOCATIONS IS NOT PERMITTED EXCEPT FOR CONNECTIONS TO INSTRUMENTATION TRANSMITTERS WHERE MULTIPLE PENETRATIONS ARE REQUIRED.

12. LIQUID TIGHT FLEXIBLE ALUMINUM CONDUIT SHALL HAVE A MAXIMUM LENGTH NOT GREATER THAN THAT OF A FACTORY MANUFACTURED LONG BEND RADIUS ELBOW OF CONDUIT TRADE SIZE USED. THE MAXIMUM BENDING RADIUS SHALL NOT BE LASS THAN THAT SHOWN IN NEC CHAPTER 9, TABLE 2.

13. THE WIRING DIAGRAMS, BLOCK DIAGRAMS, QUANTITIES, SIZE OF WIRES, AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT APPROVED.

14. ALL MODIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THE BASIC SEQUENCE AND METHOD OF CONTROL SHALL BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFIED.

15. ALL JUNCTION BOXES AND TERMINATION BOXES SHALL BE NEMA 4X STAINLESS STEEL.

16. WHERE RACEWAYS ENTER JUNCTION BOXES OR CONTROL PANELS CONTAINING ELECTRICAL OR INSTRUMENTATION EQUIPMENT, ALL ENTRANCES SHALL BE SEALED WITH LIQUID TIGHT SEALANT. TOP PENETRATIONS ARE NOT ACCEPTABLE.

17. ALL EQUIPMENT AND ELECTRICAL EQUIPMENT ENCLOSURE LOCATIONS, OR TERMINAL BOX LOCATIONS ARE APPROXIMATE. THE EXACT LOCATIONS SHALL BE COORDINATED WITH AND APPROVED BY OWNER/ENGINEER DURING CONSTRUCTION AT NO ADDITIONAL COST TO OWNER.

18. ALL EQUIPMENT AND ELECTRICAL EQUIPMENT DIMENSIONS ARE APPROXIMATE. ALL EQUIPMENT AND ELECTRICAL ENCLOSURES SHALL BE VERIFIED WITH EQUIPMENT SUPPLIERS. ALLOW FOR LOCATION CHANGES UP TO 40 FEET FOR ALL EQUIPMENT. INCLUDE IN BID PRICE. THE EXACT LOCATIONS OF ALL ELECTRICAL EQUIPMENT AND ROUTING OF ALL CABLES/CONDUITS SHALL BE COORDINATED WITH, AND APPROVED, BY THE OWNER/ENGINEER DURING CONSTRUCTION.

19. FINAL ROUTING PATH IS ULTIMATE RESPONSIBILITY OF CONTRACTOR.

20. PROVIDE CONDUIT SEALS FOR CONDUIT PENETRATIONS.

21. ALL SLOTTED CHANNEL, STRUT, WASHERS, SCREWS, NUTS, CONDUIT CLAMPS, ALL THREAD SPRING NUTS, AND MISCELLANEOUS MOUNTING HARDWARE SHALL BE 316 S.S.

22. LIGHTING FIXTURES SHALL BE MOUNTED ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS. THE MOUNTING HEIGHT SHALL BE MEASURED FROM THE BOTTOM OF THE LIGHTING FIXTURE TO FINISHED FLOOR.

23. ALL CONDUITS AND WIRES SHOWN ON THE CONSTRUCTION DRAWINGS SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. GROUPING OF CONDUIT AND WIRE MAY BE MODIFIED IF APPROVED BY OWNER AND ENGINEER.

24. ALL CONDULETS SHALL HAVE 316 S.S. CLAMP COVERS WITH 316 S.S. CLAMPS AND SCREWS. SCREW DOWN COVERS ARE UNACCEPTABLE.

25. ALL BARE COPPER GROUNDING CONDUCTORS SHALL BE TINNED. ALL GROUND RODS SHALL BE COPPER CLAD STEEL 3/4 IN. BY 10 FT. LONG. ALL EXPOSED COPPER GROUND CABLES SHALL BE GREEN INSULATED CONDUCTORS. PROVIDE XHHW-2 INSULATION.

26. WHERE NOTES ON THE DRAWINGS INDICATED THAT THE CONTRACTOR SHALL FIELD-VERIFY, THE INTENT IS FOR THE CONTRACTOR TO INVESTIGATE TO THE EXTEND NECESSARY TO PROVIDE THE WORK AND MATERIALS PRIOR TO BIDDING AND INCLUDE ALL COSTS IN THE BID PRICE.

27. SHOULD THE CONTRACTOR NOT INVESTIGATE PER REQUIREMENTS, CONTRACT PRICE SHALL NOT BE INCREASED. ALL REQUIRED CHANGES ARE SOLE RESPONSIBILITY OF CONTRACTOR AT NO ADDITIONAL COST TO OWNER.

28. DIAGRAMS, SCHEMATICS, AND DETAILS ARE SHOWN ONLY TO ILLUSTRATE FUNCTIONAL RELATIONSHIPS BETWEEN COMPONENTS OF THE SYSTEM. CONTRACTOR SHALL SUBMIT EQUIPMENT, PRODUCT DATA, AND SHOP DRAWINGS INDICATING ACTUAL INSTALLATION METHODS AND EQUIPMENT TO BE INSTALLED. EQUIPMENT SHALL NOT BE INSTALLED UNTIL THE ENGINEER OF RECORD HAS REVIEWED SUBMITTAL AND TAKEN NO EXCEPTION OR GIVEN A CONDITIONAL ACCEPTANCE.

29. HANDLE, STORE, AND PROTECT EQUIPMENT AND MATERIALS TO PREVENT DAMAGE BEFORE AND DURING INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION. REPLACE DAMAGED OR DEFECTIVE ITEMS.

30. COORDINATE WORK WITH ALL OTHER TRADES. MAINTAIN CLEARANCES AND ADVISE OTHER TRADES OF CLEARANCE REQUIREMENTS FOR OPERATION, REPAIR, REMOVAL, AND TESTING OF EQUIPMENT.

31. DRAWINGS SHALL NOT BE SCALED FOR CONSTRUCTION INSTALLATION DIMENSIONS. EACH TRADE IS RESPONSIBLE FOR FIELD VERIFICATION OF DIMENSIONS AND SHALL PERFORM FIELD MEASUREMENTS PRIOR TO FABRICATION AND/OR PURCHASE OF ANY CABLES, EQUIPMENT AND MATERIAL. REPORT ANY ROUTING DISCREPANCIES IN WRITING TO ENGINEER OF RECORD.

32. ELECTRICAL CONTRACTOR SHALL HAVE A MASTER ELECTRICIAN ON STAFF, AND LICENSED FOR THE STATE IN WHICH THIS PROJECT IS LOCATED. AN ELECTRICIAN MUST BE PRESENT AT ALL TIMES DURING THE INSTALLATION AND ENERGIZING OF THE SYSTEM.

33. ALL MATERIALS AND DEVICES SHALL BE UL LISTED.

34. PROVIDE EQUIPMENT IDENTIFICATION LABELS FOR ALL MAJOR PIECES OF EQUIPMENT INCLUDING CABINETS, ENCLOSURES, MANHOLES AND PULLBOXES, UNLESS UNITS ARE SPECIFIED WITH THEIR OWN IDENTIFICATION WITHIN PLANS. SECURE ALL NAMEPLATE TO EQUIPMENT USING 316 SS SELF-TAPPING SCREWS. PROVIDE A NAMEPLATE SCHEDULE FOR ENGINEER AND REVIEW PRIOR TO FABRICATION. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAIL.

35. ALL ABOVE GROUND CONDUIT INCLUDING ALL UNDERGROUND RISERS AND VERTICAL BENDS SHALL BE RIGID ALUMINUM. EMBEDDED PVC COATED RIGID ALUMINUM CONDUIT SHALL EXTEND A MINIMUM OF 18 IN. INTO CONCRETE BEFORE CONVERSION TO PVC.

36. CONTRACTOR IS ADVISED TO READ ALL ELECTRICAL RELATED SPECIFICATION SECTIONS PRIOR TO BIDDING AND CONSTRUCTION. SEE SPECIFICATIONS FOR LIST OF PRE-QUALIFIED ELECTRICAL CONTRACTORS AND PANEL FABRICATORS.

37. CIVIL, STRUCTURAL, ARCHITECTURAL, AND MECHANICAL PLANS MAY CONTAIN CRITICAL INFORMATION RELEVANT TO ELECTRICAL WORK AND SHOULD BE REVIEWED PRIOR TO BIDDING AND CONSTRUCTION.

38. CONDUIT RUNS INSTALLED BELOW-GRADE IN EARTH SHALL BE SCH 80 PVC. USE MANUFACTURER'S APPROVED CEMENT FOR JOINING COUPLINGS AND ADAPTERS. RUNS SHALL BE INSTALLED SO THAT THE TOP OF CONCRETE DUCTBANK IS A MINIMUM OF TWENTY FOUR INCHES (24 IN.) BELOW FINISHED GRADE. SUPPORT CONDUIT RUNS ON PLASTIC SPACERS AND ENCASE CONDUITS WITH 3,000 PSI REINFORCED CONCRETE DYED WITH RED CONCRETE DYE AT A RATE OF 12 POUNDS OF DYE PER CUBIC YARD OF CONCRETE. PROVIDE CLEARANCES AS SHOWN ON DETAIL DRAWINGS. COVER TOP OF CONCRETE TO FINISHED GRADE WITH SELECTED SOIL THAT IS FREE FROM CLODS, DEBRIS, ROCKS, AND THE LIKE. PNEUMATICALLY TAMP BACKFILL IN SIX INCHES (6 IN.) TO EIGHT INCHES (8 IN.) BELOW FINISHED GRADE. INSTALL CONTINUOUS RUN OF "BURIED ELECTRIC" MARKING TAPE AND COMPLETE BACKFILL TO FINISHED GRADE. CONTRACTOR'S MEAN AND METHODS SHALL PREVENT FLOATING OF CONDUIT AND REBAR DURING CONCRETE PLACEMENT. METAL TO METAL CONTACT BETWEEN THE EARTH AND REBAR CAGE IS NOT ALLOWED.

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LATANA
LIFT STATION

ELECTRICAL GENERAL NOTES

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05-06-2025
PROJECT NO.
212-2402
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Engineer: ERIC W. BURRER
P.E. Seal No.: 100158
Date: MAY 06, 2025
BURRER ENG, INC. (F-20420)

BURRER ENGINEERING
TBPE No. F-20420

ISSUED FOR REVIEW

BURRER
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17217 N. Eldridge, Tomball, TX 77377
Tel: 832-761-5220
TBPE No. F-20420
email: info@burrereng.com

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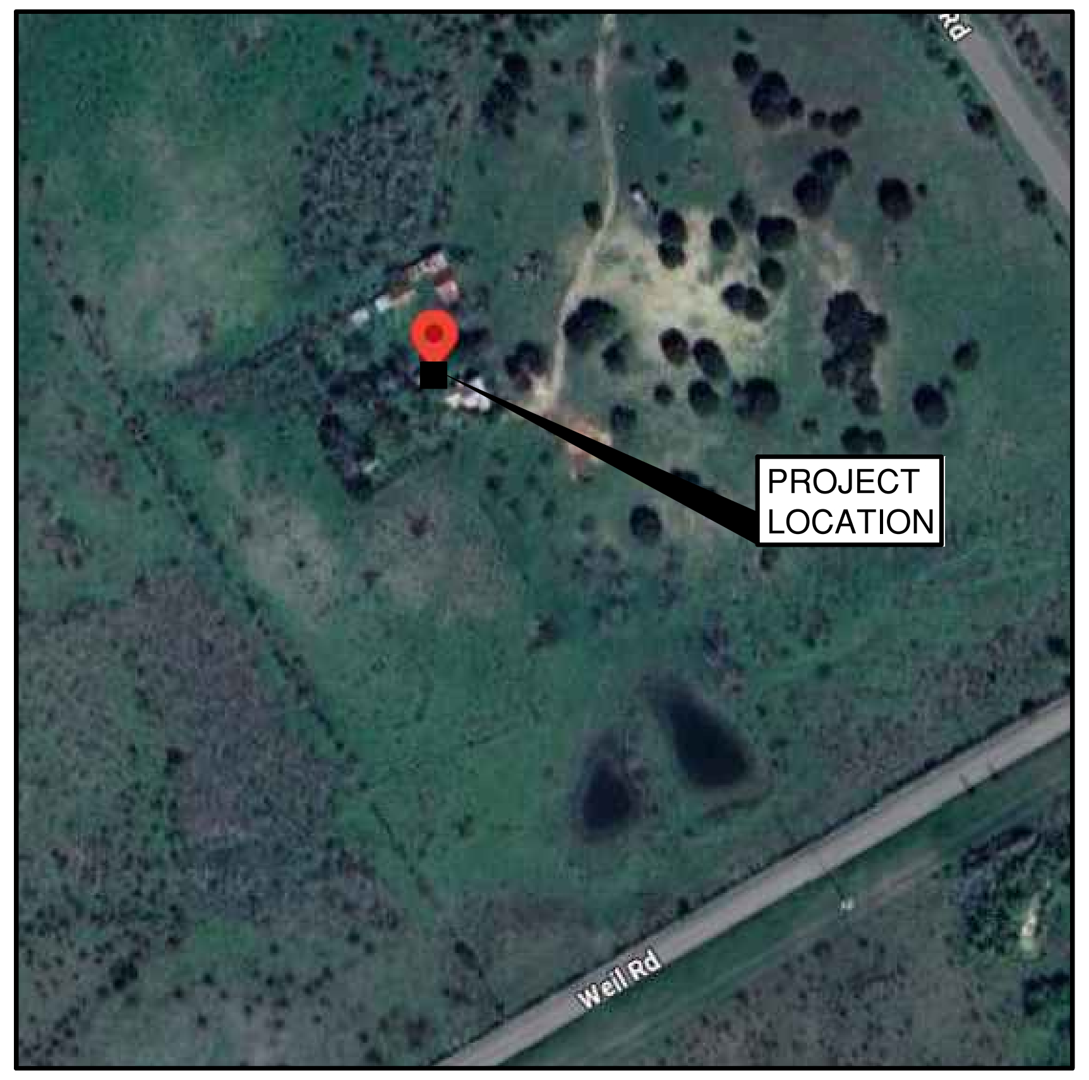
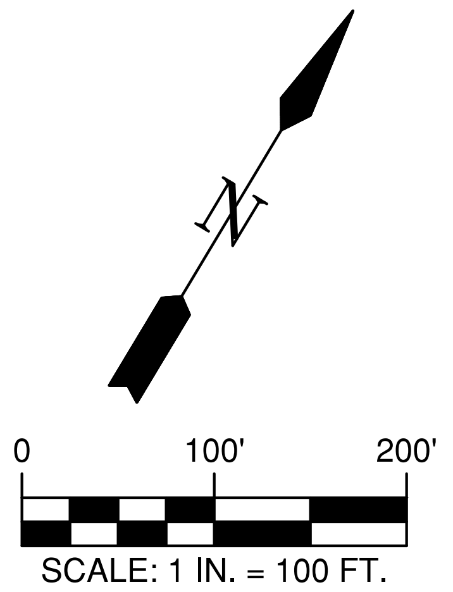


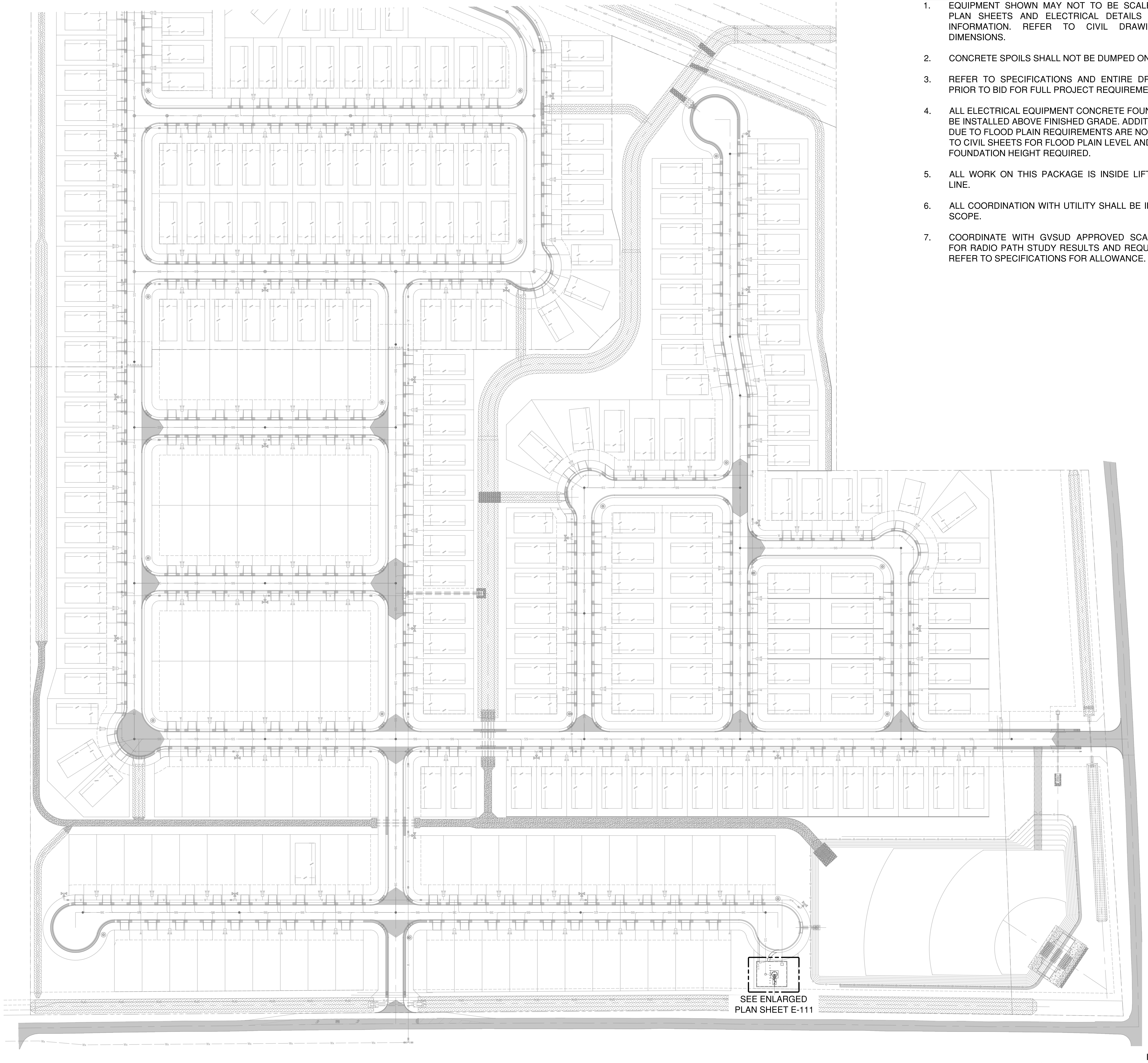
VICINITY MAP

PROJECT COORDINATES
26.615281, -98.163983
MARION, TX 78124



NOTES:

1. EQUIPMENT SHOWN MAY NOT TO BE SCALE. REFER TO ALL PLAN SHEETS AND ELECTRICAL DETAILS FOR ADDITIONAL INFORMATION. REFER TO CIVIL DRAWINGS FOR SITE DIMENSIONS.
2. CONCRETE SPOILS SHALL NOT BE DUMPED ON SITE.
3. REFER TO SPECIFICATIONS AND ENTIRE DRAWING PACKAGE PRIOR TO BID FOR FULL PROJECT REQUIREMENTS.
4. ALL ELECTRICAL EQUIPMENT CONCRETE FOUNDATIONS ARE TO BE INSTALLED ABOVE FINISHED GRADE. ADDITIONAL ELEVATION DUE TO FLOOD PLAIN REQUIREMENTS ARE NOT SHOWN. REFER TO CIVIL SHEETS FOR FLOOD PLAIN LEVEL AND MINIMUM FOUNDATION HEIGHT REQUIRED.
5. ALL WORK ON THIS PACKAGE IS INSIDE LIFT STATION FENCE LINE.
6. ALL COORDINATION WITH UTILITY SHALL BE INCLUDED IN BASE SCOPE.
7. COORDINATE WITH GVSUD APPROVED SCADA CONTRACTOR FOR RADIO PATH STUDY RESULTS AND REQUIRED EQUIPMENT. REFER TO SPECIFICATIONS FOR ALLOWANCE.



ELECTRICAL ENLARGED PLAN

SCALE: 1 IN. = 100 FT.

ISSUED FOR REVIEW

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17217 N. Eldridge, Tomball, TX 77377
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LATANA
LIFT STATION

ELECTRICAL
SITE PLAN

DATE
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P.E. Seal No.: 100158
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BURRER ENG, INC. (F-20420)

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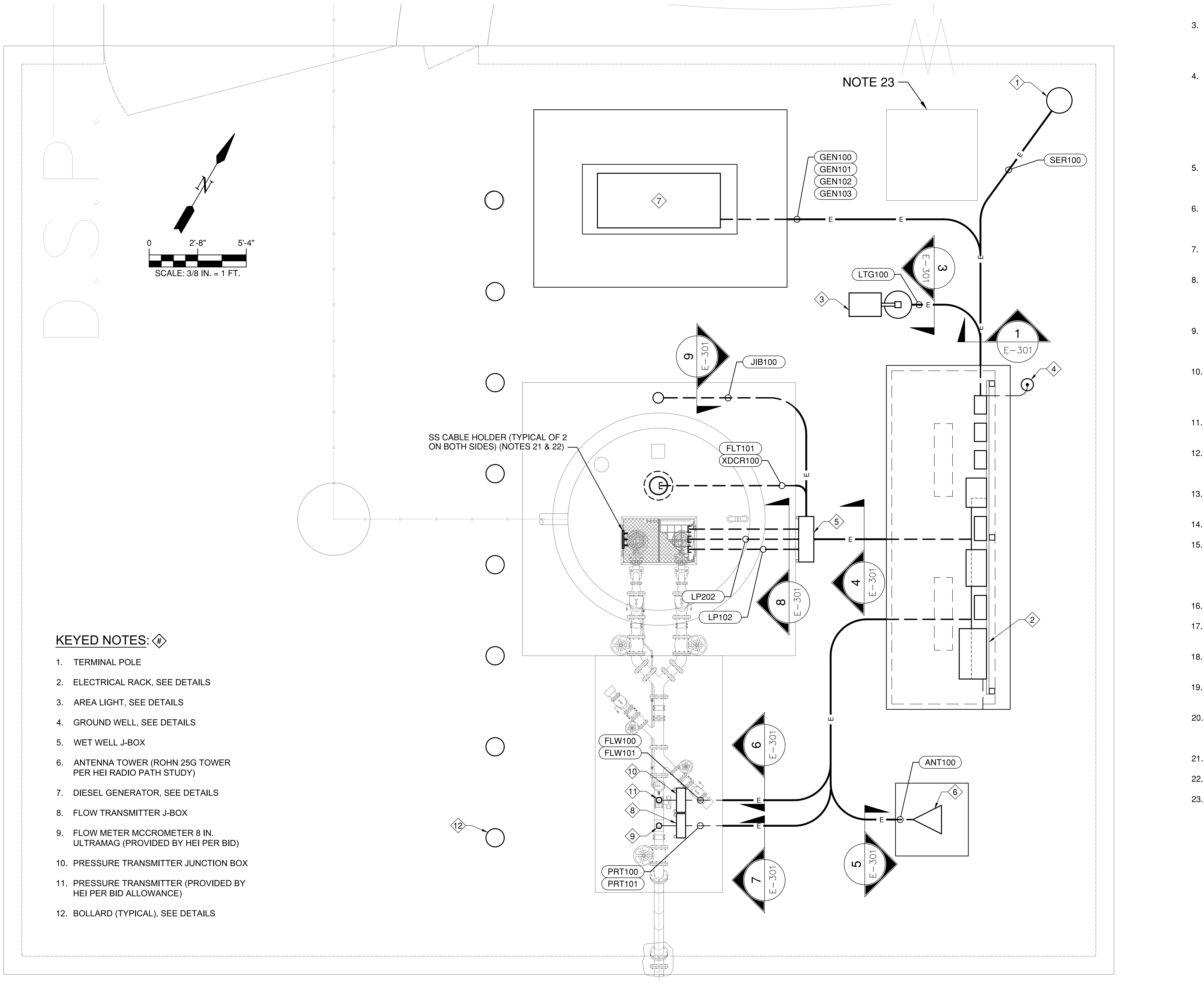

ELECTRICAL SITE PLAN

SCALE: 3/8 IN. = 1 FT.

KEYED NOTES:

1. TERMINAL POLE
2. ELECTRICAL RACK, SEE DETAILS
3. AREA LIGHT, SEE DETAILS
4. GROUND WELL, SEE DETAILS
5. WET WELL J-BOX
6. ANTENNA TOWER (ROHN 25G TOWER PER HEI RADIO PATH STUDY)
7. DIESEL GENERATOR, SEE DETAILS
8. FLOW TRANSMITTER J-BOX
9. FLOW METER MCCROMETER 8 IN. ULTRAMAG (PROVIDED BY HEI PER BID)
10. PRESSURE TRANSMITTER JUNCTION BOX
11. PRESSURE TRANSMITTER (PROVIDED BY HEI PER BID ALLOWANCE)
12. BOLLARD (TYPICAL), SEE DETAILS

NOTES:

1. REFER TO CONDUIT SCHEDULE FOR FULL CONDUIT AND CABLE REQUIREMENTS.
2. COORDINATE ELECTRICAL SERVICE WITH LOCAL POWER COMPANY. ALL COORDINATION IS WITHIN SCOPE OF THIS CONTRACT AT NO ADDITIONAL COST TO OWNER. PROVIDE ADEQUATE SIZED TRANSFORMERS PER POWER COMPANY STANDARDS.
3. EQUIPMENT SHALL NOT BE INSTALLED WITHIN ELECTRICAL EASEMENTS. WHERE EASEMENT CONFLICT EXISTS, CONTACT ENGINEER PRIOR TO INSTALLATION. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF ANY AND ALL EASEMENTS.
4. INSTALLATION SHALL BE PER LATEST VERSION OF NATIONAL ELECTRICAL CODE, GVSUD STANDARDS, AND ALL APPLICABLE LOCAL CODES/ORDINANCES. NOT ALL CODE AND STANDARD REQUIREMENTS MAY BE SHOWN ON PLANS. CONTRACTOR SHALL ADHERE TO CODES AND STANDARDS REGARDLESS OF BEING SHOWN ON PLANS OR SPECIFICATIONS IN DETAILED FASHION. REFER TO GENERAL NOTE SHEETS FOR ADDITIONAL REQUIREMENTS.
5. PROVIDE GROUND CONNECTION AT SERVICE, PANELS, METALLIC EQUIPMENT AT RACK, PIPING, AND ALL METALLIC PARTS WITHIN PROJECT SITE.
6. MINIMUM 1 IN. CONDUIT FOR ALL DUCTBANKS. PROVIDE ONE SPARE CONDUIT OF EACH EACH SIZE SPECIFIED AS REQUIRED BY GVSUD STANDARDS.
7. COORDINATE CONDUIT STUB-UP LOCATIONS WITH GENERATOR MANUFACTURER PRIOR TO POURING HOUSEKEEPING PAD.
8. CONDUITS SHALL NOT BE INSTALLED UNDERNEATH CONCRETE STRUCTURES, MEANS OF EGRESS, OR WALKWAYS. ROUTE AROUND EQUIPMENT AND AVOID CONFLICT WITH UNDERGROUND EQUIPMENT.
9. DO NOT INSTALL CONCRETE FOR EQUIPMENT OR DUCTBANK OVER WATER OR SEWER LINES. FIELD VERIFY AND MARK ALL UNDERGROUND LINES.
10. EQUIPMENT SHOWN MAY NOT BE TO SCALE. REFER TO ALL PLAN SHEETS AND ELECTRICAL DETAILS FOR ADDITIONAL INFORMATION. REFER TO CIVIL DRAWINGS FOR SITE DIMENSIONS.
11. PROVIDE ADEQUATE WORKING SPACE FOR ALL ELECTRICAL EQUIPMENT AND GENERATOR ENCLOSURE DOORS.
12. CONCRETE SPOILS SHALL NOT BE DUMPED ON SITE. DO NOT OVER POUR DUCTBANKS. PROVIDE ADEQUATE FORMS PRIOR TO POUR.
13. REFER TO SPECIFICATIONS AND ENTIRE DRAWING PACKAGE PRIOR TO BID FOR FULL PROJECT REQUIREMENTS.
14. ALL EQUIPMENT SHOWN IS NEW UNLESS NOTED OTHERWISE.
15. ALL ELECTRICAL EQUIPMENT CONCRETE FOUNDATIONS ARE TO BE INSTALLED ABOVE FINISHED GRADE. ADDITIONAL ELEVATION DUE TO FLOOD PLAIN REQUIREMENTS ARE NOT SHOWN . REFER TO CIVIL SHEETS FOR FLOOD PLAIN LEVEL AND MINIMUM FOUNDATION HEIGHT REQUIREMENTS.
16. CABLE HOLDER SHOWN FOR CLARITY. FIELD LOCATE.
17. COORDINATE INSTALLATION OF CONDUITS WITH LOCATIONS OF GUIDE RAILS FOR CABLE CLEARANCE.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD SELECTING OPTIMUM ROUTING OF CONDUITS.
19. REFER TO CIVIL AND/OR STRUCTURAL PLANS FOR ADDITIONAL REQUIREMENTS.
20. PROVIDE HEAVY DUTY SS KELLUM GRIPS FOR PUMP, FLOAT, AND TRANSDUCER CABLES. INSTALL FLOATS/TRANSDUCERS CLEAR OF INTAKE. PLASTIC ZIP TIES ARE NOT ACCEPTABLE.
21. PROVIDE STAINLESS STEEL CHAIN FOR LIFT PUMPS.
22. SEAL ALL CONDUITS FROM WET WELL INTO CONTROL PANEL.
23. PROVIDE GROUND RING AND BOND RPZ TO SURROUNDING GROUND RING.

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BURRER ENG, INC. (F-20420)

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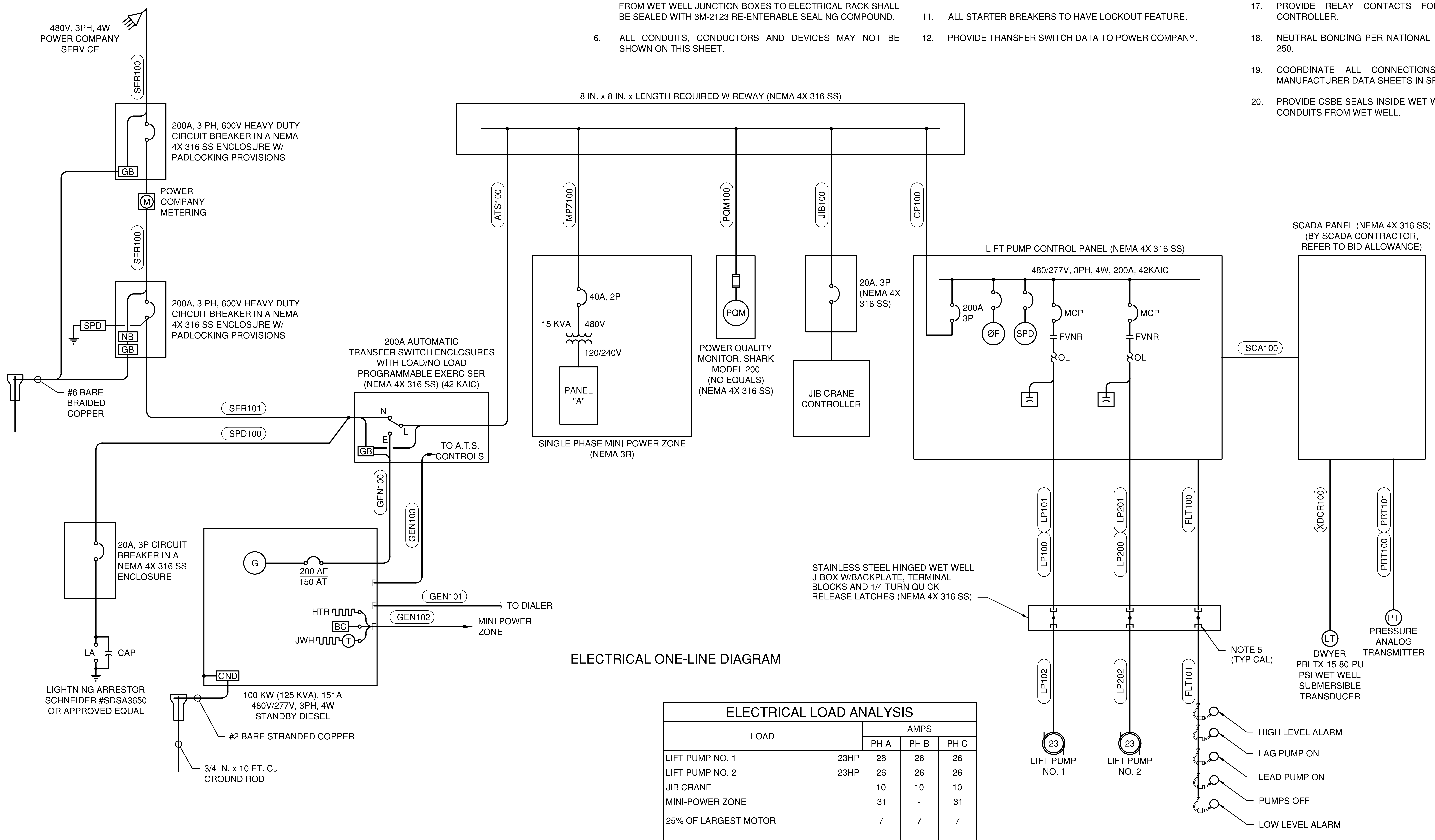
TBPE No. F-20420

NOTES:

1. ALL ENCLOSURES, HARDWARE, STRAPS, AND ANCHORS TO BE 316 STAINLESS STEEL.
2. CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH POWER COMPANY AND PROVIDE EQUIPMENT RATED ACCORDINGLY.
3. ALL CONTROL PANELS TO BE UL LISTED.
4. CONTRACTOR SHALL READ ENTIRE CONTENTS OF SPECIFICATIONS AND GVSUD STANDARDS BEFORE BIDDING ON THIS PROJECT.
5. CSBE FITTINGS ARE REQUIRED FOR ALL RACEWAYS ENTERING WET WELL JUNCTION BOXES FROM WET WELL. ALL CONDUITS FROM WET WELL JUNCTION BOXES TO ELECTRICAL RACK SHALL BE SEALED WITH 3M-2123 RE-ENTERABLE SEALING COMPOUND.
6. ALL CONDUITS, CONDUCTORS AND DEVICES MAY NOT BE SHOWN ON THIS SHEET.
7. VERIFY PUMP MOTOR CURRENT WITH MOTOR MANUFACTURER AND WHERE GREATER THAN NEC VALUE, INCREASE CONDUCTORS AND CONDUIT SIZES ACCORDINGLY.
8. ALL HOA'S, ETM'S AND RUN LIGHTS TO BE MOUNTED ON FACE OF CONTROL PANEL. PROVIDE PILOT LIGHTS FOR RUN/STOP/FAIL.
9. SEE CONDUIT SCHEDULE AND MOTOR DATA TABLE ON SCHEDULE SHEET FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
10. INSTALL SURGE PROTECTOR ACCORDING TO MANUFACTURERS INSTRUCTIONS. SURGE PROTECTOR MUST CONFORM TO SPECIFICATIONS.
11. ALL STARTER BREAKERS TO HAVE LOCKOUT FEATURE.
12. PROVIDE TRANSFER SWITCH DATA TO POWER COMPANY.
13. COORDINATE LVP BREAKER SIZES WITH GENERATOR MANUFACTURER FOR AUXILIARY LOADS.
14. PROVIDE ALL REQUIRED ALARM AND DEVICE POWER CONDUCTORS FOR LOCAL PANELS INSTALLED NEAR MOTORS AND EQUIPMENT. SEE ONE-LINE DIAGRAM, CONTROL DIAGRAMS, AND EQUIPMENT SPECIFICATIONS FOR REQUIREMENTS.
15. ALL UNDERGROUND CONDUITS SHALL BE PVC SCH. 80. ALL ABOVE GROUND CONDUITS SHALL BE RIGID ALUMINUM.
16. SERVICE SHALL ADHERE TO THE LATEST UTILITY STANDARDS. COORDINATE AND PAY FOR ALL UTILITY RELATED EXPENSES PER POWER COMPANY ALLOWANCE.
17. PROVIDE RELAY CONTACTS FOR BREAKER STATUS TO CONTROLLER.
18. NEUTRAL BONDING PER NATIONAL ELECTRICAL CODE ARTICLE 250.
19. COORDINATE ALL CONNECTIONS TO GENERATOR WITH MANUFACTURER DATA SHEETS IN SPECIFICATIONS.
20. PROVIDE CSBE SEALS INSIDE WET WELL JUNCTION BOX ON ALL CONDUITS FROM WET WELL.


480V, 3PH, 4W
POWER COMPANY
SERVICE
SER100
200A, 3 PH, 600V HEAVY DUTY CIRCUIT BREAKER IN A NEMA 4X 316 SS ENCLOSURE W/ PADLOCKING PROVISIONS
GB
M
POWER COMPANY METERING
SER100
SPD
NB
GB
200A, 3 PH, 600V HEAVY DUTY CIRCUIT BREAKER IN A NEMA 4X 316 SS ENCLOSURE W/ PADLOCKING PROVISIONS
#6 BARE BRAIDED COPPER
SER101
SPD100
200A AUTOMATIC TRANSFER SWITCH ENCLOSURES WITH LOAD/NO LOAD PROGRAMMABLE EXERCISER (NEMA 4X 316 SS) (42 KAIC)
N
L
E
GB
TO A.T.S. CONTROLS
20A, 3P CIRCUIT BREAKER IN A NEMA 4X 316 SS ENCLOSURE
LA
CAP
LIGHTNING ARRESTOR SCHNEIDER #SDSA3650 OR APPROVED EQUAL
GEN100
GEN103
G
200 AF
150 AT
GEN101
TO DIALER
GEN102
MINI POWER ZONE
HTR
BC
JWH
T
GND
100 KW (125 KVA), 151A 480V/277V, 3PH, 4W STANDBY DIESEL
#2 BARE STRANDED COPPER
3/4 IN. x 10 FT. Cu GROUND ROD
8 IN. x 8 IN. x LENGTH REQUIRED WIREWAY (NEMA 4X 316 SS)
ATS100
MPZ100
PQM100
JIB100
CP100
40A, 2P
15 KVA
480V
120/240V
PANEL "A"
SINGLE PHASE MINI-POWER ZONE (NEMA 3R)
PQM
POWER QUALITY MONITOR, SHARK MODEL 200 (NO EQUALS) (NEMA 4X 316 SS)
20A, 3P (NEMA 4X 316 SS)
JIB CRANE CONTROLLER
LIFT PUMP CONTROL PANEL (NEMA 4X 316 SS)
480/277V, 3PH, 4W, 200A, 42KAIC
200A 3P
ØF
SPD
MCP
FVNR
OL
MCP
FVNR
OL
SCA100
SCADA PANEL (NEMA 4X 316 SS) (BY SCADA CONTRACTOR, REFER TO BID ALLOWANCE)
LP101
LP100
LP201
LP200
FLT100
XDCR100
PRT101
PRT100
STAINLESS STEEL HINGED WET WELL J-BOX W/BACKPLATE, TERMINAL BLOCKS AND 1/4 TURN QUICK RELEASE LATCHES (NEMA 4X 316 SS)
NOTE 5 (TYPICAL)
LT
DWYER PBLTX-15-80-PU PSI WET WELL SUBMERSIBLE TRANSDUCER
PT
PRESSURE ANALOG TRANSMITTER
LP102
LP202
FLT101
23
LIFT PUMP NO. 1
23
LIFT PUMP NO. 2
HIGH LEVEL ALARM
LAG PUMP ON
LEAD PUMP ON
PUMPS OFF
LOW LEVEL ALARM

ELECTRICAL ONE-LINE DIAGRAM

ELECTRICAL LOAD ANALYSIS

LOAD		AMPS		
		PH A	PH B	PH C
LIFT PUMP NO. 1	23HP	26	26	26
LIFT PUMP NO. 2	23HP	26	26	26
JIB CRANE		10	10	10
MINI-POWER ZONE		31	-	31
25% OF LARGEST MOTOR		7	7	7
TOTAL LOAD		100	69	100
SERVICE AMPACITY @ 480/277V, 3PH, 4W		200	200	200
SPARE AMPACITY		100	131	100
GENERATOR LOAD		100	69	100
GENERATOR AMPACITY		151	151	151
GENERATOR SPARE		51	82	51

USE 42 KAIC RATED DEVICES AND BRACING

ISSUED FOR REVIEW

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TBPE No. F-20420
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San Antonio, Texas 78231
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LATANA
LIFT STATION

ELECTRICAL
ONE–LINE DIAGRAM

DATE
05-06-2025
PROJECT NO.
212-2402
DRAWN BY
TAD
CHECKED BY
JNO

REVISIONS
DATE
# 1. 2. 3. 4. 5. 6. 7. 8. 9.

INTERIM REVIEW
Not intended for construction, bidding or permit purposes.
Engineer: ERIC W. BURRER
P.E. Seal No.: 100158
Date: MAY 06, 2025
BURRER ENG, INC. (F–20420)

BURRER ENGINEERING
TBPE No. F-20420

E-201

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GENERAL NOTES:

1. PROVIDE INTERMEDIATE JUNCTION BOX SHOULD PRESSURE TRANSDUCER CABLE NOT BE SUFFICIENT FROM BOTTOM OF WET WELL TO SCADA PANEL CONTROLLER.
2. PROVIDE 12 IN. CLEARANCE BETWEEN POWER CONDUITS AND COMMUNICATION CONDUITS WITHIN DUCTBANKS.

CABLE AND CONDUIT SCHEDULE

CABLE/CONDUIT TAG	CONDUIT QUANTITY	CONDUIT SIZE	FROM	TO	CONDUCTOR (EACH CONDUIT)	CABLE TYPE	DESCRIPTION
ANT100	1	2 IN.	SCADA PANEL	ANTENNA TOWER	1 COAX CABLE	-	RADIO COAX CABLE
ATS100	1	3 IN.	AUTOMATIC TRANSFER SWITCH	WIREWAY	4-3/0 + #6 GND	XHHW-2	ATS CONDUCTORS
ATS101	1	1 IN.	AUTOMATIC TRANSFER SWITCH	SCADA PANEL	6-#14 + #14 GND	XHHW-2	ATS IN EMERGENCY POSITION
CP100	1	3 IN.	WIREWAY	LIFT STATION CONTROL PANEL	4-3/0 + #6 GND	XHHW-2	LIFT STATION POWER
FLT100	1	1 IN.	LIFT STATION CONTROL PANEL	WET WELL J-BOX	10 - #14 + #12 GND	XHHW-2	FLOAT SWITCHES
FLT101	1	1 IN.	WET WELL J-BOX	WET WELL HATCH	(5) MANUFACTURER'S CABLES	-	FLOAT SWITCHES
FLW100	1	1 IN.	MINI-POWER ZONE	FLOW METER	2-#12 + #12 GND	XHHW-2	FLOW METER POWER
FLW101	1	1 1/2 IN.	SCADA PANEL	FLOW METER	2 PAIR #18 BELDEN 8760	-	FLOW METER COMM
GEN100	1	3 IN.	EMERGENCY GENERATOR	AUTOMATIC TRANSFER SWITCH	4-3/0 + #6 GND	XHHW-2	EMERGENCY POWER CONDUCTORS
GEN101	1	1 IN.	EMERGENCY GENERATOR	SCADA PANEL	8-#12 + #12 GND + 2 PAIR #18 BELDEN 8760 CABLE	XHHW-2	GENERATOR ALARM SIGNALS
GEN102	1	1 IN.	MINI-POWER ZONE	EMERGENCY GENERATOR	SEE PANEL SCHEDULE	XHHW-2	GENERATOR DEVICES (HEATER, BATTERY CHARGER, LIGHTING)
GEN103	1	1 IN.	AUTOMATIC TRANSFER SWITCH	EMERGENCY GENERATOR	4-#14 + #14 GND	XHHW-2	ATS CONTROLS (START/STOP)
JIB100	1	1 1/2 IN.	WIREWAY	JIB CRANE	3-#10 + #10 GND	XHHW-2	JIB CRANE POWER
LP100	1	2 IN.	LIFT STATION CONTROL PANEL	WET WELL J-BOX	3-#8 + #8 GND (POWER)	XHHW-2	LIFT PUMP NO. 1 (POWER)
LP101	1	1 IN.	LIFT STATION CONTROL PANEL	WET WELL J-BOX	6-#12 + #12 GND (ALARMS)	XHHW-2	LIFT PUMP NO. 1 (ALARMS)
LP102	1	2 IN.	WET WELL J-BOX	LIFT PUMP NO. 1	MANUFACTURER'S CABLES	-	PUMP NO. 1 CABLE
LP200	1	2 IN.	LIFT STATION CONTROL PANEL	WET WELL J-BOX	3-#8 + #8 GND (POWER)	XHHW-2	LIFT PUMP NO. 2 (POWER)
LP201	1	1 IN.	LIFT STATION CONTROL PANEL	WET WELL J-BOX	6-#12 + #12 GND (ALARMS)	XHHW-2	LIFT PUMP NO. 2 (ALARMS)
LP202	1	2 IN.	WET WELL J-BOX	LIFT PUMP NO. 2	MANUFACTURER'S CABLES	-	PUMP NO. 2 CABLE
LTG100	1	1 IN.	MINI-POWER ZONE	SITE LIGHT	2-#10 + #10 GND	XHHW-2	SITE LIGHT
MPZ100	1	1 IN.	WIREWAY	MINI-POWER ZONE	2-#8 + #8 GND	XHHW-2	MINI-POWER ZONE
PRT100	1	1 IN.	MINI-POWER ZONE	PRESSURE TRANSMITTER	2-#12 + #12 GND	XHHW-2	PRESSURE TRANSMITTER POWER
PRT101	1	1 1/2 IN.	SCADA PANEL	PRESSURE TRANSMITTER	2 PAIR #18 BELDEN 8760	-	PRESSURE TRANSMITTER COMM
PQM100	1	1 IN.	WIREWAY	POWER QUALITY MONITOR	2-#12 + #12 GND	XHHW-2	POWER QUALITY MONITOR
SCA100	1	2 IN.	LIFT STATION CONTROL PANEL	SCADA PANEL	20-#14 + #14 GND	XHHW-2	SCADA SIGNALS
SER100	1	3 IN.	SERVICE DROP	MAIN DISCONNECT SWITCH	4-3/0 + #6 GND	XHHW-2	SERVICE FEEDERS
SER101	1	3 IN.	MAIN DISCONNECT SWITCH	AUTOMATIC TRANSFER SWITCH	4-3/0 + #6 GND	XHHW-2	ATS NORMAL FEEDERS
SPD100	1	1 IN.	SURGE PROTECTION DEVICE	MAIN DISCONNECT SWITCH	3-#10 + #10 GND	XHHW-2	SURGE PROTECTION DEVICE POWER
XDCR100	1	2 IN.	SCADA PANEL	WET WELL HANDHOLE	MANUFACTURER'S CABLE	-	PRESSURE TRANSDUCER (NOTE 1)

LUMINAIRE FIXTURE SCHEDULE

SYMBOL	DESCRIPTION	VOLTAGE	LUMENS	WATTAGE	MOUNTING	MANUFACTURER	LUMINAIRE CATALOG NUMBER	POLE DATA
A	STRIP LIGHT	120V	10,000	67	CEILING	LITHONIA	CLX LED-L48-10000LM-HEF-RDL-WD-MVOLT-50K-90CRI	-
F	AREA LIGHT	120V	27,900	231	POLE	LITHONIA	DSX1 LED-P5-50K-T5W-MVOLT-DDBXD	PER DETAIL OR APPROVED EQUAL

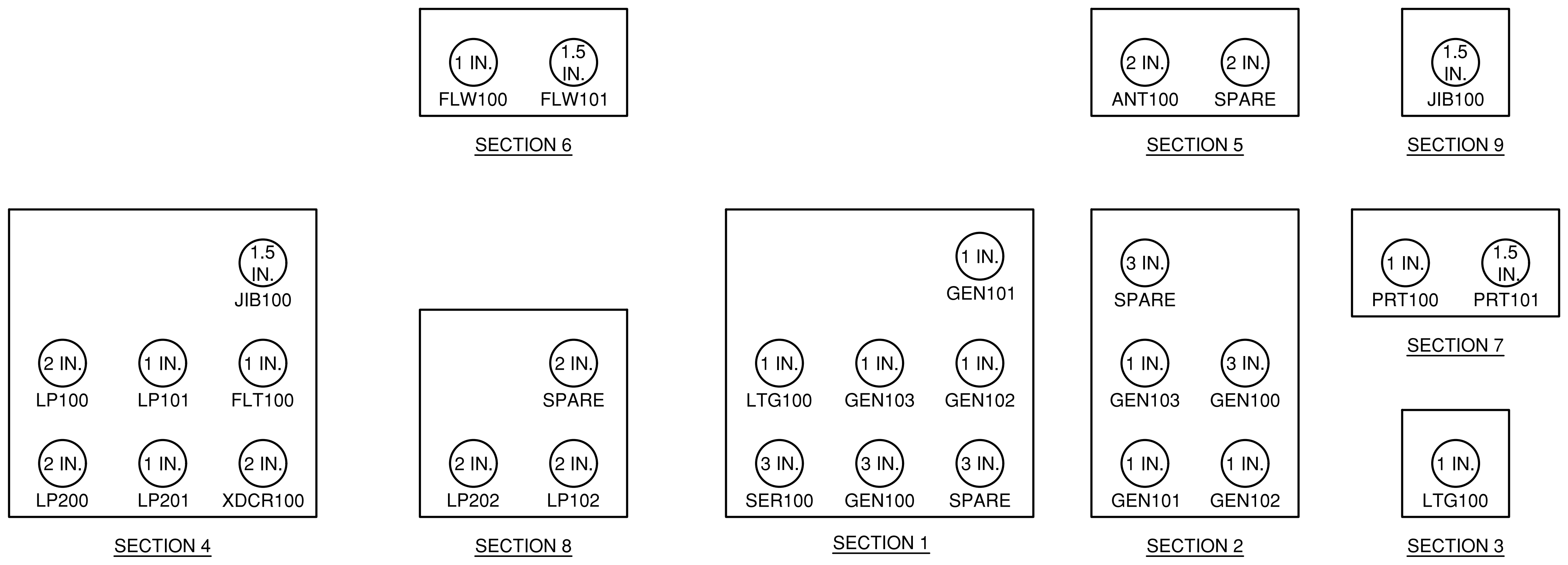
PANEL MPZ

SERVICE VOLTAGE 120/240V
MAIN BREAKER SIZE -
PHASE BUS RATING 100A
NEUTRAL BUS RATING 100A
SHORT CIRCUIT RATING 22 KAIC
LOCATION SERVICE RACK
WIRE SIZE #8
NEU WIRE SIZE #8
PHASE 1
MOUNTING CONTROL PANEL

WITH:
■ SOLID NEUTRAL & GROUND
☐ ISOLATED GROUND BUS
☐ 200% NEUTRAL

NOTE: ADJ. CKTS. TO BAL. PNL.

CKT. DESCRIPTION	WIRE	BREAKER		VA/WATTS		CKT NO.		CKT NO.	VA/WATTS		BREAKER		WIRE	CKT. DESCRIPTION
		POLE	AMP	A	B				A	B	POLE	AMP		
SCADA PANEL (UPS)	10	1	20	2000		1		2	200		1	20	12	RACK LIGHTS
SPARE	-	1	20		-	3		4		360	1	20	12	RACK RECEPTACLE
POWER QUALITY METER (PQM)	12	1	20	500		5		6	200		1	20	10	SITE LIGHT
GENERATOR BLOCK HEATER	10	1	20		1000	7		8		600	1	20	10	GENERATOR BATTERY CHARGER
SPARE	-	1	20	-		9		10	200		1	20	12	FLOW METER
SPARE	-	1	20		-	11		12		200	1	20	12	PRESSURE TRANSMITTER
SPARE	-	1	20	-		11		12	-		1	20	-	SPARE
SPARE	-	1	20		-	11		12		-	1	20	-	SPARE
SPARE	-	1	20	-		11		12	-		1	20	-	SPARE
SPARE	-	1	20		-	11		12		-	1	20	-	SPARE
SPARE	-	1	20	-		11		12	-		1	20	-	SPARE
TOTAL PHASE A: 3100 VOLT-AMPS TOTAL PHASE B: 2160 VOLT-AMPS				TOTAL PHASE A CURRENT: 26 AMPS TOTAL PHASE B CURRENT: 18 AMPS							TOTAL CONNECTED LOAD: 5260 VA			



NOTES:

1. REFER TO LIFT STATION ELECTRICAL SITE PLAN FOR LOCATIONS OF SECTIONS

LIFT STATION DUCTBANK SECTIONS

N.T.S.

ISSUED FOR REVIEW

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LATANA LIFT STATION

ELECTRICAL SCHEDULES

DATE
05-06-2025
PROJECT NO.
212-2402
DRAWN BY
TAD
CHECKED BY
JNO

REVISIONS	DATE
△#	
1.	
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INTERIM REVIEW
Not intended for construction, bidding or permit purposes.
Engineer: ERIC W. BURRER
P.E. Seal No.: 100158
Date: MAY 06, 2025
BURRER ENG, INC. (F-20420)

BURRER ENGINEERING
TBPE No. F-20420

E-301

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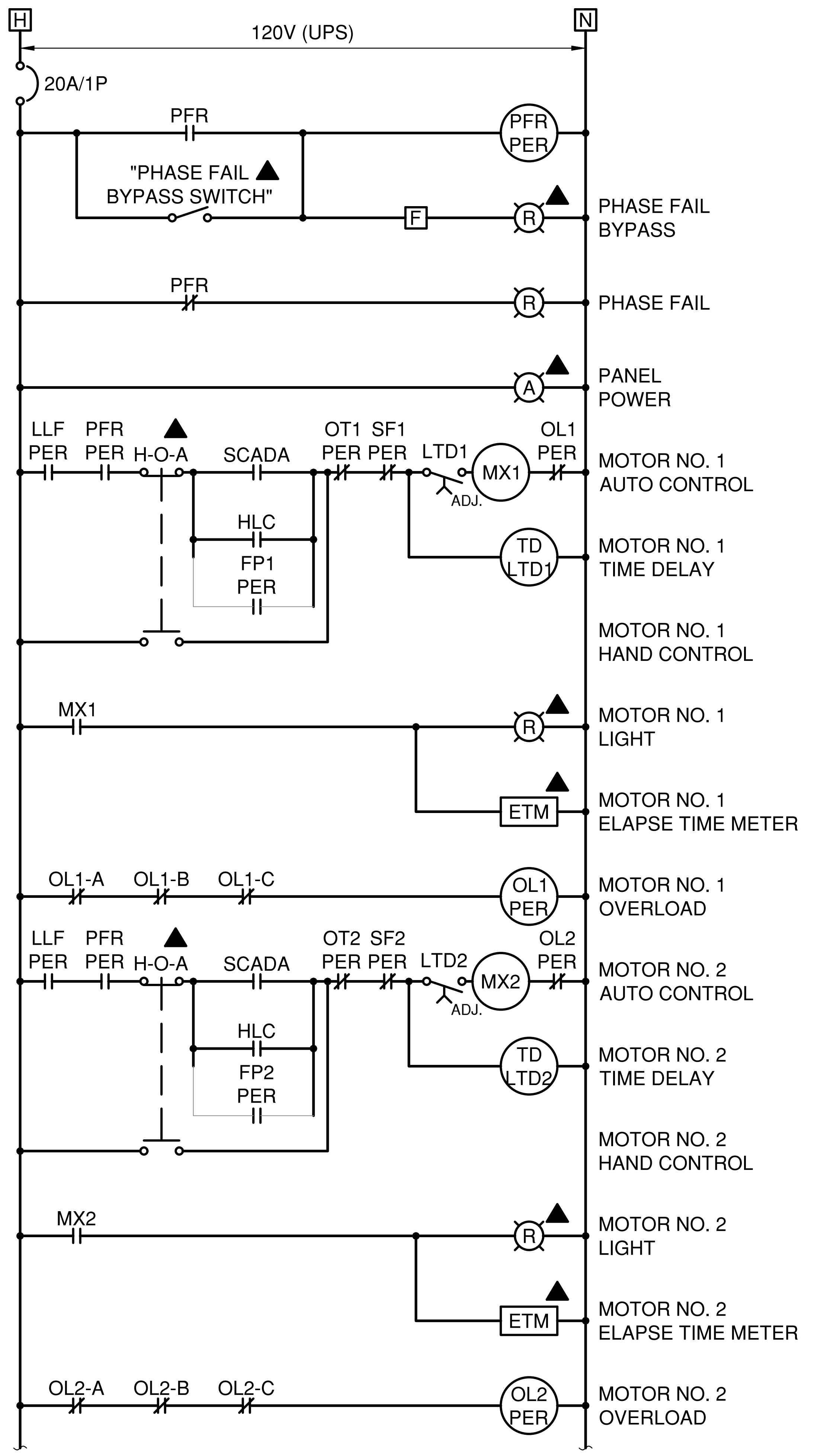
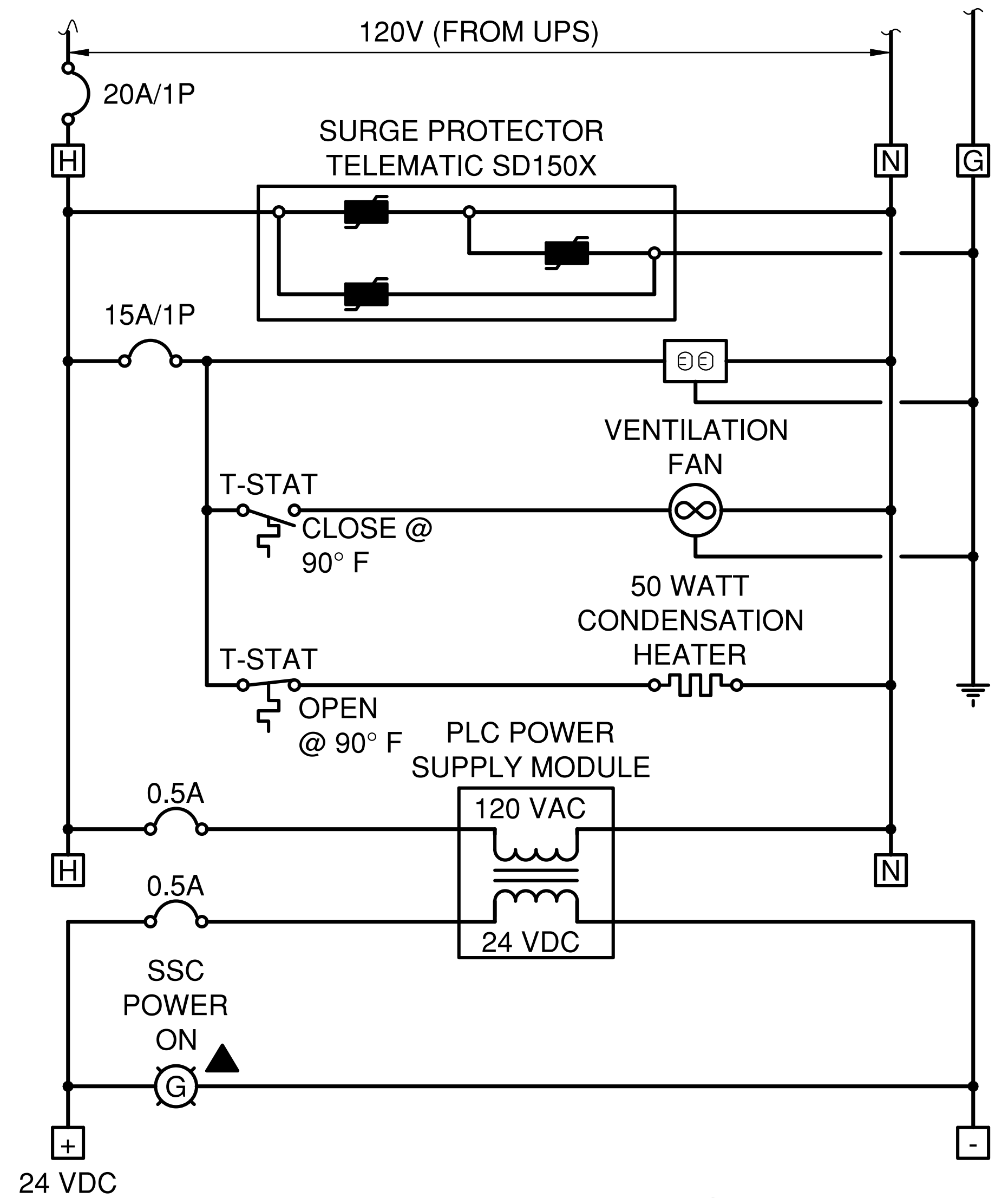


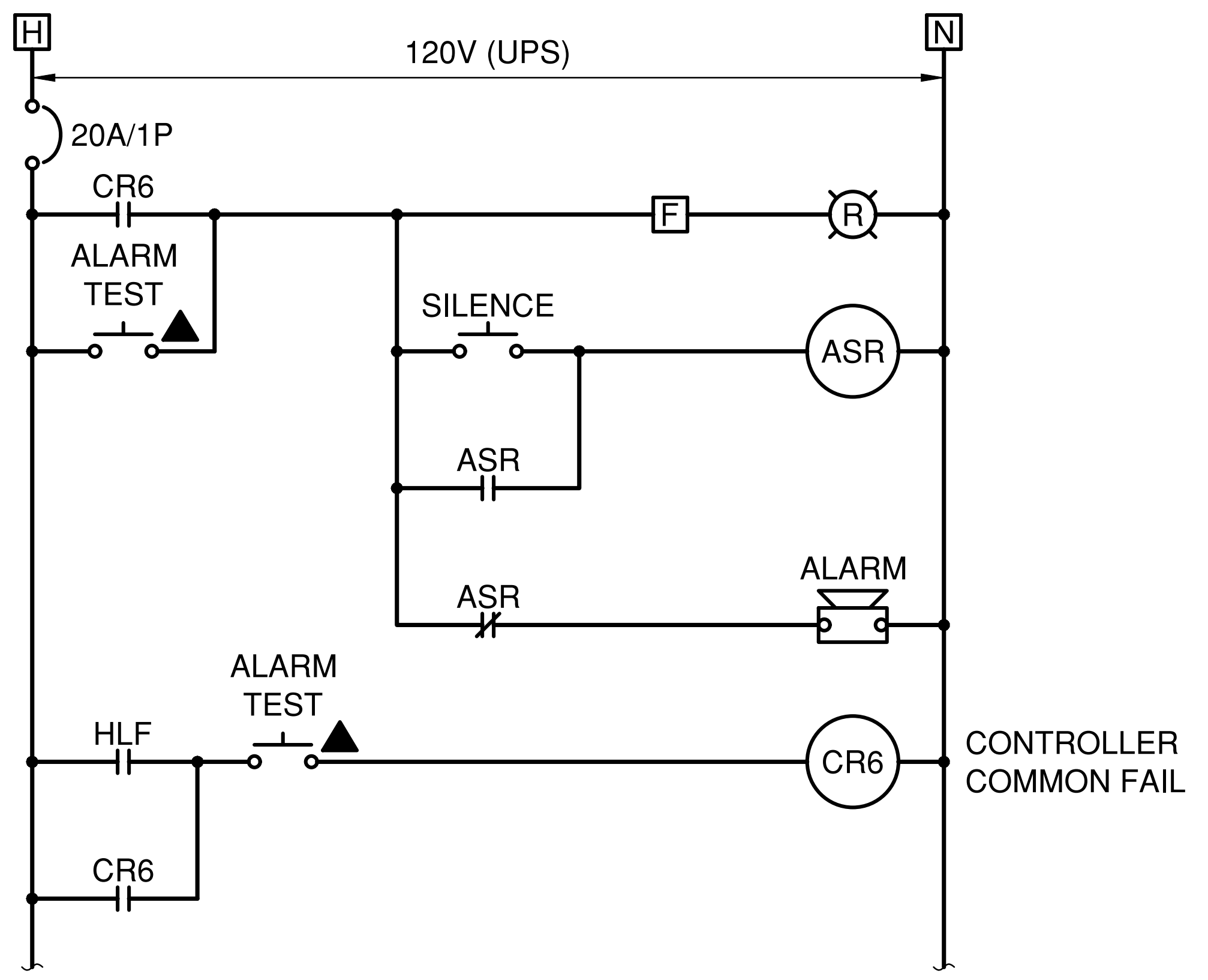
LIFT STATION PUMP FLOAT CONTROL DIAGRAM

N.T.S.



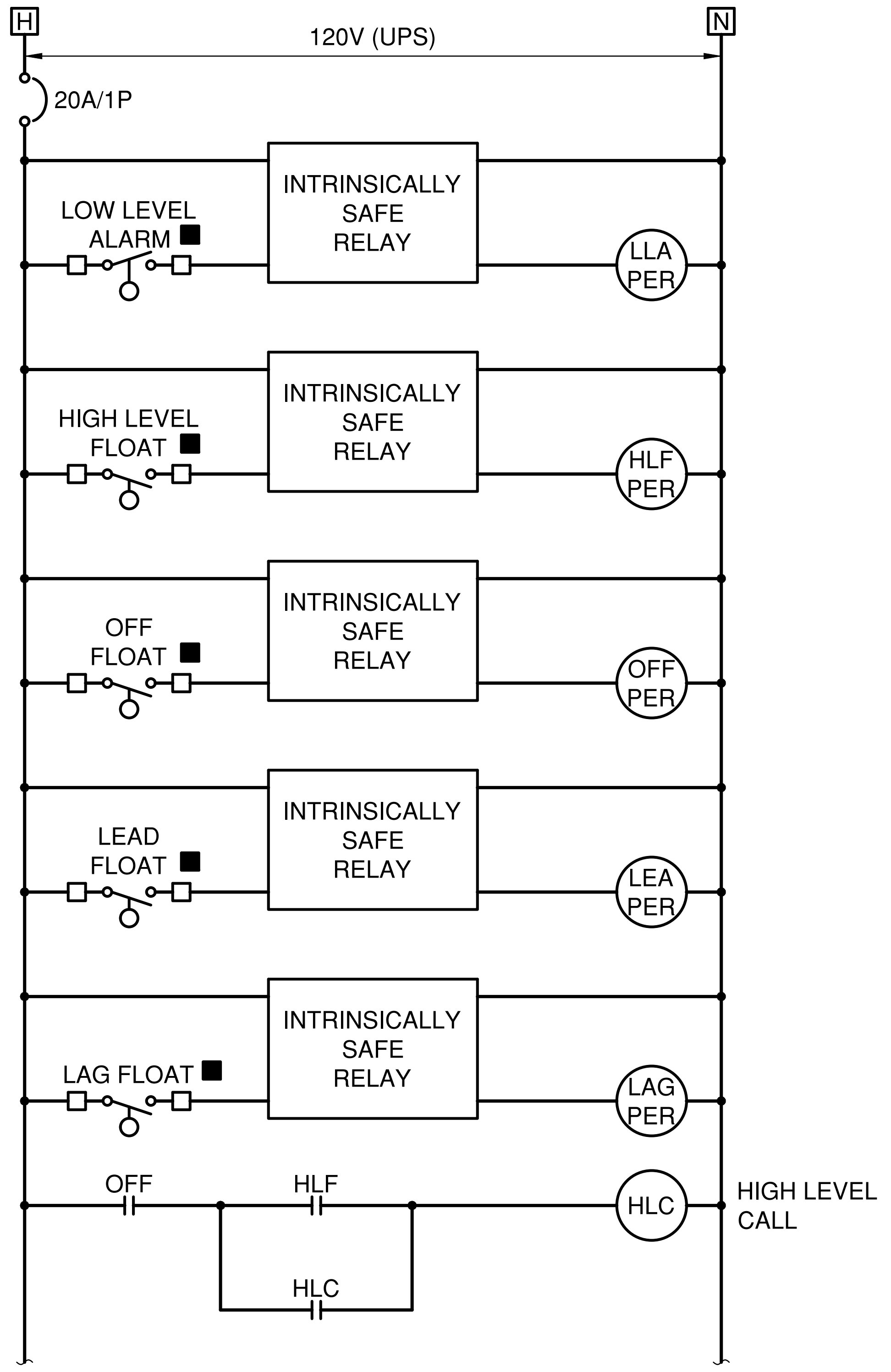
PLC POWER DIAGRAM

(TYPICAL)



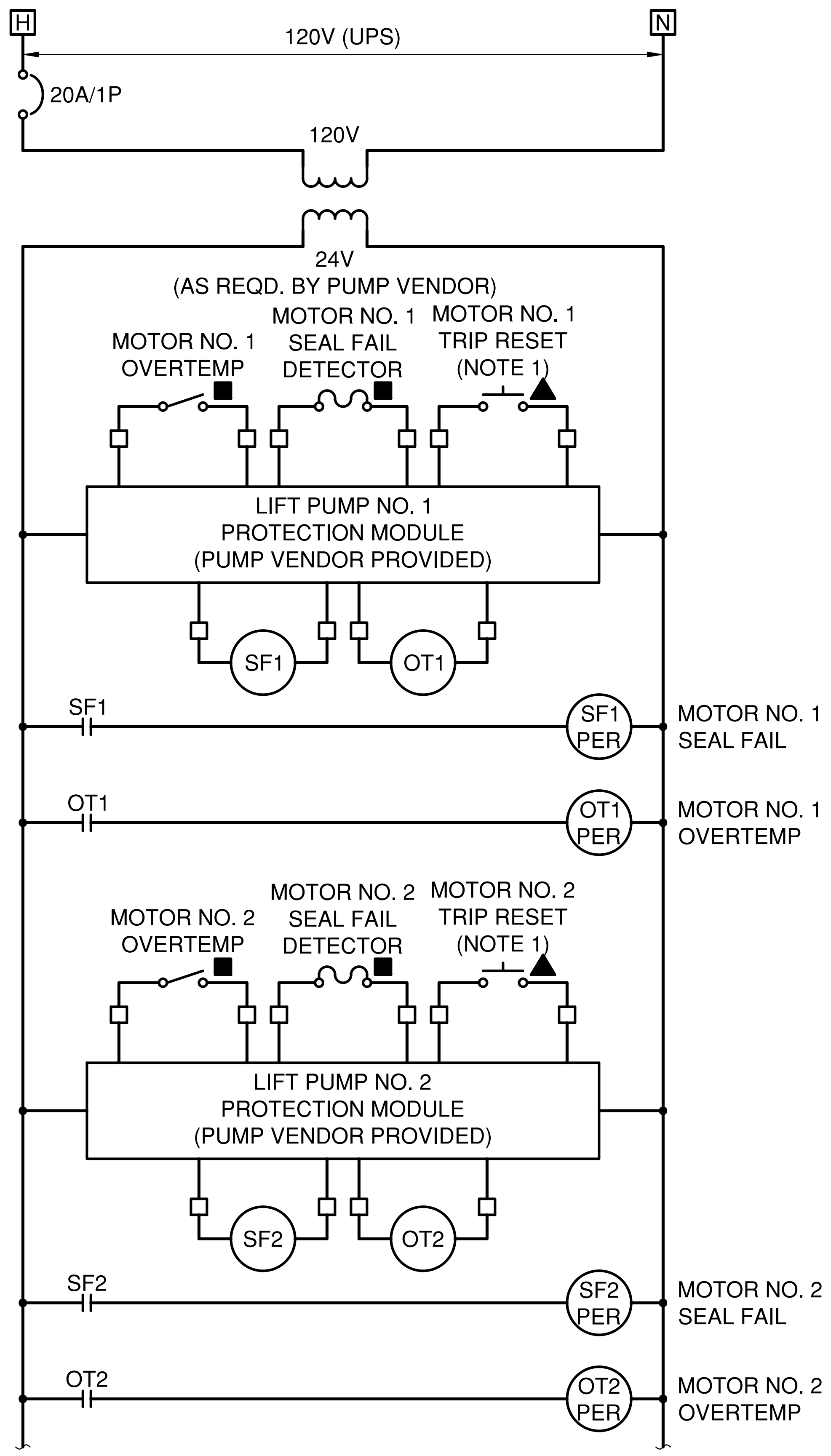
LIFT STATION PUMP ALARM CONTROL DIAGRAM

N.T.S.



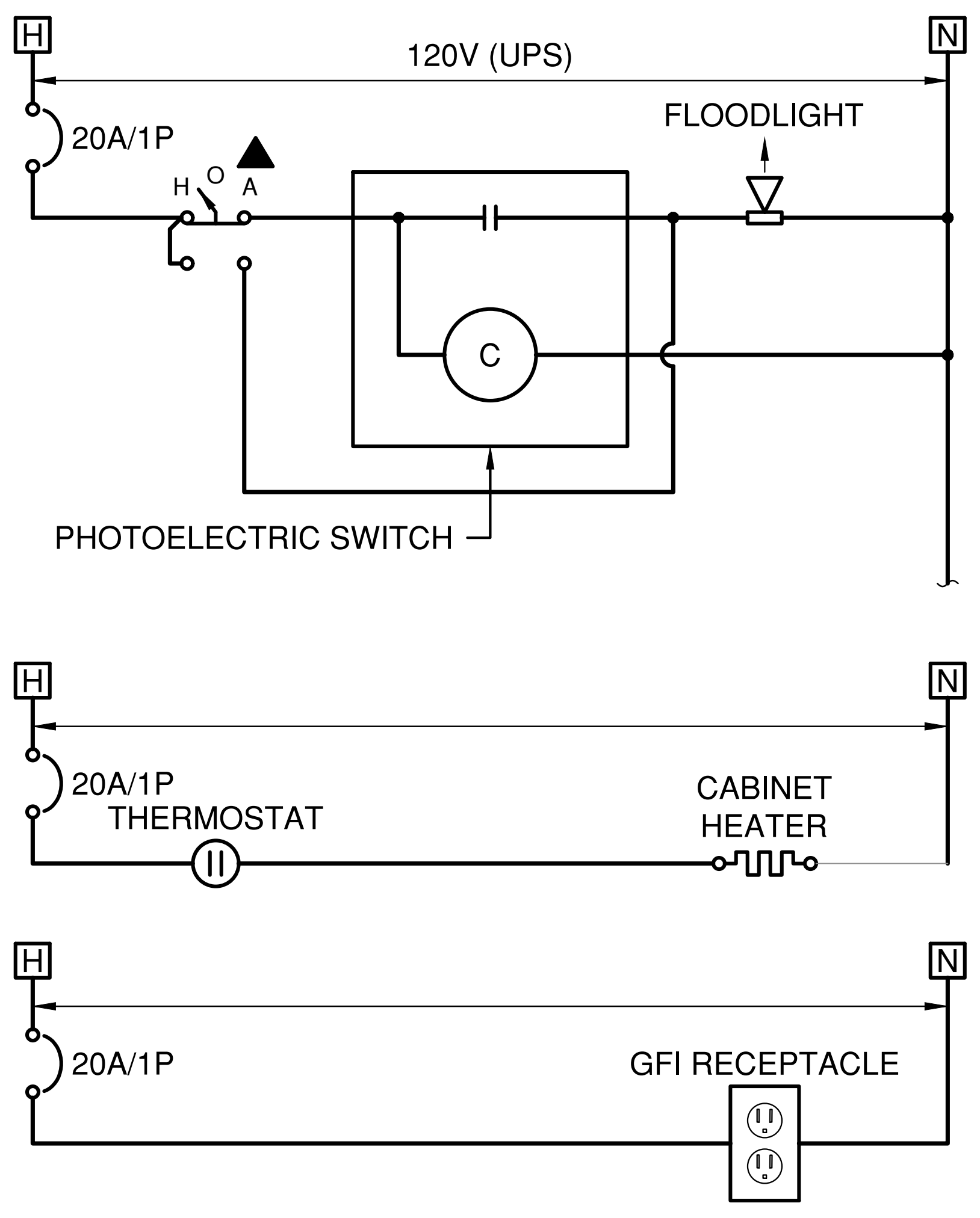
LIFT STATION PUMP FLOAT CONTROL DIAGRAM

N.T.S.


H
N
120V (UPS)
20A/1P
120V
24V
(AS REQD. BY PUMP VENDOR)
MOTOR NO. 1 OVERTEMP
MOTOR NO. 1 SEAL FAIL DETECTOR
MOTOR NO. 1 TRIP RESET (NOTE 1)
LIFT PUMP NO. 1 PROTECTION MODULE (PUMP VENDOR PROVIDED)
SF1
OT1
SF1
SF1 PER
MOTOR NO. 1 SEAL FAIL
OT1
OT1 PER
MOTOR NO. 1 OVERTEMP
MOTOR NO. 2 OVERTEMP
MOTOR NO. 2 SEAL FAIL DETECTOR
MOTOR NO. 2 TRIP RESET (NOTE 1)
LIFT PUMP NO. 2 PROTECTION MODULE (PUMP VENDOR PROVIDED)
SF2
OT2
SF2
SF2 PER
MOTOR NO. 2 SEAL FAIL
OT2
OT2 PER
MOTOR NO. 2 OVERTEMP

LIFT STATION PUMP PROTECTION MODULE DIAGRAM

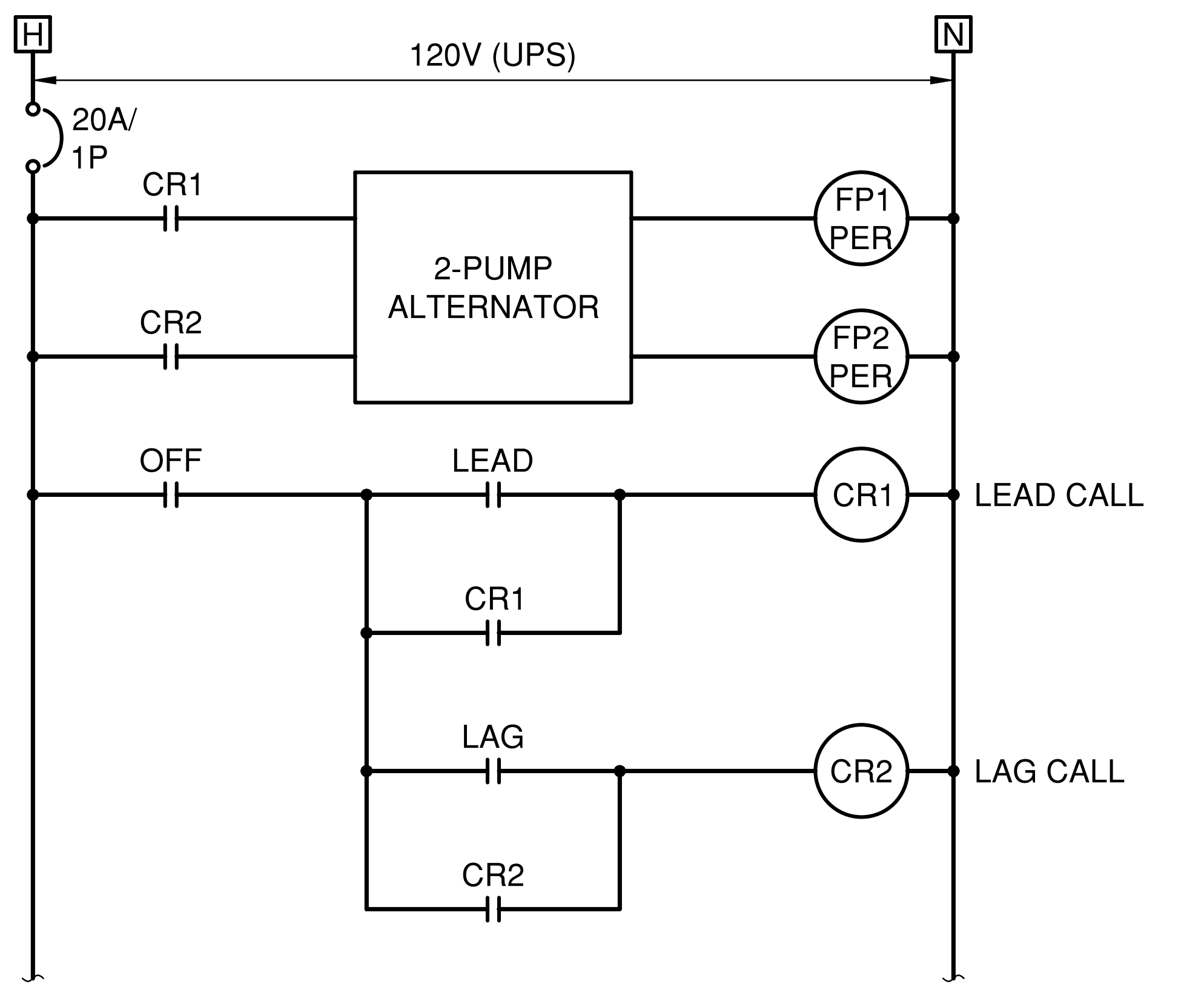
N.T.S.



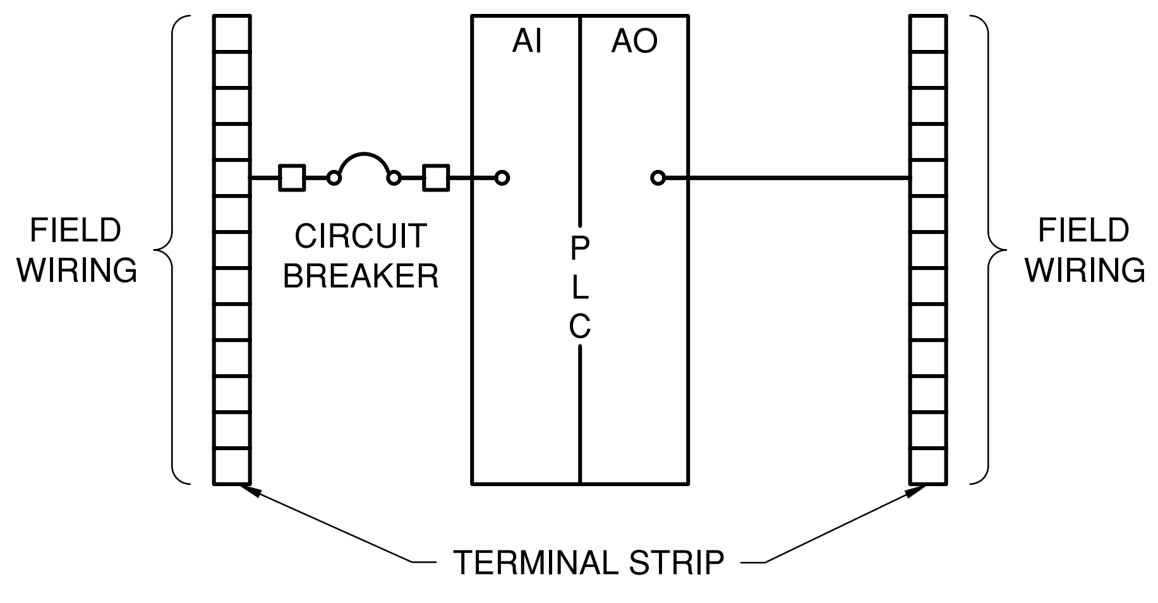
CONTROL PANEL CONTROL DIAGRAM

NOTES:

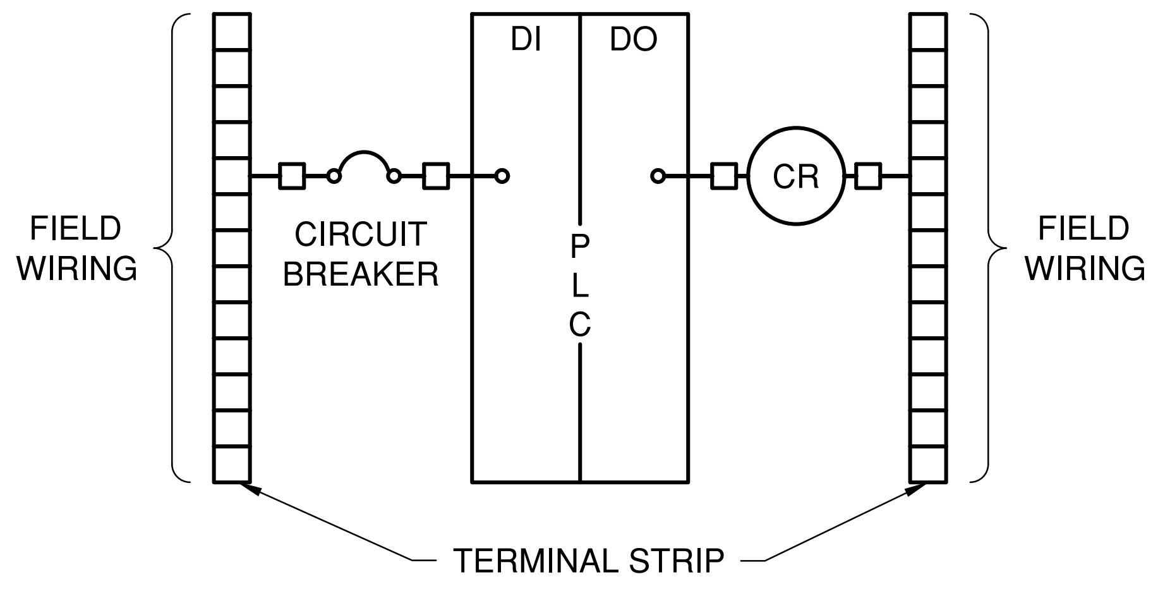
1. CONTRACTOR TO INSTALL ALL SAFETY AND ACCESSORIES REQUIRED BY PUMP VENDOR.
2. STARTER IS SOLID STATE SOFT START WITH PUMP CONTROL FEATURE IN NEMA 4X 316 SS ENCLOSURE.
3. COORDINATE TIME DELAY RELAY SETTING SO THAT ONLY ONE PUMP WILL BE IN START MODE AT ONE TIME - START AT 30 SECOND INTERVALS.
4. INSTALL WARNING SIGN THAT PANEL IS ENERGIZED FROM MULTIPLE SOURCES.
5. ALL INDICATING LIGHTS TO BE LED PUSH TO TEST.
6. ALL SWITCHES, INDICATING LIGHTS, PUSHBUTTONS TO BE MOUNTED ON INTERNAL SWING PANEL.
7. ALL ENCLOSURES, HARDWARE, STRAPS, AND ANCHORS TO BE 316 STAINLESS STEAL.



TWO (2) PUMP ALTERNATOR CONTROL DIAGRAM



TYPICAL ANALOG I/O DIAGRAM



TYPICAL DISCRETE I/O DIAGRAM

ISSUED FOR REVIEW

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LATANA LIFT STATION

ELECTRICAL CONTROL DIAGRAMS SHEET 1

DATE
05-06-2025

PROJECT NO.
212-2402

DRAWN BY
TAD

CHECKED BY
JNO

REVISIONS

DATE

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INTERIM REVIEW
Not intended for construction, bidding or permit purposes.
Engineer: ERIC W. BURRER
P.E. Seal No.: 100158
Date: MAY 06, 2025
BURRER ENG, INC. (F-20420)

BURRER ENGINEERING
TBPE No. F-20420

E-401

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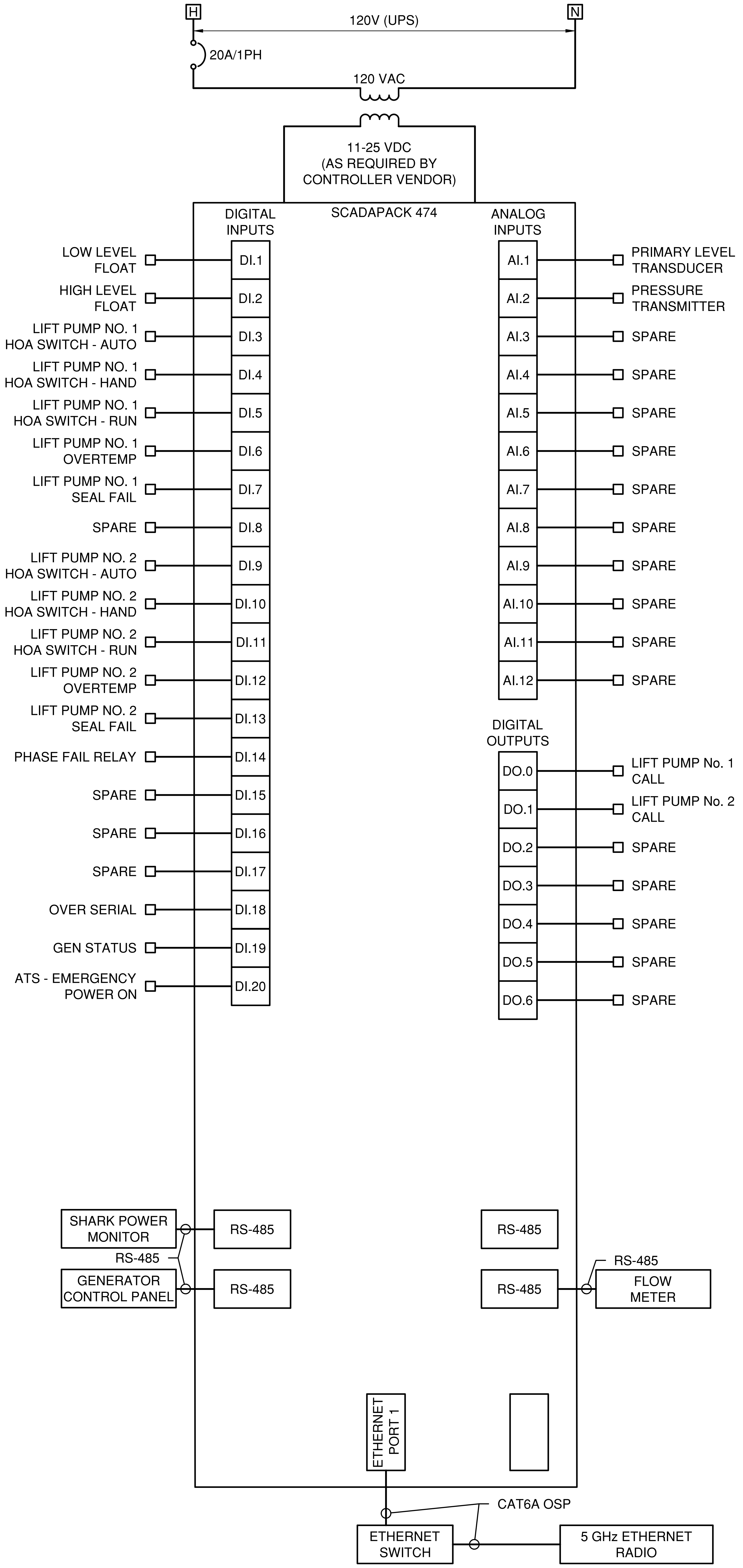
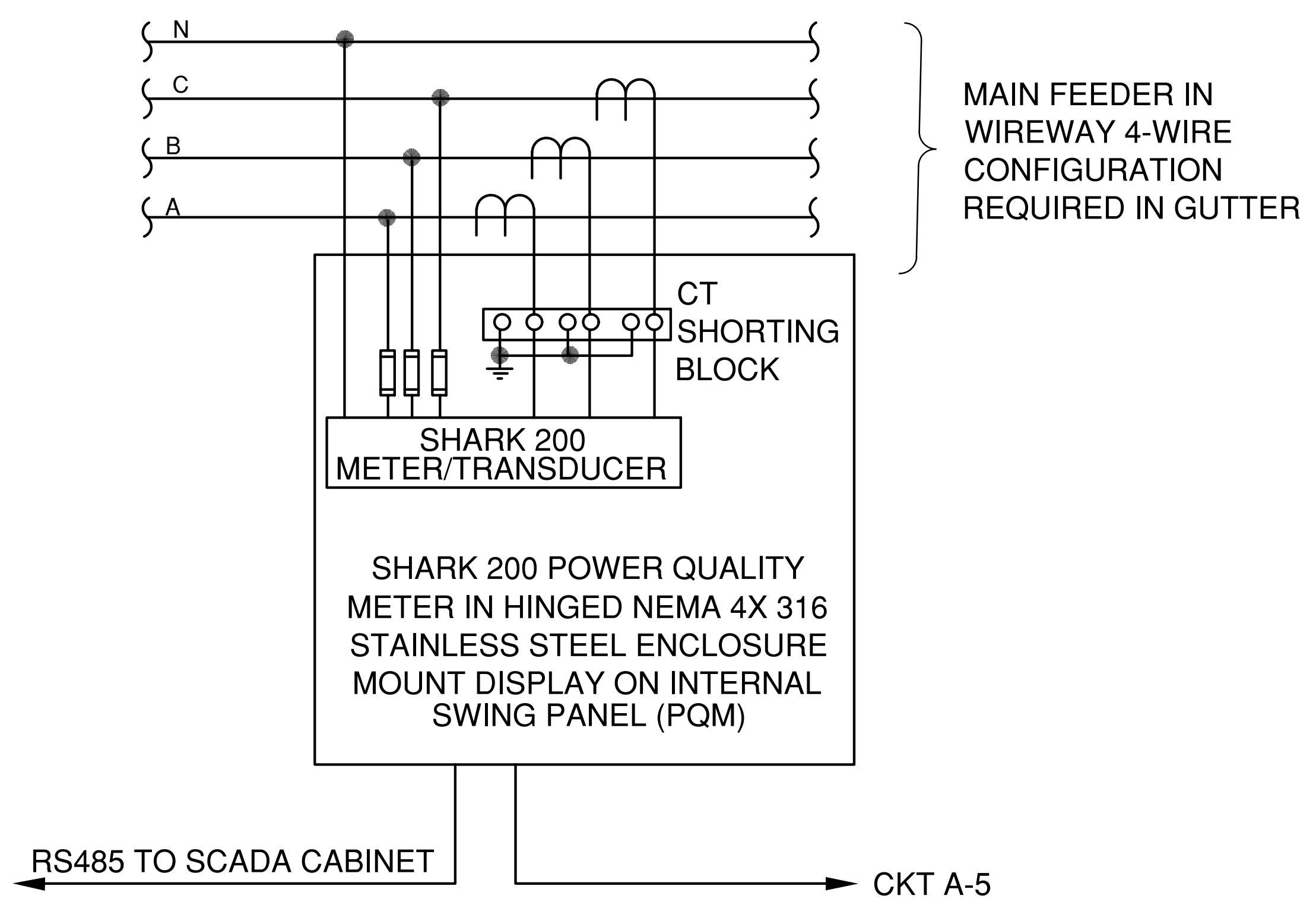
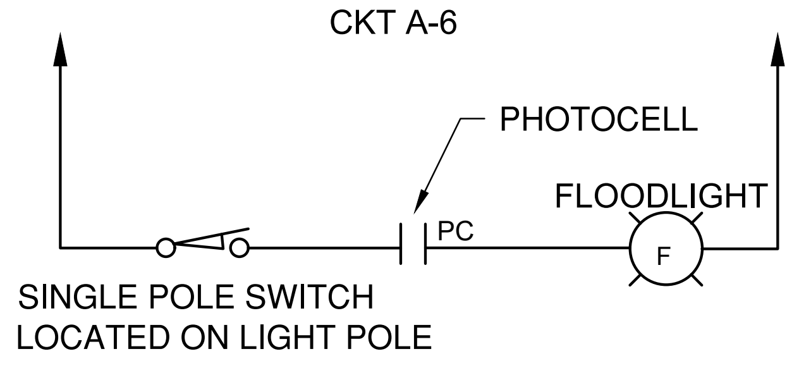


PUMP CONTROLLER I/O DIAGRAM



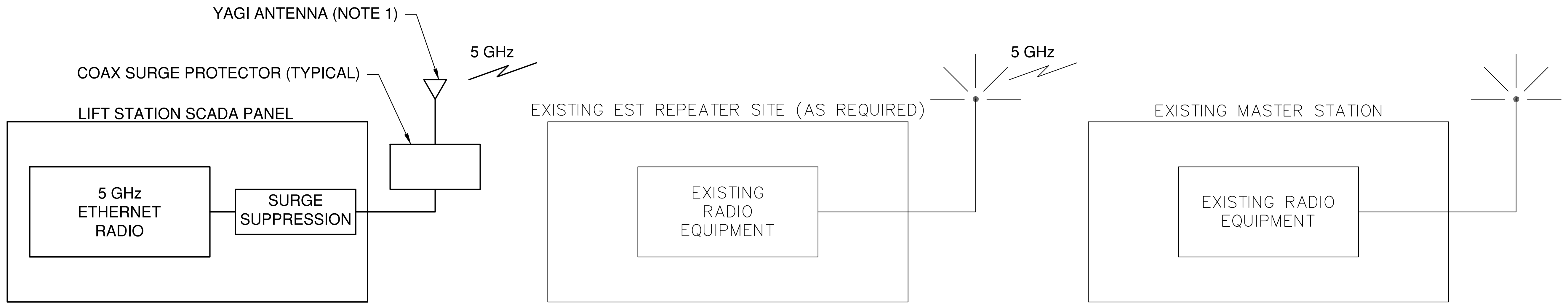
POWER QUALITY METER (PQM) DIAGRAM

N.T.S.



YARD LIGHTING DIAGRAM

N.T.S.



NOTES:

1. PROPOSED ANTENNA MOUNTED AT 30' PER RADIO PATH STUDY PROVIDED BY HEI.
2. COORDINATE WITH HEI FOR FOR WORK TO BE PERFORMED AT REPEATER SITES. ALL WORK AT OTHER SCADA FACILITIES ARE INCLUDED IN THIS BASE CONTRACT AT NO ADDITIONAL COST TO OWNER.
3. REFER TO SPECIFICATIONS 16950- PLC SCADA EQUIPMENT AND BID SHEET FOR WORK.
4. REFER TO BID ITEMS FOR ADDITIONAL INFORMATION. SCADA INTEGRATOR TO PROVIDE AND INSTALL ALL RADIO EQUIPMENT INCLUDING ANTENNA AND CABLING. TOWER SHALL BE INSTALLED BY CONTRACTOR.

NETWORK NOTIONAL DIAGRAM

N.T.S.

NOTES:

1. WHERE ADDITIONAL CONTACTS ARE REQUIRED, PROVIDE ADDITIONAL CONTACT BLOCKS OR ADDITIONAL RELAYS WITH COILS WIRED IN PARALLEL.
2. ALL ENCLOSURES, HARDWARE, STRAPS, AND ANCHORS TO BE 316 STAINLESS STEEL.
3. TERMINAL STRIP IN SCADA CABINET TO HAVE ALL SIGNALS SHOWN TERMINATED AND LABELED. NOT ALL NECESSARY TERMINATION POINTS MAY BE SHOWN. PROVIDE TERMINAL STRIP LENGTH REQUIRED FOR ALL SIGNALS SHOWN.
4. DOOR INTRUSION FROM PUMP CONTROL PANEL AND SCADA CABINET SHALL BE CONSOLIDATED INTO A SINGLE COMMON FAULT ALARM.
5. MAINTAIN MINIMUM SEPARATION REQUIRED UNDER NEC ARTICLE 504, BETWEEN INTRINSICALLY SAFE CONTROL WIRING AND NON-INTRINSICALLY SAFE MOTOR FEEDING WIRING.
6. UNLESS OTHERWISE NOTED, ALL NUTS, BOLTS, SCREWS, WASHERS, ETC. SHALL BE 316 SS.
7. ELT-PVC-001 CERTIFIED PVC COATED RGS CONDUIT STUB-UPS TO BE 6 IN. ABOVE FINISHED GRADE.
8. WIRELESS NETWORK SHALL CONFORM TO IEEE 802.11AC

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LATANA
LIFT STATION

ELECTRICAL CONTROL
DIAGRAMS SHEET 2

DATE
05-06-2025
PROJECT NO.
212-2402
DRAWN BY
TAD
CHECKED BY
JNO

#	DATE	REVISIONS
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INTERIM REVIEW
Not intended for construction, bidding or permit purposes.
Engineer: ERIC W. BURRER
P.E. Seal No.: 100158
Date: MAY 06, 2025
BURRER ENG, INC. (F-20420)

BURRER ENGINEERING
TBPE No. F-20420

ISSUED FOR REVIEW

BURRER
ENGINEERING
17217 N. Eldridge, Tomball, TX 77377
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TBPE No. F-20420
email: info@burrereng.com

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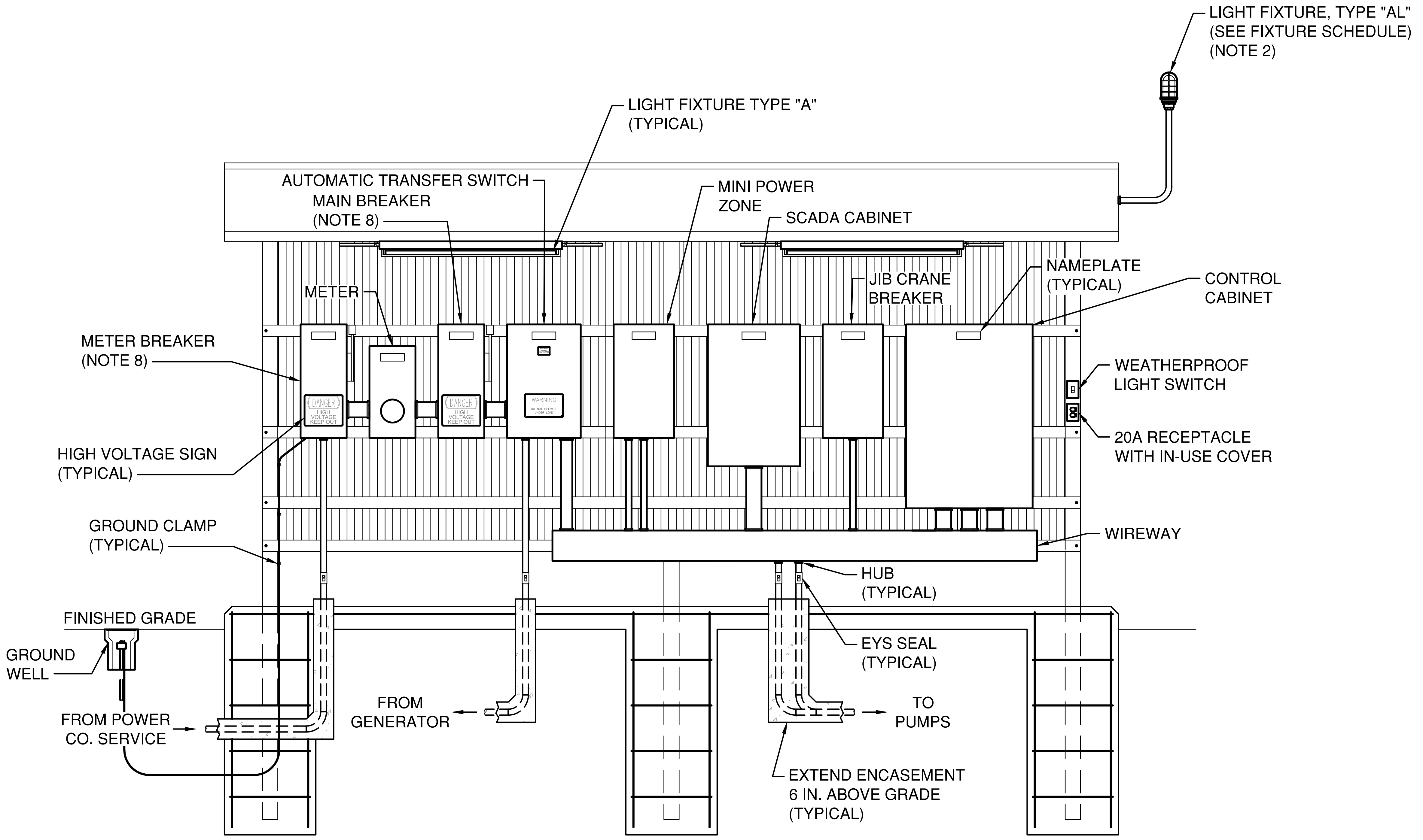


NOTES:

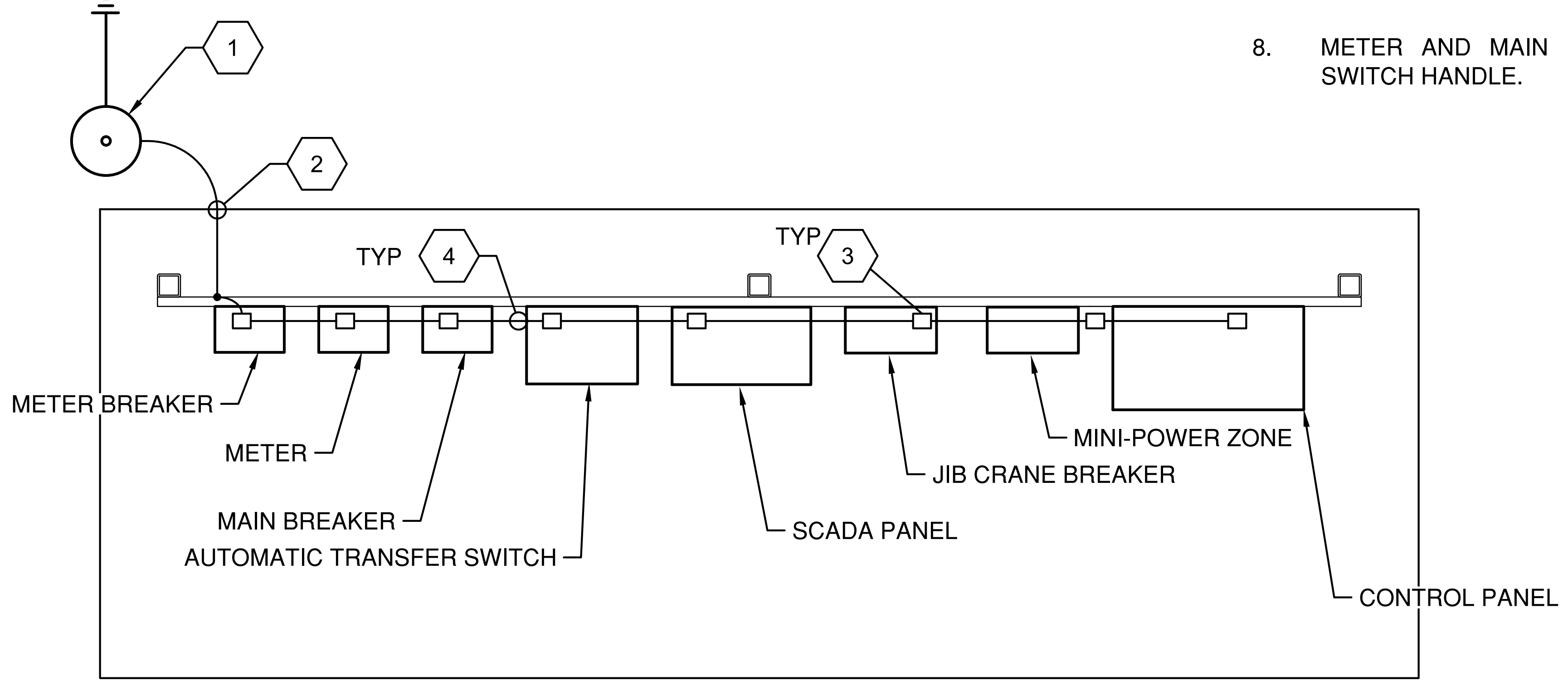
1. REFER TO SHELTER-FRONT VIEW DETAIL ON SHEET #####.
2. MOUNT ALARM LIGHT AS DIRECTED BY OWNER'S REPRESENTATIVE. ALARM LIGHT TO BE VISIBLE FROM STREET AND FROM CONTROL PANEL (MINIMUM OF 12 IN. ABOVE CANOPY).
3. METER BREAKER AND MAIN BREAKER SHALL HAVE AN EXTERNAL OPEN/CLOSE HANDLE.

ELECTRICAL EQUIPMENT RACK INSTALLATION DETAIL

N.T.S. (TYPICAL)

GENERAL NOTES:

1. UNLESS OTHERWISE NOTED, ALL EXPOSED CONDUITS SHALL BE PVC COATED RIGID GALVANIZED STEEL.
2. UNLESS OTHERWISE NOTED, ALL NUTS, BOLTS, SCREWS, WASHERS, ETC. SHALL BE TYPE 316 STAINLESS STEEL.
3. UNLESS OTHERWISE INDICATED, ALL DEVICES WITHOUT FURTHER DESIGNATION ARE LOCATED AT THE CONTROL PANEL.
4. ALL ENCLOSURES, HARDWARE, STRAPS, AND ANCHORS TO BE 316 SS.
5. HARDWARE, ANCHORS, AND HINGED PIN SHALL BE 316 SS. PROVIDE WP SWITCH AND WP GFI RECEPTACLE OUTLET WITH "IN-USE" COVER.
6. SWITCHBOARDS, SWITCHGEAR, AND PANEL BOARDS SHALL HAVE A SHORT-CIRCUIT CURRENT RATING NOT LESS THAN THE AVAILABLE FAULT CURRENT. THE AVAILABLE FAULT CURRENT AND THE DATE THE CALCULATION WAS PERFORMED SHALL BE FIELD MARKED ON THE ENCLOSURE AT THE POINT OF SUPPLY. THE MARKING SHALL COMPLY WITH 110.2l(B)(3).
7. SITE ADDRESS ON METER SHALL NOT BE WRITTEN IN SHARPIE. PROVIDED LISTED LABELING AS PROVIDED BY UTILITY.
8. METER AND MAIN BREAKER SHALL HAVE EXTERIOR KNIFE SWITCH HANDLE.



NOTE:

1. THE GROUNDING SYSTEM SHALL BE TESTED BY AN APPROVED TESTING FIRM THE ENSURE THE RESISTANCE TO GROUND IS NO GREATER THAN 5 OHMS. CONTRACTOR TO SUBMIT GROUND TESTING REPORT TO OWNER'S REPRESENTATIVE.

KEYED NOTES:

1 GROUND TEST WELL 3/4"ØX10' COPPER CLAD GROUND ROD. MECHANICAL CONNECTION TO GROUND CABLE BURIED MIN 18" BELOW GRADE

2 #4/0 SOFT DRAWN BARE COPPER CABLE BURIED MIN 18" BELOW GRADE (TYP ALL BELOW GRADE CABLE). EXOTHERMICALLY WELD ALL BELOW GRADE CONNECTIONS

3 EXTEND UP INTO CONTROL PANEL AND GROUND TO GROUND BUS. REFER TO EQUIPMENT CONNECTION TO GROUND MAT DETAIL.

4 ROUTE #10 GREEN INSULATED GROUND WIRE TO GROUND BUS IN CONTROL PANEL.

LIFT STATION ELECTRICAL RACK GROUNDING DETAIL

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ELECTRICAL
DETAILS SHEET 1

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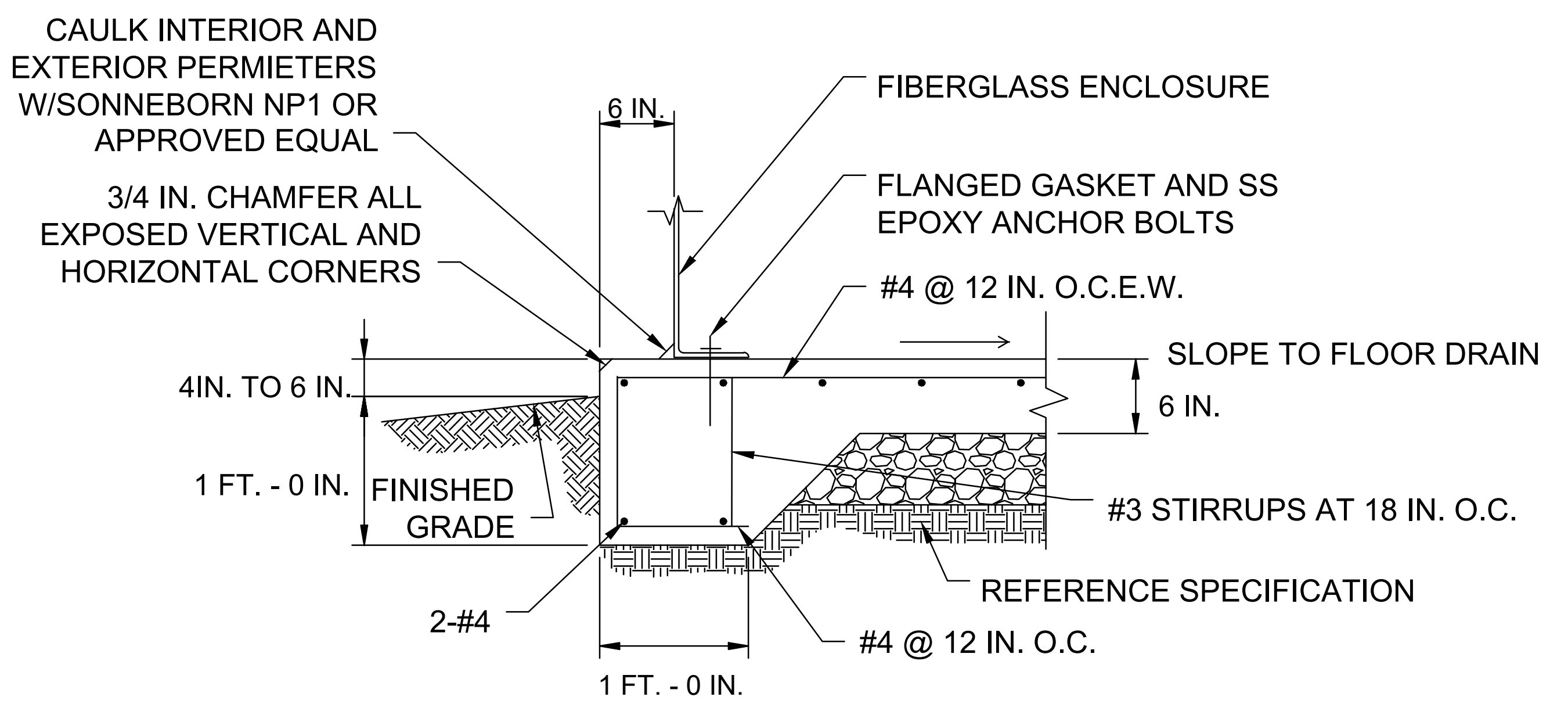
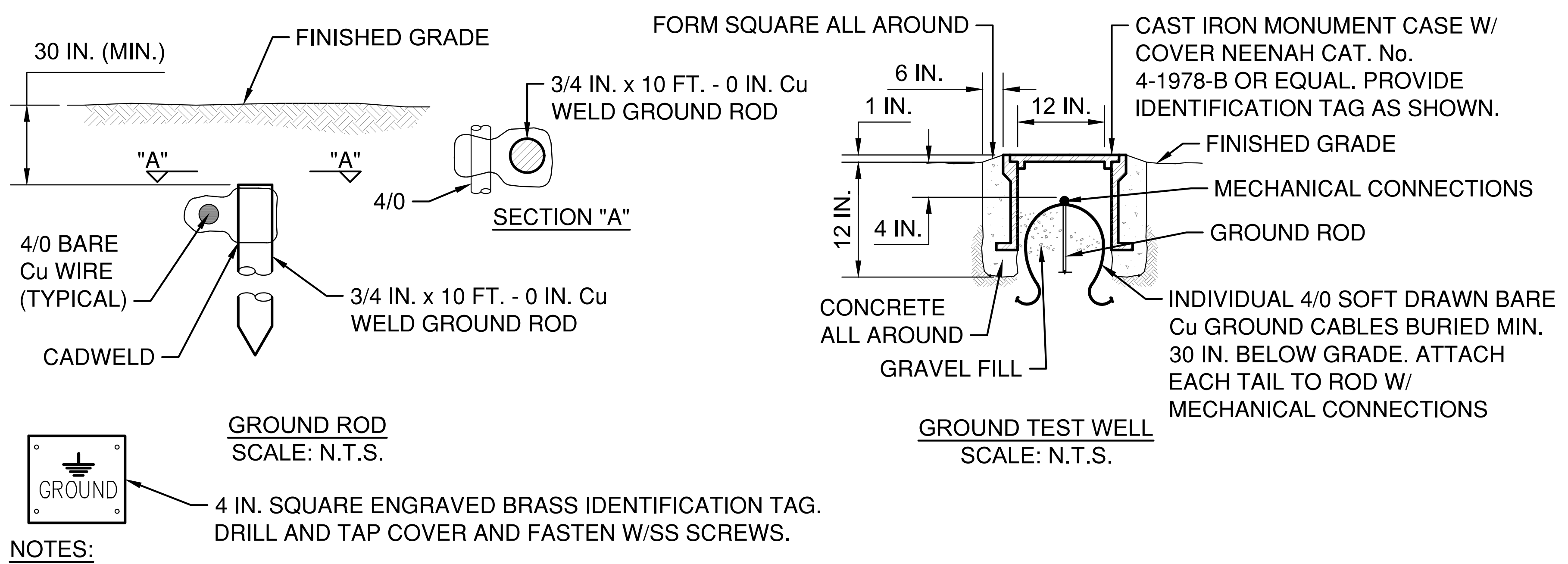

CAULK INTERIOR AND EXTERIOR PERMIETERS W/SONNEBORN NP1 OR APPROVED EQUAL
6 IN.
FIBERGLASS ENCLOSURE
3/4 IN. CHAMFER ALL EXPOSED VERTICAL AND HORIZONTAL CORNERS
FLANGED GASKET AND SS EPOXY ANCHOR BOLTS
#4 @ 12 IN. O.C.E.W.
SLOPE TO FLOOR DRAIN
4IN. TO 6 IN.
6 IN.
1 FT. - 0 IN.
FINISHED GRADE
#3 STIRRUPS AT 18 IN. O.C.
REFERENCE SPECIFICATION
2-#4
#4 @ 12 IN. O.C.
1 FT. - 0 IN.

NOTE:
1. TYPICAL FOR FIBERGLASS BUILDINGS, GENERATORS, TRANSFORMERS, BLOWERS, MISCELLANEOUS EQUIPMENT, ETC.

2. EMBED 2 IN. x 2 IN. x 1/4 IN. HDG ANGLES ACROSS DOOR OPENINGS. PROVIDE CAST IRON FLOOR DRAIN WITH BRASS STRAINER IN CENTER OF BUILDINGS. SLOPE FLOOR TO DRAIN. REFERENCE CIVIL DRAWINGS FOR ROUTING. REFERENCE GVSUD STANDARDS FOR FLOOR FINISH, CONCRETE SEALER, CURB CONTAINMENT, AND SUMP PITS.

EQUIPMENT PAD DETAIL

N.T.S. / (NOTE 1)


30 IN. (MIN.)
FINISHED GRADE
3/4 IN. x 10 FT. - 0 IN. Cu WELD GROUND ROD
"A"
"A"
4/0
SECTION "A"
4/0 BARE Cu WIRE (TYPICAL)
CADWELD
3/4 IN. x 10 FT. - 0 IN. Cu WELD GROUND ROD
GROUND
4 IN. SQUARE ENGRAVED BRASS IDENTIFICATION TAG. DRILL AND TAP COVER AND FASTEN W/SS SCREWS.
FORM SQUARE ALL AROUND
CAST IRON MONUMENT CASE W/ COVER NEENAH CAT. No. 4-1978-B OR EQUAL. PROVIDE IDENTIFICATION TAG AS SHOWN.
6 IN.
1 IN.
12 IN.
FINISHED GRADE
MECHANICAL CONNECTIONS
12 IN.
4 IN.
GROUND ROD
CONCRETE ALL AROUND
GRAVEL FILL
INDIVIDUAL 4/0 SOFT DRAWN BARE Cu GROUND CABLES BURIED MIN. 30 IN. BELOW GRADE. ATTACH EACH TAIL TO ROD W/ MECHANICAL CONNECTIONS

GROUND ROD
SCALE: N.T.S.

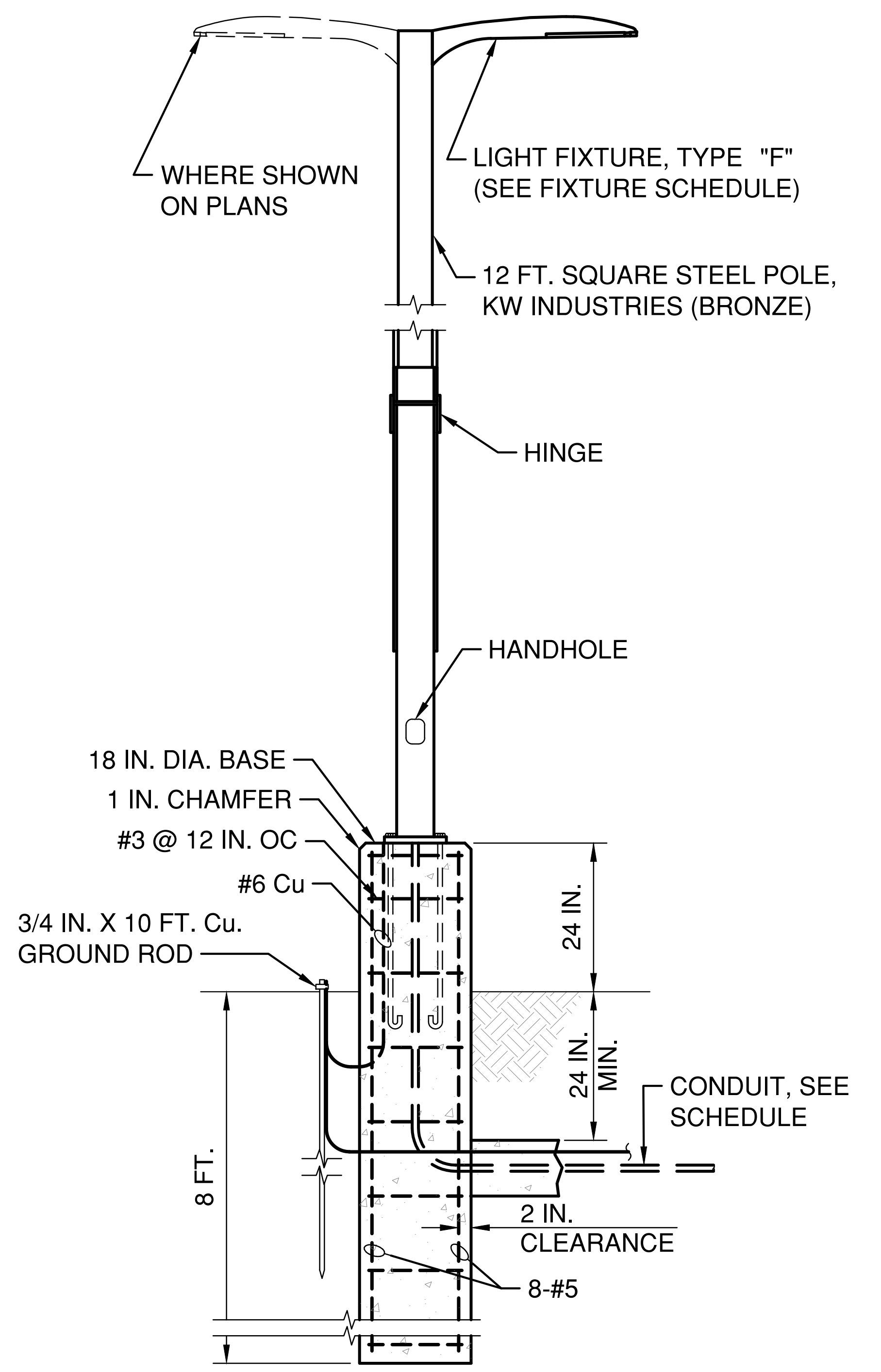
GROUND TEST WELL
SCALE: N.T.S.

NOTES:
1. ANY EXPOSED OR ABOVE GRADE CONNECTIONS SHALL BE MECHANICAL TYPE WITH CRIMP LUGS. USE CADWELD FOR BURIED LOCATIONS.
2. EXOTHERMICALLY WELD ALL BELOW GRADE CONNECTIONS.
3. EXTEND #6 SOFT DRAWN BARE COPPER CABLE UP INTO ATS/EQUIPMENT PANELS AND GROUND TO GROUND BUS.

GROUNDING SYSTEM DETAIL

N.T.S. (TYPICAL)

GENERAL NOTES:
1. REFER TO LATEST GVSUD STANDARDS FOR FULL PROJECT DETAIL REQUIREMENTS.
2. REFER TO FULL SPECIFICATIONS AND CONSTRUCTION DRAWINGS FROM OTHER DISCIPLINES FOR FULL PROJECT REQUIREMENTS.
3. SCADA CONTRACTOR TO SUBMIT TOWER OR MAST PER RADIO PATH STUDY. ANTENNA TOWERS SHALL BE SELF-SUPPORTING EQUILATERAL TRIANGULAR TYPE. TOWERS SHALL BE KNOCK-DOWN TYPE STRUCTURES FOR SITE ASSEMBLY. TOWER STRUCTURAL MEMBERS SHALL BE ROLL-FORMED GALVANIZED STEEL. PROVIDE AN EXTERNAL LADDER WITH FALL PROTECTION AND ANTI-CLIMB DEVICES ON ALL TOWERS. TOWERS SHALL BE DESIGNED FOR IBC RISK CATEGORY III, THE APPROPRIATE EXPOSURE CATEGORY, FASTEST MILE AND 3 SECOND PEAK GUST WIND RATINGS BASED ON THE ULTIMATE EFFECTIVE PROJECTED AREA AND WIND SPEED DATA FOR THE PROPOSED SITE LOCATION WITH THE EXTERNAL LADDER ASSEMBLY, ANTENNAS, AND ALL APPURTENANCES.

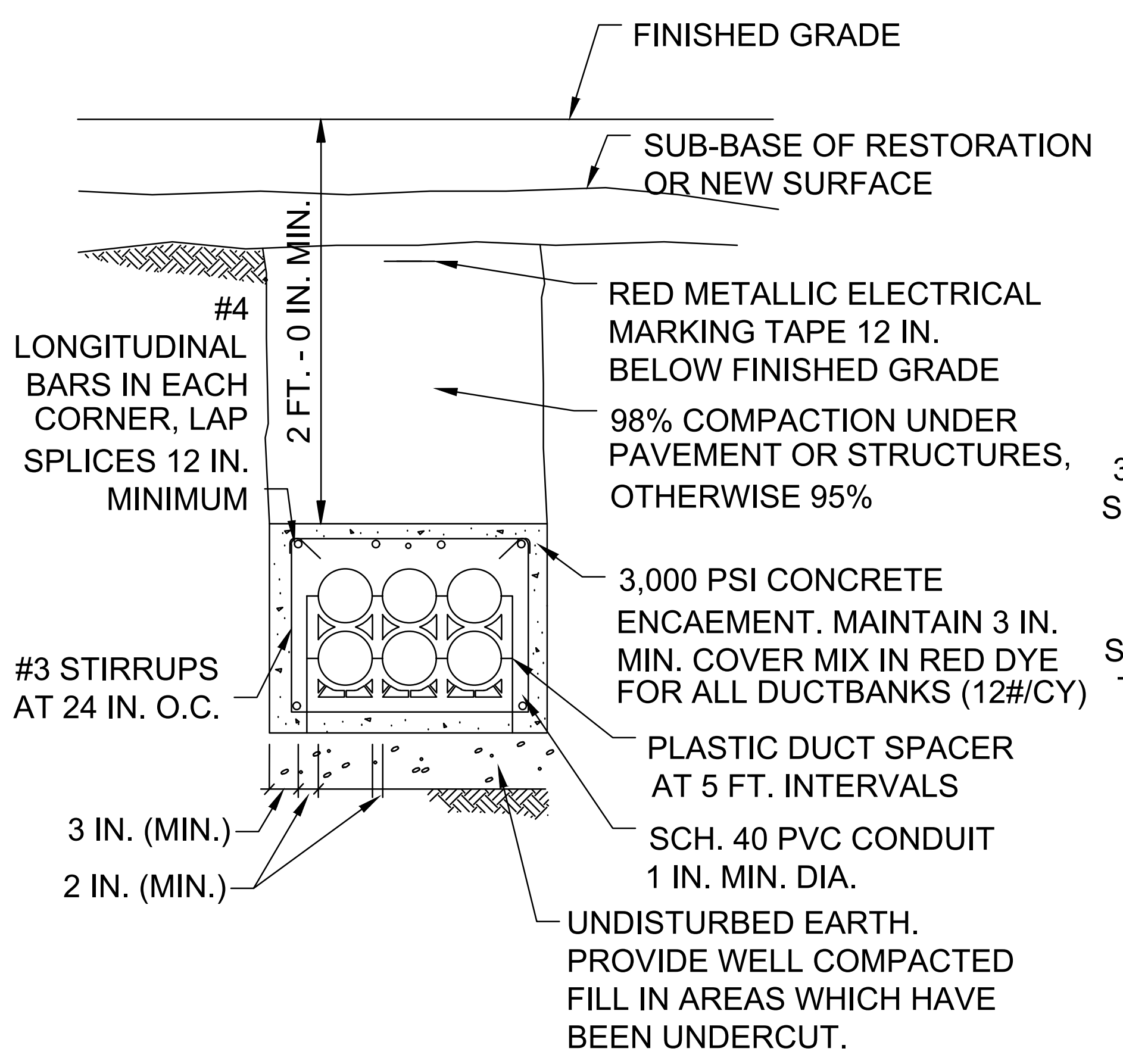


NOTES:
1. POLE, FOUNDATION, AND ANCHOR BOLTS SHALL BE RATED FOR LOCAL JURISDICTION WIND REQUIREMENTS. CONTRACTOR SHALL SUBMIT SUBMITTAL WITH CALCULATIONS FOR ENGINEERS APPROVAL.

2. ORIENT POLE ON SITE TO ALLOW HINGE OPERATION WITHOUT DAMAGE TO EQUIPMENT.

AREA LIGHT POLE DETAIL

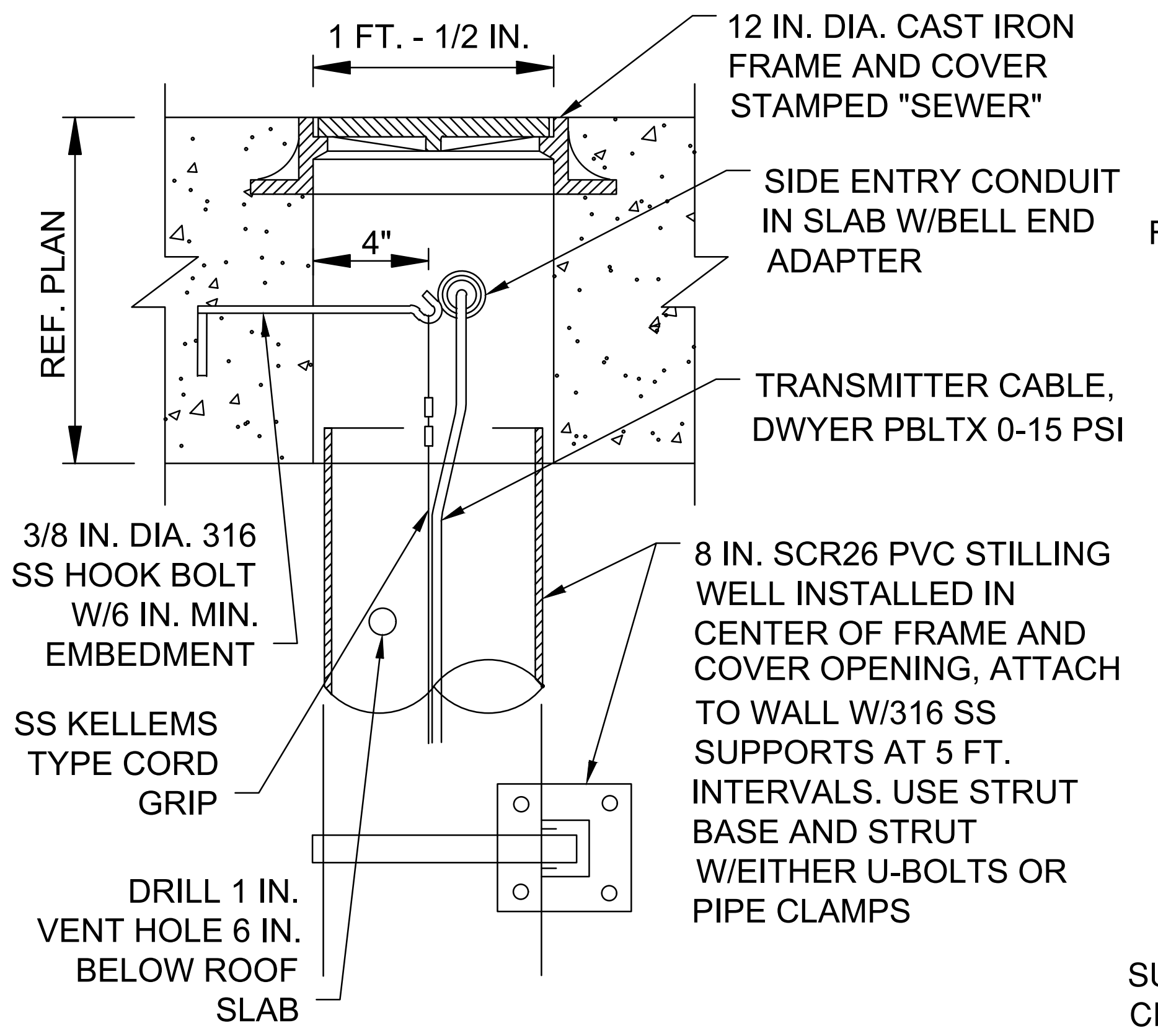
N.T.S.


FINISHED GRADE
SUB-BASE OF RESTORATION OR NEW SURFACE
#4 LONGITUDINAL BARS IN EACH CORNER, LAP SPLICES 12 IN. MINIMUM
2 FT. - 0 IN. MIN.
RED METALLIC ELECTRICAL MARKING TAPE 12 IN. BELOW FINISHED GRADE
98% COMPACTION UNDER PAVEMENT OR STRUCTURES, OTHERWISE 95%
3,000 PSI CONCRETE ENCAEMENT. MAINTAIN 3 IN. MIN. COVER MIX IN RED DYE FOR ALL DUCTBANKS (12#/CY)
#3 STIRRUPS AT 24 IN. O.C.
PLASTIC DUCT SPACER AT 5 FT. INTERVALS
3 IN. (MIN.)
SCH. 40 PVC CONDUIT 1 IN. MIN. DIA.
2 IN. (MIN.)
UNDISTURBED EARTH. PROVIDE WELL COMPACTED FILL IN AREAS WHICH HAVE BEEN UNDERCUT.

NOTES:
1. CONCRETE AND REBAR ARE REQUIRED FOR ALL DUCTBANKS, INCLUDING UNDER SLABS AND STRUCTURES.
2. DUCTBANK REBAR SHALL BE DOWELLED INTO SLABS AND STRUCTURES.
3. MINIMUM 2" SEPARATION BETWEEN DUCTS FOR LIKE SERVICES.
4. SIGNALS, POWER, AND CONTROLS SHALL BE ROUTED IN SEPARATE DUCTS.
5. MINIMUM 12" SEPARATION BETWEEN SIGNAL DUCTS AND POWER OR CONTROL DUCTS.
6. DO NOT MIX VOLTAGES IN THE SAME CONDUIT.
7. MINIMUM 2" CLEARANCE BETWEEN REBAR AND CONDUIT.
8. MINIMUM 3" CONCRETE COVER AROUND REBAR.
9. PROVIDE ONE SPARE CONDUIT OF EACH SIZE AND TYPE IN ALL DUCTBANKS.
10. MAINTAIN 12" MINIMUM VERTICAL CLEARANCE BETWEEN DUCTBANK CONCRETE AND OTHER UTILITIES.
11. SHARED TRENCHES ARE NOT ALLOWED.

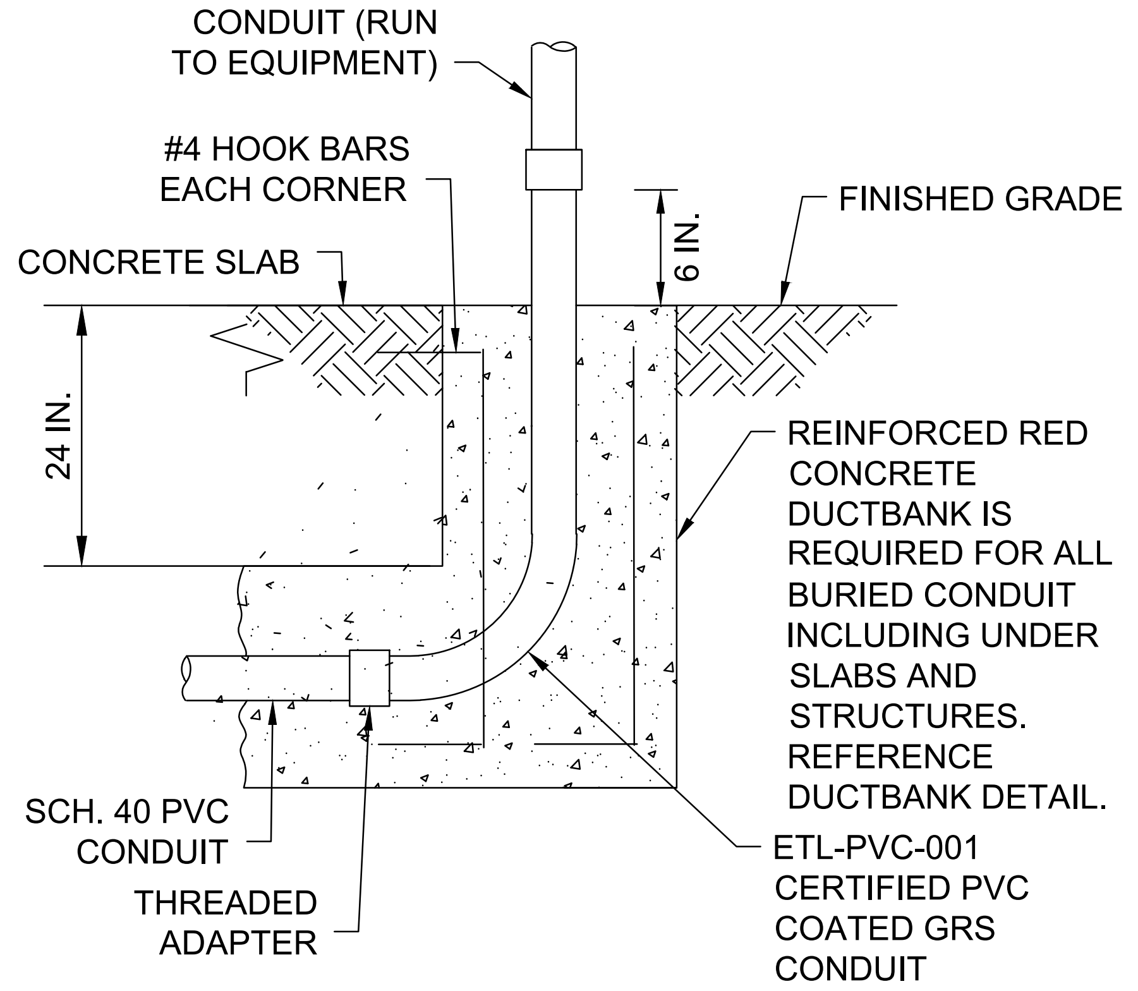
REINFORCE CONCRETE DUCTBANK DETAIL

N.T.S.


1 FT. - 1/2 IN.
12 IN. DIA. CAST IRON FRAME AND COVER STAMPED "SEWER"
SIDE ENTRY CONDUIT IN SLAB W/BELL END ADAPTER
REF. PLAN
4"
TRANSMITTER CABLE, DWYER PBLTX 0-15 PSI
3/8 IN. DIA. 316 SS HOOK BOLT W/6 IN. MIN. EMBEDMENT
8 IN. SCR26 PVC STILLING WELL INSTALLED IN CENTER OF FRAME AND COVER OPENING, ATTACH TO WALL W/316 SS SUPPORTS AT 5 FT. INTERVALS. USE STRUT BASE AND STRUT W/EITHER U-BOLTS OR PIPE CLAMPS
SS KELLEMS TYPE CORD GRIP
DRILL 1 IN. VENT HOLE 6 IN. BELOW ROOF SLAB

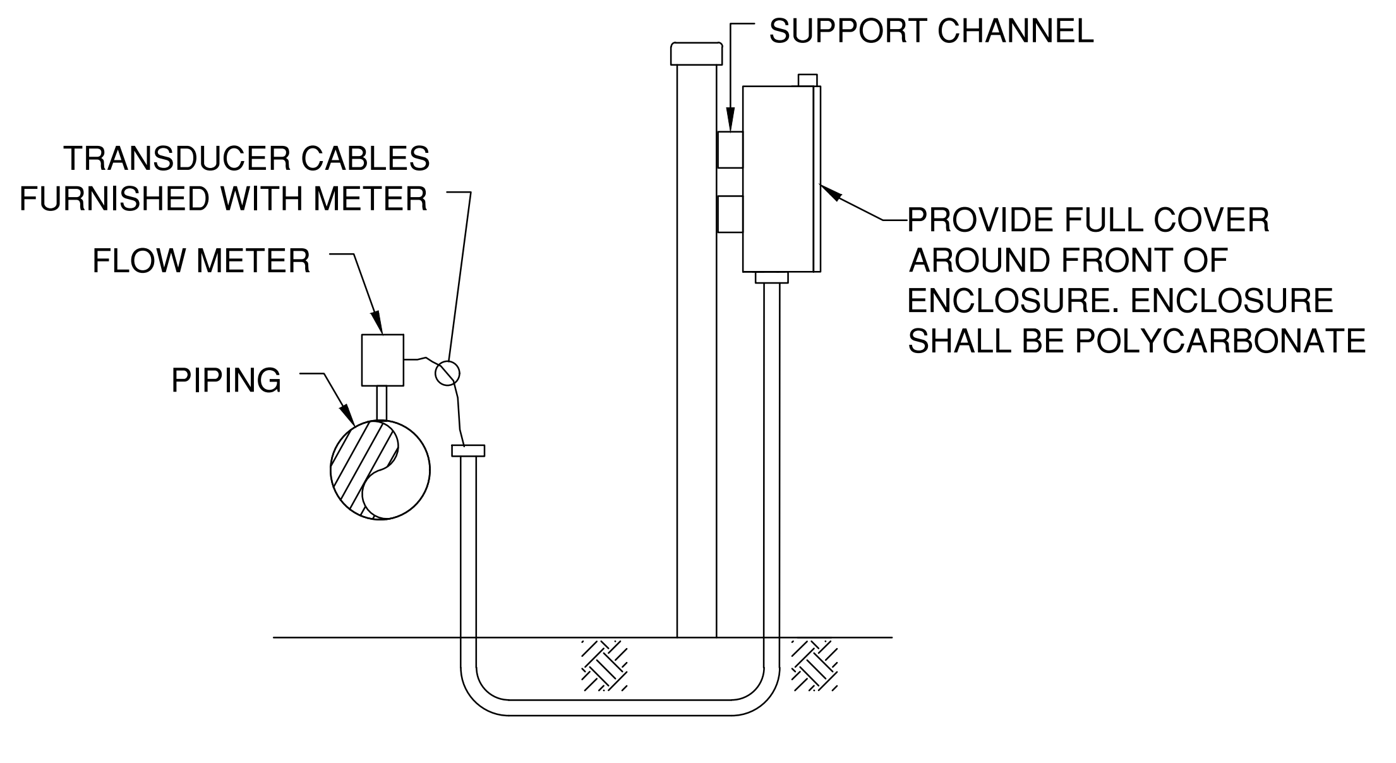
STILLING WELL DETAIL

N.T.S.

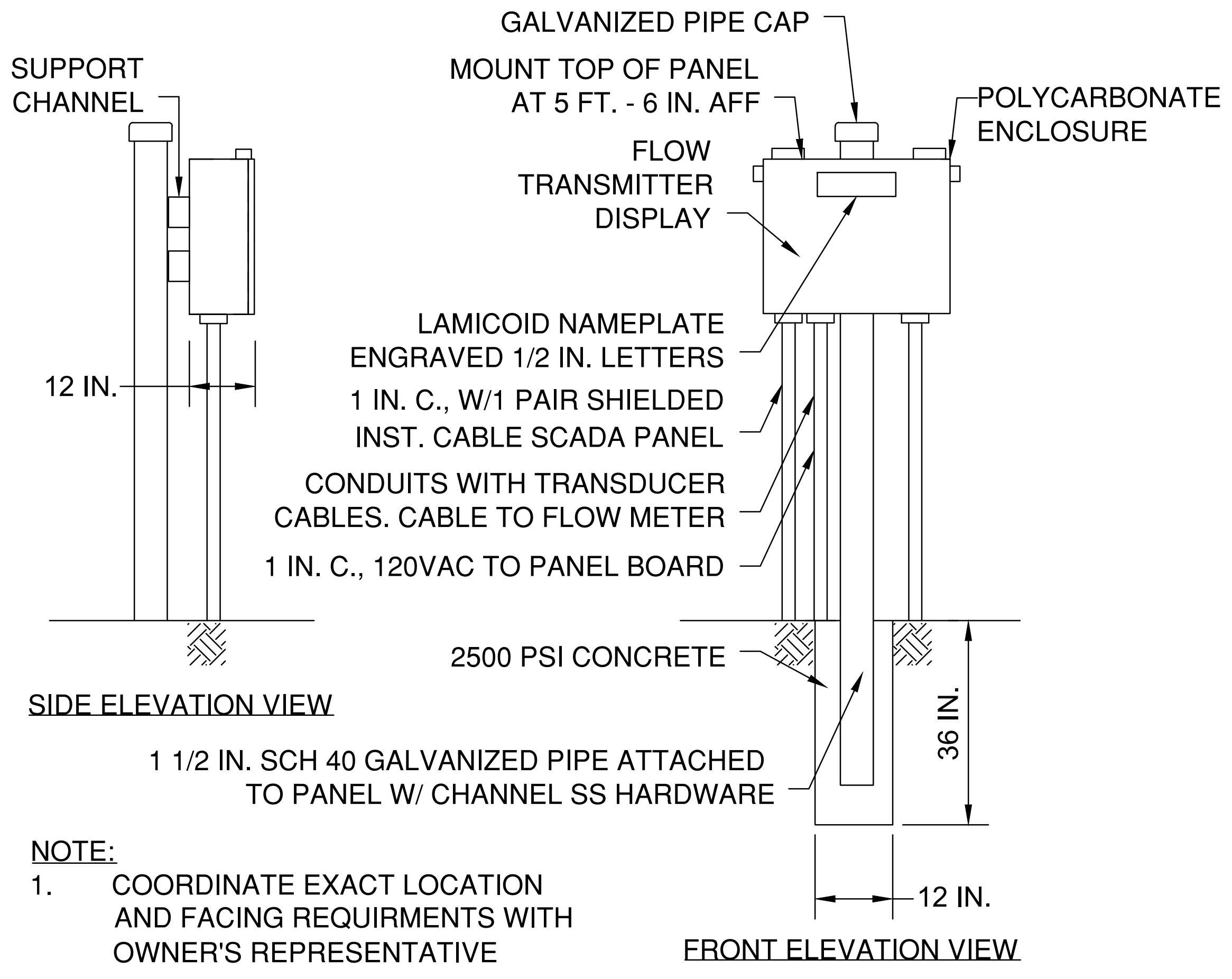

CONDUIT (RUN TO EQUIPMENT)
#4 HOOK BARS EACH CORNER
FINISHED GRADE
6 IN.
CONCRETE SLAB
24 IN.
REINFORCED RED CONCRETE DUCTBANK IS REQUIRED FOR ALL BURIED CONDUIT INCLUDING UNDER SLABS AND STRUCTURES. REFERENCE DUCTBANK DETAIL.
SCH. 40 PVC CONDUIT
THREADED ADAPTER
ETL-PVC-001 CERTIFIED PVC COATED GRS CONDUIT

CONDUIT STUB-UP DETAIL

N.T.S.


SUPPORT CHANNEL
TRANSDUCER CABLES FURNISHED WITH METER
FLOW METER
PIPING
PROVIDE FULL COVER AROUND FRONT OF ENCLOSURE. ENCLOSURE SHALL BE POLYCARBONATE

SIDE ELEVATION VIEW


SUPPORT CHANNEL
12 IN.
GALVANIZED PIPE CAP
MOUNT TOP OF PANEL AT 5 FT. - 6 IN. AFF
POLYCARBONATE ENCLOSURE
FLOW TRANSMITTER DISPLAY
LAMICOID NAMEPLATE ENGRAVED 1/2 IN. LETTERS
1 IN. C., W/1 PAIR SHIELDED INST. CABLE SCADA PANEL
CONDUITS WITH TRANSDUCER CABLES. CABLE TO FLOW METER
1 IN. C., 120VAC TO PANEL BOARD
2500 PSI CONCRETE
36 IN.
1 1/2 IN. SCH 40 GALVANIZED PIPE ATTACHED TO PANEL W/ CHANNEL SS HARDWARE
12 IN.

SIDE ELEVATION VIEW

FRONT ELEVATION VIEW

NOTE:
1. COORDINATE EXACT LOCATION AND FACING REQUIRMENTS WITH OWNER'S REPRESENTATIVE

FLOW TRANSMITTER INSTALLATION DETAIL

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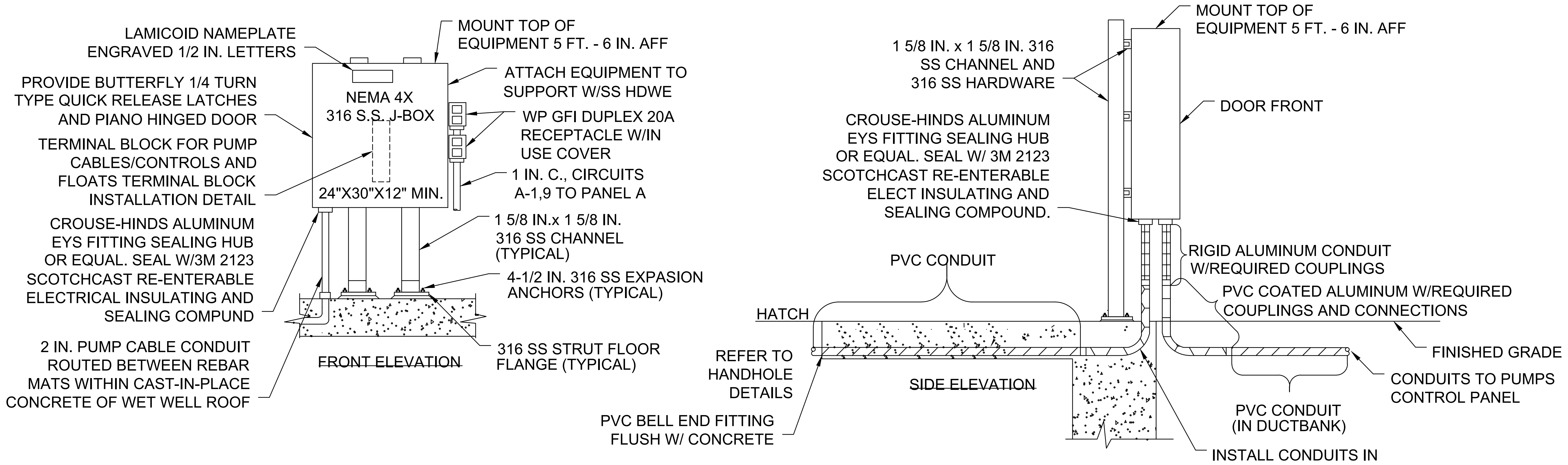
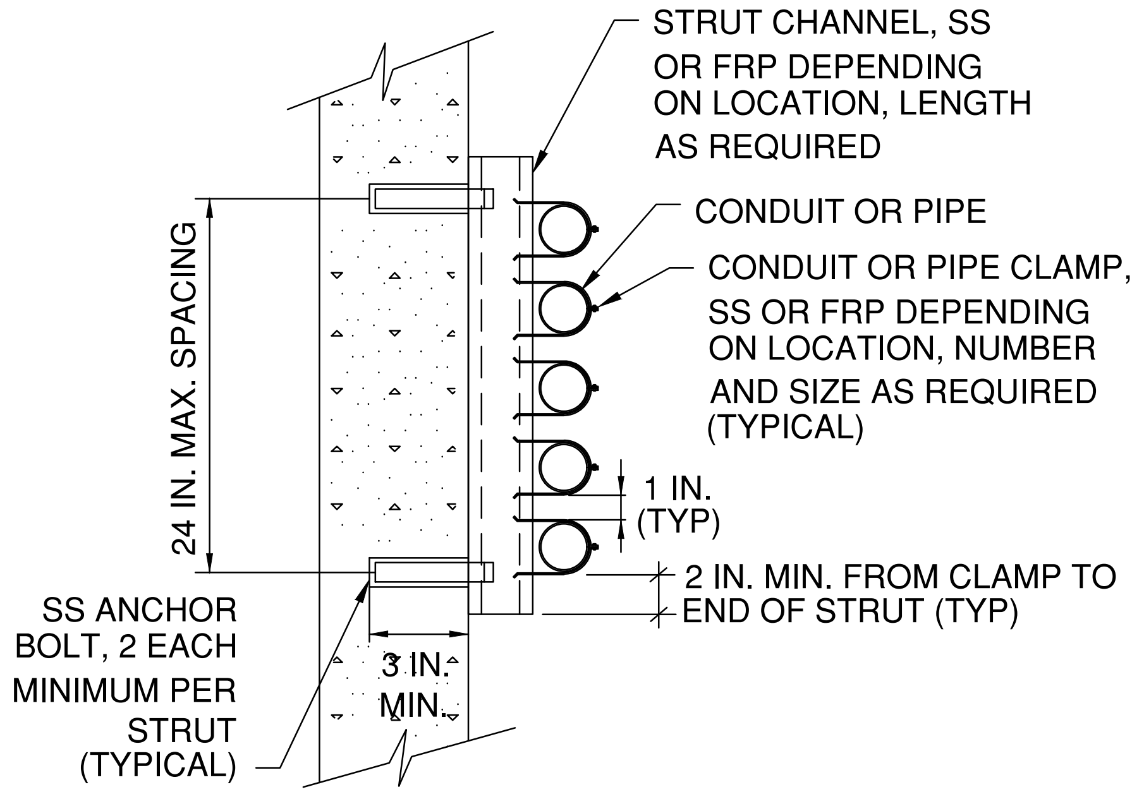


WET WELL J-BOX INSTALLATION DETAIL

N.T.S. / (GENERAL NOTE 7)

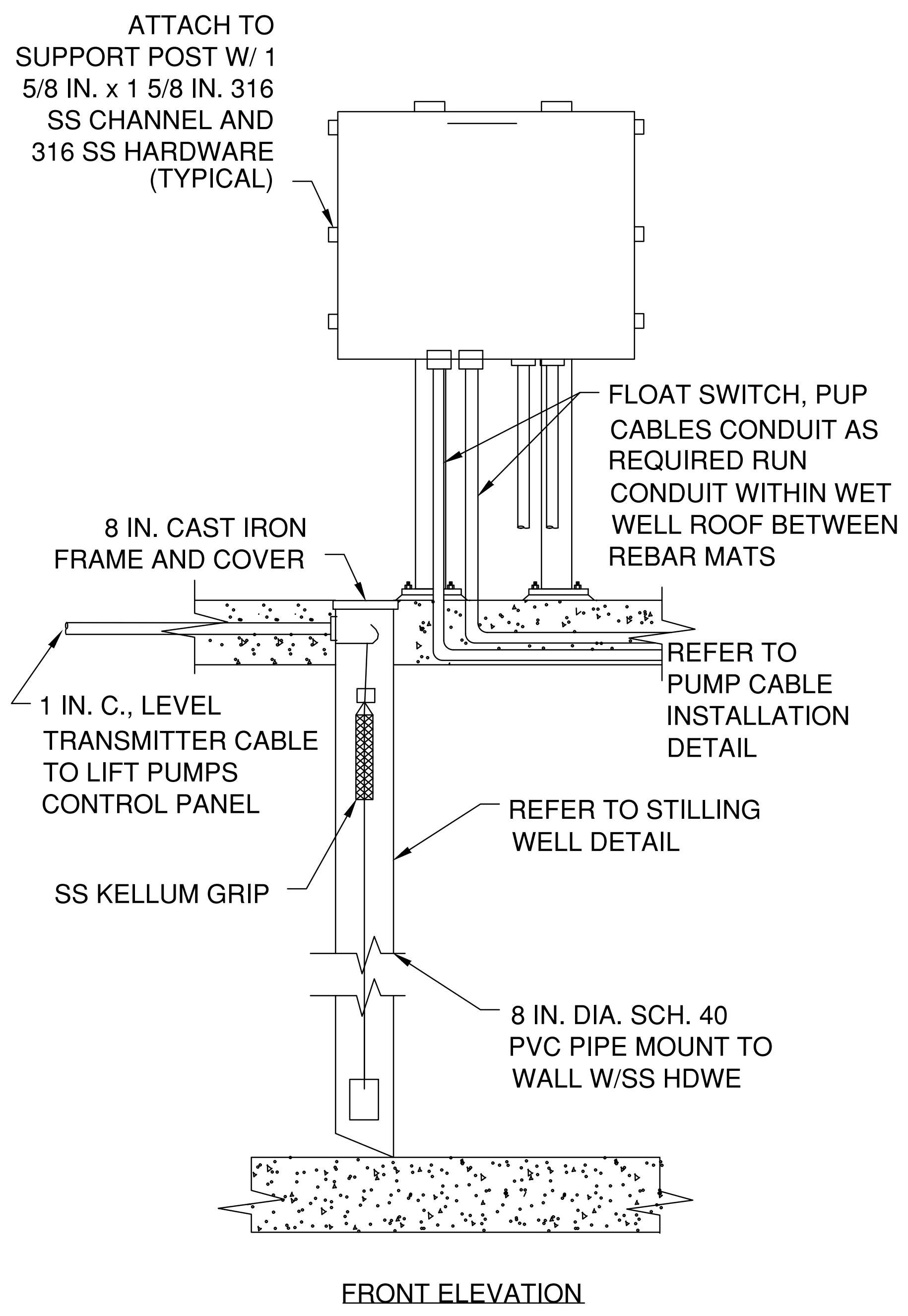


NOTE:

1. STAINLESS STEEL (SS) SHALL BE 304SS FOR WATER PROJECTS AND 316SS FOR WASTEWATER PROJECTS.

STRUT AND CLAMP DETAIL

N.T.S.



NOTES:

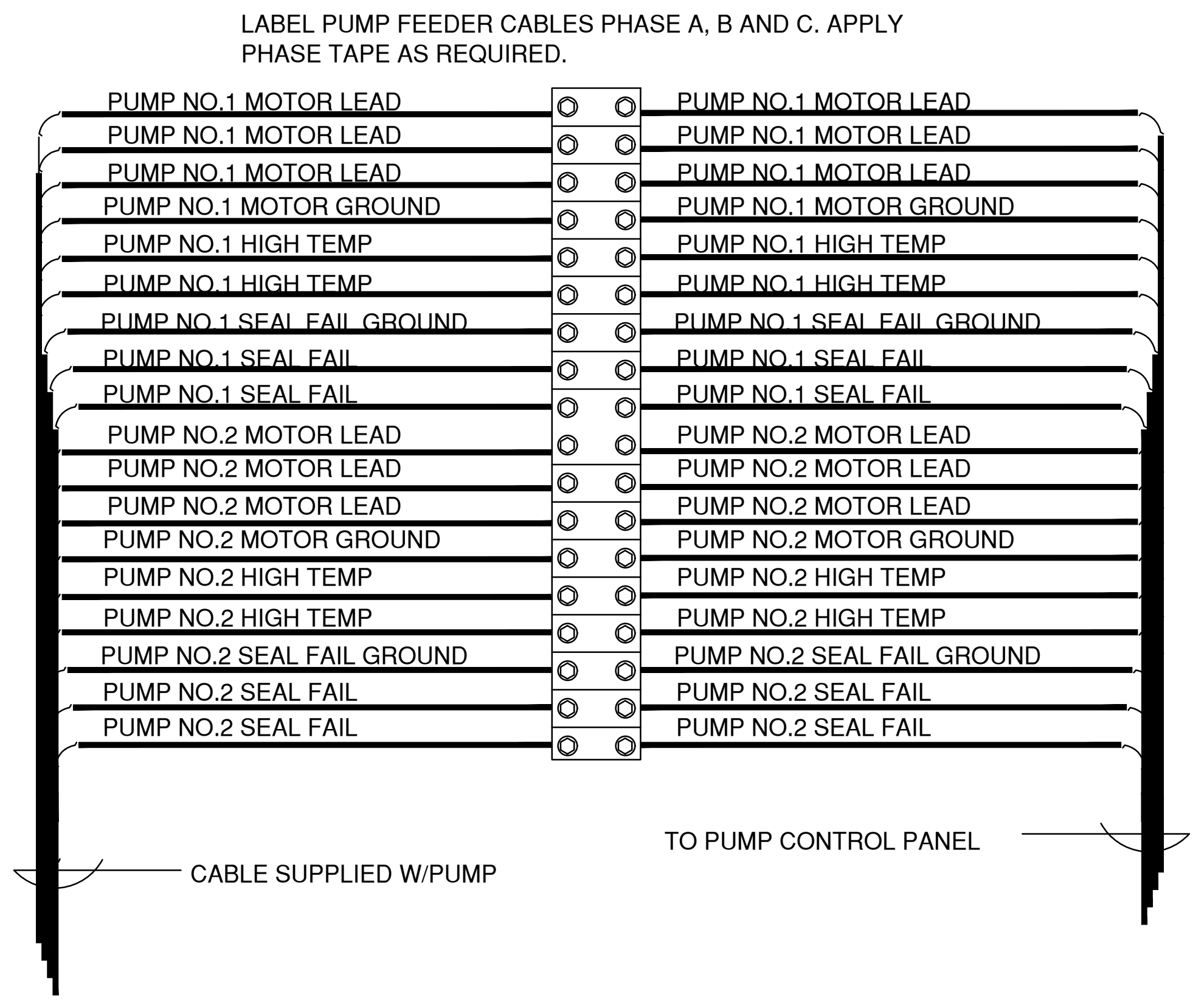
1. EQUIPMENT SUPPORT TO BE FABRICATED AS SHOWN ON DETAILS.
2. TRANSDUCER CABLE TO BE LOCATED IN STILLING WELL WITH CONDUIT SIDE ENTRY. REFER TO ADDITIONAL INSTALLATION DETAILS, CIVIL SHEETS, AND GVSUD STANDARDS.

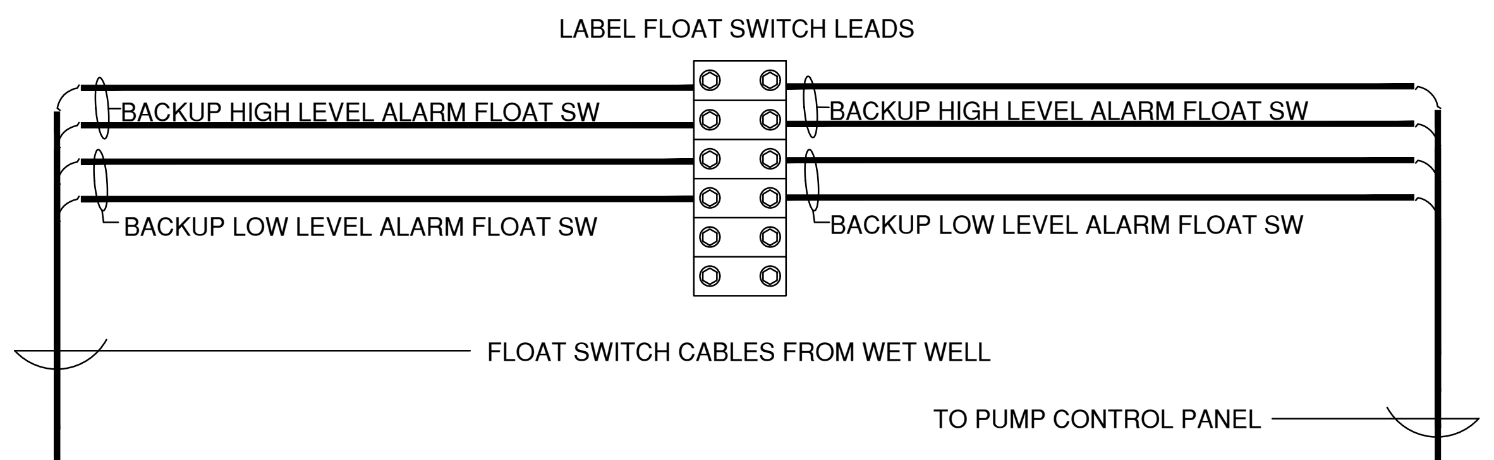
WET WELL J-BOX
ADDITIONAL INSTALLATION DETAIL

N.T.S. / (GENERAL NOTE 7)

GENERAL NOTES:

1. MAINTAIN MINIMUM SEPARATION REQUIRED UNDER NEC ARTICLE 504, BETWEEN INTRINSICALLY SAFE CONTROL WIRING AND NON-INTRINSICALLY SAFE MOTOR FEEDER WIRING.
2. UNLESS OTHERWISE NOTED, ALL EXPOSED CONDUITS SHALL BE PVC COATED RIGIC GALVANIZED STEEL.
3. UNLESS OTHERWISE NOTED, ALL NUTS, BOLTS, SCREWS, WASHERS, ETC. SHALL BE STAINLESS STEEL.
4. CABLE HOLDER SHOWN FOR CLARITY, FILED LOCATE.
5. COORDINATE INSTALLATION OF CONDUITS WITH LOCATION OF GUIDE RAILS FOR CABLE CLEARANCE.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD SELECTING OPTIMUM ROUTING OF CONDUITS.
7. WET WELL J-BOX INCLUDES BOTH PUMP POWER/ CONTROL CABLES AND FLOAT CABLES. TRANSDUCER SHALL NOT BE ROUTED THROUGH WET WELL J-BOX. J-BOX DETAILS SHOWN ON THIS PAGE ARE NOT SEPARATE BOXES.
8. ETL-PVC-001 CERTIFIED PVC COATED RGS CONDUIT STUB-UPS TO 6 IN. ABOVE FINISHED GRADE.
9. IF MULTIPLE PUMP CABLES ARE PROVIDED, INSTALL ADDITIONAL CONDUITS INSTEAD OF THE SINGLE CONDUIT INDICATED. THE MINIMUM CONDUIT SIZE FOR THE PUMP POWER CABLE SHALL BE THE CONDUIT SIZE INDICATED. MINIMUM CONDUIT SIZE IS 1 & 1/2 INCHES.
10. REFER TO LATEST GVSUD STANDARDS FOR FULL PROJECT DETAIL REQUIREMENTS.
11. REFER TO FULL SPECIFICATIONS AND CONSTRUCTION DRAWINGS FROM ALL DISCIPLINES FOR FULL PROJECT REQUIREMENTS.
12. ALL ENCLOSURES, HARDWARE, STRAPS, AND ANCHORS TO BE 316 STAINLESS STEEL.



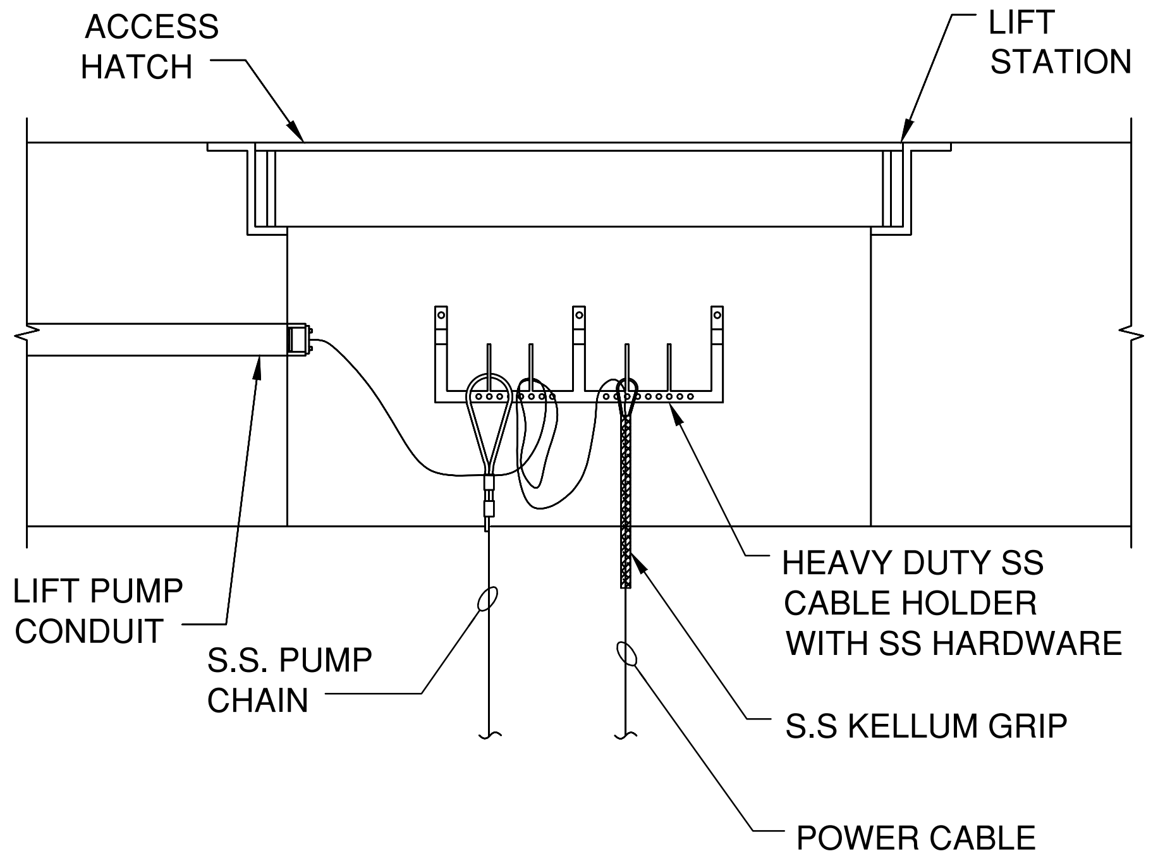

LABEL FLOAT SWITCH LEADS
BACKUP HIGH LEVEL ALARM FLOAT SW
BACKUP LOW LEVEL ALARM FLOAT SW
BACKUP HIGH LEVEL ALARM FLOAT SW
BACKUP LOW LEVEL ALARM FLOAT SW
FLOAT SWITCH CABLES FROM WET WELL
TO PUMP CONTROL PANEL

NOTE:

1. COORDINATE WITH PUMP VENDOR AND INSTALL ALL PUMP VENDORS REQUIRED CONNECTIONS. ALL CABLES AND TERMINALS MAY NOT BE INDICATED.
2. MOUNT TERMINAL BLOCK VERTICALLY AND CENTERED IN BOX.

WET WELL J-BOX
TERMINAL BLOCK INSTALLATION DETAIL

N.T.S.



PUMP CABLE INSTALLTION DETAIL

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CHECKED BY
JNO

#	DATE	REVISIONS
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INTERIM REVIEW
Not intended for construction,
bidding or permit purposes.
Engineer: ERIC W. BURRER
P.E. Seal No.: 100158
Date: MAY 06, 2025
BURRER ENG, INC. (F-20420)

BURRER ENGINEERING
TBPE No. F-20420

ISSUED FOR REVIEW

BURRER
ENGINEERING
17217 N. Eldridge, Tomball, TX 77377
Tel: 832-761-5220
TBPE No. F-20420
email: info@burrereng.com

E-503

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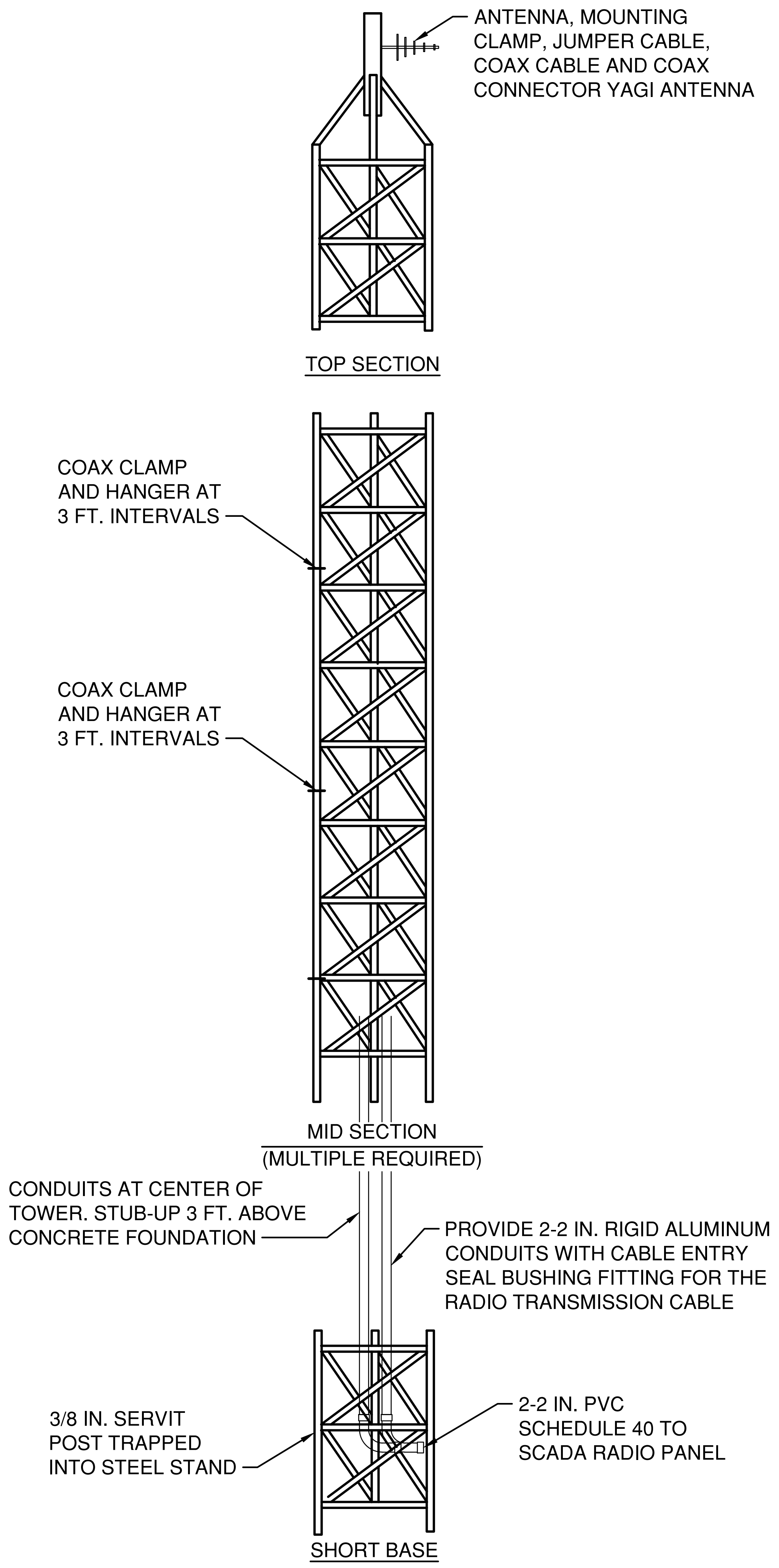
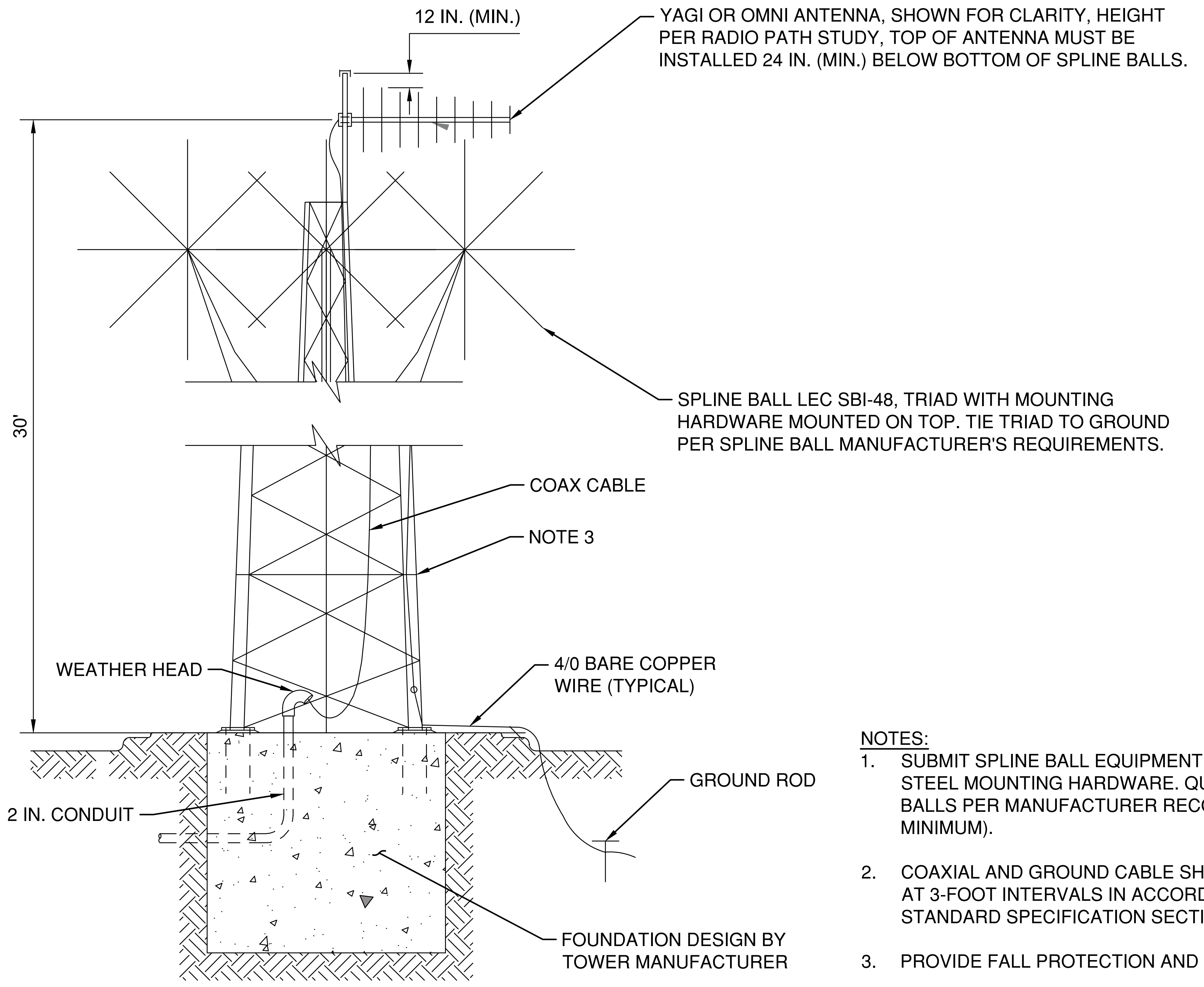

ANTENNA, MOUNTING CLAMP, JUMPER CABLE, COAX CABLE AND COAX CONNECTOR YAGI ANTENNA
TOP SECTION
COAX CLAMP AND HANGER AT 3 FT. INTERVALS
COAX CLAMP AND HANGER AT 3 FT. INTERVALS
MID SECTION
(MULTIPLE REQUIRED)
CONDUITS AT CENTER OF TOWER. STUB-UP 3 FT. ABOVE CONCRETE FOUNDATION
PROVIDE 2-2 IN. RIGID ALUMINUM CONDUITS WITH CABLE ENTRY SEAL BUSHING FITTING FOR THE RADIO TRANSMISSION CABLE
3/8 IN. SERVIT POST TRAPPED INTO STEEL STAND
2-2 IN. PVC SCHEDULE 40 TO SCADA RADIO PANEL
SHORT BASE

INCLUDE TOWER NAD83 STATE COORDINATES:
LATITUD: __D__M__S = __.____
LONGITUDE: __D__M__S = __.____

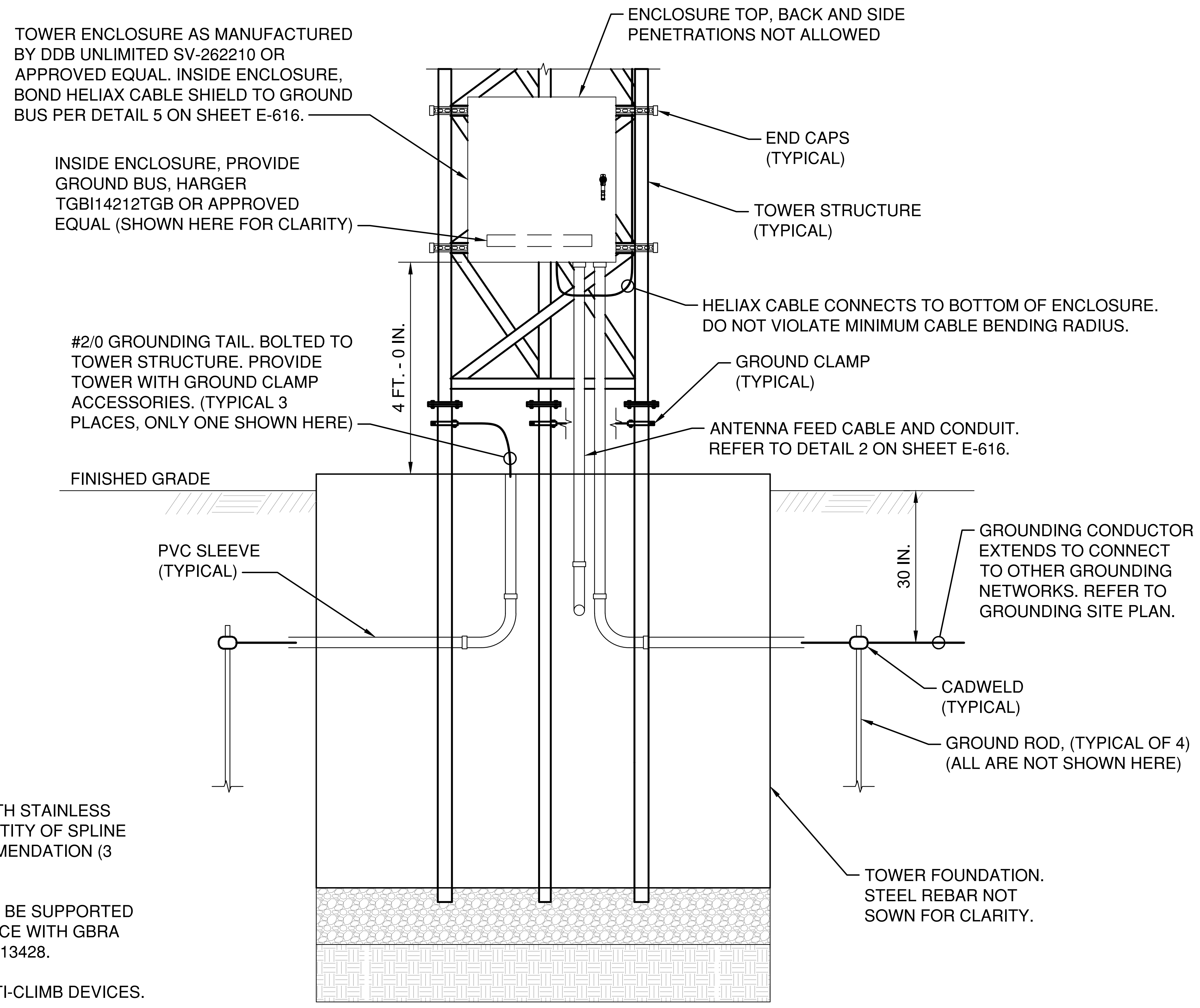
NOTES:
1. TOWER SHALL BE ROHN SELF-SUPPORTED TOWER
2. OVERTURNING MOMENT: 49,600 FT-LB
3. MAX ALLOWABLE SHEAR: 3,800 LB
4. TOWER MAXIMUM HEIGHT IS 60 FT.
5. 10-FOOT CLIMB GUARDS SHALL BE PROVIDED TO EACH SIDE OF TOWER.

SCADA TOWERS SECTIONS DETAIL
N.T.S.

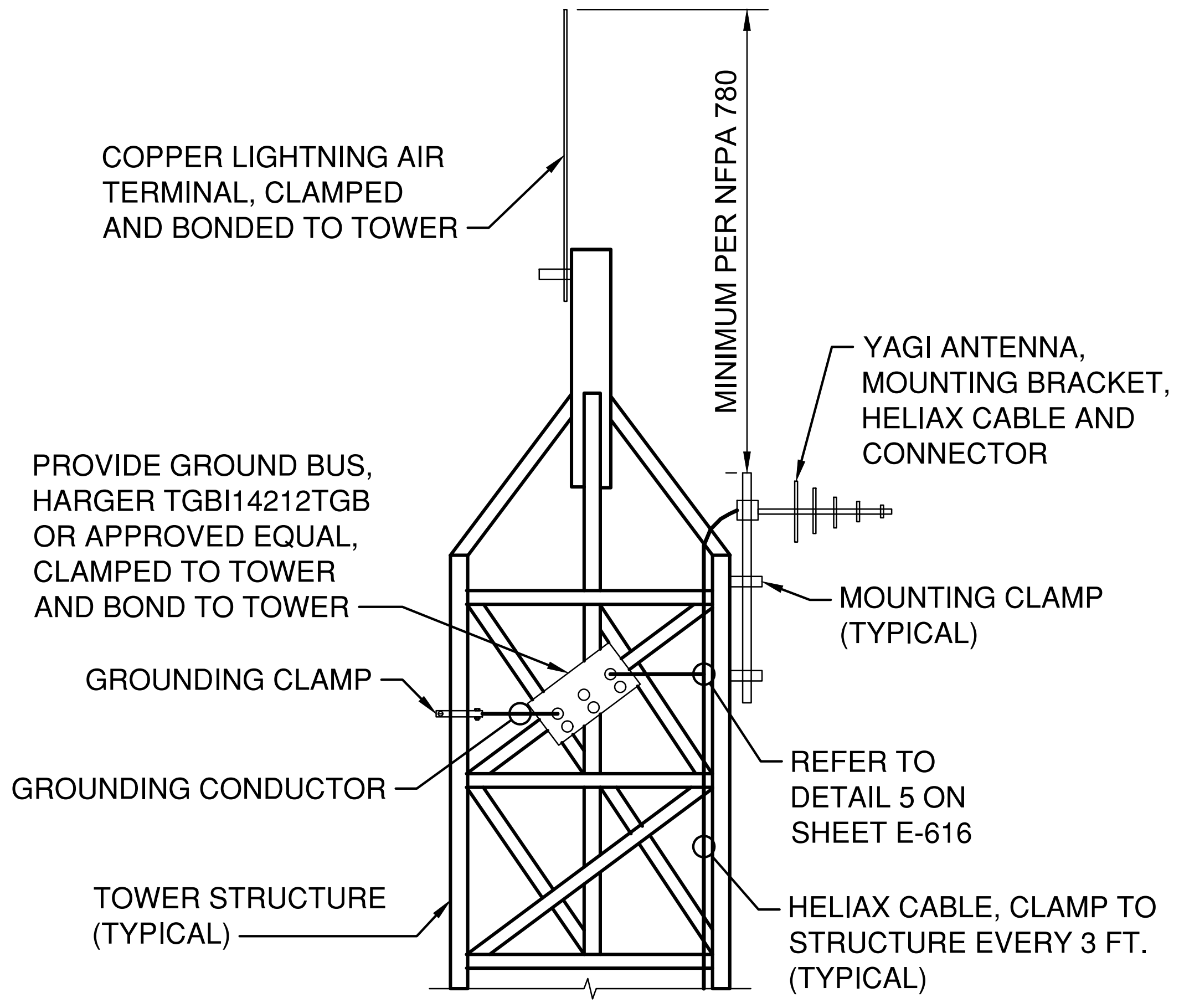

12 IN. (MIN.)
YAGI OR OMNI ANTENNA, SHOWN FOR CLARITY, HEIGHT PER RADIO PATH STUDY, TOP OF ANTENNA MUST BE INSTALLED 24 IN. (MIN.) BELOW BOTTOM OF SPLINE BALLS.
30'
SPLINE BALL LEC SBI-48, TRIAD WITH MOUNTING HARDWARE MOUNTED ON TOP. TIE TRIAD TO GROUND PER SPLINE BALL MANUFACTURER'S REQUIREMENTS.
COAX CABLE
NOTE 3
WEATHER HEAD
4/0 BARE COPPER WIRE (TYPICAL)
GROUND ROD
2 IN. CONDUIT
FOUNDATION DESIGN BY TOWER MANUFACTURER

NOTES:
1. SUBMIT SPLINE BALL EQUIPMENT WITH STAINLESS STEEL MOUNTING HARDWARE. QUANTITY OF SPLINE BALLS PER MANUFACTURER RECOMMENDATION (3 MINIMUM).
2. COAXIAL AND GROUND CABLE SHALL BE SUPPORTED AT 3-FOOT INTERVALS IN ACCORDANCE WITH GBRA STANDARD SPECIFICATION SECTION 13428.
3. PROVIDE FALL PROTECTION AND ANTI-CLIMB DEVICES.

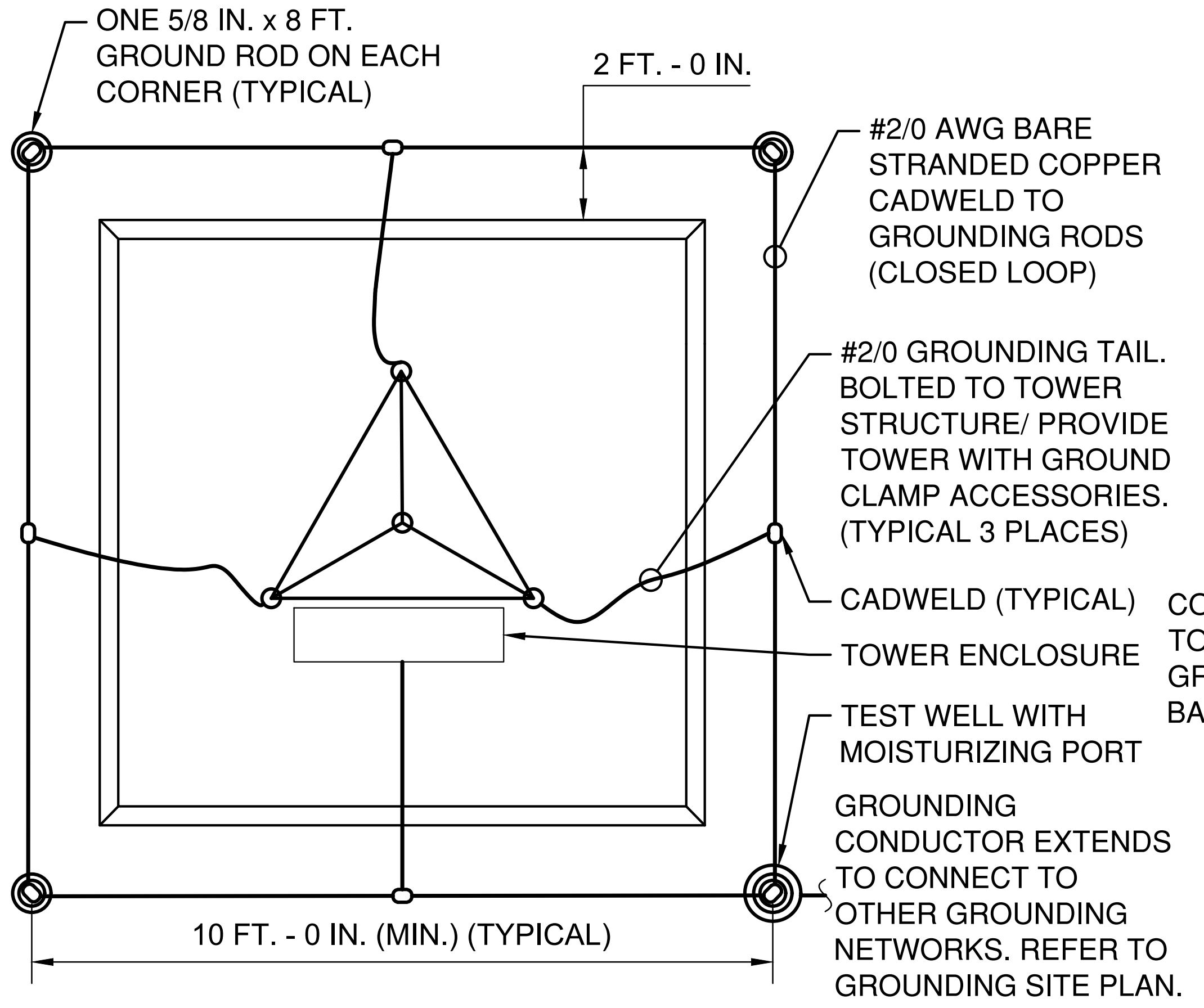
ANTENNA TOWER DETAIL
N.T.S.


TOWER ENCLOSURE AS MANUFACTURED BY DDB UNLIMITED SV-262210 OR APPROVED EQUAL. INSIDE ENCLOSURE, BOND HELIAX CABLE SHIELD TO GROUND BUS PER DETAIL 5 ON SHEET E-616.
ENCLOSURE TOP, BACK AND SIDE PENETRATIONS NOT ALLOWED
END CAPS (TYPICAL)
INSIDE ENCLOSURE, PROVIDE GROUND BUS, HARGER TGBI14212TGB OR APPROVED EQUAL (SHOWN HERE FOR CLARITY)
TOWER STRUCTURE (TYPICAL)
HELIAX CABLE CONNECTS TO BOTTOM OF ENCLOSURE. DO NOT VIOLATE MINIMUM CABLE BENDING RADIUS.
#2/0 GROUNDING TAIL. BOLTED TO TOWER STRUCTURE. PROVIDE TOWER WITH GROUND CLAMP ACCESSORIES. (TYPICAL 3 PLACES, ONLY ONE SHOWN HERE)
4 FT. - 0 IN.
GROUND CLAMP (TYPICAL)
ANTENNA FEED CABLE AND CONDUIT. REFER TO DETAIL 2 ON SHEET E-616.
FINISHED GRADE
PVC SLEEVE (TYPICAL)
30 IN.
GROUNDING CONDUCTOR EXTENDS TO CONNECT TO OTHER GROUNDING NETWORKS. REFER TO GROUNDING SITE PLAN.
CADWELD (TYPICAL)
GROUND ROD, (TYPICAL OF 4) (ALL ARE NOT SHOWN HERE)
TOWER FOUNDATION. STEEL REBAR NOT SOWN FOR CLARITY.

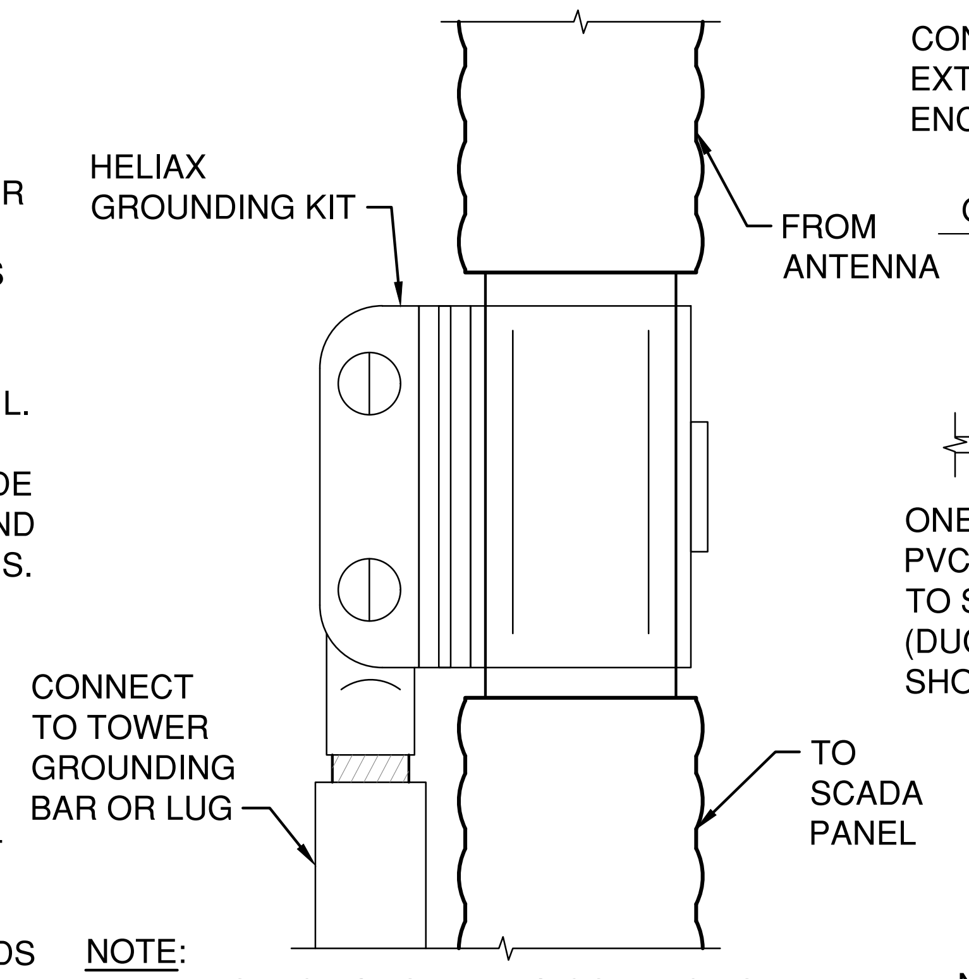
TOWER BASE GROUNDING DETAIL
N.T.S.


MINIMUM PER NFPA 780
COPPER LIGHTNING AIR TERMINAL, CLAMPED AND BONDED TO TOWER
YAGI ANTENNA, MOUNTING BRACKET, HELIAX CABLE AND CONNECTOR
PROVIDE GROUND BUS, HARGER TGBI14212TGB OR APPROVED EQUAL, CLAMPED TO TOWER AND BOND TO TOWER
MOUNTING CLAMP (TYPICAL)
GROUNDING CLAMP
GROUNDING CONDUCTOR
REFER TO DETAIL 5 ON SHEET E-616
TOWER STRUCTURE (TYPICAL)
HELIAX CABLE, CLAMP TO STRUCTURE EVERY 3 FT. (TYPICAL)

TOWER TOP GROUNDING DETAIL
N.T.S.

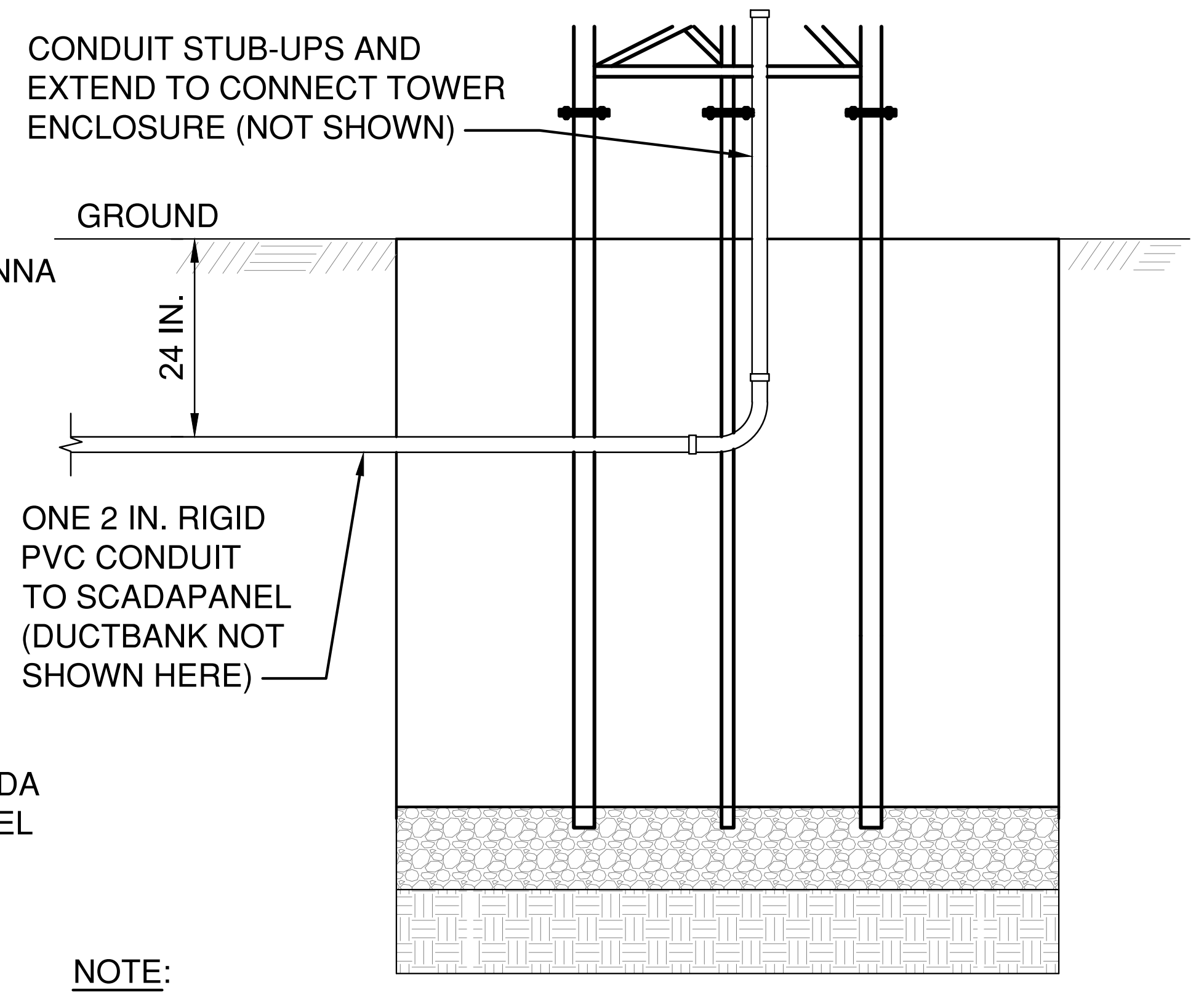

ONE 5/8 IN. x 8 FT. GROUND ROD ON EACH CORNER (TYPICAL)
2 FT. - 0 IN.
#2/0 AWG BARE STRANDED COPPER CADWELD TO GROUNDING RODS (CLOSED LOOP)
#2/0 GROUNDING TAIL. BOLTED TO TOWER STRUCTURE/ PROVIDE TOWER WITH GROUND CLAMP ACCESSORIES. (TYPICAL 3 PLACES)
CADWELD (TYPICAL)
TOWER ENCLOSURE
TEST WELL WITH MOISTURIZING PORT
GROUNDING CONDUCTOR EXTENDS TO CONNECT TO OTHER GROUNDING NETWORKS. REFER TO GROUNDING SITE PLAN.
10 FT. - 0 IN. (MIN.) (TYPICAL)

ANTENNA GROUNDING DETAIL
N.T.S.



NOTE:
1. PROTECT GROUNDING CONNECTION WITH ELECTRICAL INSULATING TAPE 2 IN. THICK.

HELIAX CABLE GROUNDING DETAIL
N.T.S.


CONDUIT STUB-UPS AND EXTEND TO CONNECT TOWER ENCLOSURE (NOT SHOWN)
GROUND
24 IN.
ONE 2 IN. RIGID PVC CONDUIT TO SCADAPANEL (DUCTBANK NOT SHOWN HERE)

NOTE:
1. STEEL REBAR AND GROUNDING GRID NOT SHOWN FOR CLARITY.

ANTENNA CABLE CONDUIT RUN DETAIL
N.T.S.

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CUDE
EST. 1980
ENGINEERS

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LATANA
LIFT STATION

ELECTRICAL
DETAILS SHEET 4

DATE
05-06-2025
PROJECT NO.
212-2402
DRAWN BY
TAD
CHECKED BY
JNO

REVISIONS
DATE
1. 2. 3. 4. 5. 6. 7. 8. 9.

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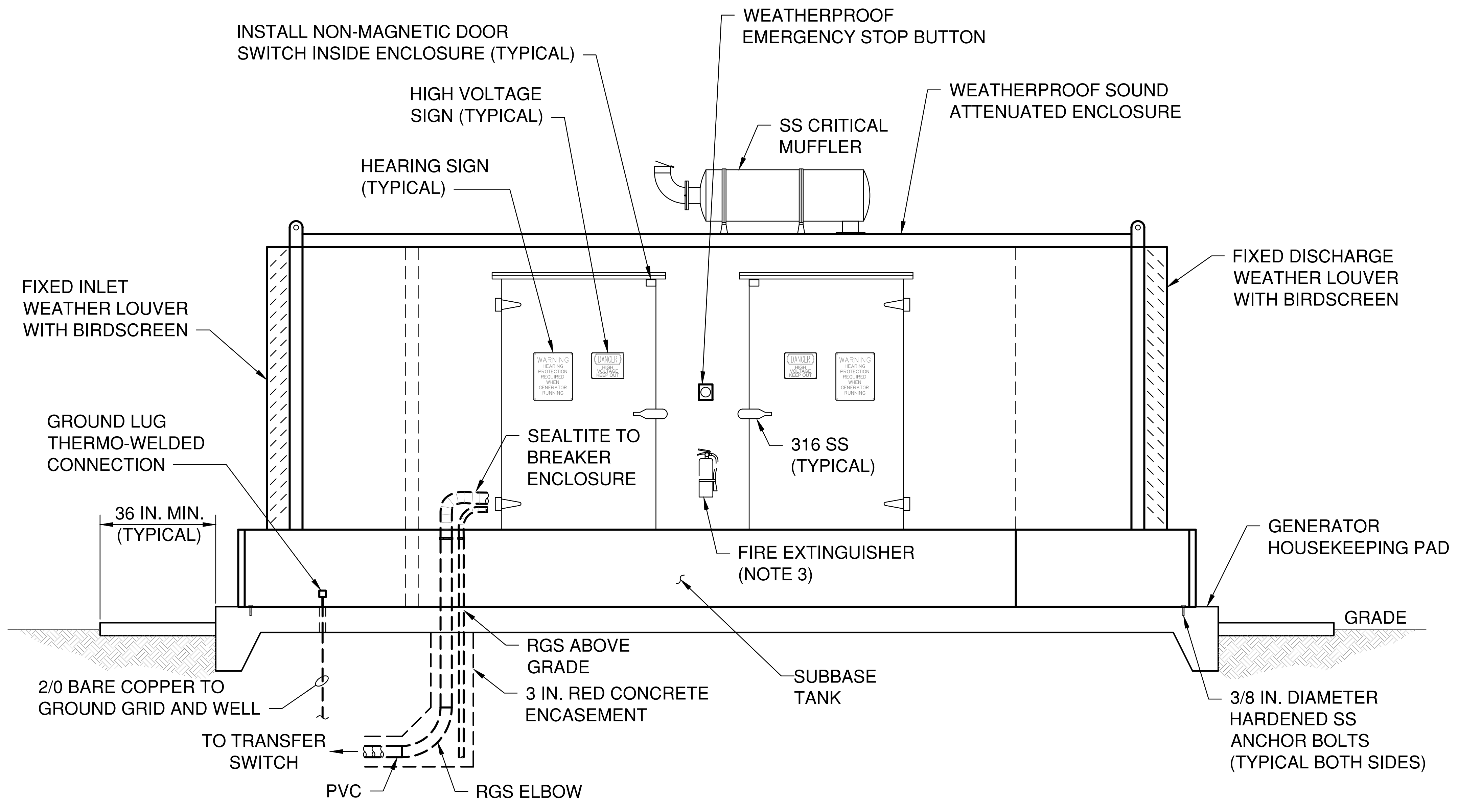
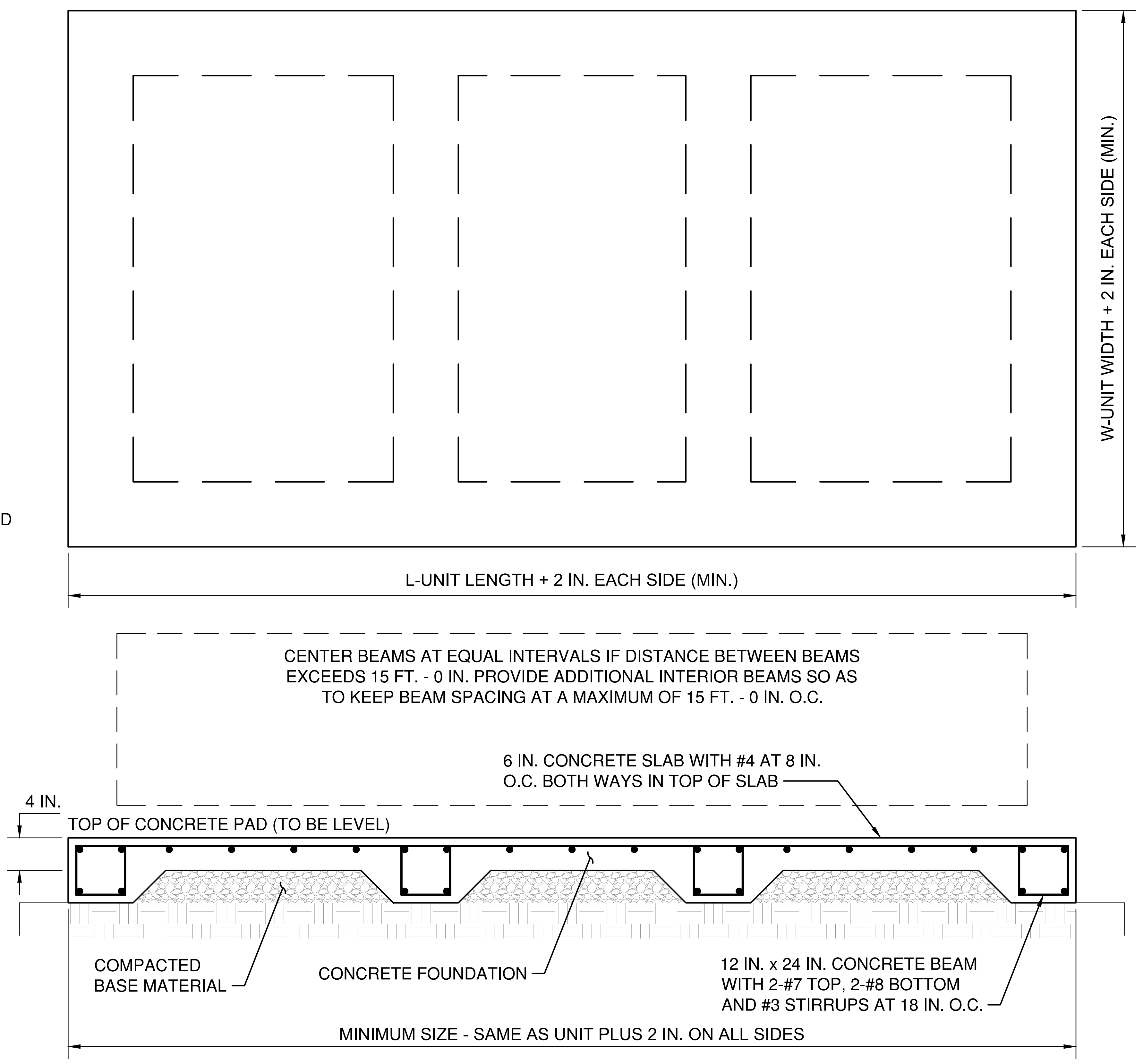

INSTALL NON-MAGNETIC DOOR SWITCH INSIDE ENCLOSURE (TYPICAL)
WEATHERPROOF EMERGENCY STOP BUTTON
HIGH VOLTAGE SIGN (TYPICAL)
WEATHERPROOF SOUND ATTENUATED ENCLOSURE
SS CRITICAL MUFFLER
HEARING SIGN (TYPICAL)
FIXED INLET WEATHER LOUVER WITH BIRDSCREEN
FIXED DISCHARGE WEATHER LOUVER WITH BIRDSCREEN
GROUND LUG THERMO-WELDED CONNECTION
SEALTITE TO BREAKER ENCLOSURE
316 SS (TYPICAL)
36 IN. MIN. (TYPICAL)
FIRE EXTINGUISHER (NOTE 3)
GENERATOR HOUSEKEEPING PAD
GRADE
RGS ABOVE GRADE
SUBBASE TANK
2/0 BARE COPPER TO GROUND GRID AND WELL
3 IN. RED CONCRETE ENCASEMENT
3/8 IN. DIAMETER HARDENED SS ANCHOR BOLTS (TYPICAL BOTH SIDES)
TO TRANSFER SWITCH
PVC
RGS ELBOW

NOTES:

1. COORDINATE CONDUIT LOCATIONS WITH GENERATOR MANUFACTURER PRIOR TO POURING CONCRETE.
2. PROVIDE BOX OF OSHA APPROVED EARPLUGS FOR NOISE REDUCTION WHEN SERVICING GENERATOR.
3. PROVIDE UL RATED CLASS B FIRE EXTINGUISHER, PROPLUS MODEL PROPLUS5MP FOR FUEL TYPE, PER GENERATOR MANUFACTURERS RECOMMENDATIONS AND FIELD LOCATE.

SOUND ATTENUATED GENERATOR ENCLOSURE DETAIL

SCALE: N.T.S.


W-UNIT WIDTH + 2 IN. EACH SIDE (MIN.)
L-UNIT LENGTH + 2 IN. EACH SIDE (MIN.)
CENTER BEAMS AT EQUAL INTERVALS IF DISTANCE BETWEEN BEAMS EXCEEDS 15 FT. - 0 IN. PROVIDE ADDITIONAL INTERIOR BEAMS SO AS TO KEEP BEAM SPACING AT A MAXIMUM OF 15 FT. - 0 IN. O.C.
6 IN. CONCRETE SLAB WITH #4 AT 8 IN. O.C. BOTH WAYS IN TOP OF SLAB
4 IN.
TOP OF CONCRETE PAD (TO BE LEVEL)
COMPACTED BASE MATERIAL
CONCRETE FOUNDATION
12 IN. x 24 IN. CONCRETE BEAM WITH 2-#7 TOP, 2-#8 BOTTOM AND #3 STIRRUPS AT 18 IN. O.C.
MINIMUM SIZE - SAME AS UNIT PLUS 2 IN. ON ALL SIDES

GENERATOR CONCRETE HOUSEKEEPING PAD DETAIL

SCALE: N.T.S.

GENERATOR & TANK DATA

ITEMS	DATA
GENERATOR*	100 KW (MIN.), 125 KVA, 151 A FUEL CONSUMPTION RATE 1/2 LOAD - 4.25 GPH FULL LOAD - 7.34 GPH WT = 2,350 LBS.
ENCLOSURE*	WT = 3,200 LBS DIM. 102 IN. L X 46 IN. W X 64 IN. H
TANK*	350 GALLON SUB-BASE TANK WT = 1,027 LBS DIM. 96 IN. L X 40 IN. W X 34 IN. H
NFPA 110	CLASS 48, TYPE 10, LEVEL 2
AVAILABLE RUN TIME (AT FULL)	$= \frac{350\text{ GAL}}{7.34\text{ GAL/HR}} =$ 47.6 HRS

* VERIFY EQUIPMENT PARAMETERS WITH THE SPECIFIC MANUFACTURER

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CUDEENGINEERS.COM

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LATANA
LIFT STATION
GENERATOR DETAILS
SHEET 1

DATE
05-06-2025
PROJECT NO.
212-2402
DRAWN BY
TAD
CHECKED BY
JNO

REVISIONS
DATE
# 1. 2. 3. 4. 5. 6. 7. 8. 9.

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TBPE No. F-20420

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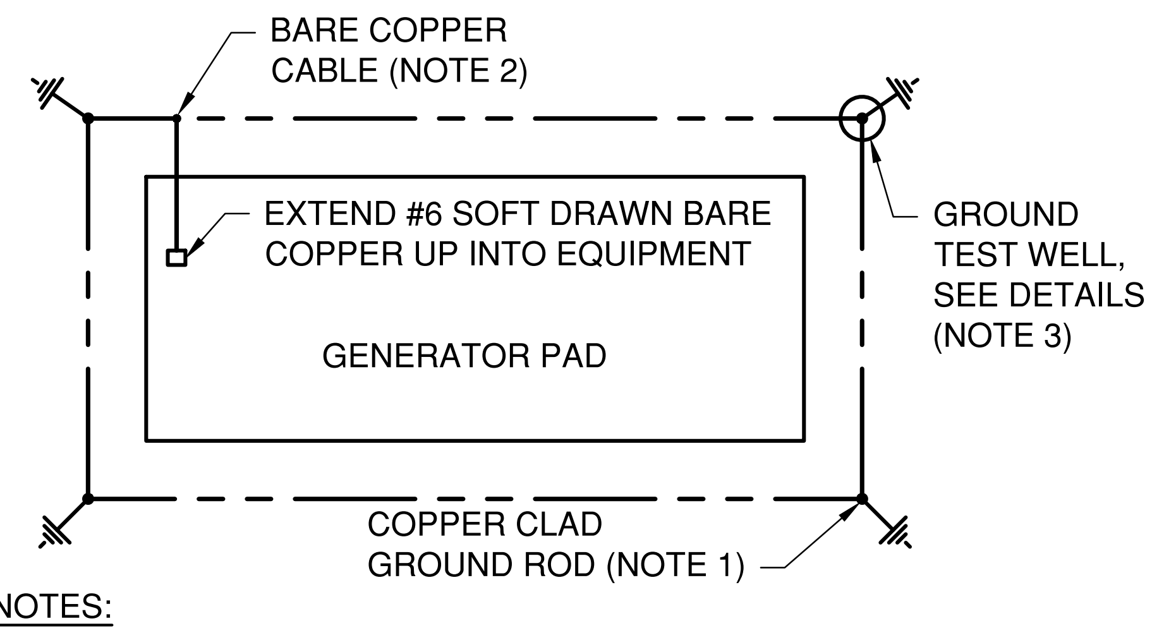
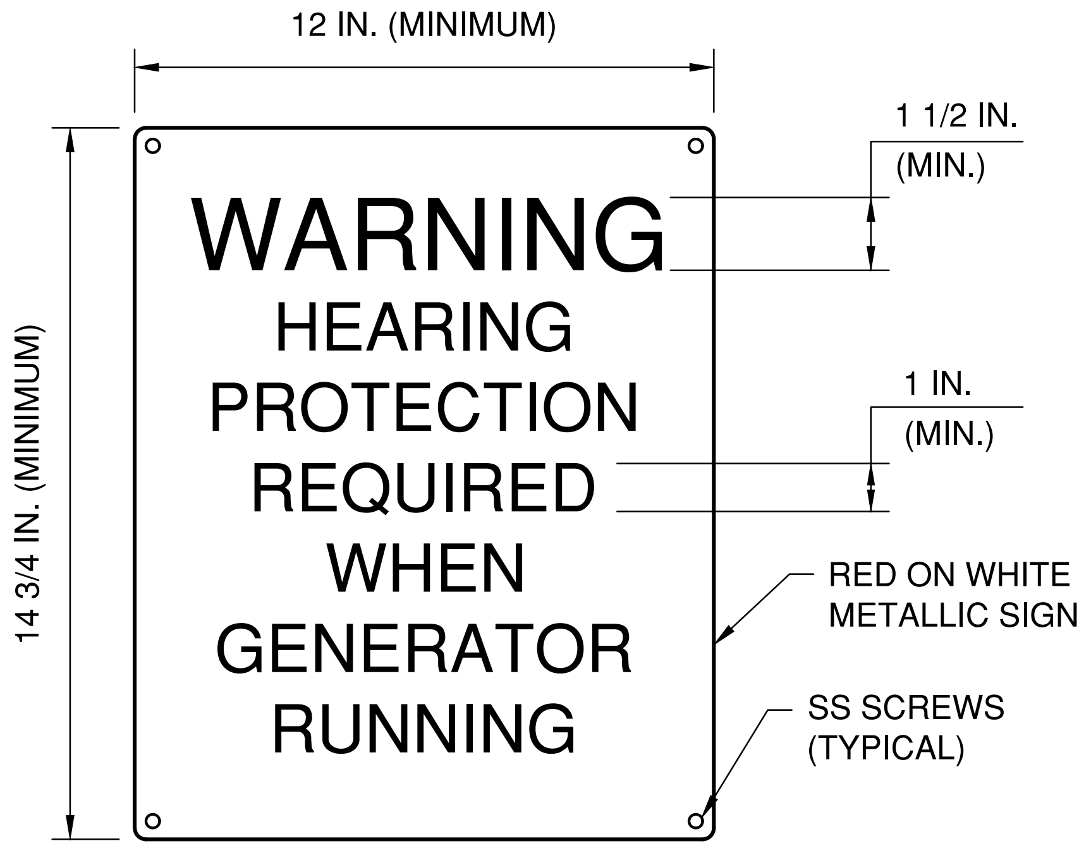


NOTES:

1. 3/4" x 10' COPPER CLAD GROUND ROD. EXOTHERMICALLY WELD TO GROUND CABLE BURIED MIN. 18" BELOW GRADE. REFER TO GROUND ROD INSTALLATION DETAIL.
2. #4/0 SOFT DRAWN BARE COPPER CABLE BURIED MIN. 18" BELOW GRADE (TYP. ALL BELOW GRADE CABLE). EXOTHERMICALLY WELD ALL BELOW GRADE CONNECTIONS.
3. PROVIDE GROUND TEST WELL AT CORNER OF THE GENERATOR NEAREST GENERATOR CONTROL PANEL. REFER TO GROUND TEST WELL INSTALLATION DETAIL.

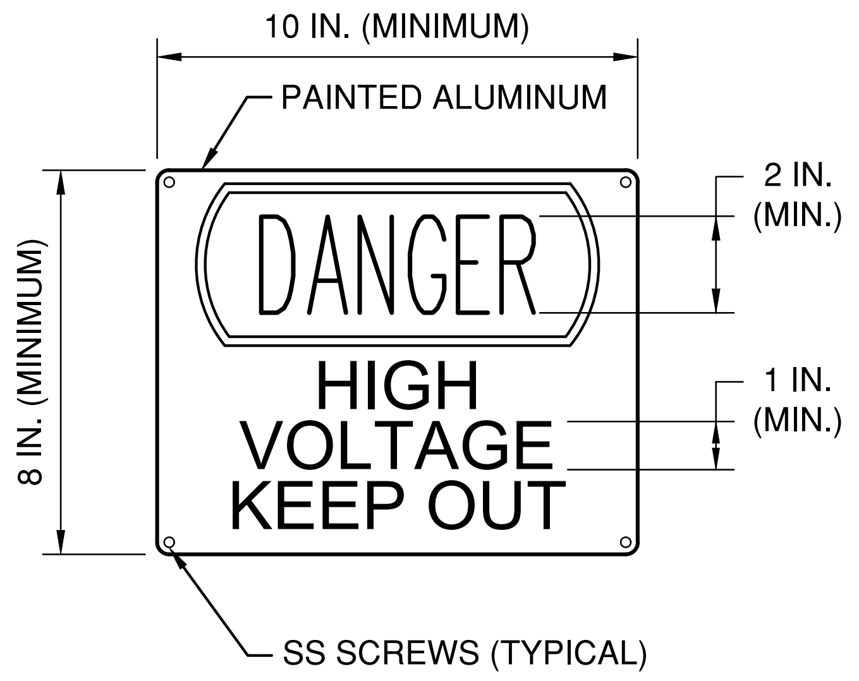
TYPICAL GENERATOR ELECTRICAL GROUNDING DETAIL

N.T.S.



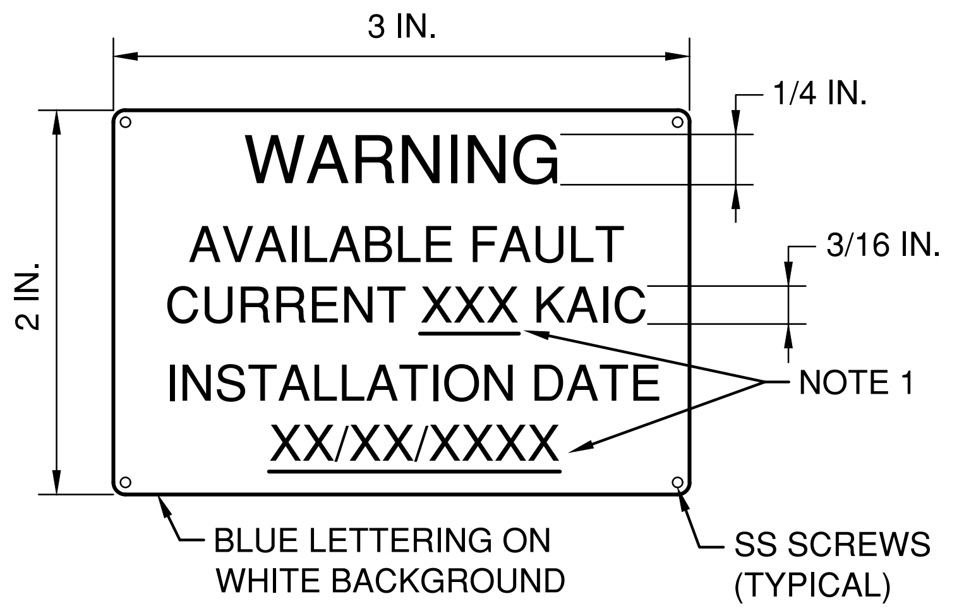
HEARING WARNING SIGN DETAIL

SCALE: N.T.S.



HIGH VOLATGE SIGN DETAIL

SCALE: N.T.S.

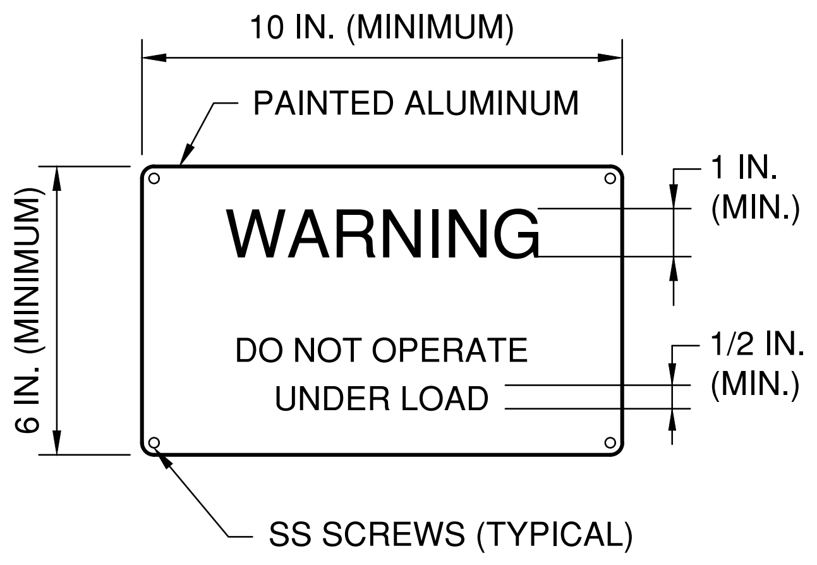


NOTE:

1. CONTRACTOR TO FILL AVAILABLE FAULT CURRENT KAIC BASED ON DATA OUTLET STATEMENT FROM ELECTRICAL PROVIDER.

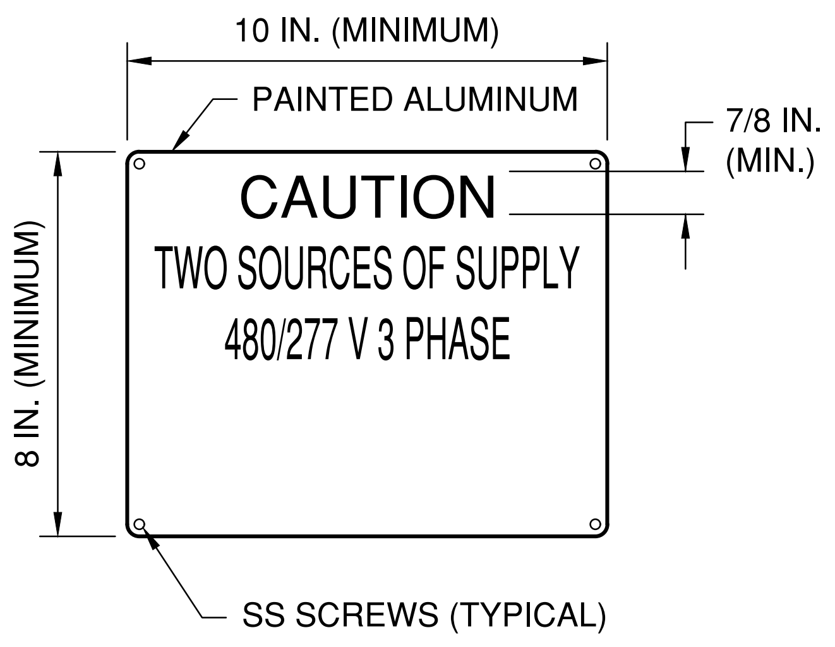
FAULT CURRENT WARNING SIGN DETAIL

SCALE: N.T.S.



DO NOT OPERATE WARNING SIGN DETAIL

SCALE: N.T.S.



DUAL SOURCE SIGN DETAIL

SCALE: N.T.S.

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TBPE No. F-20420

E-602

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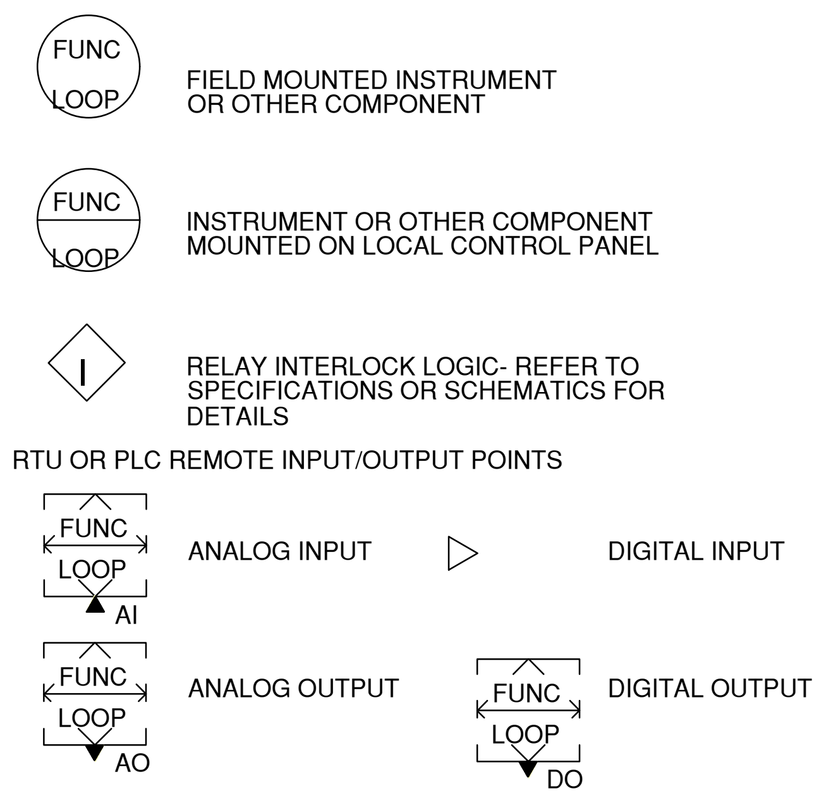
PROCESS SYMBOLS

BASIC SYMBOLS


FUNC
LOOP
FIELD MOUNTED INSTRUMENT OR OTHER COMPONENT
FUNC
LOOP
INSTRUMENT OR OTHER COMPONENT MOUNTED ON LOCAL CONTROL PANEL
I
RELAY INTERLOCK LOGIC- REFER TO SPECIFICATIONS OR SCHEMATICS FOR DETAILS
RTU OR PLC REMOTE INPUT/OUTPUT POINTS
FUNC
LOOP
AI
ANALOG INPUT
DIGITAL INPUT
FUNC
LOOP
AO
ANALOG OUTPUT
FUNC
LOOP
DO
DIGITAL OUTPUT

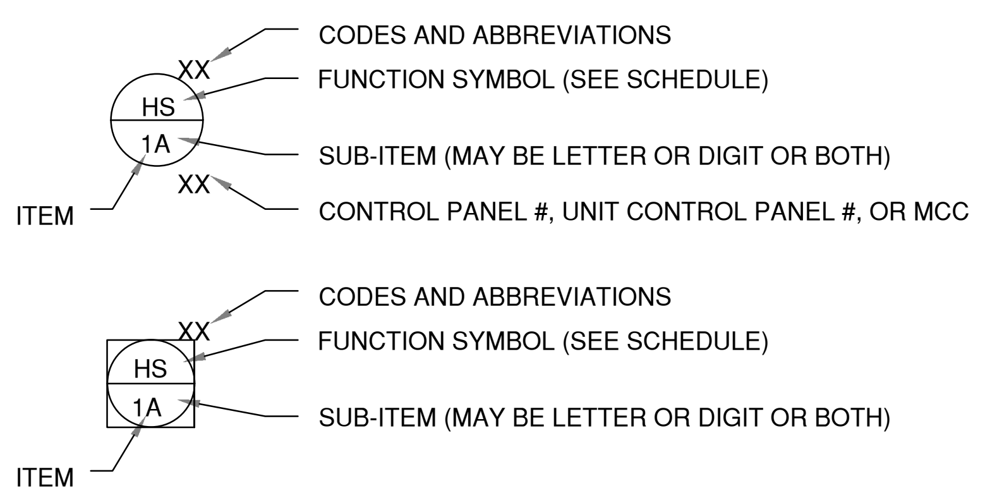
GENERAL ABBREVIATIONS

HMI = HUMAN MACHINE INTERFACE
OI = OPERATOR INTERFACE
LCP = LOCAL CONTROL PANEL
MCC = MOTOR CONTROL CENTER
MCP = MAIN CONTROL PANEL
MS = MOTOR STARTER
PLC = PROGRAMMABLE LOGIC CONTROLLER
RIO = REMOTE I/O
RTD = RESISTIVE TEMPERATURE DEVICE
RTU = REMOTE TELEMETRY UNIT
SV = SOLENOID VALVE
VCP = VENDOR SUPPLIED CONTROL PANEL
VFD = VARIABLE FREQUENCY DRIVE
VSD = VARIABLE SPEED DRIVE
V = VALVE

CONTROL FUNCTION DESIGNATIONS

C/V = CONSTANT/VARIABLE SPEED
HOA = HAND-OFF-AUTO
HOR = HAND-OFF-REMOTE
OA = OFF - AUTO
O/C = OPEN-CLOSE
O/O = ON-OFF
OSC = OPEN-STOP-CLOSE
L/L = LEAD-LAG
LOR = LOCAL-OFF-REMOTE
LOS = LOCKOUT-STOP
OCA = OPEN-CLOSE-AUTO
REM = REMOTE
R/L = RAISE-LOWER
RLOA = REMOTE LOCAL OFF AUTO
RSL = RAISE-STOP-LOWER
SEL = SELECT
S/S = START-STOP

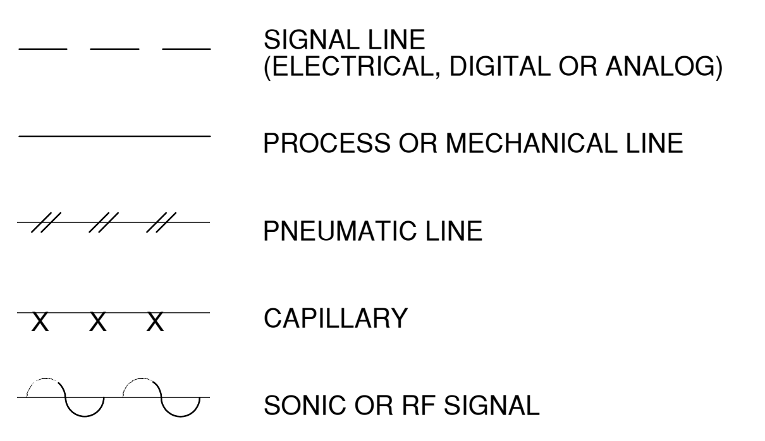
TYPICAL TAG NUMBER CODING SYSTEM

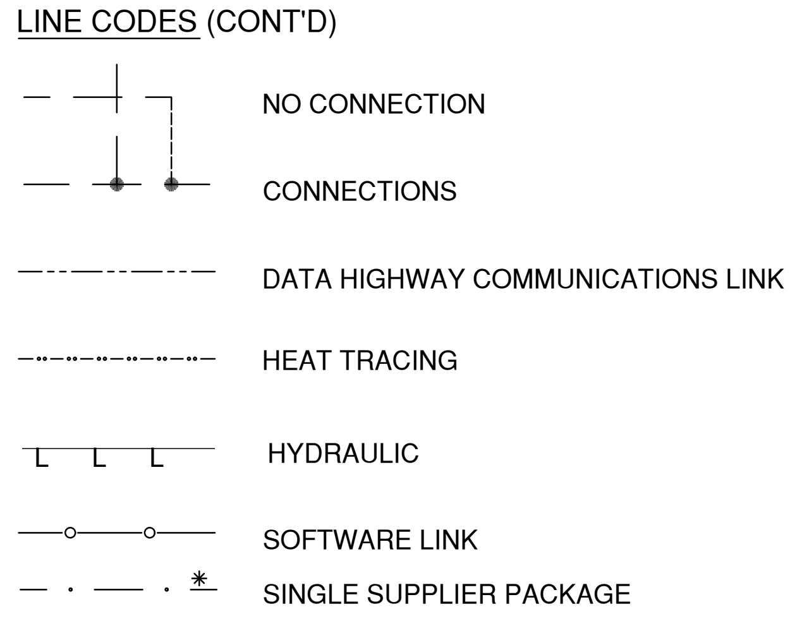

XX
HS
1A
XX
ITEM
CODES AND ABBREVIATIONS
FUNCTION SYMBOL (SEE SCHEDULE)
SUB-ITEM (MAY BE LETTER OR DIGIT OR BOTH)
CONTROL PANEL #, UNIT CONTROL PANEL #, OR MCC
XX
HS
1A
ITEM
CODES AND ABBREVIATIONS
FUNCTION SYMBOL (SEE SCHEDULE)
SUB-ITEM (MAY BE LETTER OR DIGIT OR BOTH)

MISCELLANEOUS SYMBOLS

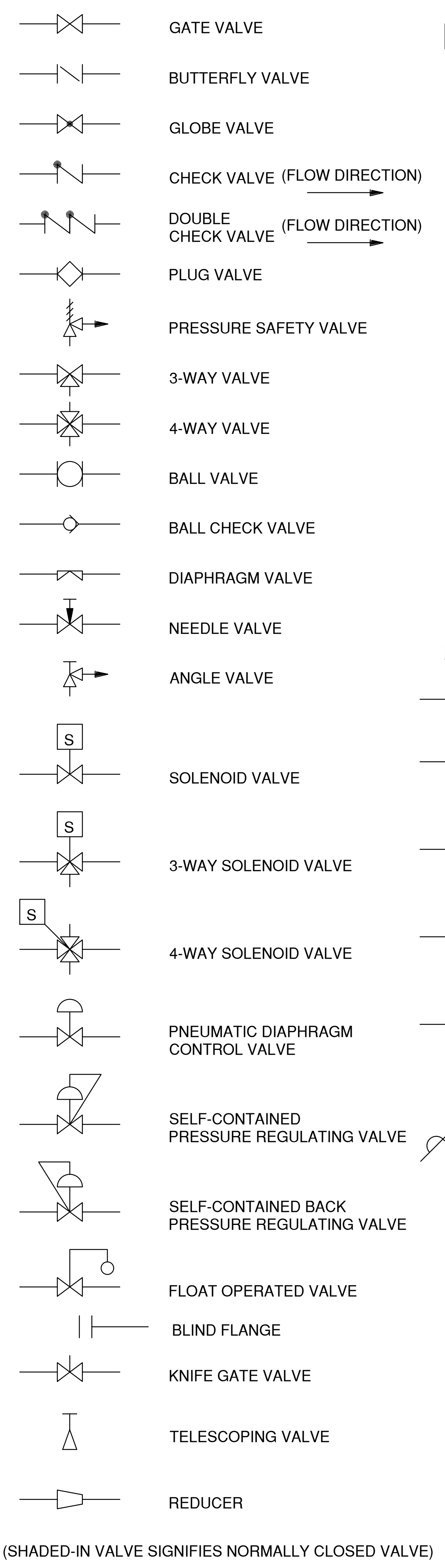
X	MULTIPLY	f(x)	SPECIAL FUNCTION
÷	DIVIDE	I:I	RATIO
>	HIGH SELECT	∫	INTERGRAL
<	LOW SELECT	*/*	CONVERT A - ANALOG B -BINARY D - DIGITAL E - VOLTAGE H - HYDRAULIC I - CURRENT PN - PNEUMATIC
—	SUBTRACTION		
√	SQUARE ROOT		
Σ/n	ARTHMETIC AVERAGE		
Σ	SUM (ALGEBRAIC)		

LINE CODES

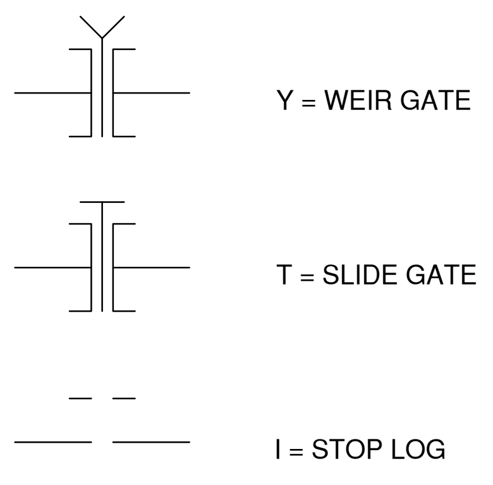

LINE CODES
SIGNAL LINE (ELECTRICAL, DIGITAL OR ANALOG)
PROCESS OR MECHANICAL LINE
PNEUMATIC LINE
X X X
CAPILLARY
SONIC OR RF SIGNAL



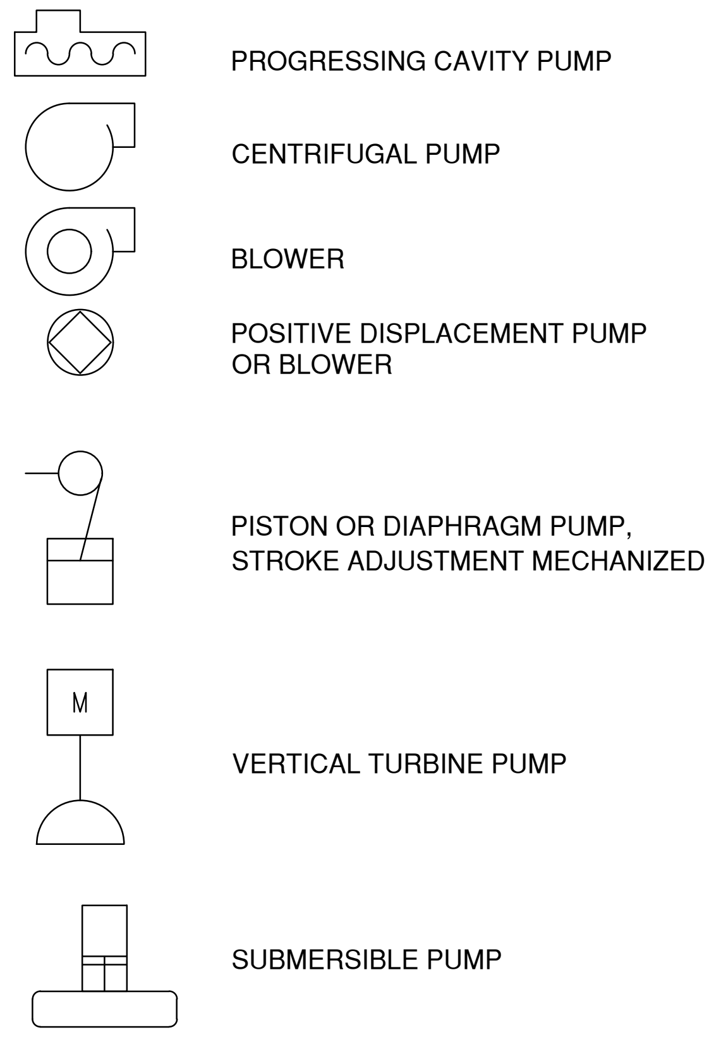
VALVES



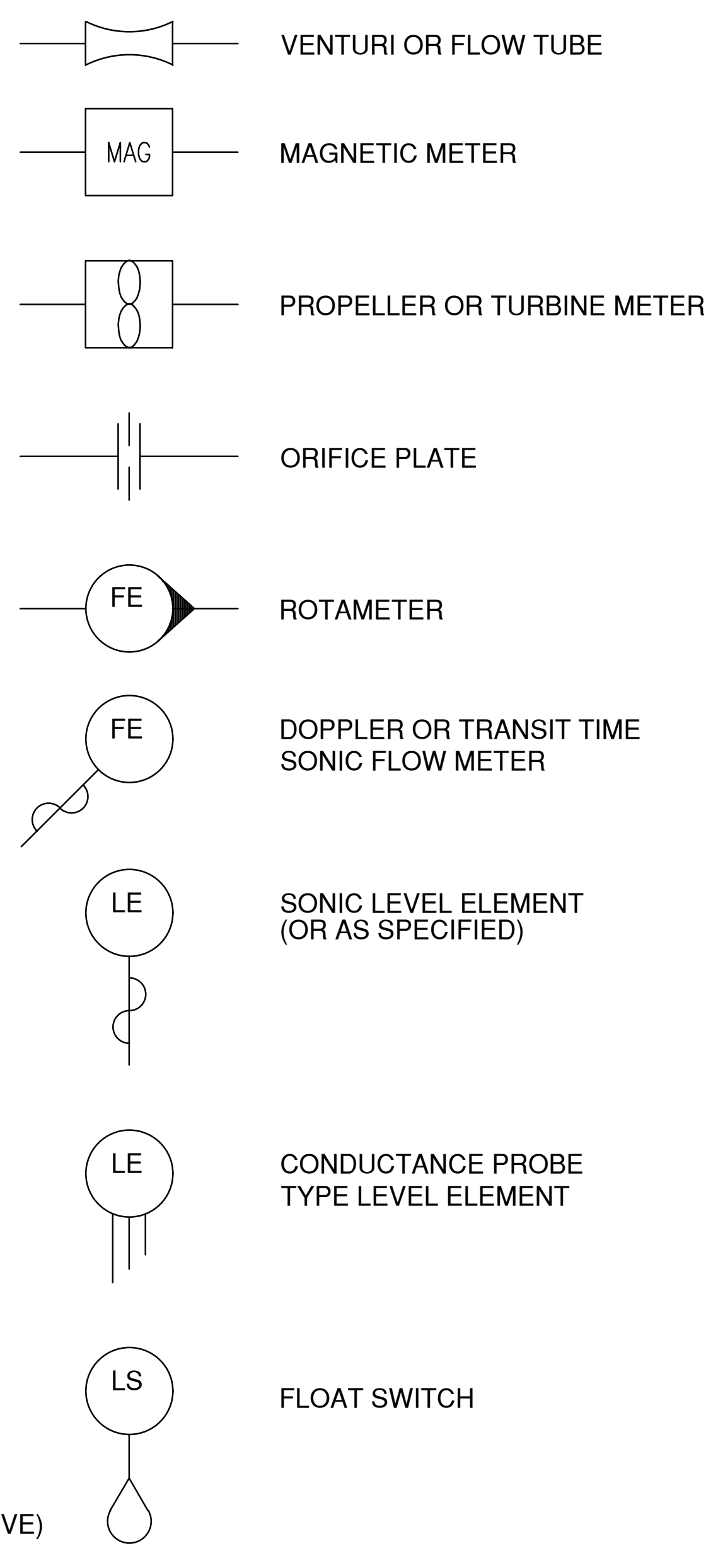
GATES



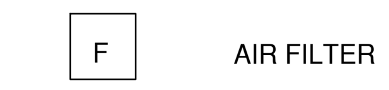
PUMPS


PROGRESSING CAVITY PUMP
CENTRIFUGAL PUMP
BLOWER
POSITIVE DISPLACEMENT PUMP OR BLOWER
PISTON OR DIAPHRAGM PUMP, STROKE ADJUSTMENT MECHANIZED
M
VERTICAL TURBINE PUMP
SUBMERSIBLE PUMP

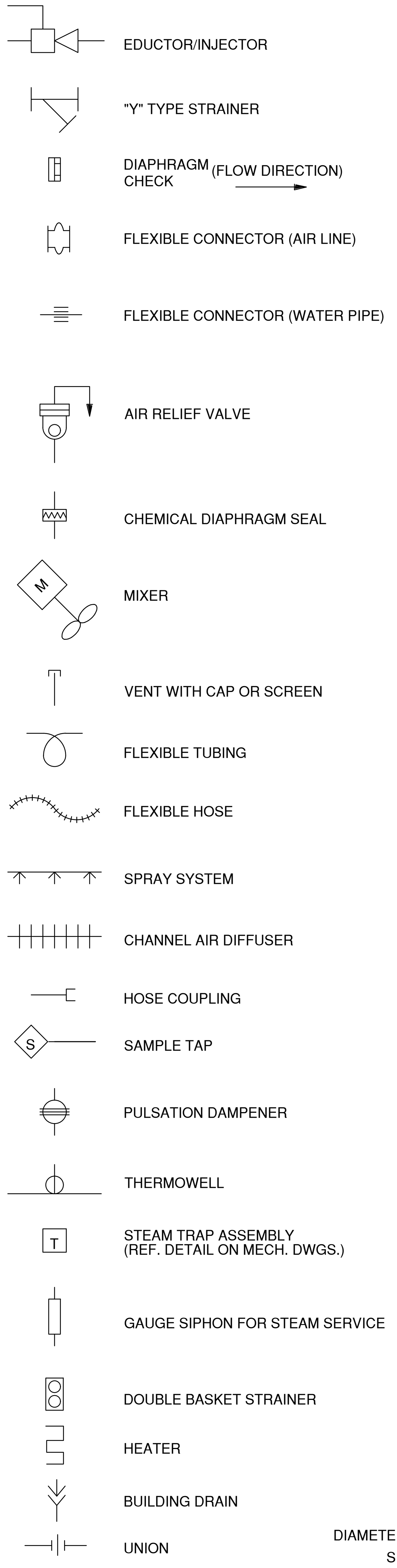
FLOW OR LEVEL ELEMENTS


VENTURI OR FLOW TUBE
MAG
MAGNETIC METER
PROPELLER OR TURBINE METER
ORIFICE PLATE
FE
ROTAMETER
FE
DOPPLER OR TRANSIT TIME SONIC FLOW METER
LE
SONIC LEVEL ELEMENT (OR AS SPECIFIED)
LE
CONDUCTANCE PROBE TYPE LEVEL ELEMENT
LS
FLOAT SWITCH

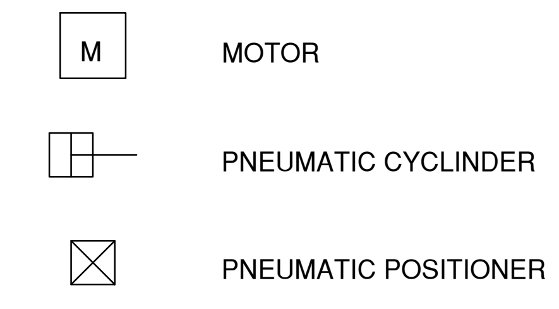
MISCELLANEOUS MECHANICAL ITEMS



MISCELLANEOUS MECHANICAL ITEMS

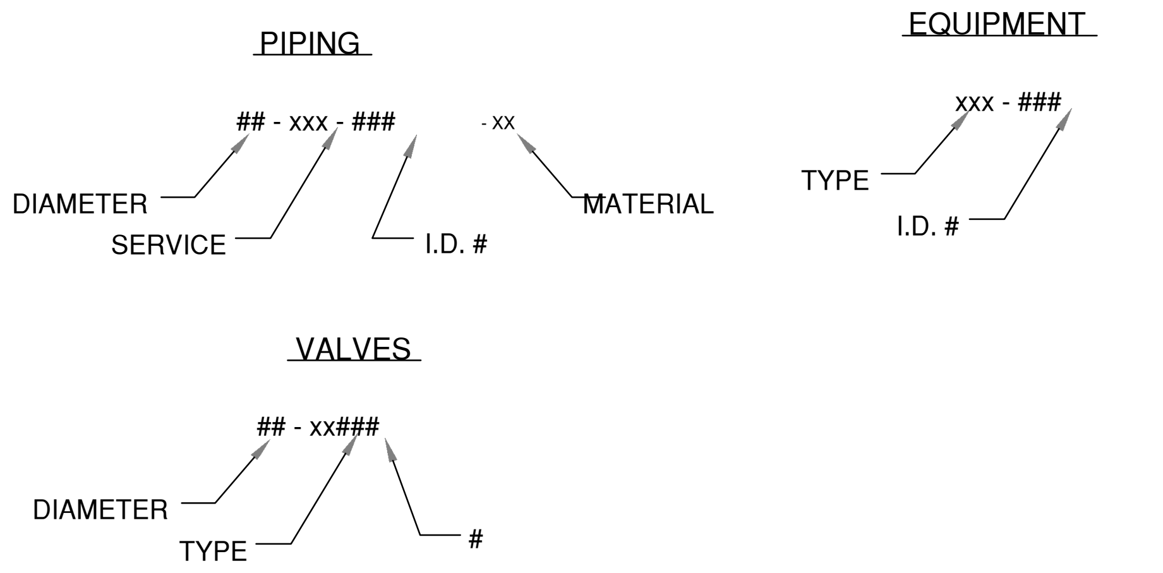


ACTUATORS



FUNCTION SYMBOL SCHEDULE					
LETTER	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER				
C	CONDUCTIVITY (ELECTRICAL)			CONTROL	CLOSE
D	DENSITY OR SPECIFIC GRAVITY	DIFFERENTIAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOWRATE	RATIO (FRACTION)			
G	GAGING		GLASS		
H	HAND (MANUALLY INITATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR RATE OF CHANGE TIME SCHEDULE	TIME		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTOR	MOMENTARY			MID
N		IGNITER			
O	OPERATION	OFFSET	ORIFICE (RESTRICTION)		OPEN
P	PRESSURE OR VACUUM				
Q	QUANTITY OR EVENT	INTEGRATE OR TOTALIZE			
R	RADIATION		RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTI-VARIABLE	TREND	MULTI-FUNCTION	MULTI-FUNCTION	MULTI-FUNCTION
V	VIBRATION			VALVE DAMPER OR LOUVER	
W	WEIGHT FORCE OR TORQUE		WELL		
X	UNCLASSIFIED VARIABLE		SPECIAL (SEE SPECIFICATION)		
Y				RELAY OR COMPUTE	
Z	POSITION			DRIVE ACTUATOR OR UNCLASSIFIED FINAL CONTROL ELEMENT	

NOTE: THIS IS A STANDARD LEGEND SHEET ALL SYMBOLS MAY NOT BE USED



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ENGINEERS

4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

LATANA
LIFT STATION

PROCESS & INSTRUMENTATION
ABBREVIATIONS AND LEGENDS

DATE
05-06-2025
PROJECT NO.
212-2402
DRAWN BY
TAD
CHECKED BY
JNO

REVISIONS
DATE
1. 2. 3. 4. 5. 6. 7. 8. 9.

INTERIM REVIEW
Not intended for construction, bidding or permit purposes.
Engineer: ERIC W. BURRER
P.E. Seal No.: 100158
Date: MAY 06, 2025
BURRER ENG, INC. (F-20420)

BURRER ENGINEERING
TBPE No. F-20420

ISSUED FOR REVIEW

BURRER
ENGINEERING
17217 N. Eldridge, Tomball, TX 77377
Tel: 832-761-5220
TBPE No. F-20420
email: info@burrereng.com

I-001

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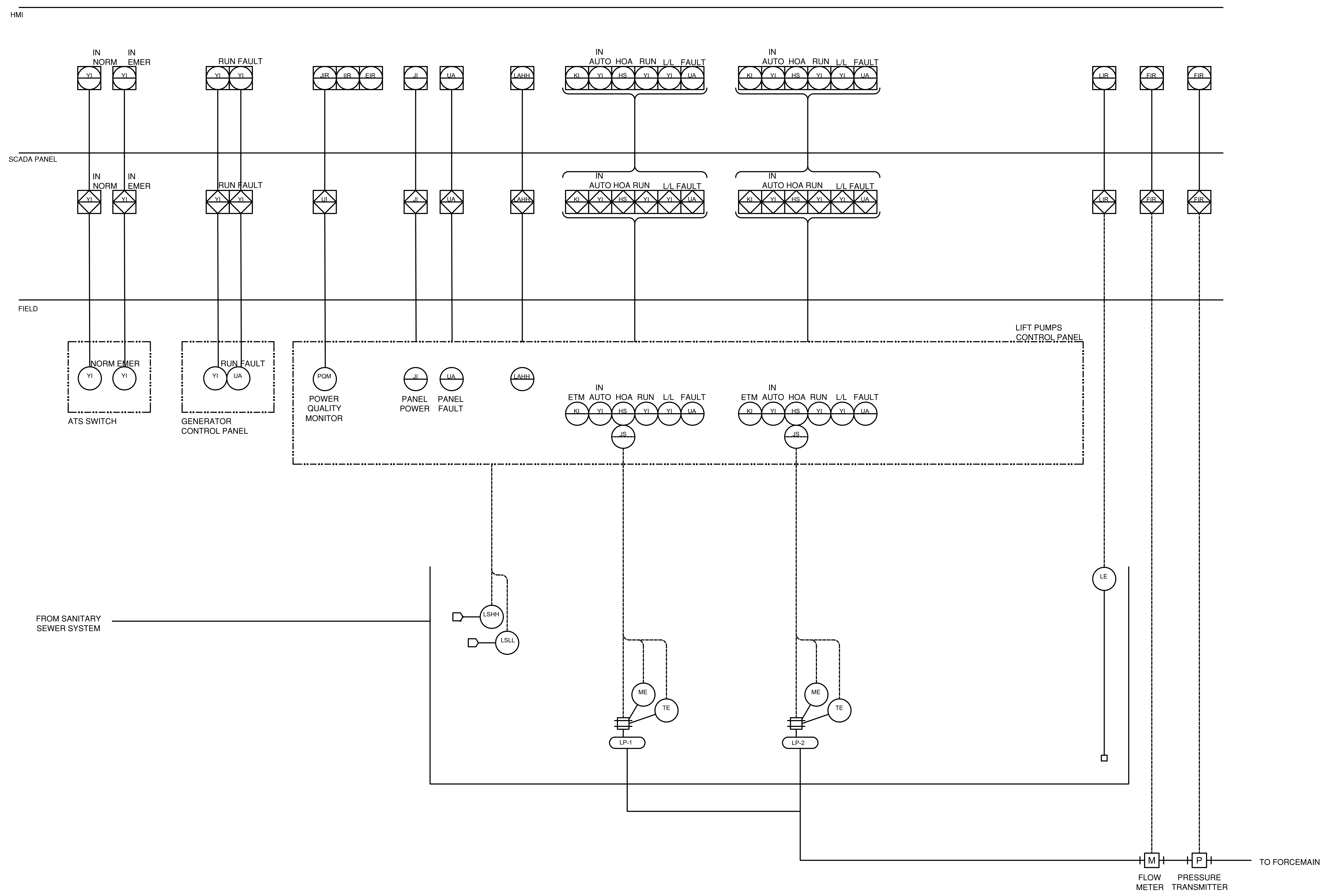

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LATANA LIFT STATION

PROCESS & INSTRUMENTATION DIAGRAMS

DATE
05-06-2025

PROJECT NO.
212-2402

DRAWN BY
TAD

CHECKED BY
JNO

REVISIONS

DATE

1. 2. 3. 4. 5. 6. 7. 8. 9.

INTERIM REVIEW
Not intended for construction, bidding or permit purposes.
Engineer: ERIC W. BURRER
P.E. Seal No.: 100158
Date: MAY 06, 2025
BURRER ENG, INC. (F-20420)

BURRER ENGINEERING
TBPE No. F-20420

I-101

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CONCRETE & REINFORCEMENT GENERAL NOTES:

1.1 DESIGN, MATERIAL, AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE FOLLOWING STANDARDS:

ACI 318	BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.
SP66	ACI DETAILING MANUAL.
ACI 301	SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS.
CRSI	RECOMMENDED PRACTICE FOR PLACING REINFORCING STEEL.

SAWS STANDARD SPECIFICATION 307 "CONCRETE STRUCTURES.

1.2 CONCRETE SHALL DEVELOP 4000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS, EXCEPT AS NOTED ON DRAWINGS. FLY ASH PERMITTED. CLASS G CONCRETE SAWS STANDARD SPECIFICATION 300 "CONCRETE (NATURAL AGGREGATE).

1.3 REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615 GRADE 60. SAWS STANDARD SPECIFICATION 301 "REINFORCING STEEL

1.4 WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185, (FLAT SHEETS ONLY).

1.5 UNLESS NOTED, CONCRETE COVER OVER REINFORCING SHALL BE:

3" WHEN THE CONCRETE IS PLACED DIRECTLY AGAINST THE GROUND.

2" FOR BARS LARGER THAN NO. 5, AND 11/2" FOR NO. 5 AND SMALLER, IF AFTER REMOVAL OF FORMS THE CONCRETE IS EXPOSED DIRECTLY TO WEATHER OR GROUND.

1.6 1" IN SLABS AND WALLS, AND 11/2" FOR BEAMS AND COLUMNS NOT EXPOSED DIRECTLY TO WEATHER OR GROUND

1.7 ALL REINFORCING HOOKS SHALL BE STANDARD HOOKS AS DEFINED BY ACI, UNLESS NOTED OTHERWISE.

1.8 ALL EXPOSED EDGES OF CONCRETE SHALL HAVE A 1 INCH, 45 DEGREE CHAMFER.

1.9 CONTRACTOR SHALL SUBMIT COMPLETE SHOP AND PLACING DRAWINGS AND OBTAIN APPROVAL PRIOR TO FABRICATION.

1.10 MAXIMUM AGGREGATE SHALL BE AS FOLLOWS:

WALLS, STRUCTURAL SLABS, BEAMS............................ 3/4"

FOOTING, SLABS ON GRADE... 11/2"

1.11 GRIND ALL CONSTRUCTION JOINTS IN SLAB SO AS TO PRODUCE A SMOOTH AND LEVEL SURFACE

1.12 WET WELL BOTTOM SLAB TO HAVE 'ROUGH' FINISH. SURFACE SLABS TO HAVE 'ROUGH' FINISH ON SIDES AND 'LIGHT BROOM' FINISH ON TOP.

1.13 SLOPE SLAB TO DRAIN AWAY FROM LIFT STATION SITE.

1.14 EXCAVATION FOR THE WET WELL STRUCTURE SHALL EXTEND 24" BELOW THE BOTTOM OF THE WET WELL STRUCTURE. NATIVE SOILS SHALL BE COMPACTED TO A DEPTH OF 6" WITH VIBRATORY COMPACTION EQUIPMENT. ABOVE THE NATIVE SOILS PLACE 6" OF FLEXIBLE BASE. COMPACTION OF NATIVE SOILS AND FLEXIBLE BASE SHALL ACHIEVE MINIMUM 98% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE TXDOT TESTING METHOD TEX 113-E AT THE OPTIMUM MOISTURE CONTENT TO +4%. ABOVE THE FLEXIBLE BASE PLACE 18" OF CRUSHED STONE.

1.15 SEE "DD-903-04" SAWS LIFT STATION DESIGN GUIDE FOR MORE INFORMATION.

1.16 SITE CLASS "D".

1.17 REFER TO GEOTECHNICAL REPORT FOR GROUNDWATER CONDITIONS

2.0 FOUNDATION CONSTRUCTION

2.1 THIS FOUNDATION DESIGN IS BASED ON TERRADYNE REPORT A241149 BORING B-3. AFTER 5FT OF REMOVE AND REPLACEMENT WITH NON-EXPANSIVE FILL, THE DESIGN PI = 32. SURFACE FOUNDATIONS DESIGNED FOR 2000PSF BEARING PRESSURE.

2.2 SELECT FILL TO MEET TXDOT STANDARD SPECIFICATION ITEM 247 ANY GRADE. MAX PI= 15

20. FLOWABLE FILL MEETING STANDARD SPECIFICATION 401 MAY ALSO BE USED.

2.3 GENERATOR AND ELECTRICAL CANOPY SURFACE SLABS TO HAVE MINIMUM 5FT OF NATIVE SOIL REMOVED AND REPLACED WITH SELECT FILL.

2.4 WET WELL EXCAVATION TO BE COMPLETELY FILLED WITH COMPACTED BACKFILL OR FLOWABLE FILL OR BOTH. THIS APPLIES TO THE PLAN LIMITS OF THE TOP SLAB.

2.5FOLLOWING EXCAVATION, THE EXPOSED SUBGRADE AREAS SHALL BE PROOF-ROLLED TO EXPOSE ANY WEAK, SOFT, WET, OR OTHERWISE UNSUITABLE SOILS THAT SHALL BE REMOVED.

2.6 FOLLOWING PROOF-ROLLING, THE EXPOSED SUBGRADE SOILS SHALL BE SCARIFIED TO A DEPTH OF SIX (6) INCHES; MOISTURE CONDITIONED BETWEEN +/- 3 PERCENTAGE POINTS OF OPTIMUM MOISTURE CONTENT AND COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH TEX-114-E.

2.7 SOIL FROM SITE EXCAVATIONS SHALL NOT BE USED AS FILL MATERIAL.

2.8 SLAB FILL MATERIAL SHALL BE COVERED AND PROTECTED FROM GETTING WET PRIOR TO PLACEMENT IN THE FOUNDATION SLAB AREAS AND AFTER PLACEMENT IN THE FOUNDATION SLAB AREAS.

2.9 PLACE SELECT FILL IN THIN, LOOSE LIFTS LESS THAN 8INCHES THICK. COMPACT TO 95% OF THE MAXIMUM DENSITY DEFINED BY ASTM D 698.

2.10 CONDUCT FIELD DENSITY TESTS AT A RATE OF ONE PER 3,000SF PER LIFT AND TWO MINIMUM PER LIFT.

2.11 TRENCHING OF GRADE BEAMS SHALL BE EXCAVATED TO PROVIDE THE BEAM CROSS SECTION INDICATED. BEAM AND SLAB DEPTHS AND WIDTHS AS INDICATED ARE MINIMUM ACCEPTABLE SIZES. LARGER SIZE BEAMS AND SLABS FORMED BY LESS ACCURATE TRENCHING MAY REQUIRE ADDITIONAL REINFORCING NOT SHOWN WHICH SHALL BE DETERMINED BY THE ENGINEER DURING CONSTRUCTION REVIEW. ALL LOOSE DIRT FROM SIDES AND BOTTOMS OF TRENCHES SHALL BE REMOVED. HAUNCHES SHALL BE CUT ON EACH SIDE OF TRENCHES OF ADEQUATE SIZE TO MAINTAIN THE VERTICAL SIDES OF THE TRENCH.

2.12 PROVIDE A LAYER OF 10 MILL. POLYETHYLENE VAPOR BARRIER MEMBRANE OR EQUIVALENT BENEATH ALL SLAB AREAS. THE VAPOR BARRIER MEMBRANE MUST BE TAPED AT ALL SPLICES AND TEARS. BARRIER MEMBRANE MUST EXTEND TO THE BOTTOM OF THE SIDES OF THE BEAM TRENCHES. IF BARRIER IS EXTENDED ACROSS BOTTOM OF BEAM, BARRIER MUST BE FLAT FORMING A SQUARE BOTTOM TO THE BEAM.

2.13 ALL EXTERIOR FOUNDATION BEAMS ARE TO BE EXCAVATED AND EMBEDDED INTO UNDISTURBED SOIL OR PROPERLY COMPACTED LOT FILL MATERIAL TO A MINIMUM DEPTH OF 6 INCHES OR AS NOTED IN THE DETAILS AND DESIGN CHART ON THIS DRAWING, WHICHEVER IS GREATER, OR INTO BEDROCK TO A MINIMUM DEPTH OF 6 INCH.

2.14 REMOVE FREE WATER FROM BEAM TRENCHES AND ALL OTHER EXCAVATIONS BEFORE PLACING CONCRETE. CLEAN BOTTOM OF BEAM TRENCHES OF LOOSE SOIL, ROOTS, GRAVEL, AND ALL DEBRIS PRIOR TO PLACING CONCRETE. CONCRETE SHALL NOT BE PLACED ON SOILS THAT HAVE BEEN DISTURBED BY RAINFALL OR WATER SEEPAGE.

3.0 BOTTOM SLAB CONSTRUCTION

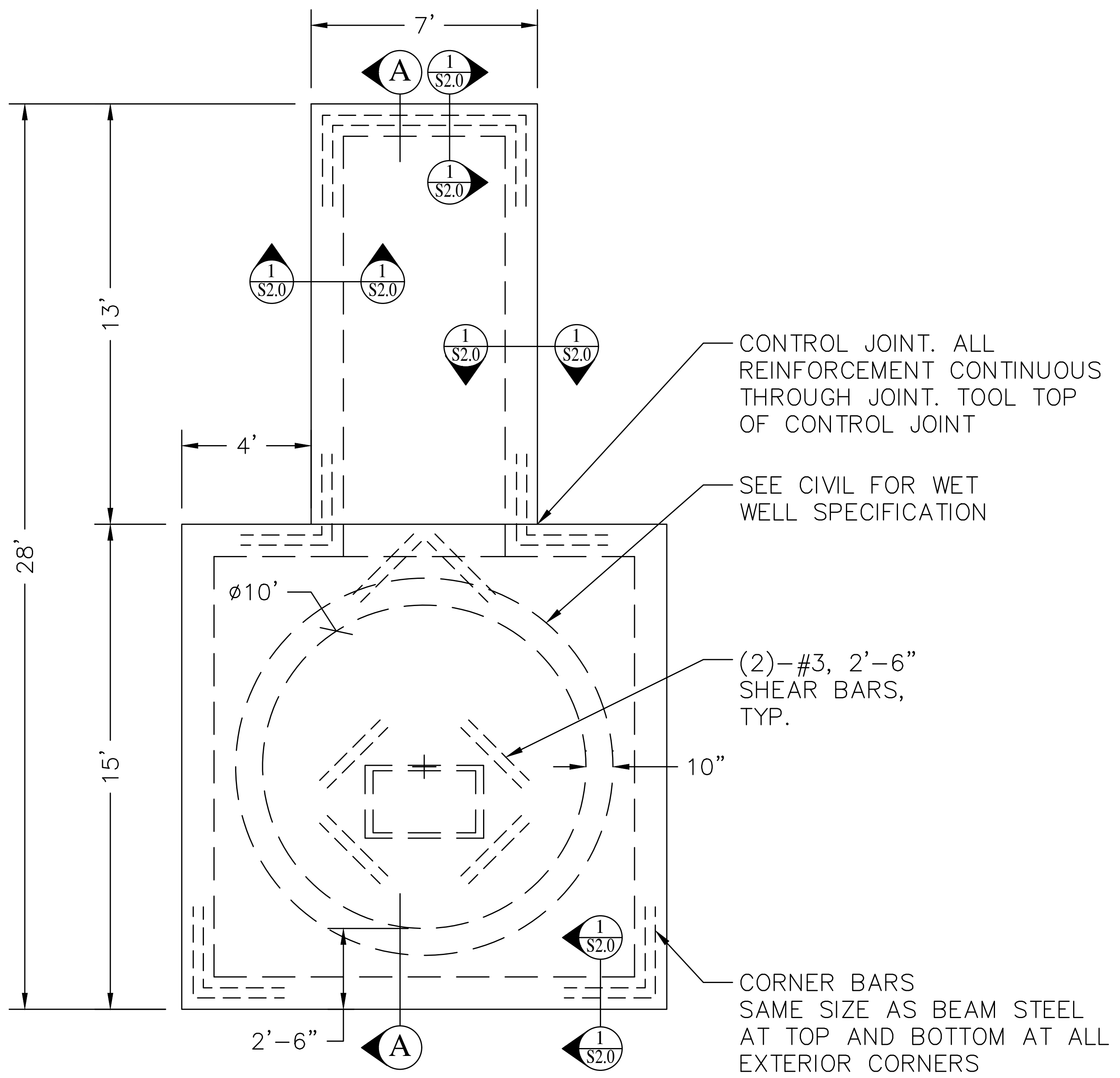
3.1 AS PRECAST SEGMENT PROFILES VARY BETWEEN MANUFACTURERS, CONTRACTOR SHALL SUBMIT (BEFORE CONSTRUCTION) DETAILS OF ALL PRECAST TO CAST-IN-PLACE CONCRETE JOINT CONDITIONS INCLUDING LOCATIONS OF SEALANT MATERIAL, TO ENGINEER FOR REVIEW

3.2 PROVIDE A CONTINUOUS 7 1/2" TO 8" DEEP X 11' WIDE CIRCLE BLOCKOUT CENTERED ON PRECAST SHELL (SEE CIVIL FOR INSIDE RADIUS) IN MAT SURFACE TO RECEIVE PRECAST. BLOCKOUT MAY BE TAPERED UP 1/2" TO 1" AT TOP FOR EASE OF FORM REMOVAL.

3.3 AFTER REMOVAL OF BLOCKOUT PROVIDE 3 ROWS OF 1/2" X 3/4" CONTINUOUS BEADS OF ADEKA P-2°1 ELASTIC SEALANT (BELOW BOTTOM OF PRECAST SHELL). ALLOW SEALANT TO FULLY CURE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION BEFORE INSTALLING PRECAST RINGS ABOVE.

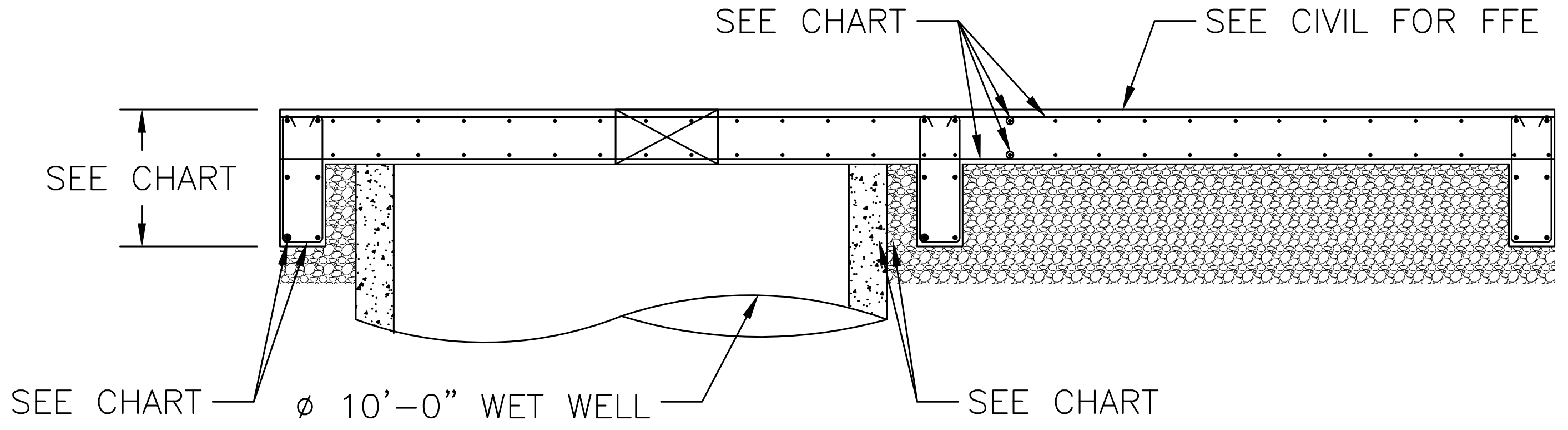
3.4 AFTER BOTTOM MOST PRECAST SHELL HAS BEEN INSTALLED. COMPLETELY FILL THE INTERIOR AND EXTERIOR ANNULAR SPACES BETWEEN SHELL AND MAT CONCRETE WITH EUCLID'S NS GROUT (FLOWABLE, NON-SHRINK) AS MANUFACTURED BY THE EUCLID CHEMICAL COMPANY.

3.5 INSTALL GROUT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. ALLOW 48 HRS. IMN. CURING TIME BEFORE INSTALLING ADDITIONAL SHELLS.


7'
A
1 S2.0
13'
28'
4'
15'
ø10'
10"
2'-6"
CONTROL JOINT. ALL REINFORCEMENT CONTINUOUS THROUGH JOINT. TOOL TOP OF CONTROL JOINT
SEE CIVIL FOR WET WELL SPECIFICATION
(2)-#3, 2'-6" SHEAR BARS, TYP.
CORNER BARS SAME SIZE AS BEAM STEEL AT TOP AND BOTTOM AT ALL EXTERIOR CORNERS

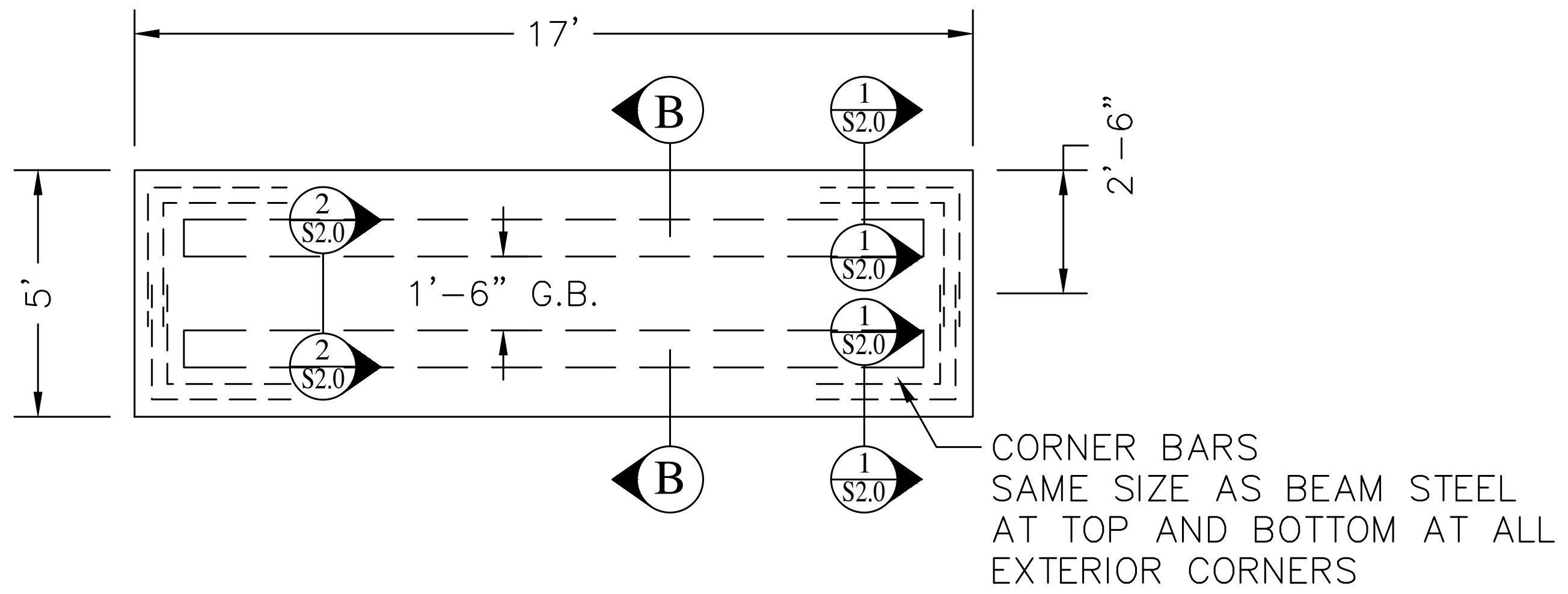
PLAN VIEW OF LIFT STATION TOP SLAB

SCALE: 1/4"=1'



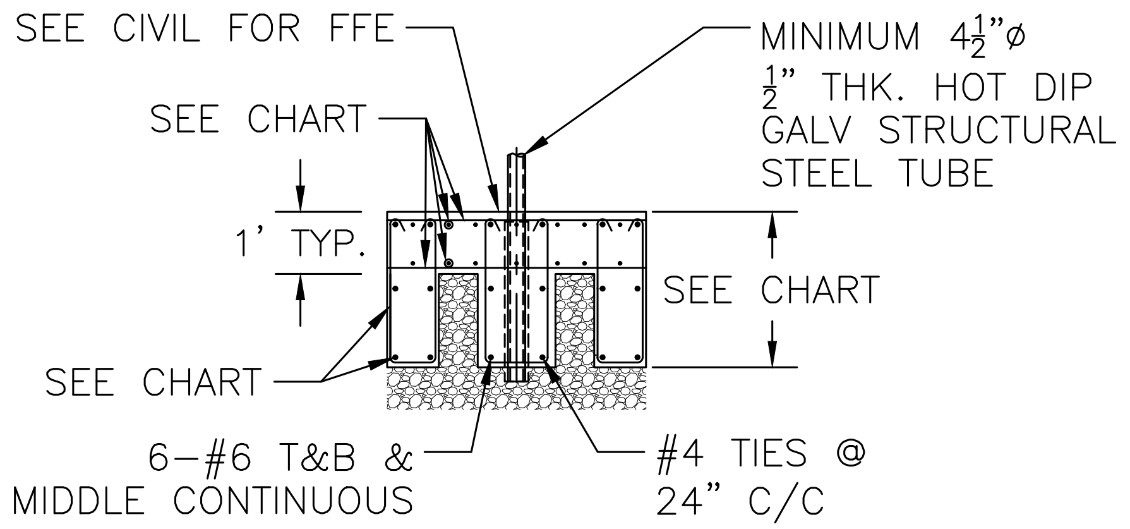
SECTION A-A

SCALE: 1/4"=1'


17'
B
1 S2.0
2 S2.0
5'
2'-6"
1'-6" G.B.
CORNER BARS SAME SIZE AS BEAM STEEL AT TOP AND BOTTOM AT ALL EXTERIOR CORNERS

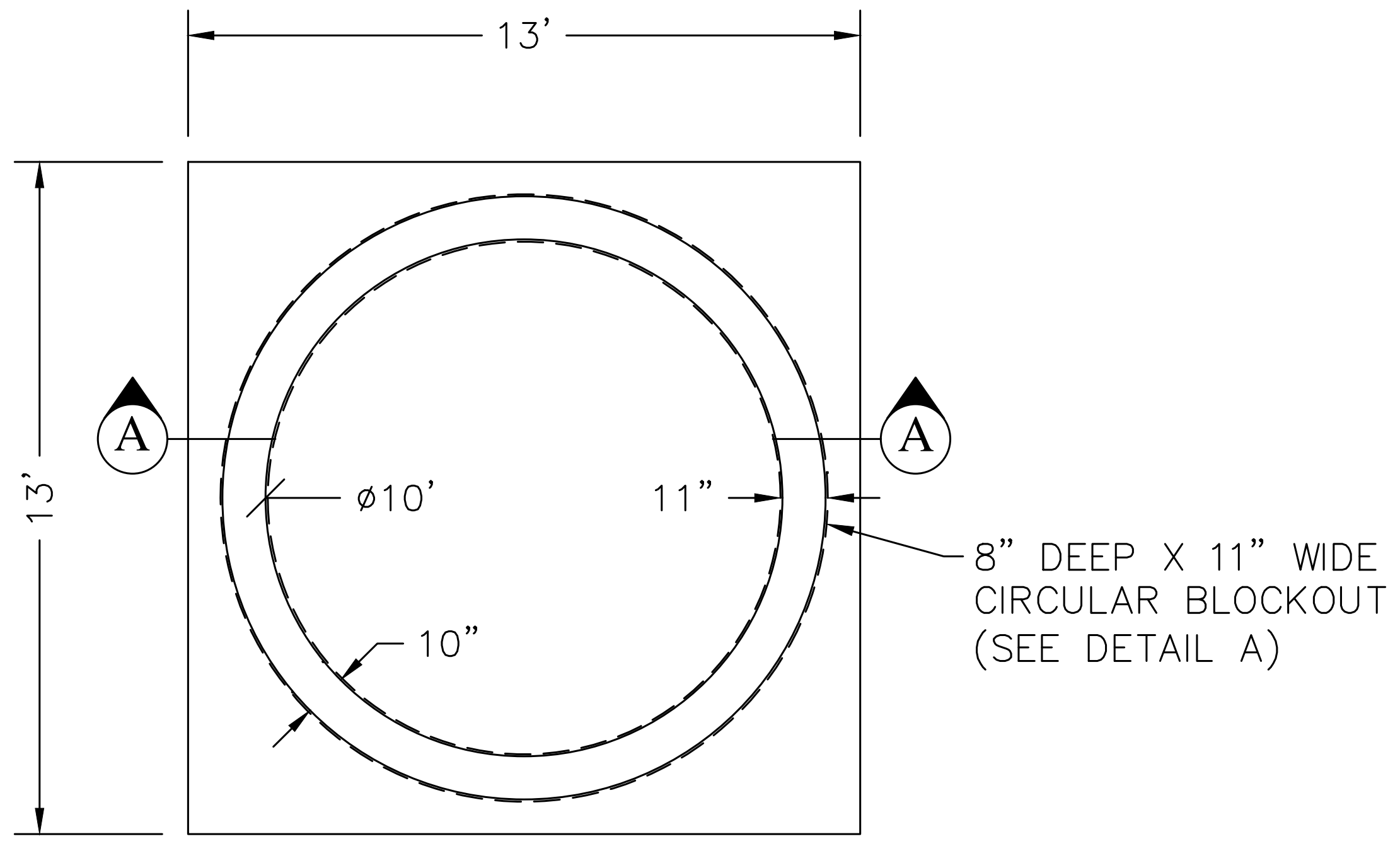
ELECTRICAL CANOPY FOUNDATION

SCALE: 1/4"=1'


SEE CIVIL FOR FFE
SEE CHART
MINIMUM $4\frac{1}{2}$"ø $\frac{1}{2}$" THK. HOT DIP GALV STRUCTURAL STEEL TUBE
1' TYP.
SEE CHART
SEE CHART
6-#6 T&B & MIDDLE CONTINUOUS TYP.
#4 TIES @ 24" C/C

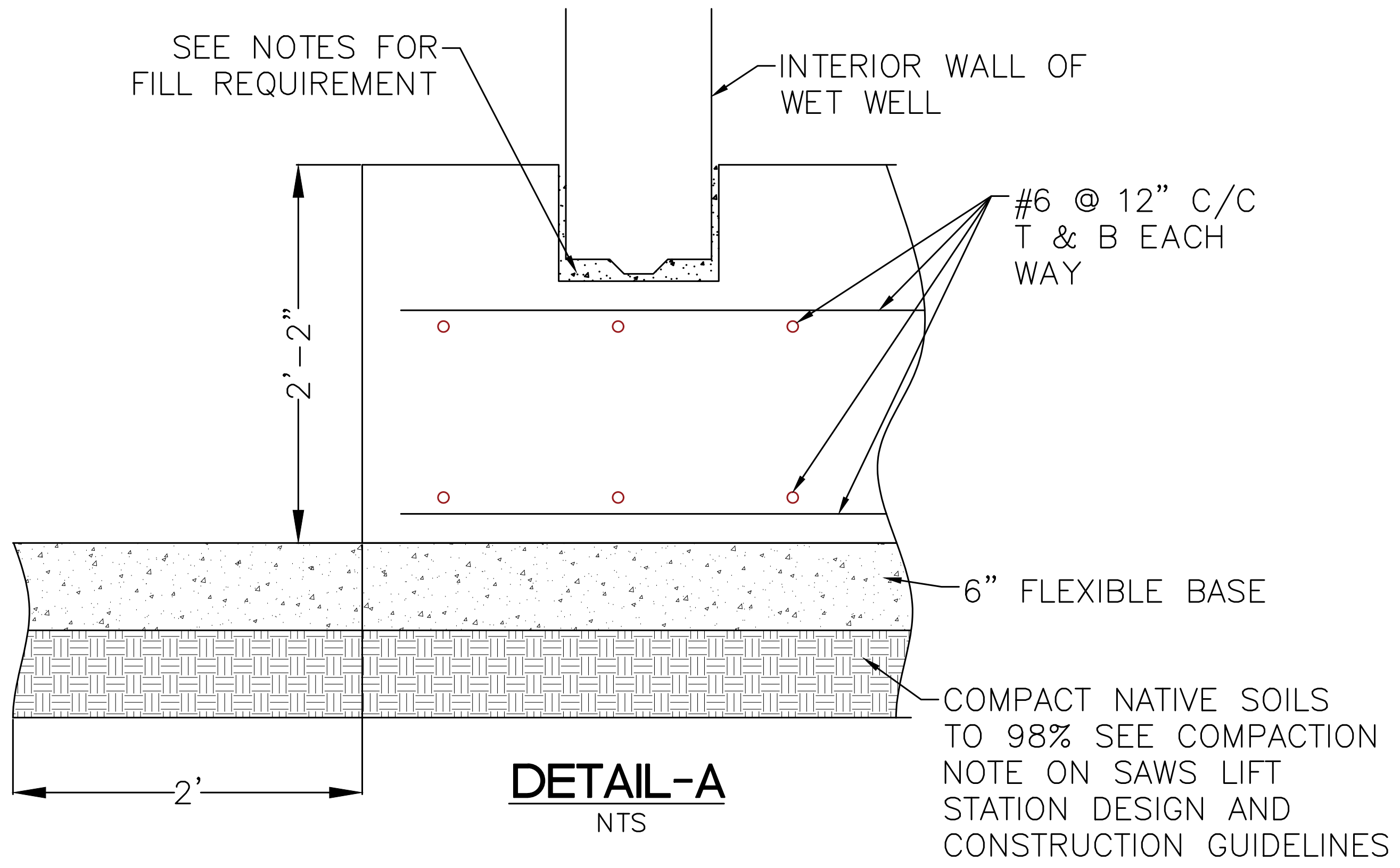
SECTION B-B

SCALE: 1/4"=1'



PLAN VIEW OF LIFT STATION BOTTOM SLAB

SCALE: 1/4"=1'


SEE NOTES FOR FILL REQUIREMENT
INTERIOR WALL OF WET WELL
#6 @ 12" C/C T & B EACH WAY
2'-2"
6" FLEXIBLE BASE
COMPACT NATIVE SOILS TO 98% SEE COMPACTION NOTE ON SAWS LIFT STATION DESIGN AND CONSTRUCTION GUIDELINES
2'

DETAIL-A

NTS

TOP SLAB, GENERATOR AND ELECTRICAL CANOPY FOUNDATION CHART

BEAM WIDTH (MINIMUM)	EXT. BEAM DEPTH	EXT.BM. DEPTH IN GRADE	INT. BEAM DEPTH	BEAM BARS T & B	STIRRUP EXT. BEAM	STIRRUP INT. BEAM	PAD BARS	SLAB THICKNESS
12" EXT. 12" INT.	24"MIN.	6" MIN.	24" MIN.	2-#6 BTM 2-#6 TOP	#3 @24"O.C.	#3 @24"O.C.	2 MATS #4 @12"O.C.	12"

BUILDER/CONTRACTOR TO VERIFY ALL DIMENSIONS, DROP AREAS, FLOOR PENETRATIONS, AND BLOCK-OUT LOCATIONS ON SITE.

GRADE BEAM WIDTH SHALL BE REFERENCED FROM CHART, U.N.O.

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New Braunfels, TX 78132
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CUDE ENGINEERS EST. 1980

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P:(210) 681.2951
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LANTANA RIDGE UNIT 1
LIFT STATION STRUCTURAL

DATE
05/06/2025

PROJECT NO.
04037.003

DRAWN BY
PPS

CHECKED BY
AS

REVISIONS

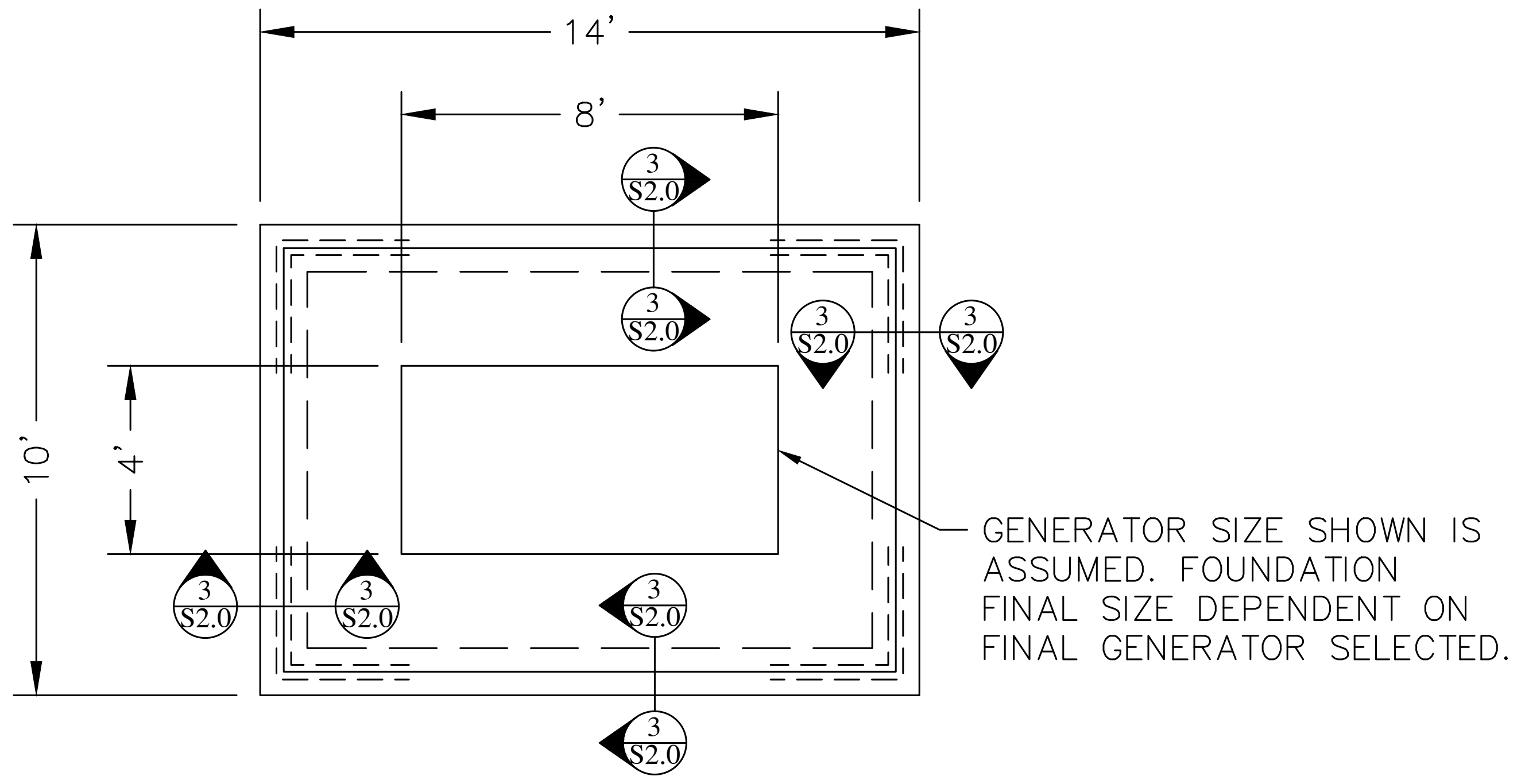
A.M. STONE
91049
A M Stone
05/10/2025

OUTLIER ENGINEERING, INC
TBPE No. 14384

PLAT NO.
–

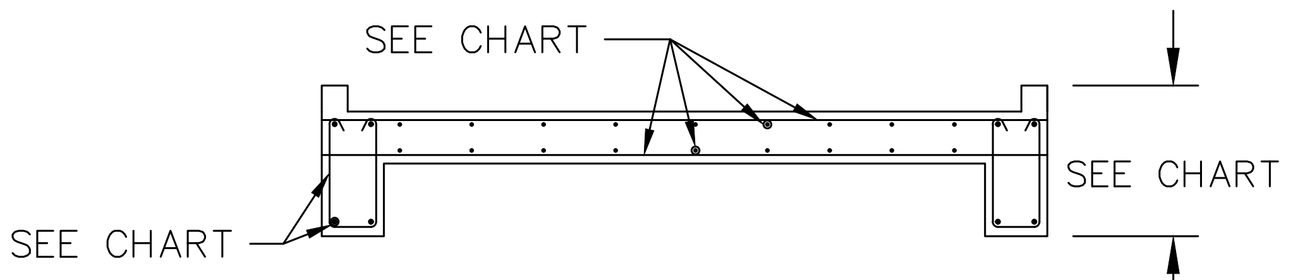
SHEET NO
S1

Q:\21-7035-012.Lantana Ridge\01.Communication\05. Upload+Mails Sent\06May25\Lantana Ridge.dwg 2025/05/06 10:22am Ashok Daregol


14'
8'
10'
4'
3 S2.0
GENERATOR SIZE SHOWN IS ASSUMED. FOUNDATION FINAL SIZE DEPENDENT ON FINAL GENERATOR SELECTED.

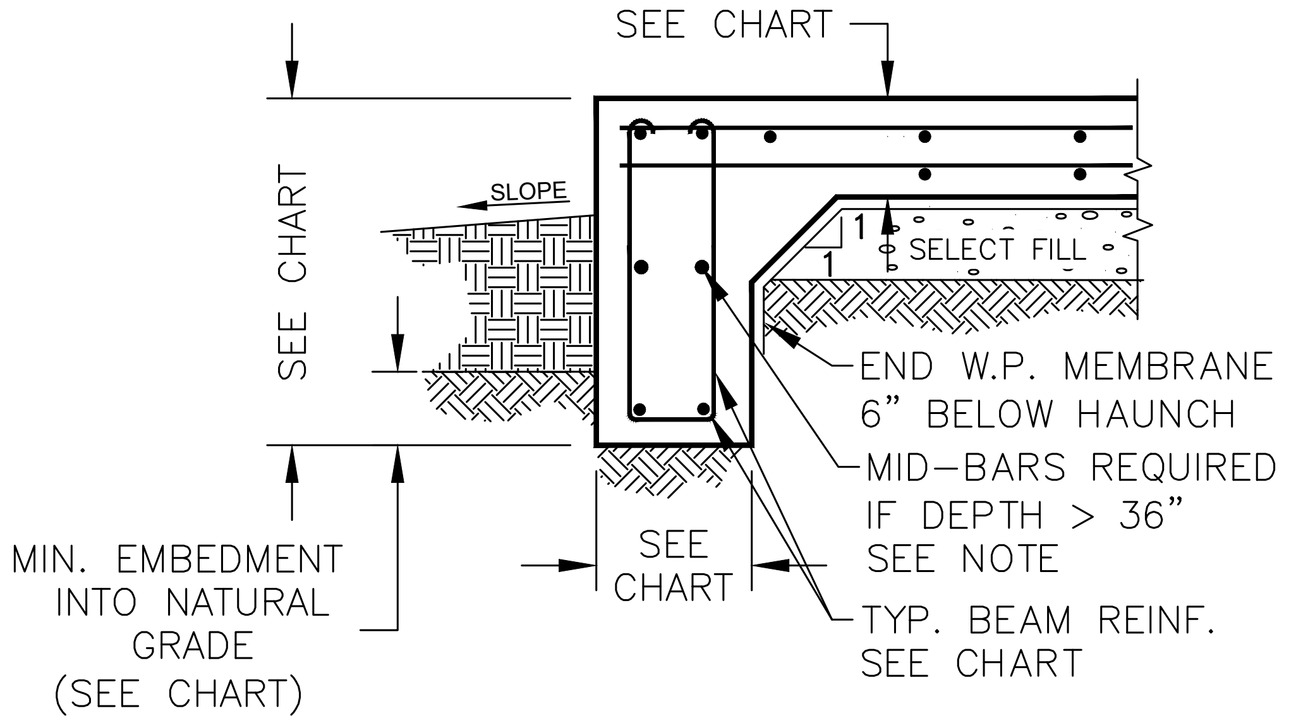
GENERATOR PAD FOUNDATION

SCALE: 1/4"=1'



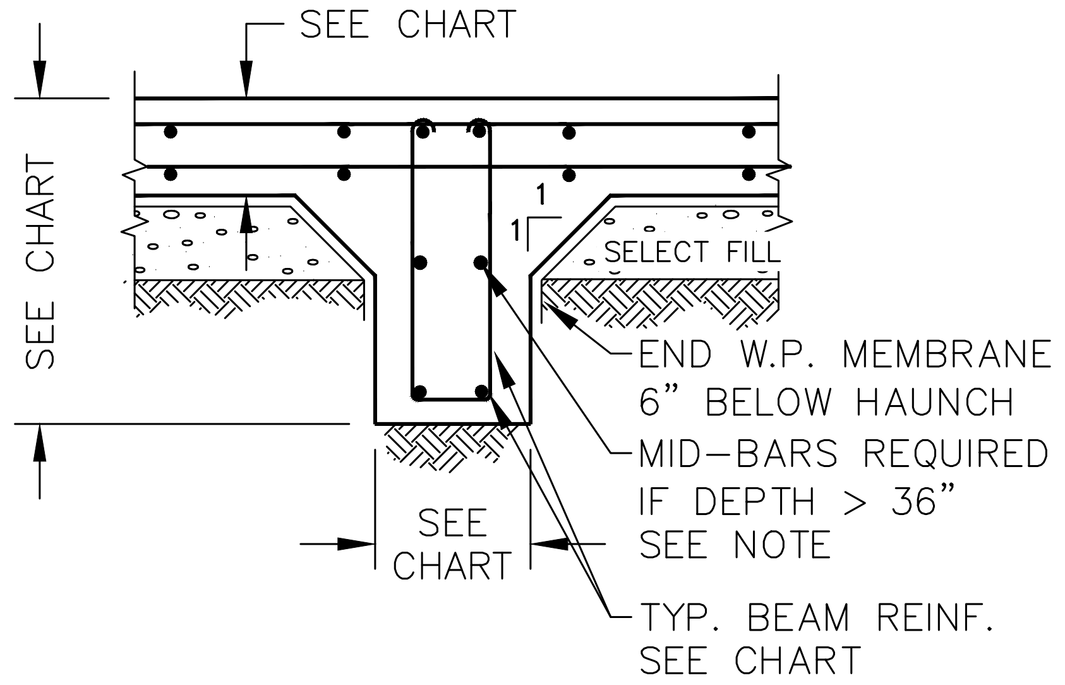
GENERATOR PAD ELEVATION

SCALE: 1/4"=1'


SEE CHART
SEE CHART
SLOPE
SELECT FILL
1
1
END W.P. MEMBRANE 6" BELOW HAUNCH
MID-BARS REQUIRED IF DEPTH > 36" SEE NOTE
TYP. BEAM REINF. SEE CHART
SEE CHART
MIN. EMBEDMENT INTO NATURAL GRADE (SEE CHART)

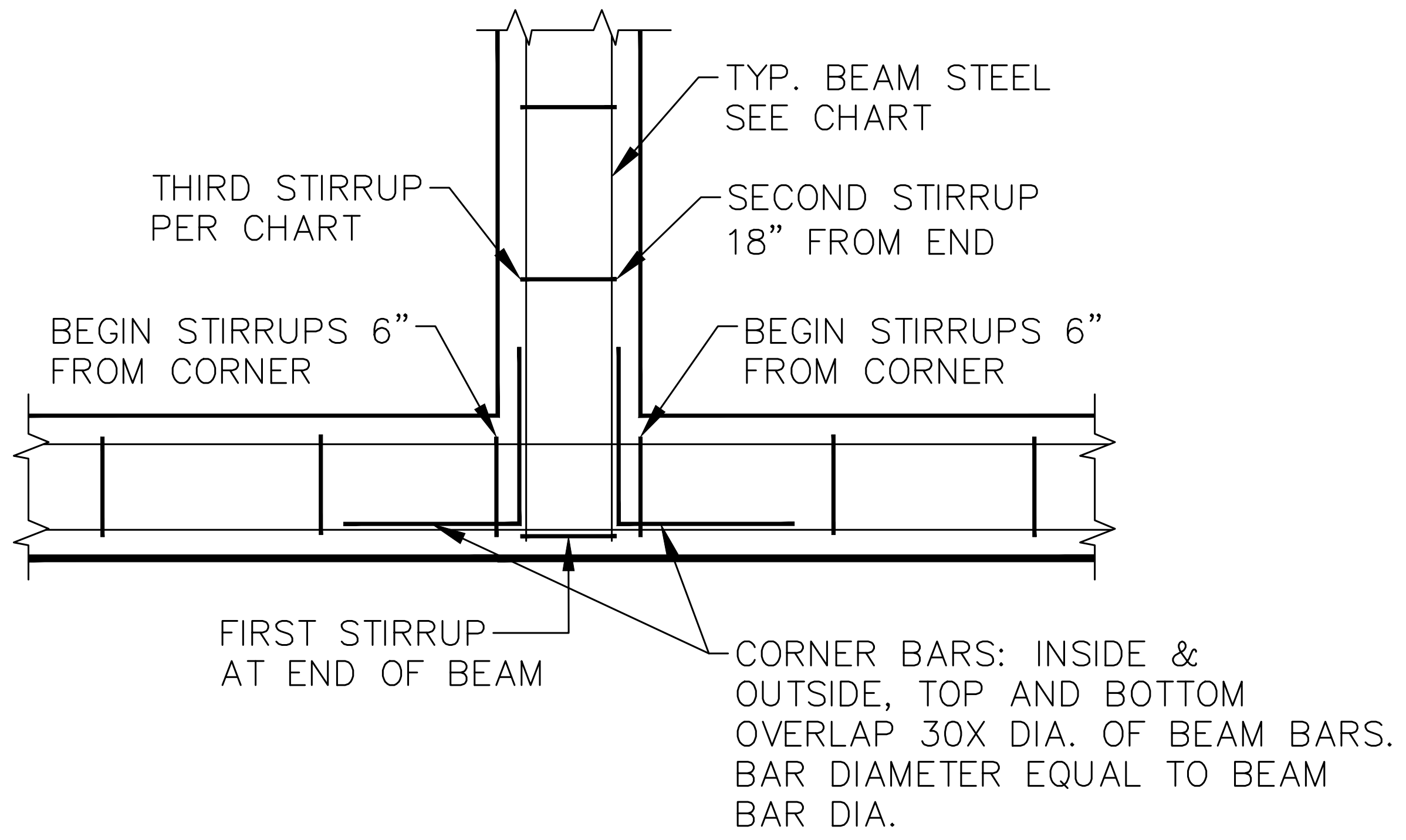
DETAIL–1

EXTERIOR BEAM–NO BRICK LUG


SEE CHART
SEE CHART
SELECT FILL
1
1
END W.P. MEMBRANE 6" BELOW HAUNCH
MID-BARS REQUIRED IF DEPTH > 36" SEE NOTE
TYP. BEAM REINF. SEE CHART
SEE CHART

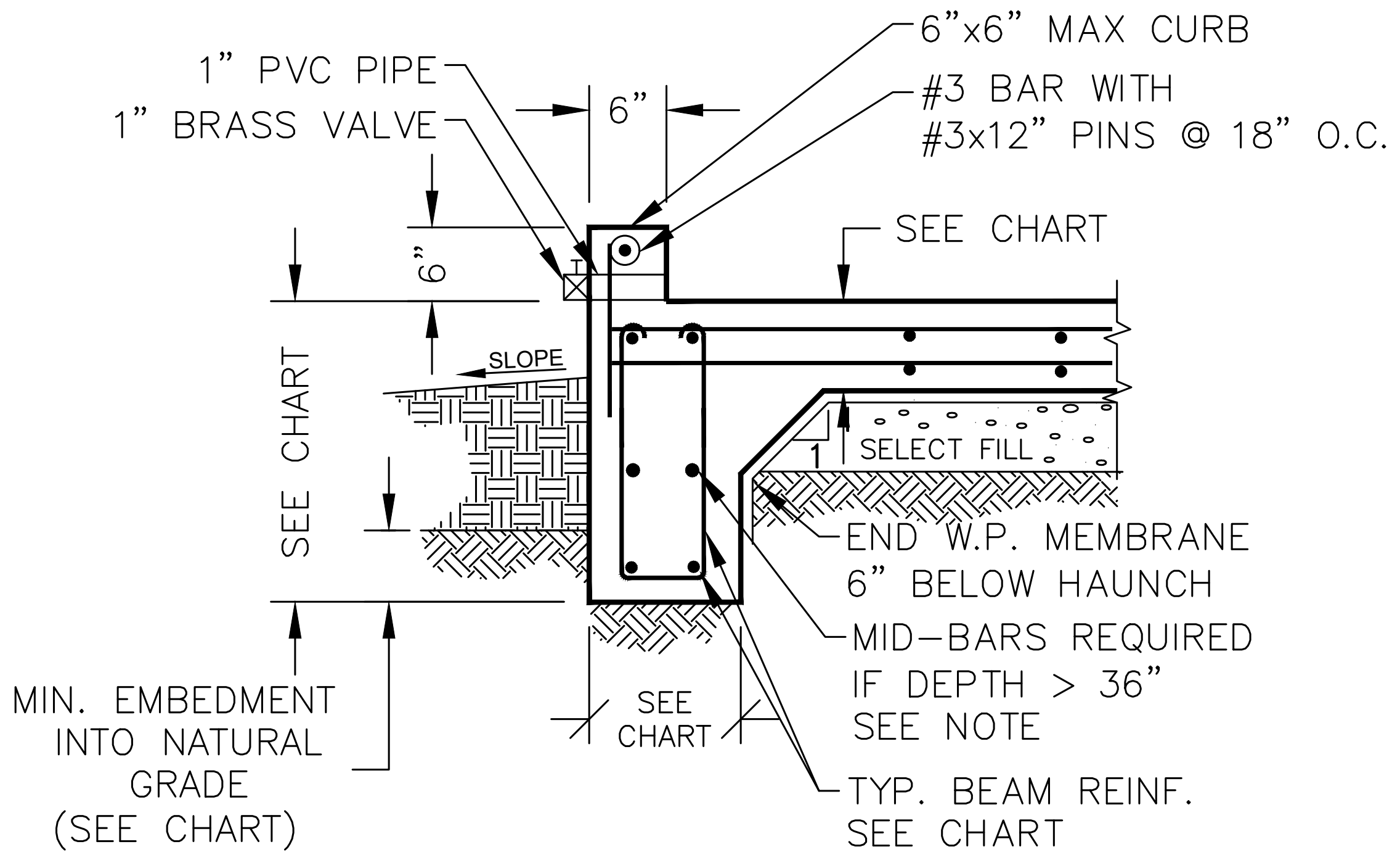
DETAIL–2

TYP. INT. BEAM DETAIL


TYP. BEAM STEEL SEE CHART
THIRD STIRRUP PER CHART
SECOND STIRRUP 18" FROM END
BEGIN STIRRUPS 6" FROM CORNER
BEGIN STIRRUPS 6" FROM CORNER
FIRST STIRRUP AT END OF BEAM
CORNER BARS: INSIDE & OUTSIDE, TOP AND BOTTOM OVERLAP 30X DIA. OF BEAM BARS. BAR DIAMETER EQUAL TO BEAM BAR DIA.

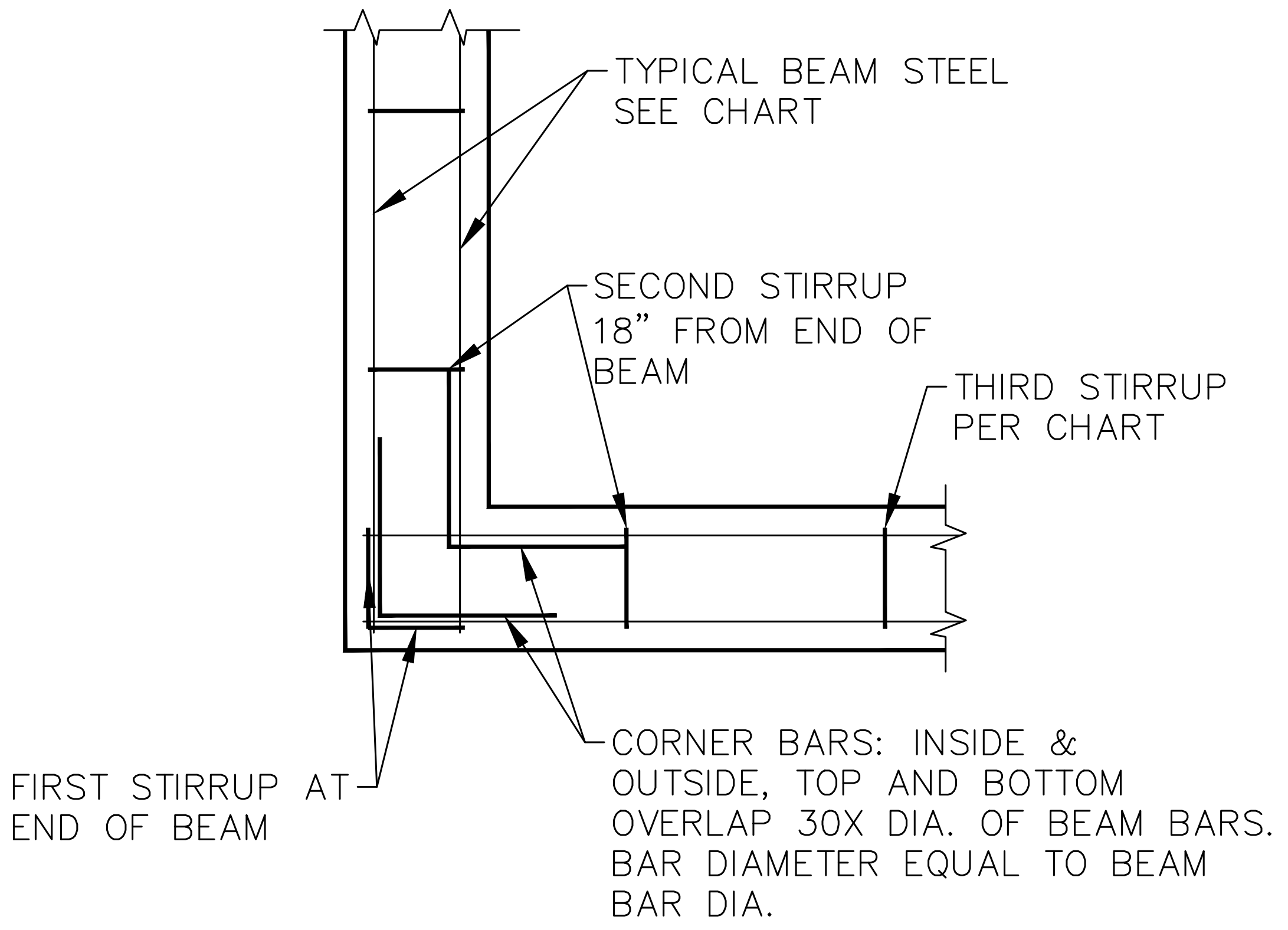
INTERSECTION DETAIL

BEAM INTERSECTION DETAIL


1" PVC PIPE
1" BRASS VALVE
6"
6"x6" MAX CURB
#3 BAR WITH #3x12" PINS @ 18" O.C.
6"
SEE CHART
SLOPE
SEE CHART
SELECT FILL
1
1
END W.P. MEMBRANE 6" BELOW HAUNCH
MID-BARS REQUIRED IF DEPTH > 36" SEE NOTE
TYP. BEAM REINF. SEE CHART
SEE CHART
MIN. EMBEDMENT INTO NATURAL GRADE (SEE CHART)

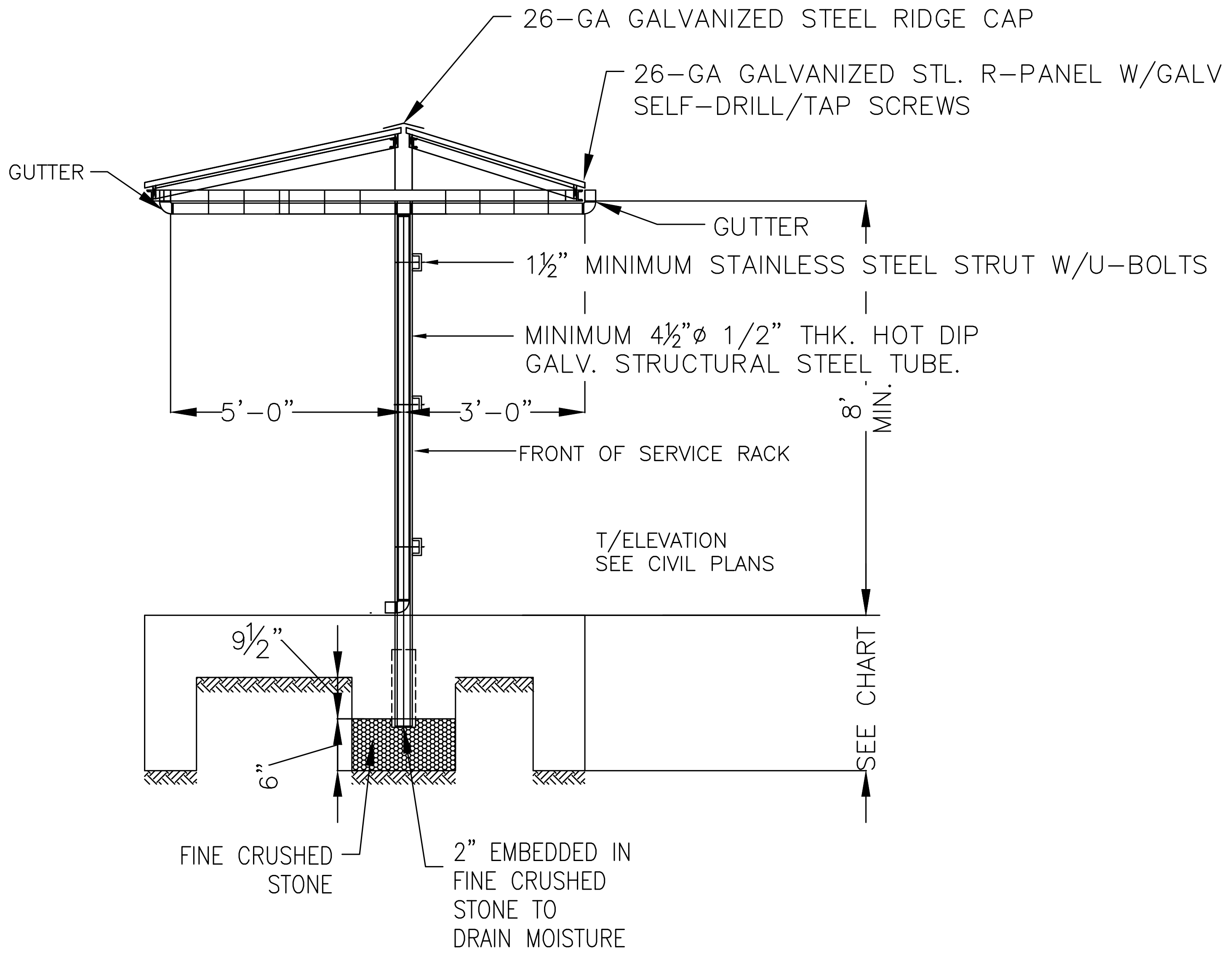
DETAIL–3

EXTERIOR BEAM W/ CURB


TYPICAL BEAM STEEL SEE CHART
SECOND STIRRUP 18" FROM END OF BEAM
THIRD STIRRUP PER CHART
FIRST STIRRUP AT END OF BEAM
CORNER BARS: INSIDE & OUTSIDE, TOP AND BOTTOM OVERLAP 30X DIA. OF BEAM BARS. BAR DIAMETER EQUAL TO BEAM BAR DIA.

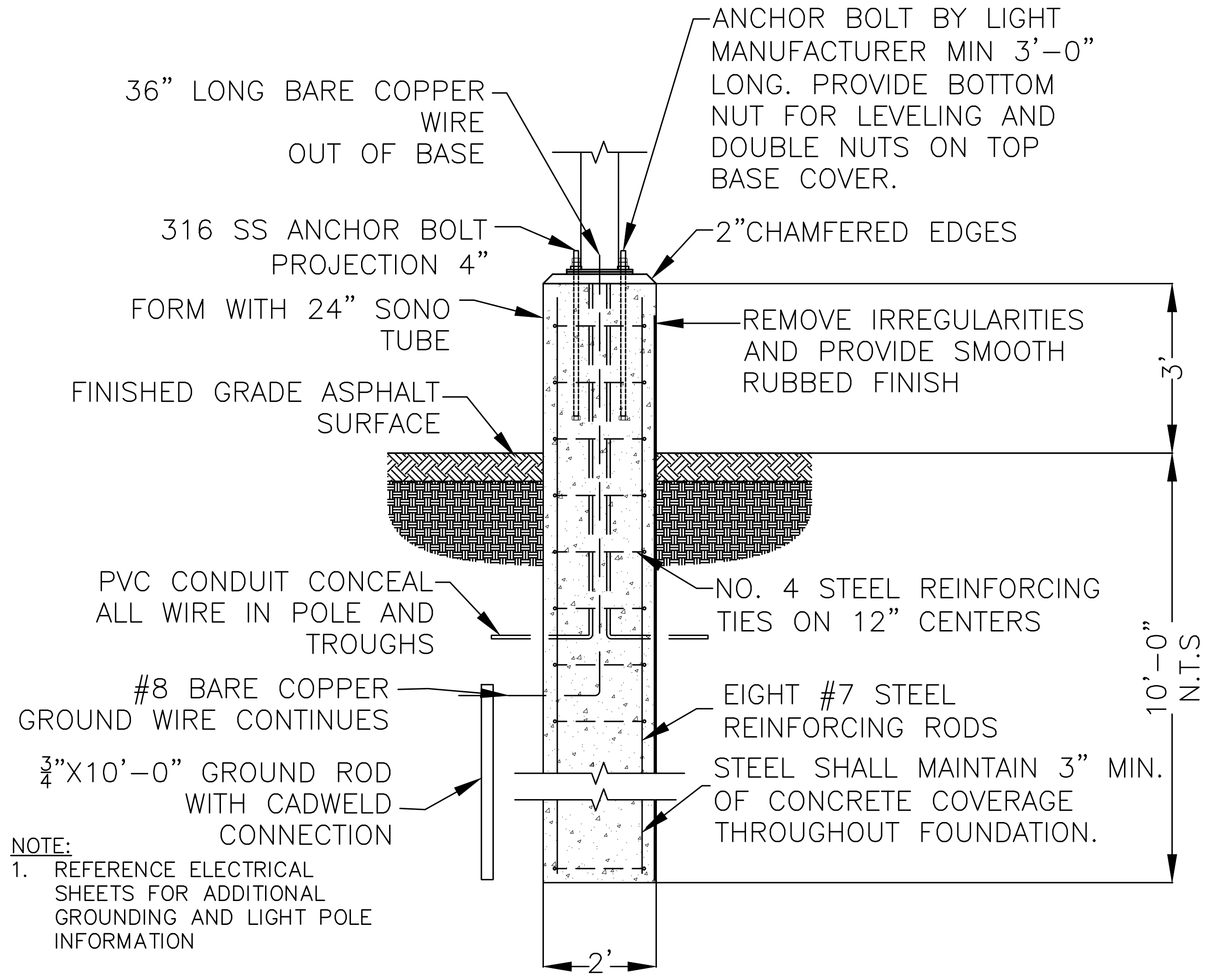
CORNER DETAIL

TYP. EXT. CORNER BEAM


26–GA GALVANIZED STEEL RIDGE CAP
26–GA GALVANIZED STL. R–PANEL W/GALV SELF–DRILL/TAP SCREWS
GUTTER
GUTTER
1½" MINIMUM STAINLESS STEEL STRUT W/U–BOLTS
MINIMUM 4½"ø 1/2" THK. HOT DIP GALV. STRUCTURAL STEEL TUBE.
5'–0"
3'–0"
8' MIN.
FRONT OF SERVICE RACK
T/ELEVATION SEE CIVIL PLANS
9½"
SEE CHART
6"
FINE CRUSHED STONE
2" EMBEDDED IN FINE CRUSHED STONE TO DRAIN MOISTURE

SECTION C–C (ELECTRICAL RACK)

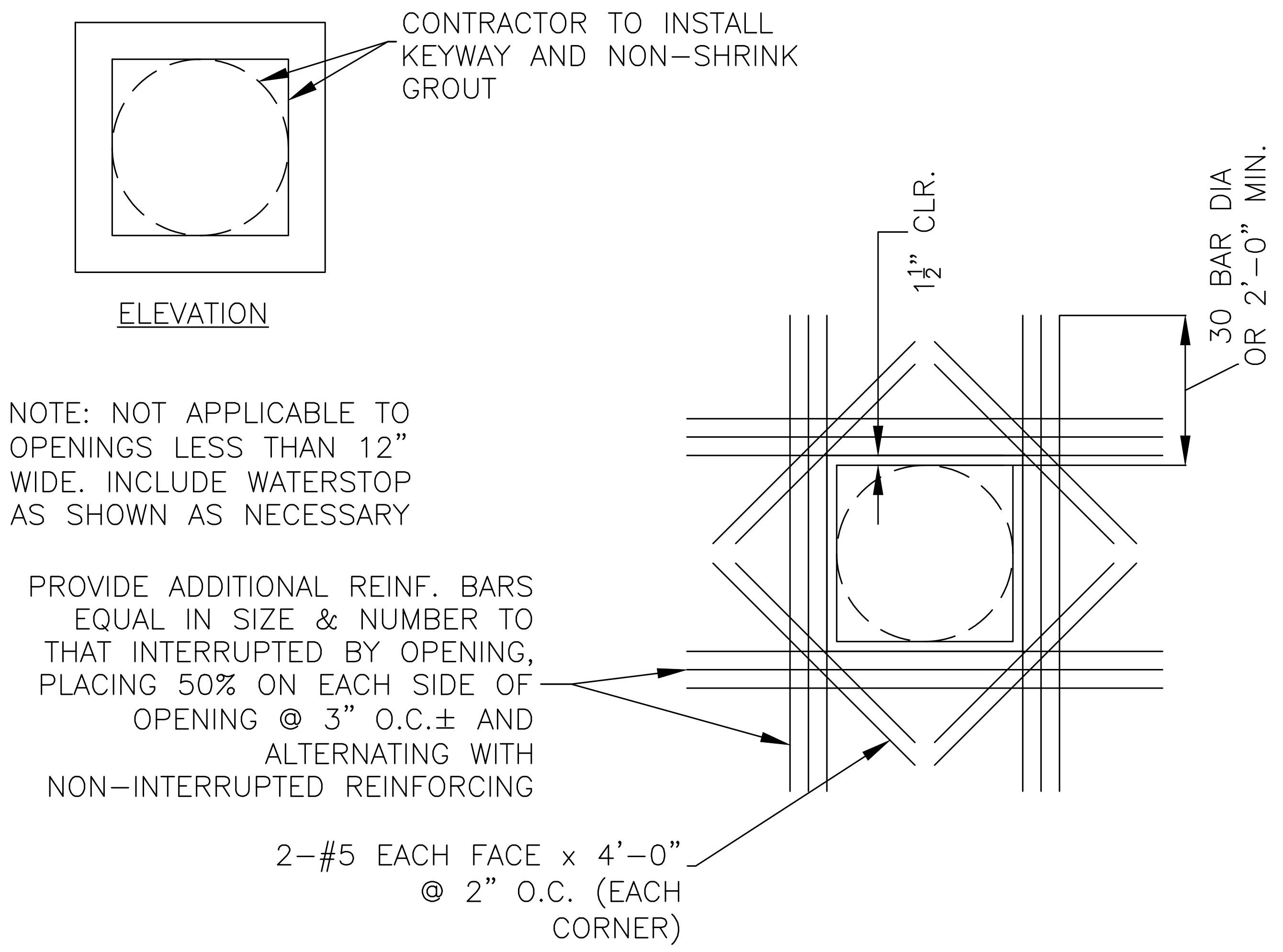
SCALE: 3/8"=1'


36" LONG BARE COPPER WIRE OUT OF BASE
ANCHOR BOLT BY LIGHT MANUFACTURER MIN 3'–0" LONG. PROVIDE BOTTOM NUT FOR LEVELING AND DOUBLE NUTS ON TOP BASE COVER.
316 SS ANCHOR BOLT PROJECTION 4"
2"CHAMFERED EDGES
FORM WITH 24" SONO TUBE
REMOVE IRREGULARITIES AND PROVIDE SMOOTH RUBBED FINISH
3'
FINISHED GRADE ASPHALT SURFACE
PVC CONDUIT CONCEAL ALL WIRE IN POLE AND TROUGHS
NO. 4 STEEL REINFORCING TIES ON 12" CENTERS
#8 BARE COPPER GROUND WIRE CONTINUES
EIGHT #7 STEEL REINFORCING RODS
10'–0" N.T.S
¾"X10'–0" GROUND ROD WITH CADWELD CONNECTION
STEEL SHALL MAINTAIN 3" MIN. OF CONCRETE COVERAGE THROUGHOUT FOUNDATION.
2'

NOTE:
1. REFERENCE ELECTRICAL SHEETS FOR ADDITIONAL GROUNDING AND LIGHT POLE INFORMATION

LIGHT POLE FOUNDATION (TYP)

SCALE: 3/8"=1'


CONTRACTOR TO INSTALL KEYWAY AND NON–SHRINK GROUT
ELEVATION
1½" CLR.
30 BAR DIA OR 2'–0" MIN.
PROVIDE ADDITIONAL REINF. BARS EQUAL IN SIZE & NUMBER TO THAT INTERRUPTED BY OPENING, PLACING 50% ON EACH SIDE OF OPENING @ 3" O.C.± AND ALTERNATING WITH NON–INTERRUPTED REINFORCING
2–#5 EACH FACE x 4'–0" @ 2" O.C. (EACH CORNER)

NOTE: NOT APPLICABLE TO OPENINGS LESS THAN 12" WIDE. INCLUDE WATERSTOP AS SHOWN AS NECESSARY

PENETRATION DETAIL

NTS

OUTLIER ENGINEERING,INC.
240 Oak Court
New Braunfels, TX 78132
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www.outliereng.com
Ph:830.837.0242

CUDEENGINEERS.COM

EST. 1980
CUDE
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4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951

LANTANA RIDGE UNIT 1
LIFT STATION STRUCTURAL

DATE
05/06/2025

PROJECT NO.
04037.003

DRAWN BY
PPS

CHECKED BY
AS

REVISIONS

A.M. STONE
91049
A.M. Stone
05/10/2025
OUTLIER ENGINEERING, INC
TBPE No. 14384

PLAT NO.
–

SHEET NO
S2