CONSTRUCTION PLANS

CUDEENGINEERS.COM

STREET AND DRAINAGE CONSTRUCTION PLANS

- C1 - ULTIMATE MASTER DRAINAGE PLAN
- C2 - ULTIMATE MASTER DRAINAGE PLAN
- C3 - STREET PLAN & PROFILE - JACARANDA LANE
- C4 - STREET PLAN & PROFILE - JACARANDA LANE
- C5 - STREET PLAN & PROFILE - RUSTIC GROVE
- C6 - STREET PLAN & PROFILE - MILKHOUSE LANE
- C7 - STREET PLAN & PROFILE - WILD YONDER LANE
- C8 - STREET PLAN & PROFILE - HOLSTEIN LN
- C9 - STREET PLAN & PROFILE - QUAKING LEAF
- C10 - TRAFFIC SIGNAGE PLAN
- C11 - CITY OF BOERNE STANDARD STREET DETAILS
- C12 - TXDOT PAVEMENT MARKING DETAILS
- C13 - DRAIN PLAN & PROFILE - DRAIN '5-A'
- C14 - DRAIN PLAN & PROFILE - DRAIN '5-A'
- C15 - DRAIN PLAN & PROFILE - DRAIN '5-A'
- C16 - DRAIN PLAN & PROFILE - DRAIN '5-B'
- C17 - DRAIN PLAN & PROFILE - DRAIN '5-C'
- C18 - SINGLE BOX CULVERTS CAST-IN-PLACE DETAIL
- C19 - TXDOT CONCRETE HEADWALLS NON-SKEWED DETAIL
- C20 - TXDOT FLARED WING DETAIL
- C21 - TXDOT PARALLEL WING DETAIL
- C22 - TXDOT PRECAST 3'.4'&5' CULVERT BOXES & CONC. RIP-RAP DETAIL
- C23 - TXDOT SAFETY END TREATMENT DETAILS
- C24 - TXDOT SAFETY END TREATMENT PARALLEL DRAINAGE 12''-72''
- C25 - CURB INLET DETAILS

SANITARY SEWER CONSTRUCTION PLANS

- C26 - OVERALL SANITARY SEWER PLAN
- C27 - SANITARY SEWER LINE 'A-A' - PLAN & PROFILE
- C28 - SANITARY SEWER LINE 'A-A' - PLAN & PROFILE
- C29 - SANITARY SEWER LINE 'A-B' AND 'Z' PLAN & PROFILE
- C30 - SANITARY SEWER LINE 'Y' - PLAN & PROFILE
- C31 - SANITARY SEWER GENERAL NOTES
- C32 - SANITARY SEWER STANDARD DETAILS

WATER DISTRIBUTION CONSTRUCTION PLANS

- C33 - WATER DISTRIBUTION PLAN
- C34 - WATER DISTRIBUTION PLAN
- C35 - WATER DISTRIBUTION STANDARD DETAILS

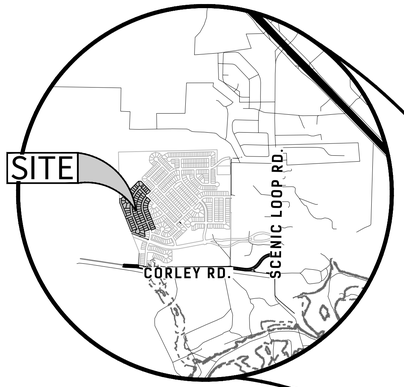
GAS DISTRIBUTION CONSTRUCTION PLANS

- C36 - NATURAL GAS DISTRIBUTION PLAN
- C37 - NATURAL GAS DISTRIBUTION STANDARD DETAILS

MISCELLANOUS CONSTRUCTION PLANS

- C38 - UTILITY LAYOUT PLAN
- C39 - STORM WATER POLLUTION PREVENTION PLAN
- C40 - OVERALL GRADING PLAN

KENDALL COUNTY WATER CONTROL &
IMPROVEMENT DISTRICT NO 3A
1330 POST OAK BLVD, SUITE 2650
HOUSTON, TEXAS 77056



CORLEY FARMS SUBDIVISION IS VESTED TO THE SUBDIVISION ORDINANCE NO. 2007-56 OF THE CITY OF BOERNE, TEXAS (REVISED 10.08.2019) PER THE DEVELOPMENT AGREEMENT EXECUTED BETWEEN BOERNEBAK, LLC., AND THE CITY OF BOERNE, TEXAS EFFECTIVE NOVEMBER 26, 2019.

LOCATION MAP



VICINITY MAP

CORLEY FARMS UNIT 5

CONSTRUCTION PLANS

PRESSURE ZONE 12

Developer's Name	PULTE HOMES OF TEXAS, L.P.				
Developer's Address	927 E. SONTERRA BLVD., SUITE 316				
City	SAN ANTONIO	State	TEXAS	Zip	78258
Phone #	(210) 496-1985	Fax #	(210) 496-0449		
SAWS Block Map #	N/A	Total EDU's	75	Total Acreage	19.78
Total Linear Footage of Pipe	8" W - 3,027 L.F./2" W - 702 L.F.			Plat No.	N/A (CORLEY FARMS UNIT 5 PLAT)
Number of Lots	XXXX	SAWS Job No.	XX-XXXX		

DEVELOPER:
PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: TREY ROGERS
927 E. SONTERRA BLVD., SUITE 316
SAN ANTONIO, TEXAS 78258
TEL: (210) 496-1985
FAX: (210) 496-0449

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

DRAWN BY	DATE	
C3	04/09/2025	
CHECKED BY	PROJECT NO.	SAWS JOB NO.
AL	03481.012	XX-XXXX

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
6/2/25

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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SPRING HILL RD.

SEAMAN MARK & PATRICIA (VOL. 1785, PG. 59)

PEINE JANELLE REVOCABLE TRUST (VOL. 1725, PG. 662)

SCHMIT STEVEN J. & KIMBERLY J. (VOL. 1685, PG. 229)

BUTLER STEVE V. SR. (VOL. 1577, PG. 1041)

ALDERETE JOSEPH & SUNNIE G. (VOL. 1381, PG. 686)

BOERNEBAK II, LLC (VOL. 1630, PG. 731)

SIMMONS BRYHN W. & KELLY L. (VOL. 914, PG. 597)

LTB INTERESTS LTD (VOL. 1145, PG. 349)

PG 1466.42

PR-WSHD-A1= 19.83 Ac.

PR-WSHD-A19= 10.04 Ac.

PR-WSHD-A35 = 9.47Ac.

PR-WSHD-A-20 = 3.52Ac.

PR-WSHD-A61= 134.03Ac.

PR-WSHD-A64= 19.54 Ac.

PR-WSHD-A63= 1.25 Ac.

PR-WSHD-A5= 1.94Ac.

PR-WSHD-A2= 7.88Ac.

PR-WSHD-A3= 4.47Ac.

PR-WSHD-A19= 4.58 Ac.

PR-WSHD-A22= 3.01 Ac.

PR-WSHD-A21= 2.49Ac.

PR-WSHD-A23 = 5.46Ac.

PR-WSHD-A24= 4.04Ac.

PR-WSHD-A25= 2.16Ac.

PR-WSHD-A27= 1.74Ac.

PR-WSHD-A28= 3.69Ac.

PR-WSHD-A29= 4.57Ac.

PR-WSHD-A26= 7.29Ac.

PR-WSHD-A30= 4.46Ac.

PR-WSHD-A31= 4.73Ac.

PR-WSHD-A32= 3.48Ac.

PR-WSHD-A14= 6.65Ac.

PR-WSHD-A13= 7.56Ac.

PR-WSHD-A12= 2.15Ac.

PR-WSHD-A36= 4.23Ac.

PR-WSHD-A39= 6.91Ac.

PR-WSHD-A41= 0.74Ac.

PR-WSHD-A44= 0.81Ac.

PR-WSHD-A37= 1.11Ac.

PR-WSHD-A34= 6.60Ac.

PR-WSHD-A33= 1.64Ac.

PR-WSHD-A40= 0.83Ac.

PR-WSHD-A60= 1.26Ac.

PR-WSHD-A66= 4.81 Ac.

PR-WSHD-A65= 0.98 Ac.

PR-WSHD-A62= 2.53 Ac.

PR-WSHD-A38= 0.96Ac.

PR-WSHD-A45= 0.90Ac.

PR-WSHD-A67= 1.47 Ac.

PR-WSHD-A42= 1.20Ac.

PR-WSHD-A43= 1.25Ac.

PR-WSHD-A46= 0.78Ac.

PR-WSHD-A47= 22.74Ac.

PR-WSHD-A15= 0.48Ac.

PR-WSHD-A10= 5.60Ac.

PR-WSHD-A9= 2.16Ac.

PR-WSHD-A4= 4.99Ac.

PR-WSHD-A3A= 0.73Ac.

PR-WSHD-A7= 3.85Ac.

PR-WSHD-A4B= 0.96Ac.

PR-WSHD-A11= 3.90Ac.

PR-WSHD-A11A= 0.75Ac.

PR-WSHD-A16= 6.62Ac.

PR-WSHD-A18= 1.82Ac.

PR-WSHD-A18A= 0.81Ac.

PR-WSHD-A49= 1.14Ac.

PR-WSHD-A48= 1.16Ac.

PR-WSHD-A50= 1.61Ac.

PR-WSHD-A5A= 4.32Ac.

PR-WSHD-A57= 16.09Ac.

PR-WSHD-A56= 0.53Ac.

PR-WSHD-A51= 0.49Ac.

PR-WSHD-A17= 0.18Ac.

PR-WSHD-A54= 2.12Ac.

PR-WSHD-A52= 0.68Ac.

PR-WSHD-A53= 0.20Ac.

PR-WSHD-A53A= 2.37Ac.

PR-WSHD-A59= 5.80Ac.

EX. 2 - 18" C.M.P.

EX. 4 - 36" R.C.P.

EX. 18" C.M.P.

EX. 2 - 24" R.C.P.

PROP. 5 ~5' x 2' CIP CONC. BOX CULVERT (REFERENCE VALLERIE LANE IMPROVEMENT PLANS)

PROP. 5 ~5' x 3' CIP CONC. BOX CULVERT (REFERENCE L.S. & F.M. PLANS)

ACORN CIRCLE

RUSTIC BARN LANE

RUSTIC GROVE

FARMING GROVE

WINDING WINDMILL

HORSESHOE CIRCLE

TOWN END

OLD RIDGE LANE

TROTTING HORSE

WHITE BARN CIRCLE

VALERIE LN.

SCENIC LOOP RD.

CORLEY RD.

REED LANE

DRAIN "2-A"

DRAIN "2-B"

DRAIN "2-C"

DRAIN "4-A"

DRAIN "4-B"

DRAIN "4-C"

DRAIN "4-D"

DRAIN "4-E"

DRAIN "4-F"

BOX DRAIN 2

BOX DRAIN 3

UECKER WILLIAM EDWARD (VOL. 1590, PG. 522)

CANNON IVA JULIA TRUSTEE (VOL. 1215, PG. 362)

YARBOUGH JON GRADY (VOL. 1898, PG. 136)

MAGAYA PROPERTIES INC. (VOL. 1643, PG. 707)

CASTELORO LEGACY HOLDINGS, LLC (VOL. 1447 PG. 468)

CASTELORO LEGACY HOLDINGS, LLC (VOL. 1447 PG. 473)

GOMBERT, GARTH W & TERRY W

BOERNEBAK, LLC (VOL. 1617 PG. 546) (40.451 Ac.)

ALORO PROPERTIES, LLC (VOL. 1146 PG. 1014)

RED BEANKAT HOLDINGS, LLC (VOL. 1621 PG. 740)

BOERNEBAK, LLC (VOL. 1617 PG. 546)

FORD, CHARLES W. & SHARON K. (VOL. 627 PG. 997)

HARPER CHARLES W. JR. (VOL. 550, PG. 413)

CASTELORO HOLDINGS GARAGE LLC (VOL. 1417, PG. 838)

GOODALL MITCHEL R. & HEIDI L. (VOL. 811, PG. 914)

GOODALL MITCHEL R. & HEIDI L. (VOL. 408, PG. 270)

BIEDENHARN CAROLYN G., (VOL. 1455, PG. 283)

LTB INTERESTS LTD (VOL. 1145, PG. 349)

INSET MAP
N.T.S.

SCALE: 1"=200'
200 100 0 200

LEGEND
- UNIT BOUNDARY
- DRAINAGE AREA BOUNDARY
- Tc FLOW PATH
- ACCUMULATION POINT (XX)
- FLOW ARROWS

TYPICAL LOT SITE PLAN
N.T.S.

CUDEENGINEERS.COM

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

CORLEY FARMS UNIT 5

ULTIMATE MASTER DRAINAGE PLAN

DATE
06/02/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

DATE	DESCRIPTION
1	
2	
3	
4	
5	
6	
7	
8	
9	
A 12/12/24	PERMITTING COMMENTS
5/27/25	GRADING REVISION

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
5/2/25

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C1

CUDEENGINEERS.COM

P:\03481\012\Drawings\Civil\05 ULTIMATE MASTER DRAINAGE PLAN.dwg 6/25/2025 3:47pm kmartinez

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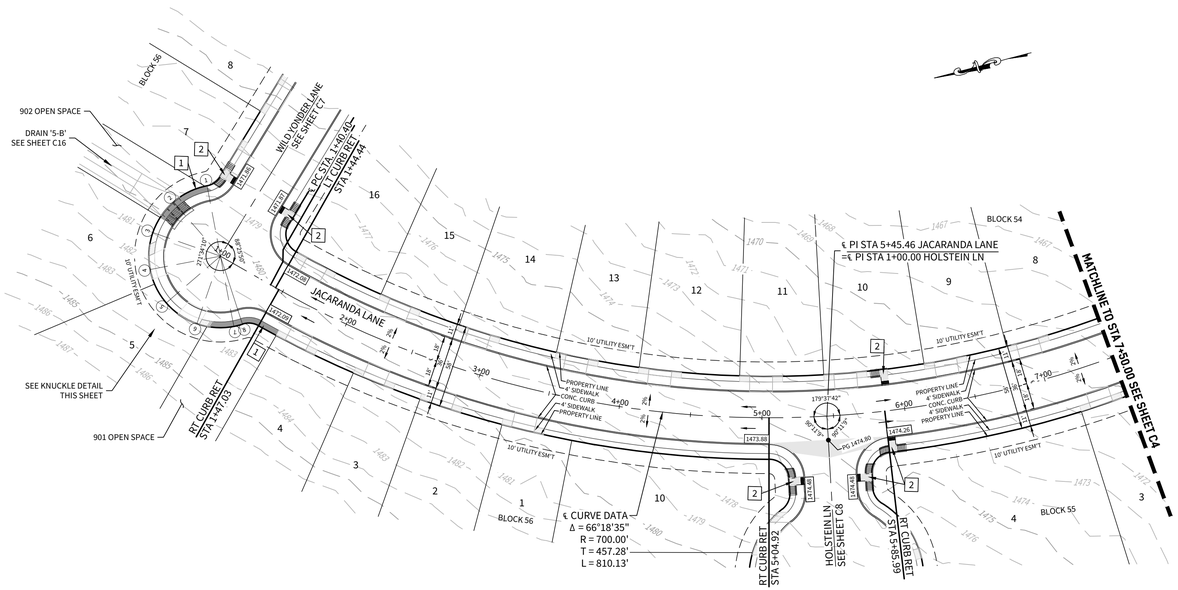
Project Name: Corley Farms
Calculation Summary for Time of Concentrations & Ultimate Flow, "U"

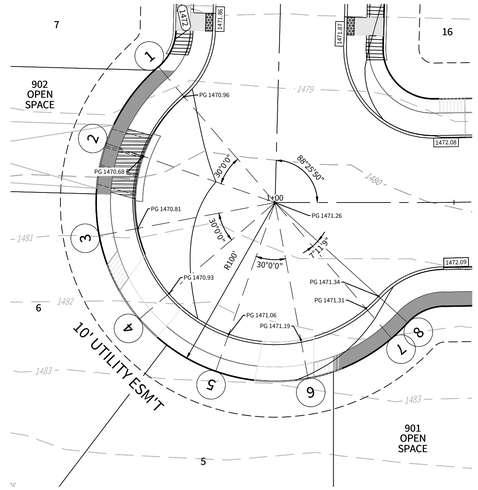
Precipitation Area Atlas 14 = PA1

HYDROLOGY							Sheet Flow Tc Compuations				Shallow Conc. Tc Compuations				Concentrated Tc Computations			Overall	INTENSITY			Q FLOW				
Drainage Shed/ Computation point	Area (Ac.)	AREA OF ACCUMULATION (Ac.)	Rational Shed Area (Ac.)	C	25 Year Cf = 1.1 C*Cf	100 Year Cf = 1.25 C*Cf	*Length = 300'*	Manning's Roughness Coefficient (n)	Slope	Time of Concentration	*Length*	Manning's Roughness Coefficient (n)	Slope	Time of Concentration	*Length*	Velocity (fps)	Time of Concentration	Time of Concentration (min)	I5	I25	I100	Q5	Q25	Q100	Drainage Shed/ Computation Point	
A1/1	19.83	A1	19.83	0.66	0.73	0.83	*300.00*	0.2	2.57%	8.91	*253.00*	0.2	2.57%	5.26	*3145.00*	6	8.74	22.91	4.33	6.06	7.65	56.67	87.24	125.15	A1/1	
A2/2	7.88	A2	7.88	0.66	0.73	0.83	*300.00*	0.3	2.83%	12.74	*50.00*	0.2	2.50%	1.05	*1255.00*	6	3.49	17.28	4.99	7.00	8.84	25.95	40.05	57.47	A2/2	
-/3	0.00	A1:A2	27.71	0.66	0.73	0.83	*300.00*	0.2	2.57%	8.91	*253.00*	0.2	2.57%	5.26	*3145.00*	6	8.74	22.91	4.33	6.06	7.65	79.19	121.91	174.88	-/3	
A3A/-	0.73	A3A	0.73	0.66	0.73	0.83	*120.00*	0.3	2.68%	5.24	*0.00*		0.00%		*95.00*	6	0.26	5.50	7.75	10.93	13.90	3.73	5.79	8.37	A3A/-	
-/3A	0.00	A1:A3A	28.44	0.66	0.73	0.83	*300.00*	0.2	2.57%	8.91	*253.00*	0.2	2.57%	5.26	*3145.00*	6	8.74	22.91	4.33	6.06	7.65	81.28	125.12	179.49	-/3A	
A4/4	4.99	A4	4.99	0.66	0.73	0.83	*192.00*	0.3	1.00%	13.71					*701.00*	6	1.95	15.66	5.23	7.33	9.25	17.22	26.55	38.08	A4/4	
-/4A	0.00	A1:A4	33.43	0.66	0.73	0.83	*300.00*	0.2	2.57%	8.91	*253.00*	0.2	2.57%	5.26	*3145.00*	6	8.74	22.91	4.33	6.06	7.65	95.54	147.08	210.99	-/4A	
A4B/-	0.96	A4B	0.96	0.66	0.73	0.83	*120.00*	0.3	2.08%	5.94					*195.00*	6	0.54	6.48	7.40	10.42	13.24	4.69	7.26	10.49	A4B/-	
-/4B	0.00	A1:A4B	34.39	0.66	0.73	0.83	*300.00*	0.2	2.57%	8.91	*253.00*	0.2	2.57%	5.26	*3145.00*	6	8.74	22.91	4.33	6.06	7.65	98.28	151.30	217.04	-/4B	
A5/5	1.94	A5	1.94	0.66	0.73	0.83	*300.00*	0.2	2.61%	8.84	*126.00*	0.15	2.23%	2.11				10.95	6.12	8.61	10.89	7.84	12.13	17.43	A5/5	
A5A/-	4.32	A5A	4.32	0.66	0.73	0.83	*300.00*	0.3	2.00%	15.15					*515.00*	6	1.43	16.58	5.09	7.15	9.02	14.51	22.42	32.15	A5A/-	
-/5A	0.00	A5:A5A	6.26	0.66	0.73	0.83	*300.00*	0.3	2.00%	15.15					*515.00*	6	1.43	16.58	5.09	7.15	9.02	21.03	32.50	46.58	-/5A	
A6/6	4.47	A6	4.47	0.66	0.73	0.83	*300.00*	0.3	4.51%	10.09	*252.00*	0.2	3.90%	4.25	*250.00*	6	0.69	15.04	5.31	7.43	9.39	15.67	24.11	34.63	A6/6	
A7/-	3.85	A7	3.85	0.66	0.73	0.83	*255.00*	0.3	2.00%	12.88					*527.00*	6	1.46	14.34	5.44	7.63	9.64	13.82	21.33	30.62	A7/-	
-/7	0.00	A6:A7	8.32	0.66	0.73	0.83	*300.00*	0.3	4.51%	10.09	*252.00*	0.2	3.90%	4.25	*250.00*	6	0.69	15.04	5.31	7.43	9.39	29.16	44.88	64.45	-/7	
A8/8	4.46	A8	4.46	0.66	0.73	0.83	*278.00*	0.3	3.20%	11.10					*765.00*	6	2.13	13.23	5.65	7.93	10.03	16.63	25.68	36.91	A8/8	
-/8A	0.00	A6:A8	12.78	0.66	0.73	0.83	*300.00*	0.3	4.51%	10.09	*252.00*	0.2	3.90%	4.25	*250.00*	6	0.69	15.04	5.31	7.43	9.39	44.79	68.94	99.00	-/8A	
A9/-	2.16	A9	2.16	0.66	0.73	0.83	*209.00*	0.3	2.00%	10.56					*376.00*	6	1.04	11.60	5.98	8.40	10.63	8.53	13.17	18.94	A9/-	
-/9	0.00	A6:A9	14.94	0.66	0.73	0.83	*300.00*	0.3	4.51%	10.09	*252.00*	0.2	3.90%	4.25	*250.00*	6	0.69	15.04	5.31	7.43	9.39	52.36	80.59	115.74	-/9	
A10/10	5.60	A10	5.60	0.66	0.73	0.83	*300.00*	0.2	2.32%	9.38	*50.00*	0.3	2.84%	1.48	*510.00*	6	1.42	12.28	5.83	8.20	10.37	21.55	33.34	47.91	A10/10	
A11/-	3.90	A11	3.90	0.66	0.73	0.83	*121.00*	0.3	2.50%	5.47	*280.00*	0.1	0.50%	6.60				12.07	5.88	8.26	10.45	15.14	23.39	33.62	A11/-	
-/11	0.00	A1:A4B, A6:A11	58.83	0.66	0.73	0.83	*300.00*	0.2	2.57%	8.91	*253.00*	0.2	2.57%	5.26	*3145.00*	6	8.74	22.91	4.33	6.06	7.65	168.12	258.83	371.29	-/11	
A11A/11A	0.75	A11A	0.75	0.66	0.73	0.83	*131.00*	0.3	1.50%	7.64					*425.00*	6	1.18	8.82	6.65	9.36	11.87	3.29	5.10	7.34	A11A/11A	
-/11B	0.00	A1:A11A	59.58	0.66	0.73	0.83	*300.00*	0.2	2.57%	8.91	*253.00*	0.2	2.57%	5.26	*3145.00*	6	8.74	22.91	4.33	6.06	7.65	170.27	262.13	376.02	-/11B	
A12/12	2.15	A12	2.15	0.66	0.73	0.83	*87.00*	0.3	1.00%	6.21								6.21	7.49	10.56	13.42	10.63	16.48	23.80	A12/12	
A13/13	7.56	A13	7.56	0.66	0.73	0.83	*251.00*	0.3	1.20%	16.37					*660.00*	6	1.83	18.20	4.86	6.82	8.61	24.25	37.43	53.70	A13/13	
A14/14	6.65	A14	6.65	0.66	0.73	0.83	*300.00*	0.2	1.50%	11.66					*590.00*	6	1.64	13.30	5.64	7.91	10.00	24.75	38.19	54.86	A14/14	
A15/15	0.48	A15	0.48	0.66	0.73	0.83	*36.00*	0.2	2.00%	1.21					*286.00*	6	0.79	2.01	9.01	12.71	16.24	2.85	4.43	6.43	A15/15	
A16/-	6.62	A16	6.62	0.66	0.73	0.83	*300.00*	0.3	1.59%	16.99	*103.00*	0.2	1.59%	2.72				19.72	4.67	6.56	8.27	20.40	31.53	45.17	A16/-	
-/16	0.00	A13:A16	21.31	0.66	0.73	0.83	*251.00*	0.3	1.20%	16.37					*660.00*	6	1.83	18.20	4.86	6.82	8.61	68.35	105.51	151.37	-/16	
A17/17	0.18	A17	0.18	0.66	0.73	0.83	*36.00*	0.2	2.00%	1.21								1.21	9.29	13.11	16.77	1.10	1.71	2.49	A17/17	
A18/-	1.82	A18	1.82	0.66	0.73	0.83	*180.00*	0.2	1.07%	8.29					*260.00*	6	0.72	9.01	6.60	9.29	11.77	7.93	12.28	17.67	A18/-	
-/18	0.00	A17:A18	2.00	0.66	0.73	0.83	*180.00*	0.2	1.07%	8.29					*260.00*	6	0.72	9.01	6.60	9.29	11.77	8.71	13.49	19.42	-/18	
A18A/18A	0.81	A18A	0.81	0.66	0.73	0.83	*35.00*	0.2	2.00%	1.18					*150.00*	6	0.42	1.60	9.16	12.92	16.51	4.90	7.60	11.03	A18A/18A	
-/18B	0.00	A13:A18A	24.12	0.66	0.73	0.83	*251.00*	0.3	1.20%	16.37					*660.00*	6	1.83	18.20	4.86	6.82	8.61	77.37	119.43	171.33	-/18B	
A19/19	10.04	A19	10.04	0.44	0.48	0.55	*200.00*	0.2	2.83%	5.66	*871.00*	0.2	9.74%	9.30	*290.00*	6	0.81	15.77	5.21	7.31	9.23	23.02	35.52	50.97	A19/19	
A19A/19A	4.58	A19A	4.58	0.66	0.73	0.83	*137.00*	0.3	2.38%	6.34					*918.00*	6	2.54	8.88	6.64	9.34	11.83	20.07	31.06	44.70	A19A/19A	
-/19B	0.00	A19+A19A	20.00	0.51	0.56	0.64	*200.00*	0.2	2.83%	5.66	*871.00*	0.2	9.74%	9.30	*290.00*	6	0.81	15.77	5.21	7.31	9.23	53.14	82.02	117.68	-/19B	
A20/20	3.52	A20	3.52	0.66	0.73	0.83	*126.00*	0.3	2.50%	5.69					*801.00*	6	2.23	7.92	6.92	9.74	12.35	16.08	24.89	35.86	A20/20	
A21/-	2.49	A21	2.49	0.66	0.73	0.83	*135.00*	0.3	3.12%	5.46					*274.00*	6	0.76	6.22	7.49	10.56	13.41	12.31	19.09	27.55	A21/-	
-/21	0.00	A19:A21	26.01	0.55	0.61	0.69	*200.00*	0.2	2.83%	5.66	*871.00*	0.2	9.74%	9.30	*417.00*	6	1.16	16.12	5.16	7.24	9.15	73.82	113.93	163.62	-/21	
A22/22	3.01	A22	3.01	0.66	0.73	0.83	*252.00*	0.3	5.40%	7.75					*487.00*	6	1.35	9.10	6.58	9.26	11.73	13.07	20.24	29.13	A22/22	
-/22A	9.79	A19:A22	29.02	0.57	0.63	0.71	*200.00*	0.2	2.83%	5.66	*871.00*	0.2	9.74%	9.30	*475.00*	6	1.32	16.28	5.14	7.21	9.10	85.02	131.19	188.16	-/22A	
A23/23	5.46	A23	5.46	0.66	0.73	0.83	*255.00*	0.3	3.92%	9.20					*612.00*	6	1.70	10.90	6.14	8.63	10.91	22.13	34.21	49.14	A23/23	
A23A	2.93	A23A	2.93	0.66	0.73	0.83	*255.00*	0.3	3.70%	9.47					*301.55*	6	0.84	10.31	6.28	8.87	11.23	12.16	18.89	27.17	A23A	1
A24/24	4.04	A24	4.04	0.66	0.73	0.83	*258.00*	0.2	3.02%	7.07					*513.00*	6	1.43	8.49	6.75	9.50	12.04	18.00	27.86	40.13	A24/24	
A25/-	2.16	A25	2.16	0.66	0.73	0.83	*138.00*	0.3	1.70%	7.56					*320.00*	6	0.89	8.45	6.76	9.52	12.06	9.64	14.93	21.49	A25/-	
-/25	0.00	A19:A25	40.68	0.60	0.66	0.75	*200.00*	0.2	2.83%	5.66	*871.00*	0.2	9.74%	9.30	*735.00*	6	2.21	17.17	5.01	7.03	8.87	122.28	188.75	270.62	-/25	
A26/26	7.29	A26	7.29	0.66	0.73	0.83	*300.00*	0.3	3.79%	9.87					*965.00*	6	2.68	12.55	5.78	8.12	10.23	27.81	42.98	61.77	A26/26	
A26A	3.27	A26A	3.27	0.66	0.73	0.83	*269.00*	0.3	3.37%	10.47					*474.00*	6	1.32	11.78	5.94	8.35	10.55	12.84	19.85	28.50	A26A	1
A27/	1.72	A27	1.72	0.66	0.73	0.83	*145.00*	0.3	2.09%	7.36					*230.00*	6	0.69	8.06	6.87	9.68	12.27	7.80	12.09	17.41	A27/	
-/27	0.00	A19:A27	49.69	0.61	0.67	0.76	*200.00*	0.2	2.83%	5.66	*871.00*	0.2	9.74%	9.30	*1050.00*	6	2.92	17.88	4.91	6.88	8.69	148.83	229.39	329.25	-/27	
A28/28	3.69	A28	3.69	0.66	0.73	0.83	*251.00*	0.3	3.70%	9.32					*495.00*	6	1.38	10.70	6.19	8.71	11.02	15.08	23.33	33.55	A28/28	
A29/-	2.38	A29	2.38	0.66	0.73	0.83	*140.00*	0.3	2.50%	6.32					*392.00*	6	1.09	7.41	7.08	9.97	12.65	11.12	17.23	24.84	A29/-	
-/29	0.00	A19:A29	55.76	0.62	0.68	0.78	*200.00*	0.2	2.83%	5.66	*871.00*	0.2	9.74%	9.30	*1437.00*	6	3.99	18.96	4.77	6.69	8.44	164.90	254.41	364.73	-/29	
A30/30	4.97	A30	4.97	0.66	0.73	0.83	*131.00*	0.3	1.50%	7.64					*1133.00*	6	3.15	10.79	6.16	8.68	10.97	20.21	31.32	44.98	A30/30	
A31/31	4.73	A31	4.73	0.66	0.73	0.83	*267.00*	0.2	2.80%	7.60					*215.00*	6	0.60	8.20	6.83	9.62	12.20	21.32	33.03	47.61	A31/31	
-/31A	0.00	A30+A31	9.70	0.66	0.73	0.83	*131.00*	0.3	1.50%	7.64					*1133.00*	6	3.15	10.79	6.16	8.68	10.97	39.44	61.13	87.79	-/31A	
-/31B	0.00	A19:A31	65.46	0.62	0.68	0.78	*200.00*	0.2	2.83%	5.66	*871.00*	0.2	9.74%	9.30	*1495.00*	6	4.15	19.12	4.75	6.66	8.40	192.78	297.33	426.14	-/31B	
A32/32	3.48	A32	3.48	0.66	0.73	0.83	*294.00*	0.3	1.70%	16.11					*343.00*	6	0.95	17.06	5.02	7.05	8.90	11.53	17.81	25.55	A32/32	
A33/-	1.64	A33	1.64	0.66	0.73	0.83	*129.00*	0.3	2.00%	6.52					*290.00*	6	0.81	7.32	7.11	10.01	12.70	7.70	11.92	17.18	A33/-	
-/33	0.00	A19:A33	70.58	0.63	0.69	0.79	*200.00*	0.2	2.83%	5.66	*871.00*	0.2	9.74%	9.30	*1791.00*	6	4.98	19.94	4.65	6.52	8.22	206.76	318.91	456.88	-/33	
A34/-	6.60	A34	6.60	0.66	0.73	0.83	*135.00*	0.3	2.00%	6.82					*633.00*	6	1.76	8.58	6.72	9.46	11.99	29.27	45.33	65.29	A34/-	
-/34	0.00	A19:A34	77.18	0.63	0.69	0.79	*200.00*	0.2	2.83%	5.66	*871.00*	0.2	9.74%	9.30	*2263.00*	6	6.29	21.25	4.50	6.31	7.96	218.81	337.50	483.80	-/34	
A35/35	9.47	A35	9.47	0.44	0.48	0.55	*300.00*	0.3	4.64%	9.95	*736.00*	0.3	10.00%	11.37	*1166.00*	6	3.33	24.64	4.16	5.84	7.36	17.33	26.77	38.33	A35/35	1
A36/-	4.23	A36	4.23	0.66	0.73	0.83	*173.00*	0.3	2.53%	7.77					*779.00*	6	2.16	9.93	6.38	9.02	11.42	17.81	27.70	39.85	A36/-	
-/36	0.00	A35:A36	13.70	0.51	0.56	0.64	*200.00*	0.2	4.36%	4.56	*828.00*	0.2	9.67%	8.88	*827.00*	6	2.30	15.73	5.22	7.32	9.24	36.47	56.26	80.70	-/36	
A37/-	1.11	A37	1.11	0.66	0.73	0.83	*45.00*	0.2	1.74%	1.62					*422.00*	6	1.17	5.00	7.93	11.18	14.23	5.81	9.01	13.03	A37/-	
-/37	0.00	A35:A37+A41	15.55	0.51	0.56	0.64	*200.00*	0.2	4.36%	4.56	*828.00*	0.2	9.67%	8.88	*827.00*	6	2.30	15.73	5.22	7.32	9.24	41.40	63.86	91.60	-/37	
A38/-	0.96	A38	0.96	0.66	0.73	0.83	*140.00*	0.3	1.74%	7.58					*131.00*	6	0.36	7.94	6.91	9.73	12.33	4.38	6.78	9.77	A38/-	
-/38	0.00	A35:A38+41	16.51	0.52	0.57	0.65	*200.00*	0.2	4.36%	4.56	*828.00*	0.2	9.67%	8.88	*827.00*	6	2.30	15.73	5.22	7.32	9.24	44.81	69.13	99.16	-/38	
A39/39	6.91	A39	6.91	0.66	0.73	0.83	*260.00*	0.2	1.52%	10.04					*748.00*	6	2.08	12.12	5.87	8.25	10.43	26.77	41.39	59.46	A39/39	
-/39A	0.00	A35:A39+A41	23.42	0.57	0.63	0.71	*200.00*	0.2	4.36%	4.56	*828.00*	0.2	9.67%	8.88	*827.00*	6	2.30	15.73	5.22	7.32	9.24	69.68	107.49	154.19	-/39A	
A40/-	0.83	A40	0.83	0.66	0.73	0.83	*58.00*	0.2	2.00%	1.95					*628.00*	6	1.74	5.00	7.93	11.18	14.23	4.34	6.74	9.74	A40/-	
-/40	0.00	A35:A40	24.25	0.57	0.63	0.71	*200.00*	0.2	4.36%	4.56	*828.00*	0.2	9.67%	8.88	*827.00*	6	2.30	15.73	5.22	7.32	9.24	72.15	111.30	159.65	-/40	
-/40A	0.00	A19:A40	101.43	0.61	0.67	0.76	*200.00*	0.2	2.83%	5.66	*871.00*	0.2	9.74%	9.30	*2353.00*	6	6.54	21.50	4.47	6.27	7.91	276.57	426.73	611.76	-/40A	
A41/41	0.74	A41	0.74	0.66	0.73	0.83	*39.00*	0.2	2.12%	1.28					*579.00*	6	1.61	5.00	7.93	11.18	14.23	3.87	6.01	8.69	A41/41	
A42/42	1.20	A42	1.20	0.66	0.73	0.83	*43.00*	0.2	3.13%	1.16					*420.00*	6	1.17	5.00	7.93	11.18	14.23	6.28	9.74	14.09	A42/42	
A43/43	1.25	A43	1.25	0.66	0.73	0.83	*37.00*	0.2	1.37%	1.51					*360.00*	6	1.00	5.00	7.93	11.18	14.23	6.54	10.15	14.67	A43/43	
A44/44	0.81	A44	0.81	0.66	0.73	0.83	*52.00*	0.2	2.83%	1.47					*421.00*	6	1.17	5.00	7.93	11.18	14.23	4.24	6.57	9.51	A44/44	
A45/45	0.90	A45	0.90	0.66	0.73	0.83	*77.00*	0.2	3.00%	2.12					*230.00*	6	0.64	5.00	7.93	11.18	14.23	4.71	7.31	10.57	A45/45	
A46/46	0.78	A46	0.78	0.66	0.73	0.83	*10.00*	0.2	2.00%	0.34					*352.00*	6	0.98	5.00	7.93	11.18	14.23	4.08	6.33	9.16	A46/46	
-/46A	0.00	A43+A46	2.03	0.66	0.73	0.83												5.00	7.93	11.18	14.23	10.62	16.48	23.83	-/46A	
-/46B	0.00	A19:A40+A43+A46	103.46	0.62	0.68	0.78	*294.00*	0.3	1.70%	16.11					*3048.00*	6	8.47	24.57	4.17	5.85	7.37	267.49	412.77	590.94	-/46B	
A47/-	22.74	A47	22.74	0.74	0.81	0.93	*300.00*	0.3	2.00%	15.15	*1070.00*	0.2	2.27%	23.67	*880.00*	6	2.44	41.27	3.11	4.34	5.48	52.33	80.33	115.27	A47/-	
-/47	0.00	A19:A40+A43+A46:A47	126.20	0.62	0.68	0.78	*300.00*	0.3	2.00%	15.15	*1070.00*	0.2	2.27%	23.67	*880.00*	6	2.44	41.27	3.11	4.34	5.48	243.34	373.54	535.97	-/47	
A48/48	1.16	A48	1.16	0.74	0.81	0.93	*200.00*	0.2	4.88%	4.31	*238.00*	0.2	2.44%	5.08				9.39	6.51	9.18	11.63	5.59	8.67	12.48	A48/48	
A49/-	1.14	A49	1.14	0.66	0.73	0.83	*300.00*	0.2	2.46%	9.11					*290.00*	6	0.81	9.91	6.38	9.02	11.43	4.80	7.47	10.75	A49/-	
-/49	0.00	A19:A40+A43+A46:A49	128.50	0.62	0.68	0.78	*300.00*	0.3	2.00%	15.15	*1070.00*	0.2	2.27%	23.67	*880.00*	6	2.44	41.27	3.11	4.34	5.48	247.77	380.34	545.74	-/49	
A50/50	1.61	A50	1.61	0.66	0.73	0.83	*167.00*	0.2	3.04%	4.56	*141.00*	0.2	3.03%	2.70	*271.00*	6	0.75	8.01	6.89	9.69	12.29	7.32	11.33	16.32	A50/50	
A51/51	0.44	A51	0.44	0.66	0.73	0.83												5.00	7.93	11.18	14.23	2.30	3.57	5.17	A51/51	
A52/52	0.51	A52	0.51	0.66	0.73	0.83												5.00	7.93	11.18	14.23	2.67	4.14	5.99	A52/52	
A53/53	0.20	A53	0.20	0.66	0.73	0.83												5.00	7.93	11.18	14.23	1.05	1.62	2.35	A53/53	
A53A/53A	2.37	A53A	2.37	0.77	0.85	0.96	*300.00*	0.2	1.41%	12.03	*257.00*	0.2	1.53%	6.93	*148.00*	7	0.35	19.31	4.72	6.63	8.36	8.61	13.31	19.07	A53A/53A	
A54/54	2.12	A54	2.12	0.44	0.48	0.55	*300.00*	0.2	1.70%	10.96	*160.00*	0.2	1.00%	5.33	*90.00*	6	0.25	16.54	5.10	7.16	9.03	4.76	7.35	10.53	A54/54	
-/55	0.00	A52:A54	2.83	0.66	0.73	0.83	*300.00*	0.2	1.70%	10.96	*160.00*	0.2	1.00%	5.33	*90.00*	6	0.25	16.54	5.10	7.16	9.03	9.53	14.71	21.08	-/55	
A56/56	0.53	A56	0.53	0.66	0.73	0.83												5.00	7.93	11.18	14.23	2.77	4.30	6.22	A56/56	
A57/57	16.09	A57	16.09	0.77	0.85	0.96	*300.00*	0.2	1.65%	11.12	*862.00*	0.2	2.51%	18.14	*320.00*	6	0.89	30.15	3.73	5.19	6.53	46.21	70.73	101.13	A57/57	
-/58	0.00	A52:A54+A56:A57	19.45	0.77	0.85	0.96	*300.00*	0.2	1.65%	11.12	*862.00*	0.2	2.51%	18.14	*320.00*	6	0.89	30.15	3.73	5.19	6.53	55.86	85.50	122.25	-/58	
A59/59	5.80	A59	5.80	0.77	0.85	0.96	*300.00*	0.2	1.80%	10.65	*603.00*	0.2	2.00%	14.21				24.86	4.14	5.81	7.32	18.49	28.54	40.86	A59/59	
A60	1.26	A60	1.26	0.63	0.69	0.79	*292.00*	0.2	2.45%	8.88					*176.00*	6	0.49	9.37	6.51	9.18	11.63	5.17	8.02	11.54	A60	
A61/-	134.03	A61	134.03	0.44	0.48	0.55	*300.00*	0.2	14.33%	3.77	*1241.00*	0.2	9.16%	13.67	*4209.00*	6	11.69	29.13	3.80	5.31	6.70	224.10	344.46	493.90	A61/-	
-/61	0.00	A60 + A61	135.29	0.44	0.48	0.55	*300.00*	0.2	14.33%	3.77	*1241.00*	0.2	9.16%	13.67	*4209.00*	6	11.69	29.13	3.80	5.31	6.70	226.20	347.70	498.54	-/61	
A62	2.53	A62	2.53	0.66	0.73	0.83	*122.18*	0.2	1.93%	4.19					*653.44*	6	1.82	6.00	7.57	10.67	13.56	12.64	19.60	28.30	A62	
A63	1.29	A63	1.29	0.60	0.66	0.75	*300.00*	0.2	2.92%	8.36	*55.00*	0.2	2.65%	1.13	*151.00*	6	0.42	9.91	6.38	9.03	11.43	4.94	7.69	11.06	A63	
A64	18.80	A64	18.80	0.45	0.50	0.56	*300.00*	0.2	3.73%	7.40	*916.00*	0.2	2.61%	18.90	*937.00*	6	2.60	28.90	3.82	5.34	6.73	32.32	49.69	71.17	A64	
-/A64	0.00	A63 + A64	20.09	0.46	0.51	0.58	*300.00*	0.2	3.73%	7.40	*916.00*	0.2	2.61%	18.90	*937.00*	6	2.60	28.90	3.82	5.34	6.73	35.30	54.28	77.74	-/A64	
A65	0.98	A65	0.98	0.66	0.73	0.83	*150.00*	0.2	2.62%	4.41					*93.00*	6	0.26	4.67	8.05	11.35	14.45	5.21	8.08	11.68	A65	
A66	4.81	A66	4.81	0.46	0.51	0.58									*497.31*	6	1.38	1.38	9.23	13.03	16.65	20.42	31.71	46.05	A66	
-/A66	0.00	A61 : A66	163.70	0.46	0.51	0.58	*

KEYNOTES:

1. SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
2. CONTRACTOR TO CONSTRUCT ADA RAMP AT THE TIME OF HOMEBUILDING





KNUCKLE DETAIL

SCALE: 1"= 20'

CUL-DE-SAC BACK OF CURB ELEVATIONS	
NUMBER	TOC ELEV.
1	1471.58
2	1471.31
3	1471.43
4	1471.56
5	1471.69
6	1471.81
7	1471.94
8	1471.97

ELEVATIONS:

- XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION
- XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

TEMPORARY TURNAROUND PAVEMENT

PROPOSED 4' SIDEWALK - TO BE CONSTRUCTED WITH INFRASTRUCTURE

DRIVEWAY TO BE BUILT WITH HOMEBUILDING

STREET WASHOUT

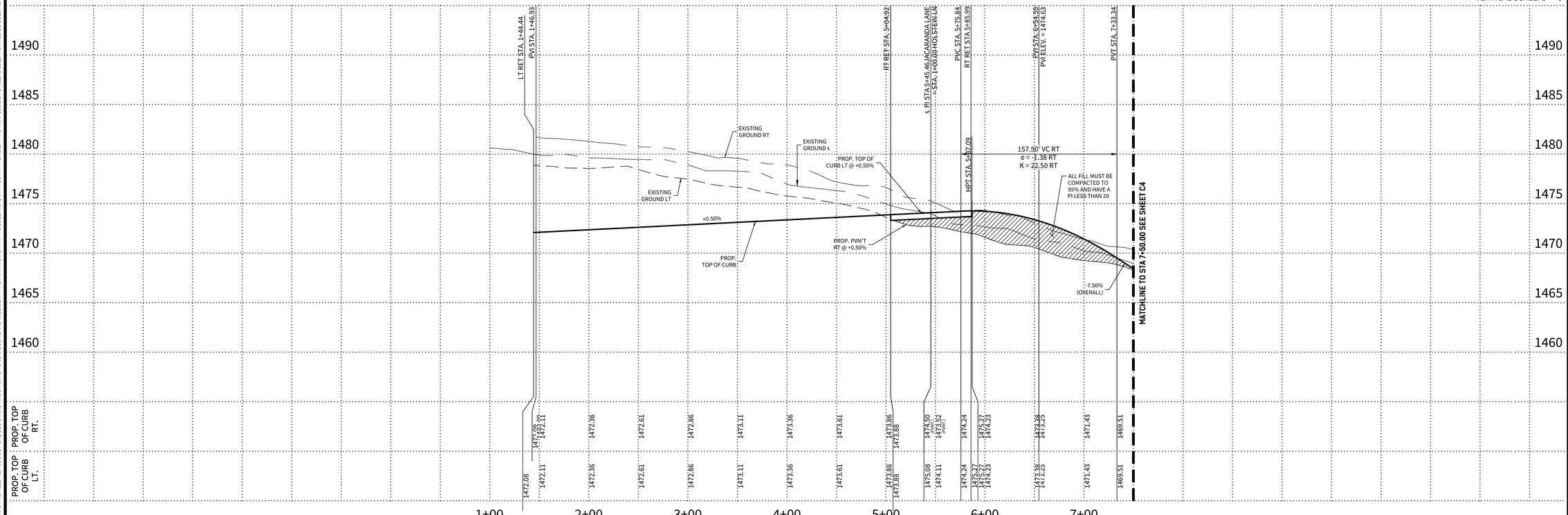
ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C11

ALL ADA RAMPS TO BE BUILT WITH INFRASTRUCTURE

JACARANDA LANE

STA. 1+00.00 TO STA. 7+50.00

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



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CORLEY FARMS UNIT 5

STREET PLAN & PROFILE - JACARANDA LANE

DATE
06/02/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

	DATE	
1.	11/7/24	PERMITTING COMMENTS
2.	5/27/25	GRADING REVISION
3.		
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8.		
9.		

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
6/2/25

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

SAWS JOB NO.
22-1190

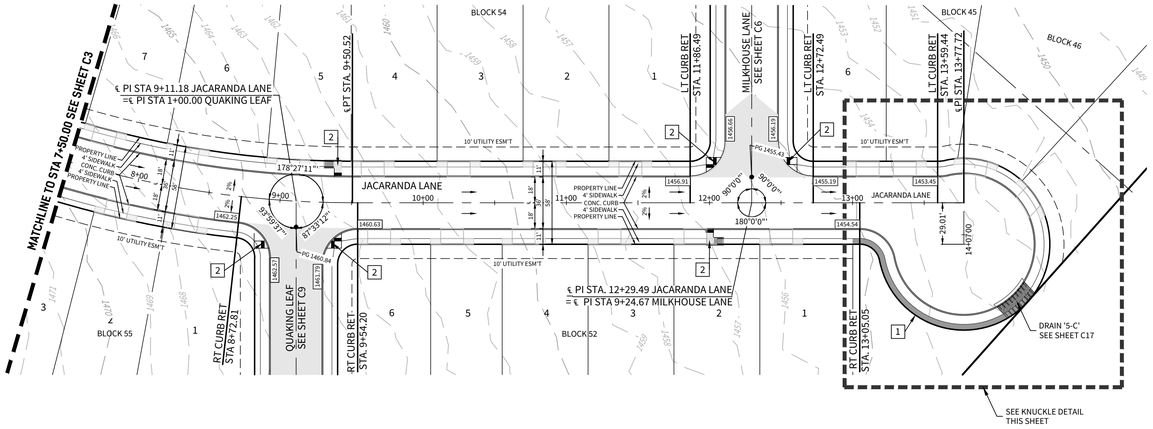
C3

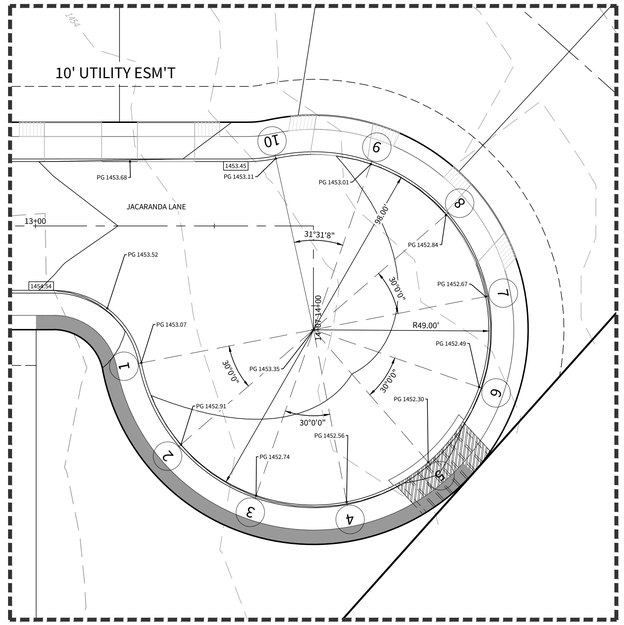
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P:\03481\012-2 Drawings\CAD\2-SHEETS\PLAN & PROFILE - JACARANDA LANE.dwg 2025/06/02 1:42pm brookfield

KEYNOTES:

1. SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
2. CONTRACTOR TO CONSTRUCT ADA RAMP AT THE TIME OF HOMEBUILDING





KNUCKLE DETAIL

SCALE: 1"= 20'

CUL-DE-SAC BACK OF CURB ELEVATIONS	
NUMBER	TOC ELEV.
1	1453.78
2	1453.56
3	1453.35
4	1453.00
5	1452.92
6	1453.07
7	1453.21
8	1453.36
9	1453.50
10	1453.65

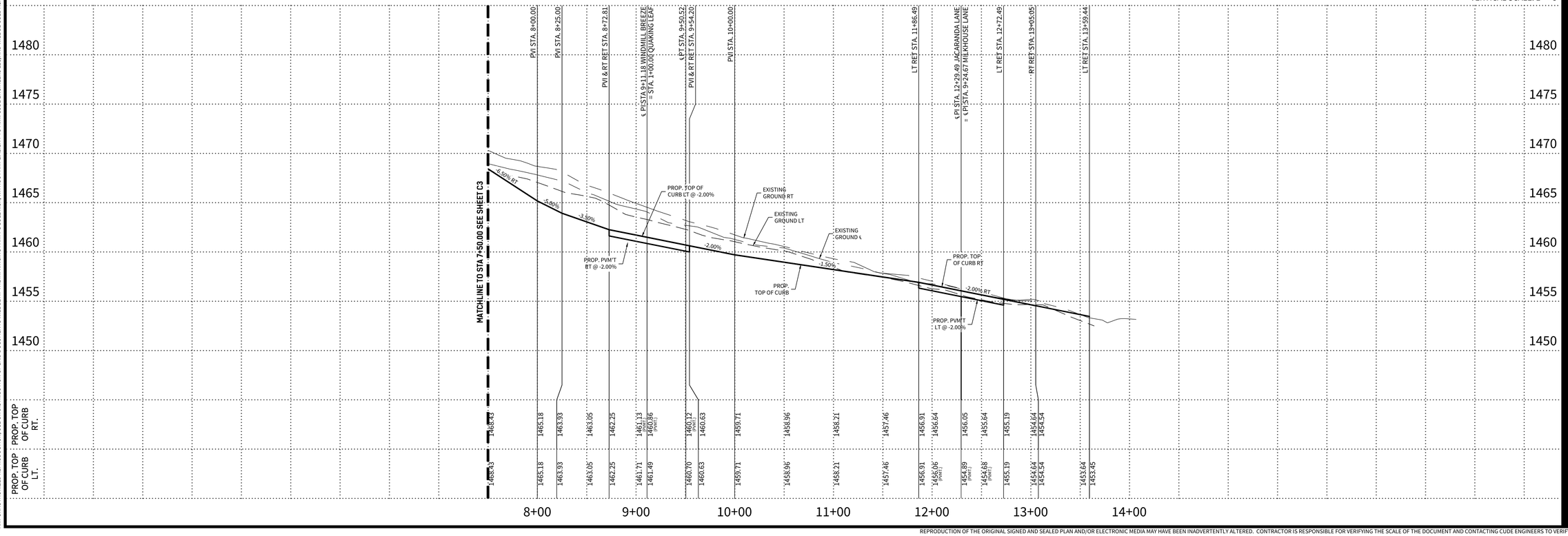
ELEVATIONS:

- XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION
- XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION
- TEMPORARY TURNAROUND PAVEMENT
- PROPOSED 4' SIDEWALK - TO BE CONSTRUCTED WITH INFRASTRUCTURE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- STREET WASHOUT
- ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C11

ALL ADA RAMPS TO BE BUILT WITH INFRASTRUCTURE

JACARANDA LANE

STA. 7+50.00 TO END



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

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San Antonio, Texas 78231
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CORLEY FARMS UNIT 5

STREET PLAN & PROFILE - JACARANDA LANE

DATE
06/02/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

DATE		
1.	11/7/24	PERMITTING COMMENTS
2.	5/28/25	GRADING REVISION
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STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
6/2/25

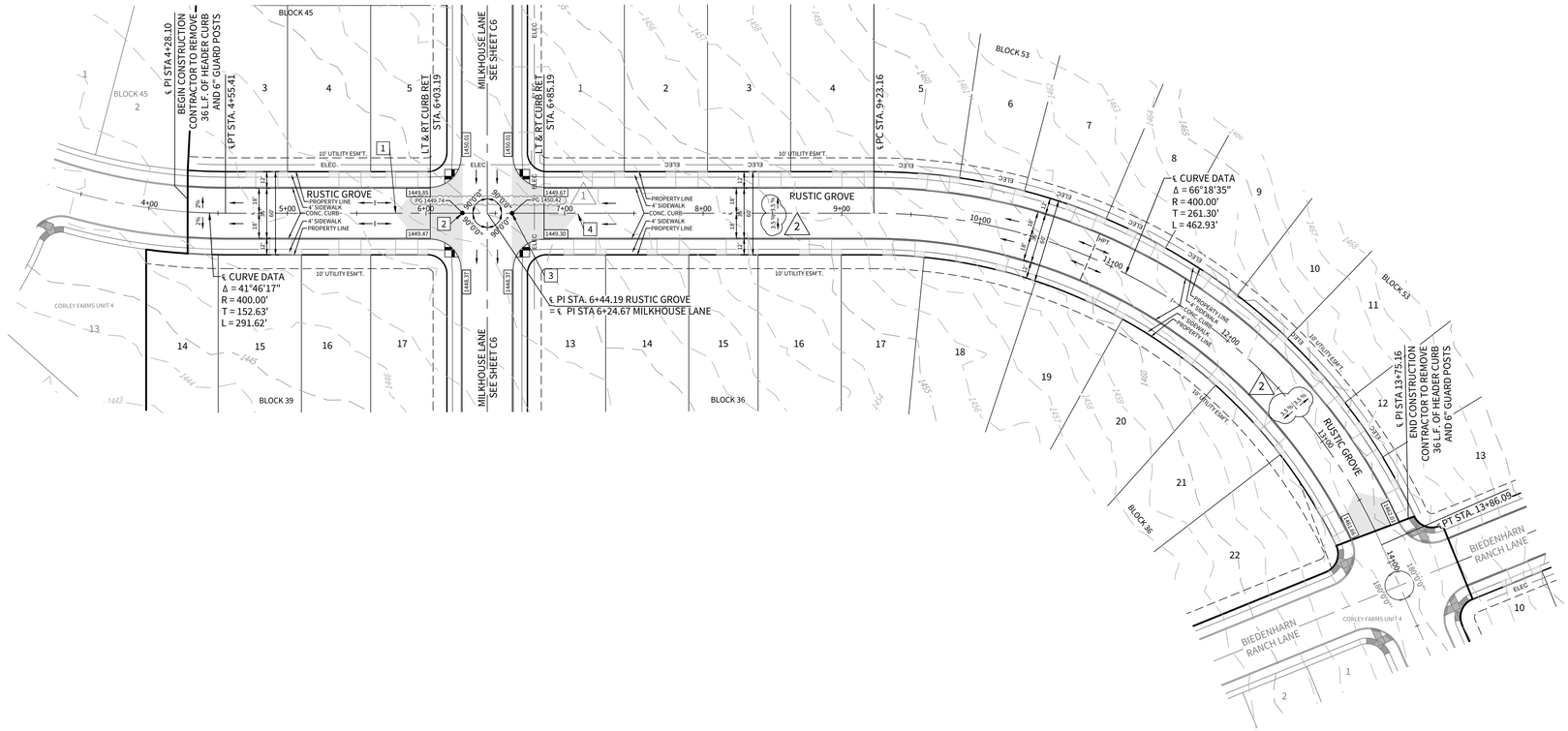
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TBPE No. 455
TBPLS No. 10048500

SAWS JOB NO.
22-1190

C4

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P:\03481\2022\3-Drawings\C4_GR & SS\03481 PLAN & PROFILE - JACARANDA LANE.dwg 2025/06/02 11:15am brookfield



KEYNOTES:

1. BEGIN WASHOUT STA. 5 + 78.19
2. END WASHOUT STA. 6 + 26.19
3. BEGIN WASHOUT STA. 6 + 62.19
4. END WASHOUT STA. 7 + 09.19

ELEVATIONS:

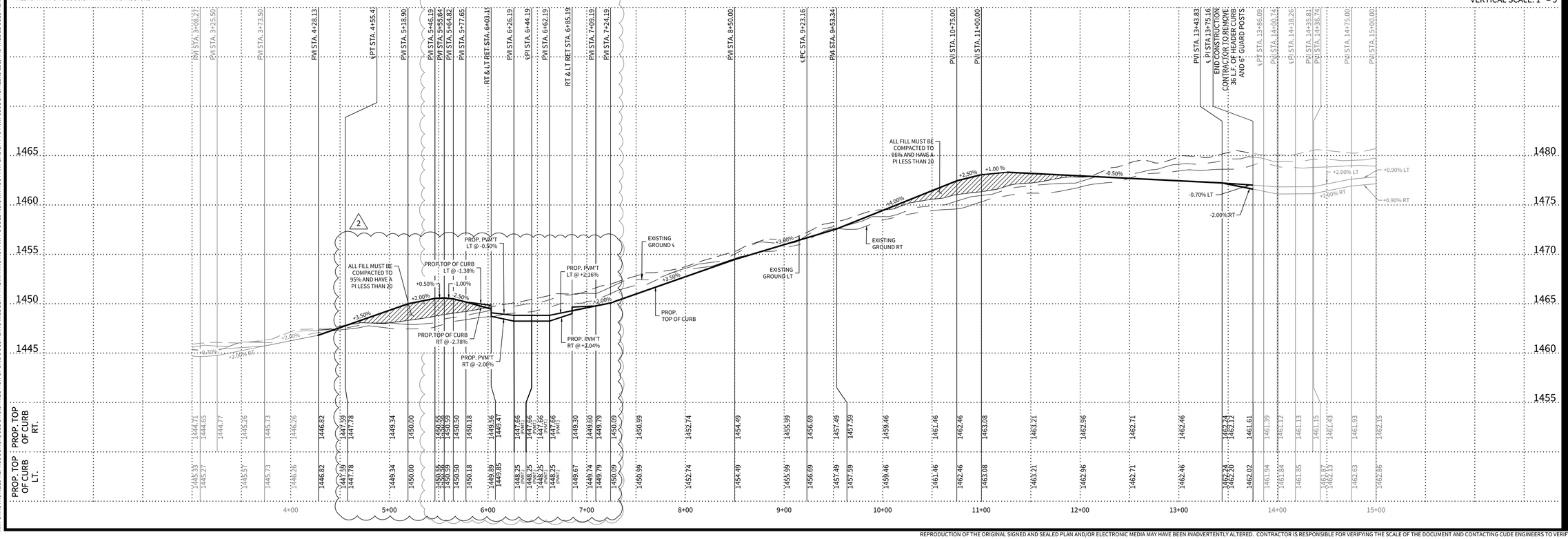
- XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION
- XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION
- TEMPORARY TURNAROUND PAVEMENT
- PROPOSED 4' SIDEWALK - TO BE CONSTRUCTED WITH INFRASTRUCTURE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- STREET WASHOUT
- ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C11

ALL ADA RAMPS TO BE BUILT WITH INFRASTRUCTURE

RUSTIC GROVE

STA. 4+28.13 TO STA. 13+75.16

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



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CORLEY FARMS UNIT 5

STREET PLAN & PROFILE - RUSTIC GROVE

DATE
04/10/2025

PROJECT NO.
03481.012

DRAWN BY
C3

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XV/AL

REVISIONS

	DATE	
1.	11/7/24	PERMITTING COMMENTS
2.	04/7/25	REVISED STREET PROFILE
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STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
04/11/25

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I:\03481\012\2-Drawings\02-01 STREET PLAN & PROFILE - RUSTIC GROVE.dwg 2025/04/10 2:59pm bhobel

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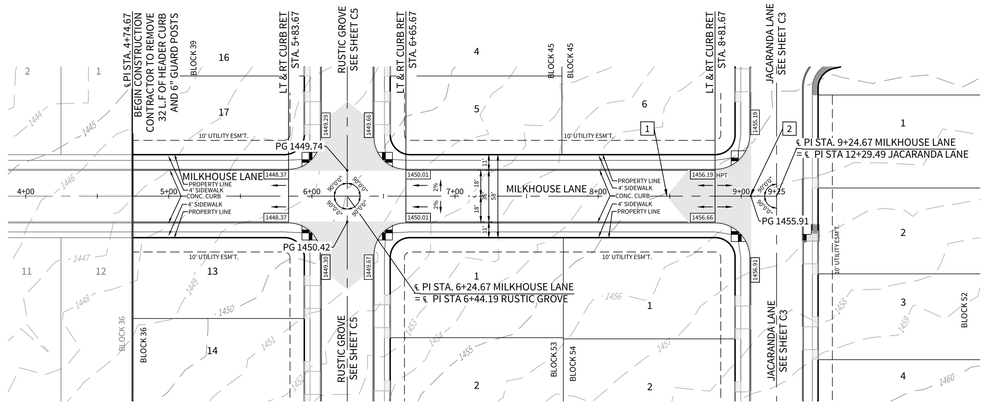
KEYNOTES:

1. END WASHOUT STA 8+48.10
2. BEGIN WASHOUT STA 8+81.67

ELEVATIONS:

- XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION
- XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION
- TEMPORARY TURNAROUND PAVEMENT
- PROPOSED 4' SIDEWALK - TO BE CONSTRUCTED WITH INFRASTRUCTURE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- STREET WASHOUT
- ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C11

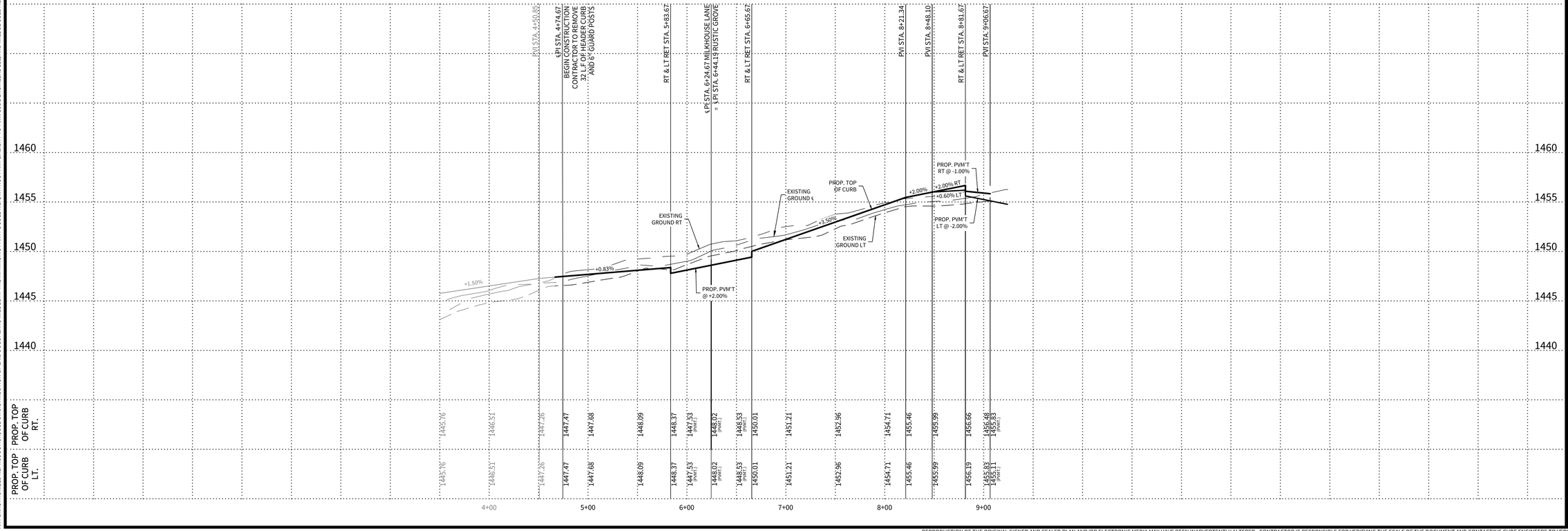
ALL ADA RAMPS TO BE BUILT WITH INFRASTRUCTURE



MILKHOUSE LANE

STA. 4+74.67 TO END

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



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CORLEY FARMS
UNIT 5

STREET PLAN & PROFILE - MILKHOUSE LANE

DATE
01/28/2025

PROJECT NO.
03481.012

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STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
02/10/2025

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TBPLS No. 10048500

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KEYNOTES:

1 SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE

ELEVATIONS:

XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

TEMPORARY TURNAROUND PAVEMENT

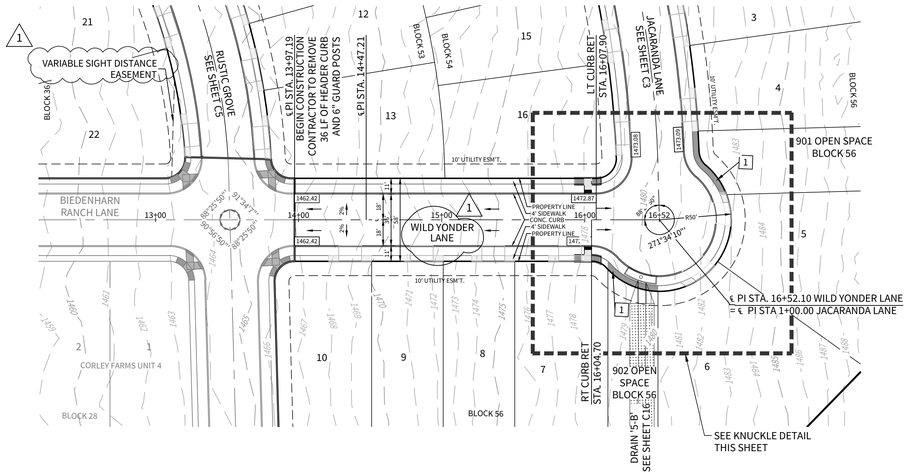
PROPOSED 4' SIDEWALK - TO BE CONSTRUCTED WITH INFRASTRUCTURE

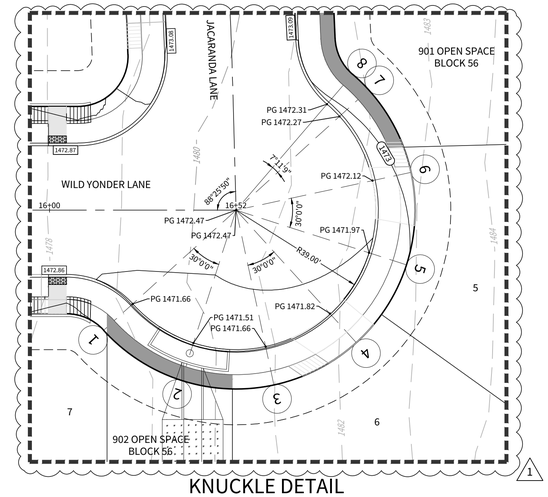
DRIVEWAY TO BE BUILT WITH HOMEBUILDING

STREET WASHOUT

ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C11

ALL ADA RAMPS TO BE BUILT WITH INFRASTRUCTURE





KNUCKLE DETAIL

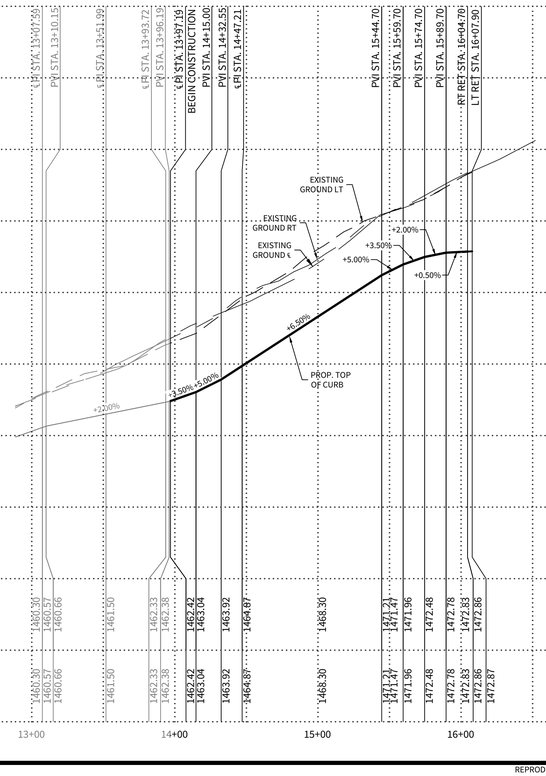
SCALE: 1"= 20'

CUL-DE-SAC BACK OF CURB ELEVATIONS

NUMBER	TOC ELEV.
1	1472.28
2	1472.12
3	1472.28
4	1472.44
5	1472.59
6	1472.75
7	1472.90
8	1472.94

WILD YONDER LANE

STA. 13+97.19 TO END



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

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CORLEY FARMS UNIT 5

STREET PLAN & PROFILE - WILD YONDER LANE

DATE
02/03/2025

PROJECT NO.
03481.012

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	DATE	PERMITTING COMMENTS
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STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
02/10/2025

CUDE ENGINEERS
TBPE No. 455
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ELEVATIONS:

XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION

XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

TEMPORARY TURNAROUND PAVEMENT

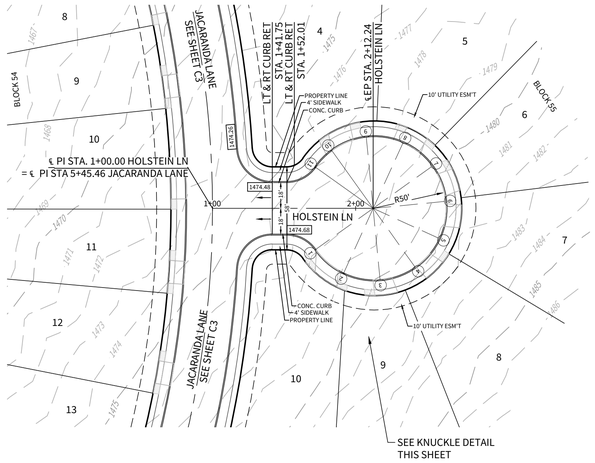
PROPOSED 4' SIDEWALK - TO BE CONSTRUCTED WITH INFRASTRUCTURE

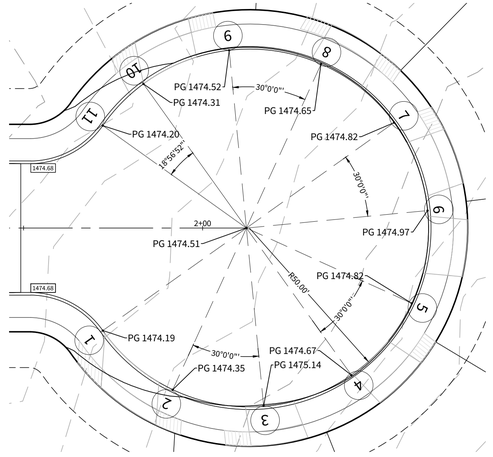
DRIVEWAY TO BE BUILT WITH HOMEBUILDING

STREET WASHOUT

ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C11

ALL ADA RAMPS TO BE BUILT WITH INFRASTRUCTURE





KNUCKLE DETAIL

SCALE: 1"= 20'

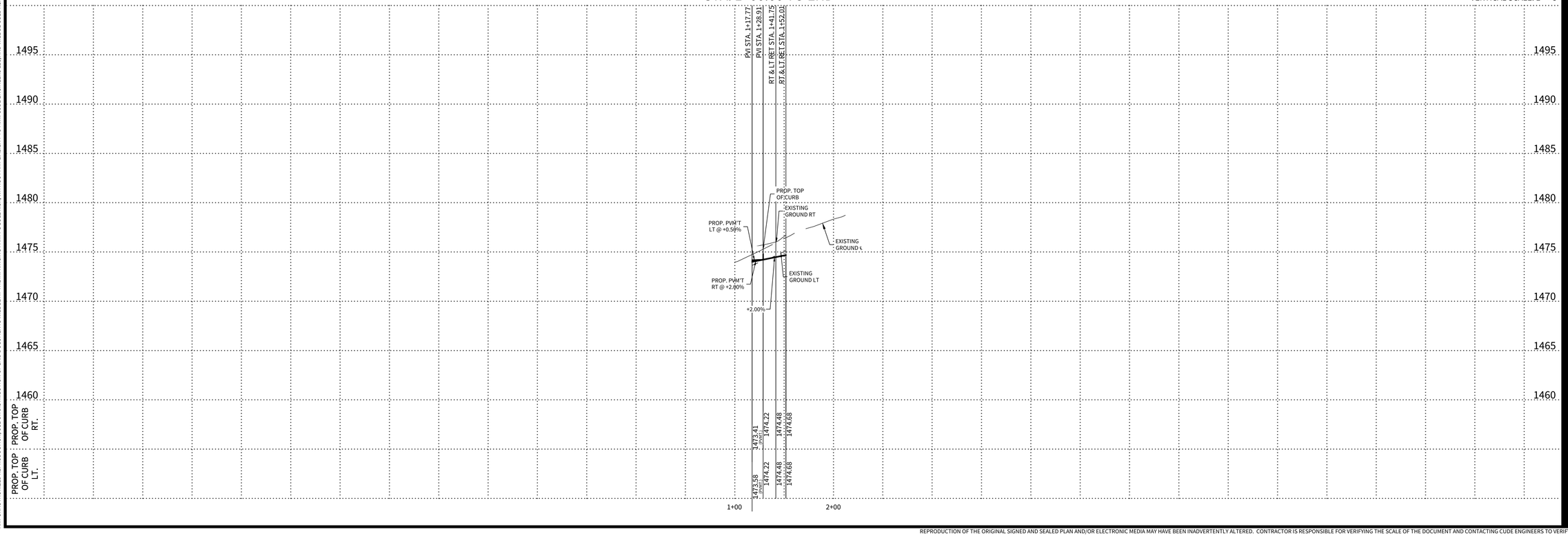
CUL-DE-SAC BACK OF CURB ELEVATIONS	
NUMBER	TOC ELEV.
1	1474.77
2	1474.98
3	1475.16
4	1475.29
5	1475.45
6	1475.58
7	1475.45
8	1475.27
9	1475.10
10	1474.93
11	1474.83

2

HOLSTEIN LN

STA. 1+00.00 TO END

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



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CORLEY FARMS UNIT 5

STREET PLAN & PROFILE - HOLSTEIN LN

DATE
06/02/2025

PROJECT NO.
03481.012

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STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
6/2/25

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KEYNOTES:

1. SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
2. BEGIN WASHOUT STA. 1 + 18.78
3. END WASHOUT STA. 2 + 89.11

ELEVATIONS:

- XXXX.XX PROPOSED TOP OF CONCRETE CURB ELEVATION
- XXXX.XX PROPOSED ASPHALT PAVEMENT ELEVATION

TEMPORARY TURNAROUND PAVEMENT

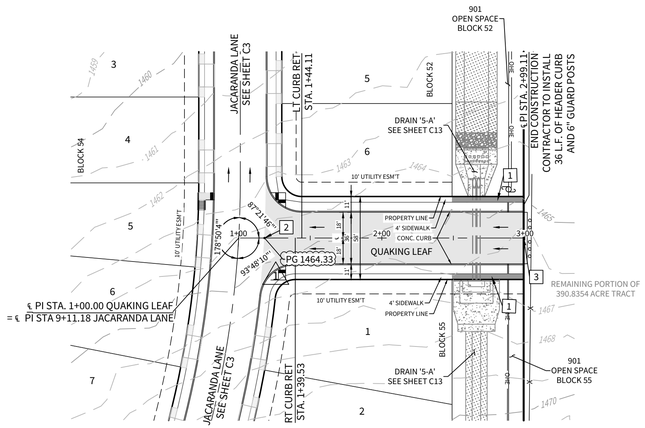
PROPOSED 4' SIDEWALK - TO BE CONSTRUCTED WITH INFRASTRUCTURE

DRIVEWAY TO BE BUILT WITH HOMEBUILDING

STREET WASHOUT

ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C11

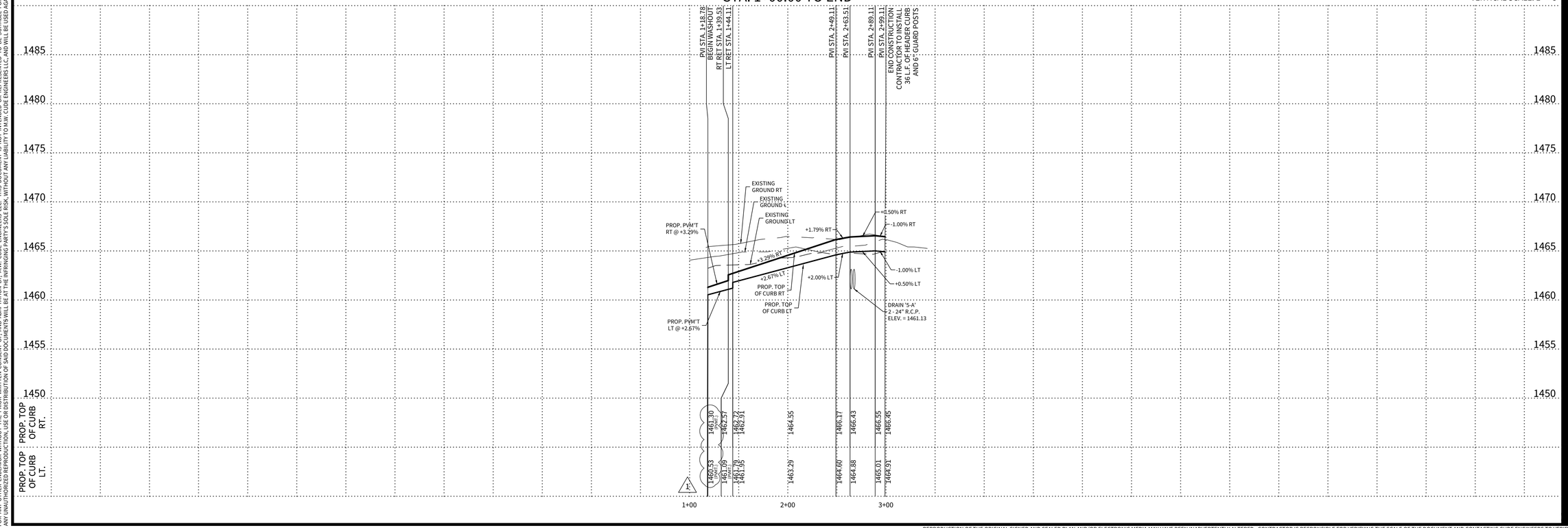
ALL ADA RAMPS TO BE BUILT WITH INFRASTRUCTURE



QUAKING LEAF

STA. 1+00.00 TO END

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



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

CORLEY FARMS UNIT 5

STREET PLAN & PROFILE - QUAKING LEAF

DATE
01/28/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

	DATE	PERMITTING COMMENTS
1.	11/7/24	
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
02/10/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

SAWS JOB NO.
22-1190

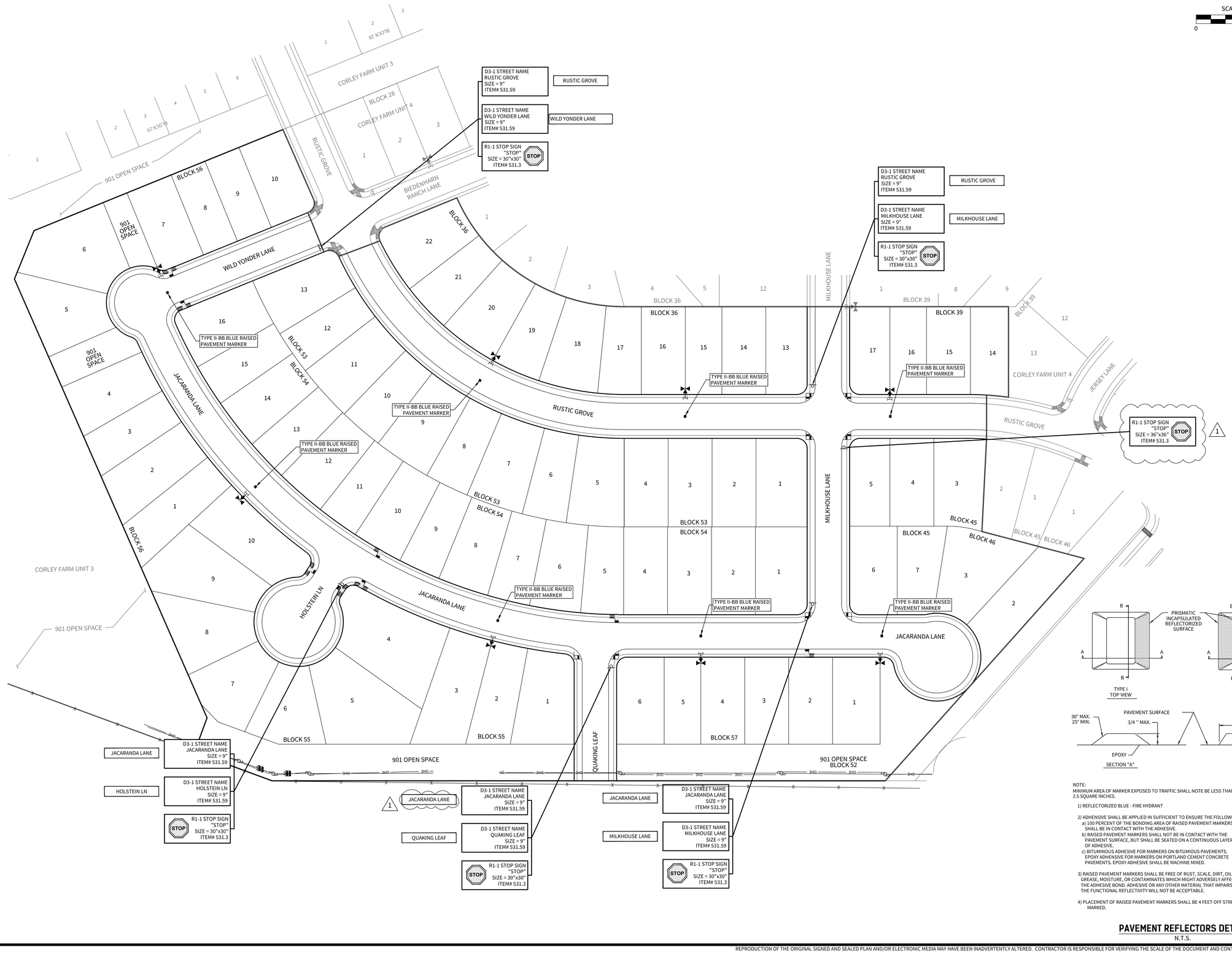
C9

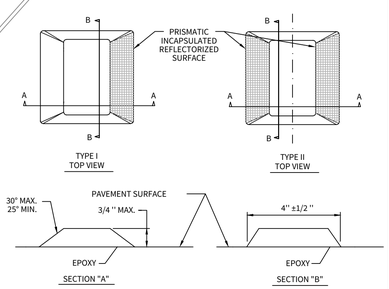
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P:\03481.012\2-Drawings\C9_05_STREET PLANS PROFILE - TROTTING HORSE.dwg 2025/01/28 12:10pm mhoyal

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NOTE:
MINIMUM AREA OF MARKER EXPOSED TO TRAFFIC SHALL NOTE BE LESS THAN 2.5 SQUARE INCHES.

1) REFLECTORIZED BLUE - FIRE HYDRANT

2) ADHENSIVE SHALL BE APPLIED IN SUFFICIENT TO ENSURE THE FOLLOWING:
   a) 100 PERCENT OF THE BONDING AREA OF RAISED PAVEMENT MARKERS SHALL BE IN CONTACT WITH THE ADHESIVE.
   b) RAISED PAVEMENT MARKERS SHALL NOT BE IN CONTACT WITH THE PAVEMENT SURFACE, BUT SHALL BE SEATED ON A CONTINUOUS LAYER OF ADHESIVE.
   c) BITUMINOUS ADHESIVE FOR MARKERS ON BITUMIOUS PAVEMENTS. EPOXY ADHENSIVE FOR MARKERS ON PORTLAND CEMENT CONCRETE PAVEMENTS. EPOXY ADHESIVE SHALL BE MACHINE MIXED.

3) RAISED PAVEMENT MARKERS SHALL BE FREE OF RUST, SCALE, DIRT, OIL, GREASE, MOISTURE, OR CONTAMINATES WHICH MIGHT ADVERSELY AFFECT THE ADHESIVE BOND. ADHESIVE OR ANY OTHER MATERIAL THAT IMPAIRS THE FUNCTIONAL REFLECTIVITY WILL NOT BE ACCEPTABLE.

4) PLACEMENT OF RAISED PAVEMENT MARKERS SHALL BE 4 FEET OFF STREET CENTELINE TOWARD ITEM MARKED.

PAVEMENT REFLECTORS DETAIL
N.T.S.

CUDEENGINEERS.COM

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

CORLEY FARMS UNIT 5

TRAFFIC SIGNAGE PLAN

DATE
01/28/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

DATE	PERMITTING COMMENTS
11/7/24	1. 2. 3. 4. 5. 6. 7. 8. 9.

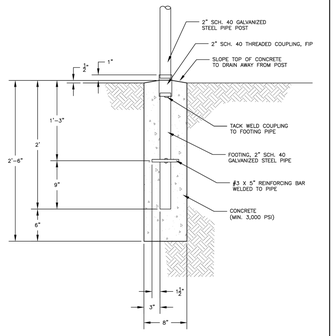
STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
02/10/2025

CUDE ENGINEERS
TBPE No. 2455
TBPLS No. 10048500

SAWS JOB NO.
22-1190

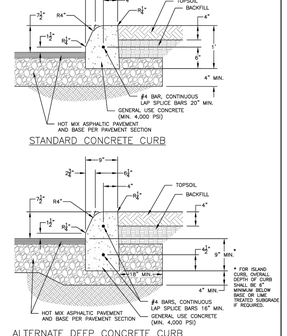
C10

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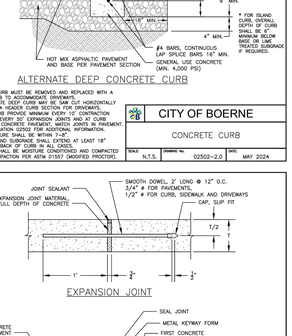


CITY OF BOERNE	
SIGN POST AND FOUNDATION	
SCALE: N.T.S.	DRAWING No. 02514-1.1
DATE: MAY 2024	

1



STANDARD CONCRETE CURB



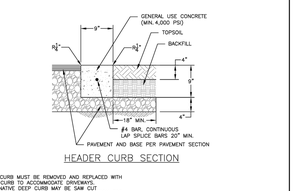
ALTERNATE DEEP CONCRETE CURB

NOTES:
1. STANDARD CURB MUST BE REMOVED AND REPLACED WITH A HEADER CURB TO ACCOMMODATE DRIVEWAYS.
2. THE ALTERNATE DEEP CURB MAY BE SAW CUT HORIZONTALLY TO ACHIEVE A HEADER CURB SECTION FOR DRIVEWAYS.
3. FOR ALL CURB PHASES MINIMUM EVERY 10' CONTRACTION JOINTS AND EVERY 50' EXPANSION JOINTS AND AT CURB RETURNS. IF CONCRETE PAVEMENT, MATCH JOINTS IN PAVEMENT. SEE SPECIFICATION 02502 FOR ADDITIONAL INFORMATION.
4. CURB EXPOSURE SHALL BE WITHIN 7-⅛".
5. FLEX BASE AND SUBGRADE SHALL EXTEND AT LEAST 18" BEHIND THE BACK OF CURB IN ALL CASES.
6. SUBGRADE SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE	
CONCRETE CURB	
SCALE: N.T.S.	DRAWING No. 02502-2.0
DATE: MAY 2024	



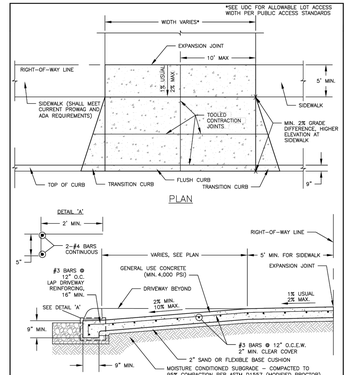
CURB TERMINATION ELEVATION



HEADER CURB SECTION

NOTES:
1. STANDARD CURB MUST BE REMOVED AND REPLACED WITH A HEADER CURB TO ACCOMMODATE DRIVEWAYS.
2. THE ALTERNATIVE DEEP CURB MAY BE SAW CUT HORIZONTALLY TO ACHIEVE A HEADER CURB SECTION FOR DRIVEWAYS.
3. FOR ALL CURB PHASES MINIMUM EVERY 10' CONTRACTION JOINTS AND EVERY 50' EXPANSION JOINTS AND AT CURB RETURNS. IF CONCRETE PAVEMENT, MATCH JOINTS IN PAVEMENT. SEE SPECIFICATION 02502 FOR ADDITIONAL INFORMATION.
4. CURB EXPOSURE SHALL BE WITHIN 7-⅛".
5. FLEX BASE AND SUBGRADE SHALL EXTEND AT LEAST 18" BEHIND THE BACK OF CURB IN ALL CASES.
6. SUBGRADE SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE	
CONCRETE CURB TERMINATION AND HEADER CURB	
SCALE: N.T.S.	DRAWING No. 02502-2.1
DATE: MAY 2024	

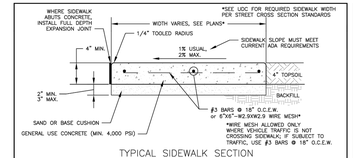


PLAN

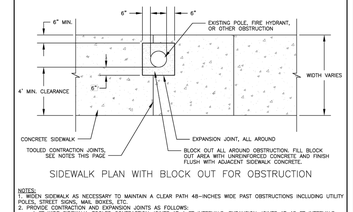
SECTION

NOTE: THE HEADER CURB CONSTRUCTION MAY BE DELETED WHEN CONSTRUCTING DRIVEWAY ADJACENT TO AN EXISTING HEADER CURB THAT IS A MINIMUM OF 9" DEEP WITH AT LEAST ONE HORIZONTAL BAR. INSTALL AN EXPANSION JOINT BETWEEN THE EXISTING HEADER CURB AND DRIVEWAY.

CITY OF BOERNE	
CONCRETE DRIVEWAY APPROACH SIDEWALK AT ROW LINE	
SCALE: N.T.S.	DRAWING No. 02502-3.1
DATE: MAY 2024	



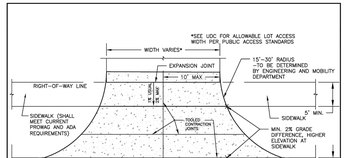
TYPICAL SIDEWALK SECTION



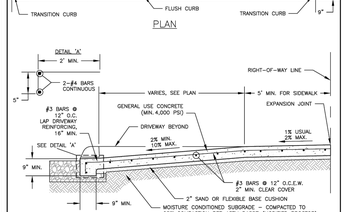
SIDEWALK PLAN WITH BLOCK OUT FOR OBSTRUCTION

NOTES:
1. WIDEN SIDEWALK AS NECESSARY TO MAINTAIN A CLEAR PATH 48–INCHES WIDE PAST OBSTRUCTIONS INCLUDING UTILITY POLES, STREET SIGNS, MAIL BOXES, ETC.
2. MAXIMUM CONSTRUCTION AND EXPANSION JOINTS AS FOLLOWS:
   - 4 FT WIDE SIDEWALK: TOOLED CONTRACTION JOINTS AT 4 FT INTERVALS, EXPANSION JOINTS AT 48 FT INTERVALS.
   - 5 FT WIDE SIDEWALK: TOOLED CONTRACTION JOINTS AT 5 FT INTERVALS, EXPANSION JOINTS AT 50 FT INTERVALS.
   - 6 FT AND WIDER SIDEWALKS: TOOLED CONTRACTION JOINTS AT 6 FT INTERVALS AND EXPANSION JOINTS AT 48 FT INTERVALS.
3. SUBGRADE BELOW SAND OR BASE CUSHION SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE	
CONCRETE SIDEWALK	
SCALE: N.T.S.	DRAWING No. 02502-4.0
DATE: MAY 2024	



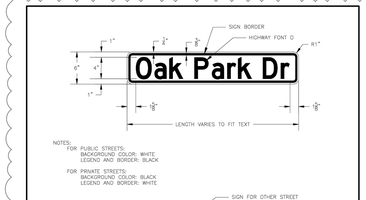
PLAN



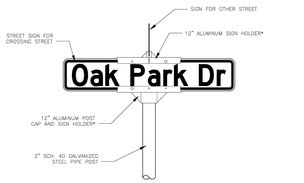
SECTION

NOTE: THE HEADER CURB CONSTRUCTION MAY BE DELETED WHEN CONSTRUCTING DRIVEWAY ADJACENT TO AN EXISTING HEADER CURB THAT IS A MINIMUM OF 9" DEEP WITH AT LEAST ONE HORIZONTAL BAR. INSTALL AN EXPANSION JOINT BETWEEN THE EXISTING HEADER CURB AND DRIVEWAY.

CITY OF BOERNE	
NON–RESIDENTIAL CONCRETE DRIVEWAY APPROACH SIDEWALK AT ROW LINE	
SCALE: N.T.S.	DRAWING No. 02502-3.1A
DATE: MAY 2024	



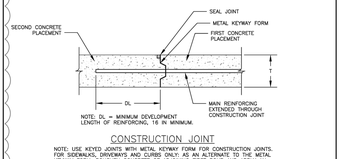
NOTES:
FOR PUBLIC STREETS: BACKGROUND COLOR: WHITE LEGEND AND BORDER: BLACK
FOR PRIVATE STREETS: BACKGROUND COLOR: BLACK LEGEND AND BORDER: WHITE



*USE 12" ALUMINUM SIGN HOLDERS FOR SIGNS > 24" IN LENGTH, FOR SHORTER SIGNS USE 5" HOLDERS.

CITY OF BOERNE	
STREET SIGN	
SCALE: N.T.S.	DRAWING No. 02514-1.0
DATE: JULY 2015	

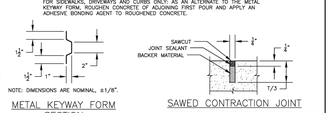
EXPANSION JOINT



NOTE: DL = MINIMUM DEVELOPMENT LENGTH OF REINFORCING, 16 IN MINIMUM.

CONSTRUCTION JOINT

NOTE: USE KEYED JOINTS WITH METAL KEYWAY FORM FOR CONSTRUCTION JOINTS FOR SIDEWALKS, DRIVEWAYS AND CURBS ONLY. AS AN ALTERNATE TO THE METAL KEYWAY FORM, ROUGHEN CONCRETE OF ADJOINING FIRST POUR AND APPLY AN ADHESIVE BONDING AGENT TO ROUGHENED CONCRETE.

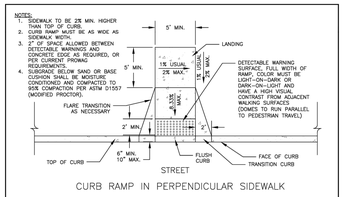


METAL KEYWAY FORM SECTION

SAWED CONTRACTION JOINT

NOTE: SAWED CONTRACTION JOINTS MUST BE USED ON CONCRETE PAVING OF DRIVEWAYS, SIDEWALKS AND CURB. JOINT TOOLING MUST NOT BE USED. THE TOOLED JOINT MUST BE 1/2 INCH DEEP AND 1/8 INCH WIDE WITH A 1/4 INCH RADIUS ALONG THE EDGE.

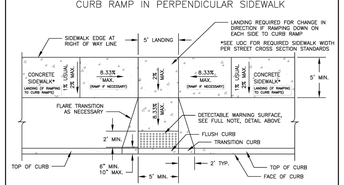
CITY OF BOERNE	
CONCRETE JOINTS	
SCALE: N.T.S.	DRAWING No. 02502-1.2
DATE: MAY 2024	



STREET

CURB RAMP IN PERPENDICULAR SIDEWALK

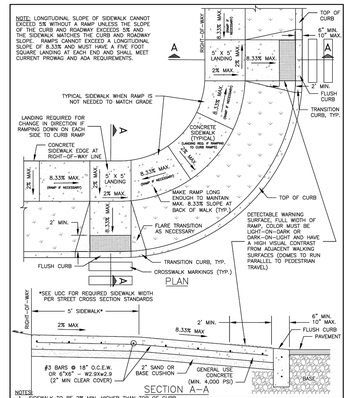
NOTES:
1. SIDEWALK TO BE 2% MIN. HIGHER THAN TOP OF CURB.
2. CURB RAMP MUST BE AS WIDE AS SIDEWALK WIDTH.
3. 2" OF SPACE ALLOWED BETWEEN DETECTABLE WARNINGS AND CONCRETE EDGE AS REQUIRED, OR PER CURRENT PROWAG REQUIREMENTS.
4. SUBGRADE BELOW SAND OR BASE CUSHION SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).



RAMP IN PARALLEL SIDEWALK WITH PERPENDICULAR CURB RAMP

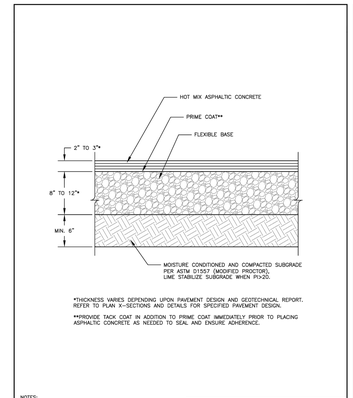
NOTE: LONGITUDINAL SLOPE OF SIDEWALK CANNOT EXCEED 5% WITHOUT A RAMP UNLESS THE SLOPE OF THE CURB AND ROADWAY EXCEEDS 5% AND THE SIDEWALK MATCHES THE CURB AND ROADWAY SLOPE. RAMPS CANNOT EXCEED A LONGITUDINAL SLOPE OF 8.33% AND MUST HAVE A FIVE FOOT SQUARE LANDING AT EACH END AND MEET CURRENT PROWAG AND ADA REQUIREMENTS.

CITY OF BOERNE	
SIDEWALK CURB RAMPS SIDEWALK AT ROW LINE	
SCALE: N.T.S.	DRAWING No. 02502-4.1
DATE: MAY 2024	



NOTES:
1. SIDEWALK TO BE 2% MIN. HIGHER THAN TOP OF CURB.
2. CURB RAMP MUST BE AS WIDE AS SIDEWALK WIDTH.
3. 2" OF SPACE ALLOWED BETWEEN DETECTABLE WARNINGS AND CONCRETE EDGE AS REQUIRED, OR PER CURRENT PROWAG REQUIREMENTS.
4. SUBGRADE BELOW SAND OR BASE CUSHION SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).
5. ANY DEVIATION FROM THESE CURB RAMP DETAILS MUST BE APPROVED BY ENGINEERING & MOBILITY DEPARTMENT.

CITY OF BOERNE	
SIDEWALK CURB RAMP ON RADIUS SIDEWALK AT ROW LINE	
SCALE: N.T.S.	DRAWING No. 02502-4.2
DATE: MAY 2024	

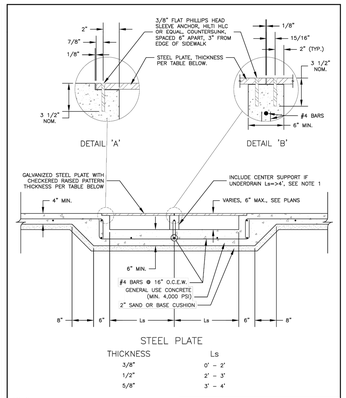


*THICKNESS VARIES DEPENDING UPON PAVEMENT DESIGN AND GEOTECHNICAL REPORT. REFER TO PLAN NOTES AND DETAILS FOR SPECIFIED PAVEMENT DESIGN.

**PROVIDE TACK COAT IN ADDITION TO PRIME COAT IMMEDIATELY PRIOR TO PLACING ASPHALTIC CONCRETE AS NEEDED TO SEAL AND ENSURE ADHERENCE.

NOTES:
1. PROVIDE 1 SET OF CORES FOR EACH DAY OF PAVING OR PER 500 TONS.

CITY OF BOERNE	
ASPHALTIC CONCRETE PAVEMENT SECTION	
SCALE: N.T.S.	DRAWING No. 02513–1.0
DATE: MAY 2024	



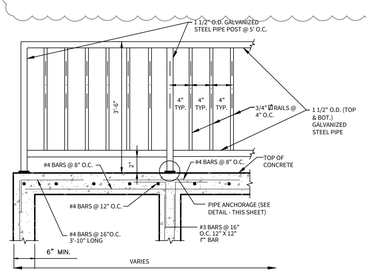
DETAIL 'A'

STEEL PLATE

THICKNESS	Ls
3/8"	0' – 2'
1/2"	2' – 3'
5/8"	3' – 4'

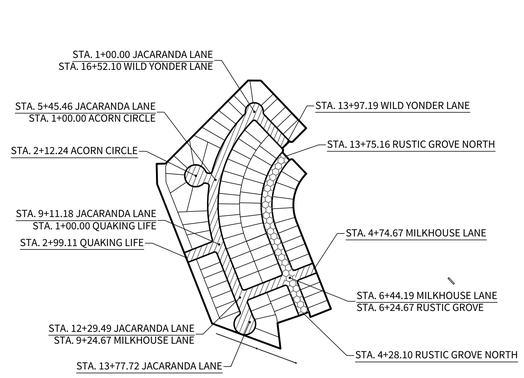
NOTES:
1. IF OPENING EXCEEDS 4–FEET, THEN MUST INSTALL MULTIPLE OPENINGS WITH MIN. 6" SUPPORT BETWEEN OPENINGS. IF SINGLE STEEL PLATE OVER CENTER SUPPORT, USE 3/8" FLAT PHILLIPS HEAD SLEEVE ANCHOR, HILTI HLC OR EQUAL, COUNTERSUNK, ON–CENTER WITH 6" SUPPORT.
2. USE OF SIDEWALK UNDERDRAIN ONLY AS ALLOWED BY THE CITY OF BOERNE.

CITY OF BOERNE	
SIDEWALK UNDERDRAIN	
SCALE: N.T.S.	DRAWING No. 02502-4.5
DATE: MAY 2024	



TYPICAL SIDEWALK BRIDGE SECTION AND SIDEWALK PIPE RAILING

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.
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 BOERNE 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

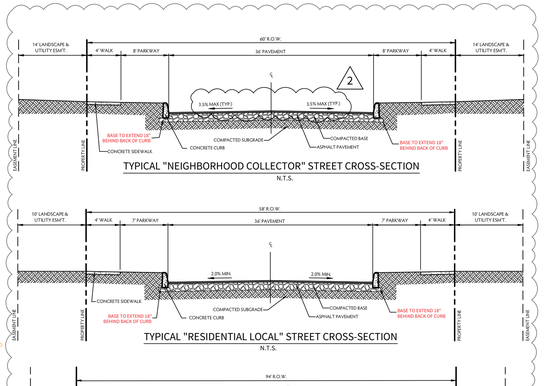
NOTE:
1. REFERENCE GEOTECHNICAL REPORT (InTEC PROJECT NO. S201216–P, DATED SEPTEMBER 23, 2020) FOR BORING INFORMATION AND CBR LOCATIONS.

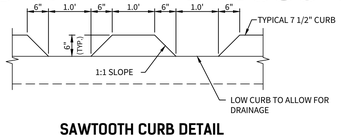
LEGEND:

TYPICAL "NEIGHBORHOOD COLLECTOR"
RUSTIC GROVE NORTH — STA. 4+28.10 – 13+75.16

TYPICAL "RESIDENTIAL LOCAL"

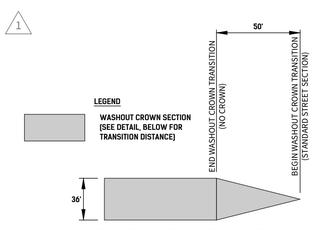
MILKHOUSE LANE	STA. 4+74.67 – 9+24.67
WILD YONDER LANE	STA. 13+97.19 – 16+52.10
JACARANDA LANE	STA. 1+00.00 – 13+77.72
ACORN CIRCLE	STA. 1+00.00 – 2+12.24
QUAKING LIFE	STA. 1+00.00 – 2+99.11





SAWTOOTH CURB DETAIL
(NOT TO SCALE)

1



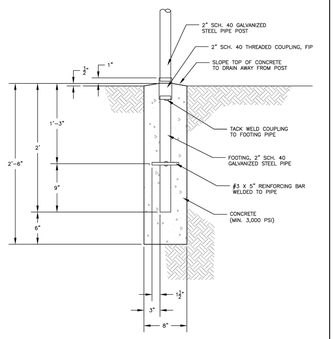
LEGEND
WASHOUT CROWN SECTION (SEE DETAIL, BELOW FOR TRANSITION DISTANCE)

WASHOUT CROWN TRANSITION DETAIL

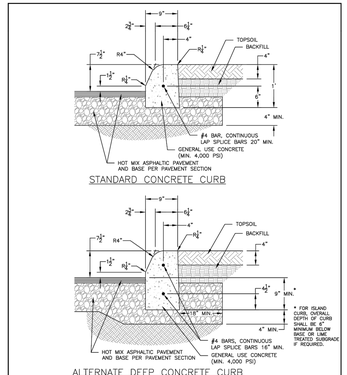
STREET PAVEMENT DESIGN OPTIONS

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 InTEC, PROJECT NO. S201216–P, DATED 09/23/20) IF GEOTECH ENGINEER DETERMINES NATIVE MARL/ROCK IS NOT SUFFICIENT. IF LIME TREATMENT IS REPLACED BY NATIVE MARL/ROCK, CITY OF BOERNE 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.

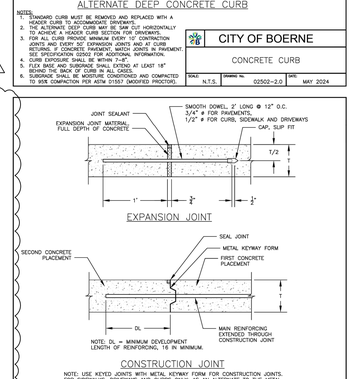
STREET TYPE	HMAC TYPE "D"	HMAC TYPE "C"	HMAC TYPE "B"	FLEX BASE (TY A GR 2)	LIME TREATED SUBGRADE (42 LB/SY)	BASE UNDER CURB	STRUCTURAL NUMBER
RESIDENTIAL LOCAL STREET	2.0"	---	---	9.5"	8.0"	5.5"	2.85
NEIGHBOORHOOD COLLECTOR STREET	3.0"	---	---	16.0"	8.0"	5.5"	4.20
94' R.O.W. ARTERIAL (OPT



CITY OF BOERNE	
SIGN POST AND FOUNDATION	
SCALE: N.T.S.	DRAWING No. 02514-1.1
DATE: MAY 2024	



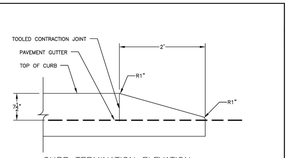
STANDARD CONCRETE CURB



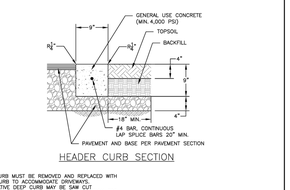
ALTERNATE DEEP CONCRETE CURB

NOTES:
1. STANDARD CURB MUST BE REMOVED AND REPLACED WITH A HEADER CURB TO ACCOMMODATE DRIVEWAYS.
2. THE ALTERNATE DEEP CURB MAY BE SAW CUT HORIZONTALLY TO ACHIEVE A HEADER CURB SECTION FOR DRIVEWAYS.
3. FOR ALL CURB PHONES MINIMUM EVERY 10' CONTRACTION JOINTS AND EVERY 50' EXPANSION JOINTS AND AT CURB RETURNS. IF CONCRETE PAVEMENT, MATCH JOINTS IN PAVEMENT. SEE SPECIFICATION 02502 FOR ADDITIONAL INFORMATION.
4. CURB EXPOSURE SHALL BE WITHIN 7-9".
5. FLEX BASE AND SUBGRADE SHALL EXTEND AT LEAST 18" BEHIND THE BACK OF CURB IN ALL CASES.
6. SUBGRADE SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE	
CONCRETE CURB	
SCALE: N.T.S.	DRAWING No. 02502-2.0
DATE: MAY 2024	



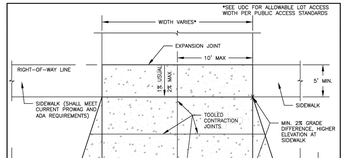
CURB TERMINATION ELEVATION



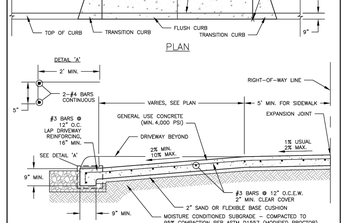
HEADER CURB SECTION

NOTES:
1. STANDARD CURB MUST BE REMOVED AND REPLACED WITH A HEADER CURB TO ACCOMMODATE DRIVEWAYS.
2. THE ALTERNATIVE DEEP CURB MAY BE SAW CUT HORIZONTALLY TO ACHIEVE A HEADER CURB SECTION FOR DRIVEWAYS.
3. FOR ALL CURB PHONES MINIMUM EVERY 10' CONTRACTION JOINTS AND EVERY 50' EXPANSION JOINTS AND AT CURB RETURNS. IF CONCRETE PAVEMENT, MATCH JOINTS IN PAVEMENT. SEE SPECIFICATION 02502 FOR ADDITIONAL INFORMATION.
4. CURB EXPOSURE SHALL BE WITHIN 7-9".
5. FLEX BASE AND SUBGRADE SHALL EXTEND AT LEAST 18" BEHIND THE BACK OF CURB IN ALL CASES.
6. SUBGRADE SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE	
CONCRETE CURB TERMINATION AND HEADER CURB	
SCALE: N.T.S.	DRAWING No. 02502-2.1
DATE: MAY 2024	



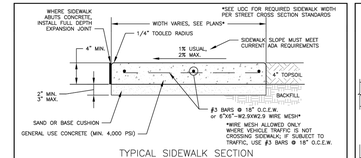
PLAN



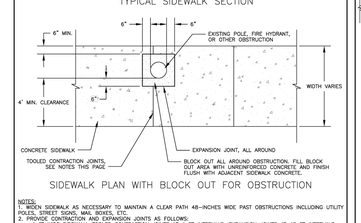
SECTION

NOTE: THE HEADER CURB CONSTRUCTION MAY BE DELETED WHEN CONSTRUCTING DRIVEWAY ADJACENT TO AN EXISTING HEADER CURB THAT IS A MINIMUM OF 9" DEEP WITH AT LEAST ONE HORIZONTAL BAR. INSTALL AN EXPANSION JOINT BETWEEN THE EXISTING HEADER CURB AND DRIVEWAY.

CITY OF BOERNE	
CONCRETE DRIVEWAY APPROACH SIDEWALK AT ROW LINE	
SCALE: N.T.S.	DRAWING No. 02502-3.1
DATE: MAY 2024	



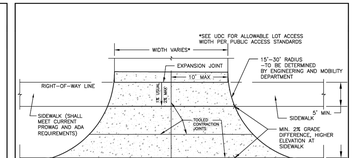
TYPICAL SIDEWALK SECTION



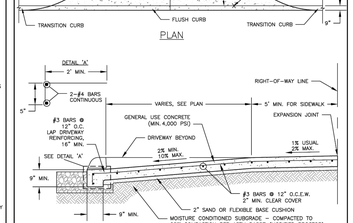
SIDEWALK PLAN WITH BLOCK OUT FOR OBSTRUCTION

NOTES:
1. WIDEN SIDEWALK AS NECESSARY TO MAINTAIN A CLEAR PATH 48-INCHES WIDE PAST OBSTRUCTIONS INCLUDING UTILITY POLES, STREET SIGNS, MAIL BOXES, ETC.
2. MAXIMUM CONSTRUCTION AND EXPANSION JOINTS AS FOLLOWS:
   - 4 FT WIDE SIDEWALK: TOOLED CONTRACTION JOINTS AT 4 FT INTERVALS, EXPANSION JOINTS AT 48 FT INTERVALS.
   - 5 FT WIDE SIDEWALK: TOOLED CONTRACTION JOINTS AT 5 FT INTERVALS, EXPANSION JOINTS AT 50 FT INTERVALS.
   - 6 FT AND WIDER SIDEWALKS: TOOLED CONTRACTION JOINTS AT 6 FT INTERVALS AND EXPANSION JOINTS AT 48 FT INTERVALS.
3. SUBGRADE BELOW SAND OR BASE CUSHION SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE	
CONCRETE SIDEWALK	
SCALE: N.T.S.	DRAWING No. 02502-4.0
DATE: MAY 2024	



PLAN



SECTION

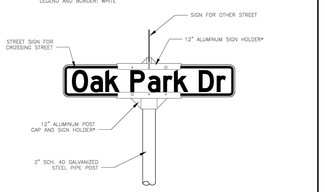
NOTE: THE HEADER CURB CONSTRUCTION MAY BE DELETED WHEN CONSTRUCTING DRIVEWAY ADJACENT TO AN EXISTING HEADER CURB THAT IS A MINIMUM OF 9" DEEP WITH AT LEAST ONE HORIZONTAL BAR. INSTALL AN EXPANSION JOINT BETWEEN THE EXISTING HEADER CURB AND DRIVEWAY.

CITY OF BOERNE	
NON-RESIDENTIAL CONCRETE DRIVEWAY APPROACH SIDEWALK AT ROW LINE	
SCALE: N.T.S.	DRAWING No. 02502-3.1A
DATE: MAY 2024	



NOTES:
FOR PUBLIC STREETS:
BACKGROUND COLOR: WHITE
LEGEND AND BORDER: BLACK

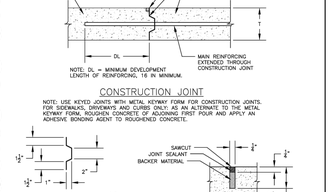
FOR PRIVATE STREETS:
BACKGROUND COLOR: BLACK
LEGEND AND BORDER: WHITE



*USE 12" ALUMINUM SIGN HOLDERS FOR SIGNS > 24" IN LENGTH, FOR SHORTER SIGNS USE 5" HOLDERS.

CITY OF BOERNE	
STREET SIGN	
SCALE: N.T.S.	DRAWING No. 02514-1.0
DATE: JULY 2015	

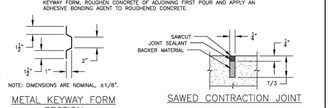
EXPANSION JOINT



NOTE: DL = MINIMUM DEVELOPMENT LENGTH OF REINFORCING, 16 IN MINIMUM.

CONSTRUCTION JOINT

NOTE: USE KEYED JOINTS WITH METAL KEYWAY FORM FOR CONSTRUCTION JOINTS FOR SIDEWALKS, DRIVEWAYS AND CURBS ONLY. AS AN ALTERNATE TO THE METAL KEYWAY FORM, ROUGHEN CONCRETE OF ADJOINING FIRST POUR AND APPLY AN ADHESIVE BONDING AGENT TO ROUGHENED CONCRETE.

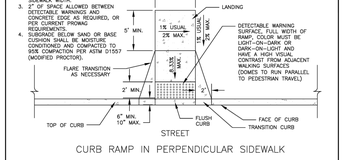


METAL KEYWAY FORM SECTION

SAWED CONTRACTION JOINT

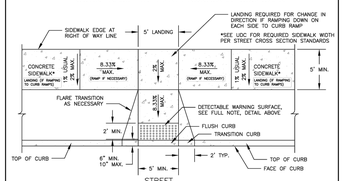
NOTE: SAWED CONTRACTION JOINTS MUST BE USED ON CONCRETE PAVING APPLICATIONS (DRIVEWAYS, SIDEWALKS AND CURB), WHERE TOOLED CONTRACTION JOINTS ARE NOT USED. THE TOOLED JOINT MUST BE 1/2 INCH DEEP AND 1/2 INCH WIDE WITH 1/4 INCH RADIUS ALONG THE EDGE.

CITY OF BOERNE	
CONCRETE JOINTS	
SCALE: N.T.S.	DRAWING No. 02502-1.2
DATE: MAY 2024	



STREET

CURB RAMP IN PERPENDICULAR SIDEWALK



RAMP IN PARALLEL SIDEWALK WITH PERPENDICULAR CURB RAMP

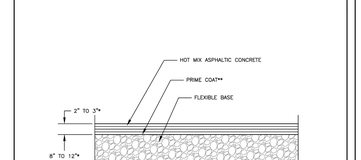
NOTE: LONGITUDINAL SLOPE OF SIDEWALK CANNOT EXCEED 5% WITHOUT A RAMP UNLESS THE SLOPE OF THE CURB AND ROADWAY EXCEEDS 5% AND THE SIDEWALK MATCHES THE CURB AND ROADWAY SLOPE. RAMPS CANNOT EXCEED A LONGITUDINAL SLOPE OF 8.33% AND MUST HAVE A FIVE FOOT SQUARE LANDING AT EACH END AND MEET CURRENT PROWAG AND ADA REQUIREMENTS.

CITY OF BOERNE	
SIDEWALK CURB RAMPS SIDEWALK AT ROW LINE	
SCALE: N.T.S.	DRAWING No. 02502-4.1
DATE: MAY 2024	

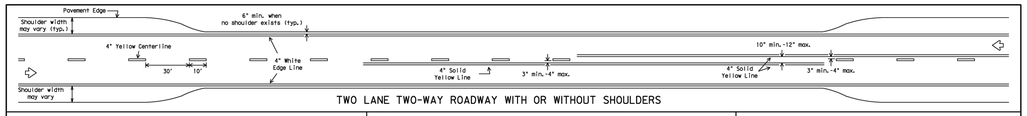


NOTES:
1. SIDEWALK TO BE 2% MIN. HIGHER THAN TOP OF CURB.
2. CURB RAMP MUST BE AS WIDE AS SIDEWALK WIDTH.
3. 2" OF SPACE ALLOWED BETWEEN DETECTABLE WARNINGS AND CONCRETE EDGE AS REQUIRED, OR PER CURRENT PROWAG REQUIREMENTS.
4. SUBGRADE BELOW SAND OR BASE CUSHION SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).
5. ANY DEVIATION FROM THESE CURB RAMP DETAILS MUST BE APPROVED BY ENGINEERING & MOBILITY DEPARTMENT

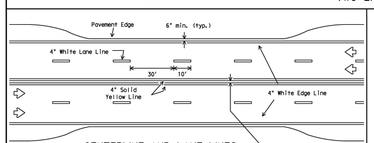
CITY OF BOERNE	
SIDEWALK CURB RAMP ON RADIUS SIDEWALK AT ROW LINE	
SCALE: N.T.S.	DRAWING No. 02502-4.2
DATE: MAY 2024	



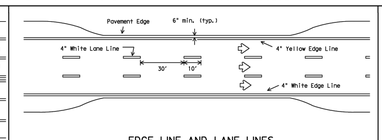
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by the Texas Department of Transportation for any purpose whatsoever. The Texas Department of Transportation shall not be liable for any damages resulting from reuse of this standard or conversion to other formats or for incorrect results or damages resulting from its use.



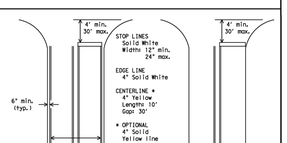
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



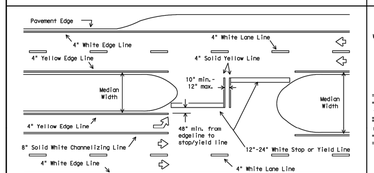
CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



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

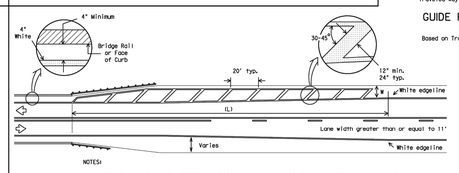


GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE
Based on Traveled Way and Pavement Widths for Undivided Highways



All medians shall be field measured to determine the location of necessary striping. Stop/Yield bars and centerlines shall be placed when the median width is greater than 30 ft. The median width is defined as the area between two roadways of a divided highway measured from edge of traveled way to edge of traveled way. The median excludes turn lanes. The median width might be different between intersections, interchanges and at opposite approaches of the same intersection. The narrow median width will be the controlling width to determine if markings are required.

FOUR LANE DIVIDED ROADWAY INTERSECTIONS



NOTES:
1. No-passing zone on bridge approach is optional but if used, it shall be a minimum 500 feet long.
2. For crosshatching length (L) see Table 1.
3. The width of the offset (W) and the required crosshatching width is the full shoulder width in advance of the bridge.
4. The crosshatching is not required if delineators or barrier reflectors are used along the structure.
5. For guard fence details, refer elsewhere in the plans.

ROADWAYS WITH REDUCED SHOULDER
WIDTHS ACROSS BRIDGE OR CULVERT

TABLE 1 - TYPICAL LENGTH (L)

Posted Speed *	Formula
≤ 40	$L = \frac{WS^2}{60}$
≥ 45	L=WS

* 85th Percentile Speed may be used on roads where posted speed limit is not consistent with 85th percentile speed. Crosshatching length should be rounded up to nearest 5 foot increment.

L=Length of crosshatching (FT.) W=Width of Offset (FT.)
S=Posted Speed (MPH)

EXAMPLES:

An 8 foot shoulder in advance of a bridge reduces to 4 feet on a 70 MPH roadway. The length of the cross-hatching should be:
L = 8 x 70 = 560 ft.

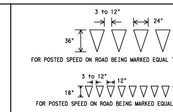
A 4 foot shoulder in advance of a bridge reduces to 2 feet on a 40 MPH roadway. The length of the cross-hatching should be:
L = 4160ft ² / 60 = 106.67 ft, rounded to 110 ft.

GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should typically be placed a minimum of 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 and not the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to inside of edgeline of a two lane roadway.

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.



FOR POSTED SPEED ON ROAD BEING MARKED EQUAL TO OR GREATER THAN 45 MPH



FOR POSTED SPEED ON ROAD BEING MARKED EQUAL TO OR LESS THAN 40 MPH

YIELD LINES

Texas Department of Transportation
Traffic Operations Division

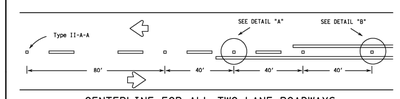
TYPICAL STANDARD
PAVEMENT MARKINGS
PM(1)-12

©TxDOT November 1978	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
8-95 2-12				
5-00	DIST	COUNTY		SHEET NO.
8-00				
7-03				
2-08				

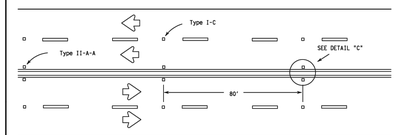
22A

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REFLECTIVE RAISED PAVEMENT MARKERS
FOR VEHICLE POSITIONING GUIDANCE

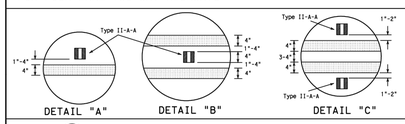


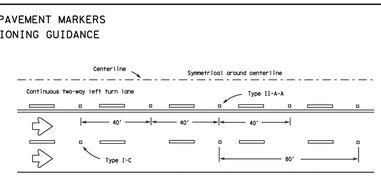
CENTERLINE FOR ALL TWO LANE ROADWAYS



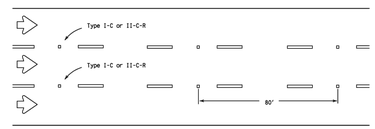
CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY HIGHWAYS

Raised pavement marker Type I-C, clear face toward normal traffic, shall be placed on 80-foot centers.



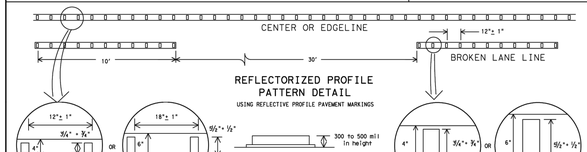


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



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

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



4" EDGE LINE OR CENTERLINE | OPTIONAL 6" EDGE LINE OR CENTERLINE | 4" LANE LINE | OPTIONAL 6" LANE LINE

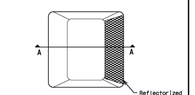
NOTE:
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

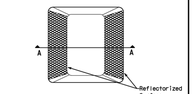
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

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

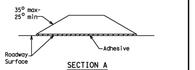
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

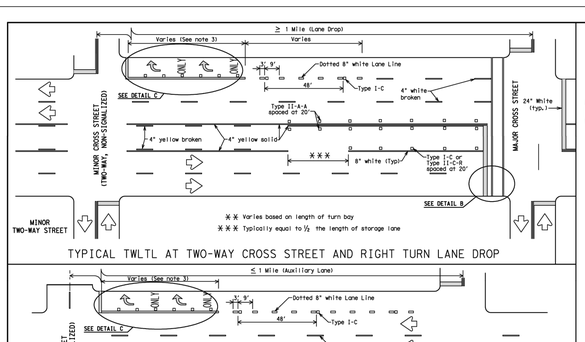
Texas Department of Transportation
Traffic Operations Division

POSITION GUIDANCE USING
RAISED MARKERS
REFLECTORIZED PROFILE
MARKINGS
PM(2)-12

©TxDOT April 1977	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
4-92 2-10				
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00				
2-08				

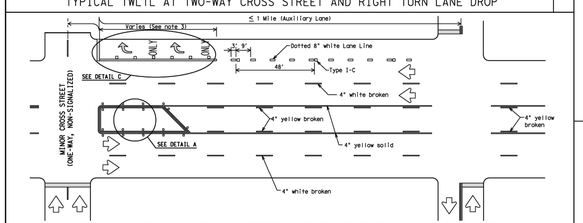
22B

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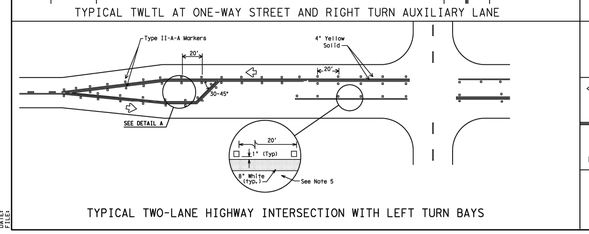


** Varies based on length of turn bay
*** Typically equal to ½ the length of storage lane

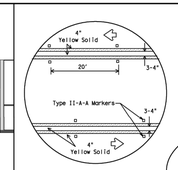
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



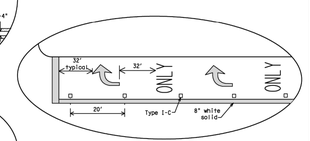
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



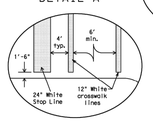
TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A



DETAIL C

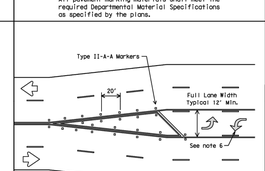


Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

DETAIL B

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

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



TYPICAL TRANSITION FOR TWLTL
AND DIVIDED HIGHWAY

GENERAL NOTES

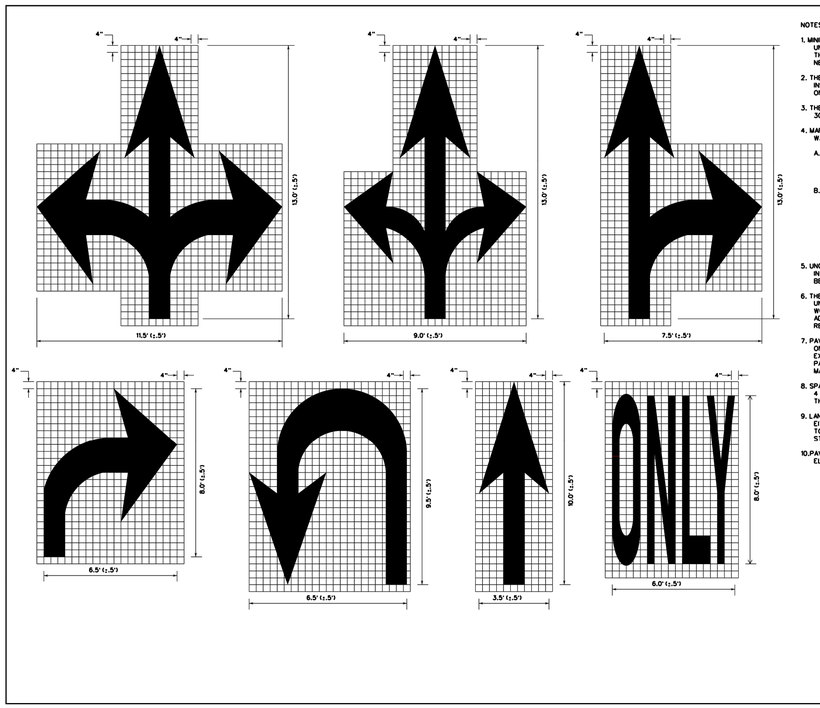
1. Refer elsewhere in plans for additional RPM placement and details.
2. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for lane use arrows are shown in the Standard Highway Sign Designs for Texas.
3. When lane used word and arrow markings are used, two sets of arrows shall be used if the length of the lane is greater than 150 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
4. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used.
5. Raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Raised pavement marker Type II-C-R with divided highways and raised medians.
6. A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

Texas Department of Transportation
Traffic Operations Division

PAVEMENT MARKINGS FOR
TWO-WAY LEFT TURN LANES
DIVIDED HIGHWAYS AND
RURAL LEFT TURN BAYS
PM(3)-12

©TxDOT April 1998	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
5-00 2-12				
8-00	DIST	COUNTY		SHEET NO.
7-03				
2-10				

23C



NOTES:
1. MINIMUM 8 FOOT WHITE MARKINGS SHALL BE USED, UNLESS OTHERWISE NOTED. IF MESSAGE CONSISTS OF MORE THAN ONE WORD, IT SHOULD BE PLACED WITH FIRST WORD NEAREST THE DRIVER.
2. THESE DETAILS ARE STANDARD SIZE FOR NORMAL INSTALLATION. SIZES MAY BE REDUCED APPROXIMATELY ONE-THIRD DEPENDING ON CONDITIONS.
3. THE LONGITUDINAL SPACE BETWEEN MARKINGS SHOULD BE 30 FEET.
4. MARKINGS CONSIDERED APPROPRIATE FOR USE WHEN WARRANTED INCLUDE THE FOLLOWING:
   A. REGULATORY
      STOP
      RIGHT (LEFT) TURN ONLY
      25 MPH
      SYMBOL ARROWS
   B. WARNING
      STOP AHEAD
      SIGNAL AHEAD
      SCHOOL
      SCHOOL X-ING
      PED X-ING
      R X R (SEE RDPM DETAIL)
      OTHER WORDS OR SYMBOLS MAY BE NECESSARY UNDER CERTAIN CONDITIONS
5. UNCONTROLLED USE OF PAVEMENT MARKINGS CAN RESULT IN DRIVER CONFUSION. WORD AND SYMBOL MARKINGS SHOULD BE NO MORE THAN THREE LINES.
6. THE WORD "STOP" SHALL NOT BE USED ON THE PAVEMENT UNLESS ACCOMPANIED BY A STOP LINE AND STOP SIGN. THE WORD "STOP" SHALL NOT BE PLACED ON THE PAVEMENT IN ADVANCE TO A STOP LINE, UNLESS EVERY VEHICLE IS REQUIRED TO STOP AT ALL TIMES.
7. PAVEMENT MARKINGS SHOULD GENERALLY BE NO MORE THAN ONE LANE IN WIDTH, WITH SCHOOL MESSAGES BEING THE EXCEPTION. FOR DETAILS OF SCHOOL AND SCHOOL CROSSING PAVEMENT MARKINGS, REFER TO PART VI OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
8. SPACING BETWEEN LETTERS SHOULD BE APPROXIMATELY 4 INCHES. THE WIDTH OF LETTERS MAY VARY DEPENDING ON THE WIDTH OF THE TRAVEL LANES.
9. LANE-USE ARROW MARKINGS MAY BE USED TO CONVEY EITHER GUIDANCE OR MANDATORY MESSAGES. ARROWS USED TO CONVEY A MANDATORY MOVEMENT MUST BE ACCOMPANIED BY STANDARD SIGNS AND THE PAVEMENT MARKING WORD "ONLY".
10. PAVEMENT MARKINGS ARE TO BE LOCATED AS SPECIFIED ELSEWHERE IN THE PLANS.

SEPTEMBER 2009
CITY OF SAN ANTONIO
DEPARTMENT OF PUBLIC WORKS
TRAFFIC ENGINEERING STANDARDS
STANDARD PAVEMENT MARKINGS
(ARROWS)
SHEET 1 OF 18

℄ SUBMITTAL	PROJECT NO.		DATE:
DRAWN BY: LMN	CHKD BY: MJV	CHKD BY: MJV	SHEET NO. 1 OF 18

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

CORLEY FARMS
UNIT 5

TXDOT PAVEMENT MARKING DETAILS

DATE
01/28/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS
DATE
1 2 3 4 5 6 7 8 9

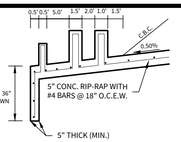
STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
02/10/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

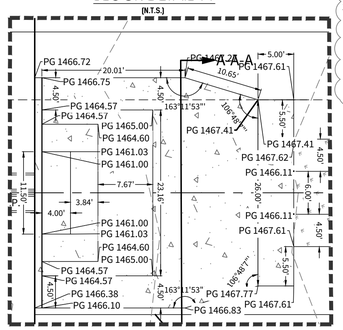
SAWS JOB NO.
22-1190

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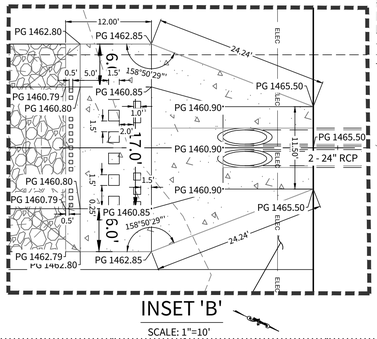


DRAIN "5-A" BAFFLE BLOCK DETAIL 'A'



INSET 'A'

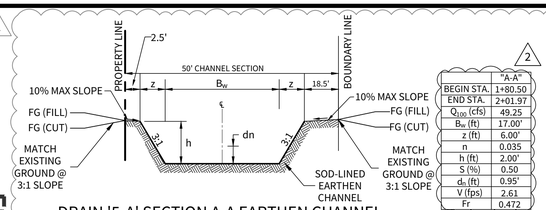
SCALE: 1"=10'



INSET 'B'

SCALE: 1"=10'

1



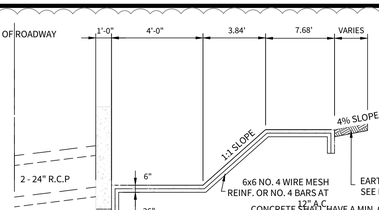
DRAIN '5-A' SECTION A-A EARTHEN CHANNEL

(N.T.S.)

"A-A" STA. 1+80.50 TO STA. 2+01.97

2

	"A-A"
BEGIN STA.	1+80.50
END STA.	2+01.97
Q_{100} (cfs)	49.25
B_W (ft)	17.00'
z (ft)	6.00'
n	0.035
h (ft)	2.00'
S (%)	0.50
d_n (ft)	0.95'
V (fps)	2.61
Fr	0.472

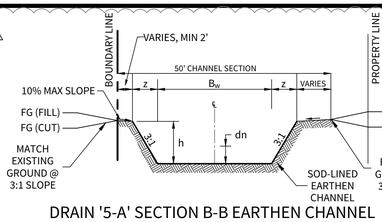


CONCRETE DRAIN SECTION VIEW

CONCRETE SHALL HAVE A MIN. COMPRESSIVE STRENGTH 3000 POUNDS P.S.I. AT 28 DAYS

2

	"A-A-A"
BEGIN STA.	3+04.58
END STA.	3+40.79
Q_{100} (cfs)	30.87
B_W (ft)	8.00'
z (ft)	0.00'
n	0.035
h (ft)	5.38'
S (%)	0.50
d_n (ft)	1.31'
V (fps)	2.95
Fr	0.454



DRAIN '5-A' SECTION B-B EARTHEN CHANNEL

(N.T.S.)

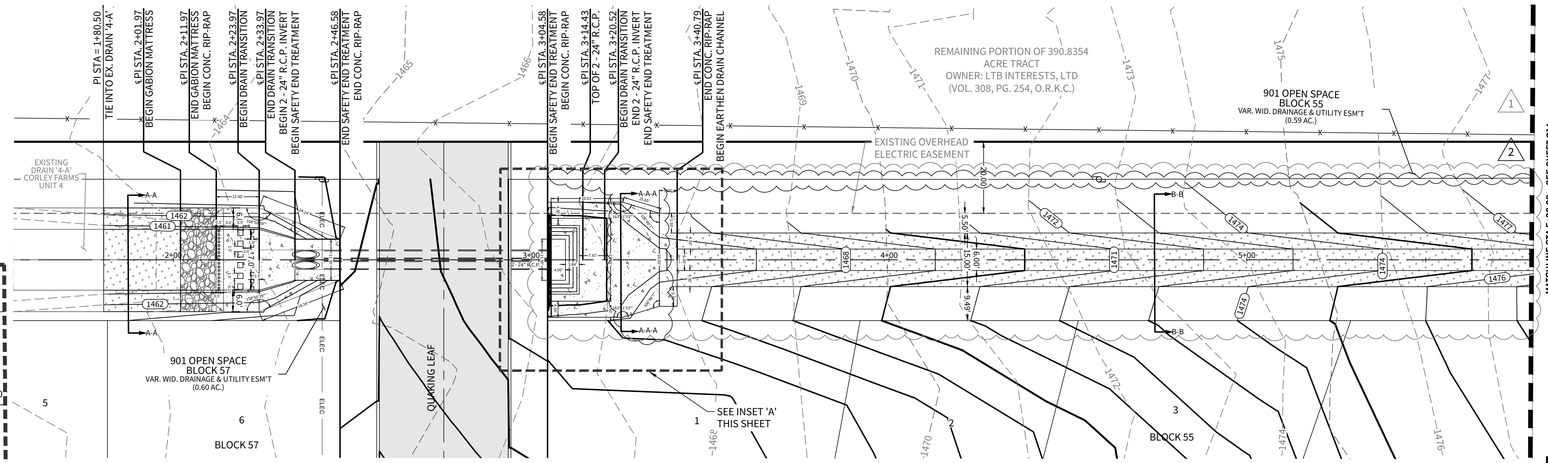
"B-B" STA. 3+40.79 TO STA. 8+47.61

2

	"B-B"
BEGIN STA.	3+40.79
END STA.	8+47.61
Q_{100} (cfs)	30.87
B_W (ft)	6.00'
z (ft)	4.50
n	0.035
h (ft)	1.50'
S (%)	4.00
d_n (ft)	0.69'
V (fps)	5.54
Fr	1.176

SCALE: 1"=20'

0 20 40



DRAIN '5-A'

STA. 1+80.50 TO STA. 5+80.00

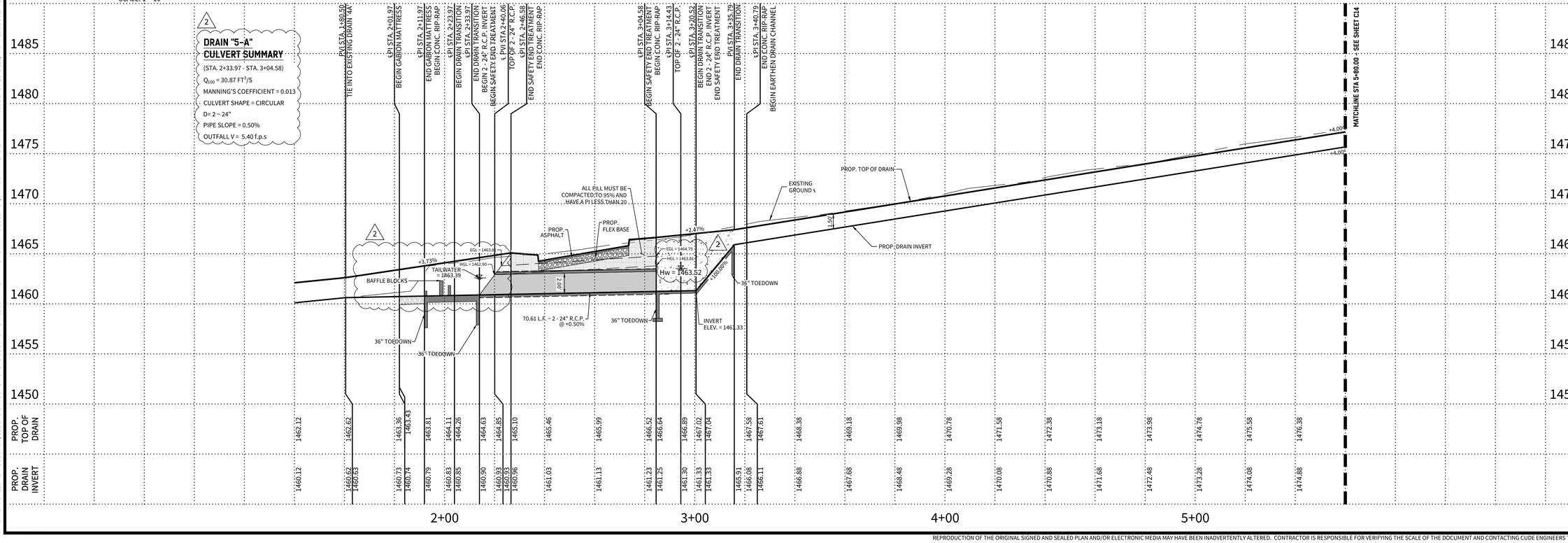
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'

LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED RIGHT OF WAY
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROPOSED 1' CONTOUR
- PROPOSED 5' CONTOUR
- PROPOSED GAS MAIN
- PROPOSED CULVERT
- CONCRETE RIP RAP
- ROCK RUBBLE
- SOD LINED

NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE CITY OF BOERNE CONCRETE RIP-RAP TYPICAL SECTION DETAIL ON THIS SHEET
4. PER THE CITY OF BOERNE DEVELOPMENT AGREEMENT, EARTHEN CHANNELS MUST BE SOD LINED WHERE VELOCITIES OF STORM WATER RUNOFF ARE 3 ~ 6 FPS.



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

CORLEY FARMS UNIT 5

DRAIN PLAN & PROFILE - DRAIN '5-A'

DATE
04/10/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

DATE	
11/7/24	1. PERMITTING COMMENTS
04/7/25	2. PERMITTING COMMENTS
	3.
	4.
	5.
	6.
	7.
	8.
	9.

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
4/11/25

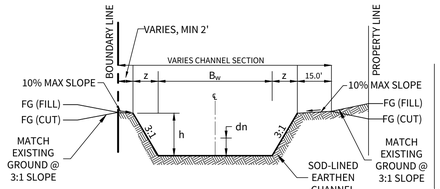
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

SAWS JOB NO.
22-1190

C13

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C:\03481\022-Drawings\C-02-7-24-DRAIN PLAN & PROFILE - DRAIN '5-A'.dwg 2025/04/10 4:50pm mlopez

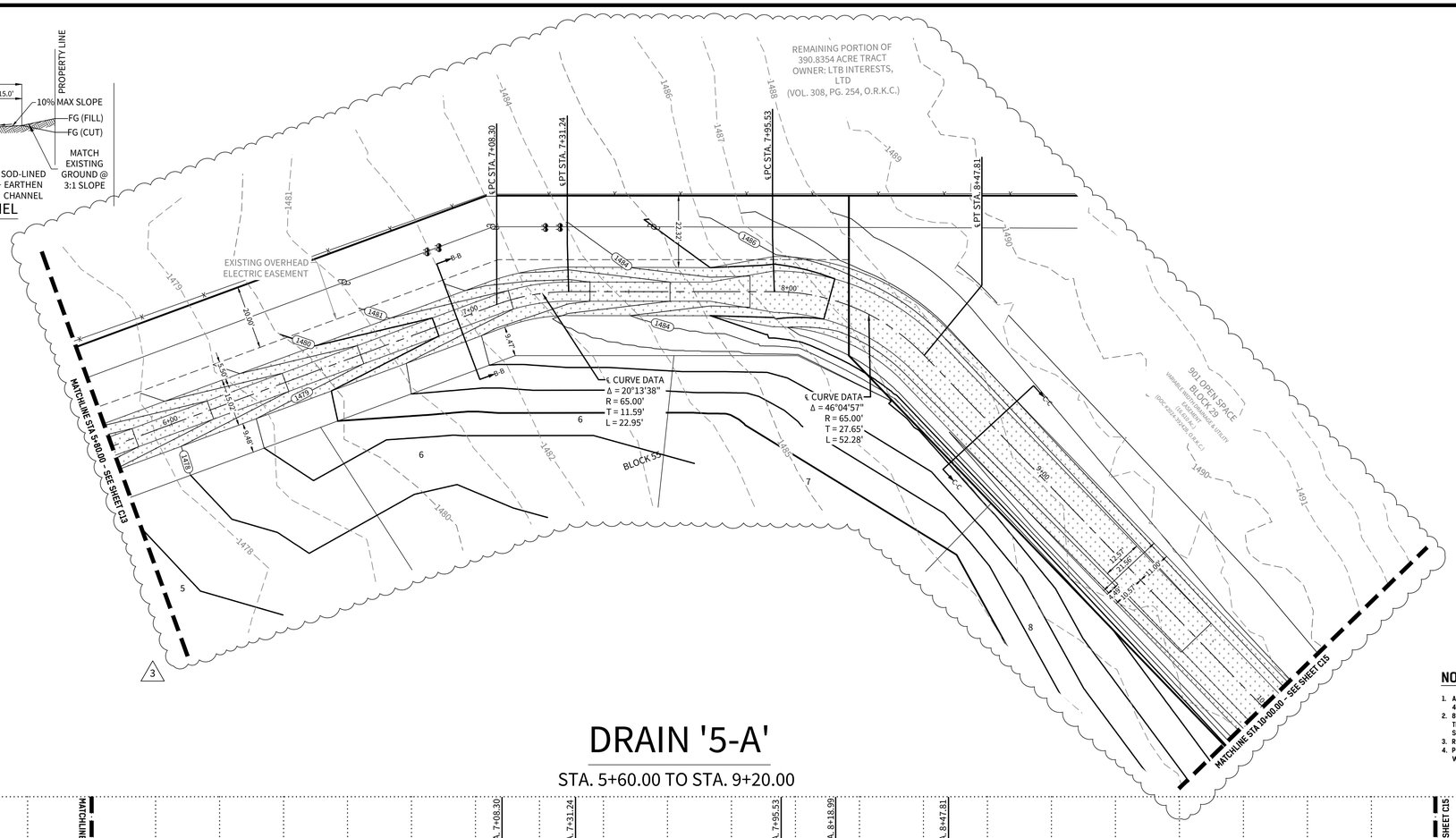


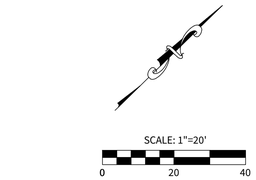
DRAIN '5-A' EARTHEN CHANNEL

(N.T.S.)

"B-B" STA. 3+40.79 TO STA. 7+75.54
"C-C" STA. 7+95+53 TO STA. 14+97.07

	"B-B"	"C-C"
BEGIN STA.	3+40.79	7+95.53
END STA.	7+75.54	14+97.07
Q_{100} (cfs)	30.87	30.87
B_w (ft)	6.00'	13.00'
z (ft)	4.50'	6.00'
n	0.035	0.035
h (ft)	1.50'	1.50'
S (%)	4.00	0.50
d_n (ft)	0.69'	0.84'
V (fps)	5.54	2.37
Fr	1.176	0.456





LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED RIGHT OF WAY
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROPOSED 1' CONTOUR
- PROPOSED 5' CONTOUR
- PROPOSED GAS MAIN
- PROPOSED CULVERT
- CONCRETE RIP RAP
- ROCK RUBBLE
- SOD LINED

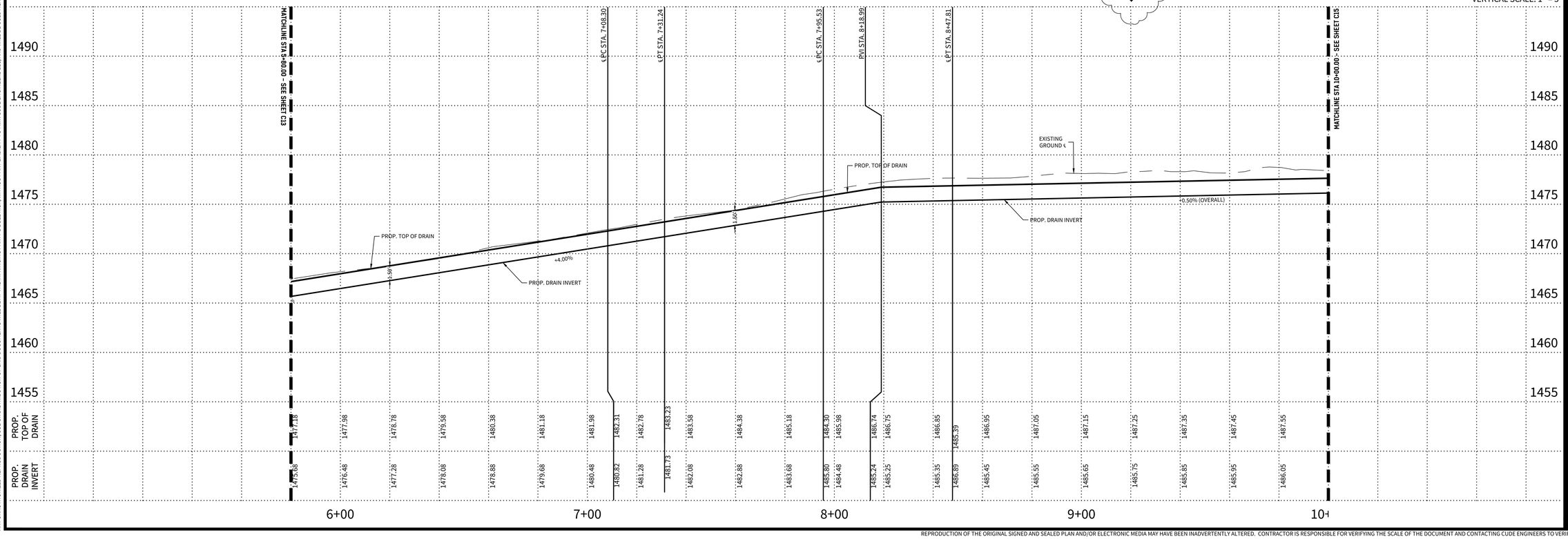
NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE CITY OF BOERNE CONCRETE RIP-RAP TYPICAL SECTION DETAIL ON THIS SHEET
4. PER THE CITY OF BOERNE DEVELOPMENT AGREEMENT, EARTHEN CHANNELS MUST BE SOD LINED WHERE VELOCITIES OF STORM WATER RUNOFF ARE 3 – 6 FPS.

DRAIN '5-A'

STA. 5+60.00 TO STA. 9+20.00

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



	6+00						7+00						8+00						9+00						10+
PROP. TOP OF DRAIN	1477.68	1477.98	1478.28	1478.58	1478.88	1479.18	1479.48	1479.78	1480.08	1480.38	1480.68	1480.98	1481.28	1481.58	1481.88	1482.18	1482.48	1482.78	1483.08	1483.38	1483.68	1483.98	1484.28	1484.58	1484.88	1485.18	1485.48	1485.78	1486.08	1486.38	1486.68	1486.98	1487.28	1487.58	1487.88	1488.18	1488.48
PROP. DRAIN INVERT	1475.68	1476.48	1477.28	1478.08	1478.88	1479.68	1480.48	1480.82	1481.28	1481.73	1482.08	1482.88	1483.68	1485.80	1484.48	1485.24	1485.25	1485.35	1485.89	1486.45	1485.55	1485.65	1485.75	1485.85	1485.95	1486.05	1486.15	1486.25	1486.35	1486.45	1486.55	1486.65	1486.75	1486.85	1486.95	1487.05	1487.15

	10+																								
PROP. TOP OF DRAIN	1487.35	1487.45	1487.55	1487.65	1487.75	1487.85	1487.95	1488.05	1488.15	1488.25	1488.35	1488.45	1488.55	1488.65	1488.75	1488.85	1488.95	1489.05	1489.15	1489.25	1489.35	1489.45	1489.55	1489.65	1489.75
PROP. DRAIN INVERT	1487.25	1487.35	1487.45	1487.55	1487.65	1487.75	1487.85	1487.95	1488.05	1488.15	1488.25	1488.35	1488.45	1488.55	1488.65	1488.75	1488.85	1488.95	1489.05	1489.15	1489.25	1489.35	1489.45	1489.55	1489.65

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CUDEENGINEERS.COM

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

CORLEY FARMS UNIT 5

DRAIN PLAN & PROFILE - DRAIN '5-A'

DATE
06/02/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

	DATE	
1.	11/7/24	PERMITTING COMMENTS
2.	04/7/25	PERMITTING COMMENTS
3.	06/2/25	CHANNEL GRADING CHANGED
4.		
5.		
6.		
7.		
8.		
9.		

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
6/2/25

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

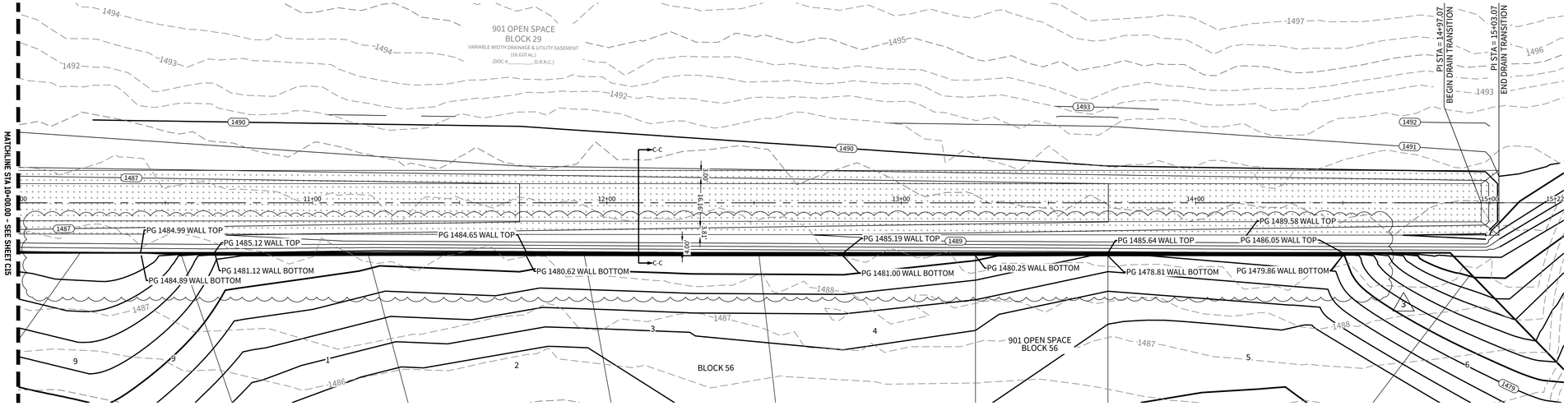
SAWS JOB NO.
22-1190

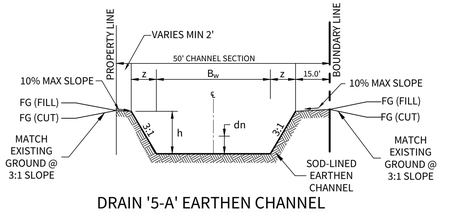
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P:\03481.012\3 Drawings\C3 Civil\03481.012 PLAN & PROFILE - DRAIN '5-A'.dwg, 5/30/2025 12:23pm, kmanthei

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DRAIN '5-A' EARTHEN CHANNEL

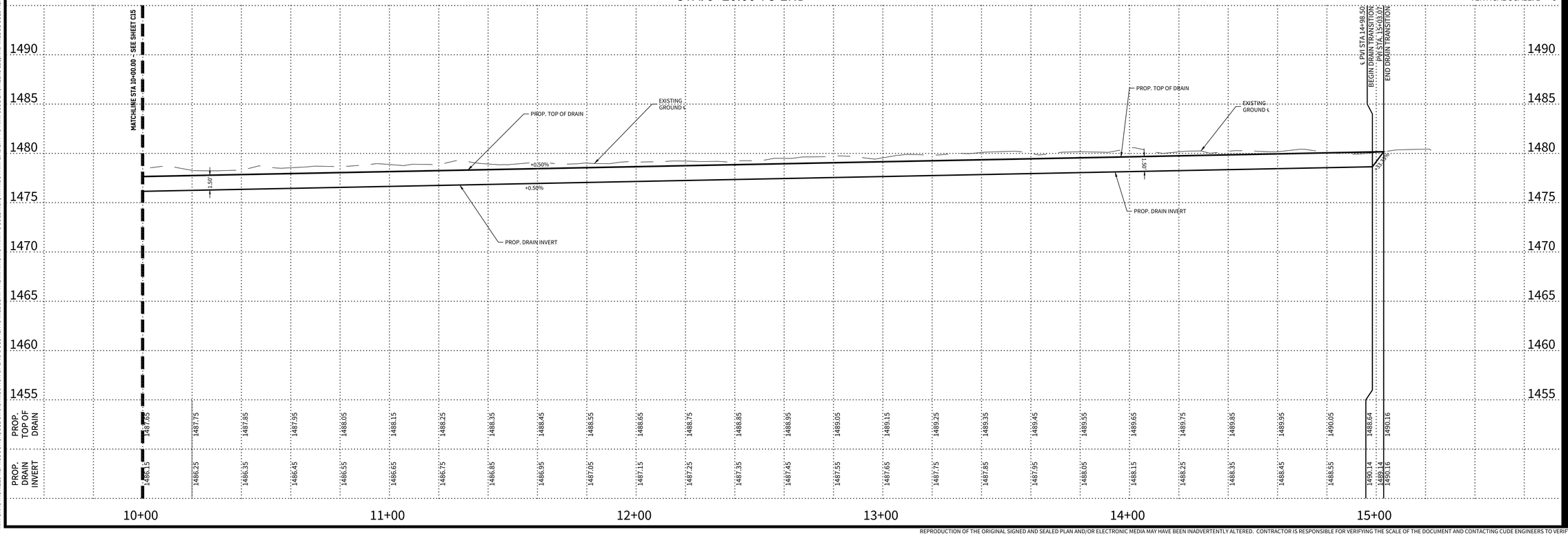
(N.T.S.)

"C-C" STA. 7+95.53 TO STA. 14+97.07

	"C-C"
BEGIN STA.	7+95.53
END STA.	14+97.07
Q_{100} (cfs)	30.87
B_w (ft)	13.00'
z (ft)	6.00'
n	0.035
h (ft)	1.50'
S (%)	0.50
d_n (ft)	0.84'
V (fps)	2.37
Fr	0.456

DRAIN '5-A'

STA. 9+20.00 TO END





LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED RIGHT OF WAY
- EXISTING 1' CONTOUR — 499
- EXISTING 5' CONTOUR — 500
- PROPOSED 1' CONTOUR — 499
- PROPOSED 5' CONTOUR — 500
- PROPOSED GAS MAIN — G
- PROPOSED CULVERT
- CONCRETE RIP RAP
- ROCK RUBBLE
- SOD LINED

NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
3. REFERENCE CITY OF BOERNE CONCRETE RIP-RAP TYPICAL SECTION DETAIL ON THIS SHEET
4. PER THE CITY OF BOERNE DEVELOPMENT AGREEMENT, EARTHEN CHANNELS MUST BE SOD LINED WHERE VELOCITIES OF STORM WATER RUNOFF ARE 3 – 6 FPS.

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

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CORLEY FARMS UNIT 5

DRAIN PLAN & PROFILE - DRAIN '5-A'

DATE
06/02/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

	DATE	
1.	11/7/24	PERMITTING COMMENTS
2.	04/7/25	PERMITTING COMMENTS
3.	5/27/25	GRADING REVISION
4.		
5.		
6.		
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STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
6/2/25

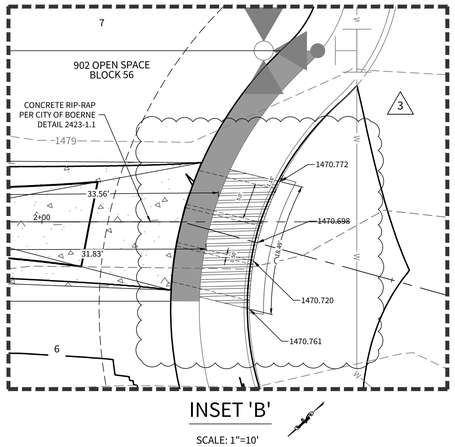
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

SAWS JOB NO.
22-1190

C15

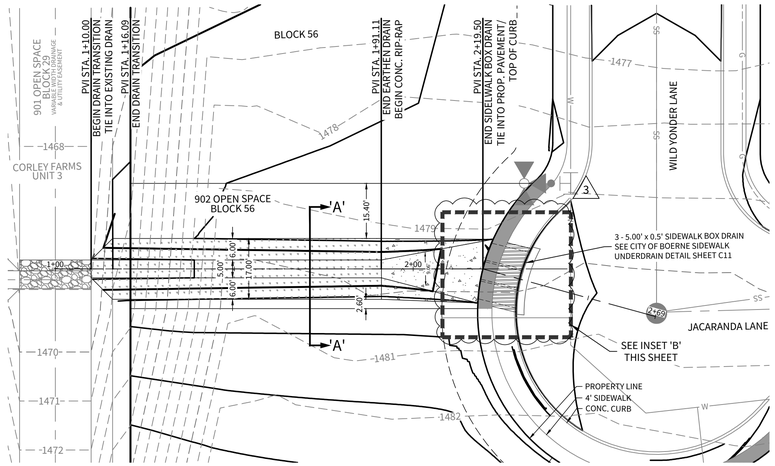
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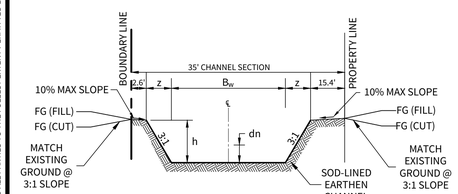
P:\03481.012\3-3 Drawings\C1-02-3 DA DRAIN PLANS & PROFILE - DRAIN '5-A'.dwg 6/2/25 09:23:33 pm Andrew Lowry



INSET 'B'

SCALE: 1"=10'





DRAIN '5-B' EARTHEN CHANNEL

(N.T.S.)

"A-A" STA. 1+16.09 TO STA. 2+09.50

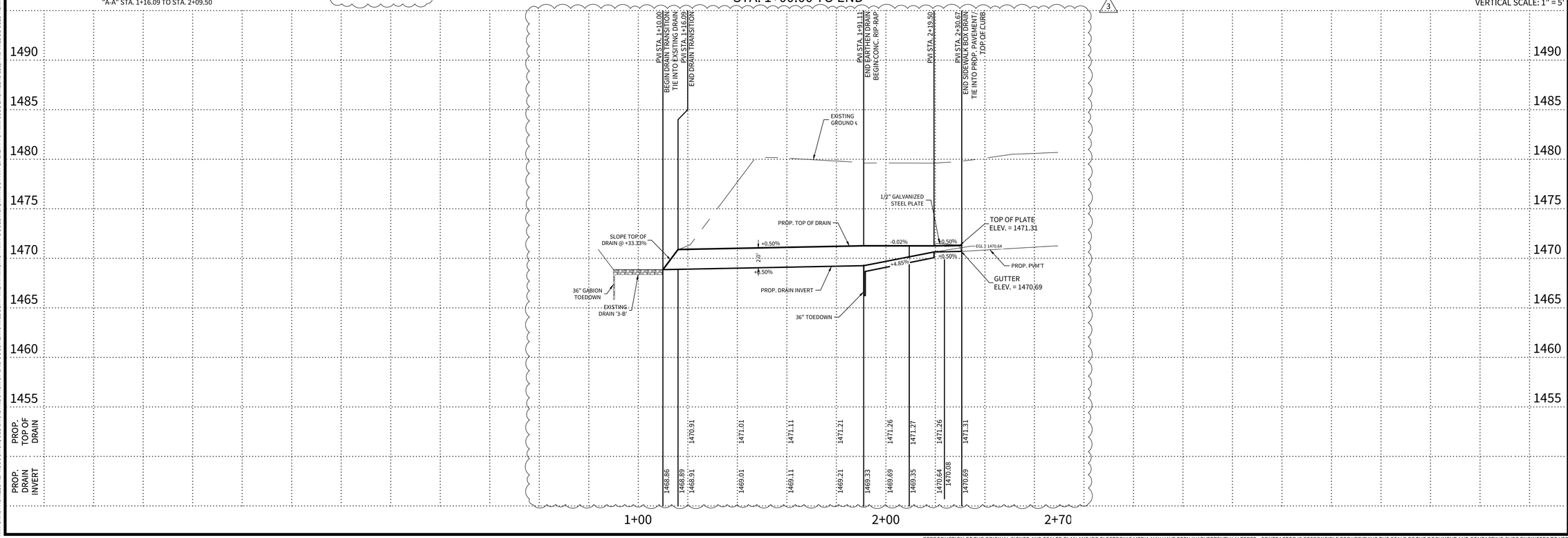
	"A-A"
BEGIN STA.	1+16.09
END STA.	2+09.50
Q_{100} (cfs)	35.86
B_w (ft)	5.00'
z (ft)	6.00'
n	0.035
h (ft)	2.00'
S (%)	0.50
d_n (ft)	1.36'
V (fps)	2.81
Fr	0.425

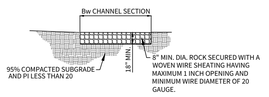
NOTE:
EARTHEN CHANNELS TO
BE SOD LINED WHEN
VELOCITIES ARE 3 - 6 FPS

3

DRAIN '5-B'

STA. 1+00.00 TO END





GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL

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

(N.T.S.)

3



SCALE: 1"=20'

0 20 40

LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED RIGHT OF WAY
- EXISTING 1' CONTOUR — 499
- EXISTING 5' CONTOUR — 500
- PROPOSED 1' CONTOUR — 499
- PROPOSED 5' CONTOUR — 500
- PROPOSED GAS MAIN — G
- PROPOSED CULVERT
- CONCRETE RIP RAP
- ROCK RUBBLE
- SOD LINED

NOTES:

1. **ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS**
2. **85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.**
3. **REFERENCE CITY OF BOERNE CONCRETE RIP-RAP TYPICAL SECTION DETAIL ON THIS SHEET**
4. **PER THE CITY OF BOERNE DEVELOPMENT AGREEMENT, EARTHEN CHANNELS MUST BE SOD LINED WHERE VELOCITIES OF STORM WATER RUNOFF ARE 3 ~ 6 FPS.**

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

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CUDE ENGINEERS

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San Antonio, Texas 78231
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CORLEY FARMS UNIT 5

DRAIN PLAN & PROFILE - DRAIN '5-B'

DATE
06/02/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

	DATE	
1.	11/7/24	PERMITTING COMMENTS
2.	11/7/24	PERMITTING COMMENTS
3.	5/27/25	GRADING REVISION
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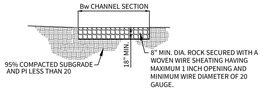
STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
5/2/25

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C16

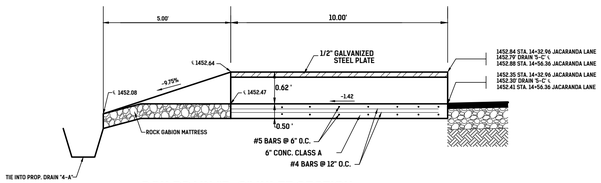
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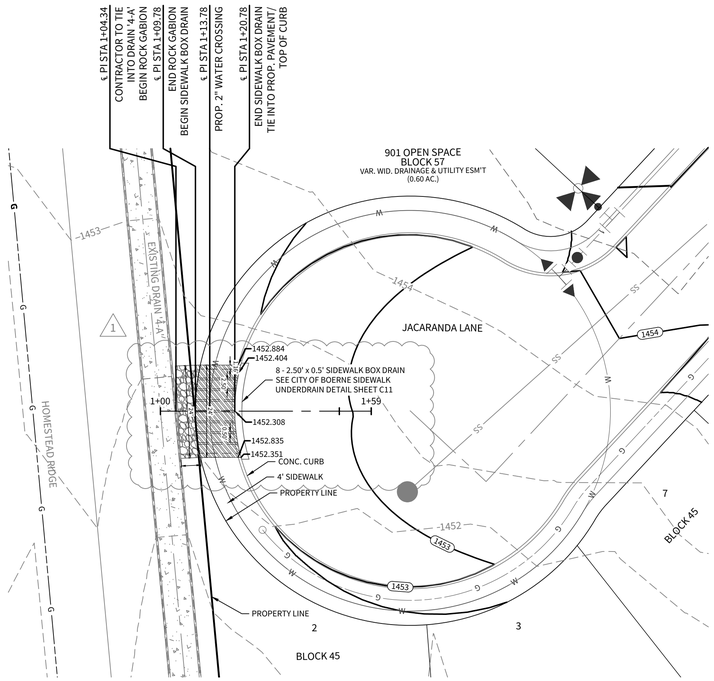
GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL

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



BOX DRAIN "5-C" INLET SECTION

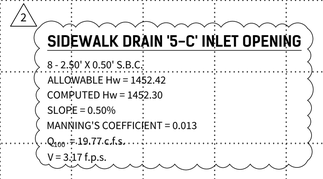
(N.T.S)

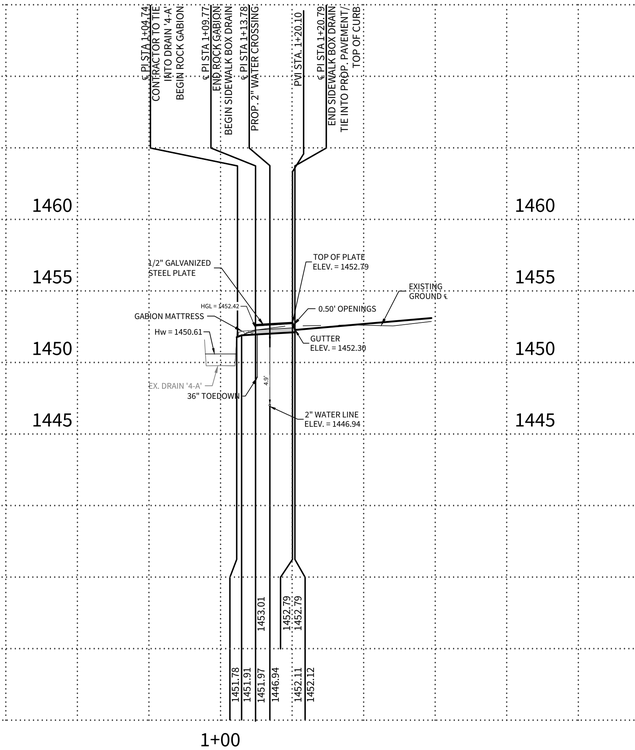


DRAIN '5-C'

STA. 1+00.00 TO END

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







LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED RIGHT OF WAY
- EXISTING 1' CONTOUR — 499
- EXISTING 5' CONTOUR — 500
- PROPOSED 1' CONTOUR — 499
- PROPOSED 5' CONTOUR — 500
- PROPOSED GAS MAIN — G
- PROPOSED CULVERT
- CONCRETE RIP RAP
- ROCK RUBBLE

NOTES:

1. ALL CONCRETE LINING SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI IN 28 DAYS
2. 85% OF CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF BOERNE. HYDROMULCH PAY ITEM TO INCLUDE SOIL, SEEDING, OR SODDING & WATERING FOR THE TIME PERIOD NEEDED TO ACHIEVE 85% VEGETATION.
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P:(210) 681.2951 F: (210) 523.7112

CORLEY FARMS UNIT 5

DRAIN PLAN & PROFILE - DRAIN '5-C'

DATE
04/09/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

Δ	DATE	
1.	11/7/24	PERMITTING COMMENTS
2.	04/7/25	PERMITTING COMMENTS
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STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
4/11/25

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C17

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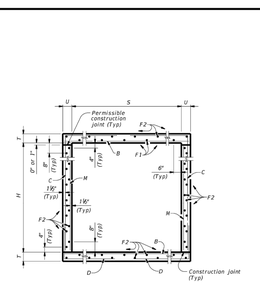
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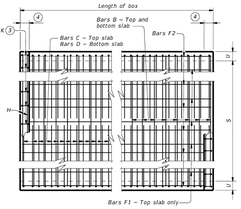
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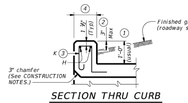
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TYPICAL SECTION



PLAN OF REINF STEEL



SECTION THRU CURB

(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 3'-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, H, 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'-7" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

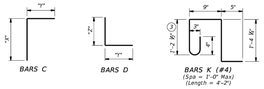
CONSTRUCTION NOTES:
Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'c = 4,000 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

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-3 & 4

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SECTION DIMENSIONS				FILL HEIGHT (3)	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																								QUANTITIES					
					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.	Size	Spa	Length	Weight	No.	Length	Wt.	No.	Length	Weight	No.	Length	Wt.	No.	Wt.	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
5'-0"	2'-0"	8"	7"	20	108	#6	9"	5'-11"	960	108	#5	9"	6'-4"	713	2'-7"	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	80.8	0.5	55	16.1	3,285
5'-0"	2'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	6'-5"	723	2'-8"	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	81.2	0.5	55	17.6	3,304
5'-0"	3'-0"	8"	7"	20	108	#6	9"	5'-11"	960	108	#5	9"	7'-4"	826	3'-7"	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	88.0	0.5	55	17.8	3,576
5'-0"	3'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	7'-5"	835	3'-8"	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	88.5	0.5	55	19.3	3,594
5'-0"	4'-0"	8"	7"	20	108	#6	9"	5'-11"	960	108	#5	9"	8'-4"	939	4'-7"	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	92.7	0.5	55	19.5	3,762
5'-0"	4'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	8'-5"	948	4'-8"	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	93.1	0.5	55	21.1	3,780
5'-0"	5'-0"	8"	7"	20	108	#6	9"	5'-11"	960	108	#5	9"	9'-4"	1,051	5'-7"	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	100.0	0.5	55	21.3	4,053
5'-0"	5'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	9'-5"	1,061	5'-8"	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	100.4	0.5	55	22.8	4,072
6'-0"	2'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	6"	6'-8"	751	2'-7"	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	89.4	0.5	63	18.1	3,637
6'-0"	2'-0"	9"	7"	30	108	#6	9"	6'-11"	1,122	162	#5	6"	6'-9"	1,141	2'-8"	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	109.0	0.5	63	19.9	4,422
6'-0"	2'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	6'-11"	1,169	2'-9"	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	0.531	110.2	0.5	69	22.6	4,477
6'-0"	3'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	7'-8"	864	2'-7"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	2'-0"	216	5	39'-9"	133	29	39'-9"	770	6'-11"	18	16	45	0.484	96.6	0.5	63	19.9	3,928
6'-0"	3'-0"	9"	7"	30	108	#6	9"	6'-11"	1,122	162	#5	6"	7'-9"	1,309	3'-8"	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	117.6	0.5	63	21.6	4,768
6'-0"	3'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	7'-11"	1,338	3'-9"	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	118.4	0.5	69	24.6	4,806
6'-0"	4'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	8'-8"	976	4'-7"	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	101.3	0.5	63	21.6	4,113
6'-0"	4'-0"	9"	7"	30	108	#6	9"	6'-11"	1,122	162	#5	6"	8'-9"	1,478	4'-8"	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	123.7	0.5	63	23.4	5,010
6'-0"	4'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	8'-11"	1,507	4'-9"	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	124.0	0.5	69	26.5	5,030
6'-0"	5'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	9'-8"	1,089	5'-7"	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	4,404
6'-0"	5'-0"	9"	7"	30	108	#6	9"	6'-11"	1,122	162	#5	6"	9'-9"	1,647	5'-8"	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	132.4	0.5	63	25.1	5,357
6'-0"	5'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	9'-11"	1,676	5'-9"	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	132.3	0.5	69	28.5	5,360
6'-0"	6'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	10'-8"	1,202	6'-7"	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	115.8	0.5	63	25.0	4,693
6'-0"	6'-0"	9"	7"	30	108	#6	9"	6'-11"	1,122	162	#5	6"	10'-9"	1,816	6'-8"	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	141.0	0.5	63	26.8	5,704
6'-0"	6'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	10'-11"	1,845	6'-9"	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	140.5	0.5	69	30.5	5,690

(3) 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

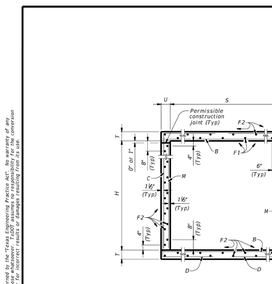
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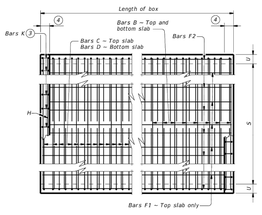
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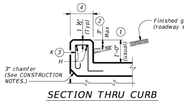
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FILE:



TYPICAL SECTION



PLAN OF REINF STEEL



SECTION THRU CURB

(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 3'-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'-7" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

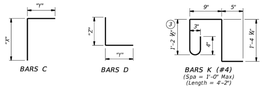
CONSTRUCTION NOTES:
Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'c = 4,000 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

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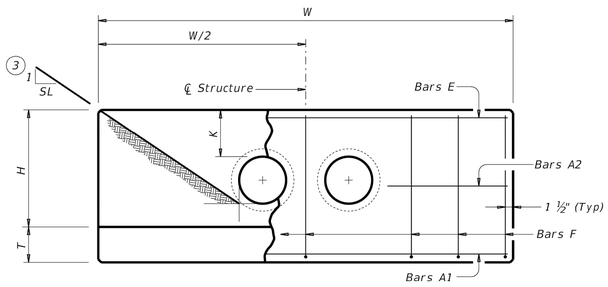
SECTION DIMENSIONS				FILL HEIGHT (3)	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																								QUANTITIES					
					Bars B				Bars C						Bars D						Bars M – #4			Bars F1 – #4 at 18" Spa			Bars F2 – #4 at 18" Spa			Bars H 4 – #4		Bars K		Per Foot of Barrel		Curb		Total	
S	H	T	U		No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Size	Spa	Length	Weight	No.	Length	Wt.	No.	Length	Weight	No.	Length	Wt.	No.	Wt.	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
5'-0"	2'-0"	8"	7"	20	108	#6	9"	5'-11"	960	108	#5	9"	6'-4"	713	2'-7"	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	80.8	0.5	55	16.1	3,285
5'-0"	2'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	6'-5"	723	2'-8"	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	81.2	0.5	55	17.6	3,304
5'-0"	3'-0"	8"	7"	20	108	#6	9"	5'-11"	960	108	#5	9"	7'-4"	826	3'-7"	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	88.0	0.5	55	17.8	3,576
5'-0"	3'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	7'-5"	835	3'-8"	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	88.5	0.5	55	19.3	3,594
5'-0"	4'-0"	8"	7"	20	108	#6	9"	5'-11"	960	108	#5	9"	8'-4"	939	4'-7"	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	92.7	0.5	55	19.5	3,762
5'-0"	4'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	8'-5"	948	4'-8"	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	93.1	0.5	55	21.1	3,780
5'-0"	5'-0"	8"	7"	20	108	#6	9"	5'-11"	960	108	#5	9"	9'-4"	1,051	5'-7"	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	100.0	0.5	55	21.3	4,053
5'-0"	5'-0"	9"	7"	30	108	#6	9"	5'-11"	960	108	#5	9"	9'-5"	1,061	5'-8"	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	100.4	0.5	55	22.8	4,072
6'-0"	2'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	6"	6'-8"	751	2'-7"	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	89.4	0.5	63	18.1	3,637
6'-0"	2'-0"	9"	7"	30	108	#6	9"	6'-11"	1,122	162	#5	6"	6'-9"	1,141	2'-8"	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	109.0	0.5	63	19.9	4,422
6'-0"	2'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	6'-11"	1,169	2'-9"	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	0.531	110.2	0.5	69	22.6	4,477
6'-0"	3'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	7'-8"	864	2'-7"	4'-1"	108	#5	9"	6'-9"	760	4'-1"	2'-8"	108	9"	2'-0"	216	5	39'-9"	133	29	39'-9"	770	6'-11"	18	16	45	0.484	96.6	0.5	63	19.9	3,928
6'-0"	3'-0"	9"	7"	30	108	#6	9"	6'-11"	1,122	162	#5	6"	7'-9"	1,309	3'-8"	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	117.6	0.5	63	21.6	4,768
6'-0"	3'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	7'-11"	1,338	3'-9"	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	118.4	0.5	69	24.6	4,806
6'-0"	4'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	8'-8"	976	4'-7"	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	101.3	0.5	63	21.6	4,113
6'-0"	4'-0"	9"	7"	30	108	#6	9"	6'-11"	1,122	162	#5	6"	8'-9"	1,478	4'-8"	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	123.7	0.5	63	23.4	5,010
6'-0"	4'-0"	10"	8"	30	108	#6	9"	7'-1"	1,149	162	#5	6"	8'-11"	1,507	4'-9"	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	124.0	0.5	69	26.5	5,030
6'-0"	5'-0"	8"	7"	20	108	#6	9"	6'-11"	1,122	108	#5	9"	9'-8"	1,089	5'-7"	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

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (5)

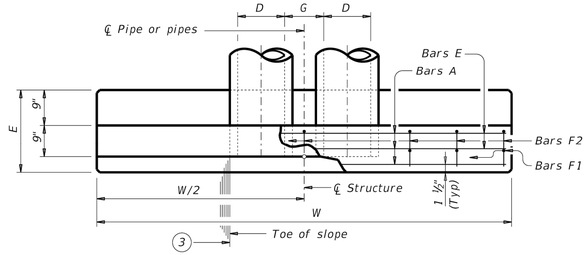
Slope	Dia of Pipe (D)	Values for One Pipe			Values To Be Added for Each Addt'l Pipe		
		W	Reinf (Lbs) (1)	Conc (CY) (2)	W	Reinf (Lbs) (1)	Conc (CY) (2)
2:1	12"	9' – 0"	122	1.1	1' – 9"	15	0.2
	15"	10' – 3"	136	1.3	2' – 2"	16	0.2
	18"	11' – 6"	163	1.5	2' – 8"	19	0.3
	21"	12' – 9"	200	1.8	3' – 1"	31	0.4
	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

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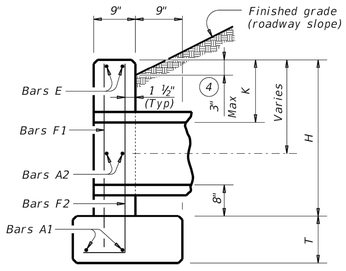
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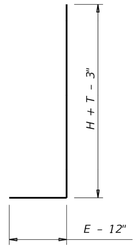
ELEVATION



PLAN OF NON-SKEWED PIPES



SECTION AT CENTER OF PIPE



BARS F2

(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).

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 = 4,000 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 PARALLEL WINGS FOR NON-SKEWED PIPE CULVERTS

CH-PW-0

FILE: chpw0ste-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
	DIST	COUNTY		SHEET NO.

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

CORLEY FARMS UNIT 5

TXDOT CONCRETE HEADWALLS NON-SKEWED DETAIL

DATE: 01/28/2025
PROJECT NO.: 03481.012
DRAWN BY: C3
CHECKED BY: XV/AL

REVISIONS

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

ANDREW R. LOWRY 123410 LICENSED PROFESSIONAL ENGINEER 02/10/2025

CUDE ENGINEERS
TBPE No. F455
TBPLS No. 10048500

SAWS JOB NO.: 22-1190

C19

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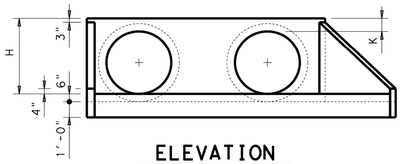
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TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (4)

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"	3'- 3 1/2"	2'- 8 3/4"	2'-10"	3'- 3 1/4"	81	0.5	1'- 9 3/4"	20	0.2
	15"	3'-10 1/2"	3'- 0 1/4"	3'- 4"	3'-10 1/4"	93	0.6	2'- 3"	25	0.3
	18"	4'- 5 1/2"	3'- 4"	3'-10"	4'- 5"	115	0.8	2'- 9 1/4"	32	0.4
	21"	5'- 0 3/4"	3'- 7 1/2"	4'- 4"	5'- 0"	128	0.9	3'- 2 1/4"	43	0.5
	24"	5'- 9 1/4"	4'- 0 3/4"	4'-10"	5'- 7"	148	1.1	3'- 8 1/2"	51	0.6
	27"	6'- 4 1/2"	4'- 4 1/2"	5'- 4"	6'- 2"	158	1.3	4'- 0 3/4"	57	0.7
	30"	6'-11 1/2"	4'- 8"	5'-10"	6'- 8 3/4"	181	1.5	4'- 5 3/4"	67	0.8
	33"	7'- 6 1/2"	4'-11 3/4"	6'- 4"	7'- 3 3/4"	197	1.7	4'-10"	73	0.9
	36"	8'- 1 3/4"	5'- 3 1/4"	6'-10"	7'-10 3/4"	223	1.9	5'- 3 1/4"	82	1.1
	42"	9'- 3 3/4"	5'-10 1/2"	7'-10"	9'- 0 1/2"	263	2.4	6'- 0 1/2"	100	1.4
	48"	10'- 9 1/2"	6'- 5 3/4"	9'- 4"	10'- 9 1/4"	315	3.2	6'- 9 3/4"	121	1.8
	54"	11'-11 3/4"	7'- 1"	10'- 4"	11'-11 1/4"	372	3.8	7'- 9 1/4"	154	2.2
	60"	13'- 1 3/4"	7'- 8 1/4"	11'- 4"	13'- 1"	419	4.5	8'- 6 1/2"	178	2.6
	66"	14'- 4"	8'- 3 1/2"	12'- 4"	14'- 3"	475	5.3	9'- 0 3/4"	198	3.0
	72"	15'- 6 1/4"	8'-10 3/4"	13'- 4"	15'- 4 3/4"	523	6.1	9'- 8"	220	3.3
3:1	12"	4'- 1 1/4"	2'- 8 3/4"	4'- 3"	4'-11"	104	0.7	1'- 9 3/4"	23	0.2
	15"	4'-10"	3'- 0 1/4"	5'- 0"	5'- 9 1/4"	123	0.9	2'- 3"	29	0.3
	18"	5'- 7"	3'- 4"	5'- 9"	6'- 7 3/4"	152	1.1	2'- 9 1/4"	37	0.5
	21"	6'- 3 3/4"	3'- 7 1/2"	6'- 6"	7'- 6"	171	1.3	3'- 2 1/4"	49	0.6
	24"	7'- 2"	4'- 0 3/4"	7'- 3"	8'- 4 1/2"	198	1.6	3'- 8 1/2"	59	0.7
	27"	7'-11"	4'- 4 1/2"	8'- 0"	9'- 2 3/4"	219	1.9	4'- 0 3/4"	68	0.9
	30"	8'- 7 3/4"	4'- 8"	8'- 9"	10'- 1 1/4"	254	2.2	4'- 5 3/4"	79	1.0
	33"	9'- 4 1/2"	4'-11 3/4"	9'- 6"	10'-11 3/4"	274	2.5	4'-10"	86	1.2
	36"	10'- 1 1/4"	5'- 3 1/4"	10'- 3"	11'-10"	305	2.9	5'- 3 1/4"	97	1.4
	42"	11'- 7"	5'-10 1/2"	11'- 9"	13'- 6 3/4"	371	3.7	6'- 0 1/2"	122	1.8
	48"	13'- 5 3/4"	6'- 5 3/4"	14'- 0"	16'- 2"	455	4.9	6'- 9 3/4"	152	2.4
	54"	14'-11 1/2"	7'- 1"	15'- 6"	17'-10 3/4"	532	5.9	7'- 9 1/4"	190	3.0
	60"	16'- 5"	7'- 8 1/4"	17'- 0"	19'- 7 1/2"	604	7.0	8'- 6 1/2"	224	3.5
	66"	17'-10 3/4"	8'- 3 1/2"	18'- 6"	21'- 4 1/4"	687	8.1	9'- 0 3/4"	248	4.0
	72"	19'- 4 1/4"	8'-10 3/4"	20'- 0"	23'- 1 1/4"	772	9.4	9'- 8"	281	4.6
4:1	12"	4'-11"	2'- 8 3/4"	5'- 8"	6'- 6 1/2"	132	0.9	1'- 9 3/4"	26	0.3
	15"	5'- 9 1/2"	3'- 0 1/4"	6'- 8"	7'- 8 1/2"	158	1.2	2'- 3"	33	0.4
	18"	6'- 8 1/4"	3'- 4"	7'- 8"	8'-10 1/4"	194	1.5	2'- 9 1/4"	43	0.6
	21"	7'- 6 3/4"	3'- 7 1/2"	8'- 8"	10'- 0"	226	1.8	3'- 2 1/4"	57	0.7
	24"	8'- 6 3/4"	4'- 0 3/4"	9'- 8"	11'- 2"	258	2.2	3'- 8 1/2"	68	0.9
	27"	9'- 5 1/4"	4'- 4 1/2"	10'- 8"	12'- 3 3/4"	286	2.6	4'- 0 3/4"	79	1.1
	30"	10'- 4"	4'- 8"	11'- 8"	13'- 5 3/4"	327	3.0	4'- 5 3/4"	91	1.3
	33"	11'- 2 1/2"	4'-11 3/4"	12'- 8"	14'- 7 1/2"	360	3.5	4'-10"	104	1.5
	36"	12'- 1"	5'- 3 1/4"	13'- 8"	15'- 9 1/4"	403	4.0	5'- 3 1/4"	115	1.7
	42"	13'-10"	5'-10 1/2"	15'- 8"	18'- 1"	487	5.1	6'- 0 1/2"	144	2.2
	48"	16'- 2 1/4"	6'- 5 3/4"	18'- 8"	21'- 6 3/4"	602	6.8	6'- 9 3/4"	183	3.0
	54"	17'-11 1/4"	7'- 1"	20'- 8"	23'-10 1/4"	717	8.2	7'- 9 1/4"	231	3.7
	60"	19'- 8 1/4"	7'- 8 1/4"	22'- 8"	26'- 2"	812	9.8	8'- 6 1/2"	270	4.4
	66"	21'- 5 1/2"	8'- 3 1/2"	24'- 8"	28'- 5 3/4"	933	11.4	9'- 0 3/4"	305	5.0
	72"	23'- 2 1/2"	8'-10 3/4"	26'- 8"	30'- 9 1/2"	1046	13.2	9'- 8"	342	5.7
6:1	12"	6'- 6 3/4"	2'- 8 3/4"	8'- 6"	9'- 9 3/4"	188	1.4	1'- 9 3/4"	30	0.4
	15"	7'- 8 3/4"	3'- 0 1/4"	10'- 0"	11'- 6 1/2"	226	1.9	2'- 3"	40	0.5
	18"	8'-10 3/4"	3'- 4"	11'- 6"	13'- 3 1/4"	277	2.4	2'- 9 1/4"	51	0.7
	21"	10'- 0 3/4"	3'- 7 1/2"	13'- 0"	15'- 0 1/4"	328	2.9	3'- 2 1/4"	69	1.0
	24"	11'- 4 1/4"	4'- 0 3/4"	14'- 6"	16'- 9"	371	3.5	3'- 8 1/2"	83	1.3
	27"	12'- 6 1/4"	4'- 4 1/2"	16'- 0"	18'- 5 3/4"	422	4.2	4'- 0 3/4"	98	1.5
	30"	13'- 8 1/4"	4'- 8"	17'- 6"	20'- 2 1/2"	482	4.9	4'- 5 3/4"	113	1.8
	33"	14'-10 1/4"	4'-11 3/4"	19'- 0"	21'-11 1/4"	543	5.7	4'-10"	130	2.0
	36"	16'- 0 1/4"	5'- 3 1/4"	20'- 6"	23'- 8"	598	6.5	5'- 3 1/4"	145	2.4
	42"	18'- 4 1/2"	5'-10 1/2"	23'- 6"	27'- 1 1/2"	732	8.4	6'- 0 1/2"	184	3.1
	48"	21'- 6 3/4"	6'- 5 3/4"	28'- 0"	32'- 4"	936	11.4	6'- 9 3/4"	240	4.1
	54"	23'-10 3/4"	7'- 1"	31'- 0"	35'- 9 1/2"	1112	13.8	7'- 9 1/4"	303	5.2
	60"	26'- 2 3/4"	7'- 8 1/4"	34'- 0"	39'- 3"	1266	16.4	8'- 6 1/2"	358	6.2



ELEVATION

Showing dimensions

1. Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.
2. For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, 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" Min cover for pipes.
4. Quantities shown are for one structure end only (one headwall).
5. Min Length = 6" + 3" x $\left(\frac{12 \times H - 7}{12 \times L}\right)$

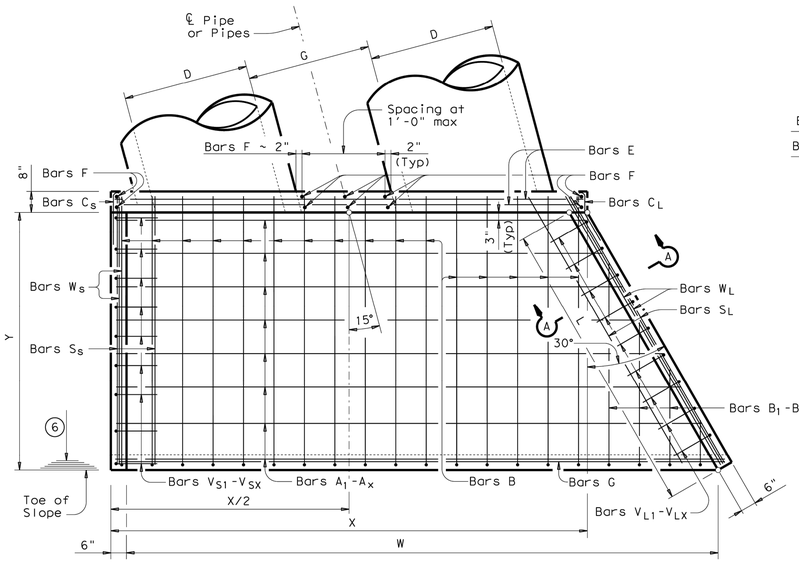
   Max Length = 12 x H - 3" x $\left(\frac{12 \times H - 7}{12 \times L}\right)$ - 1"
6. Lengths of wings based on SL:1 Slope along this line.

TABLE OF REINFORCING STEEL (4)

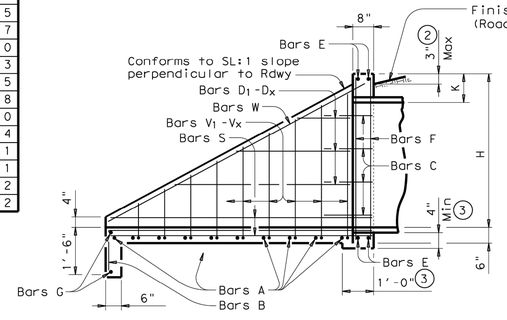
Bar	Size	Spa	No.
A	# 4	1'-0"	~
B	# 3	1'-6"	~
CL	# 4	1'-0"	~
CS	# 4	1'-0"	~
D	# 3	1'-0"	~
E	# 5	~	4
F	# 5	~	~
G	# 3	~	2
SL	# 4	~	3
SS	# 4	~	3
V	# 4	1'-0"	~
WL	# 5	~	2
WS	# 5	~	2

TABLE OF CONSTANT DIMENSIONS

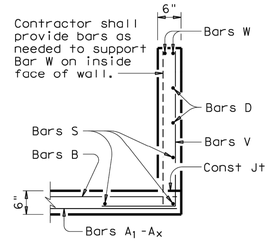
DIA OF PIPE, D	G	K	H
12"	9"	1'- 0"	2'- 0"
15"	11"	1'- 0"	2'- 3"
18"	1'- 2"	1'- 0"	2'- 6"
21"	1'- 4"	1'- 0"	2'- 9"
24"	1'- 7"	1'- 0"	3'- 0"
27"	1'- 8"	1'- 0"	3'- 3"
30"	1'-10"	1'- 0"	3'- 6"
33"	1'-11"	1'- 0"	3'- 9"
36"	2'- 1"	1'- 0"	4'- 0"
42"	2'- 4"	1'- 0"	4'- 6"
48"	2'- 7"	1'- 3"	5'- 3"
54"	3'- 0"	1'- 3"	5'- 9"
60"	3'- 3"	1'- 3"	6'- 3"
66"	3'- 3"	1'- 3"	6'- 9"
72"	3'- 4"	1'- 3"	7'- 3"



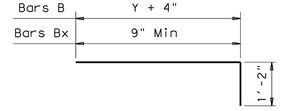
PLAN



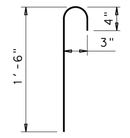
TYPICAL WING ELEVATION



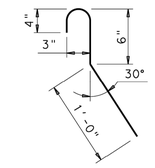
SECTION A-A



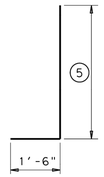
BARS B & B1-Bx



BARS CS
(2'-0" long)



BARS CL
(2'-0" long)



BARS VS & VL

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

Reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.

All reinforcing steel shall be Grade 60.

All concrete shall be Class "C" and shall have a minimum compressive strength of 4,000 psi.

No bridge rails of any type may be mounted directly to these culvert headwalls.

Texas Department of Transportation | Bridge Division Standard

CONCRETE HEADWALLS WITH FLARED WINGS FOR 15° SKEW PIPE CULVERTS

CH-FW-15

FILE: chfw15se.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2010	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

CORLEY FARMS
UNIT 5

TXDOT FLARED WING DETAIL

DATE
01/28/2025
PROJECT NO.
03481.012
DRAWN BY
C3
CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
02/10/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

SAWS JOB NO.
22-1190

C20

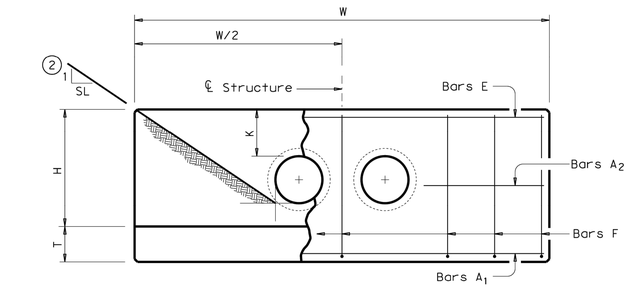
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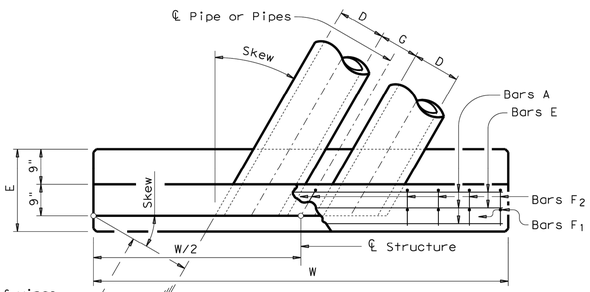
TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (4)

SLOPE	DIA OF PIPE, D	15 Degrees						30 Degrees						45 Degrees					
		Values for one Pipe			Values to be added for each addt'l Pipe			Values for one Pipe			Values to be added for each addt'l Pipe			Values for one Pipe			Values to be added for each addt'l Pipe		
		W	Reinf (Lbs)	Conc (CY) (1)	W	Reinf (Lbs)	Conc (CY) (1)	W	Reinf (Lbs)	Conc (CY) (1)	W	Reinf (Lbs)	Conc (CY) (1)	W	Reinf (Lbs)	Conc (CY) (1)	W	Reinf (Lbs)	Conc (CY) (1)
2:1	12"	9'- 4"	124	1.1	1'- 9 3/4"	15	0.2	10'- 5"	130	1.2	2'- 0"	16	0.2	12'- 9"	159	1.5	2'- 5 3/4"	17	0.3
	15"	10'- 7"	136	1.3	2'- 3"	17	0.2	11'-10"	159	1.5	2'- 6"	18	0.2	14'- 6"	191	1.8	3'- 0 3/4"	20	0.3
	18"	11'-11"	165	1.5	2'- 9"	19	0.3	13'- 3"	174	1.7	3'- 1"	29	0.3	16'- 3"	207	2.1	3'- 9 1/4"	33	0.4
	21"	13'- 2"	203	1.9	3'- 2 1/4"	31	0.4	14'- 9"	233	2.1	3'- 6 3/4"	33	0.4	18'- 0"	276	2.6	4'- 4 1/4"	36	0.5
	24"	14'- 6"	240	2.1	3'- 8 1/4"	34	0.4	16'- 2"	251	2.4	4'- 1 3/4"	36	0.5	19'-10"	318	2.9	5'- 0 3/4"	39	0.6
	27"	15'- 9"	258	2.5	4'- 0 3/4"	38	0.5	17'- 7"	292	2.8	4'- 6 1/4"	39	0.6	21'- 7"	342	3.4	5'- 6 1/4"	44	0.7
	30"	17'- 1"	297	2.8	4'- 5 3/4"	40	0.6	19'- 1"	311	3.1	5'- 0"	42	0.6	23'- 4"	388	3.8	6'- 1 3/4"	47	0.8
	33"	18'- 5"	320	3.3	4'- 9 3/4"	43	0.6	20'- 6"	358	3.6	5'- 4 3/4"	46	0.7	25'- 1"	439	4.4	6'- 7 1/4"	51	0.9
	36"	19'- 8"	401	4.0	5'- 3"	47	0.9	21'-11"	422	4.5	5'-10 3/4"	50	0.9	26'-10"	517	5.5	7'- 2 1/4"	55	1.2
	42"	22'- 3"	476	5.0	6'- 0 3/4"	53	1.1	24'-10"	528	5.6	6'- 8 3/4"	56	1.2	30'- 5"	634	6.9	8'- 3"	76	1.4
	48"	25'-11"	577	6.6	6'- 9 3/4"	60	1.3	28'-10"	637	7.3	7'- 7 1/4"	79	1.5	35'- 4"	791	9.0	9'- 3 3/4"	88	1.8
	54"	28'- 6"	711	7.8	7'- 9"	83	1.6	31'- 9"	781	8.7	8'- 8"	87	1.8	38'-11"	958	10.7	10'- 7 1/4"	97	2.2
	60"	31'- 1"	805	9.2	8'- 6 1/4"	91	1.9	34'- 8"	881	10.2	9'- 6 1/4"	97	2.1	42'- 5"	1113	12.5	11'- 8"	124	2.6
	66"	33'- 8"	907	10.6	9'- 0 3/4"	98	2.1	37'- 6"	1028	11.8	10'- 1 1/4"	102	2.4	46'- 0"	1235	14.5	12'- 4 1/4"	132	2.9
	72"	36'- 3"	1071	12.1	9'- 8"	105	2.4	40'- 5"	1207	13.5	10'- 9 1/4"	110	2.6	49'- 6"	1446	16.6	13'- 2 1/4"	141	3.2
3:1	12"	13'- 6"	178	1.6	1'- 9 3/4"	15	0.2	15'- 0"	189	1.8	2'- 0"	15	0.2	18'- 5"	237	2.2	2'- 5 3/4"	17	0.2
	15"	15'- 3"	212	1.9	2'- 3"	17	0.2	17'- 0"	223	2.1	2'- 6"	17	0.3	20'-10"	276	2.6	3'- 0 3/4"	20	0.3
	18"	17'- 1"	231	2.3	2'- 9"	19	0.3	19'- 1"	259	2.5	3'- 1"	29	0.3	23'- 4"	318	3.1	3'- 9 1/4"	32	0.4
	21"	18'-11"	306	2.7	3'- 2 1/4"	31	0.4	21'- 1"	339	3.0	3'- 6 3/4"	33	0.4	25'-10"	413	3.7	4'- 4 1/4"	36	0.5
	24"	20'- 8"	345	3.1	3'- 8 3/4"	35	0.4	23'- 1"	384	3.5	4'- 1 3/4"	36	0.5	28'- 3"	462	4.2	5'- 0 3/4"	40	0.6
	27"	22'- 6"	376	3.7	4'- 0 3/4"	38	0.5	25'- 1"	438	4.1	4'- 6 1/4"	39	0.6	30'- 9"	522	5.0	5'- 6 1/4"	44	0.7
	30"	24'- 4"	422	4.1	4'- 5 3/4"	40	0.6	27'- 2"	466	4.6	5'- 0"	42	0.6	33'- 3"	578	5.6	6'- 1 3/4"	47	0.8
	33"	26'- 2"	476	4.8	4'-10"	43	0.6	29'- 2"	522	5.3	5'- 4 3/4"	46	0.7	35'- 9"	644	6.5	6'- 7 1/4"	51	0.9
	36"	27'-11"	590	5.9	5'- 3 1/4"	47	0.8	31'- 2"	645	6.6	5'-10 3/4"	50	0.9	38'- 2"	787	8.0	7'- 2 1/4"	56	1.2
	42"	31'- 7"	684	7.3	6'- 0 1/4"	53	1.1	35'- 3"	776	8.2	6'- 8 3/4"	56	1.2	43'- 2"	933	10.0	8'- 3"	79	1.4
	48"	36'- 9"	880	9.6	6'- 9 3/4"	61	1.3	41'- 0"	953	10.7	7'- 7 1/4"	81	1.5	50'- 2"	1166	13.1	9'- 3 3/4"	88	1.8
	54"	40'- 5"	1065	11.4	7'- 9"	85	1.6	45'- 0"	1185	12.7	8'- 8"	89	1.8	55'- 2"	1435	15.5	10'- 7 1/4"	97	2.2
	60"	44'- 0"	1224	13.3	8'- 6 1/4"	93	1.9	49'- 1"	1356	14.8	9'- 6 1/4"	96	2.1	60'- 1"	1627	18.2	11'- 8"	124	2.6
	66"	47'- 7"	1357	15.4	9'- 1"	98	2.1	53'- 1"	1497	17.2	10'- 1 1/4"	103	2.3	65'- 1"	1834	21.1	12'- 4 1/4"	130	2.9
	72"	51'- 3"	1624	17.7	9'- 8"	105	2.3	57'- 2"	1787	19.7	10'- 9 1/4"	109	2.6	70'- 0"	2210	24.1	13'- 2 1/4"	139	3.2
4:1	12"	17'- 7"	232	2.1	1'- 9 3/4"	15	0.2	19'- 8"	259	2.4	2'- 0"	16	0.2	24'- 0"	314	2.9	2'- 5 3/4"	18	0.2
	15"	19'-11"	272	2.5	2'- 3"	17	0.2	22'- 3"	301	2.8	2'- 6"	18	0.3	27'- 3"	361	3.5	3'- 0 3/4"	21	0.3
	18"	22'- 3"	313	3.0	2'- 9"	19	0.3	24'-10"	344	3.3	3'- 1"	29	0.3	30'- 5"	427	4.0	3'- 9 1/4"	32	0.4
	21"	24'- 7"	407	3.6	3'- 2 1/4"	31	0.4	27'- 5"	446	4.0	3'- 6 3/4"	33	0.4	33'- 7"	549	4.9	4'- 4 1/4"	36	0.5
	24"	26'-11"	455	4.1	3'- 8 3/4"	35	0.4	30'- 0"	499	4.5	4'- 1 3/4"	36	0.5	36'- 9"	609	5.6	5'- 0 3/4"	40	0.6
	27"	29'- 3"	514	4.8	4'- 0 3/4"	38	0.5	32'- 7"	562	5.4	4'- 6 1/4"	40	0.6	39'-11"	703	6.6	5'- 6 1/4"	43	0.7
	30"	31'- 7"	568	5.4	4'- 5 3/4"	40	0.6	35'- 3"	620	6.0	5'- 0"	42	0.6	43'- 2"	768	7.4	6'- 1 3/4"	49	0.8
	33"	33'-11"	634	6.2	4'-10"	43	0.7	37'-10"	710	7.0	5'- 4 3/4"	46	0.7	46'- 4"	848	8.5	6'- 7 1/4"	52	0.9
	36"	36'- 3"	776	7.7	5'- 3"	48	0.9	40'- 5"	868	8.6	5'-10 3/4"	49	0.9	49'- 6"	1058	10.6	7'- 2 1/4"	56	1.1
	42"	40'-11"	921	9.6	6'- 0 1/4"	53	1.0	45'- 7"	1022	10.7	6'- 8 3/4"	57	1.2	55'-10"	1262	13.1	8'- 3"	78	1.4
	48"	47'- 7"	1152	12.6	6'-10"	61	1.3	53'- 1"	1268	14.0	7'- 7 1/4"	80	1.5	65'- 1"	1579	17.2	9'- 3 3/4"	86	1.8
	54"	52'- 3"	1416	14.9	7'- 9 1/4"	86	1.6	58'- 4"	1589	16.6	8'- 8"	89	1.8	71'- 5"	1916	20.4	10'- 7 1/4"	95	2.2
	60"	56'-11"	1606	17.5	8'- 6 3/4"	92	1.9	63'- 6"	1798	19.5	9'- 6 1/4"	95	2.1	77'- 9"	2184	23.9	11'- 8"	122	2.6
	66"	61'- 7"	1811	20.2	9'- 0 3/4"	97	2.1	68'- 8"	2011	22.5	10'- 1 1/4"	101	2.4	84'- 2"	2464	27.6	12'- 4 1/4"	131	2.9
	72"	66'- 3"	2142	23.2	9'- 8"	104	2.4	73'-11"	2371	25.9	10'- 9 1/4"	108	2.6	90'- 6"	2929	31.7	13'- 2 1/4"	138	3.2
6:1	12"	25'-11"	342	3.1	1'- 9 3/4"	15	0.2	28'-10"	374	3.5	2'- 0"	16	0.2	35'- 4"	456	4.3	2'- 5 3/4"	17	0.2
	15"	29'- 3"	390	3.7	2'- 3"	17	0.2	32'- 7"	442	4.2	2'- 6"	18	0.2	39'-11"	549	5.1	3'- 0 3/4"	20	0.3
	18"	32'- 7"	459	4.4	2'- 9"	20	0.3	36'- 4"	515	4.9	3'- 1"	29	0.3	44'- 7"	629	6.0	3'- 9 1/4"	33	0.4
	21"	36'- 0"	608	5.3	3'- 2 1/4"	31	0.4	40'- 2"	660	5.9	3'- 6 3/4"	33	0.4	49'- 2"	823	7.2	4'- 4 1/4"	38	0.5
	24"	39'- 4"	672	6.0	3'- 8 3/4"	35	0.4	43'-11"	748	6.7	4'- 1 3/4"	36	0.5	53'- 9"	920	8.2	5'- 0 3/4"	42	0.6
	27"	42'- 8"	770	7.1	4'- 0 3/4"	38	0.5	47'- 8"	852	8.0	4'- 6 1/4"	41	0.5	58'- 4"	1039	9.7	5'- 6 1/4"	45	0.7
	30"	46'- 1"	839	8.0	4'- 5 3/4"	40	0.6	51'- 5"	949	8.9	5'- 0"	44	0.6	62'-11"	1154	10.9	6'- 1 3/4"	48	0.8
	33"	49'- 5"	947	9.2	4'-10"	45	0.7	55'- 2"	1040	10.3	5'- 4 3/4"	48	0.7	67'- 6"	1284	12.6	6'- 7 1/4"	50	0.9
	36"	52'-10"	1151	11.4	5'- 3"	49	0.8	58'-11"	1287	12.7	5'-10 3/4"	51	1.0	72'- 1"	1575	15.6	7'- 2 1/4"	55	1.1
	42"	59'- 6"	1365	14.2	6'- 0 1/4"	55	1.0	66'- 5"	1522	15.8	6'- 8 3/4"	57	1.2	81'- 4"	1867	19.4	8'- 3"	76	1.4
	48"	69'- 4"	1729	18.5	6'-10"	59	1.3	77'- 4"	1934	20.7	7'- 7 1/4"	79	1.5	94'- 9"	2360	25.3	9'- 3 3/4"	86	1.8
	54"	76'- 1"	2130	22.0	7'- 9 1/4"	83	1.6	84'-10"	2370	24.6	8'- 8"	87	1.8	103'-11"	2904	30.1	10'- 7 1/4"	95	2.2
	60"	82'-10"	2414	25.8	8'- 6 3/4"	90	1.9	92'- 5"	2673	28.8	9'- 6 1/4"	94	2.1	113'-2"	3286	35.3	11'- 8"	122	2.6
	66"	89'- 7"	2712	29.9	9'- 0 3/4"	96	2.1	99'-11"	3030	33.3	10'- 1 1/4"	101	2.4	122'-4"	3689	40.8	12'- 4 1/4"	130	2.9
	72"	96'- 3"	3210	34.2	9'- 8"	102	2.4	107'-5"	3572	38.2	10'- 9 1/4"	108	2.6	131'-6"	4364	46.8	13'- 2 1/4"	139	3.2

DATE:
FILE:



ELEVATION

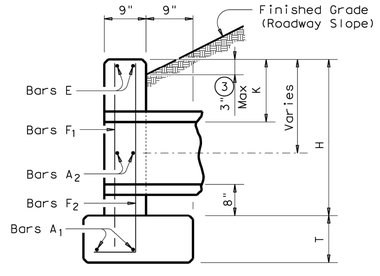


PLAN OF SKEWED PIPES

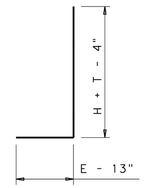
Showing 30° Skew

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

(2) Toe of Slope



℄ SECTION



BARS F2

TABLE OF CONSTANT DIMENSIONS

DIA OF PIPE, D	G	K	H	T	E
12"	9"	1'- 0"	2'- 8"	9"	1'- 9"
15"	11"	1'- 0"	2'-11"	9"	1'- 9"
18"	1'- 2"	1'- 0"	3'- 2"	9"	1'- 9"
21"	1'- 4"	1'- 0"	3'- 5"	9"	2'- 0"
24"	1'- 7"	1'- 0"	3'- 8"	9"	2'- 0"
27"	1'- 8"	1'- 0"	3'-11"	9"	2'- 3"
30"	1'-10"	1'- 0"	4'- 2"	9"	2'- 3"
33"	1'-11"	1'- 0"	4'- 5"	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 (4)

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

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

(2) Indicated slope is perpendicular to centerline Pipe or Pipes.

(3) For vehicle safety, curbs shall project no more than 3" above finished grade. Curb heights shall be reduced, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

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

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

Reinforcing steel shall be placed with the center of the outside layer of bars 2" from the surface of the concrete.

All reinforcing steel shall be Grade 60.

All concrete shall be Class "C" and shall have a minimum compressive strength of 4,000 psi.

No bridge rails of any type may be mounted directly to these culvert headwalls.

Texas Department of Transportation | Bridge Division Standard

CONCRETE HEADWALLS WITH PARALLEL WINGS FOR SKEWED PIPE CULVERTS

CH-PW-S

FILE: chpwsste.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

CUDEENGINEERS.COM

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

CORLEY FARMS UNIT 5

TXDOT PARALLEL WING DETAIL

DATE
01/28/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
02/10/2025

CUDE ENGINEERS
TBPE No. F455
TBPLS No. 10048500

SAWS JOB NO.
22-1190

C21

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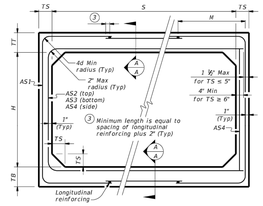
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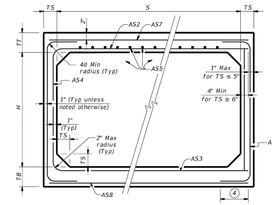
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BOX DATA

SECTION DIMENSIONS					Fill Height (ft.)	M (Min) (in.)	REINFORCING (sq. in. / ft.) ②							① Lift Weight (tons)
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)			AS1	AS2	AS3	AS4	AS5	AS7	AS8	
4	2	7.5	6	5	< 2	-	0.18	0.27	0.15	0.12	0.18	0.18	0.14	4.5
4	2	5	5	5	2 < 3	38	0.18	0.19	0.17	0.12	-	-	-	3.6
4	2	5	5	5	3 - 5	38	0.13	0.13	0.12	-	-	-	-	3.6
4	2	5	5	5	10	38	0.12	0.12	0.12	0.12	-	-	-	3.6
4	2	5	5	5	15	38	0.14	0.16	0.16	0.12	-	-	-	3.6
4	2	5	5	5	20	38	0.18	0.20	0.21	0.12	-	-	-	3.6
4	2	5	5	5	25	38	0.23	0.25	0.25	0.12	-	-	-	3.6
4	2	5	5	5	30	38	0.28	0.30	0.30	0.12	-	-	-	3.6
4	3	7.5	6	5	< 2	-	0.18	0.31	0.18	0.12	0.18	0.18	0.14	5.0
4	3	5	5	5	2 < 3	38	0.15	0.23	0.20	0.12	-	-	-	4.1
4	3	5	5	5	3 - 5	38	0.12	0.16	0.16	0.12	-	-	-	4.1
4	3	5	5	5	10	38	0.12	0.14	0.14	0.12	-	-	-	4.1
4	3	5	5	5	15	38	0.12	0.18	0.18	0.12	-	-	-	4.1
4	3	5	5	5	20	38	0.14	0.23	0.24	0.12	-	-	-	4.1
4	3	5	5	5	25	38	0.17	0.29	0.29	0.12	-	-	-	4.1
4	3	5	5	5	30	38	0.21	0.35	0.35	0.12	-	-	-	4.1
4	4	7.5	6	5	< 2	-	0.18	0.33	0.20	0.12	0.18	0.18	0.14	5.5
4	4	5	5	5	2 < 3	38	0.12	0.26	0.23	0.12	-	-	-	4.6
4	4	5	5	5	3 - 5	38	0.12	0.18	0.18	0.12	-	-	-	4.6
4	4	5	5	5	10	38	0.12	0.15	0.15	0.12	-	-	-	4.6
4	4	5	5	5	15	38	0.12	0.19	0.20	0.12	-	-	-	4.6
4	4	5	5	5	20	38	0.12	0.25	0.25	0.12	-	-	-	4.6
4	4	5	5	5	25	38	0.14	0.31	0.31	0.12	-	-	-	4.6
4	4	5	5	5	30	38	0.17	0.37	0.37	0.12	-	-	-	4.6

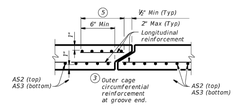


FILL HEIGHT 2 FT AND GREATER



FILL HEIGHT LESS THAN 2 FT

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



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

① For box length = 8'-0"

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

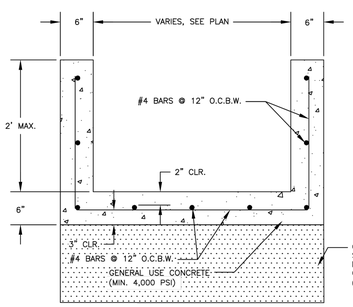
DATE: SEE CCE

Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 4'-0" SPAN

SCP-4

FILE:	sc04dzs-20.dgn	dn: TxDOT	ck: TxDOT	dw: TxDOT	ck: TxDOT
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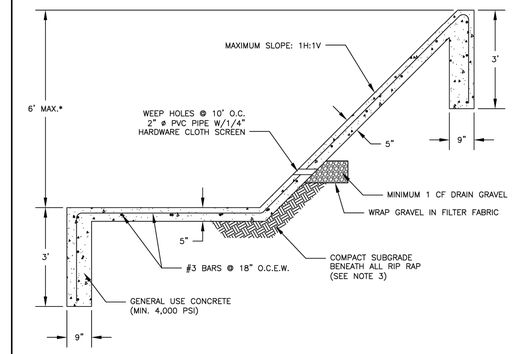


NOTES:
1. PROVIDE EXPANSION JOINTS AT A MINIMUM 40' SPACING AND CONTRACTION JOINTS MINIMUM 10' SPACING.
2. JOINT PLAN TO BE PROVIDED BY ENGINEER FOR REVIEW AND APPROVAL BY THE CITY PRIOR TO INSTALLATION.
3. COMPACT SUBGRADE TO 95% OF THE OPTIMUM DENSITY PER ASTM D1557 (MODIFIED PROCTOR) AND SPECIFICATION 02221.

CITY OF BOERNE

CONCRETE FLUME

SCALE:	DRAWING No.	DATE:
N.T.S.	02423-1.0	MAY 2024



*MAXIMUM HEIGHT MAY BE EXCEEDED IF DESIGN MODIFIED BASED UPON GEOTECHNICAL SLOPE STABILITY ANALYSIS AND APPROPRIATE STRUCTURAL DESIGN.

NOTES:
1. PROVIDE EXPANSION JOINTS AT A MINIMUM 40' SPACING AND CONTRACTION JOINTS MINIMUM 10' SPACING.
2. JOINT PLAN TO BE PROVIDED BY ENGINEER FOR REVIEW AND APPROVAL BY THE CITY PRIOR TO INSTALLATION.
3. COMPACT SUBGRADE TO 95% OF THE OPTIMUM DENSITY PER ASTM D1557 (MODIFIED PROCTOR) AND SPECIFICATION 02221.

CITY OF BOERNE

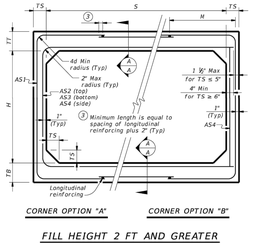
CONCRETE RIP-RAP TYPICAL SECTION

SCALE:	DRAWING No.	DATE:
N.T.S.	02423-1.1	MAY 2024

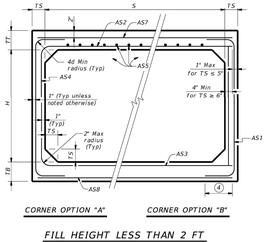
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BOX DATA

SECTION DIMENSIONS					Fill Height (ft.)	M (Min) (in.)	REINFORCING (sq. in. / ft.) ②							① Lift Weight (tons)
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)			AS1	AS2	AS3	AS4	AS5	AS7	AS8	
5	2	8	7	6	< 2	-	0.19	0.27	0.18	0.14	0.19	0.19	0.17	6.0
5	2	6	6	6	2 < 3	44	0.22	0.20	0.16	0.14	-	-	-	5.1
5	2	6	6	6	3 - 5	44	0.16	0.14	0.14	0.14	-	-	-	5.1
5	2	6	6	6	10	36	0.15	0.14	0.14	0.14	-	-	-	5.1
5	2	6	6	6	15	36	0.20	0.18	0.18	0.14	-	-	-	5.1
5	2	6	6	6	20	36	0.26	0.23	0.24	0.14	-	-	-	5.1
5	2	6	6	6	25	36	0.33	0.29	0.29	0.14	-	-	-	5.1
5	2	6	6	6	30	36	0.39	0.34	0.35	0.14	-	-	-	5.1
5	3	8	7	6	< 2	-	0.19	0.31	0.21	0.14	0.19	0.19	0.17	6.6
5	3	6	6	6	2 < 3	45	0.18	0.24	0.19	0.14	-	-	-	5.7
5	3	6	6	6	3 - 5	36	0.14	0.17	0.16	0.14	-	-	-	5.7
5	3	6	6	6	10	36	0.14	0.16	0.17	0.14	-	-	-	5.7
5	3	6	6	6	15	35	0.16	0.21	0.22	0.14	-	-	-	5.7
5	3	6	6	6	20	35	0.21	0.27	0.28	0.14	-	-	-	5.7
5	3	6	6	6	25	35	0.26	0.34	0.34	0.14	-	-	-	5.7
5	3	6	6	6	30	35	0.31	0.41	0.41	0.14	-	-	-	5.7
5	4	8	7	6	< 2	-	0.19	0.33	0.24	0.14	0.19	0.19	0.17	7.2
5	4	6	6	6	2 < 3	45	0.16	0.27	0.22	0.14	-	-	-	6.3
5	4	6	6	6	3 - 5	45	0.14	0.19	0.18	0.14	-	-	-	6.3
5	4	6	6	6	10	36	0.14	0.18	0.18	0.14	-	-	-	6.3
5	4	6	6	6	15	35	0.14	0.23	0.24	0.14	-	-	-	6.3
5	4	6	6	6	20	35	0.17	0.30	0.31	0.14	-	-	-	6.3
5	4	6	6	6	25	35	0.21	0.37	0.38	0.14	-	-	-	6.3
5	4	6	6	6	30	35	0.25	0.44	0.45	0.14	-	-	-	6.3
5	5	8	7	6	< 2	-	0.19	0.35	0.26	0.14	0.19	0.19	0.17	7.8
5	5	6	6	6	2 < 3	45	0.14	0.29	0.24	0.14	-	-	-	6.9
5	5	6	6	6	3 - 5	45	0.14	0.21	0.20	0.14	-	-	-	6.9
5	5	6	6	6	10	45	0.14	0.19	0.20	0.14	-	-	-	6.9
5	5	6	6	6	15	36	0.14	0.24	0.25	0.14	-	-	-	6.9
5	5	6	6	6	20	35	0.15	0.31	0.32	0.14	-	-	-	6.9
5	5	6	6	6	25	35	0.18	0.38	0.39	0.14	-	-	-	6.9
5	5	6	6	6	30	35	0.21	0.46	0.47	0.14	-	-	-	6.9

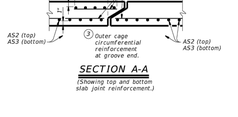


FILL HEIGHT 2 FT AND GREATER



FILL HEIGHT LESS THAN 2 FT

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



SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Submit shop plans for alternate designs in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

① For box length = 8'-0"

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

DATE: SEE CCE

Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 5'-0" SPAN

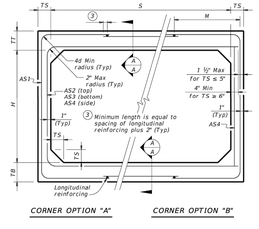
SCP-5

FILE:	sc05dzs-20.dgn	dn: TxDOT	ck: TxDOT	dw: TxDOT	ck: TxDOT
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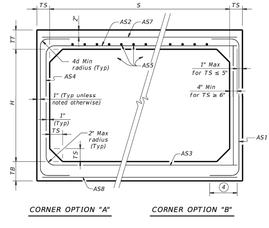
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BOX DATA

SECTION DIMENSIONS					Fill Height (ft.)	M (Min) (in.)	REINFORCING (sq. in. / ft.) ②							① Lift Weight (tons)
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)			AS1	AS2	AS3	AS4	AS5	AS7	AS8	
3	2	7	6	4	< 2	-	0.17	0.25	0.16	0.10	0.17	0.17	0.14	3.3
3	2	4	4	4	2 < 3	31	0.13	0.19	0.18	0.10	-	-	-	2.4
3	2	4	4	4	3 - 5	31	0.10	0.11	0.12	0.10	-	-	-	2.4
3	2	4	4	4	10	31	0.10	0.10	0.10	0.10	-	-	-	2.4
3	2	4	4	4	15	31	0.10	0.13	0.13	0.10	-	-	-	2.4
3	2	4	4	4	20	31	0.11	0.17	0.17	0.10	-	-	-	2.4
3	2	4	4	4	25	31	0.14	0.21	0.21	0.10	-	-	-	2.4
3	2	4	4	4	30	31	0.17	0.25	0.25	0.10	-	-	-	2.4
3	2	4	4	4	35	31	0.20	0.29	0.30	0.10	-	-	-	2.4
3	3	7	6	4	< 2	-	0.17	0.27	0.17	0.10	0.17	0.17	0.14	3.7
3	3	4	4	4	2 < 3	31	0.10	0.22	0.21	0.10	-	-	-	2.8
3	3	4	4	4	3 - 5	31	0.10	0.14	0.14	0.10	-	-	-	2.8
3	3	4	4	4	10	31	0.10	0.11	0.11	0.10	-	-	-	2.8
3	3	4	4	4	15	31	0.10	0.14	0.15	0.10	-	-	-	2.8
3	3	4	4	4	20	31	0.10	0.18	0.19	0.10	-	-	-	2.8
3	3	4	4	4	25	31	0.10	0.23	0.23	0.10	-	-	-	2.8
3	3	4	4	4	30	31	0.12	0.27	0.28	0.10	-	-	-	2.8
3	3	4	4	4	35	31	0.14	0.32	0.32	0.10	-	-	-	2.8

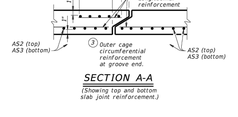


FILL HEIGHT 2 FT AND GREATER



FILL HEIGHT LESS THAN 2 FT

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SECTION A-A

(Showing top and bottom slab joint reinforcement.)

MATERIAL NOTES:
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GENERAL NOTES:
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HL93 LOADING

① For box length = 8'-0"

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

DATE: SEE CCE

Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 3'-0" SPAN

SCP-3

FILE:	CU-SCP03-20.dgn	dn: TxDOT	ck: TxDOT	dw: TxDOT	ck: TxDOT
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REVISIONS		DIST	COUNTY		SHEET NO.

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CORLEY FARMS UNIT 5

TXDOT PRECAST 3',4'&5' CULVERT BOXES & CONC. RIP-RAP DETAIL

DATE
01/28/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

DATE	A	1	2	3	4	5	6	7	8	9

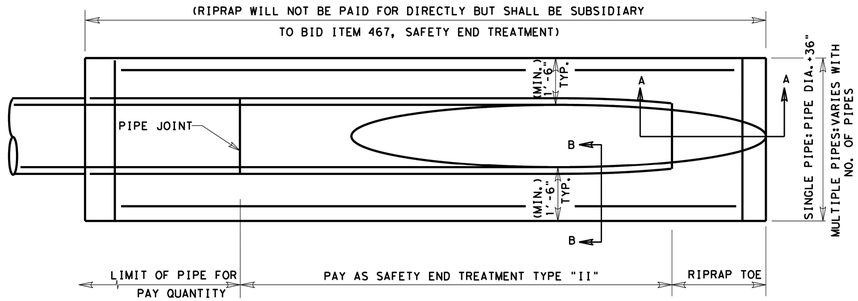
STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
02/10/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

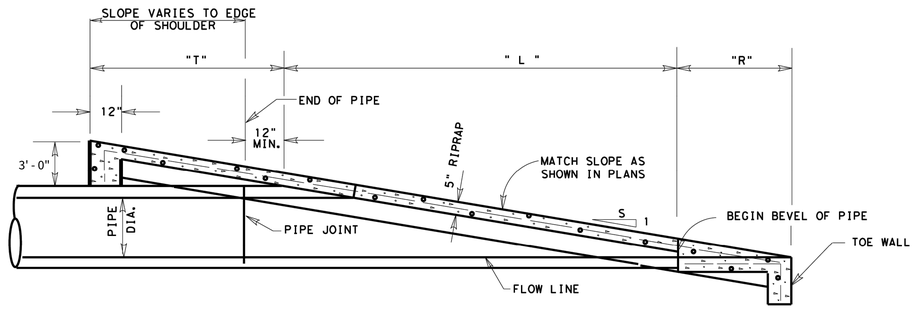
SAWS JOB NO.
22-1190

C22

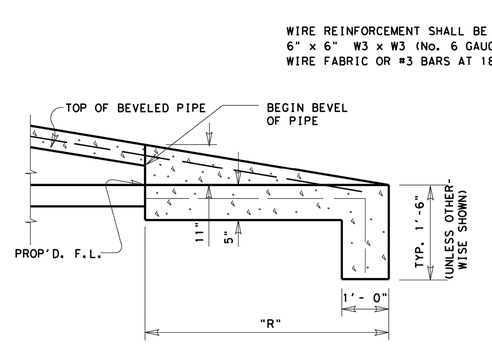
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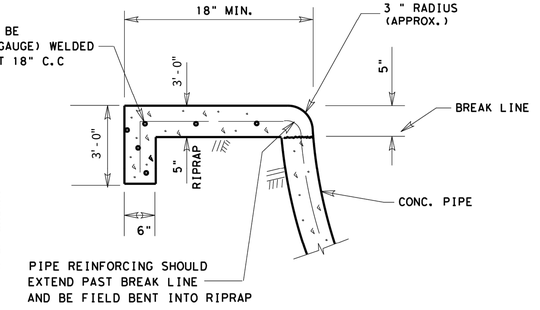
PLAN VIEW



ELEVATION
SAFETY END TREATMENT



SEC. A-A



SEC. B-B

SAFETY END TREATMENT PIPE LENGTHS

PIPE DIA. (IN.)	"L"			
	3:1	4:1	5:1	6:1
12	2'-0"	2'-8"	3'-4"	4'-0"
15	2'-9"	3'-8"	4'-7"	5'-6"
18	3'-6"	4'-8"	5'-10"	7'-0"
24	5'-1½"	6'-10"	8'-6½"	10'-3"
30	6'-9"	9-0"	11'-3"	13'-6"
36	8'-6"	11'-4"	14'-2"	17'-0"
42	10'-1½"	13'-6"	16'-10½"	20'-3"
48	11'-9"	15'-8"	19'-7"	23'-6"

⊛ DRIVEWAYS & TURNOUTS ARE 6:1 ONLY

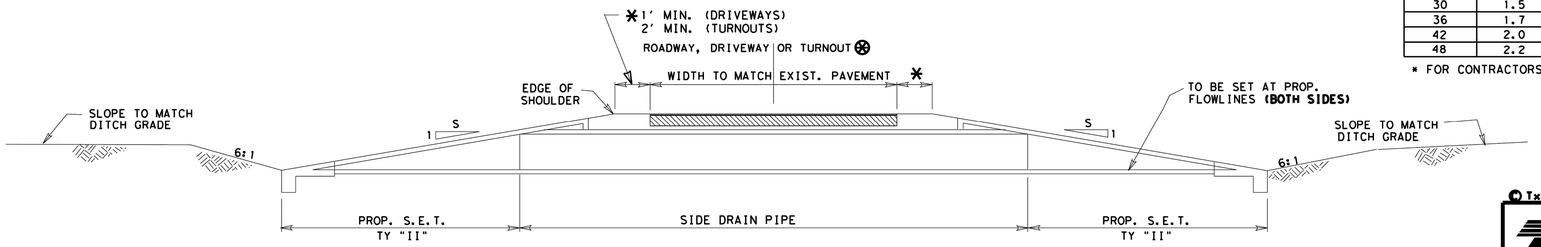
RIPRAP TOE LENGTHS

SLOPE	" R "	"T"
3:1	2'-9"	1'-9"
4:1	3'-8"	2'-4"
5:1	4'-7"	2'-11"
6:1	5'-6"	3'-6"

ESTIMATED RIPRAP VOLUME (CY)

PIPE DIA. (IN.)				
	3:1	4:1	5:1	6:1
12	.9	1.1	1.3	1.6
15	1.0	1.2	1.5	1.8
18	1.1	1.4	1.6	1.9
24	1.3	1.6	2.0	2.3
30	1.5	1.9	2.3	2.7
36	1.7	2.2	2.7	3.2
42	2.0	2.5	3.1	3.6
48	2.2	2.8	3.4	4.1

* FOR CONTRACTORS INFORMATION ONLY (SINGLE PIPE)



TYPICAL SIDEDRAIN SECTION

NOTE:

ALL EXCAVATION AND BACKFILL REQUIRED AT ALL PIPE SIDE DRAIN CONNECTIONS, ADJUSTMENTS AND/OR EXTENSIONS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE SUBSIDIARY TO THE BID ITEMS INVOLVED AND IN ACCORDANCE WITH ITEM 400 "STRUCTURAL EXCAVATION".

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PHARR DISTRICT STANDARDS

TEXAS DEPARTMENT OF TRANSPORTATION

SAFETY END TREATMENT DETAILS

REV. 9/16 SET. DGN

DIST. NO. / DIV. NO.	STATE AID PROJECT NO.		FILE NO.		SHEET NO.
6					
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21					

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CORLEY FARMS UNIT 5

TXDOT SAFETY END TREATMENT DETAILS

DATE
01/28/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

DATE	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
02/10/2025

CUDE ENGINEERS
TBPE No. F455
TBPLS No. 10048500

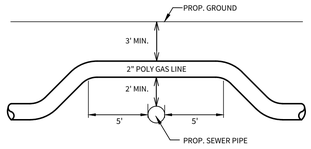
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LEGEND

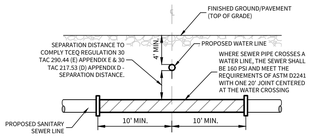
PROPERTY LINE	
PROPOSED SEWER LINE	xx"SS
PROPOSED MANHOLE	
PROPOSED WATER LINE	xx" W
PROPOSED GAS LINE	xx" G
EXISTING OVERHEAD ELECTRIC	OHE
EXISTING SANITARY SEWER FORCE MAIN	SFM
EXISTING MANHOLE	



SEWER / GAS CROSSINGS DETAIL

SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)

NOTE: VERTICAL BEND IS NOT NEEDED WHEN SEWER IS DEEPER THAN 7'



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

BENCHMARK **BM-1**

BENCHMARK TO BE SET BY ENGINEER PRIOR TO CONSTRUCTION.

SEWER/WATER LINE CROSSINGS	
LINE	STATION
"Y"	3+84.07
"A-A"	2+41.90
"A-B"	1+17.23
"A-B"	1+51.11

SEWER/GAS LINE CROSSINGS	
"Y"	4+32.10
"Z"	3+76.05
"Z"	1+25.02
"A-A"	1+69.18
"A-A"	9+70.27

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.

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.

NOTES:

1. **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 INSPECTOR/TEST ADMINISTER, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.**
2. **ALL 18" SANITARY SEWER PIPE SHALL BE SDR-26 PS115 ASTM F679.**
3. **MANHOLE OPENING INCREASED TO 30" AS PER TAC CHAPTER 217.55.**
4. **REFERENCE STREET DETAIL SHEET AND GEOTECHNICAL ENGINEERING REPORT FOR PAVEMENT DESIGN INFORMATION.**
5. **ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE UPGRADIENT SIDE OF THE SEWER TRENCH THUS ALLOWING THE TRENCH TO INTERCEPT ANY SILT CONTAMINATED RUNOFF.**
6. **ALL LATERALS SHALL BE INSTALLED AT A MINIMUM 2.0% SLOPE UNLESS OTHERWISE NOTED.**
7. **BENCHMARK TO BE SET BY ENGINEER PRIOR TO THE START OF CONSTRUCTION.**
8. **ALL SEWER LATERALS TO BE INSTALLED WITH A MINIMUM 150 PSI PRESSURE RATED PIPE AND EMBEDDED IN CEMENT STABILIZED SAND AT ALL WATER MAIN AND LATERAL SERVICE CROSSINGS PER 30 TAC CHAPTER 290.44(e)**



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CORLEY FARMS UNIT 5

OVERALL SANITARY SEWER PLAN

DATE
01/28/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

	DATE	
1.	11/7/24	PERMITTING COMMENTS
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
02/10/2025

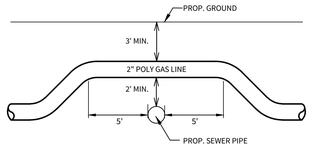
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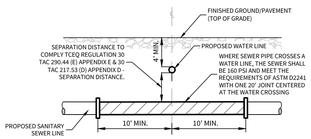
P:\03481\012\2 Drawings\C4 GRADING\C26 OVERALL SANITARY SEWER PLAN.dwg 2025-02-10 12:20pm mbland



SEWER / GAS CROSSINGS DETAIL

SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)

NOTE: VERTICAL BEND IS NOT NEEDED WHEN SEWER IS DEEPER THAN 7'



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

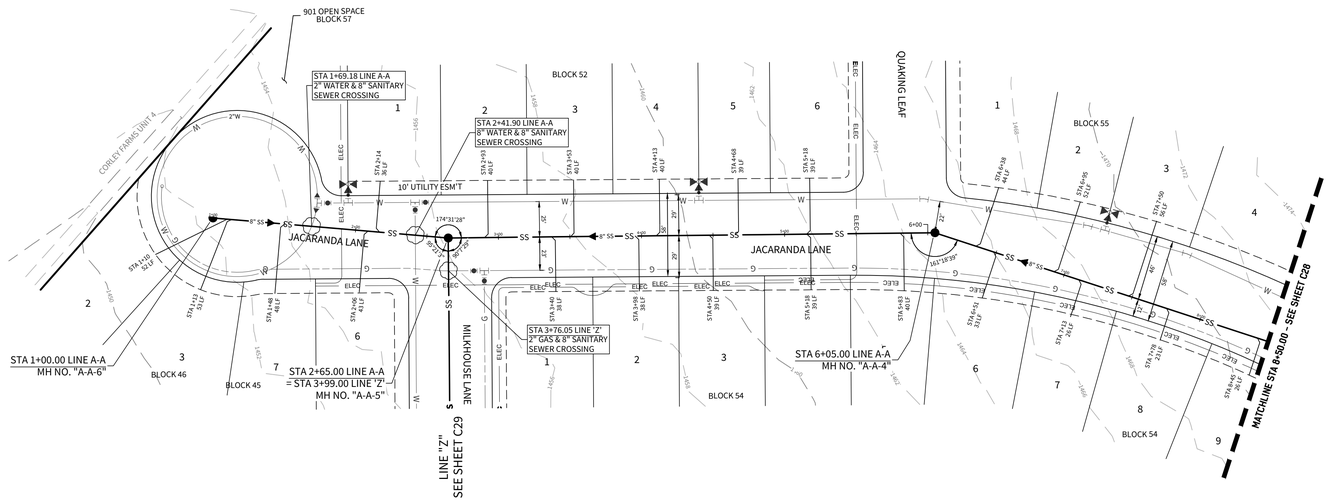
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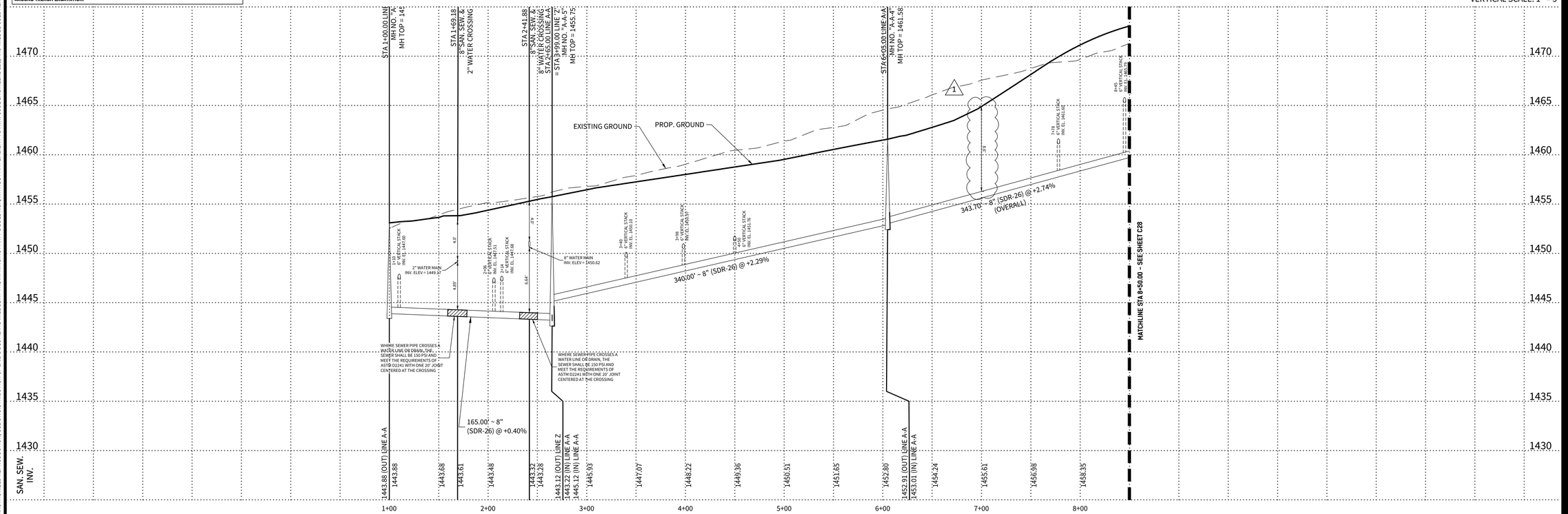




LINE "A-A"

STA. 1+00.00 TO STA. 8+50.00

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



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CORLEY FARMS UNIT 5

SANITARY SEWER LINE 'A-A' - PLAN & PROFILE

DATE
06/02/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

	DATE	
1	5/27/25	GRADING REVISION
2		
3		
4		
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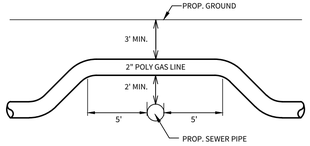
STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
5/2/25

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C27

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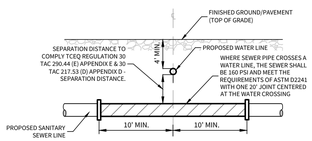
03481.012 | X:\Drawings\C4 Utility\C4 02 Sanitary Sewer\03481.012 - PLAN & PROFILE.dwg | 5/5/2025 09:32:55am | Andrew



SEWER / GAS CROSSINGS DETAIL

SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)

NOTE: VERTICAL BEND IS NOT NEEDED WHEN SEWER IS DEEPER THAN 7'



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

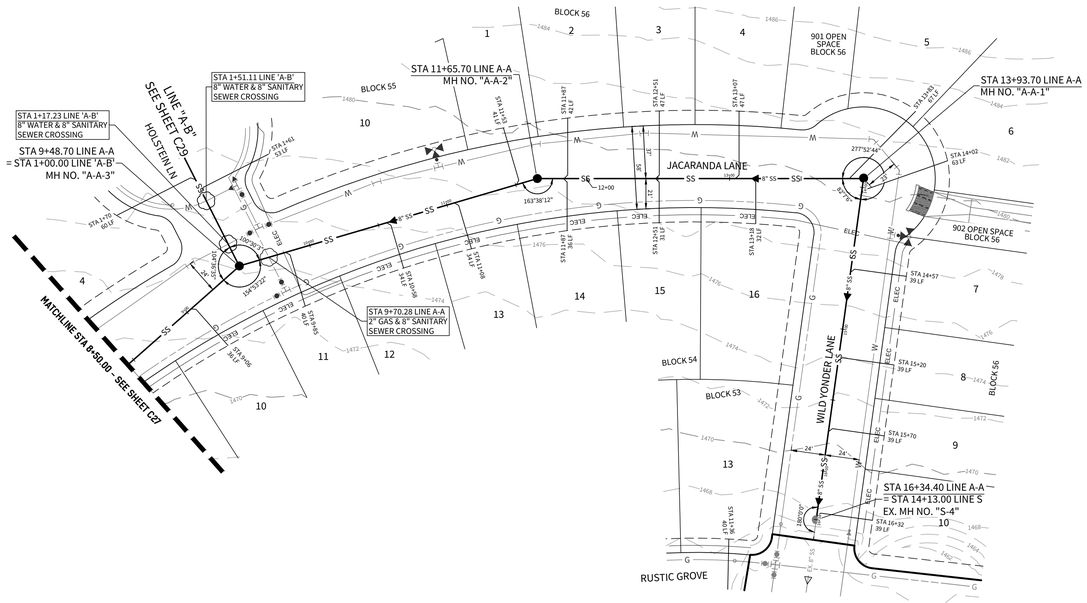
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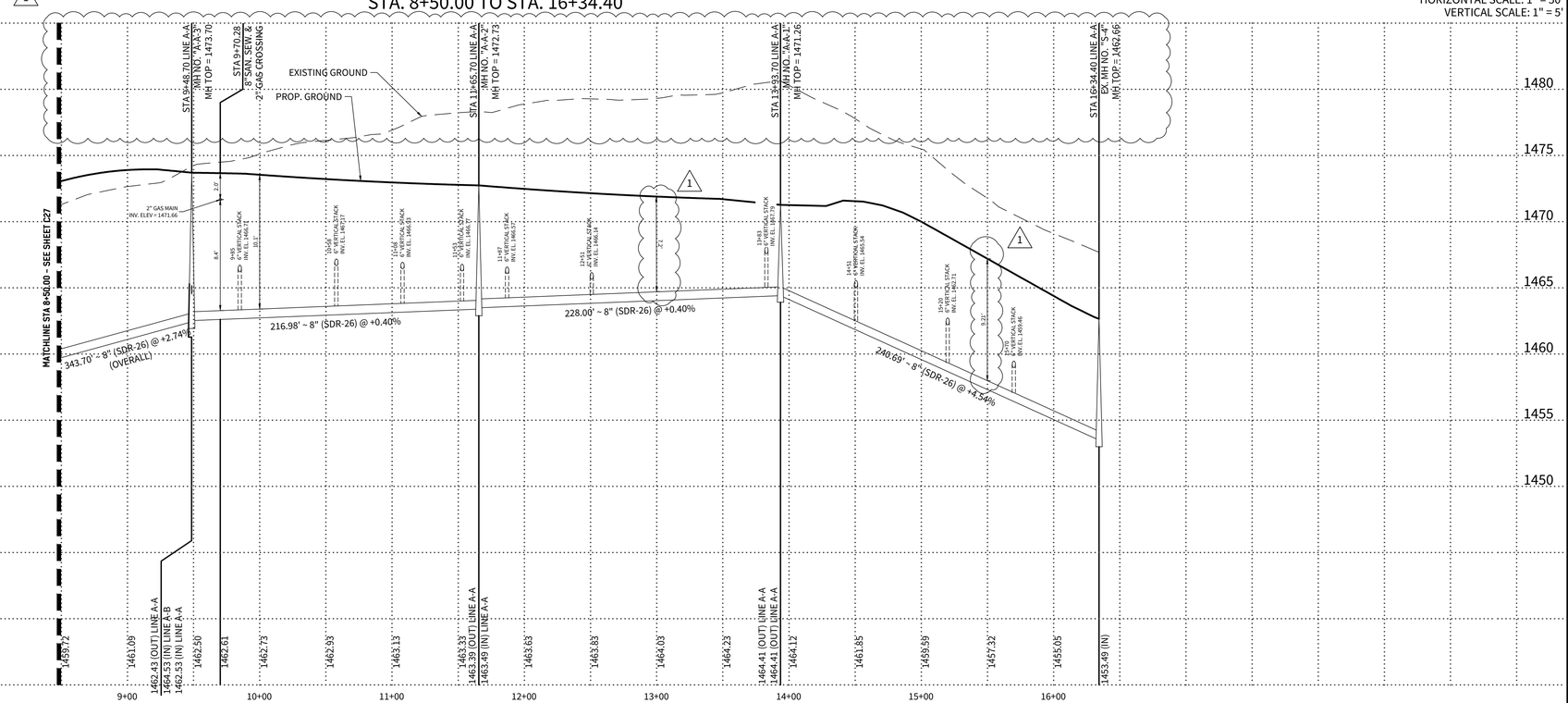
SCALE: 1"=50'

0 50 100

LINE "A-A"

STA. 8+50.00 TO STA. 16+34.40

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



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CORLEY FARMS UNIT 5

SANITARY SEWER LINE 'A-A' - PLAN & PROFILE

DATE 06/02/2025
PROJECT NO. 03481.012
DRAWN BY C3
CHECKED BY XV/AL

REVISIONS

DATE	GRADING REVISION
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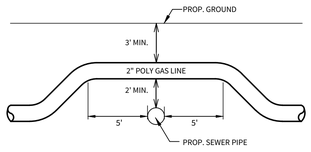
STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
5/2/25

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C28

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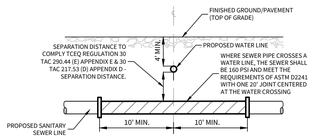
03481\012\2-Drawings\C4.0 & 4.02 SANITARY SEWER LINE 'A-A' - PLAN & PROFILE.dwg 2025/05/02 13:36pm ltanushev



SEWER / GAS CROSSINGS DETAIL

SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)

NOTE: VERTICAL BEND IS NOT NEEDED WHEN SEWER IS DEEPER THAN 7'



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

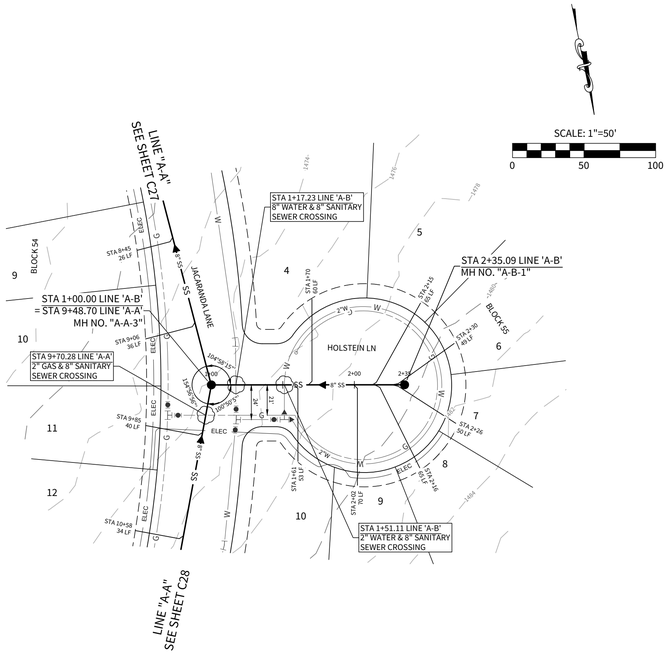
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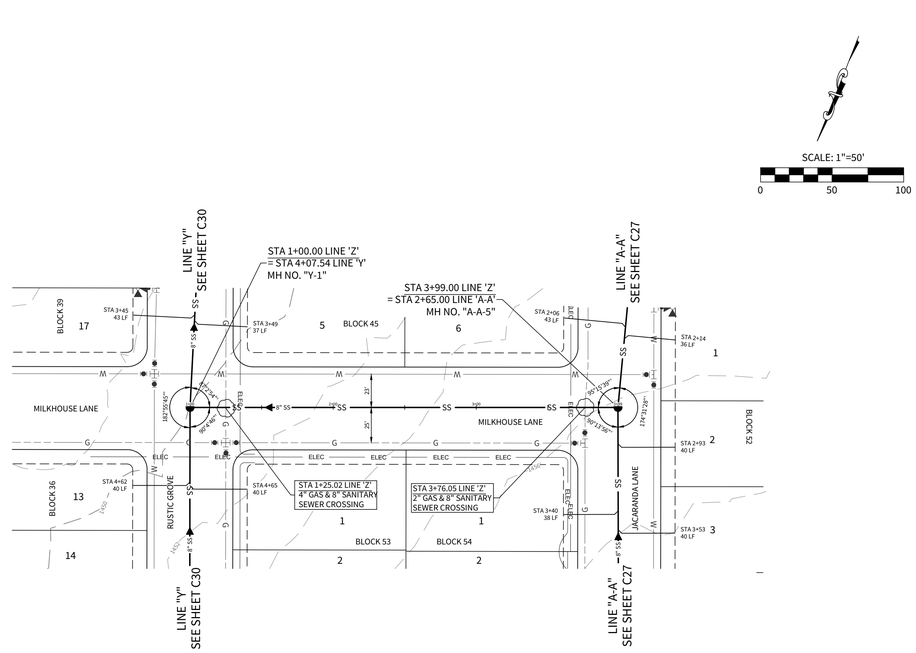
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LINE "A-B"

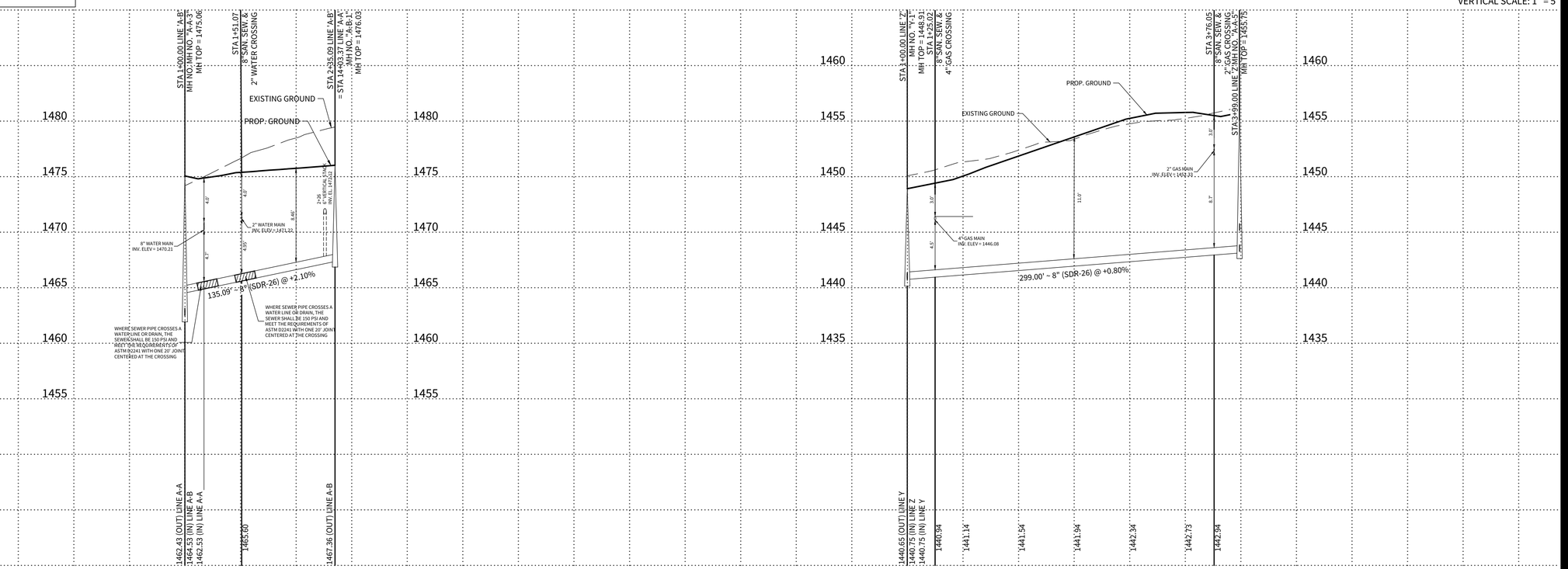
STA. 1+00.00 TO STA. 2+35.09



LINE "Z"

STA. 1+00.00 TO STA. 3+99.00

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



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CUDE ENGINEERS

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

CORLEY FARMS UNIT 5

SANITARY SEWER LINE 'A-B' AND 'Z' PLAN & PROFILE

DATE
01/28/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

DATE	
1.	
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STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
02/10/2025

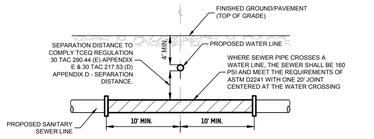
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C29

CUDEENGINEERS.COM

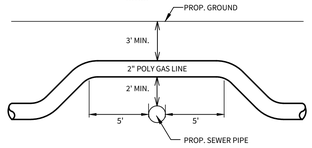
P:\03481\012\Drawings\CAD\ SANITARY SEWER LINE 'A-B' and 'Z' PLAN & PROFILE.dwg 2/25/25,10:13:22pm mlopez

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TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.



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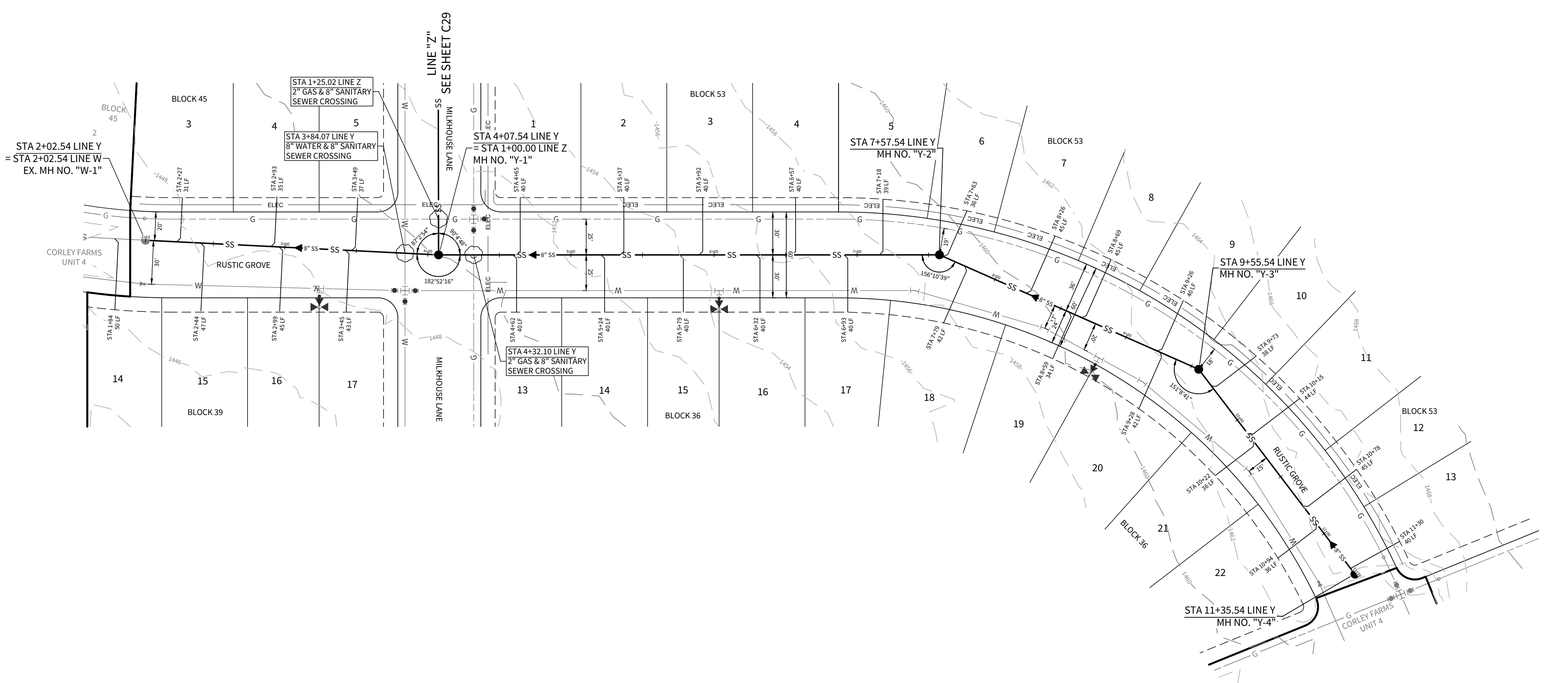
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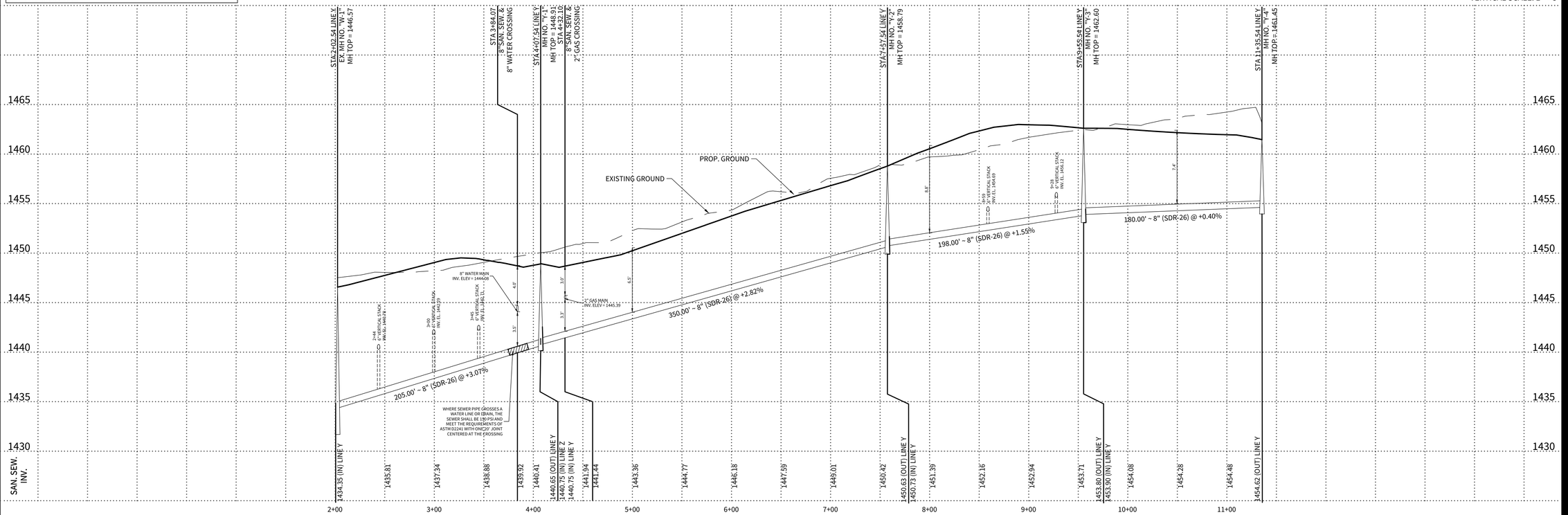
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LINE "Y"

STA. 2+02.54 TO END

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



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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.

NON-EDWARDS AQUIFER RECHARGE ZONE SANITARY SEWER SYSTEM GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS PROJECT SHALL BE APPROVED BY THE CITY OF BOERNE AND COMPLY WITH:
   A. CURRENT "CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (JANUARY, 2011)
   B. TEXAS NATURAL RESOURCE CONSERVATION COMMISSION'S DESIGN CRITERIA FOR SEWERAGE SYSTEMS [30 TAC 217]
2. THE CONTRACTOR IS TO NOTIFY AND MAKE ARRANGEMENTS WITH THE CITY OF BOERNE PUBLIC WORKS DEPARTMENT AT 1-830-248-8511, 48 HOURS PRIOR TO EXCAVATION.
3. CONTRACTOR TO CONTACT 1-800-344-8377, 48 HOURS PRIOR TO COMMENCING WORK FOR MARKING UNDERGROUND UTILITIES
4. THE CONTRACTOR SHALL MAINTAIN SERVICE TO EXISTING SANITARY SEWERS AT ALL TIMES DURING CONSTRUCTION.
5. ALL WORK IN TEXAS DEPARTMENT OF TRANSPORTATION AND KENDALL COUNTY 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 CITY OF BOERNE PUBLIC WORKS DEPARTMENT AND SHALL BE DONE IN ACCORDANCE WITH CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
7. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, THE CITY OF BOERNE MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROJECT AND WORK AROUND GAS VALVES THAT ARE IN THE PROJECT AREAS.
8. NO TESTING WILL BE PERFORMED PRIOR TO 30 DAYS FROM COMPLETE INSTALLATION OF THE SANITARY SEWER LINES.

   THE FOLLOWING SEQUENCE WILL BE STRICTLY ADHERED TO:
   1. PULL MANDREL.
   2. PERFORM AIR TEST.
   3. PULL WIPER (AFTER STREET HAS BEEN ASPHALTED IN NEW SUBDIVISIONS).

MANHOLES:

9. ALL MANHOLES SHALL BE CONSTRUCTED SO THAT TOP OF THE RING IS AT LEAST FOUR (4) INCHES ABOVE THE FINISHED GRADE OF THE SURROUNDING GROUND EXCEPT WHEN LOCATED IN TXDOT R.O.W. IN TXDOT ROW AREAS, THE MANHOLE RING SHALL BE FLUSH WITH NATURAL GROUND.
10. ALL MANHOLES IN THE STREET AND 100 YEAR FLOODPLAIN AREAS SHALL HAVE WATERTIGHT RINGS AND COVERS IN ACCORDANCE WITH THE MOST CURRENT CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
11. ON ANY MANHOLES TO BE ABANDONED, THE RINGS AND COVER SHALL BE SALVAGED IN ACCORDANCE WITH THE MOST CURRENT CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION: PREPARATION OF RIGHT-OF-WAY. THE HOLE SHOULD BE BACKFILL TO THE SATISFACTION OF THE INSPECTOR. ALL PUBLIC MANHOLES WILL BE VACUUM TESTED AS PER 02515 3.2.

PIPING:

12. THE KIND AND DESCRIPTION OF THE PIPE CONDUIT IS SHOWN ON THE PLANS, (IF PVC, "SDR" AND ASTW/ANSI DESIGNATIONS, CLASS).
13. 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.
14. ALL PVC SEWER PIPE WITH OVER 14 FEET OF COVER SHALL BE EXTRA STRENGTH, SDR 26 MINIMUM PIPE STIFFNESS OF 115 PSI.
15. ALL SEWER PIPES SHALL BE GOVERNED BY THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION (JANUARY 2011)
16. SEWER PIPE CONNECTIONS TO PRE-CAST MANHOLES WILL BE COMPRESSION JOINTS AS APPROVED BY CITY OF BOERNE MECHANICAL JOINT "BOOT TYPE" CONNECTIONS ALONE WILL NOT BE ALLOWED. "BOOT TYPE" JOINTS MAY BE USED IN CONJUNCTION WITH COMPRESSION JOINTS AS APPROVED BY CITY OF BOERNE. SEWER PIPE CONNECTIONS TO MONOLITHIC MANHOLES SHALL BE REVIEWED AND APPROVED BY CITY OF BOERNE. CITY OF BOERNE MUST APPROVE ANY CHANGES FROM THESE METHODS.
17. ALL PIPE TRENCHING, BEDDING AND BACKFILL SHALL BE DONE IN ACCORDANCE WITH APPROPRIATE ASTM/ANSI SPECIFICATIONS (REFERENCE 30 TAC 217.54; ASTM C12, (ANSI A106.2) OR ASTM D-2321 (ANSI K65.171).
18. 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 CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
19. ALL RESIDENTIAL SEWER SERVICE LATERALS SHALL BE EXTENDED TO AT LEAST THE PROPERTY LINE AND CAPPED AND SEALED.
20. WHERE REQUIRED, CONCRETE ENCASEMENT SHALL BE PLACED FOR FULL WIDTH OF THE TRENCH TO A PLANE 8" ABOVE THE TOP OF THE PIPE, WITH PAY LIMITS AS SHOWN ON THE STANDARD DETAIL SHEET.
21. A MINIMUM OF 3 FEET OF COVER IS TO BE MAINTAINED OVER THE SANITARY SEWER MAIN AND LATERALS AT SUBGRADE, OTHERWISE CONCRETE ENCASEMENT WILL BE REQUIRED.

BLASTING:

22. NO BLASTING WILL BE ALLOWED.

TESTING:

23. ALL SEWER LINES MUST BE TESTED IN ACCORDANCE WITH THE FOLLOWING;

A. 30 TAC 217.54 (b)(1) OR THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION 3.09 & 3.10 OF SECTION 025.30: DEFLECTION TEST FOR FLEXIBLE AND SEMI-RIGID PIPE CONDUCTED AFTER FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS.
B. 30 TAC 217.57 (a)(1) & 217.57 (a)(2) OR THE CITY OF BOERNE STANDARD SPECIFICATIONS INFILTRATION AND/OR EXFILTRATION AND/OR LOW-PRESSURE AIR TEST.
C. 30 TAC 217.58 OR THE CITY OF BOERNE STANDARD SPECIFICATIONS. ALL MANHOLES AND WET WELLS MUST BE TESTED SEPARATELY AND INDEPENDENTLY OF THE COLLECTION LINES.

24. SEWER LINES SHALL BE TESTED FROM MANHOLE TO MANHOLE.
25. SANITARY SEWER MAIN CONNECTIONS MADE DIRECTLY TO EXISTING MANHOLES WILL REQUIRE SUCCESSFUL TESTING OF THE MANHOLE IN ACCORDANCE WITH THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
26. AFTER CONSTRUCTION, TESTING WILL BE DONE BY TV CAMERA BY THE CITY OF BOERNE FORCES AND OBSERVED BY INSPECTOR, WASTEWATER ENGINEERING PERSONNEL, AND CONTRACTOR AS CAMERA IS RUN THROUGH THE LINES. ANY ABNORMALITIES, SUCH AS BROKEN PIPE OR MISALIGNED JOINTS, MUST BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
27. A COPY OF ALL TESTING REPORTS SHALL BE FORWARDED TO THE CITY OF BOERNE PUBLIC WORKS DEPARTMENT.
28. 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 SHALL PROVIDE FOR ADEQUATE TRENCH EVACUATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATION. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTORS 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.
29. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION. THE CONTRACTOR SHALL NO PERMANENTLY PLACE ANY WASTE MATERIALS IN THE 100-YER FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT. WASTE MATERIALS SHALL BE REMOVED FROM TXDOT NOW DAILY.
30. WATER JETTING THE BACKFILL WILL NOT BE PERMITTED. SANITARY SEWER TRENCHES SUBJECT TO TRAFFIC SHALL CONFORM TO THE CITY OF BOERNE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
31. WHERE THE MINIMUM 9-FOOT SEPARATION DISTANCE BETWEEN SEWER LINE AND WATER LINE/MAINS CANNOT BE MAINTAINED, THE INSTALLATION OF SEWER LINES SHALL BE IN STRICT ACCORDANCE WITH TEXAS NATURAL RESOURCE CONSERVATION COMMISSION'S RULES (30 TAC 217.53 (d) & 30 TAC 290.44 (e)).
32. THE TEXAS NATURAL RESOURCE CONSERVATION COMMISSION AND 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 NOTES ON THE PROJECTS PLAN AND PROFILE SHEETS.
33. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS SHALL BE REMOVED BY THE CONTRACTOR AFTER FINAL ACCEPTANCE OF THE PROJECT BY THE CITY OF BOERNE PUBLIC WORKS AND TXDOT.
34. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON PLANS BUT NOT INCLUDED ON THE BID SCHEDULE. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED UNDER THE PAY ITEM TO WHICH IT RELATES.
35. THE DEVELOPER DEDICATES THE SANITARY SEWER MAINS UPON COMPLETION BY THE DEVELOPER AND ACCEPTANCE BY THE CITY OF BOERNE. THE CITY OF BOERNE WILL OWN AND MAINTAIN SAID WORK COMPLETED BY THE CONTRACTOR, WHICH HAS NOT RECEIVED A WORK ORDER OR THE CONSENT OF THE CITY OF BOERNE CONSTRUCTION INSPECTION DIVISION WILL BE SUBJECT TO REMOVAL AND REPLACEMENT BY AND AT THE EXPENSE OF THE CONTRACTOR.
36. OWNER PAYS DIRECTLY FOR ALL INITIAL (PASSING) DENSITY TEXT.

SEWER GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN STRICT CONFORMANCE WITH CITY OF BOERNE REQUIREMENTS.
2. ALL PIPE TRENCHING, BEDDING AND BACKFILL SHALL BE DONE IN ACCORDANCE WITH SPECIFICATIONS SECTION 30 TAC 217.54.
3. MANHOLE RINGS AND COVERS SHALL BE NEENAH FOUNDRY, DEETER FOUNDRY, ALAMO IRON WORKS, EAST JORDAN IRON WORKS, OR EQUAL. WHEN WATER TIGHT MANHOLE RINGS AND COVERS ARE SPECIFIED, THEY SHALL PROVIDE A-77 O.R. WATER TIGHT OR EQUAL AND MEET THE REQUIREMENTS OF SECTION 02515 1.2 OR THE CITY OF BOERNE STANDARD SPECIFICATIONS.
4. ALL MANHOLES SHALL BE PRECAST, INCLUDING BASES, "CHARLOTTES CONCRETE" OR APPROVED EQUAL WITH GASKETS ACCORDING TO ASTM C891.
5. MATERIAL FOR SANITARY SEWER PIPE MUST BE THE SAME FROM MANHOLE TO MANHOLE. CHANGES IN TYPE OF PIPE MAY BE MADE ONLY AT MANHOLES OR SPECIAL STRUCTURES, EXCEPT AS DIRECTED BY THE ENGINEER AND WHERE APPLICABLE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
6. ALL SEWER PIPE WITH LESS THAN THREE FEET (3) OF COVER SHALL BE CONCRETE ENCASED.
7. CONES, RISERS AND BASE MUST CONFORM TO ASTM C-478.
8. JOINTS BETWEEN MANHOLE SECTIONS MUST HAVE RUBBER GASKETS PER ASTM C-443.
9. SEWER PIPE WHERE WATER LINE CROSSES SHALL BE 150 PSI AND MEET THE REQUIREMENTS OF ASTM D2241 WITH ONE 20' JOINT CENTERED AT WATER MAIN.
10. PIPE TYPE DESIGNATIONS ARE SDR 26 AND SHALL BE FROM THE FOLLOWING MANUFACTURERS OR APPROVED EQUALS: J-M MANUFACTURING, CERTAINTEED CORPORATION, NORTH AMERICAN PIPE CORPORATION, I PEX INC., DIAMOND PLASTIC CORPORATION, FREEDOM PLASTICS, NATURAL PIPE AND PLASTICS, OR NORTHERN PIPE PRODUCTS. GASKET JOINTS AND ELECTROMETRIC SEALS SHALL CONFORM TO ASTM D3034 AND ASTM F477, RESPECTIVELY.
11. IN ORDER TO MINIMIZE EROSION AND SEDIMENTATION RESULTING FROM THE PROPOSED UTILITY INSTALLATION, THE PROJECT WILL BE RE-VEGETATED IN ACCORDANCE WITH TXDOT. THE OWNER AND CONTRACTOR WILL BE PROVIDED WITH A COPY OF TXDOT'S SPECIAL PROVISION FOR UTILITY PERMIT DATED 6/2001 AND TXDOT'S SPECIAL SPECIFICATION 10327 FURNISHING AND PLACING COMPOST, AT THE TIME OF BIDDING.
12. CONTRACTOR TO NOTIFY TXDOT INSPECTOR FOR THIS AREA 48 HOURS PRIOR TO STARTING CONSTRUCTION. (TXDOT BOERNE MAINTENANCE OFFICE 830-816-2430).
13. USE BEDDING AND INITIAL BACKFILL MATERIALS AS APPROVED BY THE CITY OF BOERNE AND CONFORM TO ASTM C33 GRADING AS SHOWN IN SECTION 02221 2.1C OF THE CITY OF BOERNE STANDARD SPECIFICATIONS.
14. COMPACT SECONDARY BACKFILL TO 98% MAX DRY DENSITY. CONTRACTOR TO PERFORM DENSITY TESTING AT INTERVALS OF 500' PER 6" LIFT OF SECONDARY BACKFILL FOR UTILITIES IN TXDOT ROW (TXDOT REQUIREMENT) AND PER 8' LIFT OF SECONDARY BACKFILL FOR UTILITIES IN ALL OTHER AREAS (CITY OF BOERNE REQUIREMENT). REPORTS TO BE PROVIDED TO CITY OF BOERNE PUBLIC WORKS DEPARTMENT. REPORTS OF TEST RESULTS TO BE PROVIDED TO TXDOT FOR WORK WITHIN TXDOT ROW.
15. CONTRACTOR TO CONTACT 1-800-344-8377 48 HOURS PRIOR TO COMMENCING WORK FOR MARKING UNDERGROUND CONDUITS.

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CORLEY FARMS UNIT 5

SANITARY SEWER GENERAL NOTES

DATE
01/28/2025

PROJECT NO.
03481.012

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CHECKED BY
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REVISIONS

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STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED PROFESSIONAL ENGINEER
02/10/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

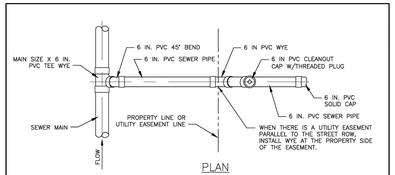
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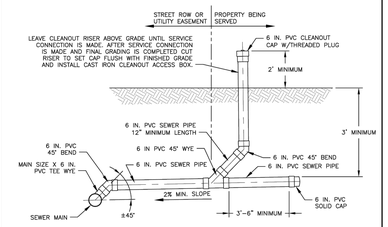
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PLAN



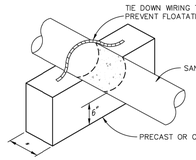
SECTION

NOTES:
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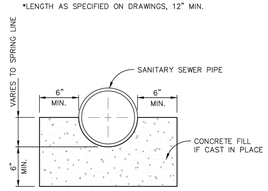
CITY OF BOERNE

STANDARD SANITARY SEWER SERVICE LATERAL

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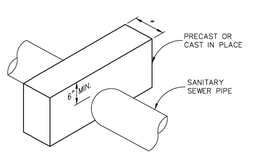
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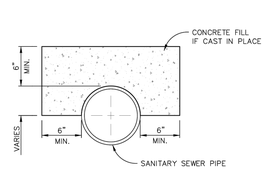
CITY OF BOERNE

SANITARY SEWER CONCRETE CRADLE

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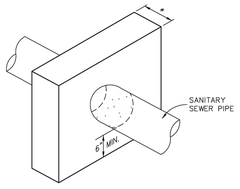
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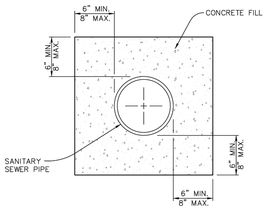
CITY OF BOERNE

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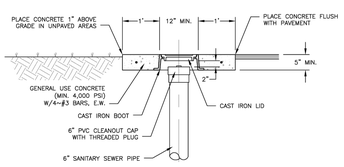
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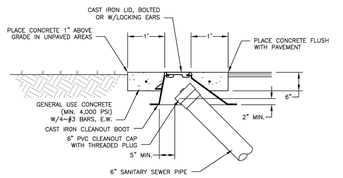
CITY OF BOERNE

SANITARY SEWER CONCRETE ENCASEMENT

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BOOT FOR VERTICAL CLEANOUT RISER

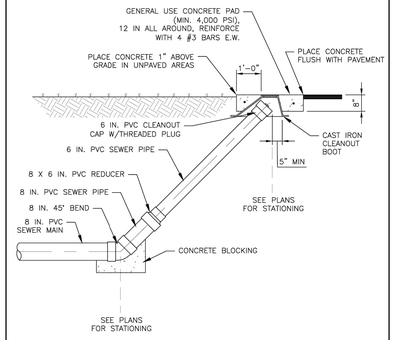


BOOT FOR 45° ANGLE CLEANOUT RISER

CITY OF BOERNE

CAST IRON CLEANOUT BOOT

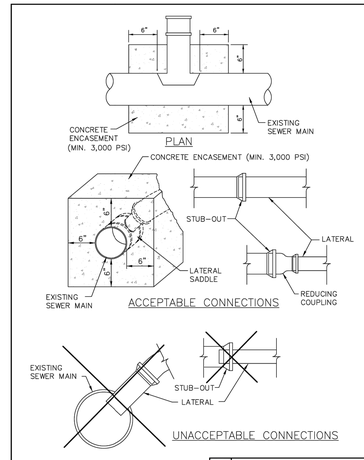
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CITY OF BOERNE

END OF SEWER CLEANOUT

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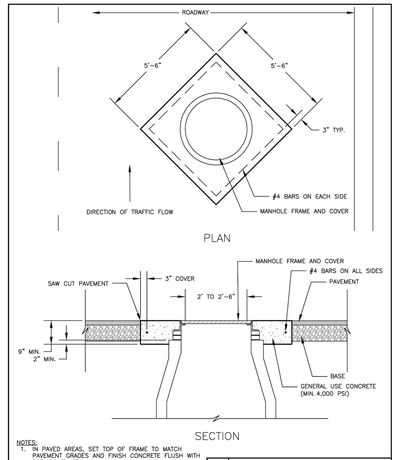


NOTE:
CONNECT THE SADDLE TO THE EXISTING MAIN PERMANENTLY USING CLAMPS AS RECOMMENDED BY THE MANUFACTURER.

CITY OF BOERNE

SANITARY SEWER SERVICE SADDLE CONNECTION

SCALE:	DRAWING No.	DATE:
N.T.S.	02530-1.2	MAY 2024



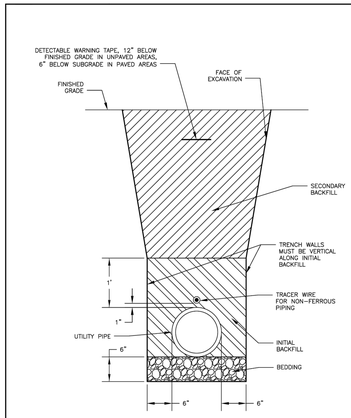
SECTION

NOTES:
1. IN PAVED AREAS, SET TOP OF FRAME TO MATCH PAVEMENT GRADES AND FINISH CONCRETE FLUSH WITH TOP OF FRAME.
2. IN UNPAVED AREAS, SET TOP OF FRAME 1" TO 2" WITH FINISHED GRADE AND FINISH CONCRETE FLUSH WITH FINISHED GRADE.
3. CONSTRUCT CONCRETE RING ENCASEMENT ON ALL MANHOLES.
4. IF MANHOLE IS LOCATED OFF-SITE, ENSURE MANHOLE IS AT LEAST 6" EXPOSED ABOVE GRADE.

CITY OF BOERNE

MANHOLE RING ENCASEMENT

SCALE:	DRAWING No.	DATE:
N.T.S.	02530-2.2	MAY 2024

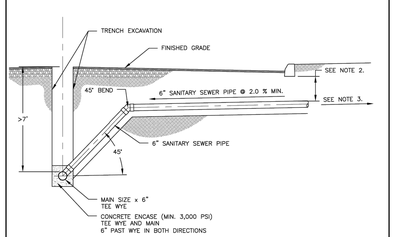


NOTES:
1. TYPICAL BEDDING PER APPLICABLE UTILITY BACKFILL STANDARD SPECIFICATIONS.
2. SECONDARY BACKFILL TO BE COMPACTED IN LIFTS PER ASTM D1557 (MODIFIED PROCTOR) AND SPECIFICATION 02221.

CITY OF BOERNE

UTILITY PIPE TRENCH

SCALE:	DRAWING No.	DATE:
N.T.S.	02221-1.0	MAY 2024

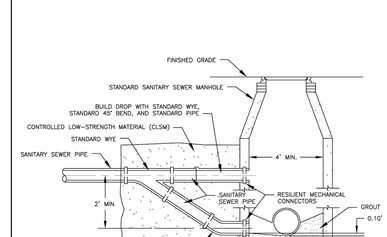


NOTES:
1. USE DEEP SANITARY SEWER SERVICE LATERAL WHEN THE MAIN DEPTH IS GREATER THAN 7' BELOW FINISHED GRADE.
2. INSTALL SERVICE LATERAL 2' MINIMUM BELOW CURB, OR 3' MINIMUM BELOW FINISHED GRADE WHEN NOT IN STREET. INSTALL SERVICE DEEPER WHEN LOT BEING SERVED SLOPES AWAY FROM SEWER MAIN. LATERAL DEPTH AT CURB OR PROPERTY LINE SHOULD NOT EXCEED 7'.
3. COMPLETE DEEP SANITARY SEWER SERVICE LATERAL AS PER THE STANDARD SANITARY SEWER SERVICE LATERAL DETAIL 02530-1.0.
4. NO ADDITIONAL BENDS ALLOWED BEYOND THE SINGLE 45-DEGREE BEND AFTER CONNECTION TO SEWER MAIN FOR SEWER SERVICE WITHIN ROW.

CITY OF BOERNE

DEEP SANITARY SEWER SERVICE LATERAL

SCALE:	DRAWING No.	DATE:
N.T.S.	02530-1.1	MAY 2024

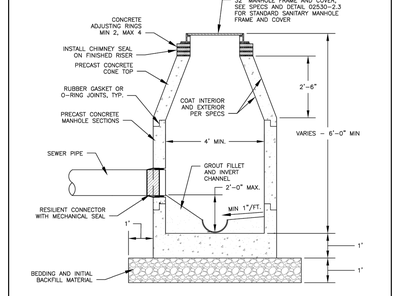


NOTES:
1. CONTROLLED LOW-STRENGTH MATERIAL (CLSM) STRENGTH SHALL BE BETWEEN 75 PSI AND 750 PSI AT 7 DAYS AND SHALL BE TESTED PER SPECIFICATION 02221.
2. ALL BACKFILL SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE

SANITARY SEWER DROP MANHOLE

SCALE:	DRAWING No.	DATE:
N.T.S.	02530-2.1	MAY 2024



NOTES:
1. IF WATERTIGHT MANHOLE IS USED, COVER MUST BE VENTED PER THE TCEQ REQUIREMENTS.
2. SANITARY SEWER MANHOLE MUST PASS VACUUM TESTING PER SPECIFICATION 02530.
3. ALL BACKFILL SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE

STANDARD SANITARY SEWER MANHOLE

SCALE:	DRAWING No.	DATE:
N.T.S.	02530-2.0	MAY 2024

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CORLEY FARMS UNIT 5

SANITARY SEWER STANDARD DETAILS

DATE
01/28/2025

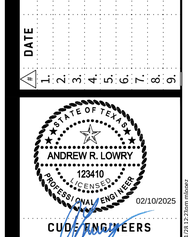
PROJECT NO.
03481.012

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CHECKED BY
XV/AL

REVISIONS

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



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TBPE No. 455
TBPLS No. 1004500

SAWS JOB NO.
22-1190

C32

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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.

P:\03481\02-23 Drawings\C4-23 SAN DWF FARMS 5 STANDARD DETAILS.dwg 2/5/2025 10:23:22am rholguin

LEGEND

- W — = 3/4" PROPOSED WATER SERVICE WITH 5/8" METER
- W — = 3/4" EXISTING WATER SERVICE WITH 5/8" METER
- 3/4" IRRIG. — = 3/4" IRRIGATION SERVICE WITH 3/4" METER
- XXX L.F. - XX" PVC C-900 — = PROPOSED WATER MAIN
- = EXISTING WATER MAIN
- = EXISTING SANITARY SEWER
- X X = JOINT RESTRAINT
- =JOINT RESTRAINT ENTIRE LENGTH
- = PROPOSED SEWER LINE AND MANHOLE

THRUST BLOCKING NOTE

ANCHORAGE/ THRUST BLOCKING AND JOINT RESTRAINTS SHALL BE DONE IN ACCORDANCE WITH SAWS STANDARDS AND SPECIFICATIONS FOR CONSTRUCTION (ITEM NO. 839)

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.

PRESSURE ZONE 12

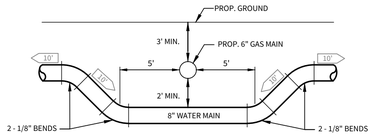
Developer's Name	PULTE HOMES OF TEXAS, L.P.		
Developer's Address	927 E. SONTERRA BLVD., SUITE 316		
City	SAN ANTONIO	**State** TEXAS	**Zip** 78258
Phone #	(210) 496-1985	**Fax #**	(210) 496-0449
SAWS Block Map #	N/A	**Total EDU's** 75	**Total Acreage** 19.78
Total Linear Footage of Pipe	8" W - 3,027 L.F./2" W - 702 L.F.		**Plat No.** N/A (CORLEY FARMS UNIT 5 PLAT)
Number of Lots	XXXX	**SAWS Job No.**	XX-XXXX

SAWS CONSTRUCTION NOTES
COUNTER PERMIT AND GENERAL CONSTRUCTION PERMIT *REVISED JULY 2022*

1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE APPROVED BY THE SAN ANTONIO WATER SYSTEM (SAWS) AND COMPLY WITH THE PLANS, SPECIFICATIONS, GENERAL CONDITIONS AND WITH THE FOLLOWING AS APPLICABLE
   - A. CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEM", TEXAS ADMINISTRATIVE CODE (TAC) TITLE 30 PART 1 CHAPTER 217 AND "PUBLIC DRINKING WATER", TAC TITLE 30 PART 1 CHAPTER 290.
   - B. CURRENT TXDOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND DRAINAGE".
   - C. CURRENT "SAN ANTONIO WATER SYSTEM STANDARD SPECIFICATIONS FOR WATER AND SANITARY SEWER CONSTRUCTION".
   - D. CURRENT CITY OF SAN ANTONIO "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION".
   - E. CURRENT CITY OF SAN ANTONIO "UTILITY EXCAVATION CRITERIA MANUAL" (UECM).
2. THE CONTRACTOR SHALL NOT PROCEED WITH ANY PIPE INSTALLATION WORK UNTIL THEY OBTAIN A COPY OF THE APPROVED COUNTER PERMIT OR GENERAL CONSTRUCTION PERMIT (GCP) FROM THE CONSULTANT AND HAS BEEN NOTIFIED BY SAWS CONSTRUCTION INSPECTION DIVISION TO PROCEED WITH THE WORK AND HAS ARRANGED A MEETING WITH THE INSPECTOR AND CONSULTANT FOR THE WORK REQUIREMENTS. WORK COMPLETED BY THE CONTRACTOR WITHOUT AN APPROVED COUNTER PERMIT AND/OR A GCP WILL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE EXPENSE OF THE CONTRACTORS AND/OR THE DEVELOPER.
3. THE CONTRACTOR SHALL OBTAIN THE SAWS STANDARD DETAILS FROM THE SAWS WEBSITE, HTTP://WWW.SAWS.ORG/BUSINESS_CENTER/SPECS. UNLESS OTHERWISE NOTED WITHIN THE DESIGN PLANS.
4. THE CONTRACTOR IS TO MAKE ARRANGEMENTS WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT (210) 233-2973, ON NOTIFICATION PROCEDURES THAT WILL BE USED TO NOTIFY AFFECTED HOME RESIDENTS AND/OR PROPERTY OWNERS 48 HOURS PRIOR TO BEGINNING ANY WORK.
5. LOCATION AND DEPTH OF EXISTING UTILITIES AND SERVICE LATERALS SHOWN ON THE PLANS ARE UNDERSTOOD TO BE APPROXIMATE. ACTUAL LOCATIONS AND DEPTHS MUST BE FIELD VERIFIED BY THE CONTRACTOR AT LEAST 1 WEEK PRIOR TO CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION AND TO PROTECT THEM DURING CONSTRUCTION AT NO COST TO SAWS.
6. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES AT LEAST 1-2 WEEKS PRIOR TO CONSTRUCTION WHETHER SHOWN ON PLANS OR NOT. PLEASE ALLOW UP TO 7 BUSINESS DAYS FOR LOCATES REQUESTING PIPE LOCATION MARKERS ON SAWS FACILITIES. THE FOLLOWING CONTACT INFORMATION ARE SUPPLIED FOR VERIFICATION PURPOSES:
   - SAWS UTILITY LOCATES: HTTP://WWW.SAWS.ORG/SERVICE/LOCATES
   - COSA DRAINAGE (210) 207-0724 OR (210) 207-6026
   - COSA TRAFFIC SIGNAL OPERATIONS (210) 206-8480
   - COSA TRAFFIC SIGNAL DAMAGES (210) 207-3951
   - TEXAS STATE WIDE ONE CALL LOCATOR 1-800-545-6005 OR 811
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, SIDEWALKS, LANDSCAPING AND STRUCTURES TO ITS ORIGINAL OR BETTER CONDITION IF DAMAGES ARE MADE AS A RESULT OF THE PROJECT'S CONSTRUCTION.
8. ALL WORK IN TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) AND/OR BEXAR COUNTY RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT REQUIREMENTS.
9. THE CONTRACTOR SHALL COMPLY WITH CITY OF SAN ANTONIO OR OTHER GOVERNING MUNICIPALITY'S TREE ORDINANCES WHEN EXCAVATING NEAR TREES.
10. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN PERMIT.
11. HOLIDAY WORK: CONTRACTORS WILL NOT BE ALLOWED TO PERFORM SAWS WORK ON SAWS RECOGNIZED HOLIDAYS. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.
    WEEKEND WORK: CONTRACTORS ARE REQUIRED TO NOTIFY THE SAWS INSPECTION CONSTRUCTION DEPARTMENT 48 HOURS IN ADVANCE TO REQUEST WEEKEND WORK. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.
    ANY AND ALL SAWS UTILITY WORK INSTALLED WITHOUT HOLIDAY/WEEKEND APPROVAL WILL BE SUBJECT TO BE UNCOVERED FOR PROPER INSPECTION.
12. COMPACTION NOTE (ITEM 804): THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE COMPACTION REQUIREMENTS ON ALL TRENCH BACKFILL AND FOR PAYING FOR THE TESTS PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED, OR AS INDICATED BY THE SAWS INSPECTOR AND/OR THE TEST ADMINISTRATOR, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
13. A COPY OF ALL TESTING REPORTS SHALL BE FORWARDED TO SAWS CONSTRUCTION INSPECTION DIVISION.

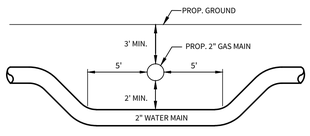
WATER SECTION

1. PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING MAINS OF ANY SIZE MUST BE COORDINATED WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT LEAST ONE WEEK IN ADVANCE OF THE SHUTDOWN. THE CONTRACTOR MUST ALSO PROVIDE A SEQUENCE OF WORK AS RELATED TO THE TIE-INS; THIS IS AT NO ADDITIONAL COST TO SAWS OR THE PROJECT AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SEQUENCE THE WORK ACCORDINGLY.
   - FOR WATER MAINS 12" OR HIGHER: SAWS EMERGENCY OPERATIONS CENTER (210) 233-2014
2. ASBESTOS CEMENT (AC) PIPE, ALSO KNOWN AS TRANSITE PIPE WHICH IS KNOWN TO CONTAIN ASBESTOS- CONTAINING MATERIAL (ACM), MAY BE LOCATED WITHIN THE PROJECT LIMITS. SPECIAL WASTE MANAGEMENT PROCEDURES AND HEALTH AND SAFETY REQUIREMENTS WILL BE APPLICABLE WHEN REMOVAL AND/OR DISTURBANCE OF THIS PIPE OCCURS. SUCH WORK IS TO BE MADE UNDER SPECIAL SPECIFICATION ITEM NO. 3000, "SPECIAL SPECIFICATION FOR HANDLING ASBESTOS CEMENT PIPE".
3. VALVE REMOVAL: WHERE THE CONTRACTOR IS TO ABANDON A WATER MAIN, THE CONTROL VALVE LOCATED ON THE ABANDONING BRANCH WILL BE REMOVED AND REPLACED WITH A CAP/PLUG. (NSPI)
4. SUITABLE ANCHORAGE/THRUST BLOCKING OR JOINT RESTRAINT SHALL BE PROVIDED AT ALL OF THE FOLLOWING MAIN LOCATIONS: DEAD ENDS, PLUGS, CAPS, TEES, CROSSES, VALVES, AND BENDS, IN ACCORDANCE WITH THE STANDARD DRAWINGS DD-839 SERIES AND ITEM NO. 839, IN THE SAWS STANDARD SPECIFICATIONS FOR CONSTRUCTION.
5. ALL VALVES SHALL READ "OPEN RIGHT".
6. PRVS REQUIRED: CONTRACTOR TO VERIFY THAT NO PORTION OF THE TRACT IS BELOW GROUND ELEVATION OF 1425 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 1425 FEET, THE DEVELOPER OR BUILDER SHALL INSTALL AT EACH LOT, ON THE CUSTOMER'S SIDE OF THE METER, AN APPROVED TYPE PRESSURE REGULATOR IN CONFORMANCE WITH THE PLUMBING CODE OF THE CITY OF SAN ANTONIO. NO DUAL SERVICES ALLOWED FOR ANY LOT(S) IF "PRV IS/ARE REQUIRED FOR SUCH LOT(S), ONLY SINGLE SERVICE CONNECTIONS SHALL BE ALLOWED. "NOTE: A PRESSURE REGULATOR IS ALSO KNOWN AS A PRESSURE REDUCING VALVE (PRV).
7. PIPE DISINFECTION WITH DRY HTH FOR PROJECTS LESS THAN 800 LINEAR FEET. (ITEM NO. 847.3): MAINS SHALL BE DISINFECTED WITH DRY HTH WHERE SHOWN IN THE CONTRACT DOCUMENTS OR AS DIRECTED BY THE INSPECTOR, AND SHALL NOT EXCEED A TOTAL LENGTH OF 800 FEET. THIS METHOD OF DISINFECTION WILL ALSO BE FOLLOWED FOR MAIN REPAIRS. THE CONTRACTOR SHALL UTILIZE ALL APPROPRIATE SAFETY MEASURE TO PROTECT HIS PERSONNEL DURING DISINFECTION OPERATIONS.
8. BACKFLOW PREVENTION DEVICES:
   - ALL IRRIGATION SERVICES WITHIN RESIDENTIAL AREAS ARE REQUIRED TO HAVE BACKFLOW PREVENTION DEVICES.
   - ALL COMMERCIAL BACKFLOW PREVENTION DEVICES MUST BE APPROVED BY SAWS PRIOR TO INSTALLATION.
9. FINAL CONNECTION TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL THE WATER MAIN HAS BEEN PRESSURE TESTED, CHLORINATED, AND SAWS HAS RELEASED THE MAIN FOR TIE-IN AND USE.
10. DIVISION VALVES: DIVISION VALVES SHOWN ON PLANS OR NOT SHOWN ON PLANS BUT FOUND IN THE FIELD SHALL ONLY BE OPERATED BY SAWS DISTRIBUTION AND COLLECTION STAFF AND ONLY WITH PRIOR WRITTEN APPROVAL OF THE SAWS DIRECTOR OF PRODUCTION AND OPERATIONS AND PROPER COORDINATION WITH ALL SAWS DEPARTMENTS. CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE INSPECTOR A MINIMUM OF TWO WEEKS IN ADVANCE TO START THE COORDINATION PROCESS AND WILL BE INFORMED BY THE INSPECTOR WHEN THE DIVISION VALVE WILL BE OPERATED BY THE SAWS DISTRIBUTION AND COLLECTION STAFF. THE DIVISION VALVE CAN ONLY BE OPERATED BY SAWS DISTRIBUTION AND COLLECTION STAFF MEMBER NOT THE INSPECTOR OR THE CONTRACTOR. OPERATION OF A DIVISION VALVE WITHOUT THE EXPRESS PRIOR WRITTEN APPROVAL OF THE SAWS DISTRIBUTION AND COLLECTION STAFF WILL CONSTITUTE A MATERIAL BREACH OF ANY WRITTEN SAWS CONTRACT OR PERMIT IN ADDITION TO SUBJECTING THE CONTRACTOR TO LIABILITY FOR ANY AND ALL FINES, FEES, OR OTHER DAMAGES, DIRECT OR CONSEQUENTIAL, THAT MAY ARISE FROM OR BE CAUSED BY THE OPERATION OF THE VALVE WITHOUT PRIOR WRITTEN PERMISSION. PLEASE BE INFORMED THAT THE APPROVAL OF THE OPERATION OR OPENING OR CLOSING OF A DIVISION VALVE CAN TAKE SEVERAL WEEKS FOR APPROVAL. DIVISION VALVES WILL ALSO HAVE A VALVE LID LABELED DIVISION VALVE AND A LOCKING MECHANISM INSTALLED WITH A KEY. THE LOCK AND KEY MECHANISM WILL BE PAID FOR BY THE CONTRACTOR BUT WILL BE INSTALLED BY SAWS DISTRIBUTION AND COLLECTION STAFF.
11. ALL METERS SHALL BE 5/8", UNLESS OTHERWISE NOTED.
12. ALL PIPES SHALL BE C-900, CLASS 235 DR 18, UNLESS OTHERWISE NOTED.



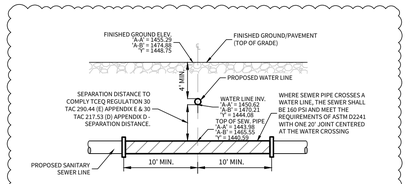
8" WATER / 6" GAS CROSSINGS DETAIL

SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)



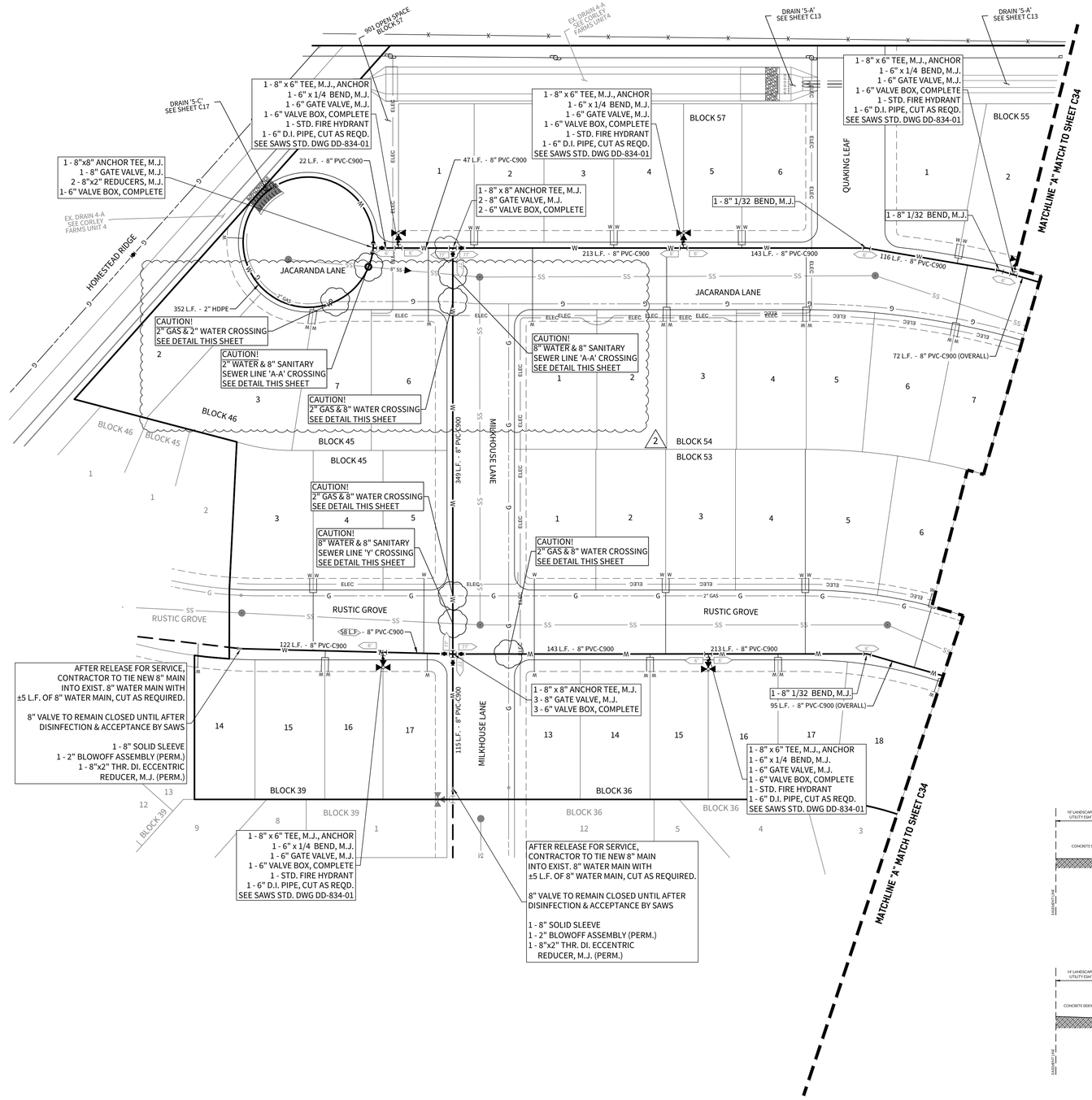
2" WATER / 2" GAS CROSSINGS DETAIL

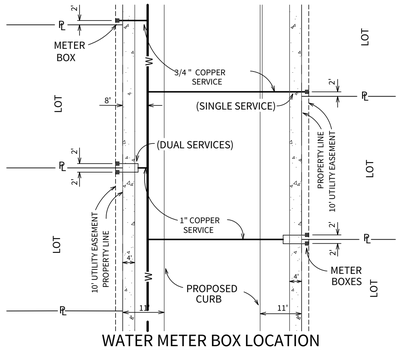
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

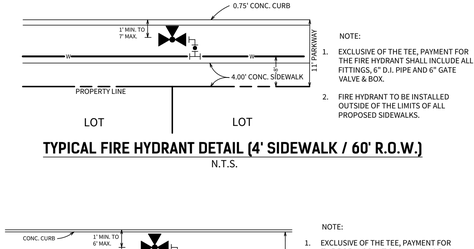
N.T.S.





WATER METER BOX LOCATION

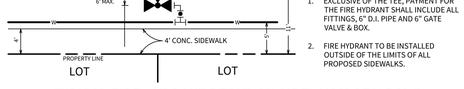
N.T.S.



NOTE:
1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 60' R.O.W.)

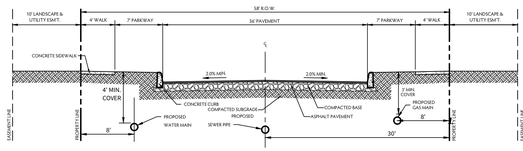
N.T.S.



NOTE:
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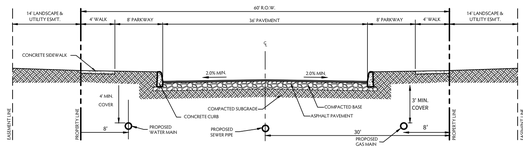
TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 58' ROW)

N.T.S.



TYPICAL "NEIGHBORHOOD RESIDENTIAL" STREET CROSS-SECTION

N.T.S.



TYPICAL "NEIGHBORHOOD COLLECTOR" STREET CROSS-SECTION

N.T.S.

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

CORLEY FARMS UNIT 5

WATER DISTRIBUTION PLAN

SCALE: 1"=50'
0 50 100

DATE
06/02/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

	DATE	PERMITTING COMMENTS	GRADING REVISION
1	11/7/24	X	
2	5/27/25		X

STATE OF TEXAS
ANDREW R. LOWRY
123410
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PROFESSIONAL ENGINEER
5/2/25

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C33

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P:\03481.012\2-Drawings\CLSD\5-SS\ WATER DISTRIBUTION PLAN.dwg 2025/06/03 12:37pm kmartinez

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LEGEND

- = 3/4" PROPOSED WATER SERVICE WITH 5/8" METER
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- 3/4" IRRIG. = 3/4" IRRIGATION SERVICE WITH 3/4" METER
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- = EXISTING WATER MAIN
- = EXISTING SANITARY SEWER
- X X = JOINT RESTRAINT
- =JOINT RESTRAINT ENTIRE LENGTH
- = PROPOSED SEWER LINE AND MANHOLE

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ANCHORAGE/ THRUST BLOCKING AND JOINT RESTRAINTS SHALL BE DONE IN ACCORDANCE WITH SAWS STANDARDS AND SPECIFICATIONS FOR CONSTRUCTION (ITEM NO. 839)

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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.

PRESSURE ZONE 12

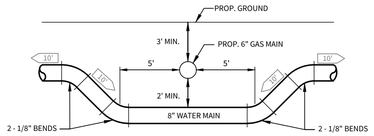
Developer's Name	PULTE HOMES OF TEXAS, L.P.		
Developer's Address	927 E. SONTERRA BLVD., SUITE 316		
City	SAN ANTONIO	**State** TEXAS	**Zip** 78258
Phone #	(210) 496-1985	**Fax #**	(210) 496-0449
SAWS Block Map #	N/A	**Total EDU's** 75	**Total Acreage** 19.78
Total Linear Footage of Pipe	8" W - 3,027 L.F./2" W - 702 L.F.	**Plat No.**	N/A (CORLEY FARMS UNIT 5 PLAT)
Number of Lots	XXXX	**SAWS Job No.**	XX-XXXX

SAWS CONSTRUCTION NOTES
COUNTER PERMIT AND GENERAL CONSTRUCTION PERMIT *REVISED JULY 2022*

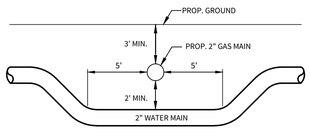
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   A. CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEM", TEXAS ADMINISTRATIVE CODE (TAC) TITLE 30 PART 1 CHAPTER 217 AND "PUBLIC DRINKING WATER", TAC TITLE 30 PART 1 CHAPTER 290.
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2. THE CONTRACTOR SHALL NOT PROCEED WITH ANY PIPE INSTALLATION WORK UNTIL THEY OBTAIN A COPY OF THE APPROVED COUNTER PERMIT OR GENERAL CONSTRUCTION PERMIT (GCP) FROM THE CONSULTANT AND HAS BEEN NOTIFIED BY SAWS CONSTRUCTION INSPECTION DIVISION TO PROCEED WITH THE WORK AND HAS ARRANGED A MEETING WITH THE INSPECTOR AND CONSULTANT FOR THE WORK REQUIREMENTS. WORK COMPLETED BY THE CONTRACTOR WITHOUT AN APPROVED COUNTER PERMIT AND/OR A GCP WILL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE EXPENSE OF THE CONTRACTORS AND/OR THE DEVELOPER.
3. THE CONTRACTOR SHALL OBTAIN THE SAWS STANDARD DETAILS FROM THE SAWS WEBSITE, HTTP://WWW.SAWS.ORG/BUSINESS_CENTER/SPECS. UNLESS OTHERWISE NOTED WITHIN THE DESIGN PLANS.
4. THE CONTRACTOR IS TO MAKE ARRANGEMENTS WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT (210) 233-2973, ON NOTIFICATION PROCEDURES THAT WILL BE USED TO NOTIFY AFFECTED HOME RESIDENTS AND/OR PROPERTY OWNERS 48 HOURS PRIOR TO BEGINNING ANY WORK.
5. LOCATION AND DEPTH OF EXISTING UTILITIES AND SERVICE LATERALS SHOWN ON THE PLANS ARE UNDERSTOOD TO BE APPROXIMATE. ACTUAL LOCATIONS AND DEPTHS MUST BE FIELD VERIFIED BY THE CONTRACTOR AT LEAST 1 WEEK PRIOR TO CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION AND TO PROTECT THEM DURING CONSTRUCTION AT NO COST TO SAWS.
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   - SAWS UTILITY LOCATES: HTTP://WWW.SAWS.ORG/SERVICE/LOCATES
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7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, SIDEWALKS, LANDSCAPING AND STRUCTURES TO ITS ORIGINAL OR BETTER CONDITION IF DAMAGES ARE MADE AS A RESULT OF THE PROJECT'S CONSTRUCTION.
8. ALL WORK IN TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) AND/OR BEXAR COUNTY RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT REQUIREMENTS.
9. THE CONTRACTOR SHALL COMPLY WITH CITY OF SAN ANTONIO OR OTHER GOVERNING MUNICIPALITY'S TREE ORDINANCES WHEN EXCAVATING NEAR TREES.
10. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN PERMIT.
11. HOLIDAY WORK: CONTRACTORS WILL NOT BE ALLOWED TO PERFORM SAWS WORK ON SAWS RECOGNIZED HOLIDAYS. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.
    WEEKEND WORK: CONTRACTORS ARE REQUIRED TO NOTIFY THE SAWS INSPECTION CONSTRUCTION DEPARTMENT 48 HOURS IN ADVANCE TO REQUEST WEEKEND WORK. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.
    ANY AND ALL SAWS UTILITY WORK INSTALLED WITHOUT HOLIDAY/WEEKEND APPROVAL WILL BE SUBJECT TO BE UNCOVERED FOR PROPER INSPECTION.
12. COMPACTION NOTE (ITEM 804): THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE COMPACTION REQUIREMENTS ON ALL TRENCH BACKFILL AND FOR PAYING FOR THE TESTS PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED, OR AS INDICATED BY THE SAWS INSPECTOR AND/OR THE TEST ADMINISTRATOR, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
13. A COPY OF ALL TESTING REPORTS SHALL BE FORWARDED TO SAWS CONSTRUCTION INSPECTION DIVISION.

WATER SECTION

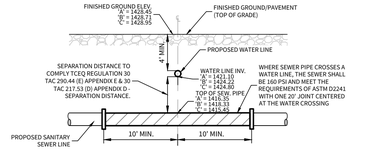
1. PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING MAINS OF ANY SIZE MUST BE COORDINATED WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT LEAST ONE WEEK IN ADVANCE OF THE SHUTDOWN. THE CONTRACTOR MUST ALSO PROVIDE A SEQUENCE OF WORK AS RELATED TO THE TIE-INS; THIS IS AT NO ADDITIONAL COST TO SAWS OR THE PROJECT AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SEQUENCE THE WORK ACCORDINGLY.
   - FOR WATER MAINS 12" OR HIGHER: SAWS EMERGENCY OPERATIONS CENTER (210) 233-2014
2. ASBESTOS CEMENT (AC) PIPE, ALSO KNOWN AS TRANSITE PIPE WHICH IS KNOWN TO CONTAIN ASBESTOS- CONTAINING MATERIAL (ACM), MAY BE LOCATED WITHIN THE PROJECT LIMITS. SPECIAL WASTE MANAGEMENT PROCEDURES AND HEALTH AND SAFETY REQUIREMENTS WILL BE APPLICABLE WHEN REMOVAL AND/OR DISTURBANCE OF THIS PIPE OCCURS. SUCH WORK IS TO BE MADE UNDER SPECIAL SPECIFICATION ITEM NO. 3000, "SPECIAL SPECIFICATION FOR HANDLING ASBESTOS CEMENT PIPE".
3. VALVE REMOVAL: WHERE THE CONTRACTOR IS TO ABANDON A WATER MAIN, THE CONTROL VALVE LOCATED ON THE ABANDONING BRANCH WILL BE REMOVED AND REPLACED WITH A CAP/PLUG. (NSPI)
4. SUITABLE ANCHORAGE/THRUST BLOCKING OR JOINT RESTRAINT SHALL BE PROVIDED AT ALL OF THE FOLLOWING MAIN LOCATIONS: DEAD ENDS, PLUGS, CAPS, TEES, CROSSES, VALVES, AND BENDS, IN ACCORDANCE WITH THE STANDARD DRAWINGS DD-839 SERIES AND ITEM NO. 839, IN THE SAWS STANDARD SPECIFICATIONS FOR CONSTRUCTION.
5. ALL VALVES SHALL READ "OPEN RIGHT".
6. PRVS REQUIRED: CONTRACTOR TO VERIFY THAT NO PORTION OF THE TRACT IS BELOW GROUND ELEVATION OF 1425 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 1425 FEET, THE DEVELOPER OR BUILDER SHALL INSTALL AT EACH LOT, ON THE CUSTOMER'S SIDE OF THE METER, AN APPROVED TYPE PRESSURE REGULATOR IN CONFORMANCE WITH THE PLUMBING CODE OF THE CITY OF SAN ANTONIO. NO DUAL SERVICES ALLOWED FOR ANY LOT(S) IF "PRV IS/ARE REQUIRED FOR SUCH LOT(S), ONLY SINGLE SERVICE CONNECTIONS SHALL BE ALLOWED. *NOTE: A PRESSURE REGULATOR IS ALSO KNOWN AS A PRESSURE REDUCING VALVE (PRV).
7. PIPE DISINFECTION WITH DRY HTH FOR PROJECTS LESS THAN 800 LINEAR FEET. (ITEM NO. 847.3): MAINS SHALL BE DISINFECTED WITH DRY HTH WHERE SHOWN IN THE CONTRACT DOCUMENTS OR AS DIRECTED BY THE INSPECTOR, AND SHALL NOT EXCEED A TOTAL LENGTH OF 800 FEET. THIS METHOD OF DISINFECTION WILL ALSO BE FOLLOWED FOR MAIN REPAIRS. THE CONTRACTOR SHALL UTILIZE ALL APPROPRIATE SAFETY MEASURE TO PROTECT HIS PERSONNEL DURING DISINFECTION OPERATIONS.
8. BACKFLOW PREVENTION DEVICES:
   - ALL IRRIGATION SERVICES WITHIN RESIDENTIAL AREAS ARE REQUIRED TO HAVE BACKFLOW PREVENTION DEVICES.
   - ALL COMMERCIAL BACKFLOW PREVENTION DEVICES MUST BE APPROVED BY SAWS PRIOR TO INSTALLATION.
9. FINAL CONNECTION TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL THE WATER MAIN HAS BEEN PRESSURE TESTED, CHLORINATED, AND SAWS HAS RELEASED THE MAIN FOR TIE-IN AND USE.
10. DIVISION VALVES: DIVISION VALVES SHOWN ON PLANS OR NOT SHOWN ON PLANS BUT FOUND IN THE FIELD SHALL ONLY BE OPERATED BY SAWS DISTRIBUTION AND COLLECTION STAFF AND ONLY WITH PRIOR WRITTEN APPROVAL OF THE SAWS DIRECTOR OF PRODUCTION AND OPERATIONS AND PROPER COORDINATION WITH ALL SAWS DEPARTMENTS. CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE INSPECTOR A MINIMUM OF TWO WEEKS IN ADVANCE TO START THE COORDINATION PROCESS AND WILL BE INFORMED BY THE INSPECTOR WHEN THE DIVISION VALVE WILL BE OPERATED BY THE SAWS DISTRIBUTION AND COLLECTION STAFF. THE DIVISION VALVE CAN ONLY BE OPERATED BY SAWS DISTRIBUTION AND COLLECTION STAFF MEMBER NOT THE INSPECTOR OR THE CONTRACTOR. OPERATION OF A DIVISION VALVE WITHOUT THE EXPRESS PRIOR WRITTEN APPROVAL OF THE SAWS DISTRIBUTION AND COLLECTION STAFF WILL CONSTITUTE A MATERIAL BREACH OF ANY WRITTEN SAWS CONTRACT OR PERMIT IN ADDITION TO SUBJECTING THE CONTRACTOR TO LIABILITY FOR ANY AND ALL FINES, FEES, OR OTHER DAMAGES, DIRECT OR CONSEQUENTIAL, THAT MAY ARISE FROM OR BE CAUSED BY THE OPERATION OF THE VALVE WITHOUT PRIOR WRITTEN PERMISSION. PLEASE BE INFORMED THAT THE APPROVAL OF THE OPERATION OR OPENING OR CLOSING OF A DIVISION VALVE CAN TAKE SEVERAL WEEKS FOR APPROVAL. DIVISION VALVES WILL ALSO HAVE A VALVE LID LABELED DIVISION VALVE AND A LOCKING MECHANISM INSTALLED WITH A KEY. THE LOCK AND KEY MECHANISM WILL BE PAID FOR BY THE CONTRACTOR BUT WILL BE INSTALLED BY SAWS DISTRIBUTION AND COLLECTION STAFF.
11. ALL METERS SHALL BE 5/8", UNLESS OTHERWISE NOTED.
12. ALL PIPES SHALL BE C-900, CLASS 235 DR 18, UNLESS OTHERWISE NOTED.



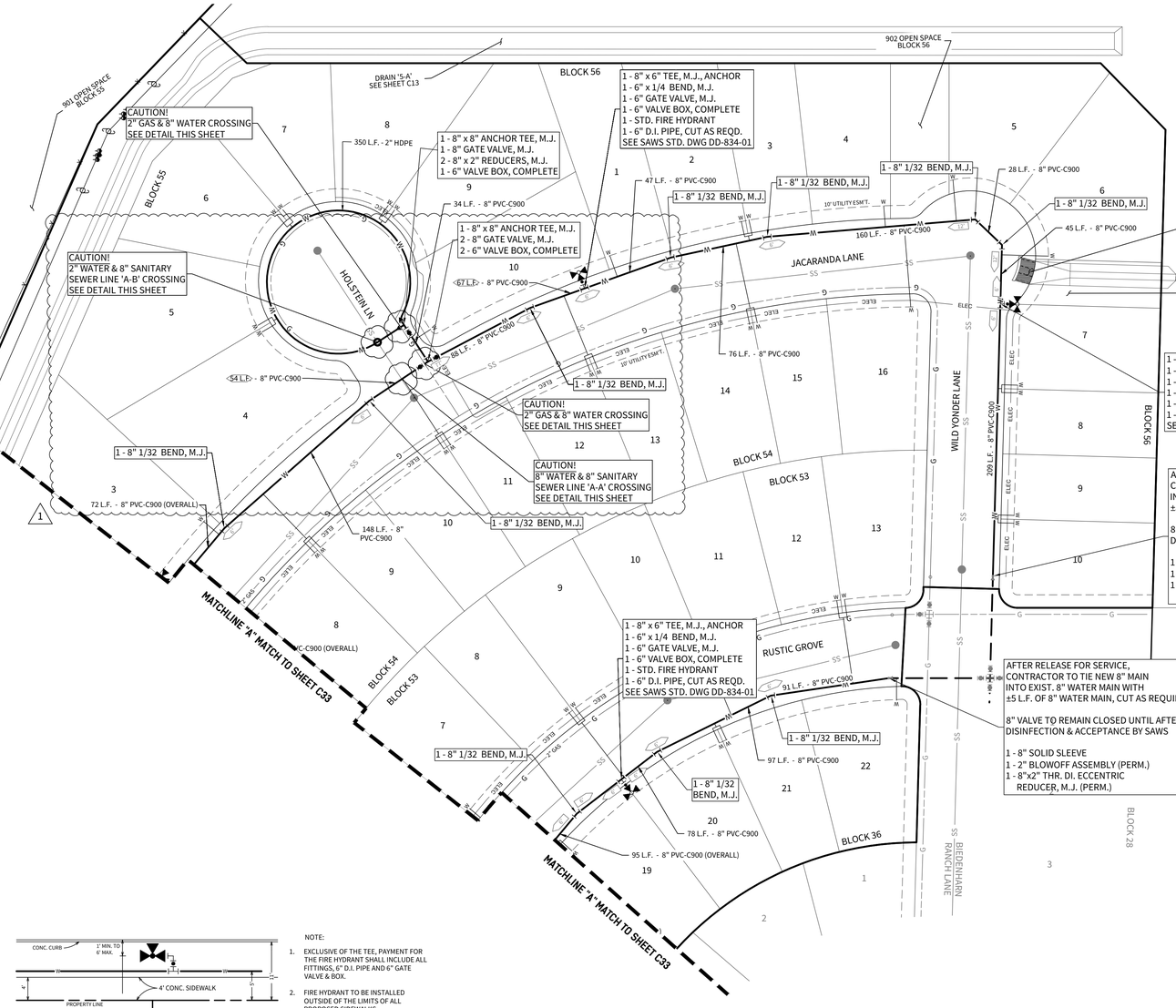
8" WATER / 6" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)

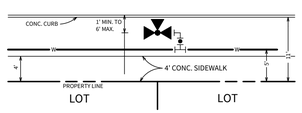


2" WATER / 2" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.

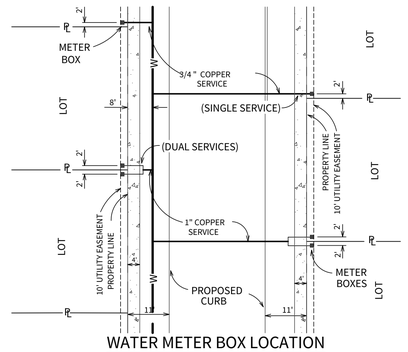




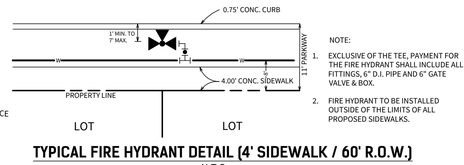
NOTE:
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2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 58' ROW)
N.T.S.



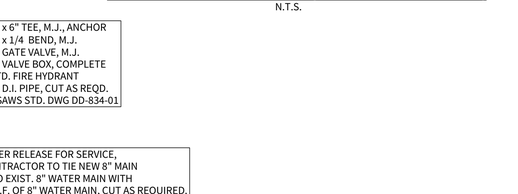


WATER METER BOX LOCATION
N.T.S.

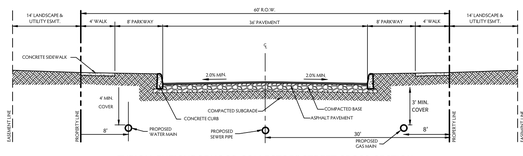


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TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 60' R.O.W.)
N.T.S.



TYPICAL "NEIGHBORHOOD RESIDENTIAL" STREET CROSS-SECTION
N.T.S.



TYPICAL "NEIGHBORHOOD COLLECTOR" STREET CROSS-SECTION
N.T.S.

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

CORLEY FARMS UNIT 5

WATER DISTRIBUTION PLAN

DATE
06/02/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

DATE	REVISIONS
5/27/25	GRADING REVISION

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
8/2/25
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C34

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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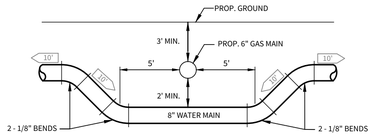
Developer's Name	PULTE HOMES OF TEXAS, L.P.		
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City	SAN ANTONIO	**State** TEXAS	**Zip** 78258
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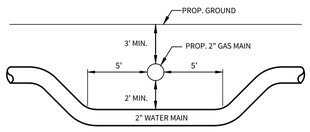
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   - TEXAS STATE WIDE ONE CALL LOCATOR 1-800-545-6005 OR 811
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, SIDEWALKS, LANDSCAPING AND STRUCTURES TO ITS ORIGINAL OR BETTER CONDITION IF DAMAGES ARE MADE AS A RESULT OF THE PROJECT'S CONSTRUCTION.
8. ALL WORK IN TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) AND/OR BEXAR COUNTY RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT REQUIREMENTS.
9. THE CONTRACTOR SHALL COMPLY WITH CITY OF SAN ANTONIO OR OTHER GOVERNING MUNICIPALITY'S TREE ORDINANCES WHEN EXCAVATING NEAR TREES.
10. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN PERMIT.
11. HOLIDAY WORK: CONTRACTORS WILL NOT BE ALLOWED TO PERFORM SAWS WORK ON SAWS RECOGNIZED HOLIDAYS. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.
    WEEKEND WORK: CONTRACTORS ARE REQUIRED TO NOTIFY THE SAWS INSPECTION CONSTRUCTION DEPARTMENT 48 HOURS IN ADVANCE TO REQUEST WEEKEND WORK. REQUEST SHOULD BE SENT TO CONSTWORKREQ@SAWS.ORG.
    ANY AND ALL SAWS UTILITY WORK INSTALLED WITHOUT HOLIDAY/WEEKEND APPROVAL WILL BE SUBJECT TO BE UNCOVERED FOR PROPER INSPECTION.
12. COMPACTION NOTE (ITEM 804): THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE COMPACTION REQUIREMENTS ON ALL TRENCH BACKFILL AND FOR PAYING FOR THE TESTS PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED, OR AS INDICATED BY THE SAWS INSPECTOR AND/OR THE TEST ADMINISTRATOR, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
13. A COPY OF ALL TESTING REPORTS SHALL BE FORWARDED TO SAWS CONSTRUCTION INSPECTION DIVISION.

WATER SECTION

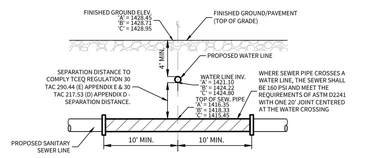
1. PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING MAINS OF ANY SIZE MUST BE COORDINATED WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT LEAST ONE WEEK IN ADVANCE OF THE SHUTDOWN. THE CONTRACTOR MUST ALSO PROVIDE A SEQUENCE OF WORK AS RELATED TO THE TIE-INS; THIS IS AT NO ADDITIONAL COST TO SAWS OR THE PROJECT AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SEQUENCE THE WORK ACCORDINGLY.
   - FOR WATER MAINS 12" OR HIGHER: SAWS EMERGENCY OPERATIONS CENTER (210) 233-2014
2. ASBESTOS CEMENT (AC) PIPE, ALSO KNOWN AS TRANSITE PIPE WHICH IS KNOWN TO CONTAIN ASBESTOS- CONTAINING MATERIAL (ACM), MAY BE LOCATED WITHIN THE PROJECT LIMITS. SPECIAL WASTE MANAGEMENT PROCEDURES AND HEALTH AND SAFETY REQUIREMENTS WILL BE APPLICABLE WHEN REMOVAL AND/OR DISTURBANCE OF THIS PIPE OCCURS. SUCH WORK IS TO BE MADE UNDER SPECIAL SPECIFICATION ITEM NO. 3000, "SPECIAL SPECIFICATION FOR HANDLING ASBESTOS CEMENT PIPE".
3. VALVE REMOVAL: WHERE THE CONTRACTOR IS TO ABANDON A WATER MAIN, THE CONTROL VALVE LOCATED ON THE ABANDONING BRANCH WILL BE REMOVED AND REPLACED WITH A CAP/PLUG. (NSPI)
4. SUITABLE ANCHORAGE/THRUST BLOCKING OR JOINT RESTRAINT SHALL BE PROVIDED AT ALL OF THE FOLLOWING MAIN LOCATIONS: DEAD-ENDS, PLUGS, CAPS, TEES, CROSSES, VALVES, AND BENDS, IN ACCORDANCE WITH THE STANDARD DRAWINGS DB-839 SERIES AND ITEM NO. 839, IN THE SAWS STANDARD SPECIFICATIONS FOR CONSTRUCTION.
5. ALL VALVES SHALL READ "OPEN RIGHT".
6. PRVS REQUIRED: CONTRACTOR TO VERIFY THAT NO PORTION OF THE TRACT IS BELOW GROUND ELEVATION OF 1425 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 1425 FEET, THE DEVELOPER OR BUILDER SHALL INSTALL AT EACH LOT, ON THE CUSTOMER'S SIDE OF THE METER, AN APPROVED TYPE PRESSURE REGULATOR IN CONFORMANCE WITH THE PLUMBING CODE OF THE CITY OF SAN ANTONIO. NO DUAL SERVICES ALLOWED FOR ANY LOT(S) IF "PRV IS/ARE REQUIRED FOR SUCH LOT(S), ONLY SINGLE SERVICE CONNECTIONS SHALL BE ALLOWED. *NOTE: A PRESSURE REGULATOR IS ALSO KNOWN AS A PRESSURE REDUCING VALVE (PRV).
7. PIPE DISINFECTION WITH DRY HTH FOR PROJECTS LESS THAN 800 LINEAR FEET. (ITEM NO. 847.3): MAINS SHALL BE DISINFECTED WITH DRY HTH WHERE SHOWN IN THE CONTRACT DOCUMENTS OR AS DIRECTED BY THE INSPECTOR, AND SHALL NOT EXCEED A TOTAL LENGTH OF 800 FEET. THIS METHOD OF DISINFECTION WILL ALSO BE FOLLOWED FOR MAIN REPAIRS. THE CONTRACTOR SHALL UTILIZE ALL APPROPRIATE SAFETY MEASURE TO PROTECT HIS PERSONNEL DURING DISINFECTION OPERATIONS.
8. BACKFLOW PREVENTION DEVICES:
   - ALL IRRIGATION SERVICES WITHIN RESIDENTIAL AREAS ARE REQUIRED TO HAVE BACKFLOW PREVENTION DEVICES.
   - ALL COMMERCIAL BACKFLOW PREVENTION DEVICES MUST BE APPROVED BY SAWS PRIOR TO INSTALLATION.
9. FINAL CONNECTION TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL THE WATER MAIN HAS BEEN PRESSURE TESTED, CHLORINATED, AND SAWS HAS RELEASED THE MAIN FOR TIE-IN AND USE.
10. DIVISION VALVES: DIVISION VALVES SHOWN ON PLANS OR NOT SHOWN ON PLANS BUT FOUND IN THE FIELD SHALL ONLY BE OPERATED BY SAWS DISTRIBUTION AND COLLECTION STAFF AND ONLY WITH PRIOR WRITTEN APPROVAL OF THE SAWS DIRECTOR OF PRODUCTION AND OPERATIONS AND PROPER COORDINATION WITH ALL SAWS DEPARTMENTS. CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE INSPECTOR A MINIMUM OF TWO WEEKS IN ADVANCE TO START THE COORDINATION PROCESS AND WILL BE INFORMED BY THE INSPECTOR WHEN THE DIVISION VALVE WILL BE OPERATED BY THE SAWS DISTRIBUTION AND COLLECTION STAFF. THE DIVISION VALVE CAN ONLY BE OPERATED BY SAWS DISTRIBUTION AND COLLECTION STAFF MEMBER NOT THE INSPECTOR OR THE CONTRACTOR. OPERATION OF A DIVISION VALVE WITHOUT THE EXPRESS PRIOR WRITTEN APPROVAL OF THE SAWS DISTRIBUTION AND COLLECTION STAFF WILL CONSTITUTE A MATERIAL BREACH OF ANY WRITTEN SAWS CONTRACT OR PERMIT IN ADDITION TO SUBJECTING THE CONTRACTOR TO LIABILITY FOR ANY AND ALL FINES, FEES, OR OTHER DAMAGES, DIRECT OR CONSEQUENTIAL, THAT MAY ARISE FROM OR BE CAUSED BY THE OPERATION OF THE VALVE WITHOUT PRIOR WRITTEN PERMISSION. PLEASE BE INFORMED THAT THE APPROVAL OF THE OPERATION OR OPENING OR CLOSING OF A DIVISION VALVE CAN TAKE SEVERAL WEEKS FOR APPROVAL. DIVISION VALVES WILL ALSO HAVE A VALVE LID LABELED DIVISION VALVE AND A LOCKING MECHANISM INSTALLED WITH A KEY. THE LOCK AND KEY MECHANISM WILL BE PAID FOR BY THE CONTRACTOR BUT WILL BE INSTALLED BY SAWS DISTRIBUTION AND COLLECTION STAFF.
11. ALL METERS SHALL BE 5/8", UNLESS OTHERWISE NOTED.
12. ALL PIPES SHALL BE C-900, CLASS 235 DR 18, UNLESS OTHERWISE NOTED.



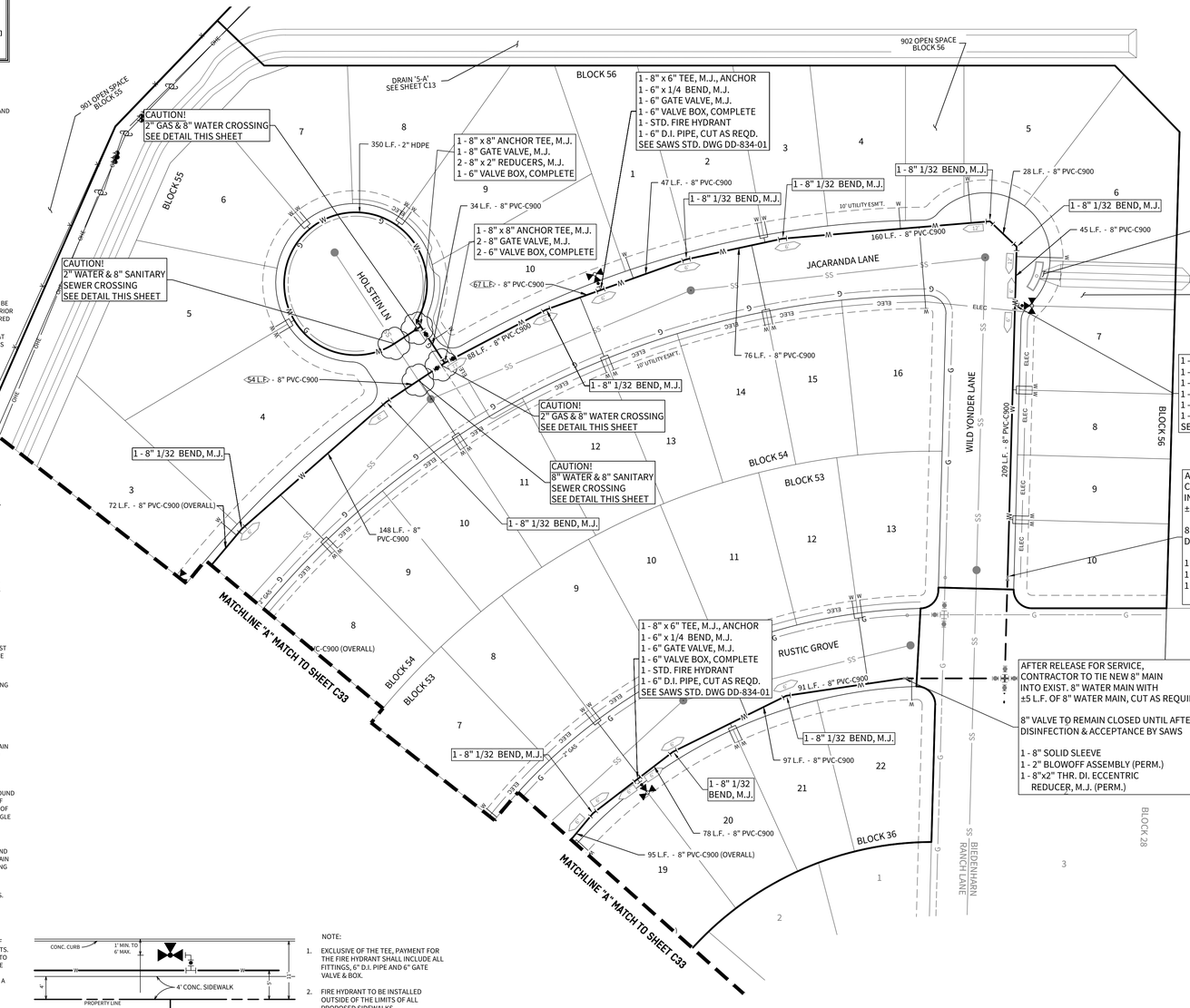
8" WATER / 6" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)

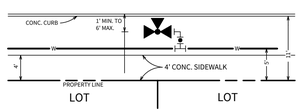


2" WATER / 2" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)



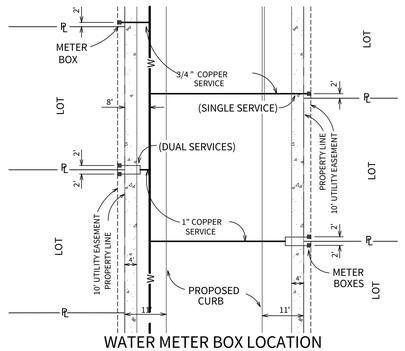
TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.



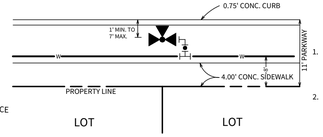


NOTE:
1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 58' ROW)
N.T.S.

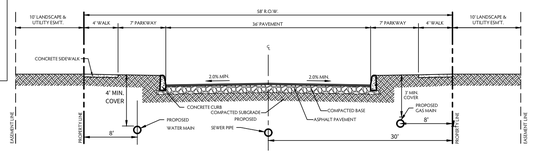


WATER METER BOX LOCATION
N.T.S.

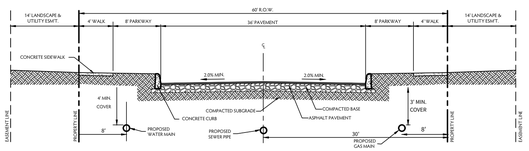


NOTE:
1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 60' R.O.W.)
N.T.S.



TYPICAL "NEIGHBORHOOD RESIDENTIAL" STREET CROSS-SECTION
N.T.S.



TYPICAL "NEIGHBORHOOD COLLECTOR" STREET CROSS-SECTION
N.T.S.

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

SCALE: 1"=50'
0 50 100

CORLEY FARMS UNIT 5
WATER DISTRIBUTION PLAN

DATE 01/28/2025
PROJECT NO. 03481.012
DRAWN BY C3
CHECKED BY XV/AL

REVISIONS

DATE	1	2	3	4	5	6	7	8	9
A									

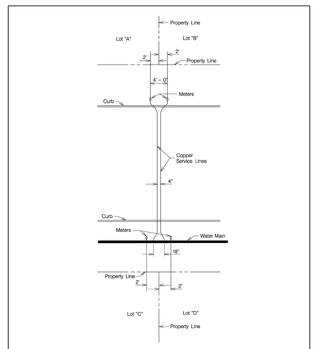
STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
02/10/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C34

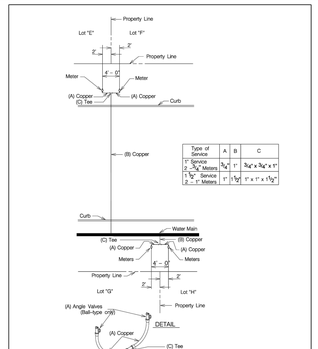
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SINGLE SERVICE LINE – SINGLE METER

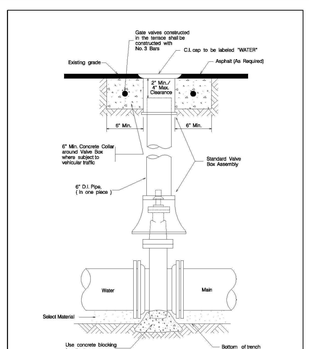
PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	TYPICAL SERVICE ARRANGEMENT	March 2008	
		DD–824–05	SHEET 1. of 3.



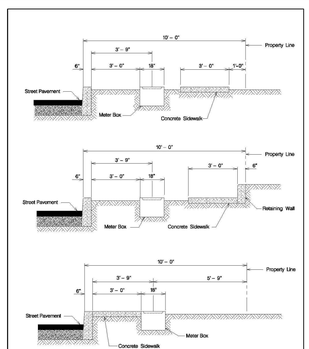
Type of Service	A	B	C
1" Service 2 – ¾" Meters	¾"	1"	¾"x"x¾"x1"
1 ½" Service 2 – 1" Meters	1"	1½"	1"x1"x1½"

SINGLE SERVICE LINE – DUAL METER

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	TYPICAL SERVICE ARRANGEMENT	March 2008	
		DD–824–05	SHEET 2. of 3.

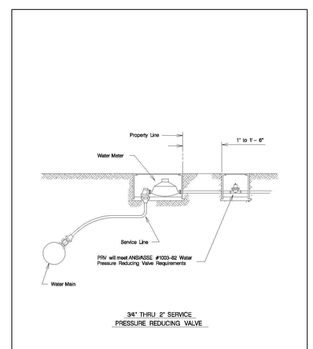


PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	INSTALLATION OF NON-GEARED GATE VALVE WITH VALVE BOX AND EXTENSION	March 2008	
		DD–828–01	SHEET 1. of 1.



Note:
Meter Box location in commercial and industrial areas will be as directed by the Engineer

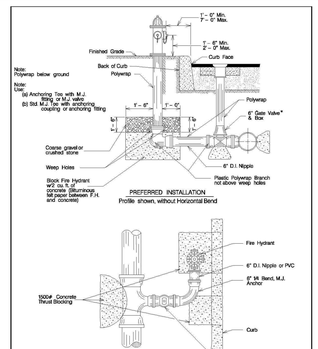
PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	TYPICAL METER BOX LOCATION (RESIDENTIAL)	March 2008	
		DD–833–01	SHEET 1. of 1.



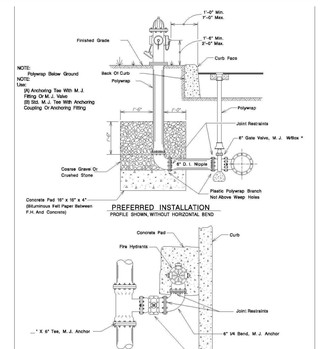
¾" THRU 2" SERVICE
PRESSURE REDUCING VALVE

Note:
For Tapping Schedule, See DD–30–00 Sheet 3 of 3

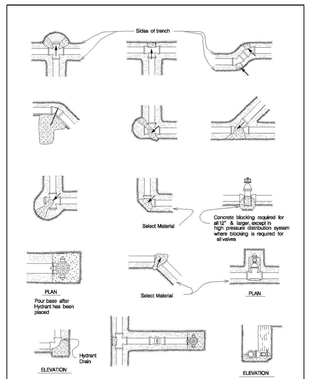
PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	SERVICE INSTALLATION WITH PRESSURE REDUCING VALVE	March 2008	
		DD–833–03	SHEET 1. of 1.



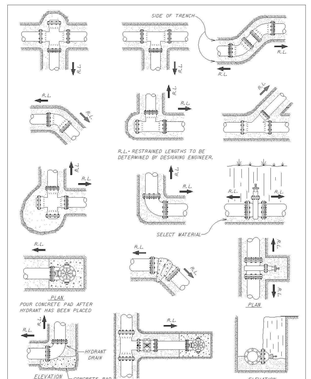
PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	FIRE HYDRANT INSTALLATION	March 2008	June 2009
		DD–834–01	SHEET 1. or 2.



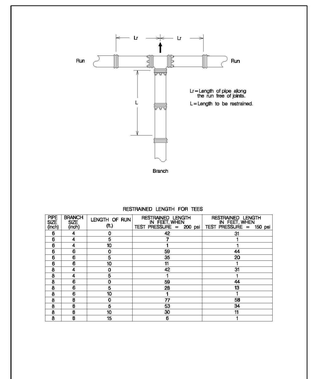
PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	FIRE HYDRANT INSTALLATION (JOINT RESTRAINT)	March 2008	June 2009
		DD–834–01	SHEET 2. or 2.



PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	THRUST BLOCKS FOR FITTINGS (WATER ONLY)	March 2008	
		DD–839–01	SHEET 1. or 2.



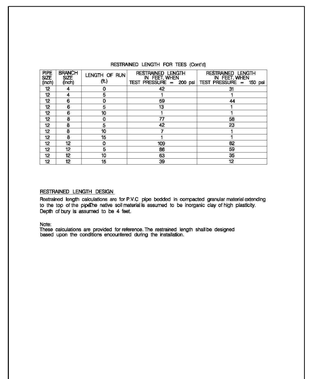
PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	JOINT RESTRAINTS FOR FITTINGS (WATER ONLY)	MARCH 2008	
		DD–839–01	SHEET 2. or 2.



RESTRAINED LENGTH FOR TEES

PIPE SIZE (INCH)	BRANCH SIZE (INCH)	LENGTH OF RUN (FT.)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
6	6	0	42	31
6	4	0	7	1
6	4	10	1	1
6	6	0	59	44
6	6	10	31	17
8	8	10	91	77
8	4	0	43	31
8	4	5	1	1
8	6	0	59	44
8	6	5	35	19
8	6	10	11	1
8	8	0	77	58
8	8	5	52	34
8	8	10	30	15
8	8	15	6	1

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	RESTRAINED LENGTHS FOR TEES	March 2008	
		DD–839–04	SHEET 1. or 2.



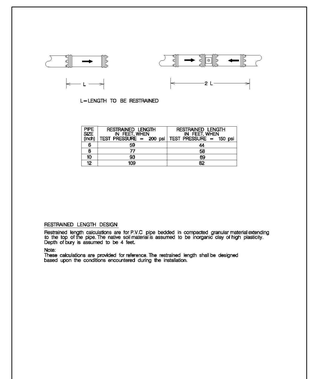
RESTRAINED LENGTH FOR TEES (Cont'd)

PIPE SIZE (INCH)	BRANCH SIZE (INCH)	LENGTH OF RUN (FT.)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
12	6	0	42	31
12	4	0	1	1
12	6	0	59	44
12	6	5	13	1
12	6	10	1	1
12	8	0	77	58
12	8	5	42	23
12	8	10	7	1
12	8	15	1	1
12	12	0	100	82
12	12	5	86	59
12	12	10	63	35
12	12	15	39	12

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

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

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	RESTRAINED LENGTHS FOR TEES	March 2008	
		DD–839–04	SHEET 2. or 2.

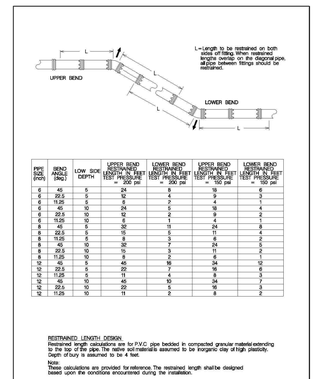


PIPE SIZE (INCH)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
6	77	58
8	99	69
12	109	82

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

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

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	RESTRAINED LENGTHS FOR DEAD ENDS /INLINE VALVES	March 2008	
		DD–839–05	SHEET 1. or 1.

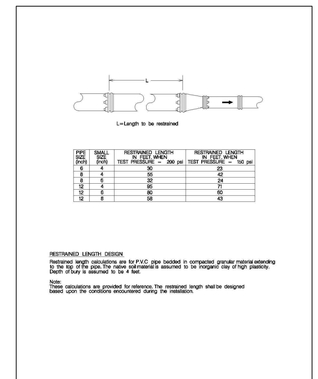


PIPE SIZE (INCH)	BEND ANGLE (DEG.)	LOW SIDE DEPTH	UPPER BEND LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	LOWER BEND LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	UPPER BEND LENGTH IN FEET WHEN TEST PRESSURE = 150 psi	LOWER BEND LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
6	45	5	24	6	18	6
6	22.5	5	12	4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

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

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

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	RESTRAINED LENGTHS FOR VERTICAL OFFSETS	March 2008	
		DD–839–06	SHEET 1. or 1.

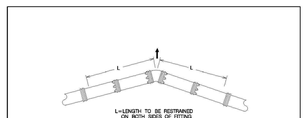


PIPE SIZE (INCH)	SMALL SIZE (INCH)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
6	4	30	23
6	6	59	44
8	6	95	74
12	4	95	71
12	6	95	93
12	8	58	43

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

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

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	RESTRAINED LENGTHS FOR REDUCERS	March 2008	
		DD–839–07	SHEET 1. or 1.

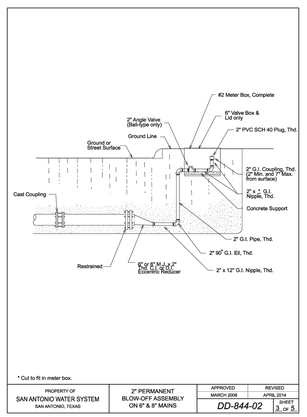


PIPE SIZE (IN.)	BEND ANGLE	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
6	90	95	74
6	45	24	7
6	22.5	12	3
6	11.25	6	2
8	90	150	122
8	45	39	11
8	22.5	19	5
8	11.25	9	3
12	90	43	32
12	45	19	6
12	22.5	8	6
12	11.25	4	3

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

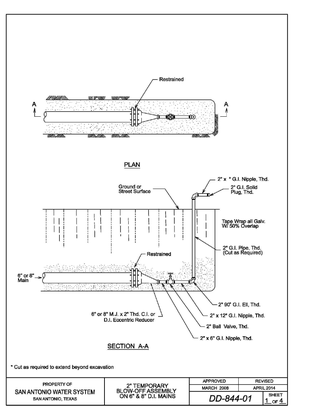
Note:
These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	RESTRAINED LENGTHS FOR HORIZONTAL BENDS	March 2008	
		DD–839–08	SHEET 1. or 1.



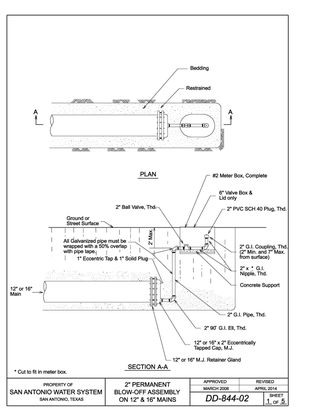
* Cut to fit in meter box.

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	2" PERMANENT BLOW-OFF ASSEMBLY ON 6" & 8" MAINS	MARCH 2008	APRIL 2014
		DD–844–02	SHEET 3. or 5.



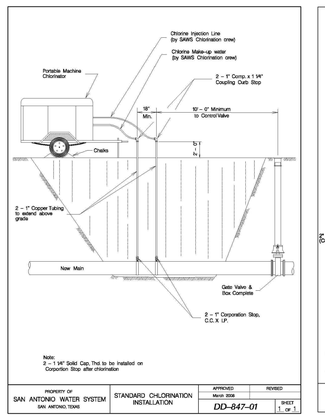
* Cut as required to extend beyond excavation

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	2" TEMPORARY BLOW-OFF ASSEMBLY ON 6" & 8" D.I. MAINS	March 2008	
		DD–844–01	SHEET 1. or 5.



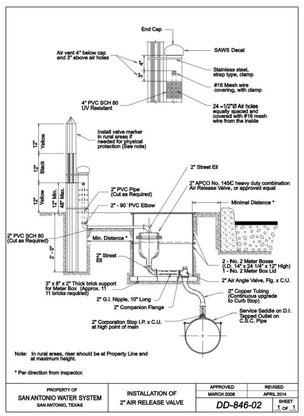
* Cut to fit in meter box.

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	2" PERMANENT BLOW-OFF ASSEMBLY ON 12" & 16" MAINS	March 2008	APRIL 2014
		DD–844–02	SHEET 1. or 5.



Note:
2 – 1 ¼" Solid Cap, Thd.to be installed on Corporation Stop after chlorination

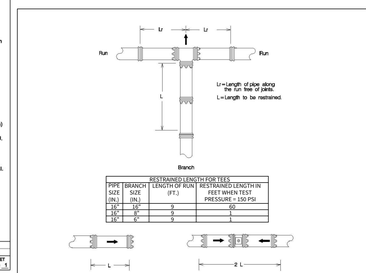
PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	STANDARD CHLORINATION INSTALLATION	March 2008	
		DD–847–01	SHEET 1. OF 1.



Note: In rural areas, riser should be at Property Line and at maximum height.

* Per direction from Inspector.

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	INSTALLATION OF 2" AIR RELEASE VALVE	MARCH 2008	APRIL 2014
		DD–846–02	SHEET 1 of 1

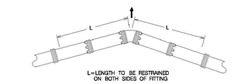


RESTRAINED LENGTH FOR TEES

PIPE SIZE (IN.)	BRANCH SIZE (IN.)	LENGTH OF RUN (FT.)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 PSI
16"	16"	9	60
16"	8"	9	1
16"	6"	9	1

L=LENGTH TO BE RESTRAINED

RESTRAINED LENGTH FOR DEAD ENDS/INLINE VALVES	
PIPE SIZE (IN.)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 PSI
16"	135



RESTRAINED LENGTH FOR HORIZONTAL BENDS		
PIPE SIZE (IN.)	BEND ANGLE (DEG.)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 PSI
16"	45	15
16"	22.5	8
16"	11.25	4

NOTE:
1. RESTRAINED LENGTH CALCULATIONS ARE DUCTILE IRON PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE. THE NATIVE SOIL MATERIALS IS ASSUMED TO BE ORGANIC CLAY OF HIGH PLASTICITY. DEPTH OF BURY IS ASSUMED TO BE 5 FT.
2. THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BASED UPON THE CONDITIONS ENCOUNTERED DURING THE INSTALLATION.

1 SCALE: NONE

JOINT RESTRAINT TABLES (16" WATER MAIN)

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND 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 NOTE:

1. 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 SAWS 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 SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

NOTE: SAWS PRESSURE ZONE 12

CUDEENGINEERS.COM

CUDE ENGINEERS

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

CORLEY FARMS UNIT 5

WATER DISTRIBUTION STANDARD DETAILS

DATE
04/09/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

A	1	2	3	4	5	6	7	8	9
DATE									

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
4/11/25

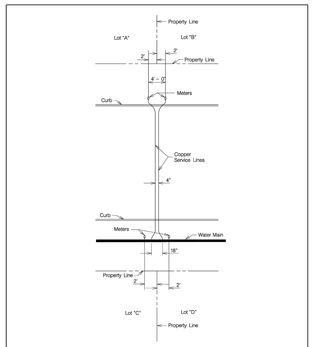
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C35

CUDEENGINEERS.COM

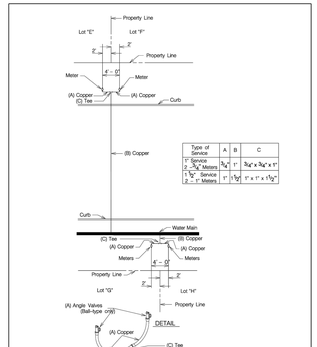
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

J:\03481\03481.012 Drawings\CS-SS\ WATER DISTRIBUTION STANDARD DETAILS.dwg 2025/04/09 10:43pm mbryant



SINGLE SERVICE LINE – SINGLE METER

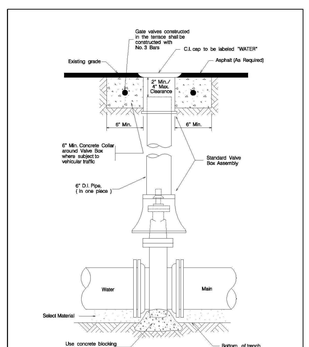
PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | TYPICAL SERVICE ARRANGEMENT | APPROVED: March 2006 | REVISED: DD–824–05 | SHEET: 1. of 3



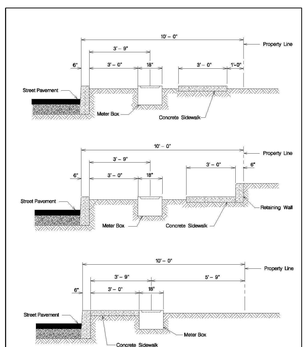
Type of Service	A	B	C
1" Service 2 – ¾" Meters	¾"	1"	¾"x"x¾"x1"
1 ½" Service 2 – 1" Meters	1"	1½"	1"x1"x1½"

SINGLE SERVICE LINE – DUAL METER

PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | TYPICAL SERVICE ARRANGEMENT | APPROVED: March 2006 | REVISED: DD–824–05 | SHEET: 2. of 3

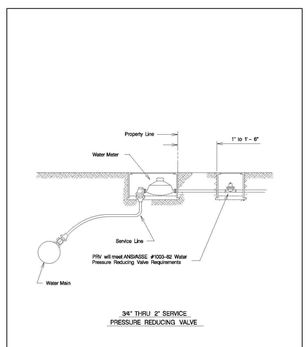


PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | INSTALLATION OF NON-GEARED GATE VALVE WITH VALVE BOX AND EXTENSION | APPROVED: March 2006 | REVISED: DD–828–01 | SHEET: 1. of 1



Note:
Meter Box location in commercial and industrial areas will be as directed by the Engineer

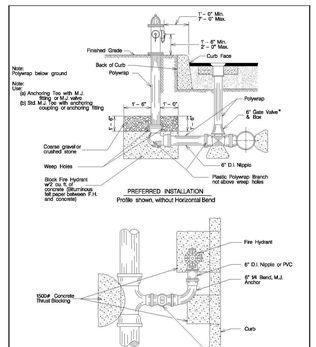
PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | TYPICAL METER BOX LOCATION (RESIDENTIAL) | APPROVED: March 2006 | REVISED: DD–833–01 | SHEET: 1. of 1



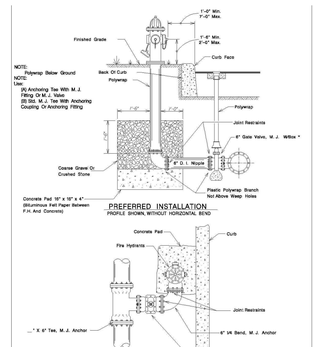
3/4" THRU 2" SERVICE PRESSURE REDUCING VALVE

Note:
For Tapping Schedule, See DD-30-00 Sheet 3 of 3

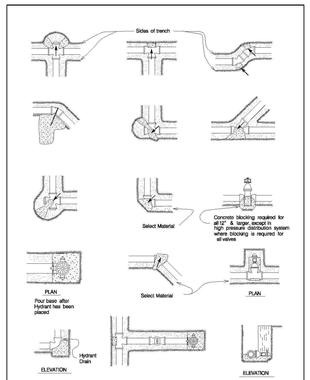
PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | SERVICE INSTALLATION WITH PRESSURE REDUCING VALVE | APPROVED: March 2006 | REVISED: DD–833–03 | SHEET: 1. of 1



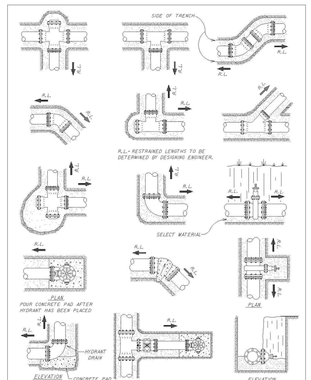
PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | FIRE HYDRANT INSTALLATION | APPROVED: March 2006 | REVISED: June 2009 | DD–834–01 | SHEET: 1. or 2.



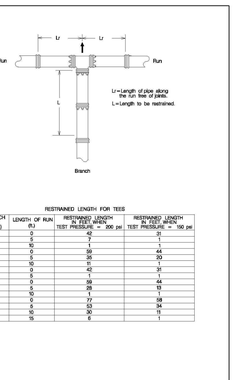
PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | FIRE HYDRANT INSTALLATION (JOINT RESTRAINT) | APPROVED: March 2006 | REVISED: June 2009 | DD–834–01 | SHEET: 2. of 2



PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | THRUST BLOCKS FOR FITTINGS (WATER ONLY) | APPROVED: March 2006 | REVISED: DD–839–01 | SHEET: 1. or 2.



PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | JOINT RESTRAINTS FOR FITTINGS (WATER ONLY) | APPROVED: MARCH 2008 | REVISED: DD-839-01 | SHEET: 2. or 2.



RESTRAINED LENGTH FOR TEES

PIPE SIZE (INCH)	BRANCH SIZE (INCH)	LENGTH OF RUN (FT.)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
6	6	0	42	31
6	4	0	7	1
6	4	10	1	1
6	6	0	59	44
6	6	10	31	7
8	8	10	91	68
8	4	0	43	31
8	4	5	1	1
8	6	0	59	44
8	6	5	26	19
8	6	10	1	1
8	8	0	77	58
8	8	5	52	34
8	8	10	30	11
8	8	15	6	1

PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | RESTRAINED LENGTHS FOR TEES | APPROVED: March 2006 | REVISED: DD–839–04 | SHEET: 1. or 2.

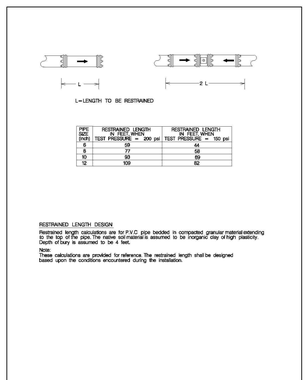
RESTRAINED LENGTH FOR TEES (Cont'd)

PIPE SIZE (INCH)	BRANCH SIZE (INCH)	LENGTH OF RUN (ft.)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
12	6	0	42	31
12	4	5	1	1
12	6	0	59	44
12	6	5	13	1
12	6	10	1	1
12	8	0	77	58
12	8	5	42	33
12	8	10	7	1
12	8	15	1	1
12	12	0	100	82
12	12	5	66	59
12	12	10	63	35
12	12	15	39	12

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

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

PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | RESTRAINED LENGTHS FOR TEES | APPROVED: March 2006 | REVISED: DD–839–04 | SHEET: 2 or 2.

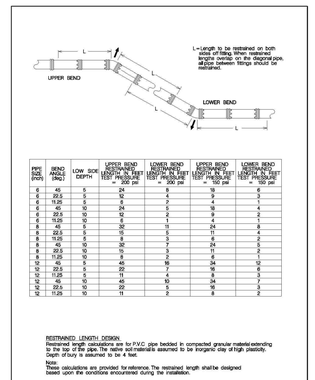


PIPE SIZE (INCH)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
6	77	58
8	77	58
10	93	69
12	109	82

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

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

PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | RESTRAINED LENGTHS FOR DEAD ENDS /INLINE VALVES | APPROVED: March 2006 | REVISED: DD–839–05 | SHEET: 1. or 1.

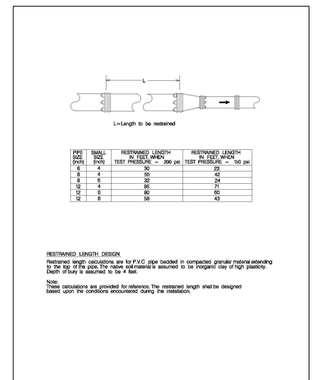


PIPE SIZE (INCH)	BEND ANGLE (DEG.)	LOW SOIL DEPTH	UPPER BEND LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	LOWER BEND LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	UPPER BEND LENGTH IN FEET WHEN TEST PRESSURE = 150 psi	LOWER BEND LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
6	45	5	24	6	18	6
6	22.5	5	12	4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

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

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

PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | RESTRAINED LENGTHS FOR VERTICAL OFFSETS | APPROVED: March 2006 | REVISED: DD–839–06 | SHEET: 1. or 1.

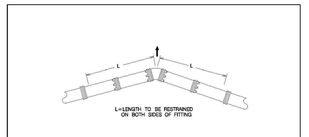


PIPE SIZE (IN.)	SMALL SIZE (IN.)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
6	4	30	23
6	6	59	44
8	4	50	34
12	4	96	71
12	6	90	65
12	8	58	43

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

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

PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | RESTRAINED LENGTHS FOR REDUCERS | APPROVED: March 2006 | REVISED: DD–839–07 | SHEET: 1. or 1.



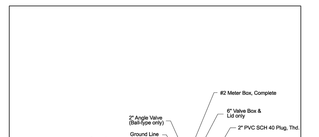
L=LENGTH TO BE RESTRAINED
ON BOTH SIDES OF FITTING

PIPE SIZE (INCH)	BEND ANGLE	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
6	90	59	44
6	45	24	7
6	22.5	5	2
6	11.25	2	2
8	90	90	22
8	45	32	9
8	22.5	10	3
8	11.25	3	1
12	90	43	32
12	45	19	6
12	22.5	8	6
12	11.25	4	3

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

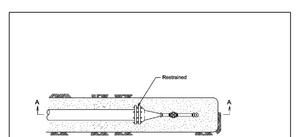
Note:
These calculations are provided for reference.The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | RESTRAINED LENGTHS FOR HORIZONTAL BENDS | APPROVED: March 2006 | REVISED: DD–839–08 | SHEET: 1. or 1.



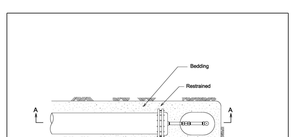
* Cut to fit in meter box.

PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | 2" PERMANENT BLOW-OFF ASSEMBLY ON 6" & 8" MAINS | APPROVED: MARCH 2008 | REVISED: APRIL 2014 | DD–844–02 | SHEET: 3. or 5.



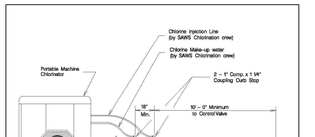
* Cut as required to extend beyond excavation

PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | 2" TEMPORARY BLOW-OFF ASSEMBLY ON 6" & 8" D.I. MAINS | APPROVED: March 2008 | REVISED: APRIL 2014 | DD–844–01 | SHEET: 5. or 5.



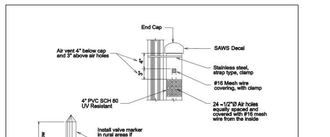
* Cut to fit in meter box.

PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | 2" PERMANENT BLOW-OFF ASSEMBLY ON 12" & 16" MAINS | APPROVED: March 2008 | REVISED: APRIL 2014 | DD–844–02 | SHEET: 1. or 5.



Note:
2 – 1 ¼" Solid Cap, Thd.to be installed on Corporation Stop after chlorination

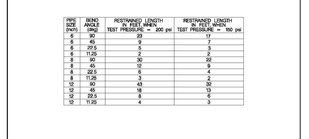
PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | STANDARD CHLORINATION INSTALLATION | APPROVED: March 2006 | REVISED: DD–847–01 | SHEET: 1. OF 1.



Note: In rural areas, riser should be at Property Line and at maximum height.

* Per direction from Inspector.

PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | INSTALLATION OF 2" AIR RELEASE VALVE | APPROVED: MARCH 2008 | REVISED: APRIL 2014 | DD–846–02 | SHEET: 1 of 1



PIPE SIZE (INCH)	BEND ANGLE (DEG.)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 PSI
16"	45	135
16"	22.5	67
16"	11.25	34

RESTRAINED LENGTH FOR DEAD ENDS/INLINE VALVES

PIPE SIZE (INCH)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 PSI
16	135

RESTRAINED LENGTH FOR HORIZONTAL BENDS

PIPE SIZE (IN.)	BEND ANGLE (DEG.)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 PSI
16"	45	15
16"	22.5	8
16"	11.25	4

NOTE:
1. RESTRAINED LENGTH CALCULATIONS ARE DUCTILE IRON PIPE BEDDED IN COMPACTED GRANULAR MATERIAL EXTENDING TO THE TOP OF THE PIPE. THE NATIVE SOIL MATERIALS IS ASSUMED TO BE ORGANIC CLAY OF HIGH PLASTICITY. DEPTH OF BURY IS ASSUMED TO BE 5 FT.
2. THESE CALCULATIONS ARE PROVIDED FOR REFERENCE. THE RESTRAINED LENGTH SHALL BE DESIGNED BASED UPON THE CONDITIONS ENCOUNTERED DURING THE INSTALLATION.

1 SCALE: NONE

JOINT RESTRAINT TABLES (16" WATER MAIN)

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND 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 NOTE:

1. 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 SAWS 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 SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.

NOTE: SAWS PRESSURE ZONE 12

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CORLEY FARMS UNIT 5

WATER DISTRIBUTION STANDARD DETAILS

DATE
01/28/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

DATE	1	2	3	4	5	6	7	8	9

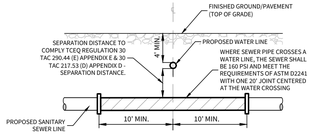
STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
02/10/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

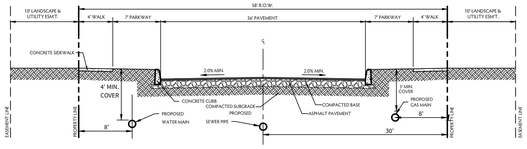
C35

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.

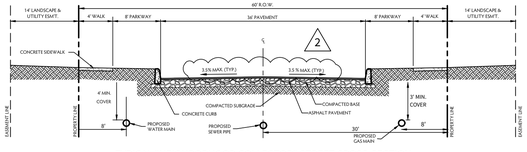
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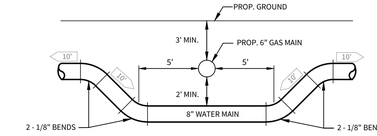
TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
N.T.S.



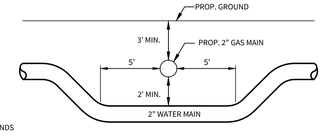
TYPICAL "NEIGHBORHOOD RESIDENTIAL" STREET CROSS-SECTION
N.T.S.



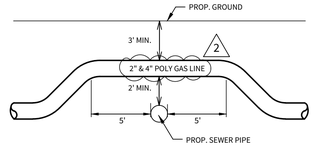
TYPICAL "NEIGHBORHOOD COLLECTOR" STREET CROSS-SECTION
N.T.S.



8" WATER / 6" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)



2" WATER / 2" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)



SEWER / GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)
NOTE: VERTICAL BEND IS NOT NEEDED WHEN SEWER IS DEEPER THAN 7'

THRUST BLOCKING NOTE

ANCHORAGE/ THRUST BLOCKING AND JOINT RESTRAINTS SHALL BE DONE IN ACCORDANCE WITH SAWS STANDARDS AND SPECIFICATIONS FOR CONSTRUCTION (ITEM NO. 839)

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.

SAWS CONSTRUCTION NOTES
COUNTER PERMIT AND GENERAL CONSTRUCTION PERMIT *REVISED JULY 2017*

GENERAL SECTION

1. All materials and construction procedures within the scope of this contract shall be approved by the San Antonio Water System (SAWS) and comply with the Plans, Specifications, General Conditions and with the following as applicable:

A. Current Texas Commission on Environmental Quality (TCEQ) "Design Criteria for Domestic Wastewater System", Texas Administrative Code (TAC) Title 30 Part 1 Chapter 217 and "Public Drinking Water", TAC Title 30 Part 1 Chapter 290.

B. Current TXDOT "Standard Specifications for Construction of Highways, Streets and Drainage".

C. Current "San Antonio Water System Standard Specifications for Water and Sanitary Sewer Construction".

D. Current City of San Antonio "Standard Specifications for Public Works Construction".

E. Current City of San Antonio "Utility Excavation Criteria Manual" (UECM).

2. The contractor shall not proceed with any pipe installation work until they obtain a copy of the approved Counter Permit or General Construction Permit (GCP) from the consultant and has been notified by SAWS Construction Inspection Division to proceed with the work and has arranged a meeting with the inspector and consultant for the work requirements. Work completed by the contractor without an approved Counter Permit and/or a GCP will be subject to removal and replacement at the expense of the contractors and/or the developer.

3. The Contractor shall obtain the SAWS Standard Details from the SAWS website, http://www.saws.org/business_center/specs. Unless otherwise noted within the design plans.

4. The Contractor is to make arrangements with the SAWS Construction Inspection Division at 233-2973, on notification procedures that will be used to notify affected home residents and/or property owners 48 hours prior to beginning any work.

5. Location and depth of existing utilities and service laterals shown on the plans are understood to be approximate. Actual locations and depths must be field verified by the Contractor at least 1 week prior to construction. It shall be the Contractor's responsibility to locate utility service lines as required for construction and to protect them during construction at no cost to SAWS.

6. The Contractor shall verify the exact location of underground utilities and drainage structures at least 1-2 weeks prior to construction whether shown on plans or not. Please allow up to 7 business days for locates requesting pipe location markers on SAWS facilities. The following contact information are supplied for verification purposes:

- ☐ SAWS Utility Locates: http://www.saws.org/Service/Locates
- ☐ COSA Drainage (210) 207-0724 or (210) 207-6026
- ☐ COSA Traffic Signal Operations (210) 206-8480
- ☐ COSA Traffic Signal Damages (210) 207-3951

Texas State Wide One Call Locator 1-800-545-6005 or 811

7. The Contractor shall be responsible for restoring existing fences, curbs, streets, driveways, sidewalks, landscaping and structures to its original or better condition if damages are made as a result of the project's construction.

8. All work in Texas Department of Transportation (TxDOT) and/or Bexar County right-of-way shall be done in accordance with respective construction specifications and permit requirements.

9. The Contractor shall comply with City of San Antonio or other governing municipality's tree ordinances when excavating near trees.

10. The Contractor shall not place any waste materials in the 100-year Flood Plain without first obtaining an approved Flood Plain Permit.

11. Holiday Work: Contractors will not be allowed to perform SAWS work on SAWS recognized holidays. Request should be sent to constworkreq@saws.org.

Weekend Work: Contractors are required to notify the SAWS Inspection Construction Department 48 hours in advance to request weekend work. Request should be sent to constworkreq@saws.org.

Any and all SAWS utility work installed without holiday/weekend approval will be subject to be uncovered for proper inspection.

12. Compaction note (Item 804): The contractor shall be responsible for meeting the compaction requirements on all trench backfill and for paying for the tests performed by a third party. Compaction tests will be done at one location point randomly selected, or as indicated by the SAWS Inspector and/or the test administrator, per each 12-inch loose lift per 400 linear feet at a minimum. This project will not be accepted and finalized by SAWS without this requirement being met and verified by providing all necessary documented test results.

13. A copy of all testing reports shall be forwarded to SAWS Construction Inspection Division. Water Section

WATER SECTION

1. Prior to tie-ins, any shutdowns of existing mains of any size must be coordinated with the SAWS Construction Inspection Division at least one week in advance of the shutdown. The Contractor must also provide a sequence of work as related to the tie-ins; this is at no additional cost to SAWS or the project and it is the responsibility of the Contractor to sequence the work accordingly. For water mains 12" or higher: SAWS Emergency Operations Center (210) 233-2014

2. Asbestos Cement (AC) pipe, also known as transite pipe which is known to contain asbestoscontaining material (ACM), may be located within the project limits. Special waste management procedures and health and safety requirements will be applicable when removal and/or disturbance of this pipe occurs. Such work is to be made under Special Specification Item No. 3000, "Special Specification for Handling Asbestos Cement Pipe".

3. Valve removal: Where the contractor is to abandon a water main, the control valve located on the abandoning branch will be removed and replaced with a cap/plug. (NSPI)

4. Suitable anchorage/thrust blocking or joint restraint shall be provided at all of the following main locations: dead ends, plugs, caps, tees, crosses, valves, and bends, in accordance with the Standard Drawings DD-839 Series and Item No. 839, in the SAWS Standard Specifications for Construction.

5. All valves shall read "open right".

6. PRVs Required: Contractor to verify that no portion of the tract is below ground elevation of XXXX feet where the static pressure will normally exceed 80 PSI. At all such locations where the ground level is below XXXX feet, the Developer or Builder shall install at each lot, on the customer's side of the meter, an approved type pressure regulator in conformance with the Plumbing Code of the City of San Antonio. No dual services allowed for any lot(s) if *PRV is/are required for such lot(s), only single service connections shall be allowed. *Note: A pressure regulator is also known as a pressure reducing valve (PRV).

7. Pipe Disinfection with Dry HTH for Projects less than 800 linear feet. (Item No. 847.3): Mains shall be disinfected with dry HTH where shown in the contract documents or as directed by the Inspector, and shall not exceed a total length of 800 feet. This method of disinfection will also be followed for main repairs. The Contractor shall utilize all appropriate safety measure to protect his personnel during disinfection operations.

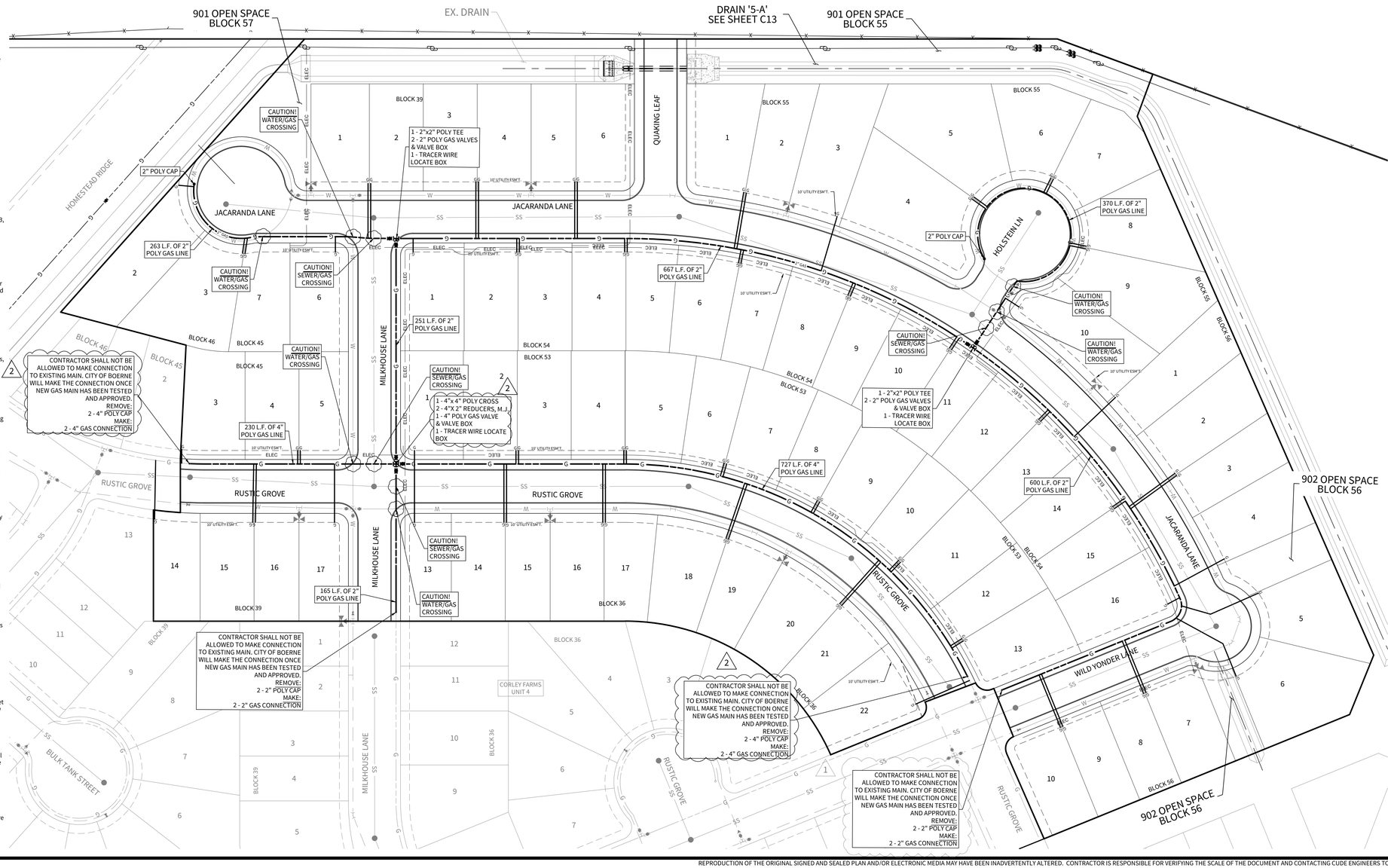
8. Backflow Prevention Devices:

- ☐ All irrigation services within residential areas are required to have backflow prevention devices.
- ☐ All commercial backflow prevention devices must be approved by SAWS prior to installation.

9. Final connection to the existing water main shall not be made until the water main has been pressure tested, chlorinated, and SAWS has released the main for tie-in and use.

10. All meters shall be 5/8", unless otherwise noted.

11. All pipes shall be C-900, CLASS 235 DR 18, unless otherwise noted.



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SCALE: 1"=60'
60 30 0 60

LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING WATER LINE — W —
- EXISTING SEWER MAIN — SS —
- EXISTING GAS MAIN — G —
- EXISTING SEWER MANHOLE
- PROPOSED SEWER MANHOLE
- PROPOSED WATER LINE — W —
- PROPOSED SEWER MAIN — SS —
- PROPOSED GAS MAIN — G —
- PROPOSED SEWER LATERAL

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CORLEY FARMS UNIT 5

NATURAL GAS DISTRIBUTION PLAN

DATE
04/10/2025
PROJECT NO.
03481.012
DRAWN BY
C3
CHECKED BY
XV/AL

REVISIONS

DATE	REVISIONS
1. 11/7/24	PERMITTING COMMENTS
2. 04/7/25	PERMITTING COMMENTS

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
4/11/25

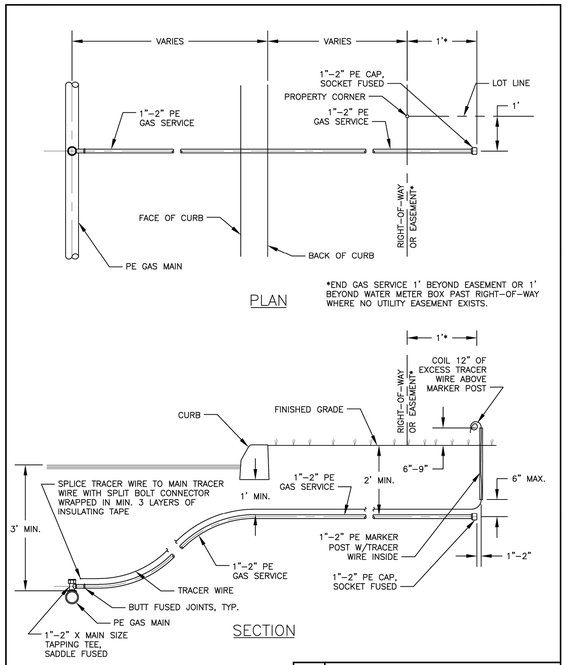
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TBPE No. 455
TBPLS No. 10048500

C36

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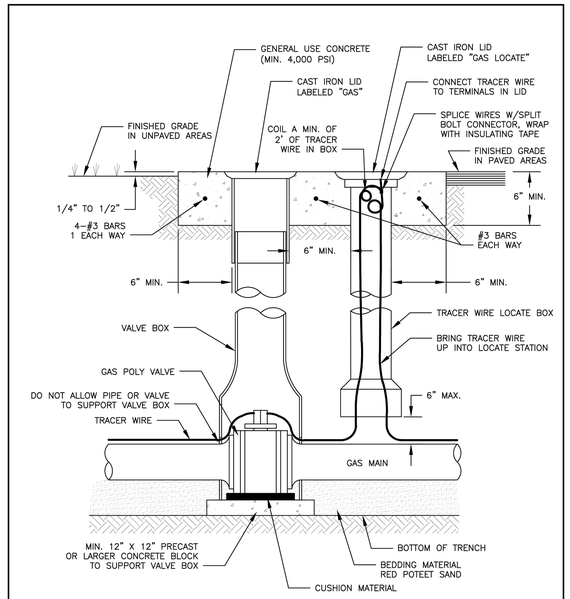
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

P:\03481\012\Drawings\CS\00 NATURAL GAS DISTRIBUTION PLAN.dwg 2025/04/10 3:44pm mbarrs



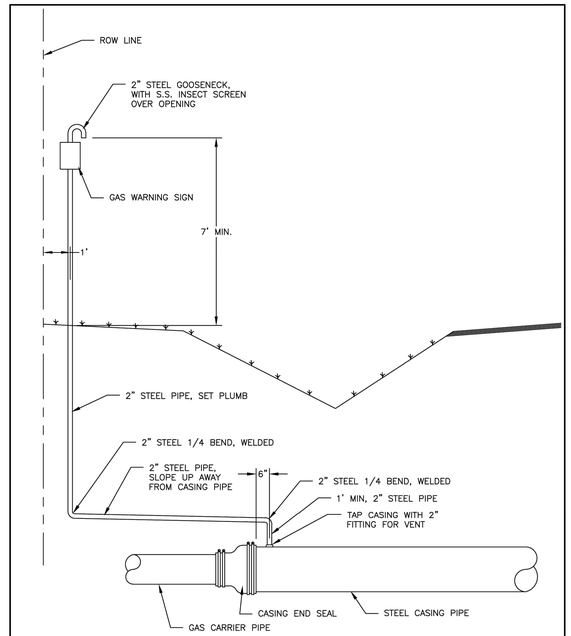
NOTES:
1. EXCESS FLOW VALVE (EFV) TO BE INSTALLED BY THE CITY OF BOERNE UTILITIES DEPARTMENT.
2. GAS SERVICE SIZE TO BE DETERMINED BY CITY OF BOERNE UTILITIES DEPARTMENT.

CITY OF BOERNE		
1"–2" SINGLE GAS SERVICE		
SCALE: N.T.S.	DRAWING No. 02560–1.3	DATE: MAY 2024

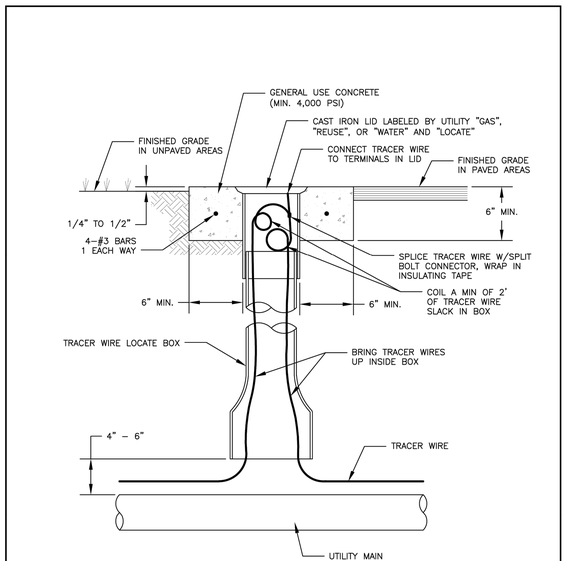


NOTES:
1. WHERE MULTIPLE VALVES ARE PROPOSED WITHIN 10–FEET OF EACH OTHER, MAY ROUTE TO A SINGLE TRACER WIRE LOCATE BOX; OTHERWISE A LOCATE BOX IS REQUIRED FOR EACH INDIVIDUAL VALVE OR EVERY 500–FEET.
2. ALL BACKFILL SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% COMPACTION PER ASTM D1557 (MODIFIED PROCTOR).

CITY OF BOERNE		
GAS VALVE AND VALVE BOX		
SCALE: N.T.S.	DRAWING No. 02560–1.0	DATE: MAY 2024

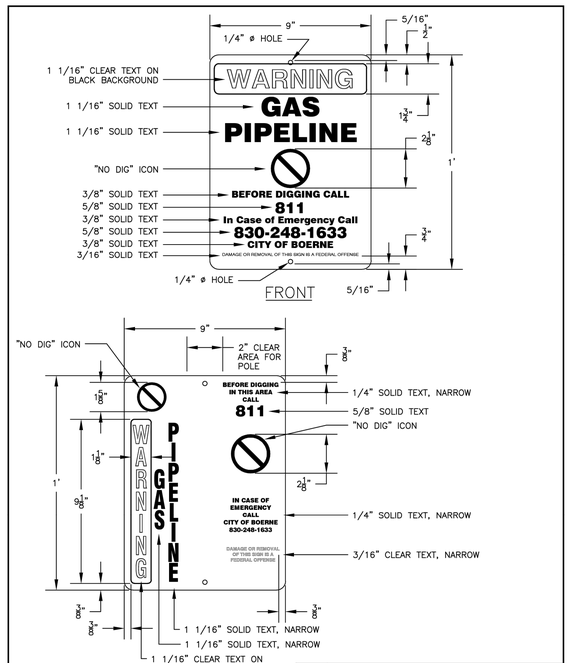


CITY OF BOERNE		
CASING VENT FOR GAS MAIN UNDERCROSSING		
SCALE: N.T.S.	DRAWING No. 02224–1.1	DATE: MAY 2024



NOTES:
1. INSTALL LOCATE BOX WITH EVERY VALVE OR GROUP OF VALVES WITHIN 10–FEET OR EACH OTHER.
2. FOR GAS MAINS, LOCATE BOX REQUIRED EVERY 500–FEET.
3. BOX TO BE LOCATED WITHIN 5' OF PROPERTY PIN SO NOT IN STREET OR DRIVEWAY

CITY OF BOERNE		
TRACER WIRE LOCATE BOX		
SCALE: N.T.S.	DRAWING No. 02560–1.2	DATE: MAY 2024



NOTE: MOUNT SIGN ON STEEL POST, 5'–6" ABOVE FINISHED GRADE.

CITY OF BOERNE		
GAS WARNING SIGN		
SCALE: N.T.S.	DRAWING No. 02560–1.1	DATE: MAY 2024

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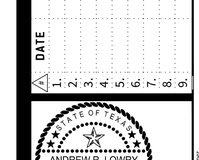
CUDEENGINEERS.COM
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

CORLEY FARMS UNIT 5

NATURAL GAS DISTRIBUTION STANDARD DETAILS

DATE 04/09/2025
PROJECT NO. 03481.012
DRAWN BY C3
CHECKED BY XV/AL

REVISIONS
DATE
1 2 3 4 5 6 7 8 9

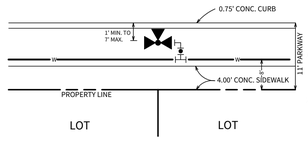


CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C37

P:\03481\012\2-Drawings\CAD\01 NATURAL GAS DISTRIBUTION STANDARD DETAILS.dwg 2025/04/09 10:42pm mdaynt

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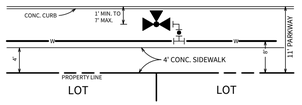


NOTE:

1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 60' R.O.W.)

N.T.S.

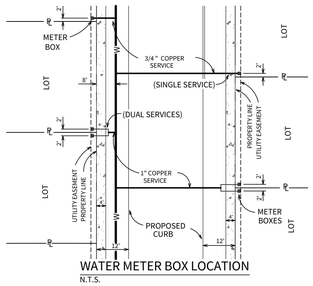


NOTE:

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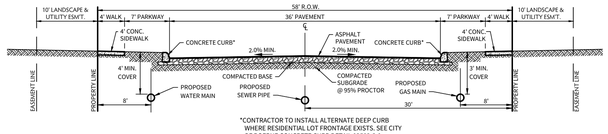
TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 58' ROW)

N.T.S.



WATER METER BOX LOCATION

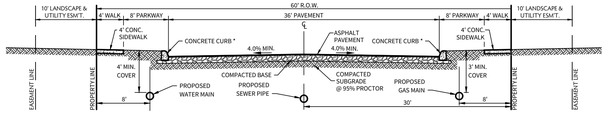
N.T.S.



*CONTRACTOR TO INSTALL ALTERNATE DEEP CURB WHERE RESIDENTIAL LOT FRONTAGE EXISTS. SEE CITY OF BOERNE CONCRETE CURB DETAIL 02502-2.0

TYPICAL "RESIDENTIAL LOCAL" STREET CROSS SECTION

N.T.S.



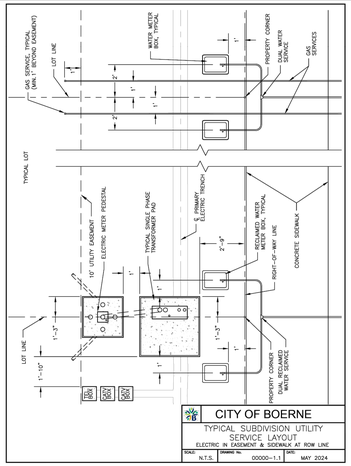
*CONTRACTOR TO INSTALL ALTERNATE DEEP CURB WHERE RESIDENTIAL LOT FRONTAGE EXISTS. SEE CITY OF BOERNE CONCRETE CURB DETAIL 02502-2.0

TYPICAL "RESIDENTIAL COLLECTOR" STREET CROSS SECTION

N.T.S.

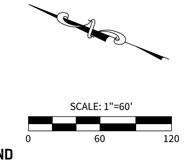
TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.



CITY OF BOERNE TYPICAL UTILITY SERVICE LAYOUT

N.T.S.



LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING WATER LINE — Wx —
- EXISTING SEWER MAIN — SSx —
- EXISTING GAS MAIN — Gx —
- EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- PROPOSED SEWER MANHOLE
- PROPOSED WATER LINE — W —
- PROPOSED SEWER MAIN — SS —
- PROPOSED GAS MAIN — G —
- PROPOSED SEWER LATERAL
- PROPOSED GAS SERVICE
- PROPOSED SINGLE 3/4" WATER SERVICE WITH 5/8" METER
- PROPOSED DUAL 3/4" WATER SERVICE WITH 5/8" METER
- PROPOSED FIRE HYDRANT
- PROPOSED LIGHT POLE

BENCHMARK BM-1

BENCHMARK TO BE SET BY ENGINEER PRIOR TO CONSTRUCTION.

NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE DISTRICT INSPECTOR. PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY THE DISTRICT WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
2. CONTRACTOR TO MAINTAIN A MINIMUM 1' VERTICAL SEPARATION DISTANCE BETWEEN OF THE BOTTOM PROPOSED WATER MAIN AND TOP OF PROPOSED SANITARY SEWER MAIN AT WATER AND SANITARY SEWER CROSSINGS.
3. ALL LATERALS SHALL BE INSTALLED AT A MINIMUM 2.0% SLOPE UNLESS OTHERWISE NOTED.
4. CONTRACTOR TO REFERENCE SANITARY SEWER, WATER, AND GAS PLANS FOR ALL UTILITY CROSSINGS CALLED OUT ON THIS SHEET.

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.

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.

2" WATER / 2" GAS CROSSINGS DETAIL

SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)

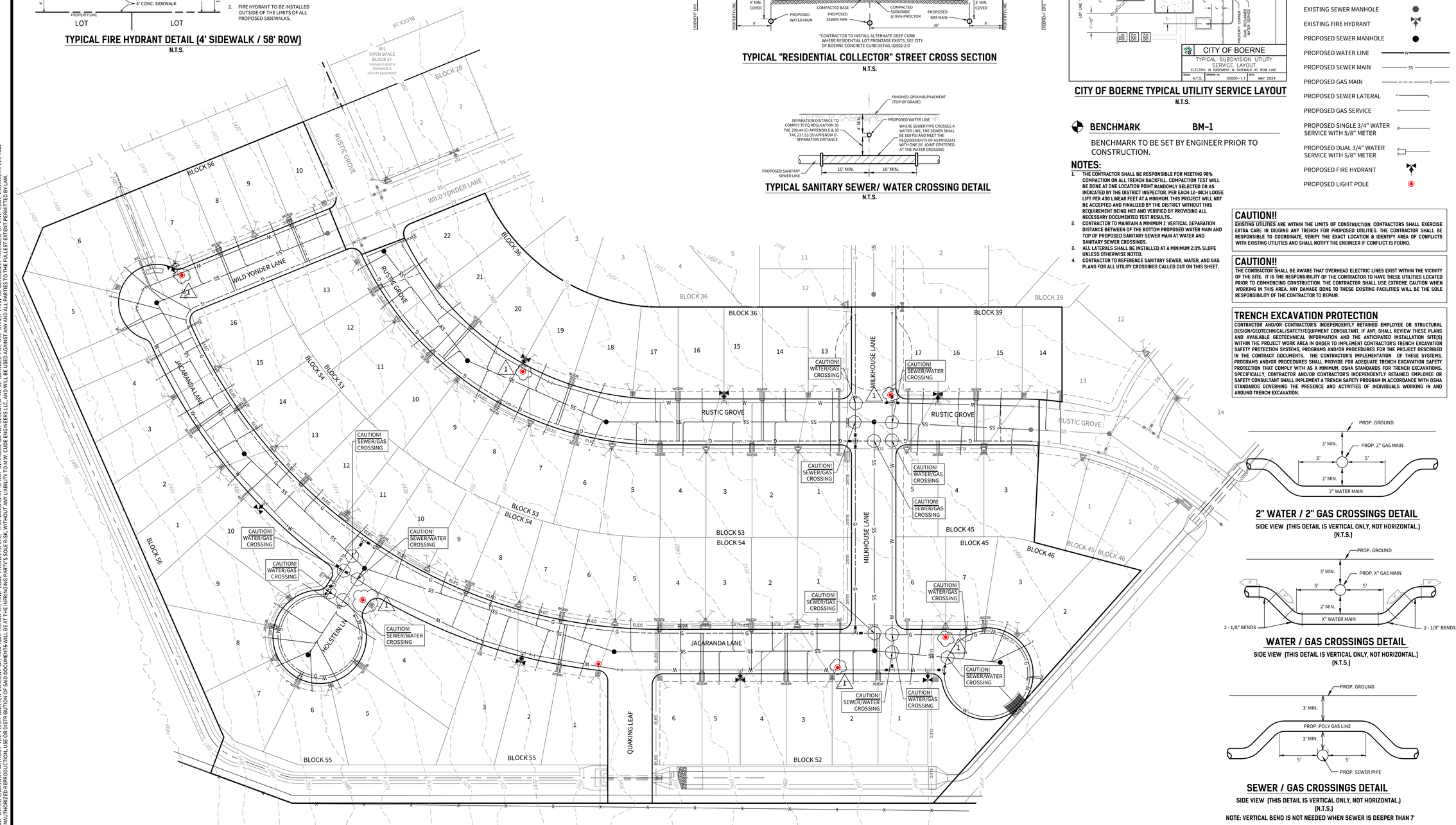
WATER / GAS CROSSINGS DETAIL

SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)

SEWER / GAS CROSSINGS DETAIL

SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.) (N.T.S.)

NOTE: VERTICAL BEND IS NOT NEEDED WHEN SEWER IS DEEPER THAN 7'



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CUDEENGINEERS.COM

CUDE ENGINEERS

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CORLEY FARMS UNIT 5

UTILITY LAYOUT PLAN

DATE
04/09/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

	DATE	PERMITTING COMMENTS
1.	11/7/24	
2.		
3.		
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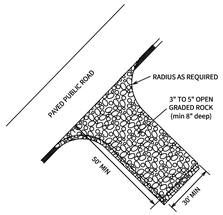
STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
4/11/25

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C38

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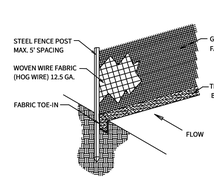
P:\03481\012-2.0\working\C3.1\UTILITY LAYOUT PLAN.dwg 2025/04/09 08:42pm mbeck



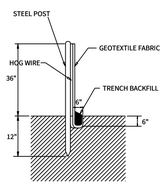
STABILIZED CONSTRUCTION EXIT NOTES:

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.

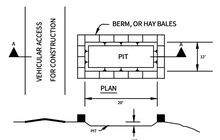


SILT FENCE DETAIL



SECTION DETAIL

2 STANDARD SILT FENCE
N.T.S.



GENERAL NOTES:

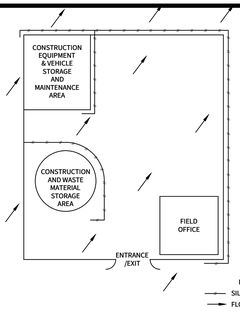
- Detail above illustrates minimum dimensions. Pit can be increased in size depending on expected frequency of use. construction traffic.
- If hay bales are used, they shall be placed in accordance with details shown on Exhibit for hay bales.

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.

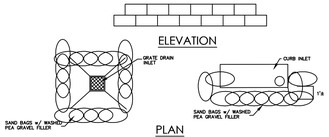
- Washout pit shall be lined with a 10-mil thick polyethylene sheeting free of holes, tears and other defects.

3 CONCRETE TRUCK WASHOUT PIT
N.T.S.



4 TYP. CONSTRUCTION STAGING AREA
N.T.S.

5 ROCK BERM W/ SILT FENCE DETAIL
N.T.S.



6 BAGGED GRAVEL INLET FILTER NOTES
N.T.S.

BAGGED GRAVEL INLET FILTER NOTES

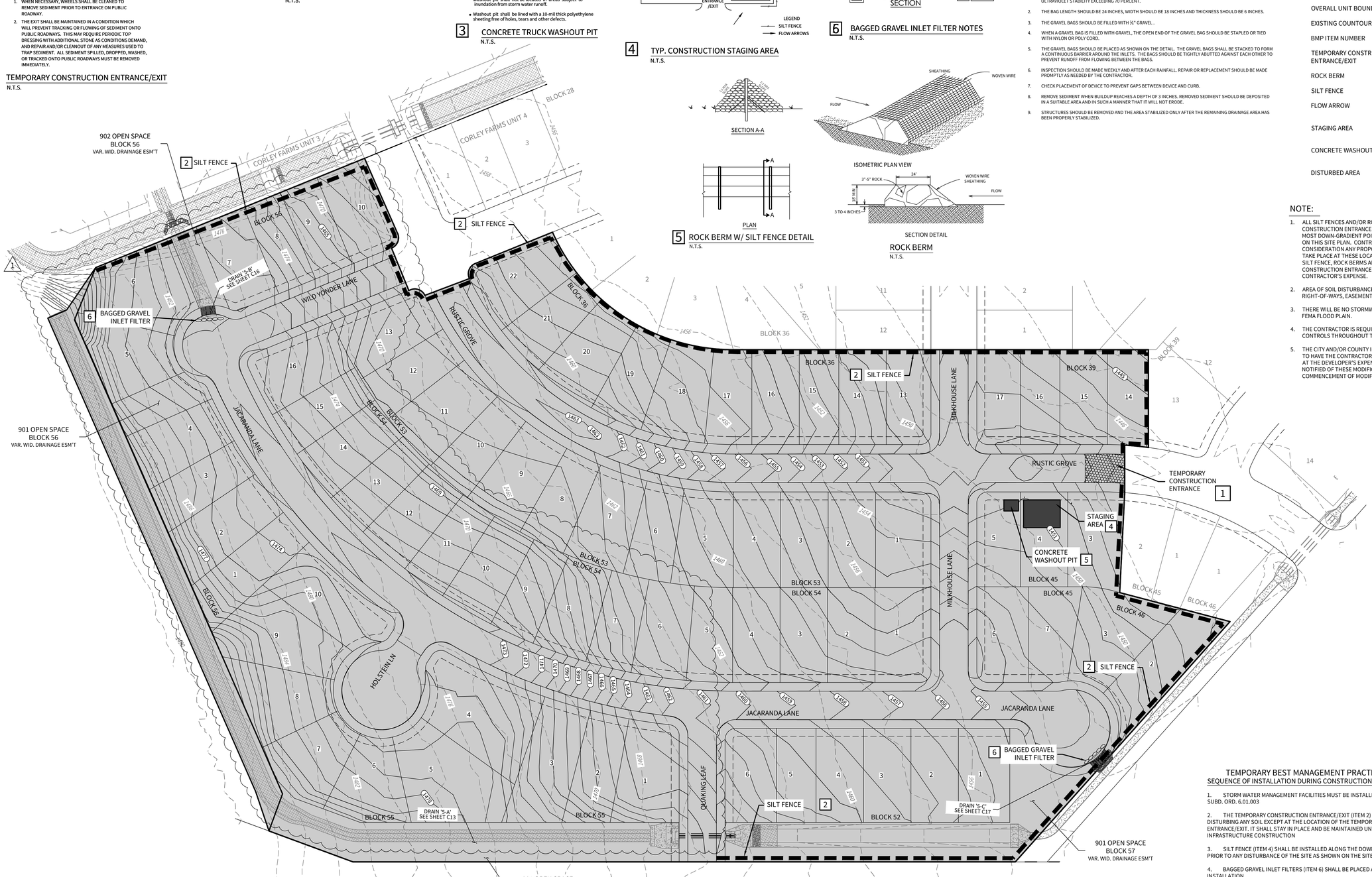
1. THE GRAVEL BAG MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, POLYAMIDE OR COTTON BURLAP WOVEN FABRIC, MINIMUM UNIT WEIGHT 4 OZ/YD 2, MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT.
2. THE BAG LENGTH SHOULD BE 24 INCHES, WIDTH SHOULD BE 18 INCHES AND THICKNESS 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.

ROCK BERM
N.T.S.

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.



LEGEND

- OVERALL UNIT BOUNDARY
- EXISTING COUNTOURS
- BMP ITEM NUMBER
- TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- ROCK BERM
- SILT FENCE
- FLOW ARROW
- STAGING AREA
- CONCRETE WASHOUT PIT
- DISTURBED AREA

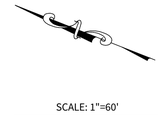
NOTE:

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. THERE WILL BE NO STORMWATER DISCHARGES INTO THE FEMA FLOOD PLAIN.
4. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
5. 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.

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.



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CORLEY FARMS UNIT 5

STORM WATER POLLUTION PREVENTION PLAN

DATE
06/02/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

	DATE	
1.	12/27/2025	GRADING REVISION
2.		
3.		
4.		
5.		
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STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
8/2/25

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

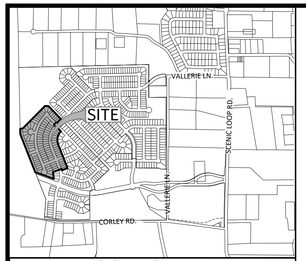
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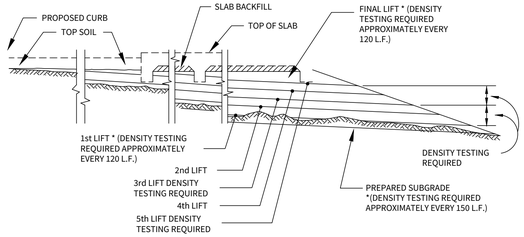
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LOCATION MAP
N.T.S.

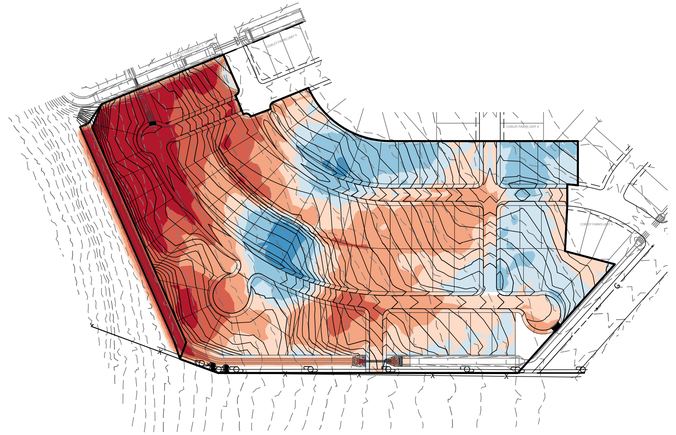
Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	-9999.000	-5.000	
2	-5.000	-3.000	
3	-3.000	-1.000	
4	-1.000	0.000	
5	0.000	1.000	
6	1.000	3.000	
7	3.000	5.000	
8	5.000	999999.000	



DENSITY TEST FREQUENCY

NOT TO SCALE

* DENSITY TEST REQUIRED ON ALL LIFTS PER CITY OF BOERNE SPECIFICATIONS SECTION 02200(3.7)



CUT & FILL HEAT MAP

N.T.S.

SCALE: 1"=60'
0 60 120

LEGEND

- PROPOSED CONTOUR — 1000
- EXISTING CONTOUR — 1000
- PROPOSED ELEVATION — 1000.00
- TYPE OF LOT GRADING — A, B, OR C
- SWALE FLOW LINE (ONLY LOT FOR PRIVATE LOT GRADING)
- BLOCK RETAINING WALL
- LIMITS OF GRADING
- GRADE BREAK
- BUILDING PAD (60')
- BUILDING PAD (65')
- BUILDING PAD (70')
- BUILDING PAD (75')

TYPICAL LOT SITE PLAN

N.T.S.



NOTE:

LOT GRADING BASE ON SLABS BEING 20' BEHIND FRONT PROPERTY LINE.

MINIMUM SLAB EXPOSURE IS 1.0'

TYPICAL PADS SIZES ARE 30' X 80' UNLESS NOTED OTHERWISE ON PLAN.

CONTOURS SHOWN ON STREET ARE TO STREET SUBGRADE ELEVATIONS.

CONTOURS SHOWN ON STREET

GENERAL SPECIFICATIONS FOR SITE PREPARATION

1. General Description
This item shall consist of all clearing and grubbing, demolition, preparation of land to be filled, filling of the land, spreading, compaction testing and inspection of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades and slopes as shown on the approved plans.

2. Clearing the Area to be Filled
All timber, logs, trees, brush and rubbish shall be removed from the site.

3. Scarifying the Area to be Filled
All organic matter shall be removed from the surface upon which the fill is to be placed, and the surface shall then be disked or scarified to a minimum depth of six inches (6"), all surface ruts or other uneven features will be leveled prior to field density testing. Where fills are made on hillsides or slopes, the slope of the original ground upon which the fill is to be placed shall be disked or scarified. Where the slope ratio of the original ground is steeper than 5 horizontal to 1 vertical, the bank shall be stepped or benched. Ground slopes which are flatter than 5 to 1 shall be benched when considered necessary by the Geotechnical Engineer.

4. Compacting the Area to be Filled
Following the clearing and disking or scarifying of the fill area, it shall be bladed until it is uniform and free from large clods. The area shall be brought to the adequate moisture content and compacted (typically) to not less than ninety percent (90%) of maximum density in accordance with the current ASTM D 1557 Compaction Procedure, or 95% of maximum density in accordance with the current THD--TEX--113--E Compaction Procedure.

5. Fill Materials
The materials used shall be free from organic matter and other deleterious substances, such as trees, brush and rubbish.

6. Depth and Mixing of Fill Layers
The selected fill material shall be placed in level, uniform layers which, when compacted, shall have a density conforming to that stipulated above. Each layer shall be thoroughly mixed during the spreading to ensure uniformity of material in each layer. Compacted layer thickness may vary depending on the compaction equipment of demonstrated capability. The maximum loose depth for any material shall not exceed twelve inches (12"). For testing requirements of fill material, see density testing.

7. Rock
When fill material includes rock, the maximum rock size shall be as approved by the Geotechnical Engineer. No large rocks shall be allowed to nest and all voids must be filled with small stones or soil and adequately compacted. No large rocks will be permitted within eighteen inches (18") of the finished grade.

8. Compaction of Fill Layer
Compaction equipment shall be capable of compacting the fill to the specified density. Compaction shall be accomplished while the fill material is at or near the appropriate moisture content. Compaction of each layer shall be continuous over the entire structural area (beneath proposed structures).

9. Compaction of Slopes
The faces of fill slopes shall be compacted. Compacting operations shall be continued until the slope faces are stable but not too dense for planting on the slopes. Compaction of the slope faces may be done progressively in increments of three to five feet (3' to 5') in fill height as this fill progresses or after the fill has been brought to its total height.

10. Moisture Content
The fill material shall be compacted at the appropriate moisture content specified for the soils being used. Appropriate moisture content is defined, typically, as optimum moisture content; however, for expansive soils it may be greater than optimum moisture content, and other moisture contents may be necessary to produce the desired results with certain soils.

11. Density Tests
Field density tests shall be performed on layers of fill when the fill is being placed as directed by the Geotechnical Engineer. The maximum fill height between density testing shall be eighteen inches (18"). All testing shall be requested by the contractor to meet the contractor's construction schedule. Notification by the contractor to conduct tests shall be at least the day before. This notification shall include the fill area location (Lot and Block), the lift or height of fill and approximate desired time of testing. When these tests indicate that the density of any layer of fill or portion thereof is below the required density, the particular layer or portion shall be reworked and retested at the expense of the contractor unless the contractor can show evidence that circumstances beyond his control required the retesting. Generally, the specific testing will be as follows and conducted by Geotechnical Engineer.

A. The land to be filled (prepared subgrade) shall be prepared and tested at a frequency as determined by the Geotechnical Engineer.
B. The first lift of compacted fill (generally 8 to 12-in.) shall be tested as determined by the Geotechnical Engineer. Any areas supporting the proposed structures requiring fill shall be tested for density compliance.
C. Fills shall be tested a maximum of each eighteen inches (18") of fill.
D. Test results will be provided by the field technician to the contractor when possible; however, all test results are to be reviewed by the Geotechnical Engineer for compliance. The engineer will notify the contractor of all test results.

12. Cut/Fill Lots
Areas involving cut on one portion and fill on another portion of a specific lot shall be prepared to a minimum depth of 6-in. and will be the same material classification at the same compaction and moisture content. A minimum of two (2) field density tests shall be required on each cut/fill lot for the purpose of determining uniformity of the area supporting the proposed structures.

NOTES:

1. STREET PAVEMENT CONTOURS SHOWN. REFERENCE GEOTECH REPORT FOR PAVEMENT SECTIONS.
2. HOUSE PADS SHALL HAVE A MINIMUM 20' FRONTAGE, 15' REAR AND 5' SIDE SETBACK UNLESS NOTED OTHERWISE. CONTRACTOR SHALL REFER TO THE SUBDIVISION PLAT TO VERIFY ALL SETBACKS PRIOR TO CONSTRUCTION.
3. MINIMUM SLAB EXPOSURE IS 1.0'.
4. TYPICAL PAD SIZES IS 40' X 80' UNLESS NOTED OTHERWISE ON PLAN.
5. MAXIMUM REAR SETBACK SLOPE = 15%
6. HOUSE PAD SWALES TO BE CONSTRUCTED WITH HOME BUILDING.
7. CONTRACTOR SHALL ENSURE THAT POSITIVE DRAINAGE IS MAINTAINED AWAY FROM ALL HOUSE PADS. NO WATER PONDING SHALL BE ALLOWED.

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CORLEY FARMS UNIT 5

OVERALL GRADING PLAN

DATE
06/02/2025

PROJECT NO.
03481.012

DRAWN BY
C3

CHECKED BY
XV/AL

REVISIONS

A	DATE	
1.	4/7/25	RUSTIC GROVE PVMT SLOPE
2.	5/28/25	GRADING REVISIONS
3.		
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9.		

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
6/2/25

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TBPE No. 455
TBPLS No. 10048500

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