CONSTRUCTION PLANS

CUDEENGINEERS.COM

STREET AND DRAINAGE CONSTRUCTION PLANS

- C1 - ULTIMATE MASTER DRAINAGE PLAN
- C2 - ULTIMATE MASTER DRAINAGE PLAN - RATIONAL METHOD CALCULATIONS
- C3 - STREET PLAN & PROFILE - PONY BEND
- C4 - STREET PLAN & PROFILE - RUSTIC GROVE
- C5 - STREET PLAN & PROFILE - FARMING GROVE
- C6 - STREET PLAN & PROFILE - LEANING OAK DRIVE
- C7 - STREET PLAN & PROFILE - LEANING OAK DRIVE
- C8 - STREET PLAN & PROFILE - GRAZING MEADOW
- C9 - STREET PLAN & PROFILE - RESTING PASTURE
- C10 - STREET PLAN & PROFILE - IVORY OAK LEAF
- C11 - TRAFFIC SIGNAGE PLAN
- C12 - CITY OF BOERNE STANDARD STREET DETAILS
- C13 - DRAIN PLAN & PROFILE - DRAIN '3-B'
- C14 - DRAIN PLAN & PROFILE - DRAIN '3-B'
- C15 - DRAIN PLAN & PROFILE - DRAIN '3-B'
- C16 - DRAIN PLAN & PROFILE - DRAIN '3-B'
- C17 - DRAIN PLAN & PROFILE - DRAIN '3-B'
- C18 - DRAIN PLAN & PROFILE - DRAIN '3-B'
- C20 - DRAIN PLAN & PROFILE - DRAIN '3-C'
- C21 - DRAIN PLAN & PROFILE - DRAIN '3-D'
- C22 - DRAIN PLAN & PROFILE - DRAIN '3'-E'
- C23 - CURB INLET DETAILS
- C24 - SAFETY END TREATMENT DETAILS
- C25 - CULVERT DETAILS

SANITARY SEWER CONSTRUCTION PLANS

- C27 - OVERALL SANITARY SEWER PLAN
- C28 - OVERALL SANITARY SEWER PLAN
- C26 - SANITARY SEWER GENERAL NOTES
- C29 - SANITARY SEWER PLAN & PROFILE LINE "L"
- C30 - SANITARY SEWER PLAN & PROFILE LINE "M"
- C31 - SANITARY SEWER PLAN & PROFILE LINE "N"
- C32 - SANITARY SEWER PLAN & PROFILE LINE "N"
- C33 - SANITARY SEWER PLAN & PROFILE LINE "O"
- C34 - SANITARY SEWER PLAN & PROFILE LINE "P"
- C35 - SANITARY SEWER PLAN & PROFILE LINE "Q"
- C36 - SANITARY SEWER PLAN & PROFILE LINE "R"
- C37 - SANITARY SEWER STANDARD DETAILS

WATER DISTRIBUTION CONSTRUCTION PLANS

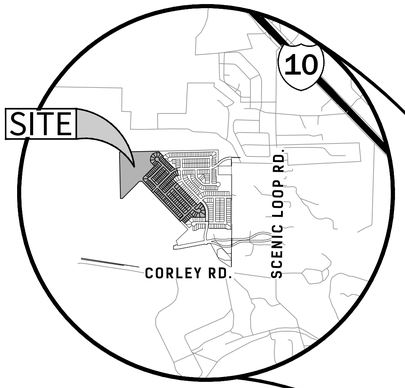
- C38 - WATER DISTRIBUTION PLAN
- C39 - WATER DISTRIBUTION PLAN
- C40 - WATER DISTRIBUTION STANDARD DETAILS

GAS DISTRIBUTION CONSTRUCTION PLANS

- C41 - NATURAL GAS DISTRIBUTION PLAN
- C42 - NATURAL GAS DISTRIBUTION PLAN
- C43 - NATURAL GAS DISTRIBUTION STANDARD DETAILS

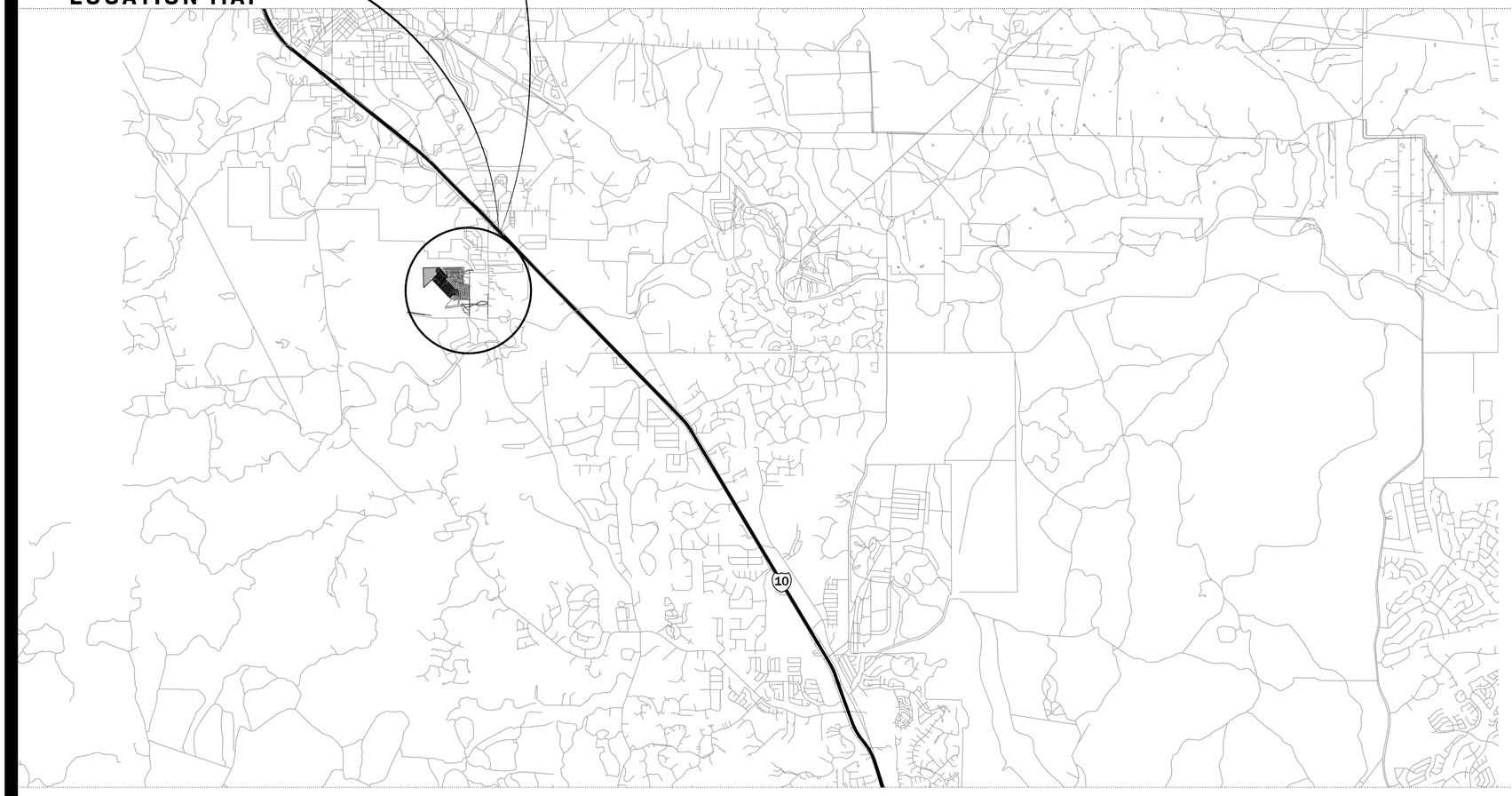
MISCELLANEOUS CONSTRUCTION PLANS

- C44 - UTILITY LAYOUT PLAN
- C45 - UTILITY LAYOUT PLAN
- C46 - STORM WATER POLLUTION PREVENTION PLAN
- C47 - STORM WATER POLLUTION PREVENTION PLAN
- C48 - PUBLIC GRADING PLAN
- C49 - PUBLIC GRADING PLAN



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 3

CONSTRUCTION PLANS

DEVELOPER:
PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO, TX 78259
TEL: (210) 496-1985
FAX: (210) 496-0449

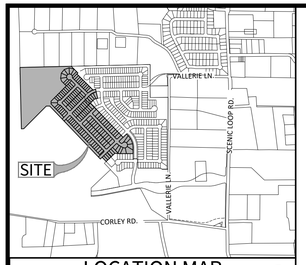
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

DRAWN BY	DATE
CA/CG/XV	09/07/2022
CHECKED BY	PROJECT NO.
XV/JC/AL	03481.007

STATE OF TEXAS — ANDREW R. LOWRY — 123410 — LICENSED PROFESSIONAL ENGINEER — 09/09/2022

STATE OF TEXAS — JAVIER CASTELLO — 122170 — LICENSED PROFESSIONAL ENGINEER — 09/09/2022

CUDE ENGINEERS
TBPE No. 655
TBPLS No. 10048500



LOCATION MAP
N.T.S.

OWNER/DEVELOPER:

PULTE HOMES OF TEXAS, L.P.
CONTACT PERSON: FELIPE GONZALEZ
1718 DRY CREEK WAY, SUITE 120
SAN ANTONIO,TX 78259
TEL: (210) 496-1985
FAX: (210) 496-0449

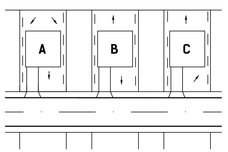
CIVIL ENGINEER:

M.W. CUDE ENGINEERS, L.L.C.
CONTACT PERSON: DAVID D. CUPIT II, P.E.
4122 POND HILL ROAD, SUITE 101
SAN ANTONIO, TX 78231
TEL: (210) 681-2951
FAX: (210) 523-7112

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.

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CORLEY FARMS UNIT 3

ULTIMATE MASTER DRAINAGE PLAN

DATE
09/07/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

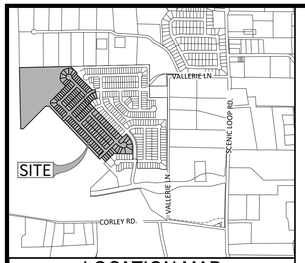
DATE	
2022-07-13	CUDE COMMENTS
2022-09-07	CUDE COMMENTS

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
09/09/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C1

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LOCATION MAP
N.T.S.

Project Name: Corley Farms — **Precipitation Area Atlas 14 = PA1**

Calculation Summary for Time of Concentrations & Ultimate Flow, "U"

HYDROLOGY							Sheet Flow Tc Compuations				Shallow Conc. Tc Compuations				Concentrated Tc Compuations			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					*913.00*	6	2.54	**8.88**	6.64	9.34	11.83	20.07	**31.06**	**44.70**	**A19A/19A**
-/19B	**0.00**	A19+A19A	**14.62**	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	38.85	**59.96**	**86.03**	**-/19B**
A20/20	**3.56**	A20	**3.56**	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	16.26	**25.17**	**36.27**	**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	**20.67**	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	58.66	**90.54**	**130.03**	**-/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	**23.68**	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	69.38	**107.05**	**153.54**	**-/22A**
A23/23	**4.97**	A23	**4.97**	0.66	0.73	0.83	*255.00*	0.3	3.92%	9.20					*622.00*	6	1.70	**10.90**	6.14	8.63	10.91	20.14	**31.14**	**44.73**	**A23/23**
A24/24	**4.04**	A24	**4.04**	0.66	0.73	0.83	*258.00*	0.2	3.49%	7.07	*213.00*	0.2	1.41%	5.03	*213.00*	6	1.43	**8.49**	6.75	9.50	12.06	18.00	**27.86**	**40.13**	**A24/24**
A25/-	**2.13**	A25	**2.13**	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	9.50	**14.72**	**21.19**	**A25/-**
-/25	**0.00**	A19:A25	**34.82**	0.60	0.66	0.75	*200.00*	0.2	2.83%	5.66	*871.00*	0.2	9.74%	9.30	*786.00*	6	2.21	**17.17**	5.01	7.03	8.87	104.67	**161.56**	**231.64**	**-/25**
A26/26	**7.19**	A26	**7.19**	0.66	0.73	0.83	*269.00*	0.3	3.79%	9.87					*965.00*	6	2.68	**12.55**	5.78	8.12	10.27	27.43	**42.39**	**60.92**	**A26/26**
A27/-	**1.83**	A27	**1.83**	0.66	0.73	0.83	*149.00*	0.3	2.09%	7.36					*250.00*	6	0.69	**8.06**	6.87	9.68	12.27	8.30	**12.86**	**18.52**	**A27/-**
-/27	**0.00**	A19:A27	**43.84**	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	131.31	**202.39**	**290.49**	**-/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/-	**2.58**	A29	**2.58**	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	12.06	**18.67**	**26.93**	**A29/-**
-/29	**0.00**	A19:A29	**50.11**	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	148.20	**228.63**	**327.77**	**-/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	**4.93**	A31	**4.93**	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	22.22	**34.43**	**49.62**	**A31/31**
-/31A	**0.00**	A30+A31	**9.90**	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	40.25	**62.39**	**89.60**	**-/31A**
-/31B	**0.00**	A19:A31	**60.01**	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	176.73	**272.57**	**390.67**	**-/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	**65.13**	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	190.80	**294.28**	**421.60**	**-/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	**71.73**	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	203.35	**313.66**	**449.64**	**-/34**
A35/35	**9.47**	A35	**9.47**	0.44	0.48	0.55	*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	21.75	**33.55**	**48.13**	**A35/35**
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/-	**0.18**	A37	**0.18**	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	0.94	**1.46**	**2.11**	**A37/-**
-/37	**0.00**	A35:A37	**13.88**	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	36.95	**57.00**	**81.76**	**-/37**
A38/-	**1.00**	A38	**1.00**	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	4.56	**7.06**	**10.17**	**A38/-**
-/38	**0.00**	A35:A38	**14.88**	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	40.39	**62.30**	**89.37**	**-/38**
A39/39	**7.31**	A39	**7.31**	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	28.32	**43.78**	**62.90**	**A39/39**
-/39A	**0.00**	A35:A39	**22.19**	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	66.02	**101.84**	**146.09**	**-/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	**23.02**	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	68.49	**105.65**	**151.55**	**-/40**
-/40A	**0.00**	A19:A40	**94.75**	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	258.35	**398.63**	**571.47**	**-/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	**0.89**	A42	**0.89**	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	4.66	**7.22**	**10.45**	**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	**0.74**	A44	**0.74**	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	3.87	**6.01**	**8.69**	**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	**96.78**	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	250.22	**386.12**	**552.78**	**-/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	**119.52**	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	230.46	**353.76**	**507.60**	**-/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	**121.82**	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	234.89	**360.57**	**517.37**	**-/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**

*REFERENCE STORMWATER REPORT FOR DETENTION POND INFLOW AND OUTFLOW RATES (& SCS HYDROLOGY)

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CORLEY FARMS
UNIT 3

ULTIMATE MASTER DRAINAGE PLAN -
RATIONAL METHOD CALCULATIONS

DATE
09/07/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

DATE	
A	2022-09-07 - CUDE COMMENTS
1.	
2.	
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STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
09/09/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

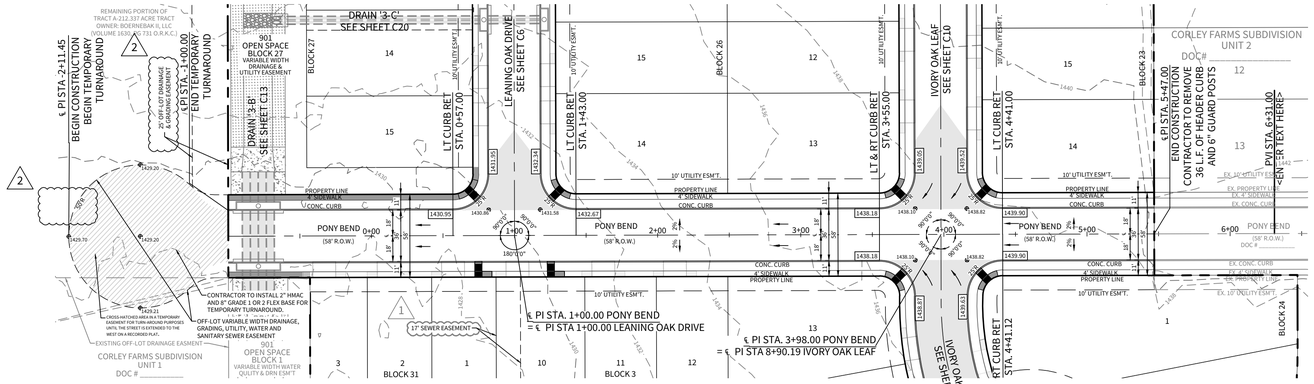
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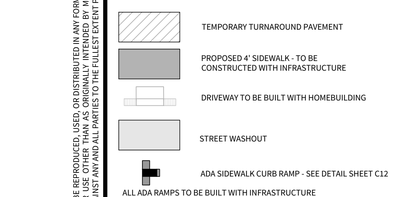
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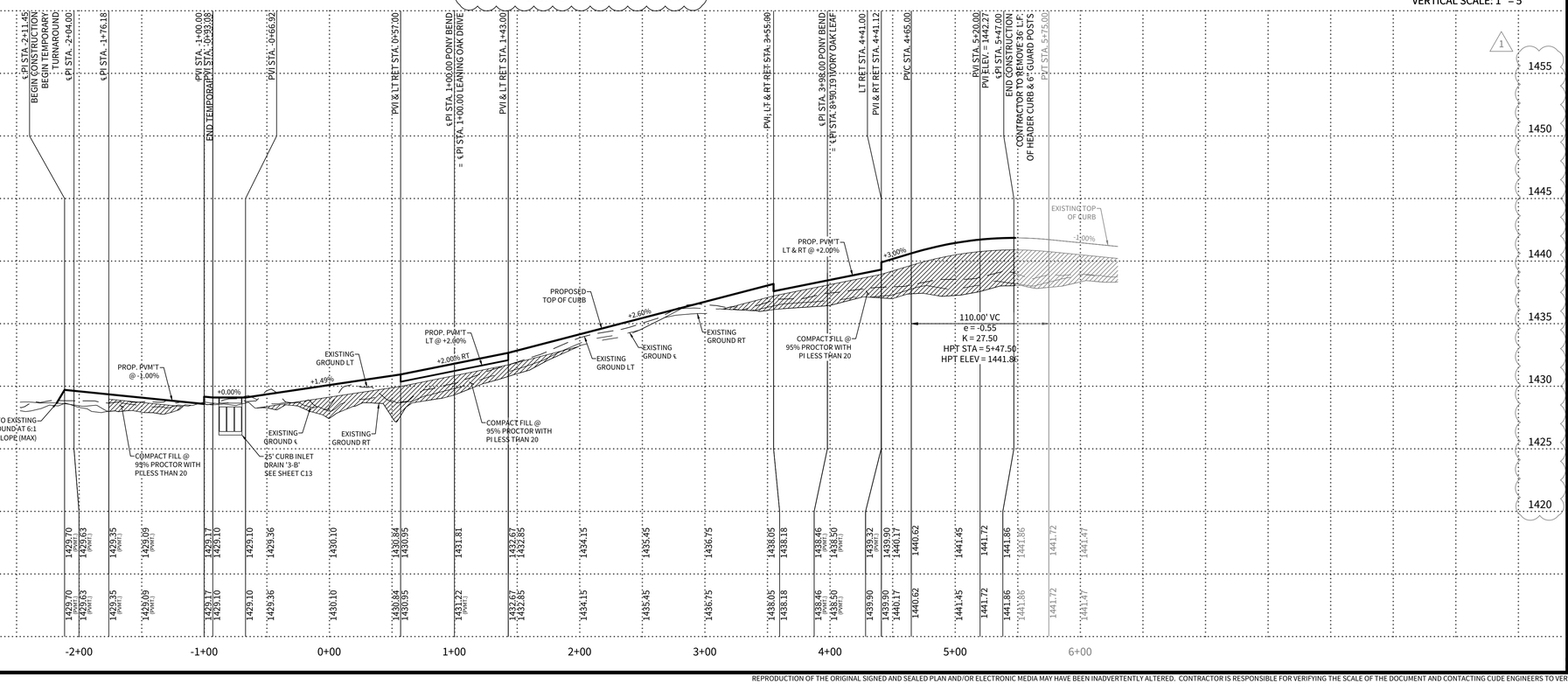




PONY BEND

STA. -2+11.45 TO STA. 5+47.00

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



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CORLEY FARMS UNIT 3

STREET PLAN & PROFILE - PONY BEND

DATE
09/07/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

	DATE
1.	2022-07-13 - CUDE COMMENTS
2.	2022-09-07 - CUDE COMMENTS
3.	
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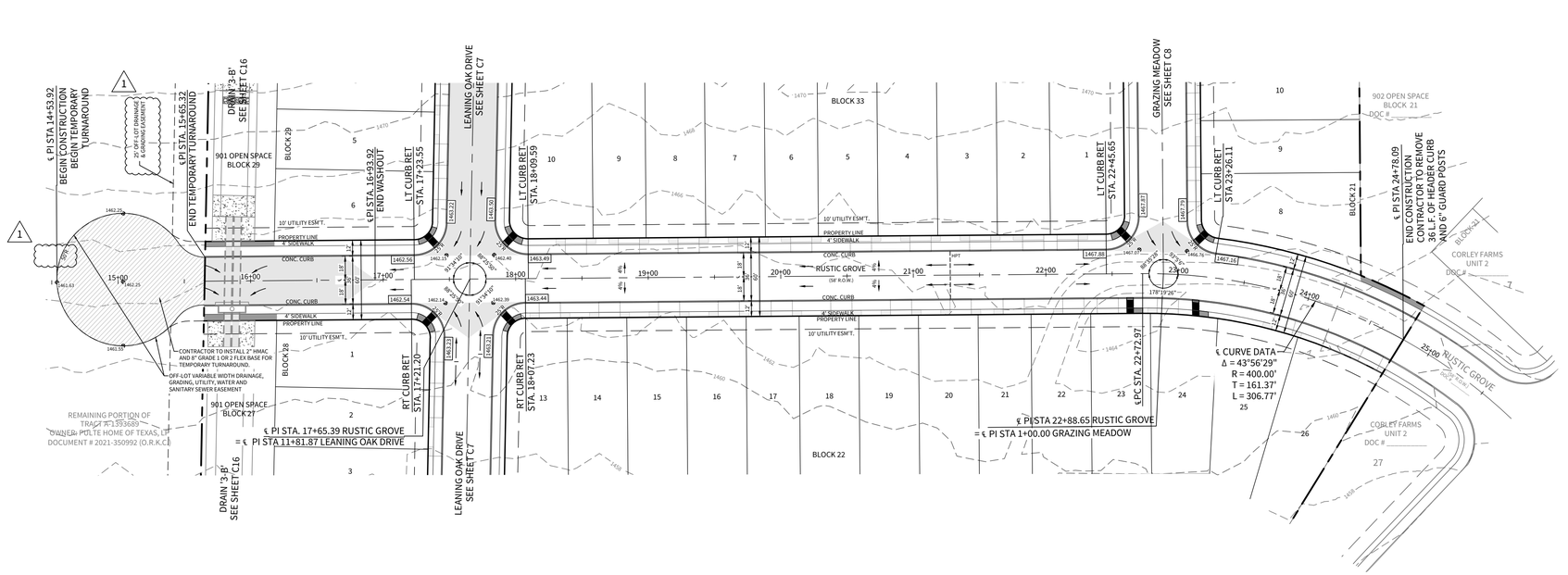
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
09/09/2022
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C3

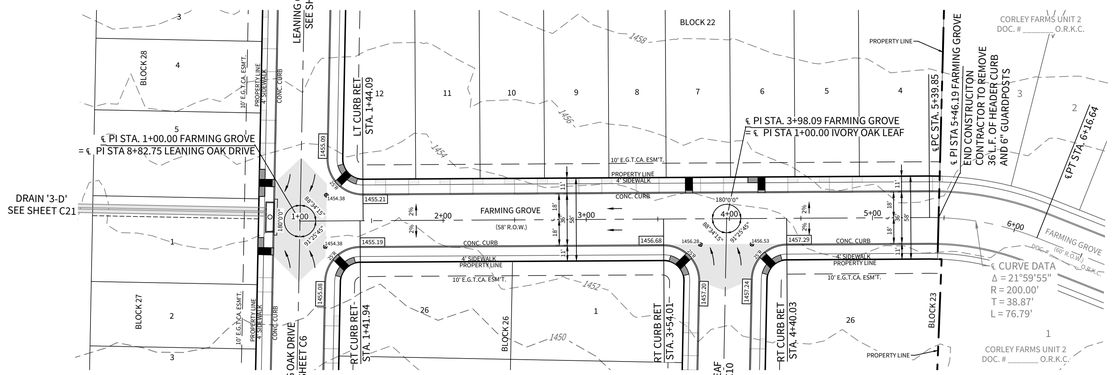
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S:\03481\007\2-Drawings\13-STREET PLAN & PROFILE - PONY BEND.dwg 2022/09/09 10:56am cangahare


℄ PI STA 14+53.92
BEGIN CONSTRUCTION
BEGIN TEMPORARY TURNAROUND
℄ PI STA. 15+65.32
END TEMPORARY TURNAROUND
DRAIN '3-B'
SEE SHEET C16
25' OFF-LOT DRAINAGE, GRADING, UTILITY & SANITARY SEWER EASEMENT
901 OPEN SPACE BLOCK 29
BLOCK 29
℄ PI STA. 16+93.92
END WASHOUT
LT CURB RET
STA. 17+23.55
LEANING OAK DRIVE
SEE SHEET C7
LT CURB RET
STA. 18+09.59
BLOCK 33
LT CURB RET
STA. 22+45.65
GRAZING MEADOW
SEE SHEET C8
LT CURB RET
STA 23+26.11
902 OPEN SPACE BLOCK 21
DOC #
℄ PI STA 24+78.09
END CONSTRUCTION
CONTRACTOR TO REMOVE
36 LF. OF HEADER CURB
AND 6' GUARD POSTS
BLOCK 21
CORLEY FARMS UNIT 2
DOC #
PROPERTY LINE
4' SIDEWALK
CONC. CURB
10' UTILITY ESM'T.
RUSTIC GROVE
(58' R.O.W.)
CONTRACTOR TO INSTALL 2" HMAC AND 8" GRADE 1 OR 2 FLEX BASE FOR TEMPORARY TURNAROUND.
OFF-LOT VARIABLE WIDTH DRAINAGE, GRADING, UTILITY, WATER AND SANITARY SEWER EASEMENT
BLOCK 28
901 OPEN SPACE BLOCK 27
REMAINING PORTION OF TRACT A-393689
OWNER: PETLTE HOME OF TEXAS, LP
DOCUMENT # 2021-350992 (O.R.K.C.T.)
RT CURB RET
STA. 17+21.20
RT CURB RET
STA. 18+07.23
BLOCK 22
℄ PI STA. 17+65.39 RUSTIC GROVE
= ℄ PI STA. 11+81.87 LEANING OAK DRIVE
℄ PI STA 22+88.65 RUSTIC GROVE
= ℄ PI STA 1+00.00 GRAZING MEADOW
℄ PC STA. 22+72.97
℄ CURVE DATA
Δ = 43°56'29"
R = 400.00'
T = 161.37'
L = 306.77'
DRAIN '3-B'
SEE SHEET C16
LEANING OAK DRIVE
SEE SHEET C7
1462.22
1461.63
1462.25
1461.25
1462.56
1462.54
1462.15
1462.39
1463.49
1463.44
1467.88
1467.79
1467.26
1466.76
1467.36
178°19'26"
1462.21
1463.22
1463.23
1463.21
1465.70
1465.22
1462.40
1463.40
1467.21
1467.68
1467.07
1466.94
1466.81
1466.69
1466.57
1466.45
1466.33
1466.21
1466.09
1465.97
1465.85
1465.73
1465.61
1465.49
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1464.17
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1463.57
1463.45
1463.33
1463.21
1463.09
1462.97
1462.85
1462.73
1462.61
1462.49
1462.37
1462.25
1462.13

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TEMPORARY TURNAROUND PAVEMENT

PROPOSED 4' SIDEWALK - TO BE CONSTRUCTED WITH INFRASTRUCTURE

DRIVEWAY TO BE BUILT WITH HOMEBUILDING

STREET WASHOUT

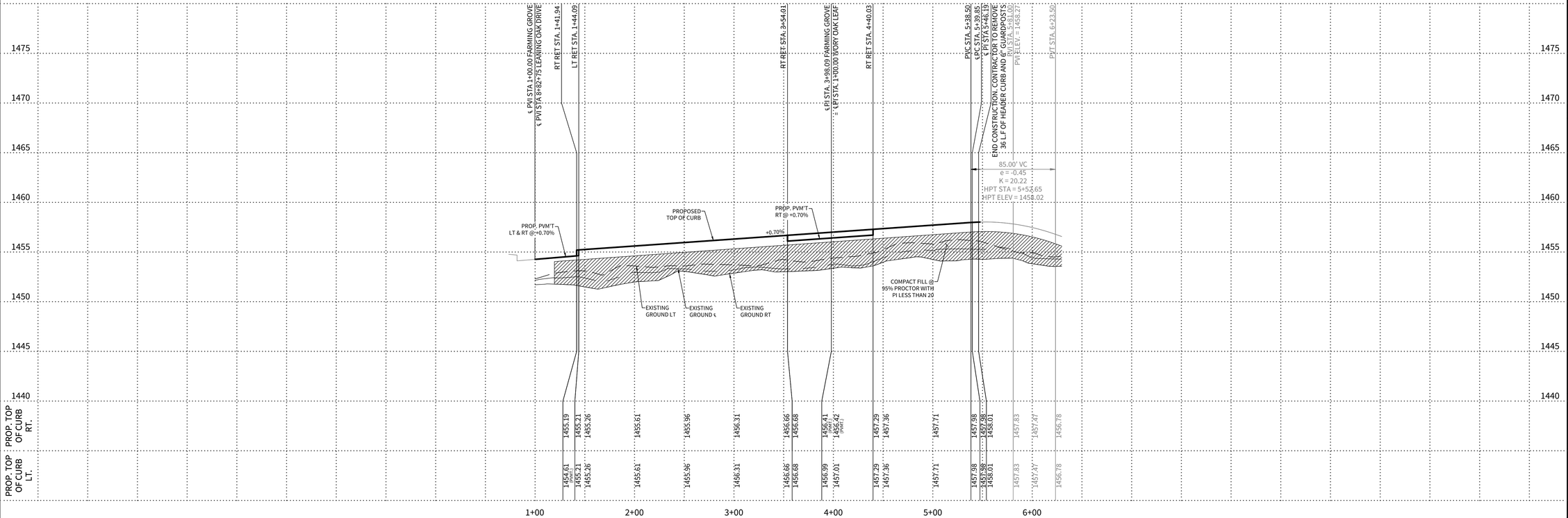
ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C12

ALL ADA RAMPS TO BE BUILT WITH INFRASTRUCTURE

FARMING GROVE

STA. 1+00.00 TO STA. END

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



CUDEENGINEERS.COM

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

CORLEY FARMS UNIT 3

STREET PLAN & PROFILE - FARMING GROVE

DATE
03/22/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

	DATE
1	
2	
3	
4	
5	
6	
7	
8	
9	

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
3/22/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C5

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P:\03481\007\2-Drawings\C5 STREET PLAN & PROFILE - FARMING GROVE.dwg 3/22/2022 3:25pm cg.thrift

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TEMPORARY TURNAROUND PAVEMENT

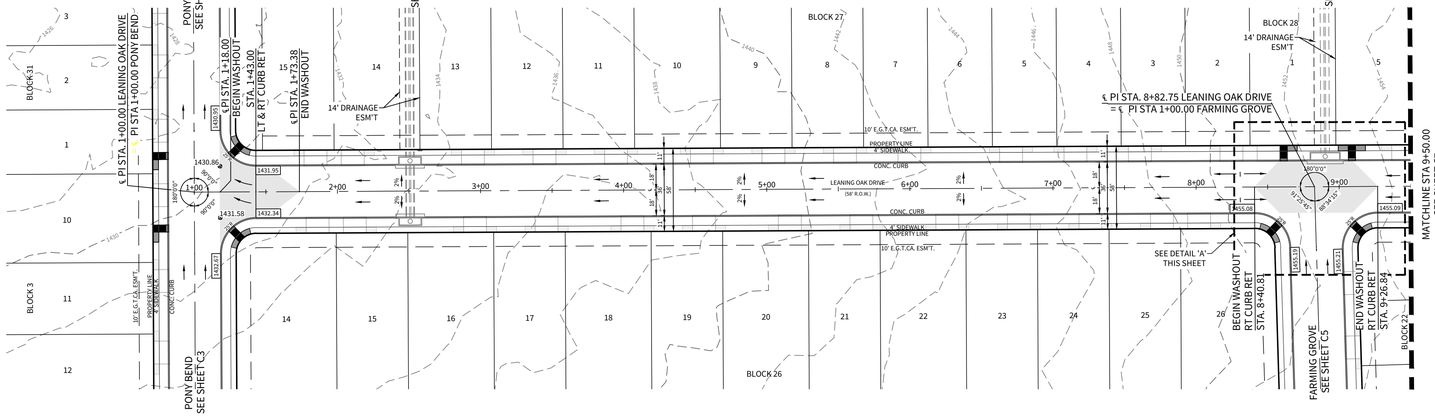
PROPOSED 4' SIDEWALK - TO BE CONSTRUCTED WITH INFRASTRUCTURE

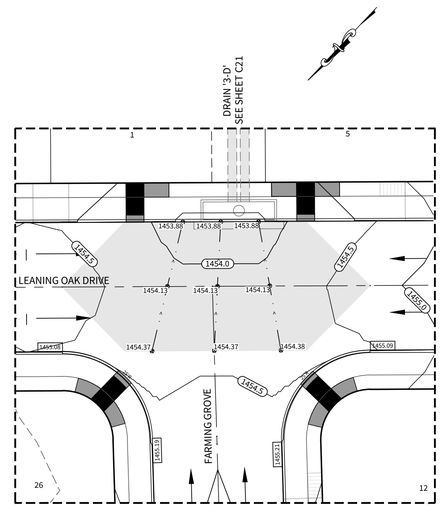
DRIVEWAY TO BE BUILT WITH HOMEBUILDING

STREET WASHOUT

ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C12

ALL ADA RAMPS TO BE BUILT WITH INFRASTRUCTURE

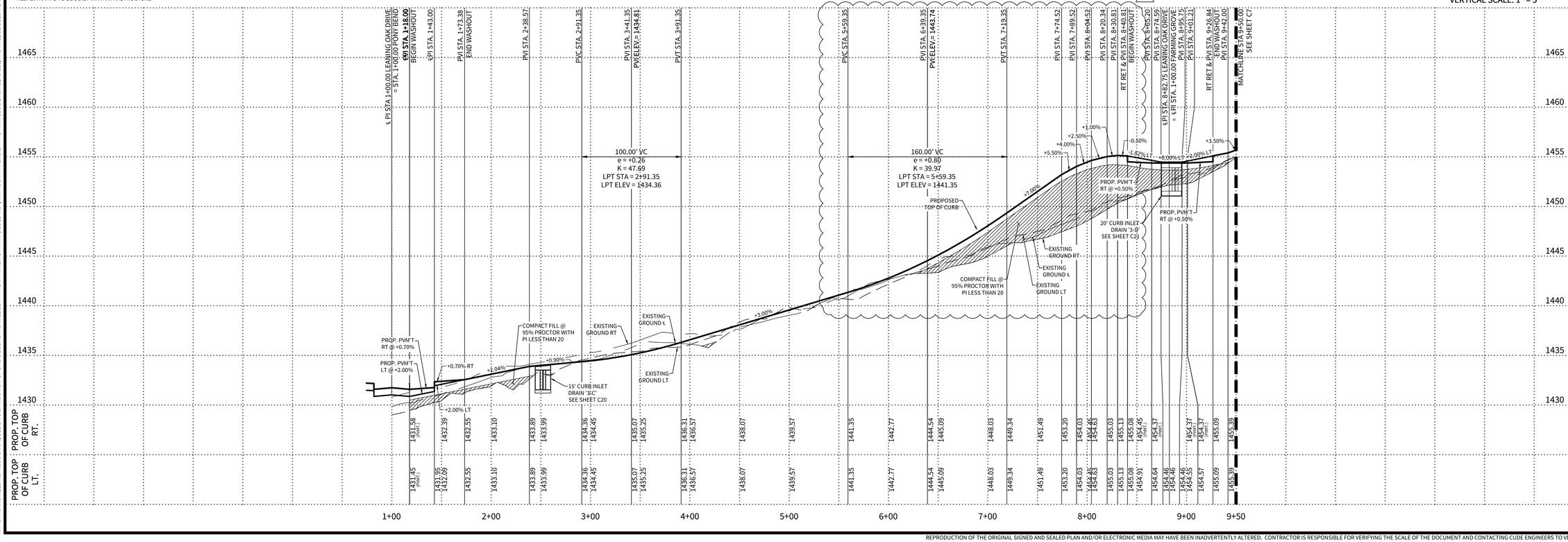




LEANING OAK DRIVE

STA. 1+00.00 TO STA. 9+50.00

HORIZONTAL SCALE: 1" = 50'
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 3

STREET PLAN & PROFILE - LEANING OAK DRIVE

DATE
09/07/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

DATE	
2022-09-07	CUDE COMMENTS

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
09/09/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C6

P:\03481\007\3-Drawings\05 STREET PLANS PROFILE - LEANING OAK DRIVE.dwg 2022/09/07 11:02am cgarbarino

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TEMPORARY TURNAROUND PAVEMENT

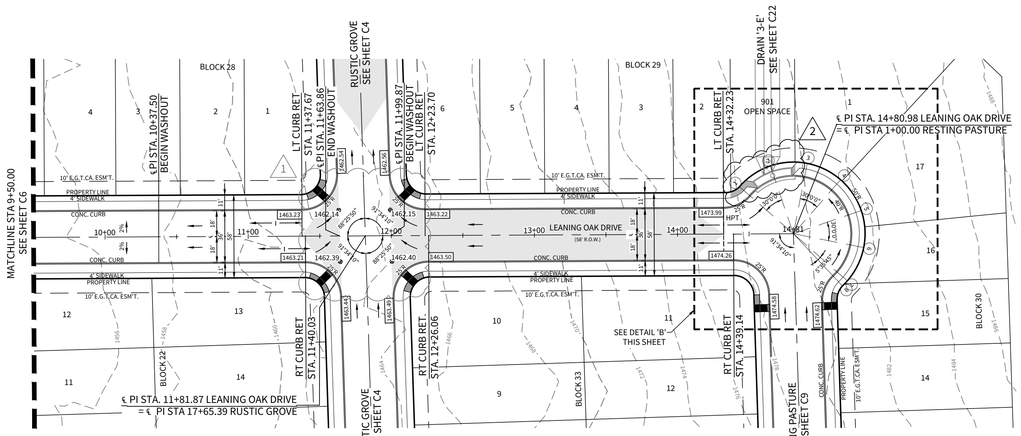
PROPOSED 4' SIDEWALK - TO BE CONSTRUCTED WITH INFRASTRUCTURE

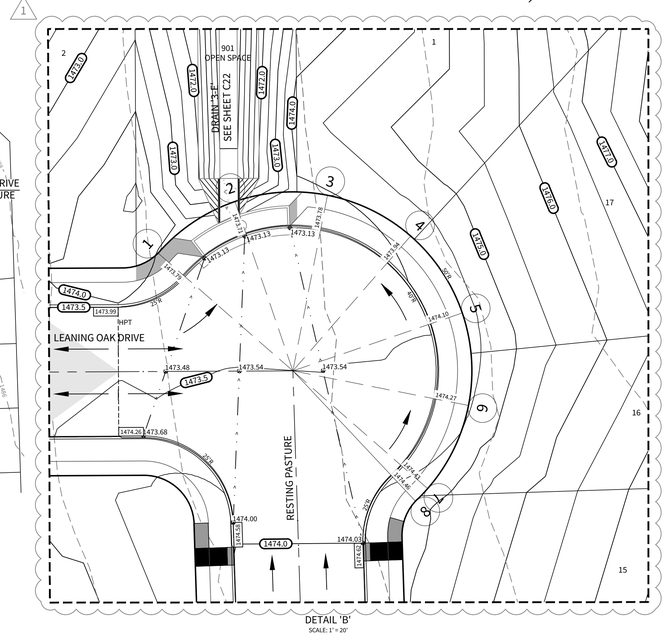
DRIVEWAY TO BE BUILT WITH HOMEBUILDING

STREET WASHOUT

ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C12

ALL ADA RAMPS TO BE BUILT WITH INFRASTRUCTURE



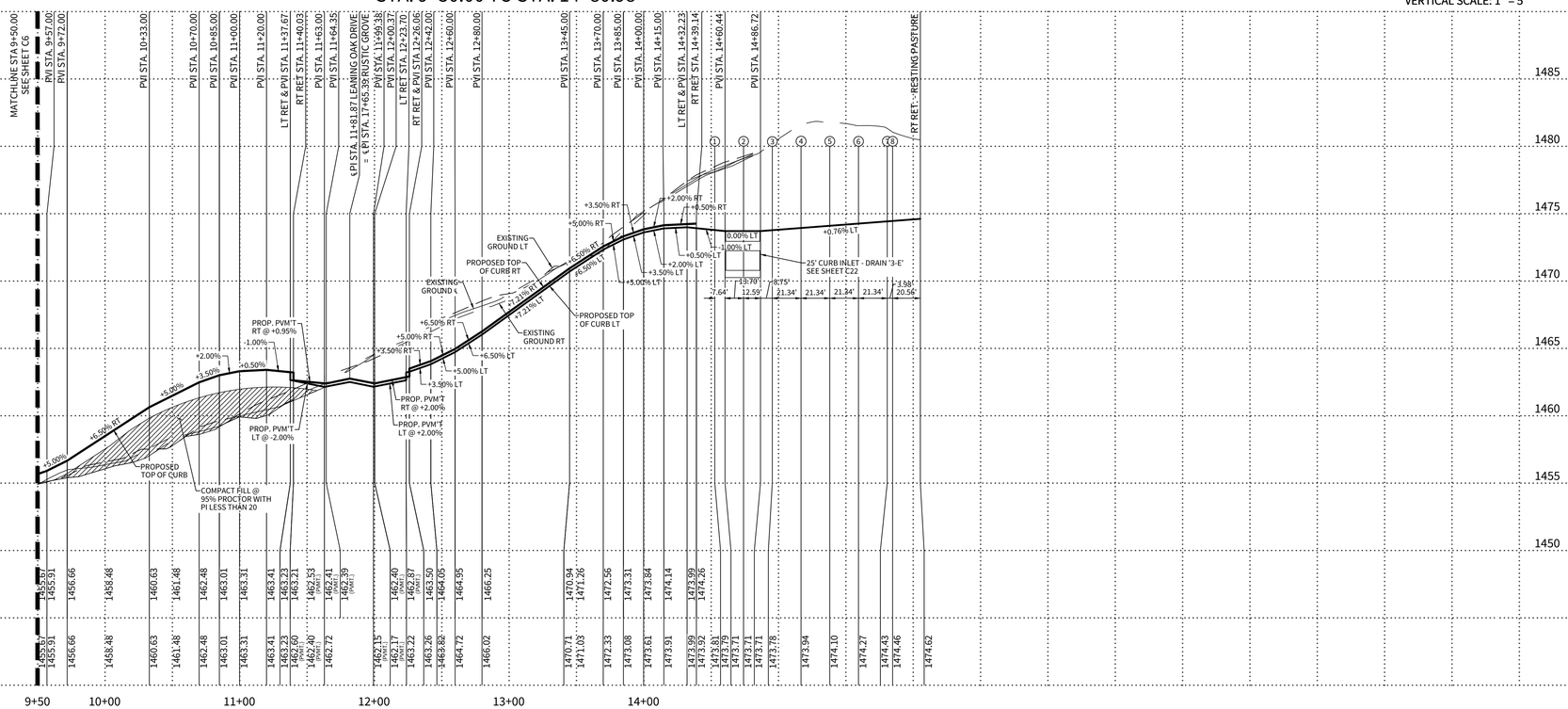


DETAIL 'B'
SCALE: 1" = 20'

LEANING OAK DRIVE

STA. 9+50.00 TO STA. 14+80.98

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 3

STREET PLAN & PROFILE - LEANING OAK DRIVE

DATE
09/07/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

	DATE
1.	2022-07-11 - CUDE COMMENTS
2.	2022-09-07 - CUDE COMMENTS
3.	
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STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
09/09/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

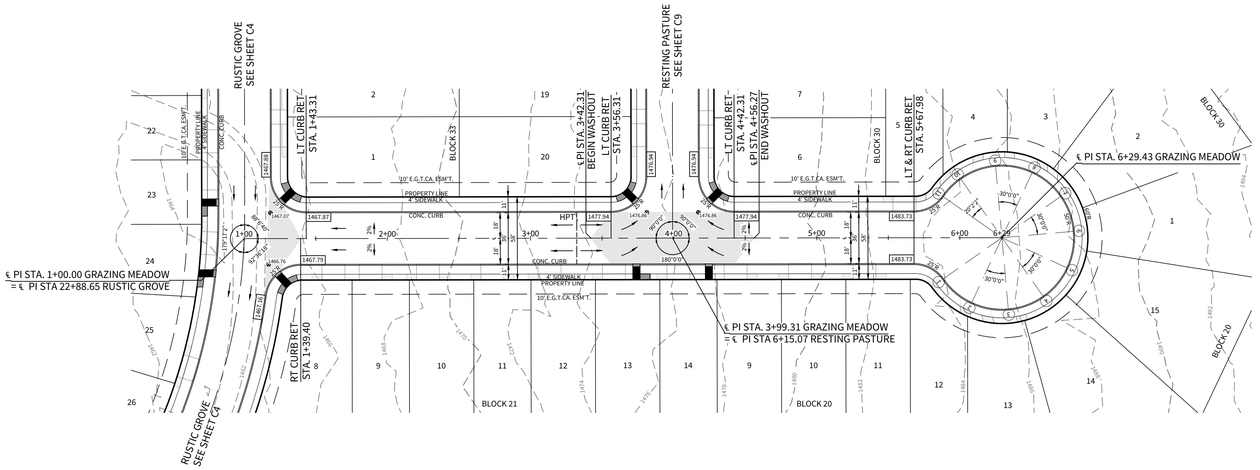
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P:\03481\007\2-Drawings\C7 STREET PLAN & PROFILE - LEANING OAK DRIVE.dwg 2/22/2023 2:22pm Langlands

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TEMPORARY TURNAROUND PAVEMENT

PROPOSED 4' SIDEWALK - TO BE CONSTRUCTED WITH INFRASTRUCTURE

DRIVEWAY TO BE BUILT WITH HOMEBUILDING

STREET WASHOUT

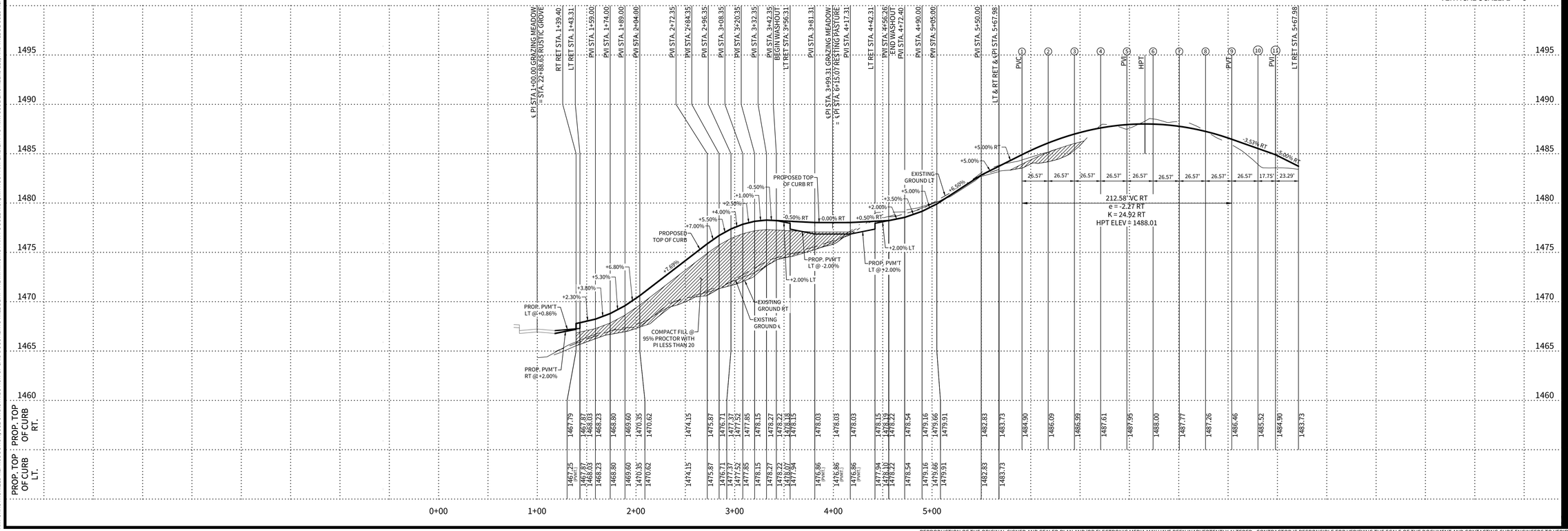
ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C12

ALL ADA RAMPS TO BE BUILT WITH INFRASTRUCTURE

GRAZING MEADOW

STA. 1+00.00 TO 6+29.43

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



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San Antonio, Texas 78231
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CORLEY FARMS
UNIT 3

STREET PLAN & PROFILE - GRAZING MEADOW

DATE
03/22/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

DATE	A	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
3/22/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

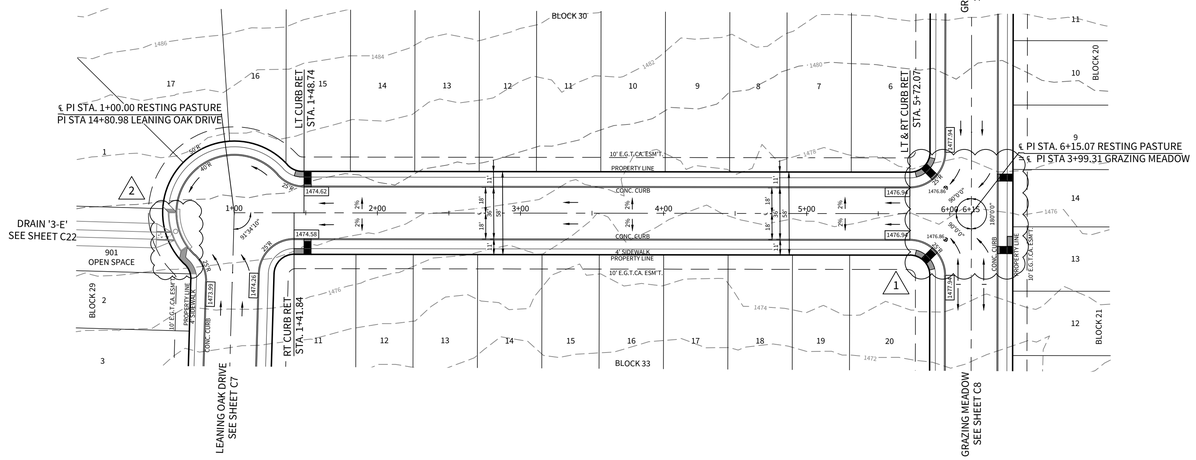
C8

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P:\03481.007\12-Drawings\03 STREET PLAN & PROFILE - GRAZING MEADOW.dwg 2022.03.22 3:25pm cgillett

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TEMPORARY TURNAROUND PAVEMENT

PROPOSED 4' SIDEWALK - TO BE CONSTRUCTED WITH INFRASTRUCTURE

DRIVEWAY TO BE BUILT WITH HOMEBUILDING

STREET WASHOUT

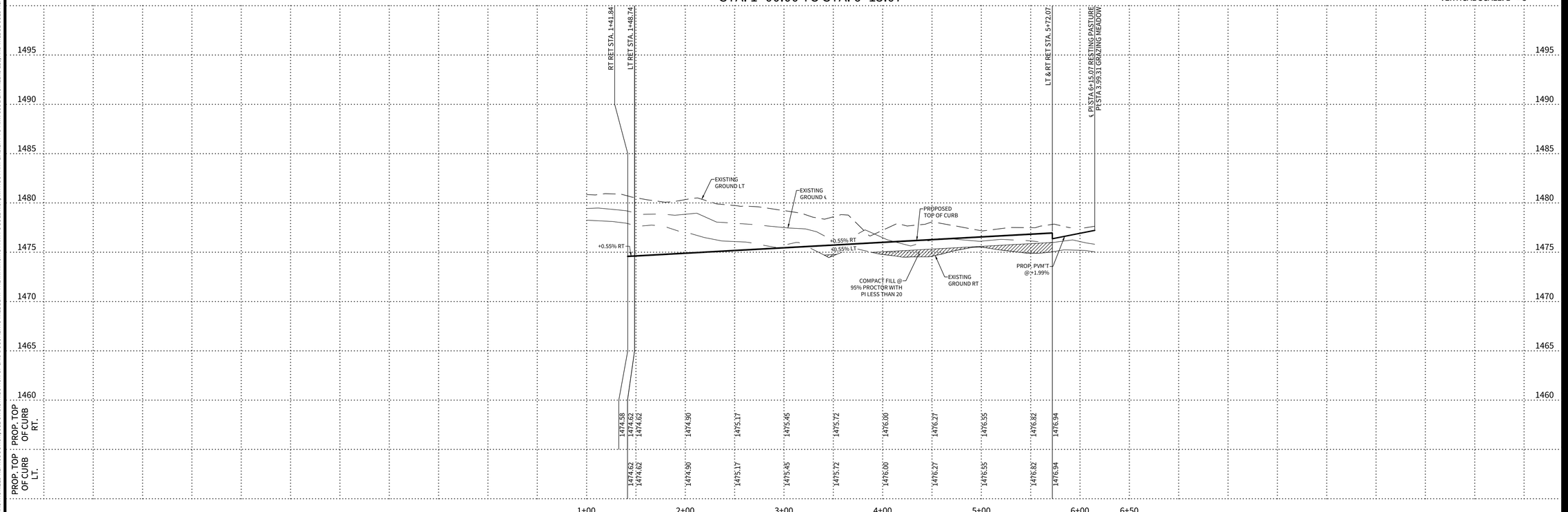
ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C12

ALL ADA RAMPS TO BE BUILT WITH INFRASTRUCTURE

RESTING PASTURE

STA. 1+00.00 TO STA. 6+15.07

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



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CORLEY FARMS
UNIT 3

STREET PLAN & PROFILE - RESTING PASTURE

DATE
09/07/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

	DATE
1.	2022-07-11 - CoB COMMENTS
2.	2022-09-07 - CoB COMMENTS

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
09/09/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

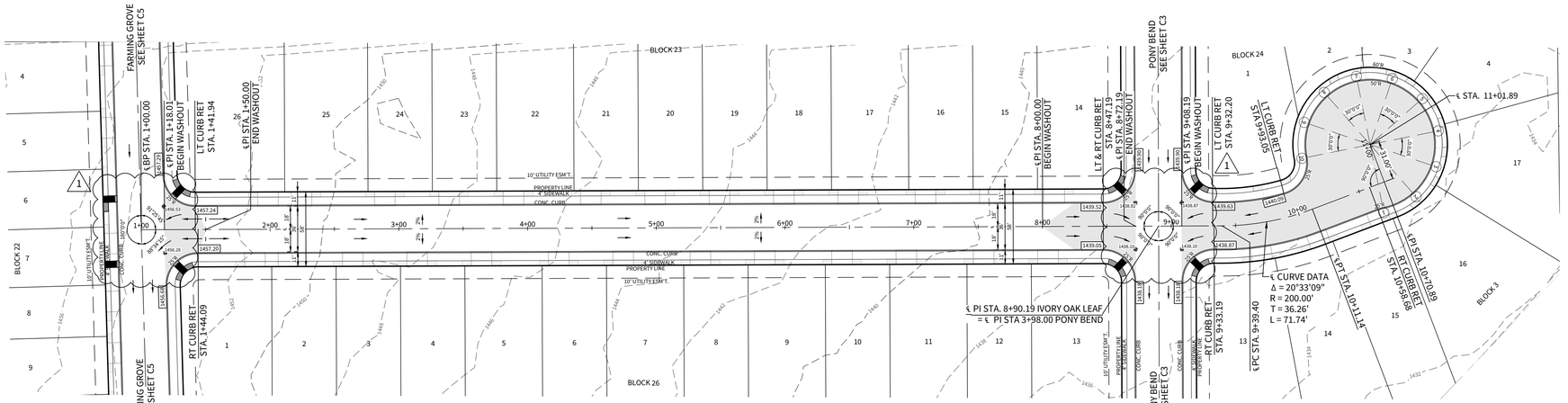
C9

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P:\03481\007\2-Drawings\03 STREET PLANS & PROFILE - RESTING PASTURE.dwg 2022/09/07 7:23pm cangulano

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TEMPORARY TURNAROUND PAVEMENT

PROPOSED 4' SIDEWALK - TO BE CONSTRUCTED WITH INFRASTRUCTURE

DRIVEWAY TO BE BUILT WITH HOMEBUILDING

STREET WASHOUT

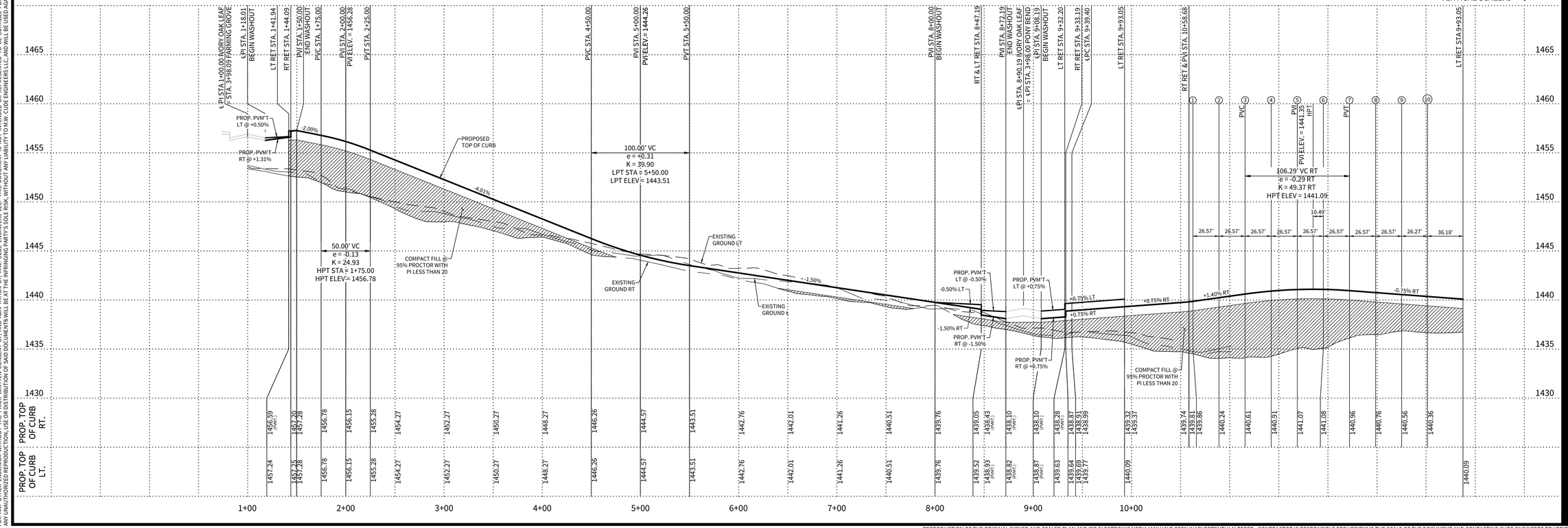
ADA SIDEWALK CURB RAMP - SEE DETAIL SHEET C12

ALL ADA RAMPS TO BE BUILT WITH INFRASTRUCTURE

IVORY OAK LEAF

STA. 1+00.00 TO STA. 11+01.89

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



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San Antonio, Texas 78231
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CORLEY FARMS
UNIT 3

STREET PLAN & PROFILE - IVORY OAK LEAF

DATE
07/12/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

DATE	
2022-07-13	CoB COMMENTS

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
7/13/2022
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C10

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LOCATION MAP
N.T.S.



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CORLEY FARMS UNIT 3

TRAFFIC SIGNAGE PLAN

DATE
07/12/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

DATE	
A	2022-07-13 - CUDE COMMENTS

ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
7/13/2022
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

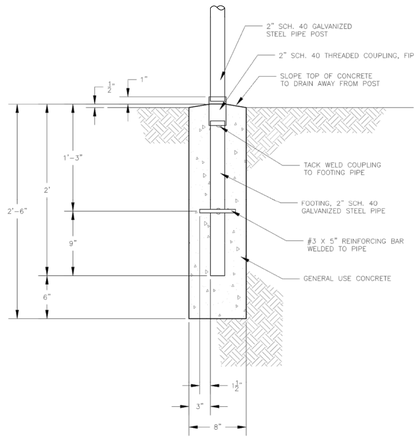
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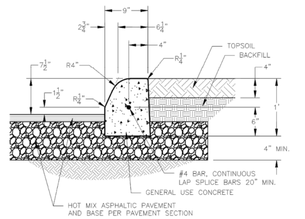
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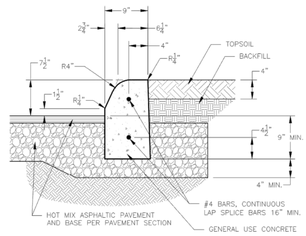
CITY OF BOERNE

SIGN POST AND FOUNDATION

SCALE: N.T.S. | Drawing No.: 02514-1.1 | DATE: JULY 2015



STANDARD CONCRETE CURB



ALTERNATE DEEP CONCRETE CURB

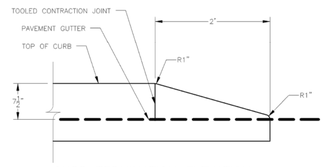
NOTE:
STANDARD CURB MUST BE REMOVED AND REPLACED WITH A HEADER CURB TO ACCOMMODATE DRIVEWAYS.

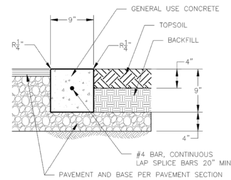
THE ALTERNATE DEEP CURB MAY BE SAW CUT HORIZONTALLY TO ACHIEVE A HEADER CURB SECTION FOR DRIVEWAYS.

CITY OF BOERNE

CONCRETE CURB

SCALE: N.T.S. | Drawing No.: 02502-2.0 | DATE: JULY 2015



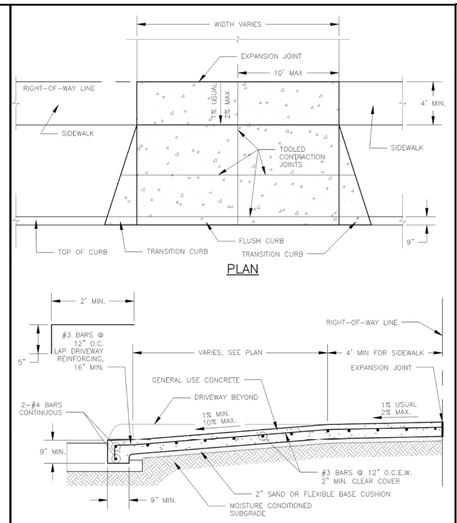


HEADER CURB SECTION

CITY OF BOERNE

CONCRETE CURB TERMINATION AND HEADER CURB

SCALE: N.T.S. | Drawing No.: 02502-2.1 | DATE: JULY 2015

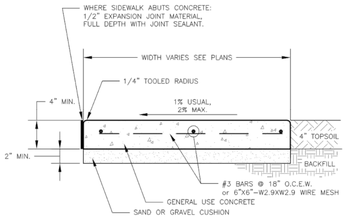


NOTE: THE HEADER CURB CONSTRUCTION MAY BE DELETED WHEN CONSTRUCTING DRIVEWAY ADJACENT TO AN EXISTING HEADER CURB THAT IS A MINIMUM OF 9" DEEP WITH AT LEAST ONE HORIZONTAL BAR. INSTALL AN EXPANSION JOINT BETWEEN THE EXISTING HEADER CURB AND DRIVEWAY.

CITY OF BOERNE

CONCRETE DRIVEWAY APPROACH SIDEWALK AT ROW LINE

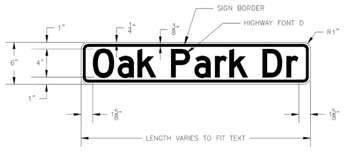
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CITY OF BOERNE

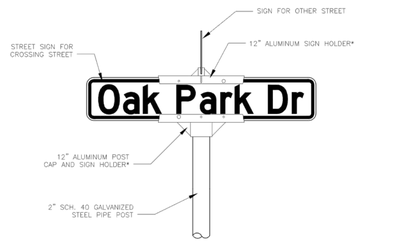
CONCRETE SIDEWALK

SCALE: N.T.S. | Drawing No.: 02502-4.0 | DATE: JANUARY 2011



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

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

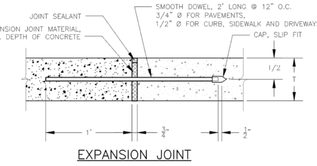


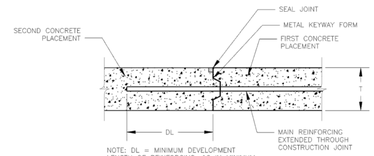
*USE 12" ALUMINUM SIGN HOLDERS FOR SIGNS > 24" IN LENGTH, FOR SHORTER SIGNS USE 5" HOLDERS.

CITY OF BOERNE

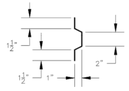
STREET SIGN

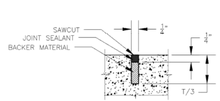
SCALE: N.T.S. | Drawing No.: 02514-1.0 | DATE: JULY 2015





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.



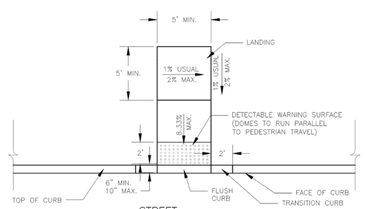


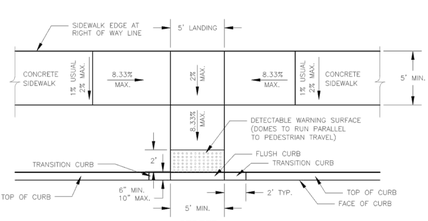
NOTE: SAWED CONTRACTION JOINTS MUST BE USED ON CONCRETE PAVING, ON DRIVEWAYS, SIDEWALKS AND CURB. TOOLED CONTRACTION JOINTS MAY BE USED. THE TOOLED JOINT MUST BE 1/2 INCH DEEP AND 1/2 INCH WIDE WITH A 1/4 INCH RADIUS ALONG THE EDGE.

CITY OF BOERNE

CONCRETE JOINTS

SCALE: N.T.S. | Drawing No.: 02502-1.2 | DATE: JULY 2015



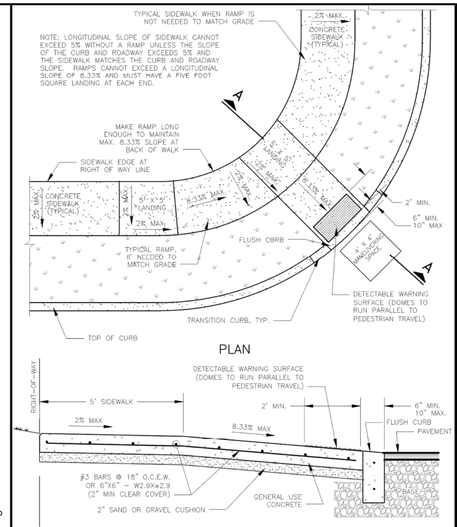


NOTE: LONGITUDINAL SLOPE OF SIDEWALK CANNOT EXCEED 5% WITHOUT A RAMP UNLESS THE SLOPE OF THE CURB AND ROADWAY EXCEEDS 5% AND THE SIDEWALK MATCHES THE CURB AND ROADWAY SLOPE. RAMPS CANNOT EXCEED A LONGITUDINAL SLOPE OF 8.33% AND MUST HAVE A FIVE FOOT SQUARE LANDING AT EACH END.

CITY OF BOERNE

SIDEWALK CURB RAMPS SIDEWALK AT ROW LINE

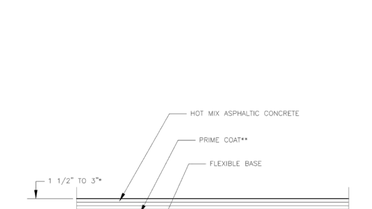
SCALE: N.T.S. | Drawing No.: 02502-4.1 | DATE: JULY 2015



CITY OF BOERNE

SIDEWALK CURB RAMP ON RADIUS SIDEWALK AT ROW LINE

SCALE: N.T.S. | Drawing No.: 02502-4.2 | DATE: JULY 2015



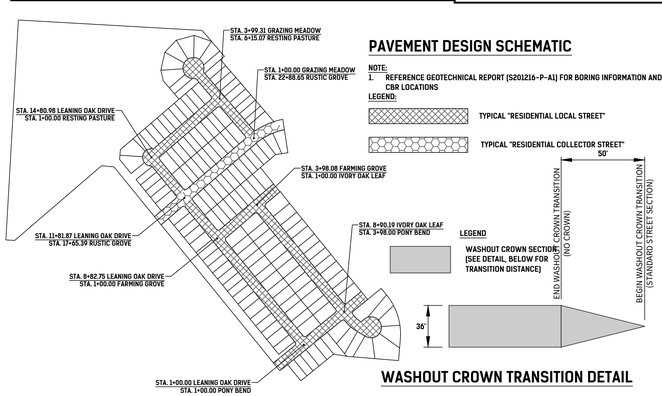
*THICKNESS VARIES DEPENDING UPON PAVEMENT DESIGN. REFER TO PLAN X-SECTIONS AND DETAILS FOR SPECIFIED PAVEMENT DESIGN.

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

CITY OF BOERNE

ASPHALTIC CONCRETE PAVEMENT SECTION

SCALE: N.T.S. | Drawing No.: 02513-1.0 | DATE: JULY 2015



PAVEMENT DESIGN SCHEMATIC

NOTE:
1. REFERENCE GEOTECHNICAL REPORT (S201216-P-A1) FOR BORING INFORMATION AND CBR LOCATIONS

LEGEND:

TYPICAL "RESIDENTIAL LOCAL STREET"

TYPICAL "RESIDENTIAL COLLECTOR STREET"

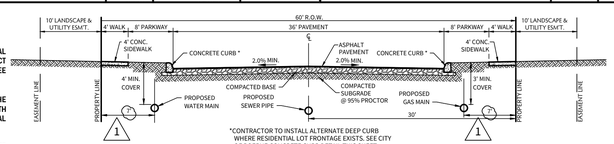
LEGEND

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

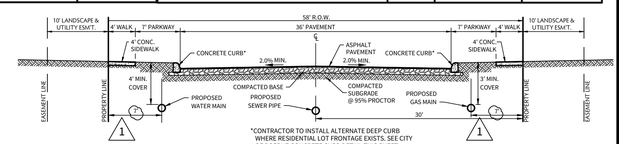
WASHOUT CROWN TRANSITION DETAIL

NOTES:

1. PAVEMENT DESIGN THICKNESS BASED ON GEOTECHNICAL REPORT. SEE TABLE FOR STRUCTURAL NUMBER CALCULATION. REFERENCE PROJECT GEOTECHNICAL REPORT AND PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND ALTERNATE PAVEMENT SECTIONS. (SEE GEOTECH REPORT BY INTEC, PROJECT NO. S201216-P, DATED 09/23/20)
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.

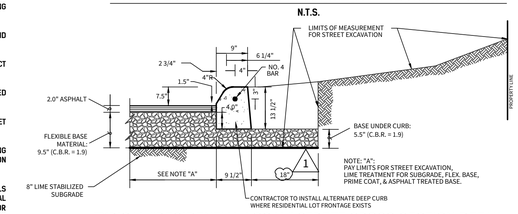


TYPICAL "RESIDENTIAL COLLECTOR" STREET CROSS SECTION



TYPICAL "RESIDENTIAL LOCAL" STREET CROSS SECTION

N.T.S.



TYPICAL "RESIDENTIAL LOCAL" STREET CROSS SECTION DETAIL

STREET TYPE	HMAC TYPE "D"	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
RESIDENTIAL COLLECTOR STREET	3.0"	16.0"	8.0"	5.5"	4.20

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.

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CORLEY FARMS UNIT 3

CITY OF BOERNE STANDARD STREET DETAILS

DATE: 07/12/2022
PROJECT NO.: 03481.007
DRAWN BY: CA/CG/XV
CHECKED BY: XV/JC/AL

REVISIONS

DATE	
2022-07-13	CUDE COMMENTS

1 2 3 4 5 6 7 8 9

STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED PROFESSIONAL ENGINEER
7/13/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C12

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P:\03481\007\2-Drawings\CAD\C12 CITY OF BOERNE STANDARD STREET DETAILS.dwg Aug 2022/07/13 5:21pm cangajeme

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INSET 'A'

SCALE: 1"=10'

DRAIN '3-B'

STA. 1+15.17 TO STA. 4+40.00

DRAIN '3-B' EARTHEN CHANNEL

(N.T.S.)
"A-A" STA. 1+20.17 TO STA. 1+33.60

	"A-A"
Q_{100} (cfs)	390.67
B_W (ft)	16.00'
z (ft)	11.25'
n	0.035
D (ft)	3.75'
S (%)	0.65
d_N (ft)	2.87
V (fps)	5.53

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

DRAIN '3-B' CONCRETE CHANNEL

(N.T.S.)
"B-B" STA. 2+23.36 TO STA. 2+39.31

	"B-B"
Q_{100} (cfs)	327.77
B_W (ft)	20.00'
z (ft)	9.00'
n	0.013
D (ft)	3.00'
S (%)	25.00
d_N (ft)	0.47
V (fps)	32.57

DRAIN '3-B' CONCRETE CHANNEL

(N.T.S.)
"D-D" STA. 4+00.00 TO STA. 4+16.00

	"D-D"
Q_{100} (cfs)	290.49
B_W (ft)	20.00'
z (ft)	9.00'
n	0.013
D (ft)	3.00'
S (%)	25.00
d_N (ft)	0.44
V (fps)	30.97
V_{EXIT} (fps)	6.00

DRAIN '3-B' EARTHEN CHANNEL

(N.T.S.)
"C-C" STA. 2+39.31 TO STA. 4+00.00
"E-E" STA. 4+16.00 TO STA. 4+40.00

	"C-C"	"E-E"
Q_{100} (cfs)	327.77	290.49
B_W (ft)	20.00'	20.00'
z (ft)	9.00'	9.00'
n	0.035	0.035
D (ft)	3.00'	3.00'
S (%)	0.85	0.98
d_N (ft)	2.19	1.98
V (fps)	5.63	5.70

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

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

LEGEND

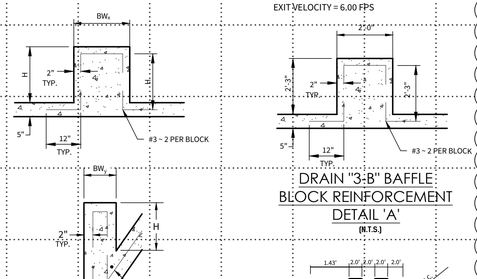
- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.C.A. EASEMENT
- EXISTING 1' CONTOUR (499)
- EXISTING 5' CONTOUR (500)
- PROPOSED 1' CONTOUR (499)
- PROPOSED 5' CONTOUR (500)
- PROPOSED WATER LINE (W)
- PROPOSED SEWER MAIN (SS)
- PROPOSED GAS MAIN (G)
- PROPOSED CULVERT
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL
- ROCK RUBBLE

DRAIN "3-B" (USBR TYPE IX) BAFFLED APRON CALCULATIONS

CRITICAL DEPTH (Y_C) = 1.85 FT
BLOCK HEIGHT (H) = $0.8Y_C$ = 1.48 FT (USED 1.50 FT)
BLOCK WIDTH (BW_B) = 1.5H = 2.22 FT (USED 2.25 FT)
BLOCK WIDTH (BW_B) = H/2 + 0.2H = 1.04 FT (USED 1.50 FT)
SPACING (S) = 2H - BW_B = 1.92 FT (USED 2.0 FT)
NUMBER OF ROWS (4 MIN.) = 4 ROWS

DRAIN "3–B" (USBR TYPE III) BAFFLE BLOCK CALCULATIONS

Y_1 = 2.74 FT V_1 = 9.13 FPS F_1 = 1.01
V_2 = 6.00 FPS
$Y_2/Y_C = \frac{1}{2}(\sqrt{1+8(F1)^2}-1) = 1.02$
Y_2 = 2.79 FT
$L_B = 4.5(Y_2) / (F_1)^{0.76} = 12.42$ FT (USED 13 FT)
$L_B / 3 = 4.14$ FT (USED 4.25 FT)
$H = Y_2(0.168*F_1+0.58) = 2.05$ FT (USED 2.25 FT)
EXIT VELOCITY = 6.00 FPS



30' CURB INLET OPENING

DRAIN '3-B1'

$Q_{100\,PROJECT}$ = 51.30 c.f.s.
$Q_{100\,ULTIMATE}$ = 51.30 c.f.s.

$L = Q_I / ((C*w^{(2/3)}g^{(1/2)}) = \frac{51.3}{0.7*0.50^{(2/3)}32.2^{(0.5)}} = 24.85'$

L = 24.85' INLET REQ'D.
USED - 30' INLET (TYPE C-2)
A = 21.20 s.f. (3 - 3.0' DIAMETER OPENING(S))
V = 2.42 f.p.s.
Hv = 0.09'
1.5Hv = 0.14'
Hw = z + y + 1.5Hv
Hw = 1423.93+3.0+0.14
Hw = 1,426.94
GUTTER = 1,428.48

DRAIN '3-B2'

$Q_{100\,PROJECT}$ = 51.30 c.f.s.
$Q_{100\,ULTIMATE}$ = 51.30 c.f.s.

$L = Q_I / ((C*w^{(2/3)}g^{(1/2)}) = \frac{51.3}{0.7*0.50^{(2/3)}32.2^{(0.5)}} = 24.85'$

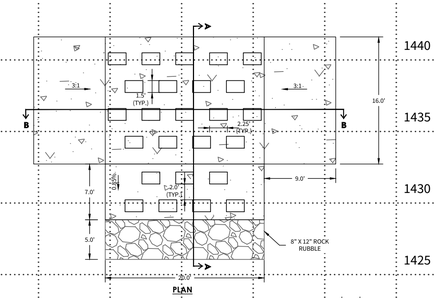
L = 24.85' INLET REQ'D.
USED - 30' INLET
A = 21.20 s.f. (3 - 3.0' DIAMETER OPENING(S))
V = 2.42 f.p.s.
Hv = 0.09'
1.5Hv = 0.14'
Hw = z + y + 1.5Hv
Hw = 1423.93+3.0+0.14
Hw = 1,427.07
GUTTER = 1,428.48

CULVERT SUMMARY

Q_{100} = 390.67 c.f.s.
MANNING'S COEFFICIENT = 0.013
CULVERT SHAPE = CONC. BOX (4)
RISE = 36"
SPAN = 60"
PIPE SLOPE = 0.30%
OUTFALL V = 9.13 f.p.s.

GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL

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



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

CORLEY FARMS UNIT 3

DRAIN PLAN & PROFILE - DRAIN '3-B'

DATE	REVISIONS
2022-07-13	CoB COMMENTS
2022-09-07	CoB COMMENTS

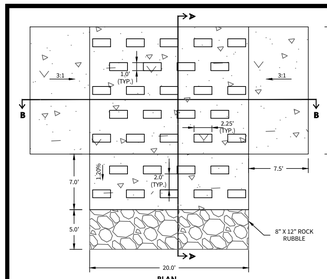
DATE
09/08/2022
PROJECT NO.
03481.007
DRAWN BY
CA/CG/XV
CHECKED BY
XV/JC/AL

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
09/09/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C13

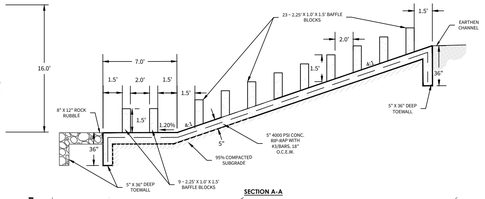
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



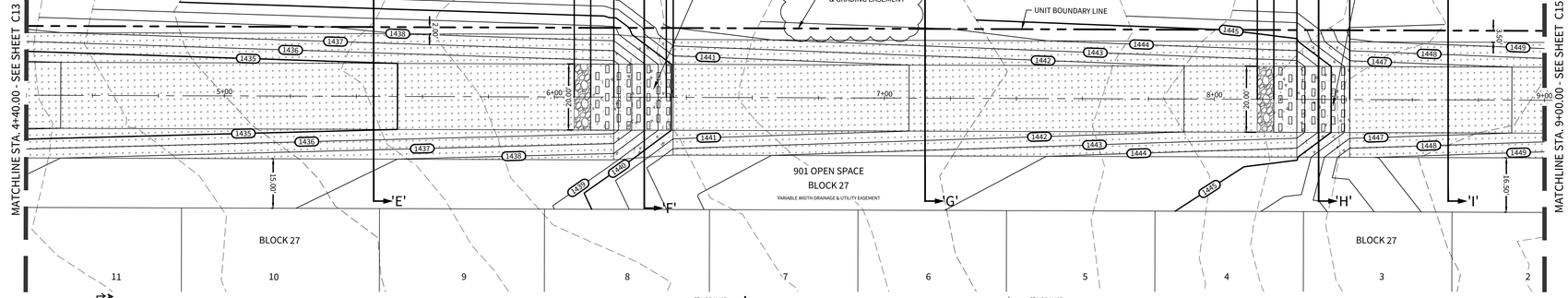
PLAN

CONCRETE CHUTE DETAIL 'C'

(N.T.S.)



SECTION A-A



LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.C.A. EASEMENT
- EXISTING 1' CONTOUR — 499
- EXISTING 5' CONTOUR — 500
- PROPOSED 1' CONTOUR — 499
- PROPOSED 5' CONTOUR — 500
- PROPOSED WATER LINE — W
- PROPOSED SEWER MAIN — SS
- PROPOSED GAS MAIN — G
- PROPOSED CULVERT
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL
- ROCK RUBBLE

DRAIN "3-B" (USBR TYPE IX) BAFFLED APRON CALCULATIONS

CRITICAL DEPTH (Y_c) = 1.72 FT

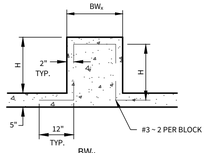
BLOCK HEIGHT (H) = $0.8Y_c$ = 1.38 FT (USED 1.50 FT)

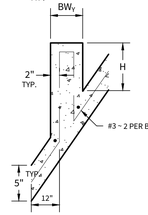
BLOCK WIDTH (BW_x) = 1.5H = 2.06 FT (USED 2.25 FT)

BLOCK WIDTH (BW_y) = H/2 + 0.2H = 0.97 FT (USED 1.00 FT)

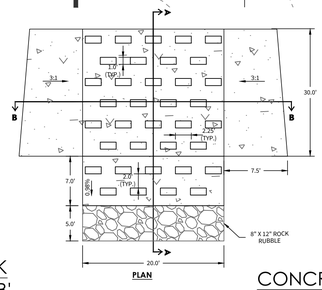
SPACING (S) = 2H - BW_x = 1.79 FT (USED 2.0 FT)

NUMBER OF ROWS (4 MIN.) = 6 ROWS

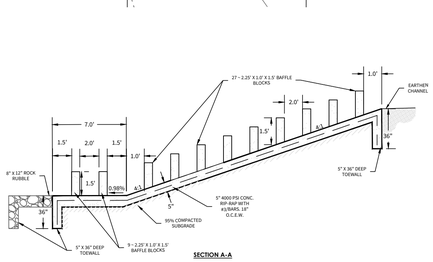




DRAIN '3-B' BAFFLE BLOCK REINFORCEMENT DETAIL 'B'



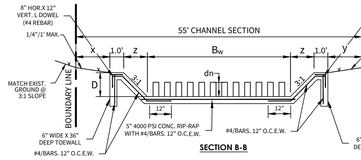
PLAN



SECTION A-A

CONCRETE CHUTE DETAIL 'B'

(N.T.S.)



SECTION B-B

DRAIN '3-B' CONCRETE CHANNEL

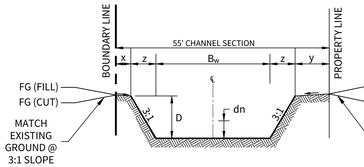
(N.T.S.)

"F-F" STA. 6+18.00 TO STA. 6+36.00
"H-H" STA. 8+25.00 TO STA. 8+41.00

	"F-F"	"H-H"
Q_{100} (cfs)	290.49	231.64
B_w (ft)	20.00'	20.00'
z (ft)	9.00'	7.50'
y (ft)	VAR.	15.50'
x (ft)	VAR.	2.50'
n	0.013	0.013
D (ft)	3.00'	2.50'
S (%)	25.00	25.00
d_N (ft)	0.43	0.38
V (fps)	31.44	28.89
V_{EXIT} (fps)	6.00	6.00

DRAIN '3-B'

STA. 4+40.00 TO STA. 9+00.00



DRAIN '3-B' EARTHEN CHANNEL

(N.T.S.)

"E-E" STA. 4+40.00 TO STA. 6+18.00
"G-G" STA. 6+36.00 TO STA. 8+25.00
"I-I" STA. 8+41.00 TO STA. 9+00.00

	"E-E"	"G-G"	"I-I"
Q_{100} (cfs)	290.49	231.64	231.64
B_w (ft)	20.00'	20.00'	20.00'
z (ft)	9.00'	7.50'	7.50'
y (ft)	15.00'	16.50'	16.50'
x (ft)	2.00'	3.50'	3.50'
n	0.035	0.035	0.035
D (ft)	3.00'	2.50'	2.50'
S (%)	0.98	1.20	1.20
d_N (ft)	1.97	1.64	1.64
V (fps)	5.70	5.68	5.68

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

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

DRAIN "3-B" (USBR TYPE IX) BAFFLED APRON CALCULATIONS

CRITICAL DEPTH (Y_c) = 1.49 FT

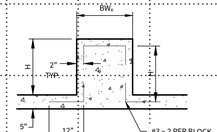
BLOCK HEIGHT (H) = $0.8Y_c$ = 1.19 FT (USED 1.50 FT)

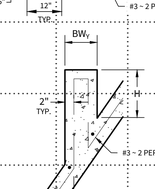
BLOCK WIDTH (BW_x) = 1.5H = 1.79 FT (USED 2.25 FT)

BLOCK WIDTH (BW_y) = H/2 + 0.2H = 0.83 FT (USED 1.00 FT)

SPACING (S) = 2H - BW_x = 1.55 FT (USED 2.0 FT)

NUMBER OF ROWS (4 MIN.) = 5 ROWS

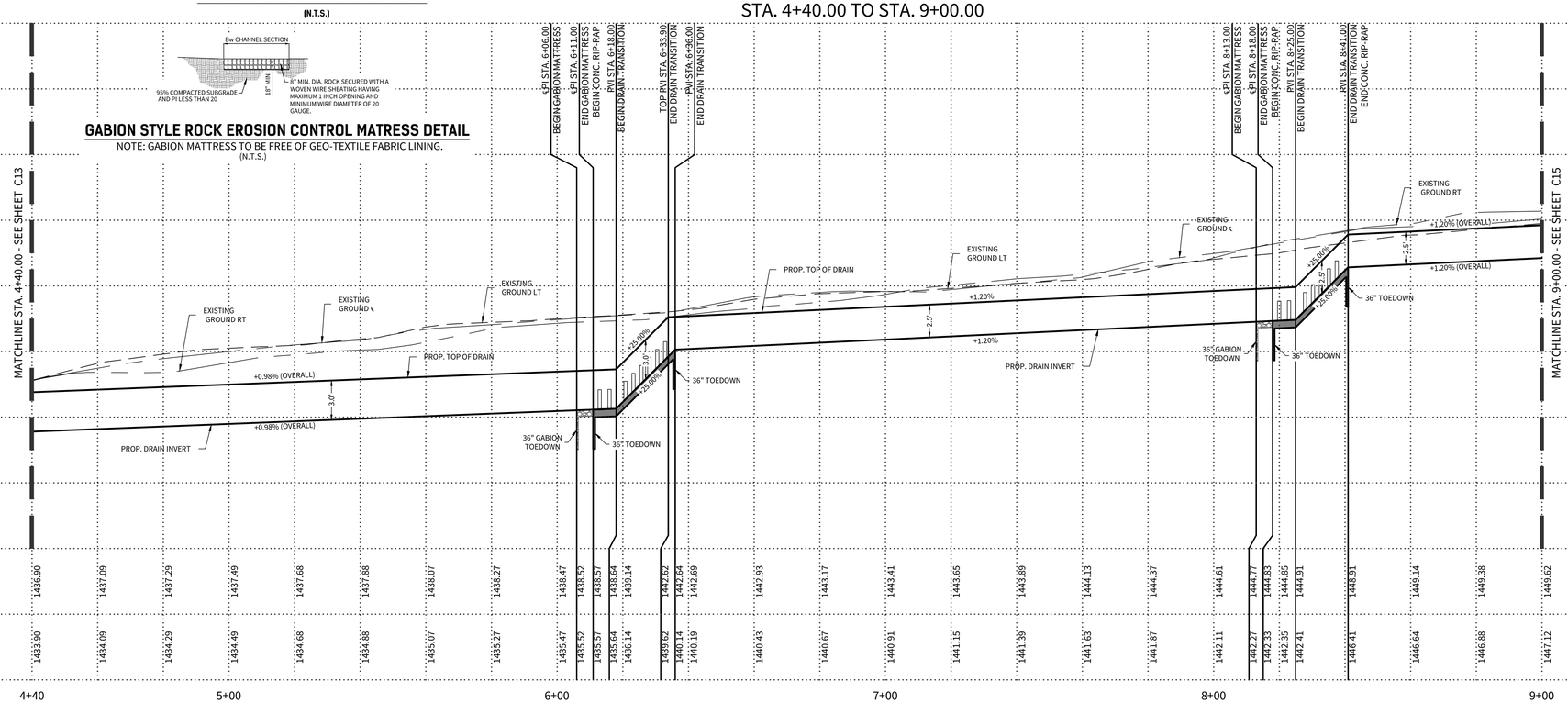




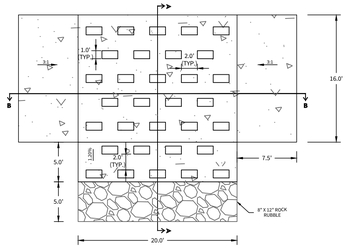
DRAIN '3-B' BAFFLE BLOCK REINFORCEMENT DETAIL 'C'

GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL

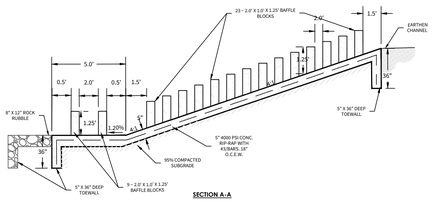
NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)



| | | |



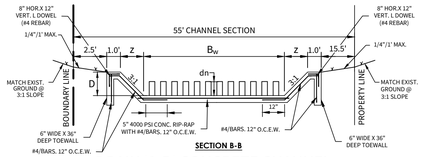
PLAN



SECTION A-A

CONCRETE CHUTE DETAIL 'D'

(N.T.S.)



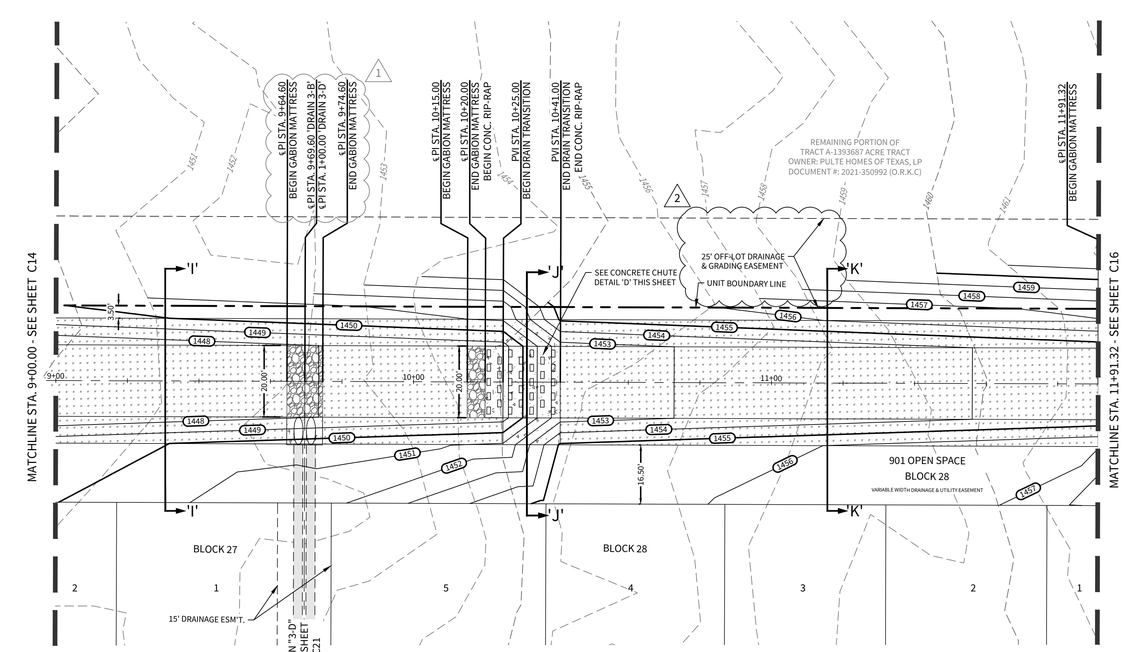
SECTION B-B

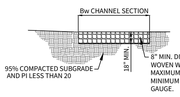
DRAIN '3-B' CONCRETE CHANNEL

(N.T.S.)

"J-J" STA. 10+25.00 TO STA. 10+41.00

	"J-J"
Q_{100} (cfs)	231.64
B_W (ft)	20.00'
z (ft)	7.50'
n	0.013
D (ft)	2.50'
S (%)	25.00
d_n (ft)	0.38
V (fps)	28.84
V_{EXIT} (fps)	6.00





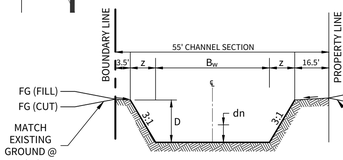
GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL

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

(N.T.S.)

DRAIN '3-B'

STA. 9+00.00 TO STA. 11+91.32



DRAIN '3-B' EARTHEN CHANNEL

(N.T.S.)

"I-I" STA. 9+00.00 TO STA. 10+25.00

"K-K" STA. 10+41.00 TO STA. 11+91.32

	"I-I"	"K-K"
Q_{100} (cfs)	231.64	231.64
B_W (ft)	20.00'	20.00'
z (ft)	7.50'	7.50'
n	0.035	0.035
D (ft)	2.50'	2.50'
S (%)	1.20	1.20
d_n (ft)	1.64	1.64
V (fps)	5.68	5.68

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

HORIZONTAL SCALE: 1" = 20'

VERTICAL SCALE: 1" = 5'

DRAIN "3-B" (USBR TYPE IX) BAFFLED APRON CALCULATIONS

CRITICAL DEPTH (Y_C) = 1.49 FT

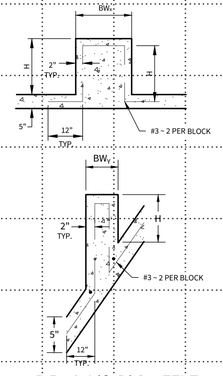
BLOCK HEIGHT (H) = $0.8Y_C$ = 1.19 FT (USED 1.25 FT)

BLOCK WIDTH (BW_1) = 1.5H = 1.79 FT (USED 2.00 FT)

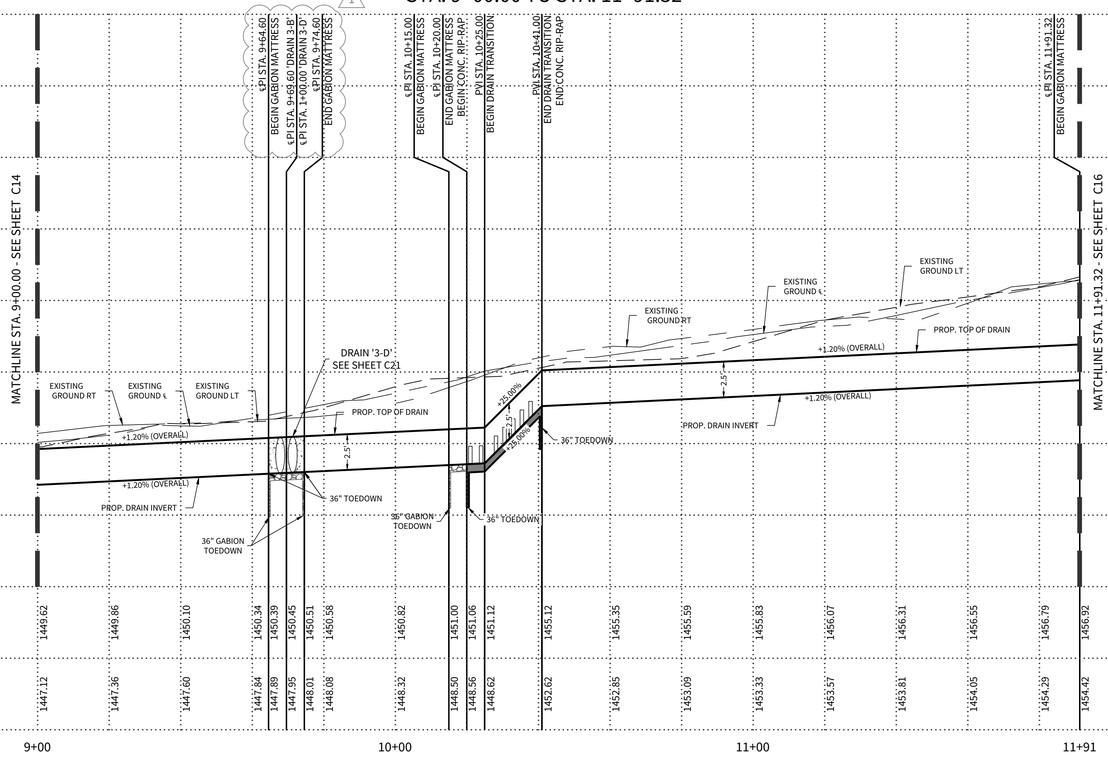
BLOCK WIDTH (BW_2) = H/2 + 0.2H = 0.83 FT (USED 1.00 FT)

SPACING (S) = 2H - BW_2 = 1.55 FT (USED 2.0 FT)

NUMBER OF ROWS (4 MIN.) = 5 ROWS

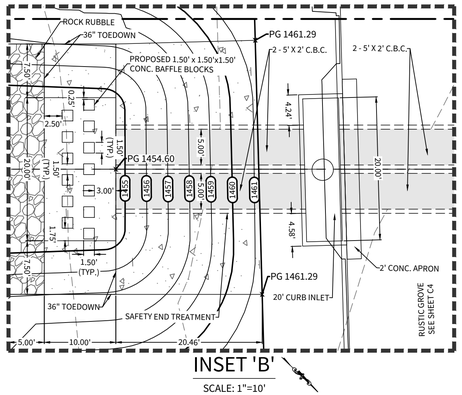


DRAIN '3-B' BAFFLE BLOCK REINFORCEMENT DETAIL 'D'



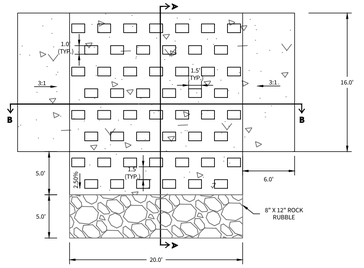
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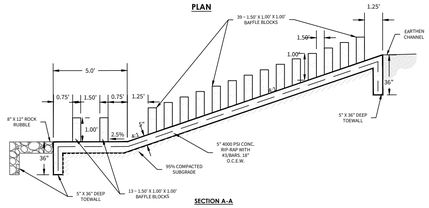


INSET 'B'

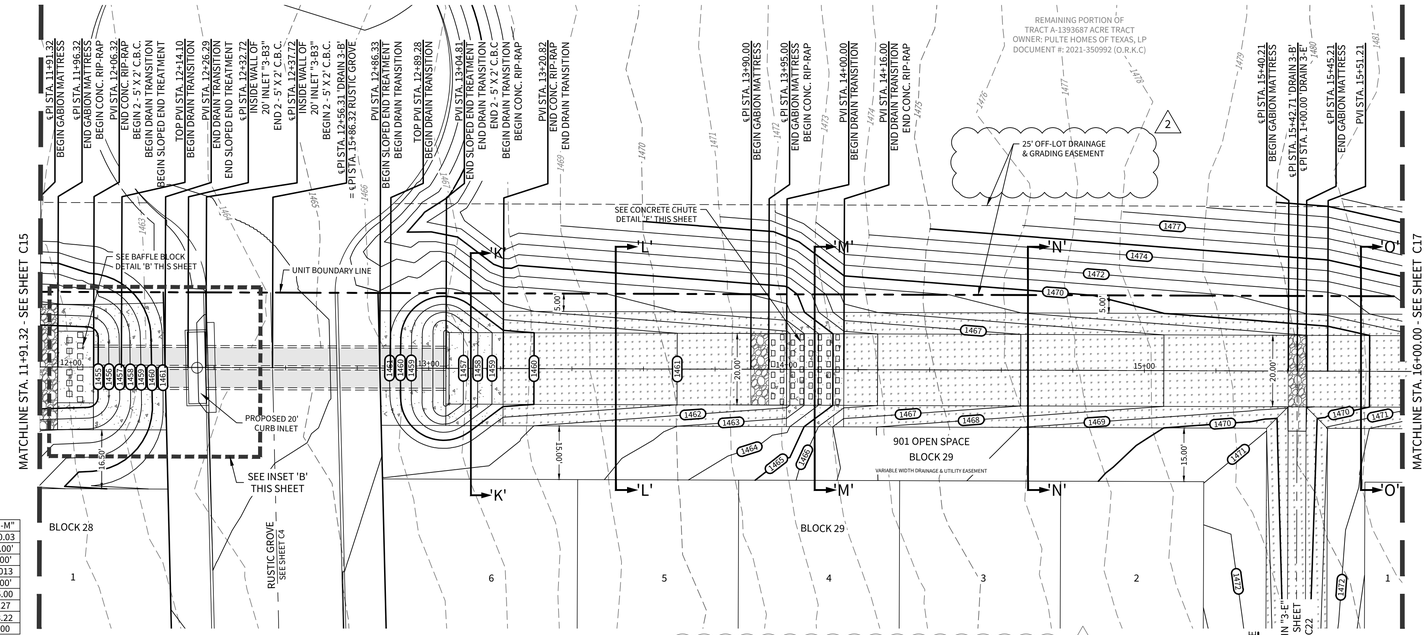
SCALE: 1"=10'



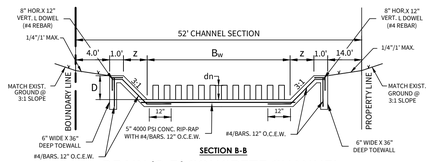
PLAN



SECTION A-A



	"M-M"
Q_{100} (cfs)	130.03
B_W (ft)	20.00'
z (ft)	6.00'
n	0.013
D (ft)	2.00'
S (%)	25.00
d_N (ft)	0.27
V (fps)	23.22
V_{EXIT} (fps)	6.00

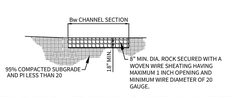


SECTION B-B

DRAIN '3-B' CONCRETE CHANNEL

(N.T.S.)

"M-M" STA. 14+00.00 TO STA. 14+16.00



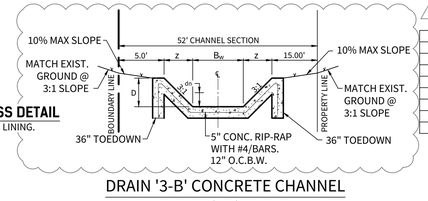
GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL

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

(N.T.S.)

DRAIN '3-B'

STA. 11+91.32 TO STA. 16+00.00

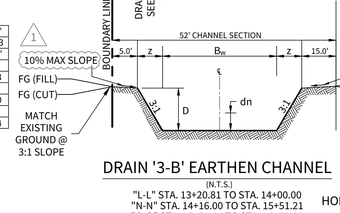


DRAIN '3-B' CONCRETE CHANNEL

(N.T.S.)

"K-K" STA. 13+04.81 TO STA. 13+20.82

	"K-K"
Q_{100} (cfs)	130.03
B_W (ft)	20.00'
z (ft)	6.00'
n	0.013
D (ft)	2.00'
S (%)	25.00
d_N (ft)	0.27
V (fps)	23.14



DRAIN '3-B' EARTHEN CHANNEL

(N.T.S.)

"L-L" STA. 13+20.81 TO STA. 14+00.00
"N-N" STA. 14+16.00 TO STA. 15+51.21
"O-O" STA. 15+51.21 TO STA. 16+00.00

	"L-L"	"N-N"	"O-O"
Q_{100} (cfs)	130.03	130.03	50.97
B_W (ft)	20.00'	20.00'	20.00'
z (ft)	6.00'	6.00'	6.00'
n	0.035	0.035	0.035
D (ft)	2.00'	2.00'	2.00'
S (%)	2.50	2.50	7.30
d_N (ft)	0.95	0.95	0.66
V (fps)	5.97	5.97	5.86

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

CONCRETE CHUTE DETAIL 'E'

(N.T.S.)

DRAIN "3-B" (USBR TYPE IX) BAFFLED APRON CALCULATIONS

CRITICAL DEPTH (Y_C) = 1.04 FT

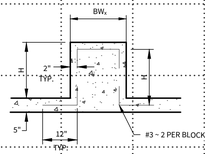
BLOCK HEIGHT (H) = $0.8Y_C$ = 0.83 FT (USED 1.00 FT)

BLOCK WIDTH (BW_O) = 1.5H = 1.25 FT (USED 1.50 FT)

BLOCK WIDTH (BW_B) = H/2 + 0.2H = 0.58 FT (USED 1.00 FT)

SPACING (S) = 2H - BW_T = 1.08 FT (USED 1.50 FT)

NUMBER OF ROWS (4 MIN.) = 6 ROWS



DRAIN '3-B' BAFFLE BLOCK REINFORCEMENT DETAIL 'E'

DRAIN "3-B" (USBR TYPE III) BAFFLE BLOCK CALCULATIONS

Y_1 = 1.94 FT V_1 = 7.91 FPS F_1 = 1.00

Y_2 = 6.00 FPS

$Y_2/Y_1 = \frac{1}{2}(\sqrt{1+8(F1^2)}-1) = 1.00$

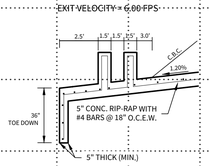
Y_2 = 1.94 FT

$L_B = 4.5(Y_2) / (F_1)^{1.0} = 8.73$ FT (USED 9.0 FT)

$L_B / 3 = 4.37$ FT (USED 4.50 FT)

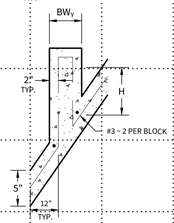
$H = Y_1(0.168*F_1+0.58) = 1.45$ FT (USED 1.50 FT)

EXIT VELOCITY = 6.00 FPS

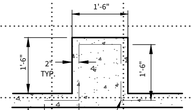


DRAIN "3-B" BAFFLE BLOCK DETAIL 'B'

(N.T.S.)



DRAIN '3-B' BAFFLE BLOCK REINFORCEMENT DETAIL 'B'



DRAIN "3-B" BAFFLE BLOCK REINFORCEMENT DETAIL 'B'

(N.T.S.)

20' CURB INLET OPENING DRAIN '3-B'

$Q_{100 PROJECT}$ = 29.13 c.f.s.

$Q_{100 ALLOWABLE}$ = 29.13 c.f.s.

$L = Q/(C*w*(2*g*h)^{1/2}) = \frac{29.13}{0.7*0.50*(2*32.2*0.54)^{1/2}}$

L = 14.11' INLET REQ'D.

USED - 20' INLET

A = 6.28 s.f. (2 - 2.0' DIAMETER OPENING(S))

V = 4.64 f.p.s.

Hv = 0.33'

1.5Hv = 0.50'

Hw = z + y + 1.5Hv

Hw = 1454.95+2.0+0.50

Hw = 1,457.45

GUTTER = 1,460.41

CULVERT SUMMARY

Q_{100} = 153.54 c.f.s.

MANNING'S COEFFICIENT = 0.013

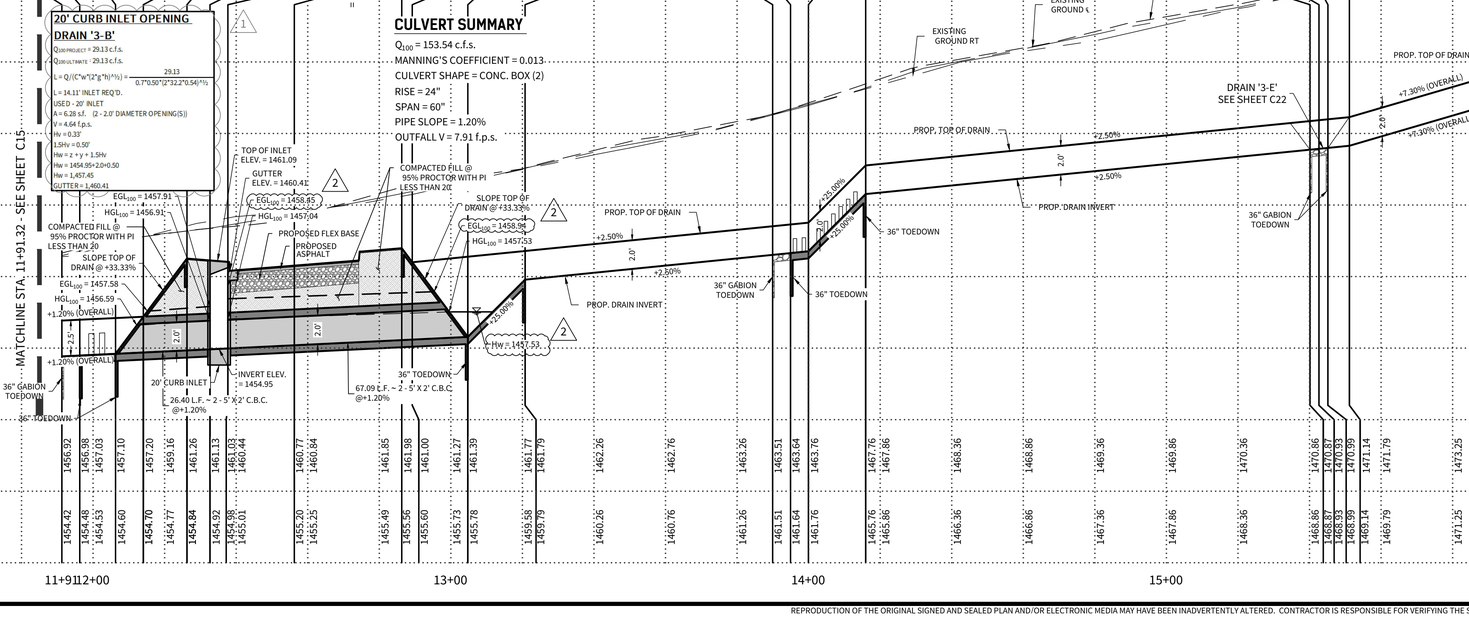
CULVERT SHAPE = CONC. BOX (2)

RISE = 24"

SPAN = 60"

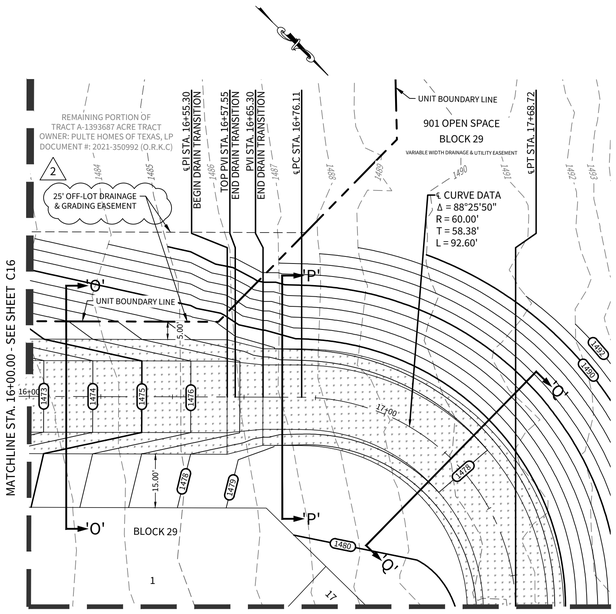
PIPE SLOPE = 1.20%

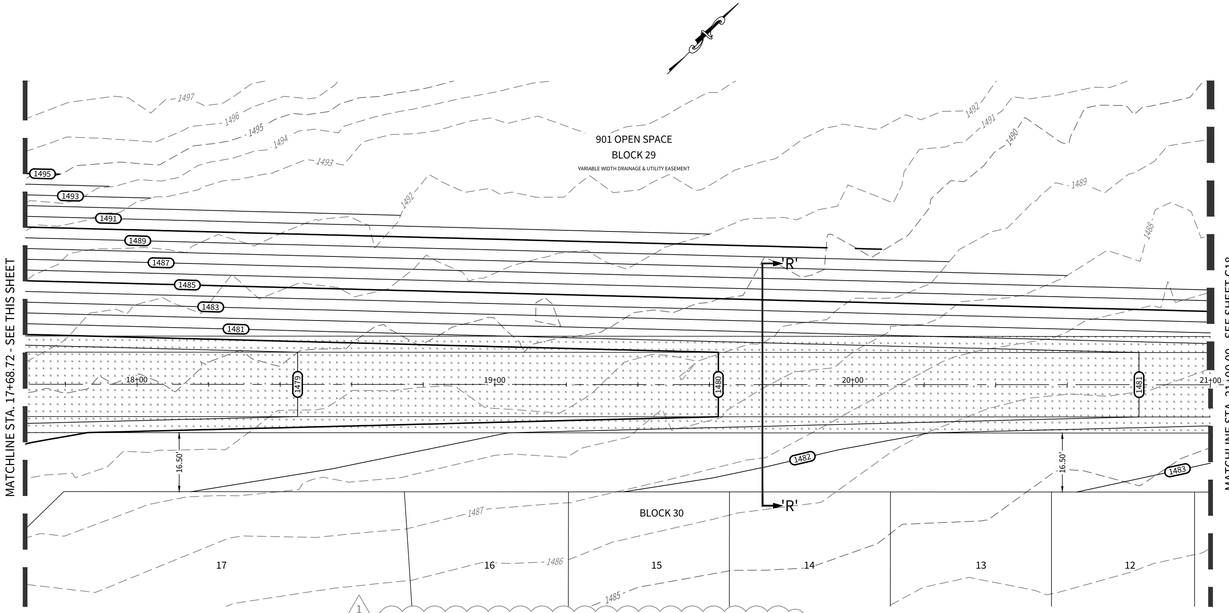
OUTFALL V = 7.91 f.p.s.



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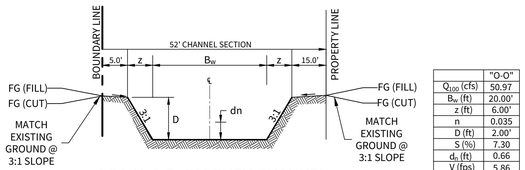
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LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.C.A. EASEMENT
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROPOSED 1' CONTOUR
- PROPOSED 5' CONTOUR
- PROPOSED WATER LINE
- PROPOSED SEWER MAIN
- PROPOSED GAS MAIN
- PROPOSED CULVERT
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL
- ROCK RUBBLE



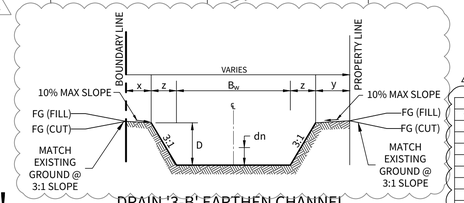
DRAIN '3-B' EARTHEN CHANNEL
(N.T.S.)
"N-N" STA. 16+00.00 TO STA. 16+65.30

	"O-O"
Q_{100} (cfs)	50.97
B_w (ft)	20.00'
z (ft)	6.00'
n	0.035
D (ft)	2.00'
S (%)	7.30
d_n (ft)	0.66
V (fps)	5.86

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

DRAIN '3-B'

STA. 16+00.00 TO STA. 21+00.00



DRAIN '3-B' EARTHEN CHANNEL
(N.T.S.)
"P-P" STA. 16+65.30 TO STA. 16+76.11
"Q-Q" STA. 16+76.11 TO STA. 17+68.72
"R-R" STA. 17+68.72 TO STA. 21+00.00

	"P-P"	"Q-Q"	"R-R"
Q_{100} (cfs)	50.97	50.97	50.97
B_w (ft)	18.00'	18.00'	18.00'
z (ft)	4.50'	4.50'	4.50'
y (ft)	15.00'	15.00' (MIN)	16.50'
x (ft)	42.00' (MAX)	59.00' (MAX)	59.00' (MAX)
n	0.035	0.035	0.035
D (ft)	1.50'	1.50'	1.50'
S (%)	0.85	0.85	0.85
d_n (ft)	0.80	**0.91	0.80
V (fps)	3.12	3.12	3.12

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

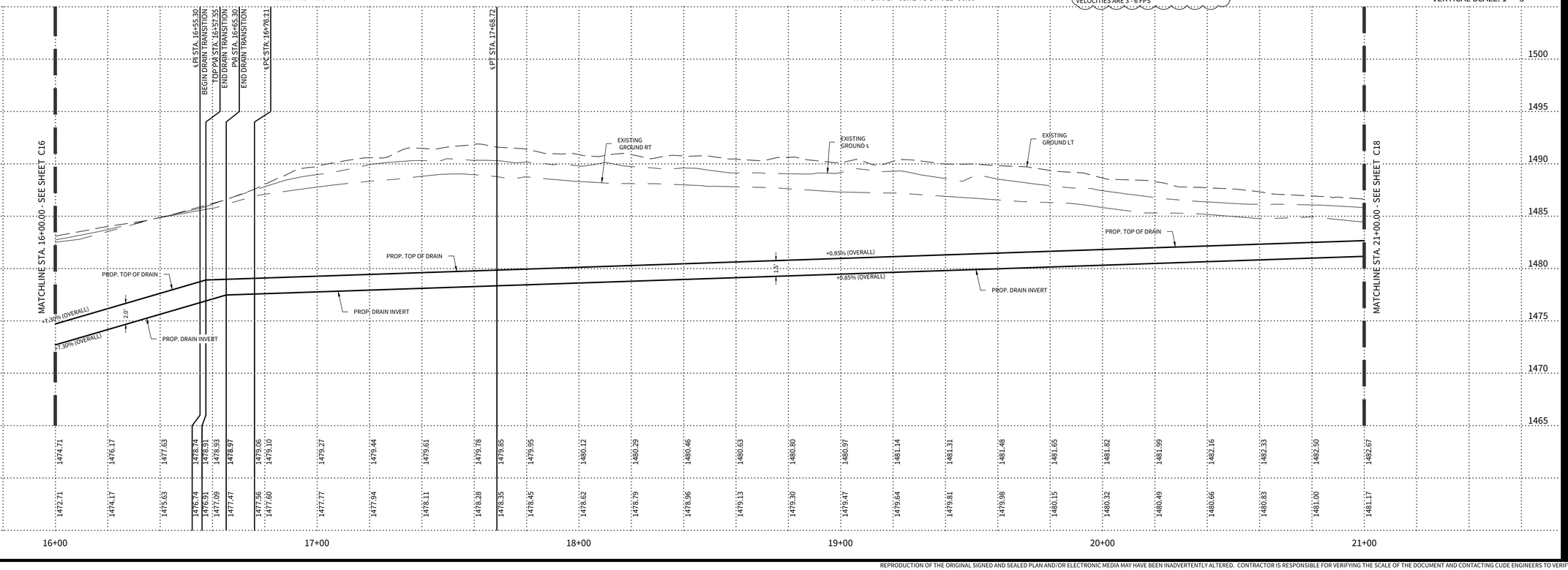
** 9.3.15 - Super Elevation
Channel Bends and Turns - Freeboard. Allowance for extra freeboard shall be made when the centerline radius of the channel is less than three (3) times the bottom width or for super-critical flow regime. Where bends or high velocities are involved and the flow regime is sub-critical, the applicant shall use the following formula for computing the extra freeboard:

[Equation 9.3.15]

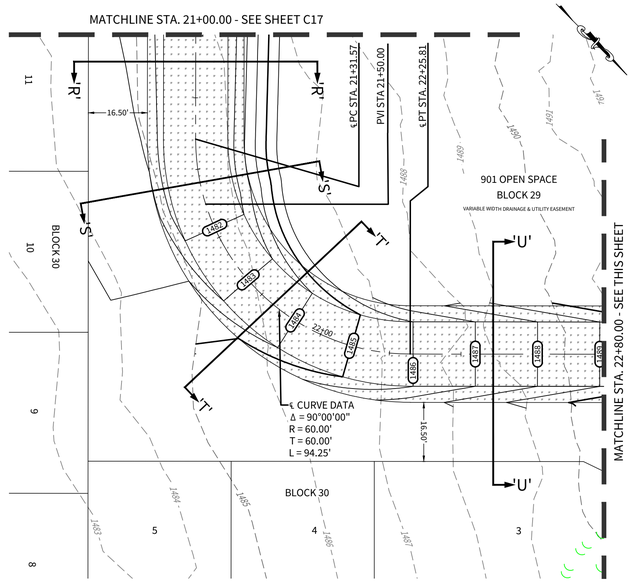
$$d_2 - d_1 = \frac{V^2(T+B)}{2gR}$$

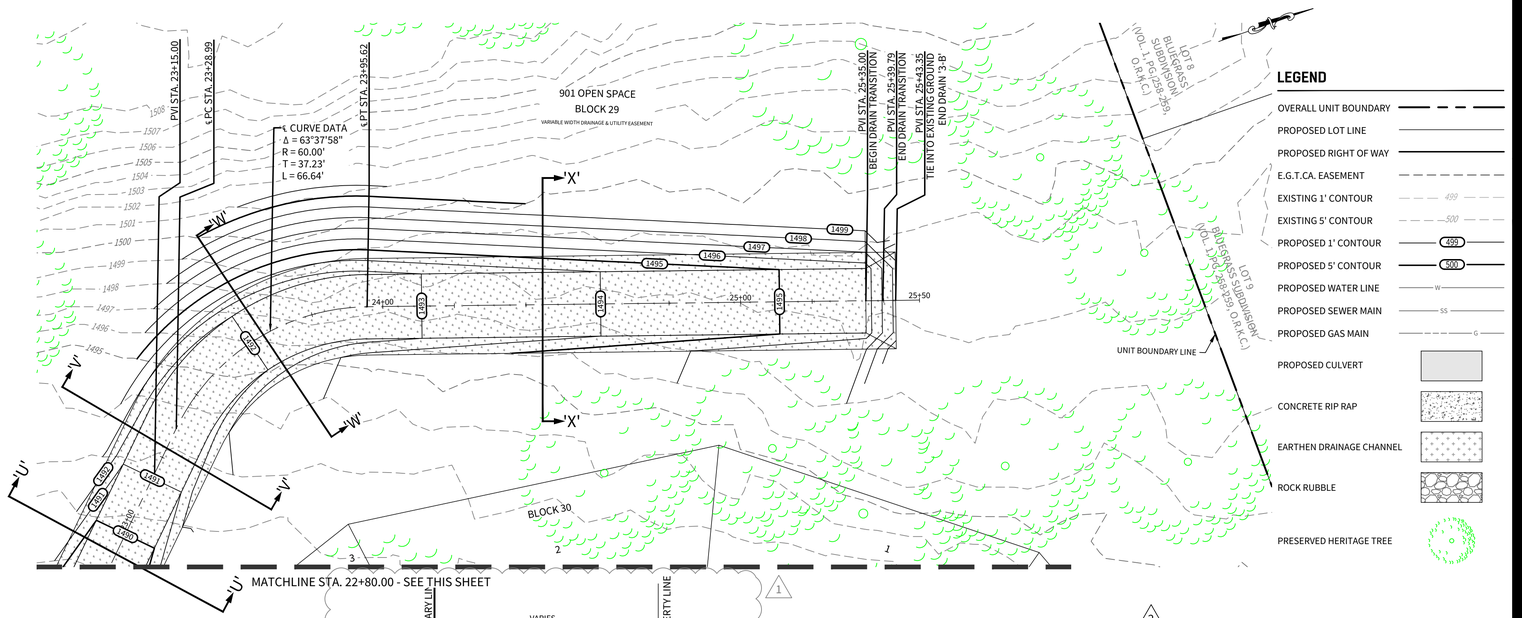
d_1 = depth of flow at the inside of the bend in feet.
d_2 = depth of flow at the outside of the bend in feet.
B = bottom width of the channel in feet.
V = the average approach velocity in the channel in feet per second.
T = width of flow at the water surface in feet.
g = 32.2 feet/second squared.
R = the center line radius of the turn or bend in feet.

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



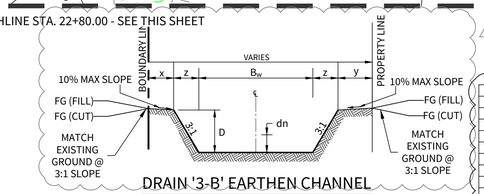
| | | |





LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROPOSED 1' CONTOUR
- PROPOSED 5' CONTOUR
- PROPOSED WATER LINE
- PROPOSED SEWER MAIN
- PROPOSED GAS MAIN
- PROPOSED CULVERT
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL
- ROCK RUBBLE
- PRESERVED HERITAGE TREE



DRAIN '3-B' EARTHEN CHANNEL

(N.T.S.)

"R-R" STA. 21+31.57 TO STA. 21+50.00
"S-S" STA. 21+50.00 TO STA. 22+25.81
"T-T" STA. 22+25.81 TO STA. 23+15.00
"U-U" STA. 23+15.00 TO STA. 23+28.99
"V-V" STA. 23+28.99 TO STA. 23+95.62
"W-W" STA. 23+95.62 TO STA. 25+35.00

	"R-R"	"S-S"	"T-T"	"U-U"	"V-V"	"W-W"	"X-X"
Q_{100} (cfs)	50.97	50.97	50.97	50.97	50.97	50.97	50.97
B_w (ft)	18.00'	18.00'	18.00'	18.00'	18.00'	18.00'	18.00'
z (ft)	4.50'	4.50'	4.50'	4.50'	4.50'	4.50'	4.50'
y (ft)	16.50'	15.00' (MIN)	15.00' (MIN)	15.00' (MIN)	15.00' (MIN)	15.00' (MIN)	15.00' (MIN)
x (ft)	23.50' (MAX)	22.00' (MAX)	22.00' (MAX)	22.00' (MAX)	34.00' (MAX)	34.00' (MAX)	34.00' (MAX)
n	0.035	0.035	0.035	0.035	0.035	0.035	0.035
D (ft)	1.50'	1.50'	1.50'	1.50'	1.50'	1.50'	1.50'
S (%)	0.85	0.85	5.75	5.75	2.00	2.00	2.00
d_c (ft)	0.80	**0.91	**0.85	0.46	0.62	**0.82	0.62
V (fps)	3.12	3.12	5.76	5.76	4.11	4.11	4.11

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

** **9.3.15 - Super Elevation**
Channel Bends and Turns - Freeboard. Allowance for extra freeboard shall be made when the centerline radius of the channel is less than three (3) times the bottom width or for super-critical flow regime. Where bends or high velocities are involved and the flow regime is sub-critical, the applicant shall use the following formula for computing the extra freeboard:

(Equation 9.3.15)

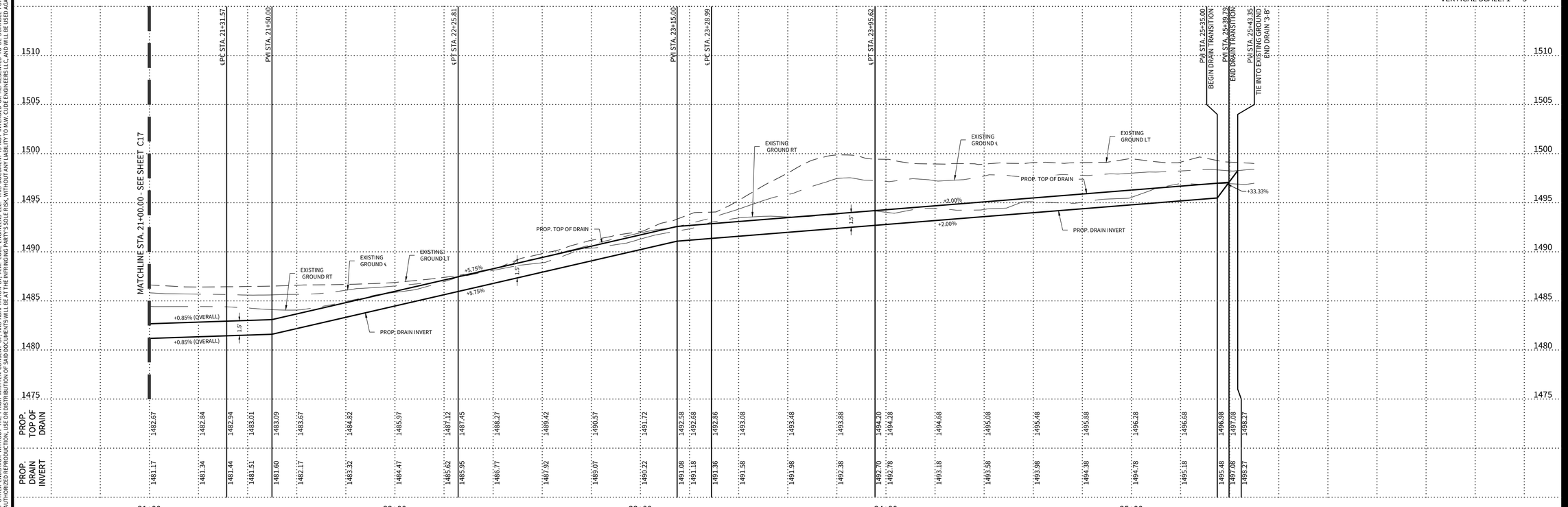
$$d_2 - d_1 = \frac{V^2(T+B)}{2gR}$$

d_2 = depth of flow at the inside of the bend in feet.
d_1 = depth of flow at the outside of the bend in feet.
B = bottom width of the channel in feet.
V = the average approach velocity in the channel in feet per second.
T = width of flow at the water surface in feet.
g = 32.2 feet/second squared.
R = the center line radius of the turn or bend in feet.

DRAIN '3-B'

STA. 21+00.00 TO STA. 25+43.35

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



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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 3

DRAIN PLAN & PROFILE - DRAIN '3-B'

DATE
09/07/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

DATE	
1.	2022-07-13 - CoB COMMENTS
2.	2022-09-07 - CoB COMMENTS
3.	
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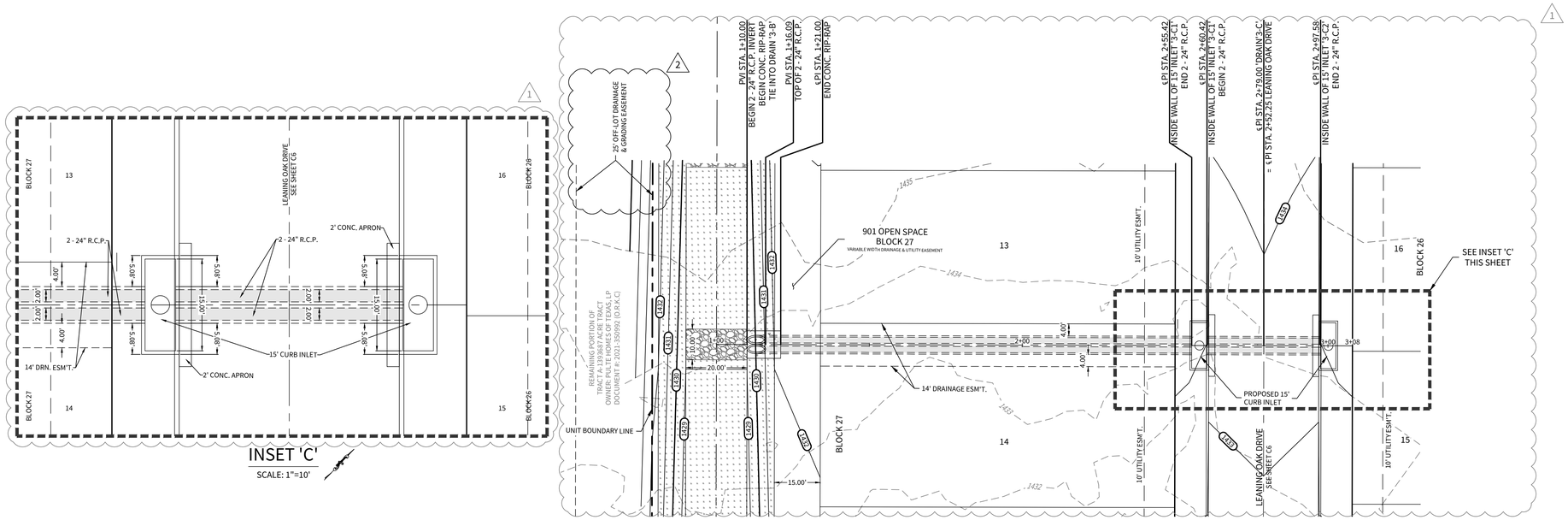
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
09/09/2022

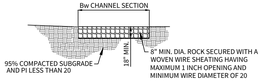
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C18

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P:\03481\007\3 Drawings\C18 DRAIN PLAN & PROFILE - DRAIN '3-B'.dwg 2022/09/07 9:07am Carolyn Arno





GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL

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

CULVERT SUMMARY

Q_{100} = 33.52 c.f.s.
MANNING'S COEFFICIENT = 0.013
CULVERT SHAPE = CIRCULAR
D = 24"
PIPE SLOPE = 0.50%
OUTFALL V = 8.19 f.p.s.

15' CURB INLET OPENING
DRAIN 3-C1

$Q_{100\ PROJECT}$ = 16.76 c.f.s.
$Q_{100\ ULTIMATE}$ = 16.76 c.f.s.
$L = Q/(C*w*(2*g*h)^{½}) = \frac{16.76}{0.7*0.50*(2*32.2*0.54)^{½}}$
L = 8.12' INLET REQ'D.
USED - 15' INLET (TYPE C-1)
A = 6.28 s.f. (2 - 2.0' DIAMETER OPENING(S))
V = 2.67 f.p.s.
Hv = 0.11'
1.5Hv = 0.17'
Hw = z + y + 1.5Hv
Hw = 1429.83+2.0+0.17
Hw = 1,431.98
GUTTER = 1,433.37

DRAIN '3-C'

STA. 1+10.00 TO STA. 2+97.58

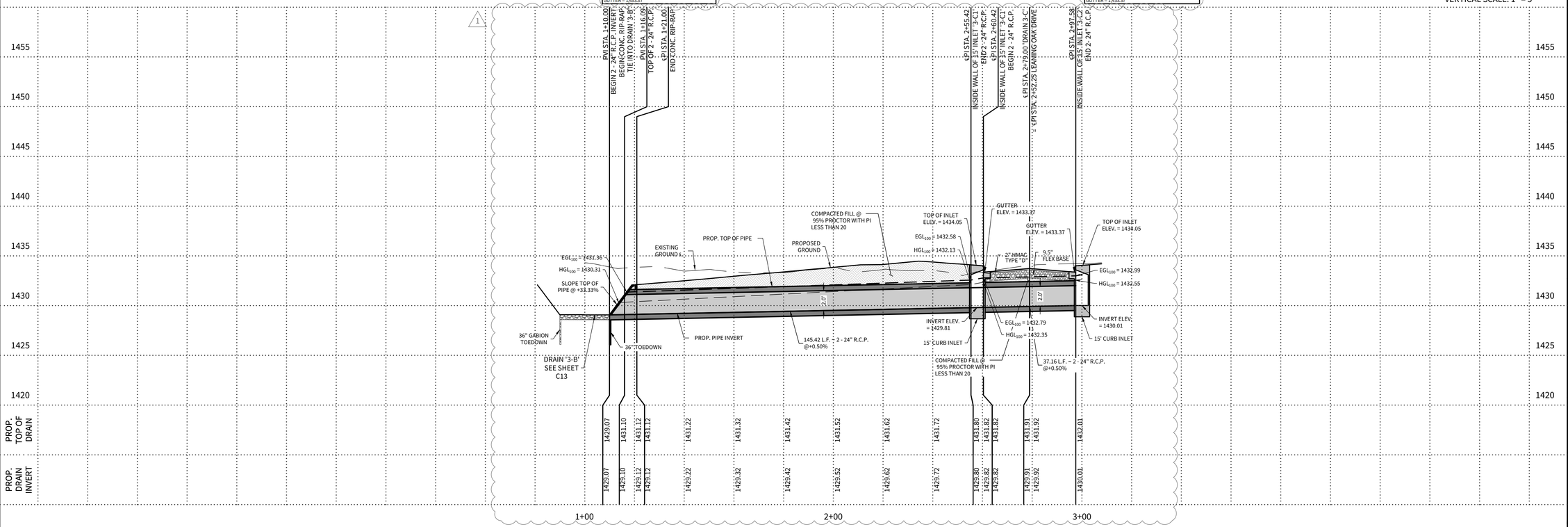
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'

CULVERT SUMMARY

Q_{100} = 16.76 c.f.s.
MANNING'S COEFFICIENT = 0.013
CULVERT SHAPE = CIRCULAR
D = 24"
PIPE SLOPE = 0.50%
OUTFALL V = 2.67 f.p.s.

15' CURB INLET OPENING
DRAIN 3-C2

$Q_{100\ PROJECT}$ = 16.76 c.f.s.
$Q_{100\ ULTIMATE}$ = 16.76 c.f.s.
$L = Q/(C*w*(2*g*h)^{½}) = \frac{16.76}{0.7*0.50*(2*32.2*0.54)^{½}}$
L = 8.12' INLET REQ'D.
USED - 15' INLET (TYPE C-1)
A = 6.28 s.f. (2 - 2.0' DIAMETER OPENING(S))
V = 2.67 f.p.s.
Hv = 0.11'
1.5Hv = 0.17'
Hw = z + y + 1.5Hv
Hw = 1430.01+2.0+0.17
Hw = 1,432.18
GUTTER = 1,433.37



LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING 1' CONTOUR (499)
- EXISTING 5' CONTOUR (500)
- PROPOSED 1' CONTOUR (499)
- PROPOSED 5' CONTOUR (500)
- PROPOSED WATER LINE (W)
- PROPOSED SEWER MAIN (SS)
- PROPOSED GAS MAIN (G)
- PROPOSED CULVERT
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL
- ROCK RUBBLE

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 3

DRAIN PLAN & PROFILE - DRAIN '3-C'

DATE
09/07/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

DATE	
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
A	2022-07-13 - CUDE COMMENTS
B	2022-09-07 - CUDE COMMENTS

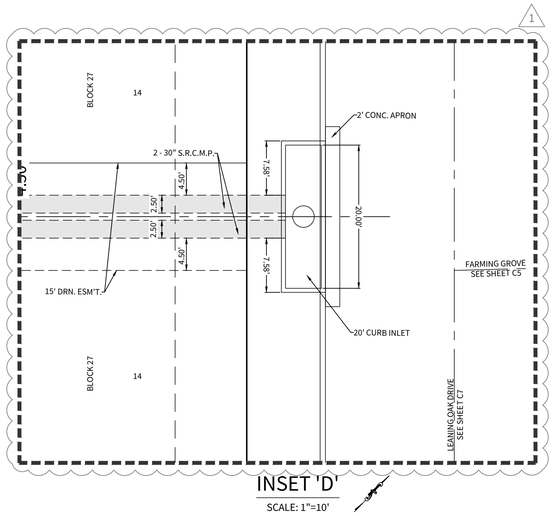
STATE OF TEXAS
JAVIER CASTELLO
122170
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PROFESSIONAL ENGINEER
09/09/2022

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C20

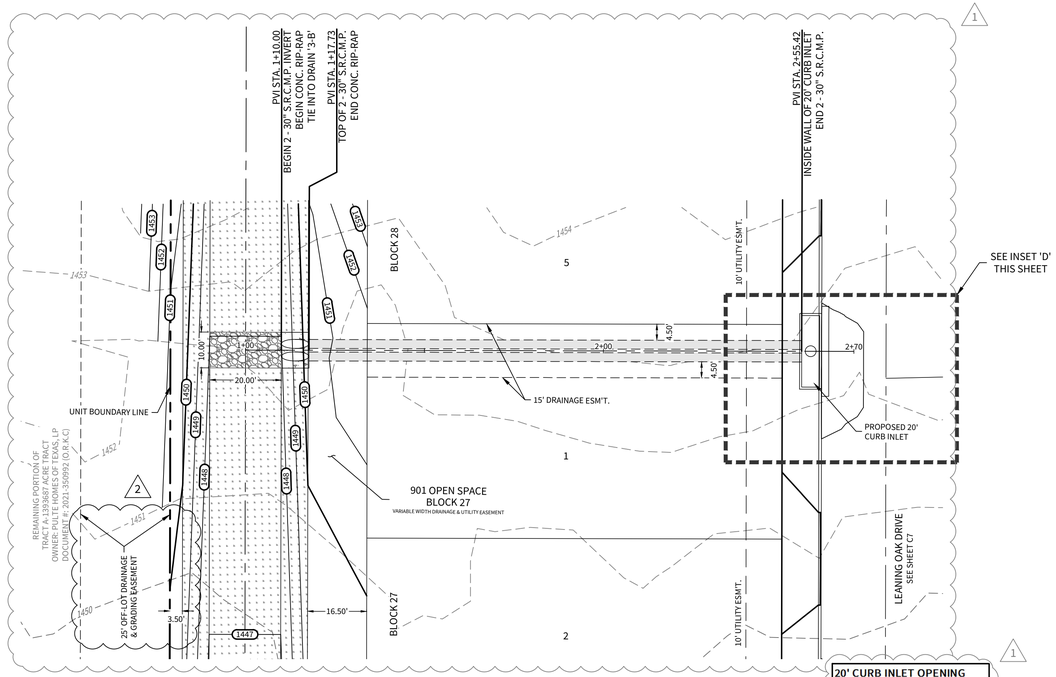
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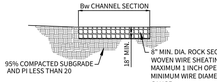
INSET 'D'

SCALE: 1"=10'



LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING 1' CONTOUR — 499
- EXISTING 5' CONTOUR — 500
- PROPOSED 1' CONTOUR — 499
- PROPOSED 5' CONTOUR — 500
- PROPOSED WATER LINE — W
- PROPOSED SEWER MAIN — SS
- PROPOSED GAS MAIN — G
- PROPOSED CULVERT
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL
- ROCK RUBBLE



GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL

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

CULVERT SUMMARY

Q_{100} = 40.13 c.f.s.
MANNING'S COEFFICIENT = 0.024
CULVERT SHAPE = CIRCULAR
D = 30"
PIPE SLOPE = 1.00%
OUTFALL V = 4.64 f.p.s.

20' CURB INLET OPENING
DRAIN 3-D

$Q_{100\ PROJECT}$ = 40.13 c.f.s.
$Q_{100\ ULTIMATE}$ = 40.13 c.f.s.

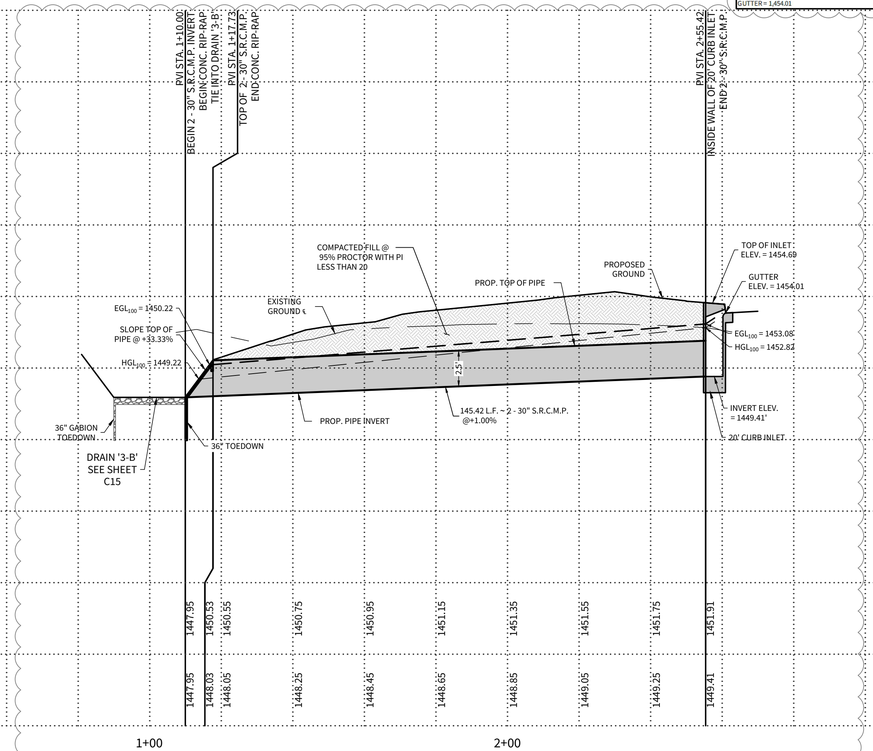
$L = Q/(C*W*(2*g*h)^{1/2}) = \frac{40.13}{0.7*0.50*(2*32.2*0.54)^{1/2}}$

L = 19.44' INLET REQ'D.
USED - 20' INLET (TYPE C-1)
A = 9.81 s.f. (2 - 2.5' DIAMETER OPENING(S))
V = 4.09 f.p.s.
Hv = 0.26'
1.5Hv = 0.39'
Hw = z + y + 1.5Hv
Hw = 1449.43+2.5+0.39
Hw = 1,452.30
GUTTER = 1,454.01

DRAIN '3-D'

STA. 1+10.00 TO STA. 2+55.42

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



CUDEENGINEERS.COM

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

CORLEY FARMS
UNIT 3

DRAIN PLAN & PROFILE - DRAIN '3-D'

DATE
09/07/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

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

2022-07-13 - CoB COMMENTS
2022-09-07 - CoB COMMENTS

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
09/09/2022

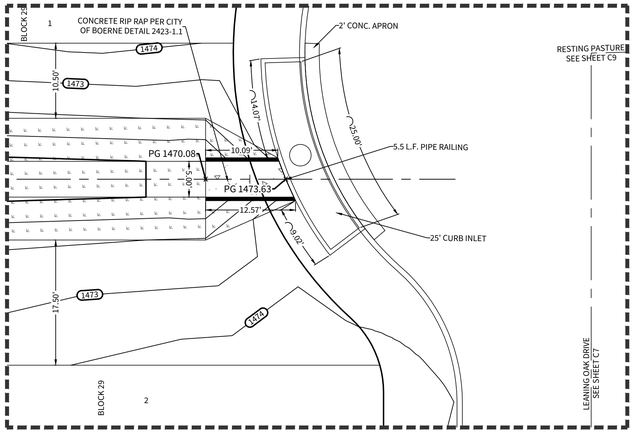
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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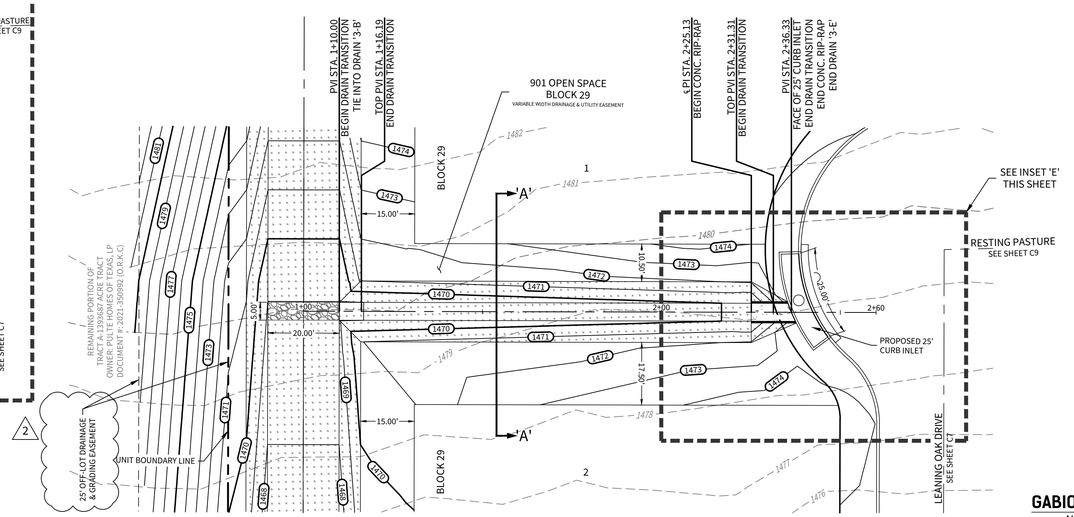
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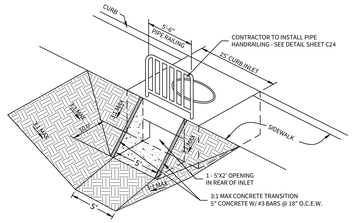
P:\03481\007\2 Drawings\C21 DRAIN PLAN & PROFILE - DRAIN '3-D'.dwg, 9/7/2022 9:53 am, cgarguilo



INSET 'E'

SCALE: 1"=10'





DRAIN '3–E' CURB INLET & EARTHEN DRAIN DETAIL (N.T.S.)

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

1

25' CURB INLET OPENING

DRAIN '3-E'

$Q_{100\ PROJECT}$ = 44.70 c.f.s.

$Q_{100\ ULTIMATE}$ = 44.70 c.f.s.

$L = Q/(C*w^{(2/3)}*S^{(1/2)}) = \frac{44.7}{0.7*0.50^{(2/3)}*32.2^{(1/2)}*0.54^{(1/2)}}$

L = 21.66' INLET REQ'D.

USED - 25' INLET

A = 10.00 sf. (1 - 5'x2' OPENING(S))

V = 4.47 f.p.s.

Hv = 0.31'

1.5Hv = 0.47'

Hw = z + y + 1.5Hv

Hw = 1470.2+2.0+0.47

Hw = 1,472.67

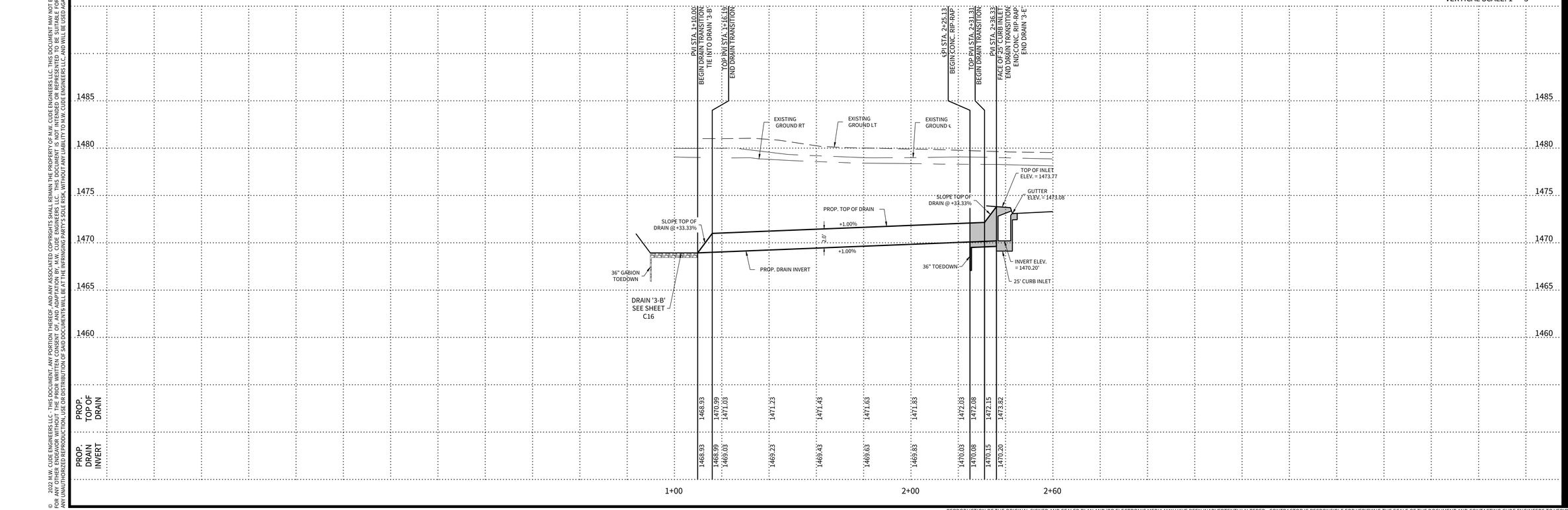
GUTTER = 1,473.08

RECOMMENDED CHANNEL WIDTH = 5.00'

CHANNEL WIDTH USED = 5.00'

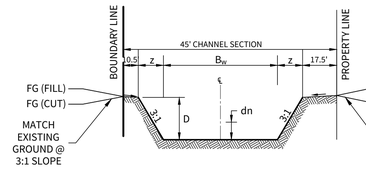
DRAIN '3-E'

STA. 1+10.00 TO STA. 2+36.33



GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL

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



DRAIN '3-E' EARTHEN CHANNEL

(N.T.S.)
"A-A" STA. 1+10.00 TO STA. 2+25.13

	"A-A"
Q_{100} (cfs)	44.70
B_W (ft)	5.00'
z (ft)	6.00'
n	0.035
D (ft)	2.00'
S (%)	1.00
d_N (ft)	1.30
V (fps)	3.86

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

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

LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING 1' CONTOUR — 499
- EXISTING 5' CONTOUR — 500
- PROPOSED 1' CONTOUR — 499
- PROPOSED 5' CONTOUR — 500
- PROPOSED WATER LINE — W
- PROPOSED SEWER MAIN — SS
- PROPOSED GAS MAIN — G
- PROPOSED CULVERT
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL
- ROCK RUBBLE

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

CORLEY FARMS UNIT 3

DRAIN PLAN & PROFILE - DRAIN '3'-E'

DATE
09/07/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

DATE	
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2022-07-13 - CoB COMMENTS
2022-09-07 - CoB COMMENTS

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
09/09/2022

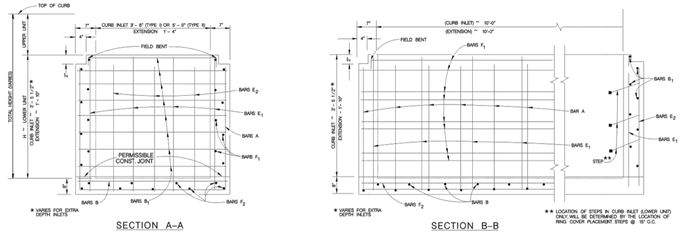
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P:\03481007\3 Drawings\C22 DRAIN PLAN & PROFILE - DRAIN '3'-E.dwg 2022/09/07 9:16am cangulo



SECTION A–A

SECTION B–B

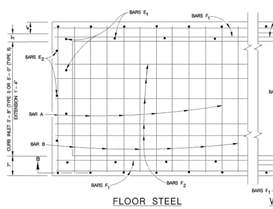
REINFORCING STEEL

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

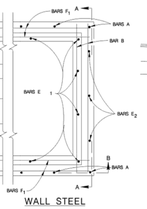
LOWER UNIT 10' X 5' – 0" (TYPE II)				
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	6'-10"
B_1	VARIES	#4	12"	6'-10"
E_1	22	#4	18"±	VARIES
E_2	6	#4	18"±	VARIES
F_1	VARIES	#4	12"±	10'-10"
F_2	11	#4	——	10'-10"

GENERAL NOTES

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

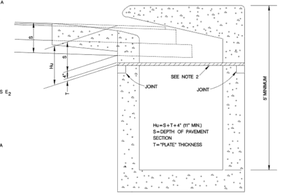


FLOOR STEEL



WALL STEEL

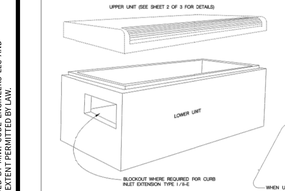
PLAN



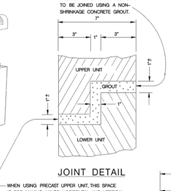
PHASE CONSTRUCTION

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

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

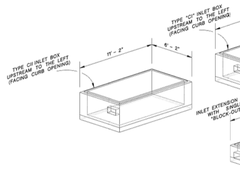


PLAN



JOINT DETAIL

WHEN USING PRECAST UPPER UNIT, THIS SPACE IS FOR MAKING MINOR HORIZONTAL AND VERTICAL ADJUSTMENTS TO ACCOMODATE A FIT BETWEEN THE UPPER AND LOWER UNIT THAT ALLOWS FOR A MATCH LINE AND GRADE BETWEEN THE ROADWAY CURB AND THE UPPER UNIT OF THE INLET.



CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)



BARS A
(LOWER UNIT)

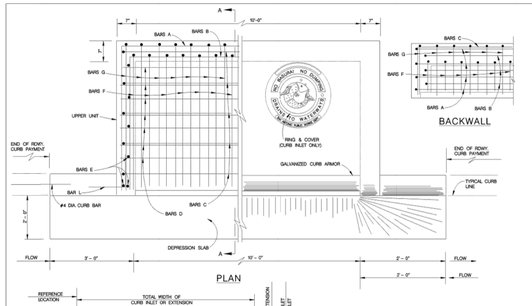
MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

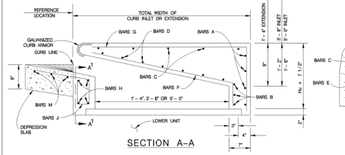
TYPE "C" INLET (TYPE I & II)
& INLET EXTENSION STANDARDS
SHEET 1 OF 3

%	SUBMITTAL	PROJECT NO.:	DATE:
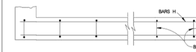
DRAWN BY: V. VASQUEZ DSGN. BY: L.E. MALTOS, P.E. CHKD. BY: R.S. HOSSENI, P.E. SHEET NO.: ___ OF ___



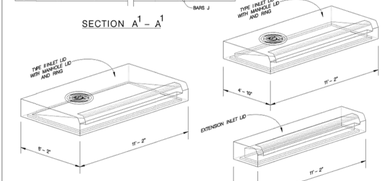
PLAN



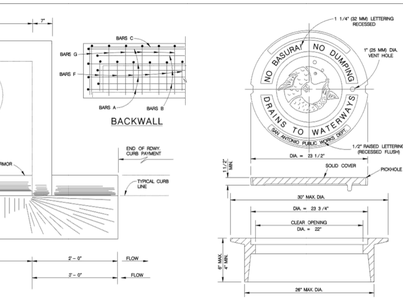
SECTION A–A



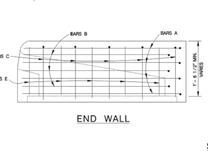
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CONCRETE INLET LID CONFIGURATIONS (UPPER UNITS)



BACKWALL



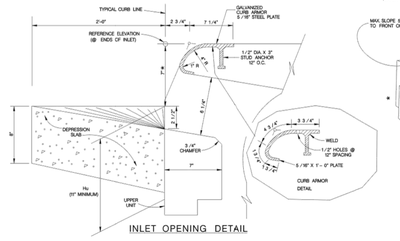
END WALL

MANHOLE LID & RING DETAIL (ITEM 409)

NOTES FOR MANHOLE LID AND RING

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

SEE SHEET 1 OF 3 FOR GENERAL NOTES.



INLET OPENING DETAIL

REINFORCING STEEL (FOR Hu = 11")

UPPER UNIT 10' X 3'-8" (TYPE I)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	——	18'-10"	53
B	3	#4	——	18'-10"	38
C	5	#4	11"	13'-2"	44
D	7	#4	6"	10'-10"	51
E	12	#4	11"	1'-2"	9
F	21	#5	6"	4'-8"	147
G	22	#5	6"	5'-8"	167
H	4	#4	——	10'-10"	29
J	12	#4	12"	3'-8"	28
K	4	#4	——	2'-0"	5
M	3	#4	——	14'-8"	29
TOTAL WEIGHT					620 LBS.

UPPER UNIT 10' X 5'(TYPE II)					
BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	——	20'-6"	60
B	3	#4	——	21'-6"	43
C	7	#4	11"	13'-2"	62
D	11	#4	6"	10'-10"	80
E	16	#4	11"	1'-2"	13
F	21	#5	6"	5'-8"	179
G	22	#5	6"	7'-0"	221
H	4	#4	——	10'-10"	29
J	12	#4	12"	3'-8"	28
K	4	#4	——	2'-0"	5
M	3	#4	——	14'-8"	29
TOTAL WEIGHT					759 LBS.

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

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

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



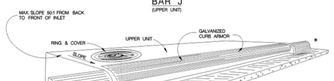












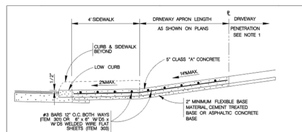
MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

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

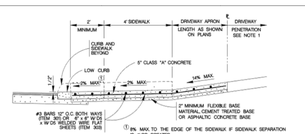
%	SUBMITTAL	PROJECT NO.:	DATE:

DRAWN BY: V. VASQUEZ DSGN. BY: L.E. MALTOS, P.E. CHKD. BY: R.S. HOSSENI, P.E. SHEET NO.: ___ OF ___



TYPICAL RESIDENTIAL DRIVEWAY SECTION

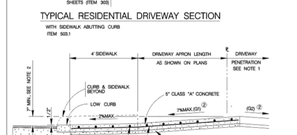
WITH SIDEWALK ABUTTING CURB
ITEM 500.1



① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

TYPICAL RESIDENTIAL DRIVEWAY SECTION

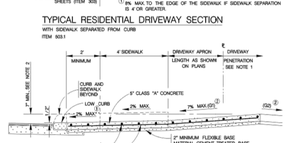
WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.1



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

TYPICAL RESIDENTIAL DRIVEWAY SECTION

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



① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.
② THE ALGEBRAIC DIFFERENCE OF G1 & G2 SHALL BE 14% OR LESS

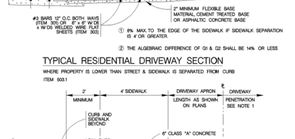
TYPICAL RESIDENTIAL DRIVEWAY SECTION

WHERE PROPERTY IS LOWER THAN STREET & SIDEWALK IS SEPARATED FROM CURB
ITEM 503.1



TYPICAL COMMERCIAL DRIVEWAY SECTION

WITH SIDEWALK ABUTTING CURB
ITEM 502.2



① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

TYPICAL COMMERCIAL DRIVEWAY SECTION

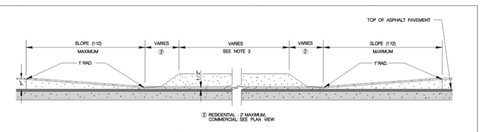
WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.2

CONCRETE DRIVEWAY NOTES

1. DRIVEWAY PENETRATION REFERS TO A PORTION OF THE DRIVEWAY THAT MAY BE NECESSARY TO RECONSTRUCT WITHIN PRIVATE PROPERTY TO COMPLY WITH A MAXIMUM DRIVEWAY SLOPE. THIS PORTION OF THE DRIVEWAY SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS AS MAY APPLY.
   A.) CONCRETE DRIVEWAY PAD FOR UNDER ITEM NO.503.1 OR 503.2.
   B.) ASPHALTIC CONCRETE DRIVEWAY PAD FOR UNDER ITEM NO.503.6 AND SHALL INCLUDE A MINIMUM OF 1" ASPHALT TYPE "D" & 6" FLEXIBLE BASE.
   C.) GRAVEL DRIVEWAY PAD FOR UNDER ITEM NO.503.5 AND SHALL INCLUDE A MINIMUM OF 6" FLEXIBLE BASE.
2. 7" MINIMUM HEIGHT WILL NOT NECESSARILY OCCUR AT THE PROPERTY LINE. IT MAY OCCUR WITHIN THE RIGHT OF WAY OR WITHIN THE DRIVEWAY PENETRATION ON PRIVATE PROPERTY.
3. THE PROPOSED DRIVEWAY SHOULD MATCH THE EXISTING WIDTH AT THE PROPERTY LINE BUT UNLESS AUTHORIZED BY THE CITY TRAFFIC ENGINEER THE WIDTH SHALL BE WITHIN THE FOLLOWING VALUES.

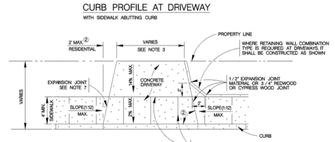
TYPE	MINIMUM	MAXIMUM
RESIDENTIAL	10'	30'
COMMERCIAL – ONE WAY	12'	20'
COMMERCIAL – TWO WAY	24'	30'

4. FOR LOCAL TYPE "A" STREETS, SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 2' FROM THE BACK OF CURB.
5. FOR OTHER THAN LOCAL TYPE "A" STREETS, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 4' AND SEPARATED A MINIMUM OF 2' FROM THE BACK OF CURB OR AS AN OPTION, THE SIDEWALK SHALL HAVE A MINIMUM WIDTH OF 6' WHEN LOCATED AT THE BACK OF CURB.
6. DUMMY JOINTS PARALLEL TO THE CURB SHALL BE PLACED WHERE THE SIDEWALK MEETS THE DRIVEWAY. DUMMY JOINTS PERPENDICULAR TO THE CURB AND WITHIN THE BOUNDARIES OF THE PARALLEL DUMMY JOINTS, SHALL BE PLACED AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK.
7. A MINIMUM OF TWO ROUND AND SMOOTH DOWEL BARS 3 /8" IN DIAMETER AND 18" IN LENGTH SHALL BE SPACED 18" APART AT EACH EXPANSION JOINT.
8. SIDEWALK RAMP LENGTHS SHALL BE OF SUFFICIENT LENGTH TO MAINTAIN 8.33% (1:12) MAXIMUM SLOPE WHERE SIDEWALKS CROSS DRIVEWAYS, SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.
9. SIDEWALK RAMP SURFACE SHALL BE BRUSH FINISHED.



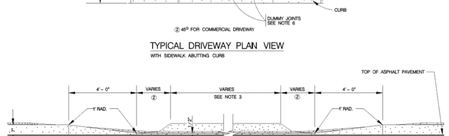
CURB PROFILE AT DRIVEWAY

WITH SIDEWALK ABUTTING CURB



TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK ABUTTING CURB



CURB PROFILE AT DRIVEWAY

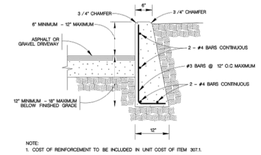
WITH SIDEWALK SEPARATED FROM CURB



① 8% MAX. TO THE EDGE OF THE SIDEWALK IF SIDEWALK SEPARATION IS 4' OR GREATER.

TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK SEPARATED FROM CURB



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

DRIVEWAY – CONCRETE RETAINING WALL

ON COMPACTED SUBGRADE
ITEM 307.1

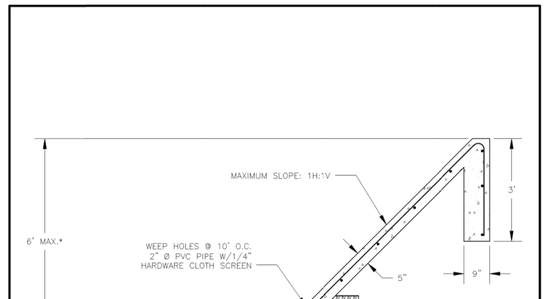
MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

CONCRETE DRIVEWAY STANDARDS

%	SUBMITTAL	PROJECT NO.:	DATE:

DRAWN BY: V. VASQUEZ DSGN. BY: ___ CHKD. BY: R.S. HOSSENI, P.E. SHEET NO.: ___ OF ___



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

CITY OF BOERNE

CONCRETE RIP RAP
TYPICAL SECTION

SCALE:	DRAWING No.:	DATE:
N.T.S.	0242S–1.1	JULY 2015

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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 3

CURB INLET DETAILS

DATE
03/22/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

DATE	A	1	2	3	4	5	6	7	8	9

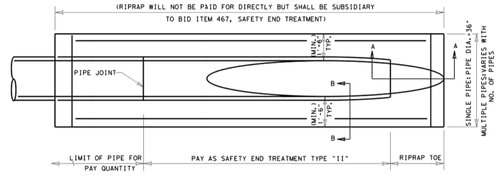
STATE OF TEXAS
JAVIER CASTILLO
122170
LICENSED PROFESSIONAL ENGINEER
3/22/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

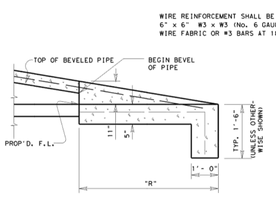
C23

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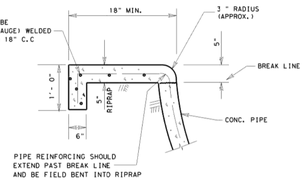
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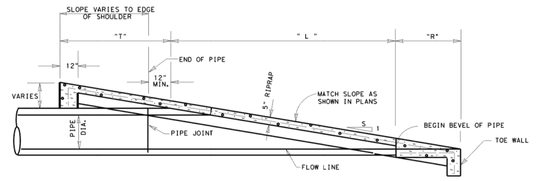
PLAN VIEW



SEC. A-A



SEC. B-B



ELEVATION
SAFETY END TREATMENT

SAFETY END TREATMENT PIPE LENGTHS

PIPE DIA.	"L"			
(IN.)	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'-0½"	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

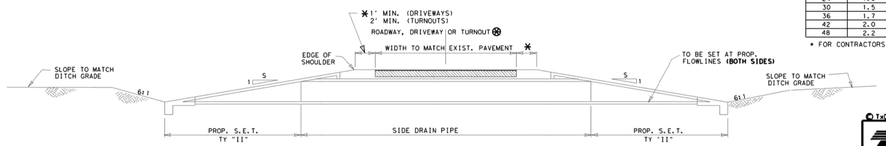
RIPRAP TOE LENGTHS

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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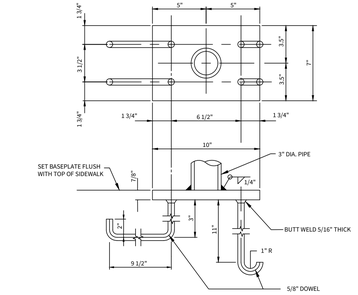
PHARR DISTRICT STANDARDS

TEXAS DEPARTMENT OF TRANSPORTATION

SAFETY END TREATMENT DETAILS

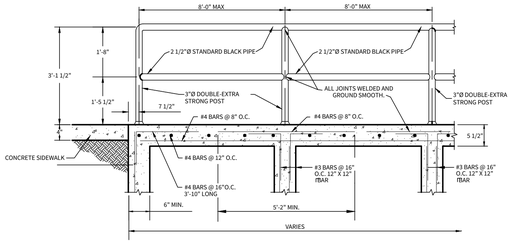
REV. 9/16 — SET.DGN

DIST.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
6					
STATE	STATE				
TEXAS	21				



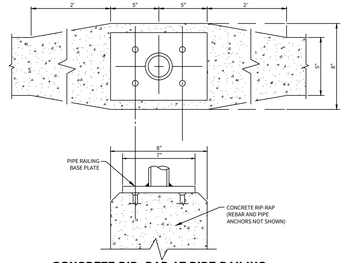
PIPE ANCHORAGE DETAILS

N.T.S.



TYPICAL SIDEWALK BRIDGE SECTION AND SIDEWALK PIPE RAILING

N.T.S.

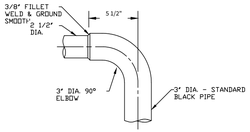


CONCRETE RIP-RAP AT PIPE RAILING BASE PLATE DETAIL

NOTES:

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

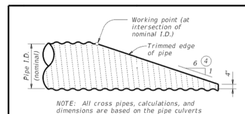
N.T.S.



DETAIL OF 90° WELDING ELBOWS

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

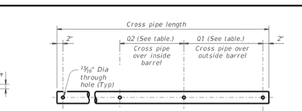
SCALE: 1" = 8"



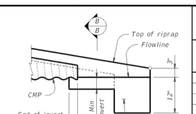
NOTE: All cross pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing corrugated metal pipe (CMP) culvert. Details at reinforced concrete pipe (RCP) culvert are similar.)

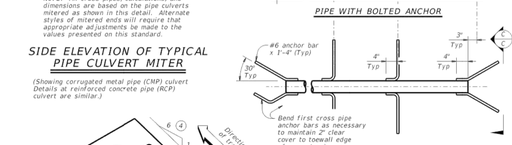


PIPE WITH BOLTED ANCHOR

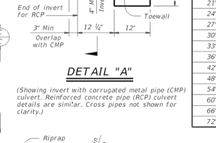


DETAIL "A"

(Showing invert with corrugated metal pipe (CMP) culvert. Reinforced concrete pipe (RCP) culvert details are similar. Cross pipes not shown for clarity.)



PIPE WITH ANCHOR BARS



SECTION B-B

(Cross pipes not shown for clarity.)



SECTION C-C

CROSS PIPE DETAILS

CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, AND RIPRAP QUANTITIES (2)

Nominal Culvert I.D.	Conc Riprap (CY) (6)	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for Use of Cross Pipes	Cross Pipe Sizes
12"	0.6	0'-9"	N/A	2'-1"	1'-9"	3 or more pipe culverts	3" Std (3.500" O.D.)
15"	0.7	0'-11"	N/A	2'-5"	2'-2"		
18"	0.8	1'-2"	N/A	2'-10"	2'-8"		
21"	0.9	1'-4"	N/A	3'-2"	3'-1"		
24"	0.9	1'-7"	N/A	3'-6"	3'-7"		
27"	1.0	1'-8"	N/A	3'-10"	3'-11"	3 or more pipe culverts	3 ½" Std (4.000" O.D.)
30"	1.1	1'-10"	N/A	4'-2"	4'-4"	2 or more pipe culverts	
33"	1.2	1'-11"	4'-2"	4'-5"	4'-8"	All pipe culverts	
36"	1.3	2'-1"	4'-5"	4'-9"	5'-1"	All pipe culverts	4" Std (4.500" O.D.)
42"	1.5	2'-4"	4'-11"	5'-5"	5'-10"		
48"	1.7	2'-7"	5'-5"	6'-0"	6'-7"	All pipe culverts	5" Std (5.563" O.D.)
54"	2.0	3'-0"	5'-11"	6'-9"	7'-6"		
60"	2.2	3'-3"	6'-5"	7'-4"	8'-3"		
66"	2.4	3'-3"	6'-11"	7'-10"	8'-9"		
72"	2.7	3'-4"	7'-5"	8'-5"	9'-4"		

(1) The proper installation of the first cross pipe is critical for vehicle safety. Place the top of the first cross pipe no more than 6" above the flow line.

(2) Provide cross pipes, except the first bottom pipe, of the size shown in the table. Provide a 3 1#2" standard pipe (4" O.D.) for the first bottom pipe.

(3) Install the third cross pipe from the bottom of the culvert using a bolted connection. Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, install all other cross pipes using the bolted connection details.

(4) Match cross slope as shown elsewhere in the plans. Cross slope of 6:1 or flatter is required for vehicle safety.

(5) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(6) Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for contractor's information only.

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Provide cross pipes that meet the requirements of ASTM A53 (Type E or S, Gr. B), ASTM A500 (Gr. B), or API 5L#52.

Provide ASTM A307 bolts and nuts.

Galvanize all steel components, except concrete reinforcing, after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

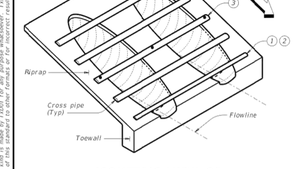
GENERAL NOTES:

Cross pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

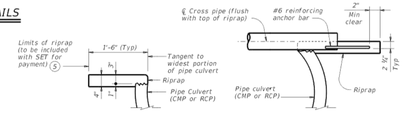
Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the cross pipes.

Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap".

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

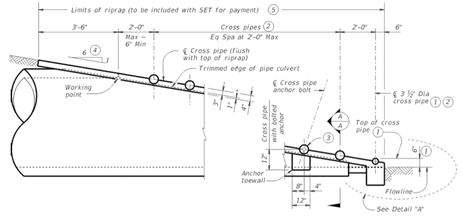


ISOMETRIC VIEW OF TYPICAL INSTALLATION



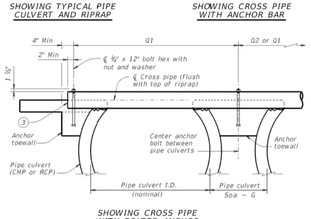
SHOWING TYPICAL PIPE CULVERT AND RIPRAP

SHOWING CROSS PIPE WITH ANCHOR BAR



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details at corrugated metal pipe (CMP) culvert are similar.)



SHOWING CROSS PIPE WITH BOLTED ANCHOR

SECTION A-A

Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT
FOR 12" DIA TO 72" DIA
PIPE CULVERTS
TYPE II ~ PARALLEL DRAINAGE

SETP-PD

FILE:	setpdse-20.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
	REVISIONS	DIST	COUNTY		SHEET NO.

DATE:
FILE:

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CORLEY FARMS UNIT 3

SAFETY END TREATMENT DETAILS

DATE
03/22/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
102170
LICENSED
PROFESSIONAL ENGINEER
3/22/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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P:\03481.007\2 Drawings\C24 SAFETY END TREATMENT DETAILS.dwg 3/22/2022 4:09pm cgaskell

BOX DATA

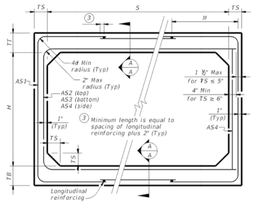
SECTION DIMENSIONS					Fill Height (ft.)	H (Min) (in.)	REINFORCING (sq. in. / ft.) ②						① Lift Weight (tons)
S (ft.)	H (ft.)	TT (in.)	TB (in.)	TS (in.)			AS1	AS2	AS3	AS4	AS5	AS7	AS8	
5	2	8	7	6	< 2	-	0.19	0.27	0.18	0.14	0.19	0.19	0.17	6.0
5	2	6	6	6	2 < 3	44	0.22	0.20	0.16	0.14	-	-	-	5.1
5	2	6	6	6	3 - 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

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.

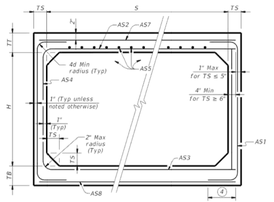
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DATE: JULY 2015
FILE:



CORNER OPTION "A" CORNER OPTION "B"

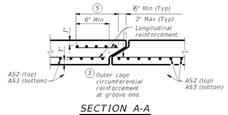
FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

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



SECTION A-A
(Showing top and bottom slab joint reinforcement.)

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

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for additional 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)".

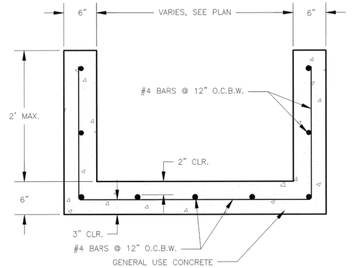
HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS
PRECAST
5'-0" SPAN

SCP-5

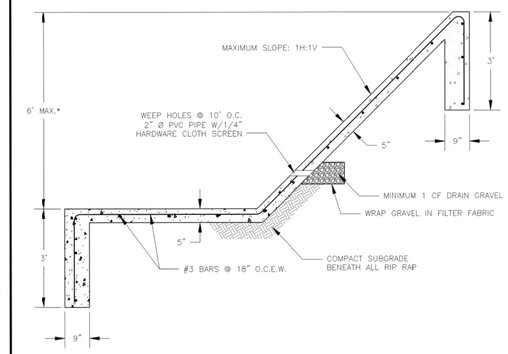
FILE:	sc05d1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS					
		DIST	COUNTY		SHEET NO.



CITY OF BOERNE

CONCRETE FLUME

SCALE:	DRAWING No.	DATE:
N.T.S.	02423–1.0	JULY 2015



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

CITY OF BOERNE

CONCRETE RIP RAP
TYPICAL SECTION

SCALE:	DRAWING No.	DATE:
N.T.S.	02423–1.1	JULY 2015

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CORLEY FARMS UNIT 3

CULVERT DETAILS

DATE
03/22/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

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STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
3/22/2022

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TBPE No. 455
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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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P:(210) 681.2951 F: (210) 523.7112

CORLEY FARMS UNIT 3

SANITARY SEWER GENERAL NOTES

DATE
07/12/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

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STATE OF TEXAS
ANDREW R. LOWRY
123410
LICENSED
PROFESSIONAL ENGINEER
7/13/2022

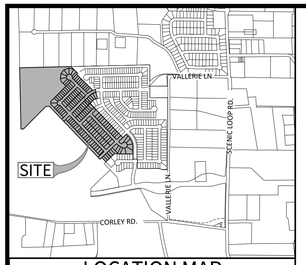
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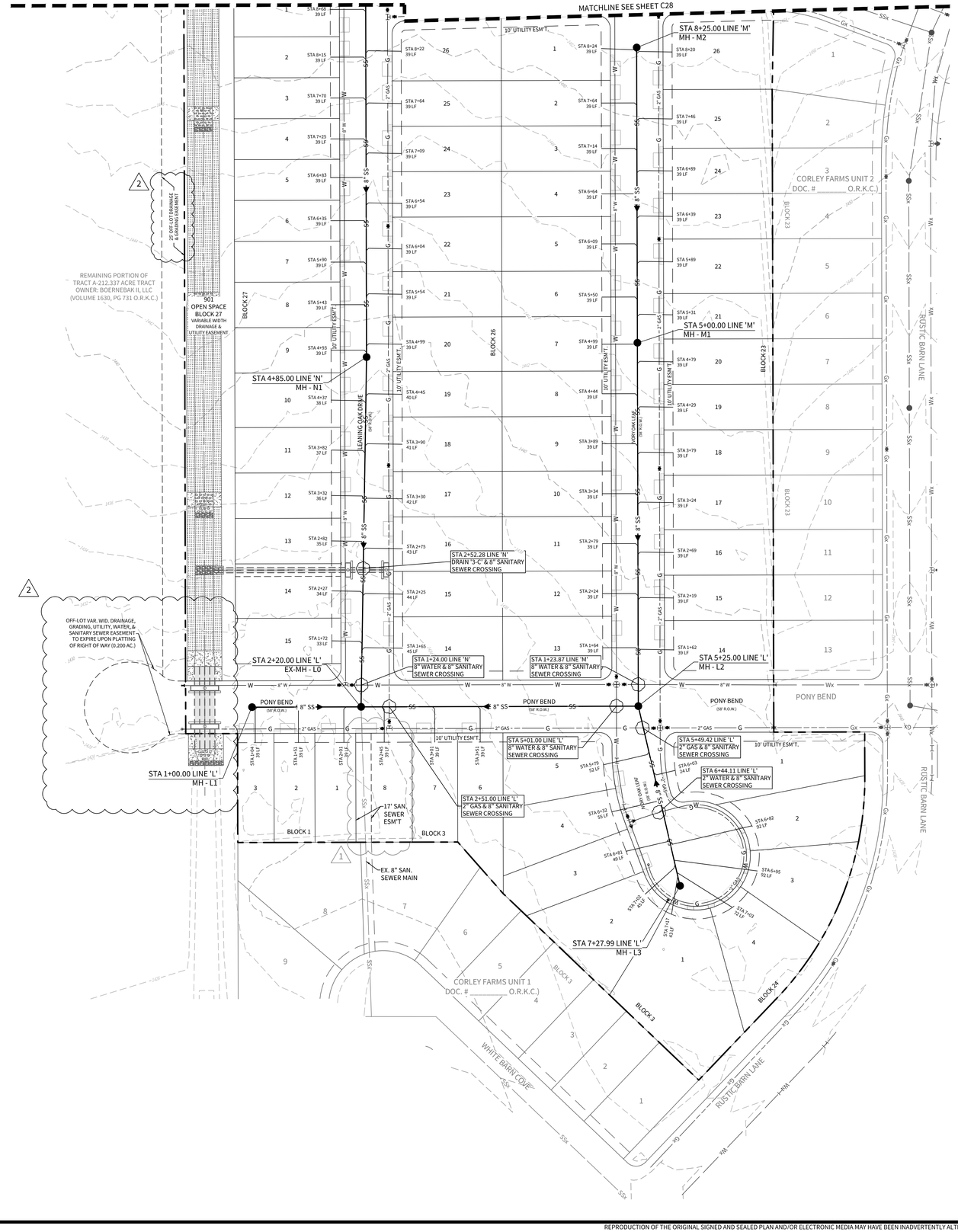
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LOCATION MAP
N.T.S.



BENCHMARK **BM-1**

BENCHMARK TO BE SET BY ENGINEER PRIOR TO CONSTRUCTION.

SEWER/WATER LINE CROSSINGS	
LINE	STATION
"L"	5+01.00
"L"	6+44.18
"M"	1+23.87
"N"	1+24.00
"N"	9+06.83
"N"	11+57.92
"O"	3+74.08
"P"	6+47.94
"R"	4+23.00
"R"	5+73.12

SEWER/GAS LINE CROSSINGS	
"L"	2+51.00
"N"	5+49.44
"O"	1+24.01
"P"	1+24.01
"R"	1+24.71

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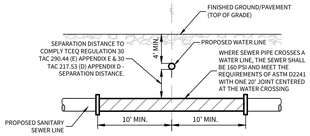
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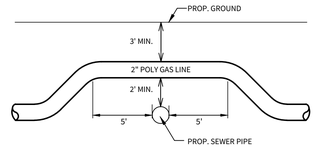
SCALE: 1"=60'
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LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.C.A. EASEMENT
- EXISTING WATER LINE — Wx —
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- EXISTING GAS MAIN — Gx —
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- PROPOSED SEWER MANHOLE
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- PROPOSED SEWER LATERAL



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
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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CORLEY FARMS UNIT 3

OVERALL SANITARY SEWER PLAN

DATE
09/08/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

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2022-07-13	CUDE COMMENTS
2022-09-07	CUDE COMMENTS

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
09/09/2022

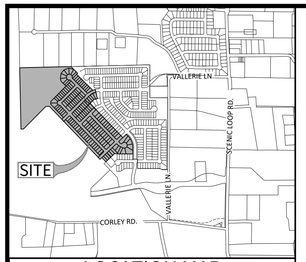
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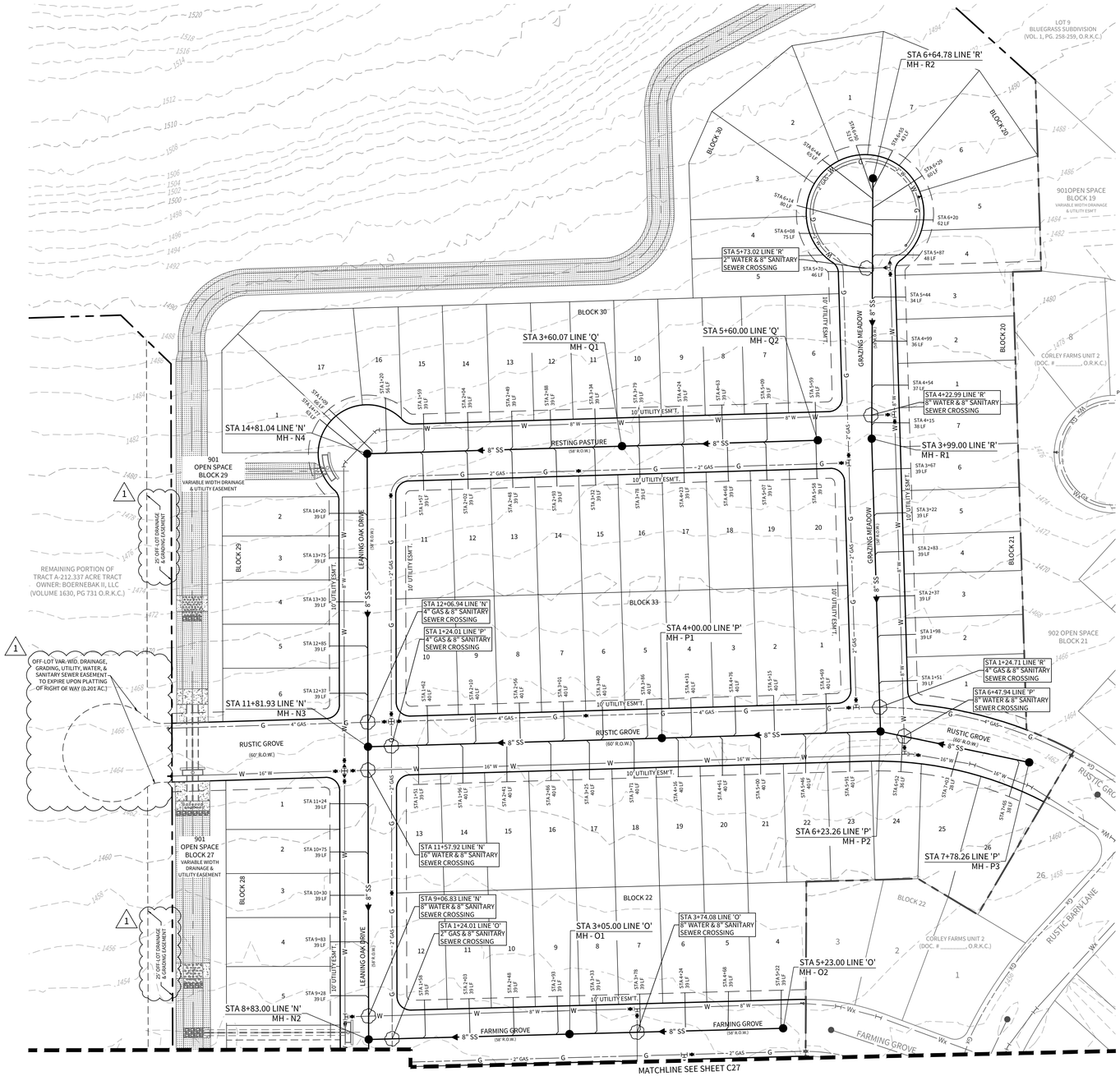
LOCATION MAP
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BENCHMARK **BM-1**

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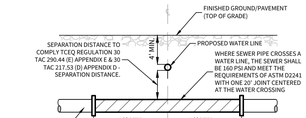
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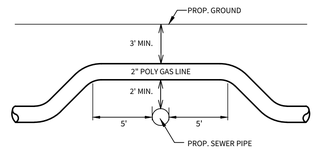
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TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
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SEWER / GAS CROSSINGS DETAIL
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STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
09/09/2022

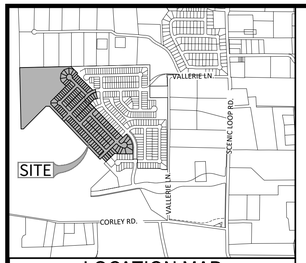
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P:\03481\007\2 Drawings\C28 OVERALL SANITARY SEWER PLAN.dwg 2022-09-09 10:23am ccastaneda



LOCATION MAP
N.T.S.

NOTES:

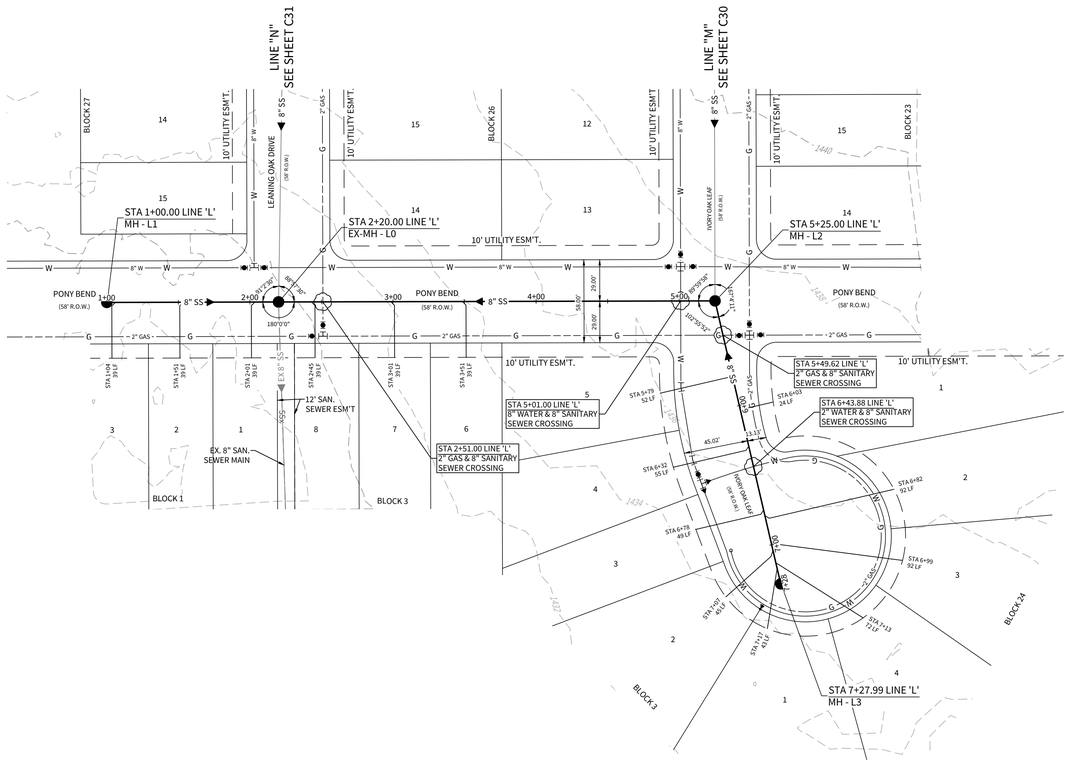
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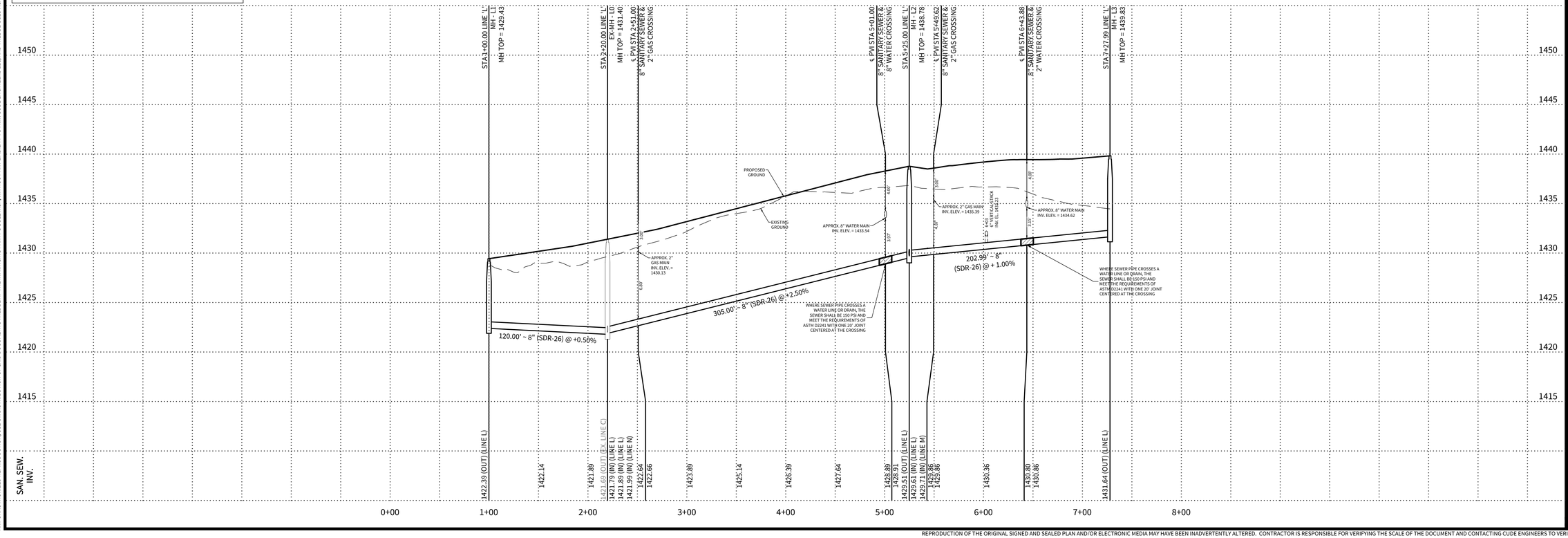
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CORLEY FARMS
UNIT 3

SANITARY SEWER PLAN & PROFILE LINE "L"

DATE
03/22/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

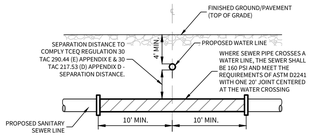
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STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
ORIGINAL SIGNED
3/22/2022

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TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

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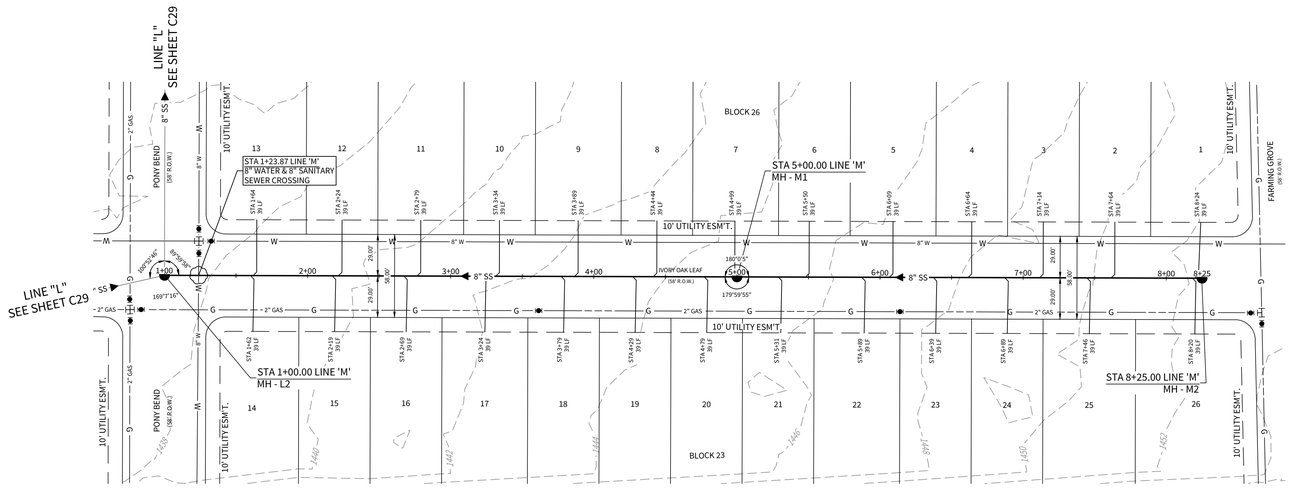
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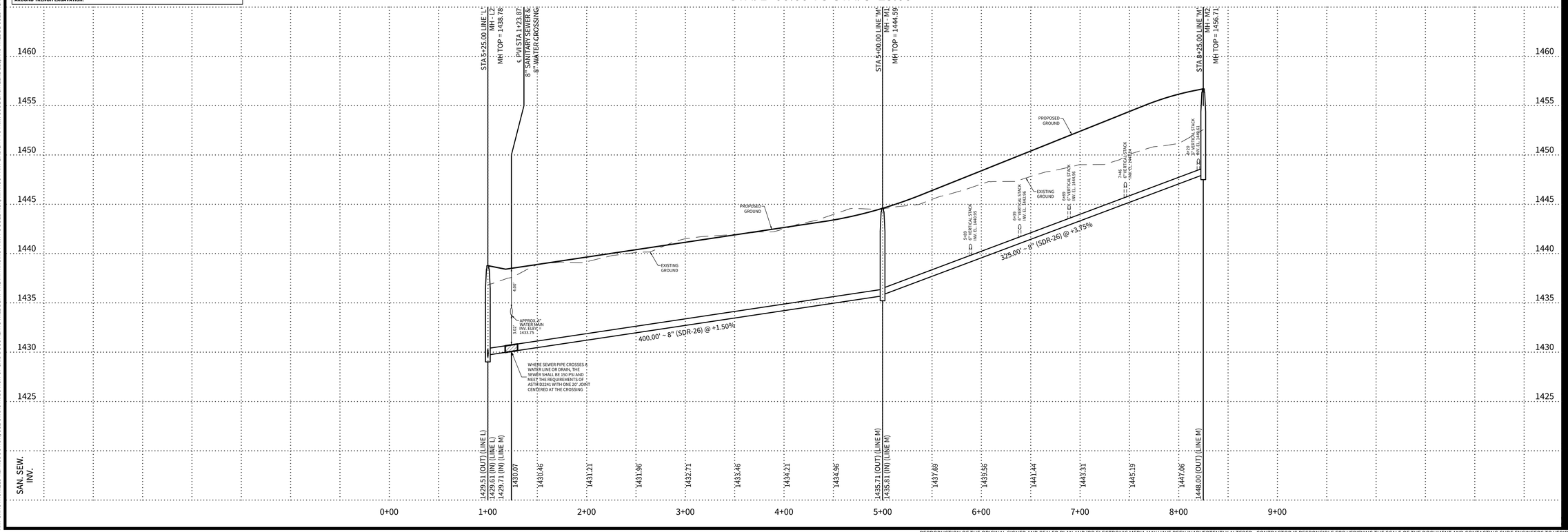
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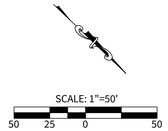
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CORLEY FARMS UNIT 3

SANITARY SEWER PLAN & PROFILE LINE "M"

DATE
03/22/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

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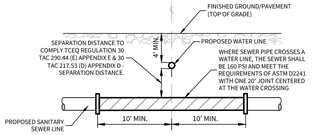
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
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3/22/2022

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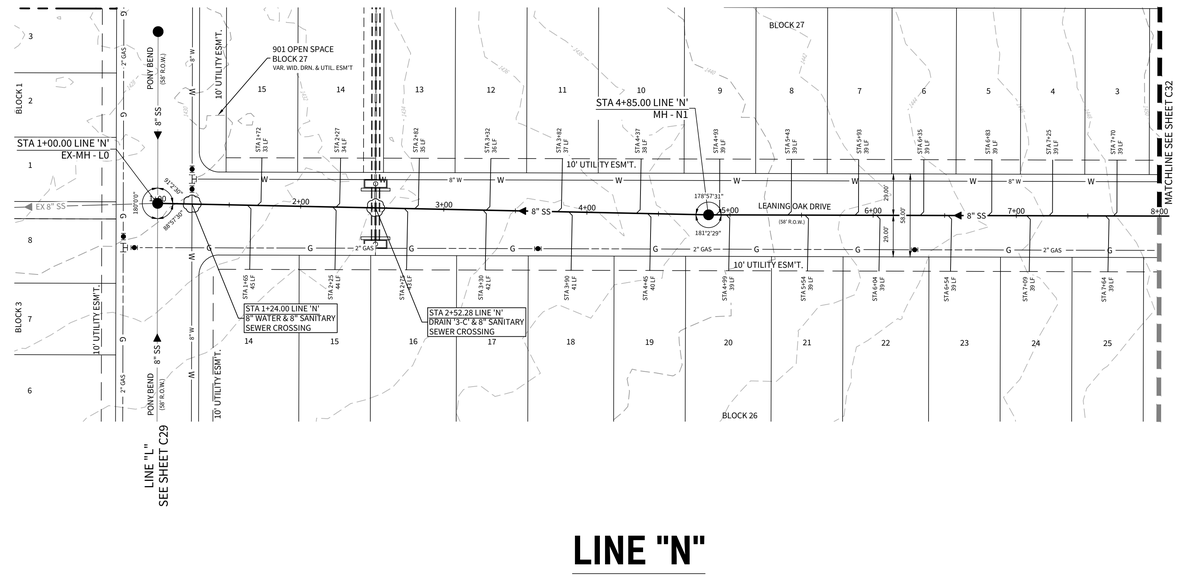
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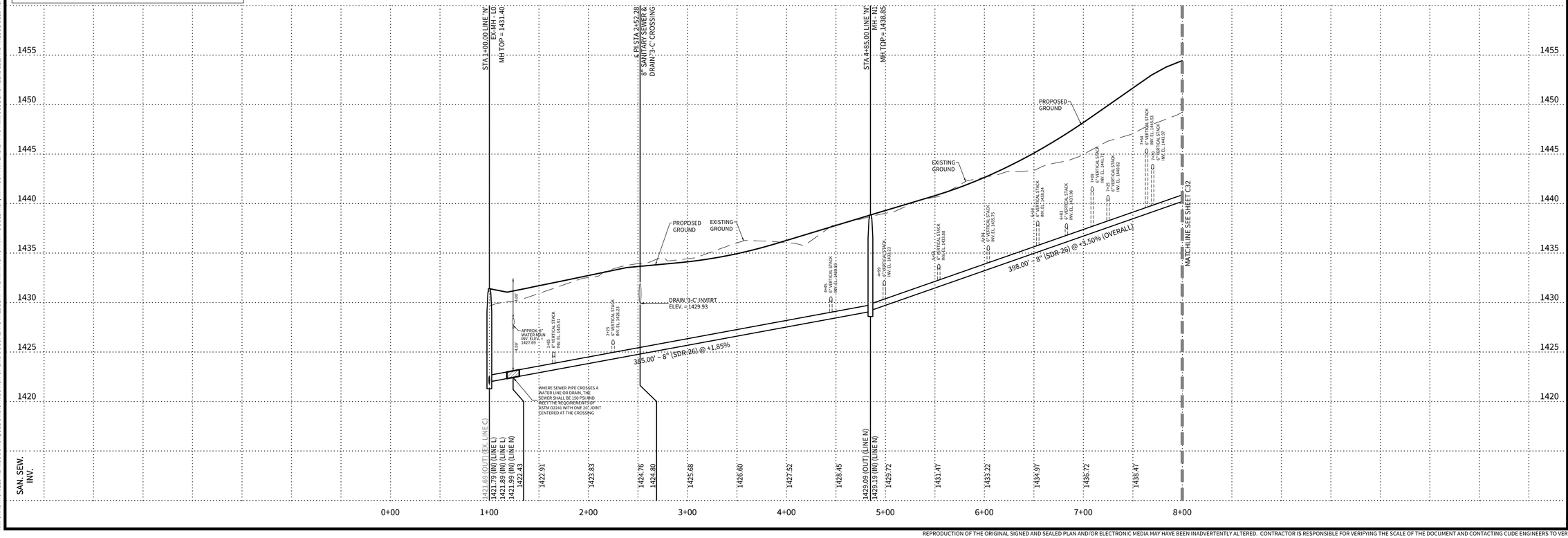
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DATE	03/22/2022
PROJECT NO.	03481.007
DRAWN BY	CA/CG/XV
CHECKED BY	XV/JC/AL

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STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
3/22/2022

CUDE ENGINEERS
TBPE No. 455
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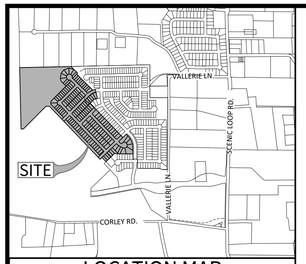
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P:\03481.007\2-Drawings\C31 SANITARY SEWER PLAN & PROFILE LINE "N".dwg 2022.03.22 3:05pm cgilbert



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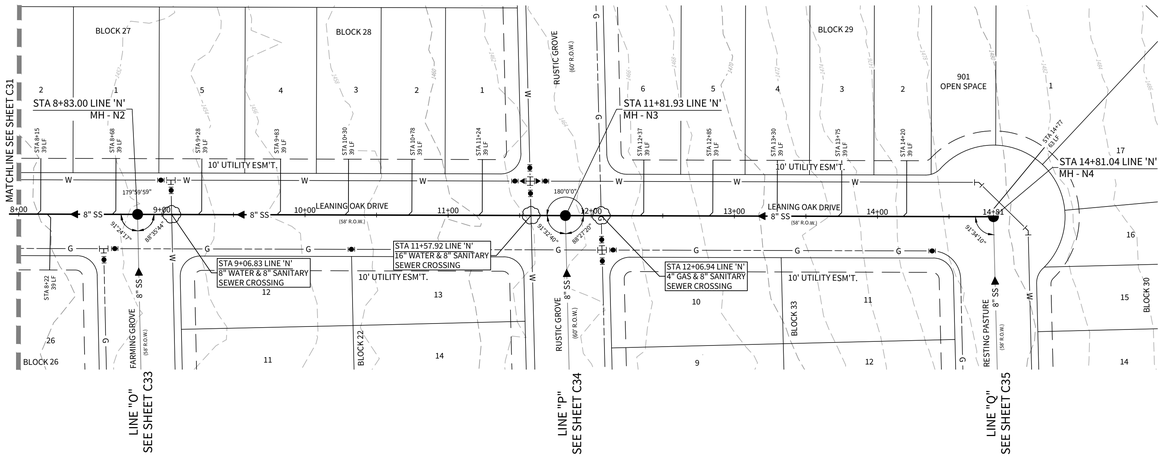
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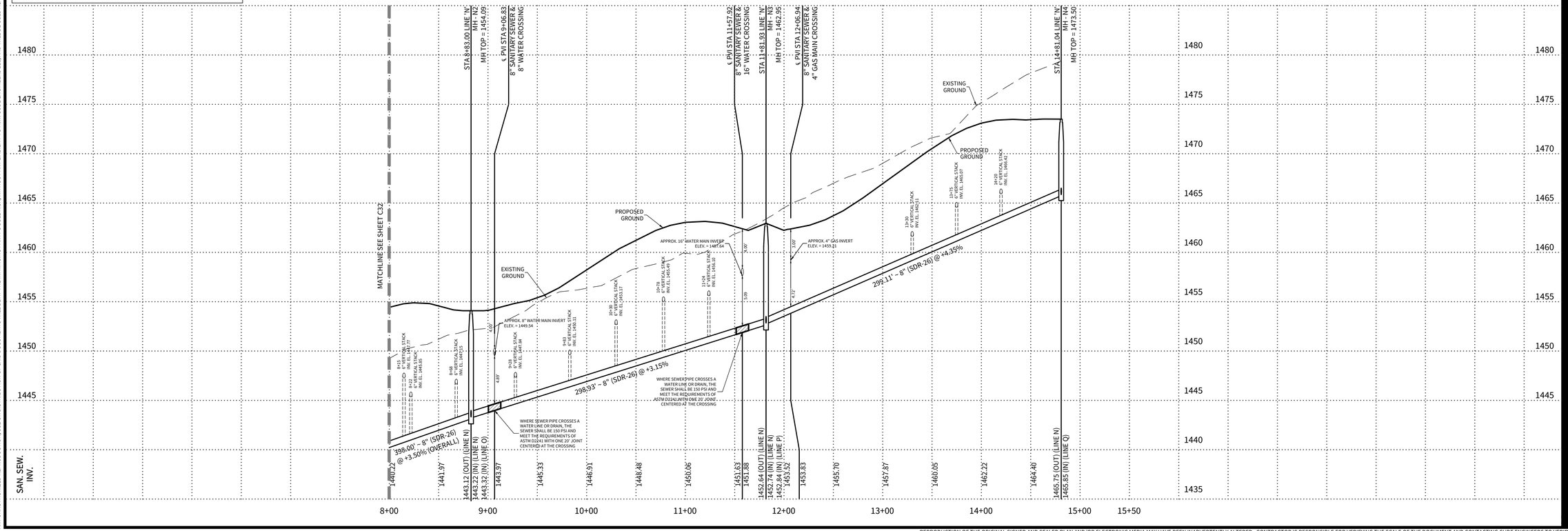
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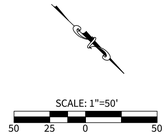
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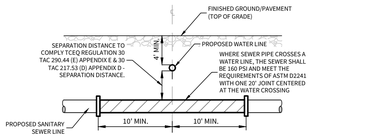
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P:\03481.007\2-Drawings\C3\ SANITARY SEWER PLAN & PROFILE LINE "N" - Aug 2022.DGN 3:59pm cgillett



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

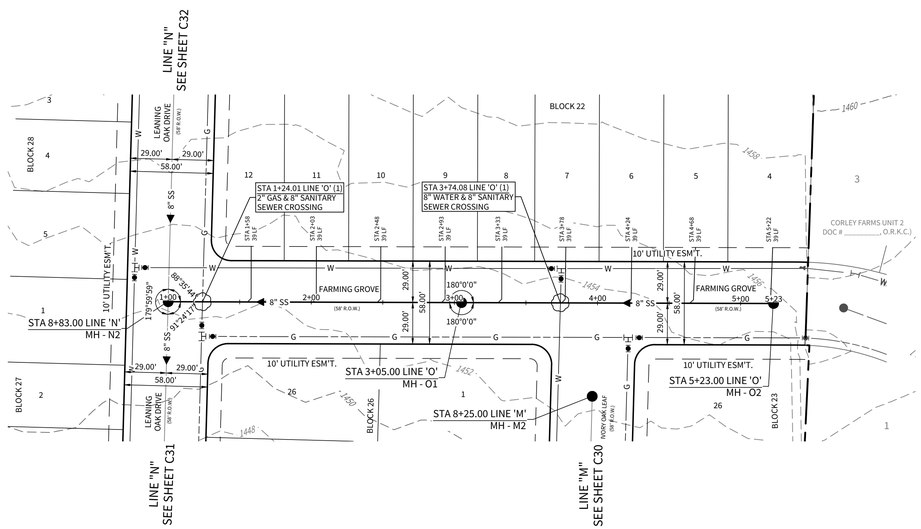
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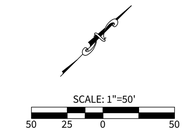
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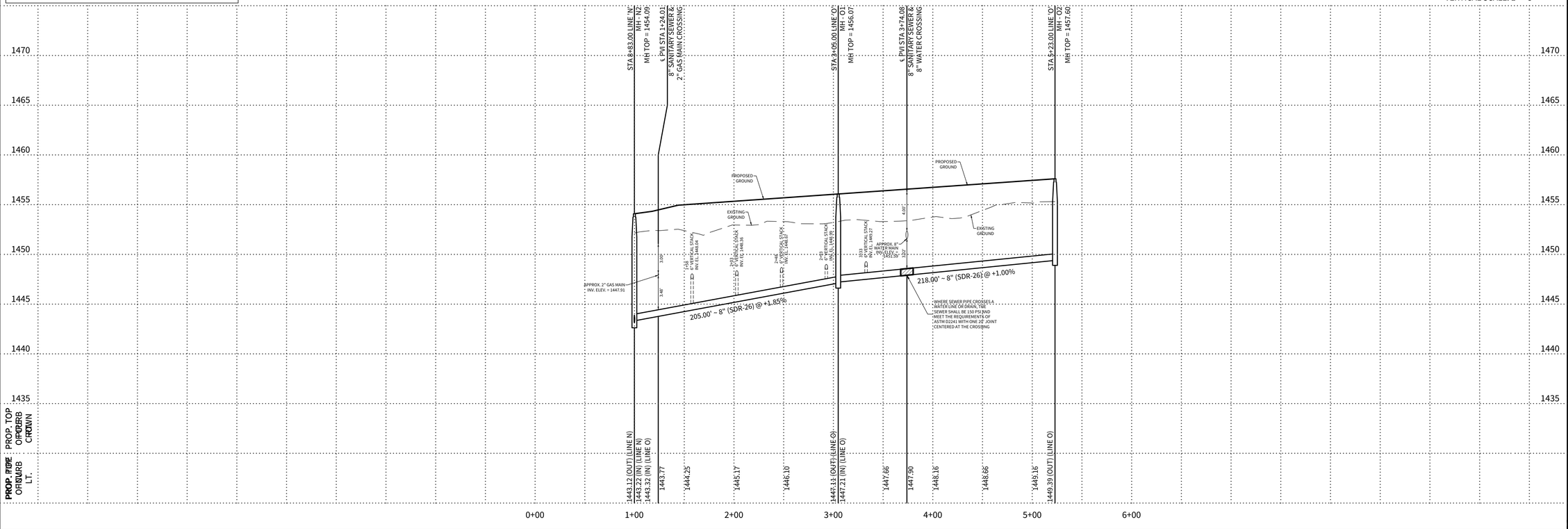




LINE "O"

STA. 1+00.00 TO STA. 5+23.00

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



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SANITARY SEWER PLAN & PROFILE LINE "O"

DATE
03/22/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

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STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
3/22/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

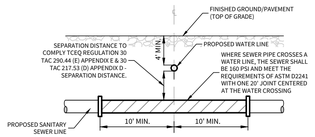
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P:\03481.007\2 Drawings\C33 SANITARY SEWER PLAN & PROFILE LINE "O".dwg 2022/03/22 3:59pm rgilbert



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

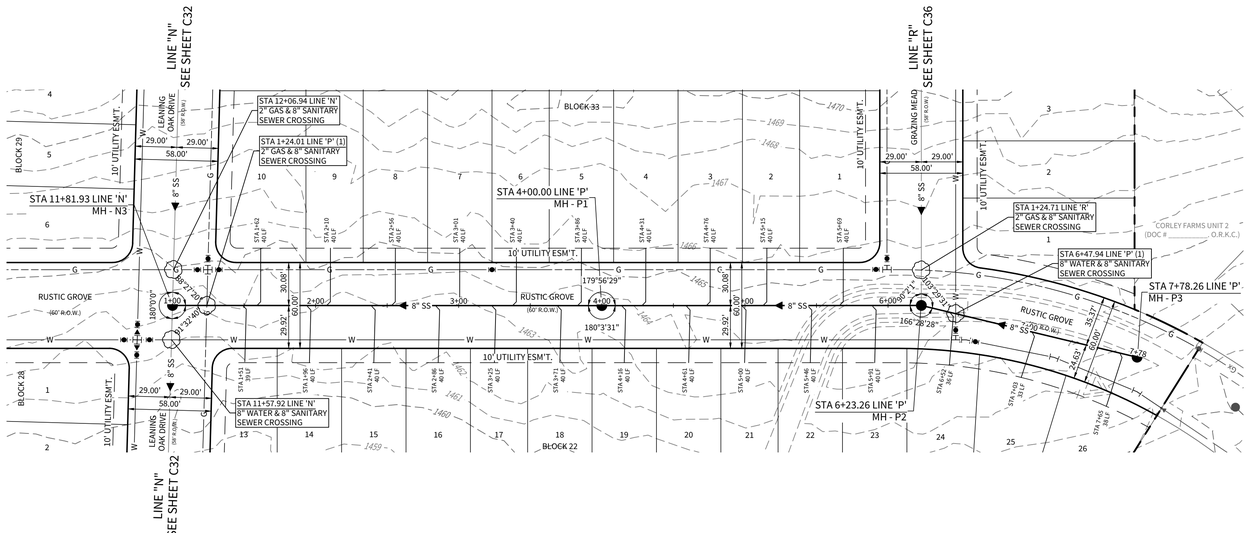
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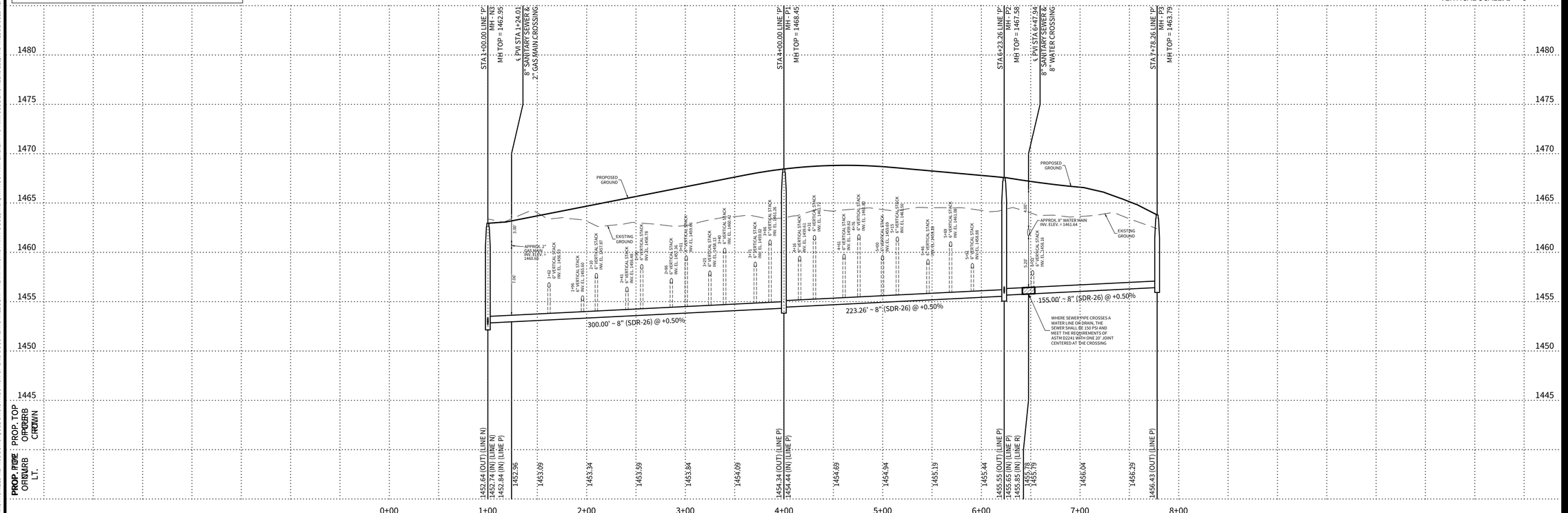
SCALE: 1"=50'

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LINE "P"

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HORIZONTAL SCALE: 1" = 50'
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SANITARY SEWER PLAN & PROFILE LINE "P"

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DATE
03/22/2022

PROJECT NO.
03481.007

DRAWN BY
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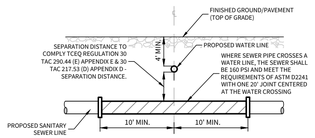
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
3/22/2022

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P:\03481.007\2 Drawings\C34 SANITARY SEWER PLAN & PROFILE LINE "P".dwg 2022/03/22 3:10pm cgilbert



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

N.T.S.

NOTES:

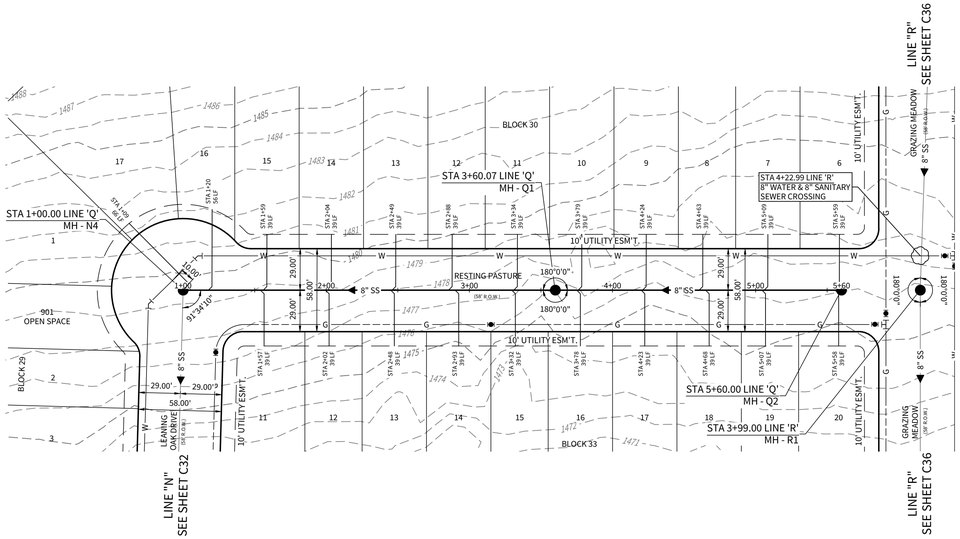
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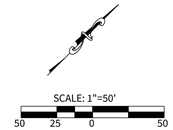
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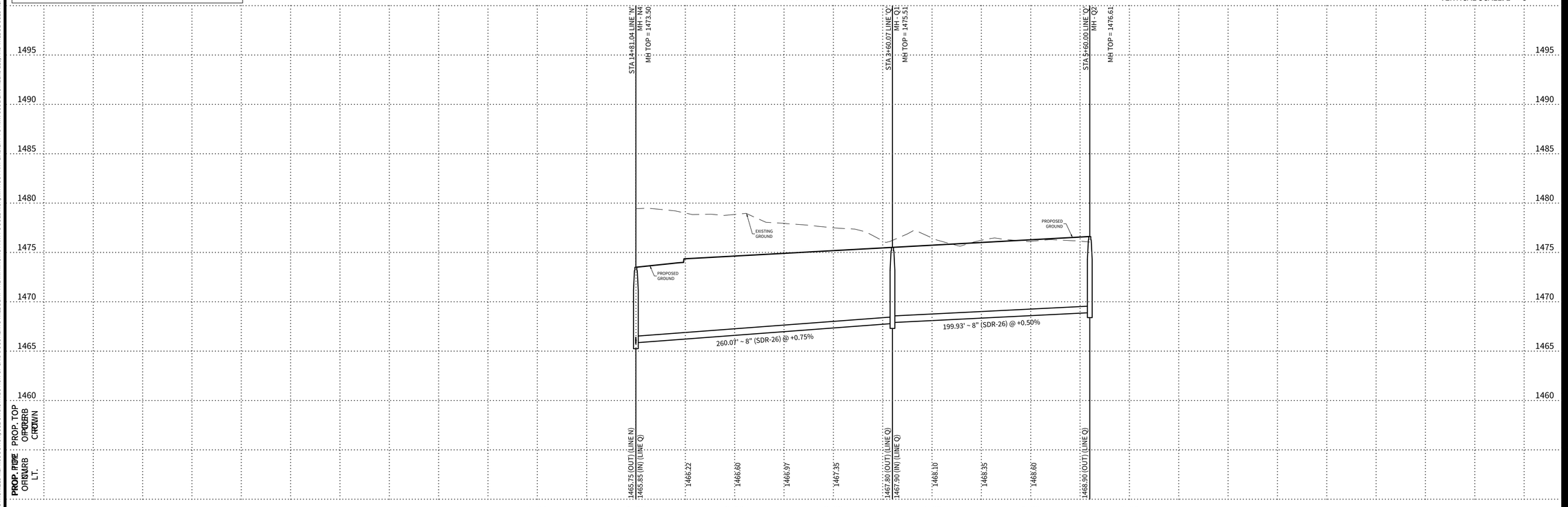




LINE "Q"

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SANITARY SEWER PLAN & PROFILE LINE "Q"

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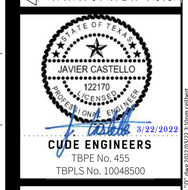
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PROJECT NO.
03481.007

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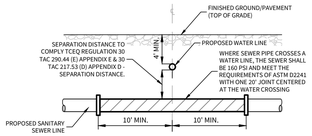


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TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL

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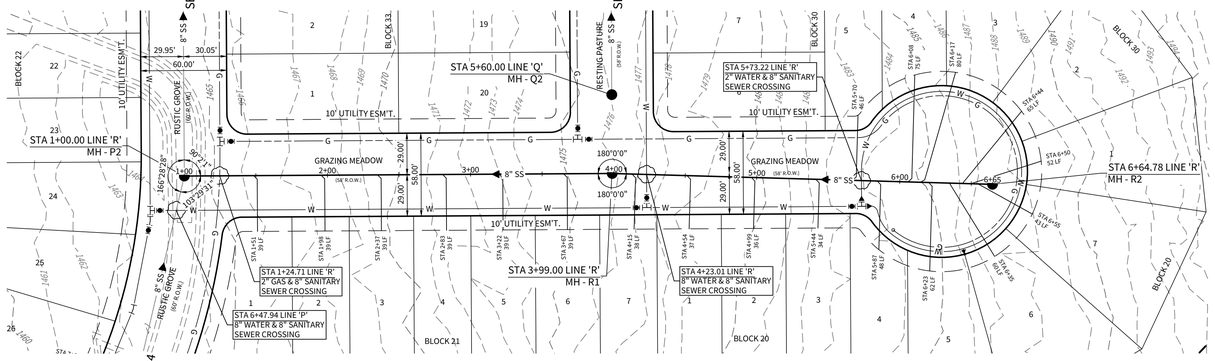
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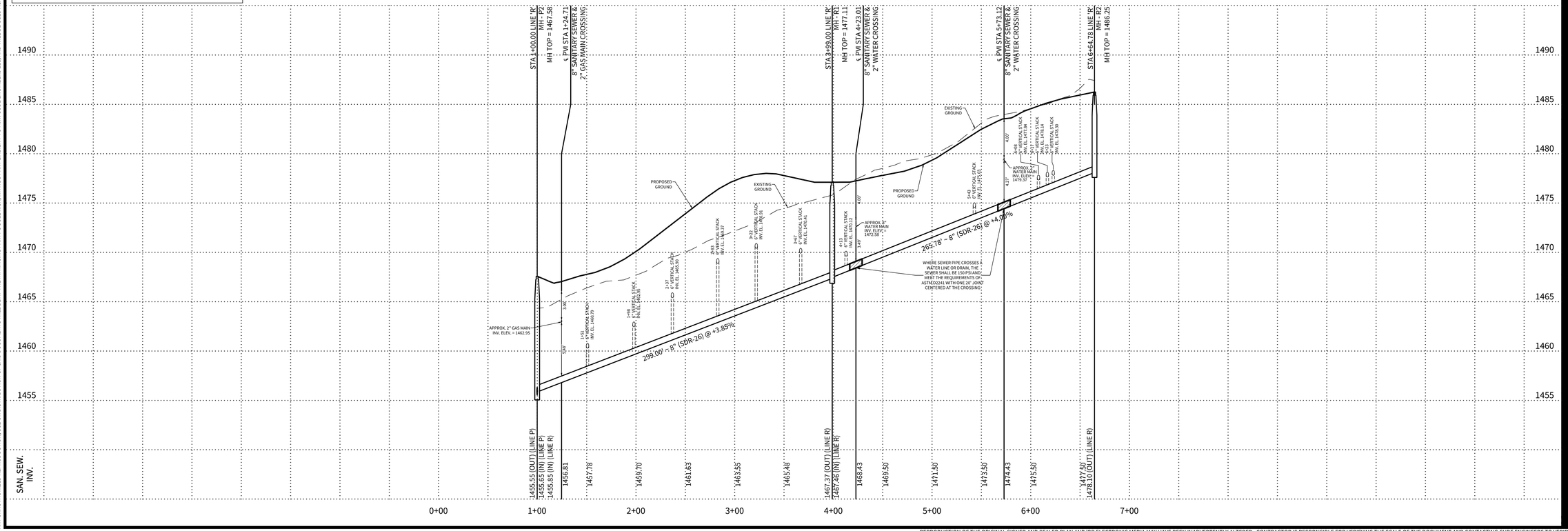
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LINE "R"

STA. 1+00.00 TO STA. 6+64.78



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

CORLEY FARMS
UNIT 3

SANITARY SEWER PLAN & PROFILE LINE "R"

SCALE: 1"=50'
50 25 0 50

DATE
03/22/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

NO.	DATE
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9	

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
3/22/2022

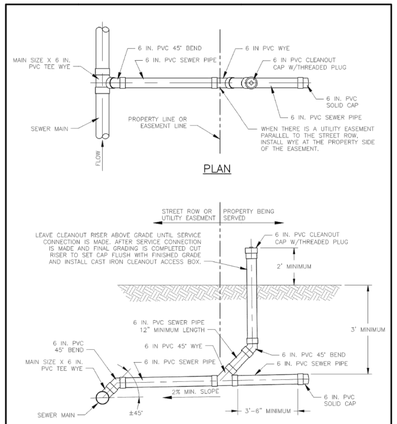
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TBPLS No. 10048500

C36

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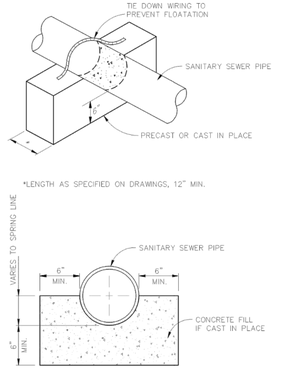
P:\03481.007\2 Drawings\C6 SANITARY SEWER PLAN & PROFILE LINE "R".dwg 2022/03/22 3:10pm cgilbert



CITY OF BOERNE

STANDARD SANITARY SEWER SERVICE LATERAL

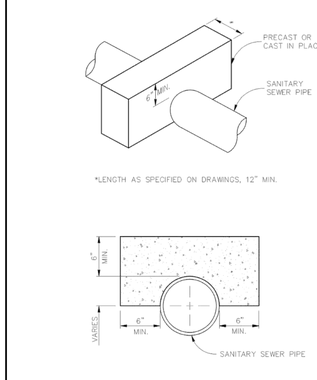
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CITY OF BOERNE

SANITARY SEWER CONCRETE CRADLE

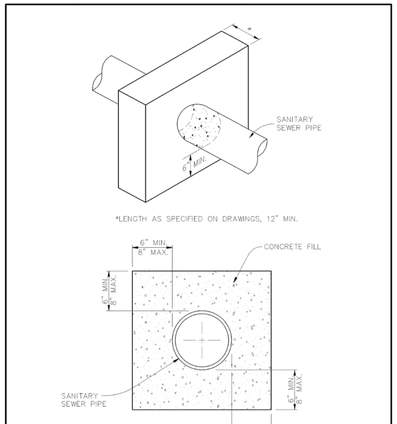
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CITY OF BOERNE

SANITARY SEWER CONCRETE SADDLE

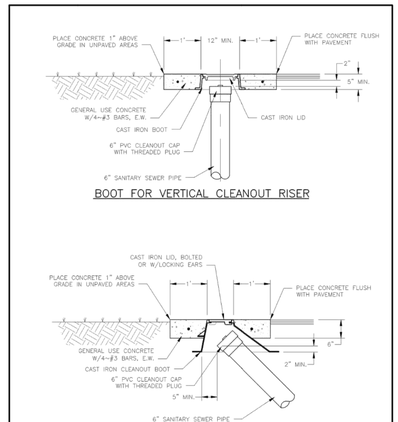
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CITY OF BOERNE

SANITARY SEWER CONCRETE ENCASEMENT

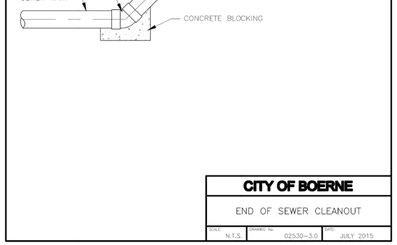
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CITY OF BOERNE

CAST IRON CLEANOUT BOOT

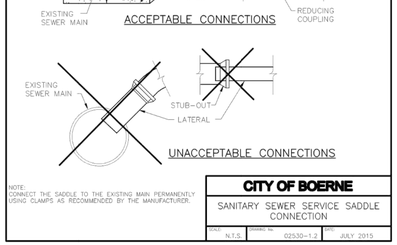
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CITY OF BOERNE

END OF SEWER CLEANOUT

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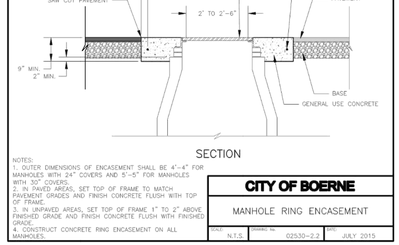


NOTE:
CONNECT THE SADDLE TO THE EXISTING MAIN PERMANENTLY USING CLAMPS AS RECOMMENDED BY THE MANUFACTURER.

CITY OF BOERNE

SANITARY SEWER SERVICE SADDLE CONNECTION

SCALE: N.T.S. | DRAWING No.: 02530-1.2 | DATE: JULY 2015

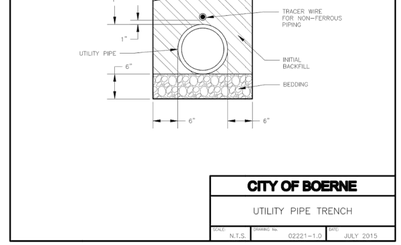


NOTES:
1. OUTER DIMENSIONS OF ENCASEMENT SHALL BE 4'-4" FOR MANHOLES WITH 24" COVERS AND 5'-5" FOR MANHOLES WITH 30" COVERS.
2. IN PAVED AREAS, SET TOP OF FRAME TO MATCH PAVEMENT GRADES AND FINISH CONCRETE FLUSH WITH TOP OF FRAME.
3. IN UNPAVED AREAS, SET TOP OF FRAME 1" TO 2" ABOVE FINISHED GRADE AND FINISH CONCRETE FLUSH WITH FINISHED GRADE.
4. CONSTRUCT CONCRETE RING ENCASEMENT ON ALL MANHOLES.

CITY OF BOERNE

MANHOLE RING ENCASEMENT

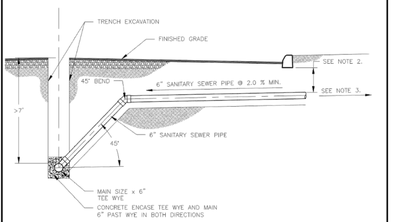
SCALE: N.T.S. | DRAWING No.: 02530-2.2 | DATE: JULY 2015



CITY OF BOERNE

UTILITY PIPE TRENCH

SCALE: N.T.S. | DRAWING No.: 02221-1.0 | DATE: JULY 2015

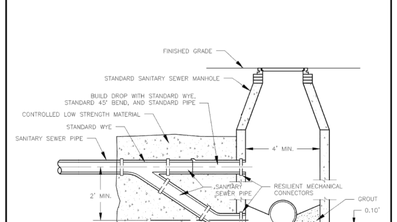


NOTES:
1. USE DEEP SANITARY SEWER SERVICE LATERAL WHEN THE MAIN DEPTH IS GREATER THAN 7' BELOW FINISHED GRADE.
2. INSTALL SERVICE LATERAL 2' MINIMUM BELOW CURB, OR 3' MINIMUM BELOW FINISHED GRADE WHEN NOT IN STREET. INSTALL SERVICE DEEPER WHEN LOT BEING SERVED SLOPES AWAY FROM SEWER MAIN. LATERAL DEPTH 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.

CITY OF BOERNE

DEEP SANITARY SEWER SERVICE LATERAL

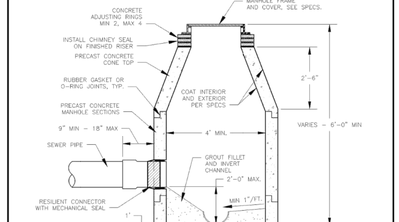
SCALE: N.T.S. | DRAWING No.: 02530-1.1 | DATE: JULY 2015



CITY OF BOERNE

SANITARY SEWER DROP MANHOLE

SCALE: N.T.S. | DRAWING No.: 02530-2.1 | DATE: JULY 2015



CITY OF BOERNE

STANDARD SANITARY SEWER MANHOLE

SCALE: N.T.S. | DRAWING No.: 02530-2.0 | DATE: JULY 2015

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CORLEY FARMS UNIT 3

SANITARY SEWER STANDARD DETAILS

DATE
03/22/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

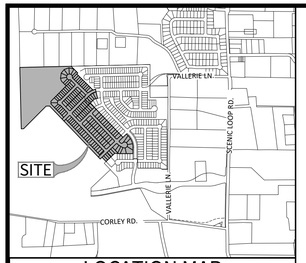
DATE	1.	2.	3.	4.	5.	6.	7.	8.	9.

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
3/22/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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LOCATION MAP
N.T.S.

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.

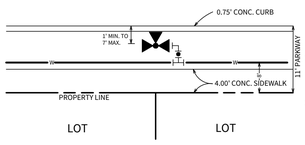
8. Backflow Prevention Devices:

- ☐ 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.

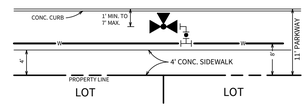
10. All meters shall be 5/8", unless otherwise noted.

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



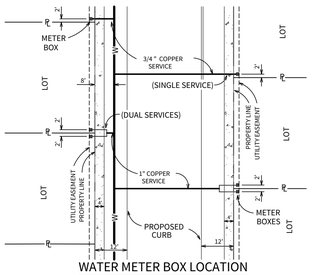
NOTE:
1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

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

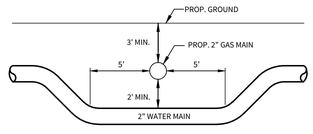


NOTE:
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2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

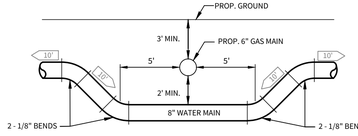
TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 58' ROW)
N.T.S.



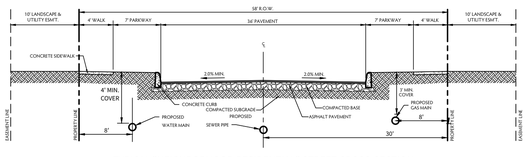
WATER METER BOX LOCATION
N.T.S.



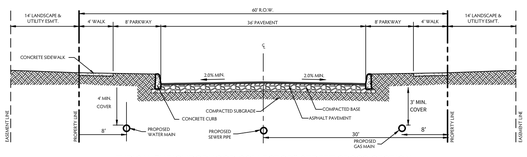
2" WATER / 2" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)



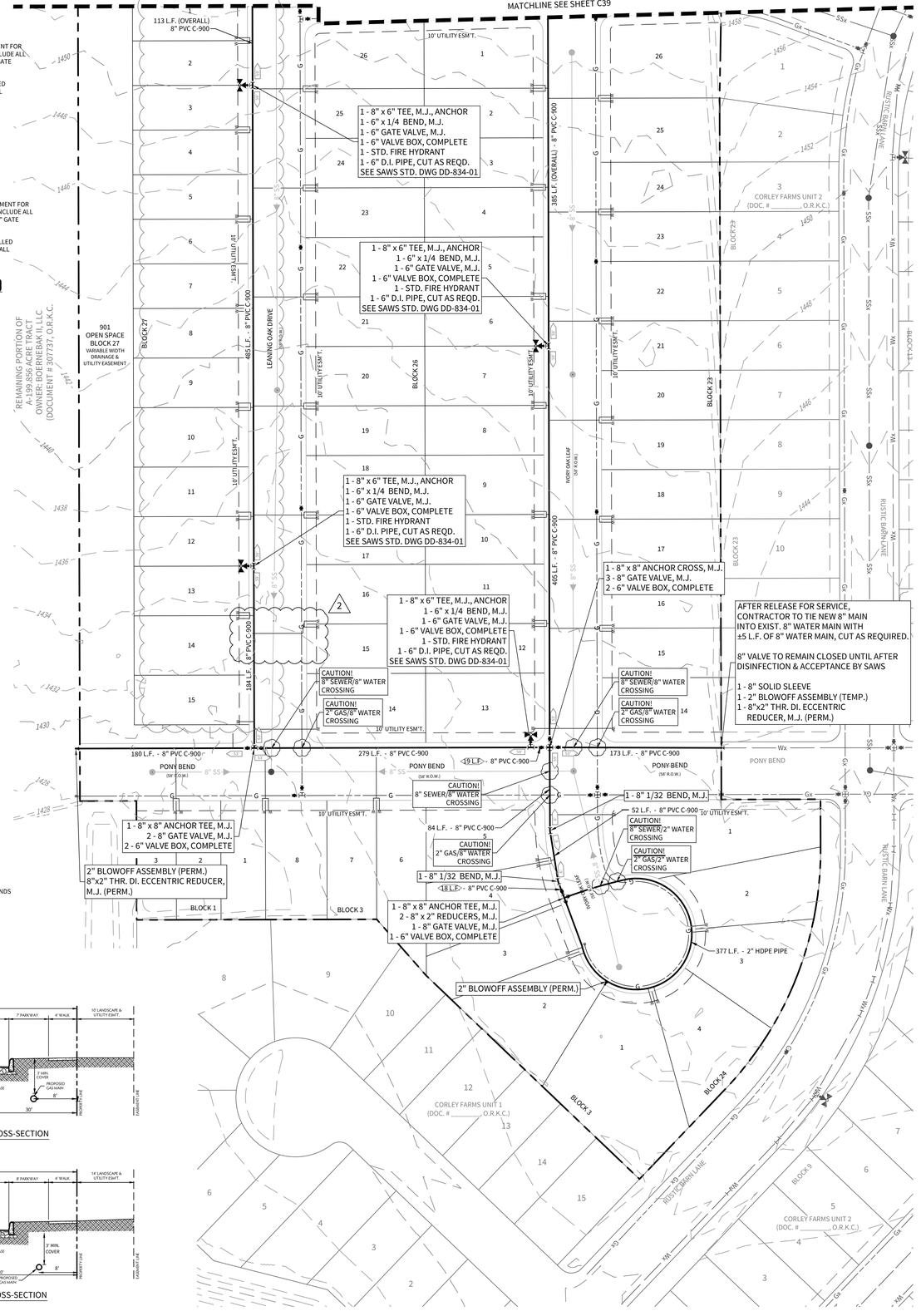
8" WATER / 6" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)



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



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



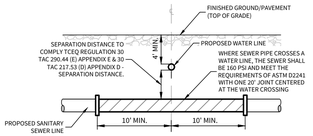
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LEGEND

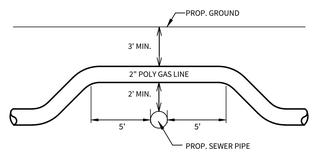
- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.C.A. EASEMENT
- EXISTING WATER LINE — Wx
- EXISTING SEWER MAIN — SSx
- EXISTING GAS MAIN — Gx
- EXISTING SEWER MANHOLE
- PROPOSED SEWER MANHOLE
- PROPOSED WATER LINE — W
- PROPOSED SEWER MAIN — SS
- PROPOSED GAS MAIN — G
- PROPOSED SEWER LATERAL
- PROPOSED JOINT RESTRAINT — X" X"
- JOINT RESTRAINT ENTIRE LENGTH

KEYNOTES

1. 20' OVERHEAD ELECTRIC EASEMENT
2. 12' SANITARY SEWER EASEMENT
3. 16' SANITARY SEWER EASEMENT



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
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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4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

CORLEY FARMS UNIT 3

WATER DISTRIBUTION PLAN

DATE
09/07/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

DATE	
1.	
2.	2022-07-13 - CUDE COMMENTS
3.	2022-09-07 - CUDE COMMENTS
4.	
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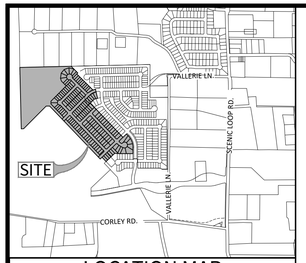
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JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
09/09/2022

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LOCATION MAP
N.T.S.

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.

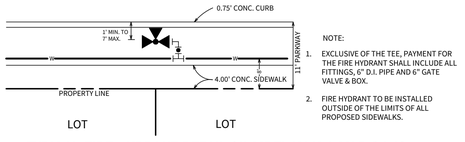
8. Backflow Prevention Devices:

- ☐ 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.

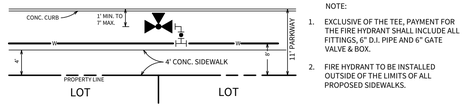
10. All meters shall be 5/8", unless otherwise noted.

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



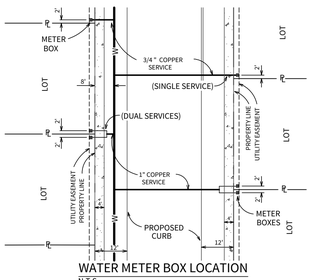
NOTE:
1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

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

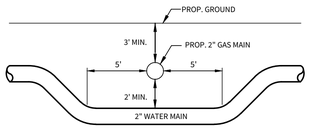


NOTE:
1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
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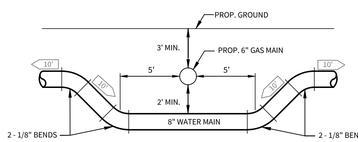
TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 58' ROW)
N.T.S.



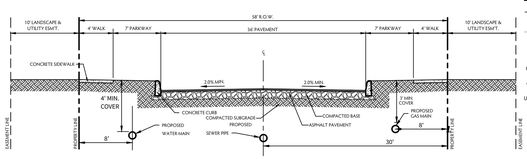
WATER METER BOX LOCATION
N.T.S.



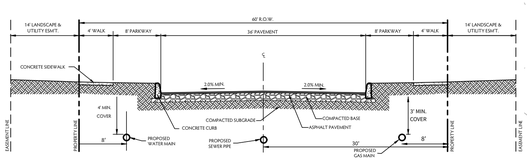
2" WATER / 2" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)



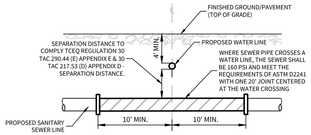
8" WATER / 6" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)



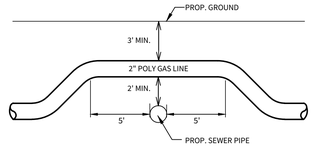
TYPICAL "NEIGHBORHOOD RESIDENTIAL" STREET CROSS-SECTION
N.T.S.



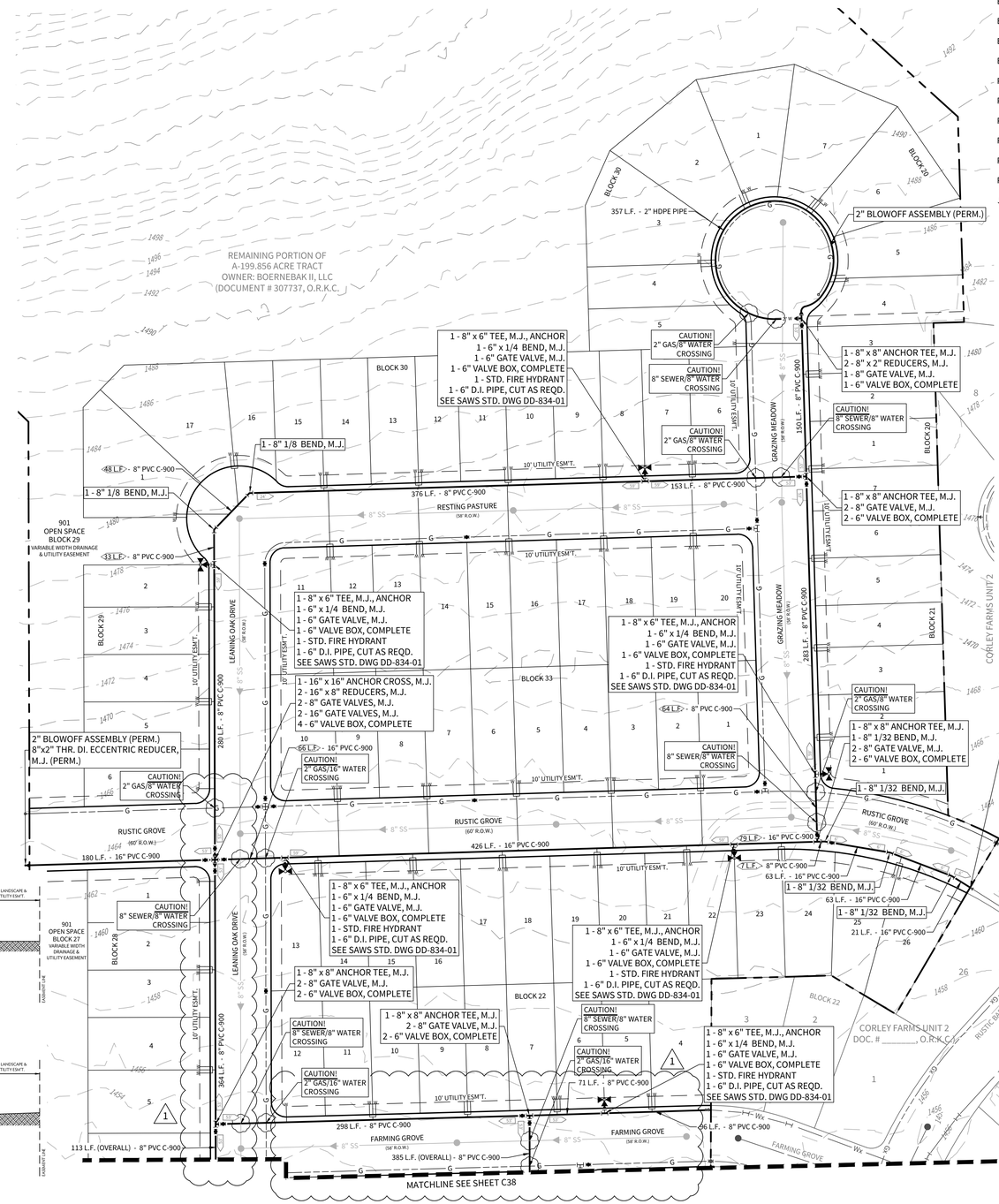
TYPICAL "NEIGHBORHOOD COLLECTOR" STREET CROSS-SECTION



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
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'



AFTER RELEASE FOR SERVICE, CONTRACTOR TO TIE NEW 8" MAIN INTO EXIST. 16" WATER MAIN WITH ±5 L.F. OF 16" WATER MAIN, CUT AS REQUIRED.

16" VALVE TO REMAIN CLOSED UNTIL AFTER DISINFECTION & ACCEPTANCE BY SAWS

1 - 16" SOLID SLEEVE
1 - 2" BLOWOFF ASSEMBLY (TEMP.)
1 - 16"x2" THR. DI. ECCENTRIC REDUCER, M.J. (PERM.)

SCALE: 1"=50'
50 25 0 50

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
- PROPOSED SEWER MANHOLE
- PROPOSED WATER LINE — W —
- PROPOSED SEWER MAIN — SS —
- PROPOSED GAS MAIN — G —
- PROPOSED SEWER LATERAL
- PROPOSED JOINT RESTRAINT — X' — X' —
- JOINT RESTRAINT ENTIRE LENGTH

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CORLEY FARMS UNIT 3

WATER DISTRIBUTION PLAN

DATE
07/21/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

DATE	
A	2022-07-13 - CoA COMMENTS

1 2 3 4 5 6 7 8 9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
07/22/2022
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

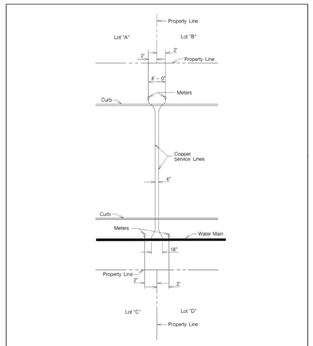
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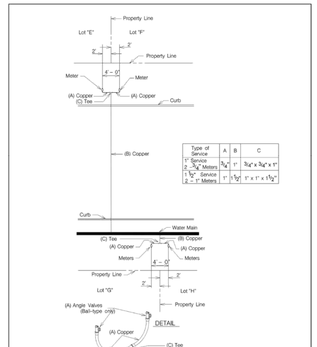
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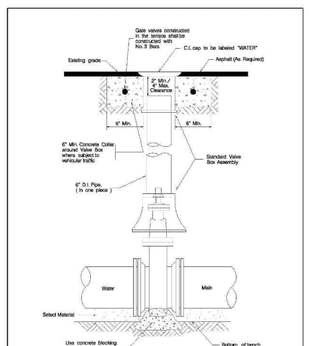
SINGLE SERVICE LINE – SINGLE METER

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

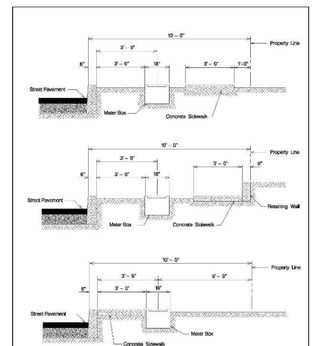


SINGLE SERVICE LINE – DUAL METER

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

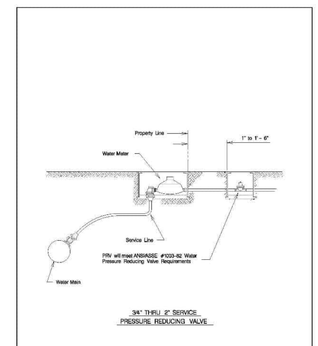


PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | INSTALLATION OF NON-GEARED GATE VALVE WITH VALVE BOX AND EXTENSION | APPROVED March 2008 | REVISED | DD–828–01 | SHEET 1. OF 1.



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

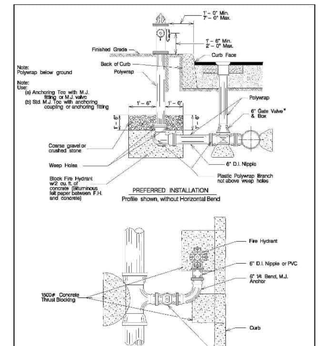
PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | TYPICAL METER BOX LOCATION (RESIDENTIAL) | APPROVED March 2008 | REVISED | DD–833–01 | SHEET 1 OF 1



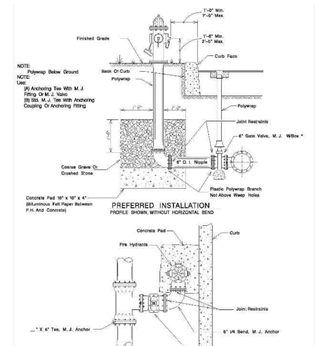
3/4" THRU 2" SERVICE PRESSURE REDUCING VALVE

Note:
For Tapping Schedule, See DD-30-09 Sheet 3 of 3

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



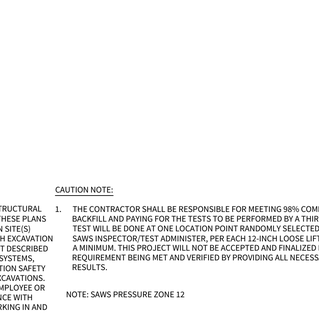
PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS | FIRE HYDRANT INSTALLATION | APPROVED March 2008 | REVISED June 2009 | DD–834–01 | SHEET 1. OF 2.



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



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



RESTRAINED LENGTH FOR TEES

PIPE SIZE (IN/S)	BRANCH SIZE (IN/S)	LENGTH OF RUN (ft.)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
6	4	5	42	31
6	4	6	7	1
6	6	5	1	1
6	6	6	59	44
8	6	5	49	37
8	6	10	11	8
8	4	5	42	31
8	4	6	1	1
8	6	5	59	44
8	6	6	39	13
8	8	10	11	8
8	8	5	77	58
8	8	6	52	39
8	8	10	30	11
8	8	15	9	1

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

RESTRAINED LENGTH FOR TEES (Cont'd)

PIPE SIZE (IN/S)	BRANCH SIZE (IN/S)	LENGTH OF RUN (ft.)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
12	4	5	42	31
12	4	6	1	1
12	6	5	59	44
12	6	6	13	1
12	8	10	1	1
12	8	5	77	58
12	8	10	77	58
12	8	15	43	33
12	10	5	1	1
12	10	6	103	82
12	10	10	88	69
12	12	12	63	36
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 materials 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 2008 | REVISED | DD–839–04 | SHEET 2 or 2

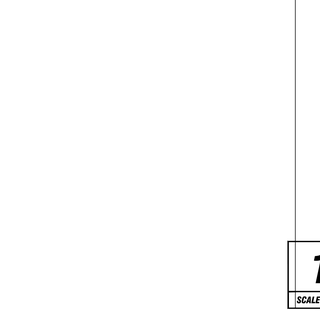
PIPE SIZE (IN/S)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
6	77	58
8	77	58
10	99	69
12	109	82

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



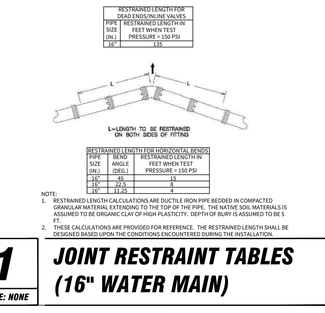
PIPE SIZE (IN/S)	ANGLE (DEG.)	LOW SIDE DEPTH	UPPER BEND LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	LOWER BEND LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	UPPER BEND LENGTH IN FEET WHEN TEST PRESSURE = 150 psi	LOWER BEND LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
6	45	5	24	6	18	5
6	22.5	5	12	4	9	3
6	11.25	5	6	2	5	2
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	2
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	16	34	7
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 materials 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 2008 | REVISED | DD–839–06 | SHEET 1 or 1



PIPE SIZE (IN/S)	SMALL END SIZE (IN/S)	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET WHEN TEST PRESSURE = 150 psi
6	4	30	23
8	4	50	24
8	6	50	24
12	4	90	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 2008 | REVISED | DD–839–07 | SHEET 1. OF 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	39	29
8	45	9	7
6	22.5	5	4
6	11.25	2	2
8	90	52	39
8	45	12	9
8	22.5	6	5
8	11.25	3	3
12	90	43	32
12	45	18	13
12	22.5	8	6
12	11.25	4	3

RESTRAINED LENGTH DESIGN

Restrained length calculations are for P.V.C. pipe bedded in compacted granular material extending to the top of the pipe.The native soil materials 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 2008 | REVISED | DD–839–08 | SHEET 1. OF 1.

* Cut to fit in meter box.

PROPERTY OF SAN ANTONIO WATER SYSTEM, SAN ANTONIO | 2" PERMANENT BLOW-OFF ASSEMBLY ON 6" & 8" MAINS | APPROVED MARCH 2008 | REVISED APRIL 2014 | DD–844–02 | SHEET 3. OF 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 | DD–844–01 | SHEET 5. OF 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. OF 5.

Note:
2 – 1 1/4" 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 2008 | 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 (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

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

L=LENGTH TO BE RESTRAINED ON BOTH SIDES OF FITTING

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 3

WATER DISTRIBUTION STANDARD DETAILS

DATE 03/22/2022

PROJECT NO. 03481.007

DRAWN BY CA/CG/XV

CHECKED BY XV/JC/AL

REVISIONS

DATE	A	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
3/22/2022

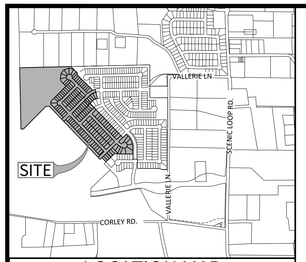
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

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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.

J:\03481007\2 Drawings\CAD\WATER DISTRIBUTION STANDARD DETAILS.dwg 2022.03.22 4:23pm cgallant



LOCATION MAP
N.T.S.

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.

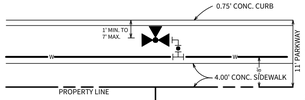
8. Backflow Prevention Devices:

- ☐ 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.

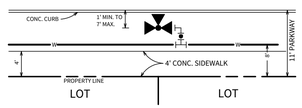
10. All meters shall be 5/8", unless otherwise noted.

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



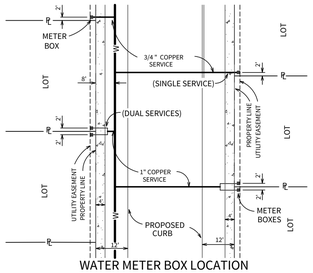
NOTE:
1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

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

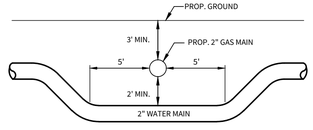


NOTE:
1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

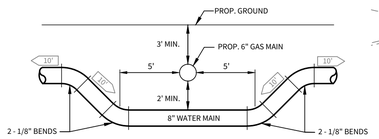
TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 58' ROW)
N.T.S.



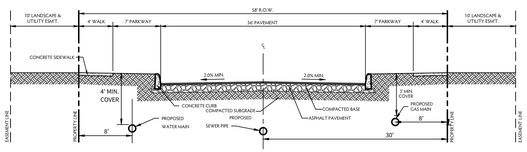
WATER METER BOX LOCATION
N.T.S.



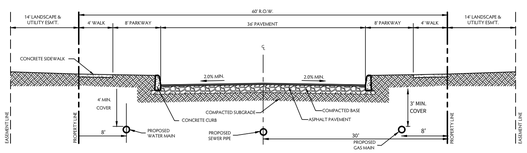
2" WATER / 2" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)



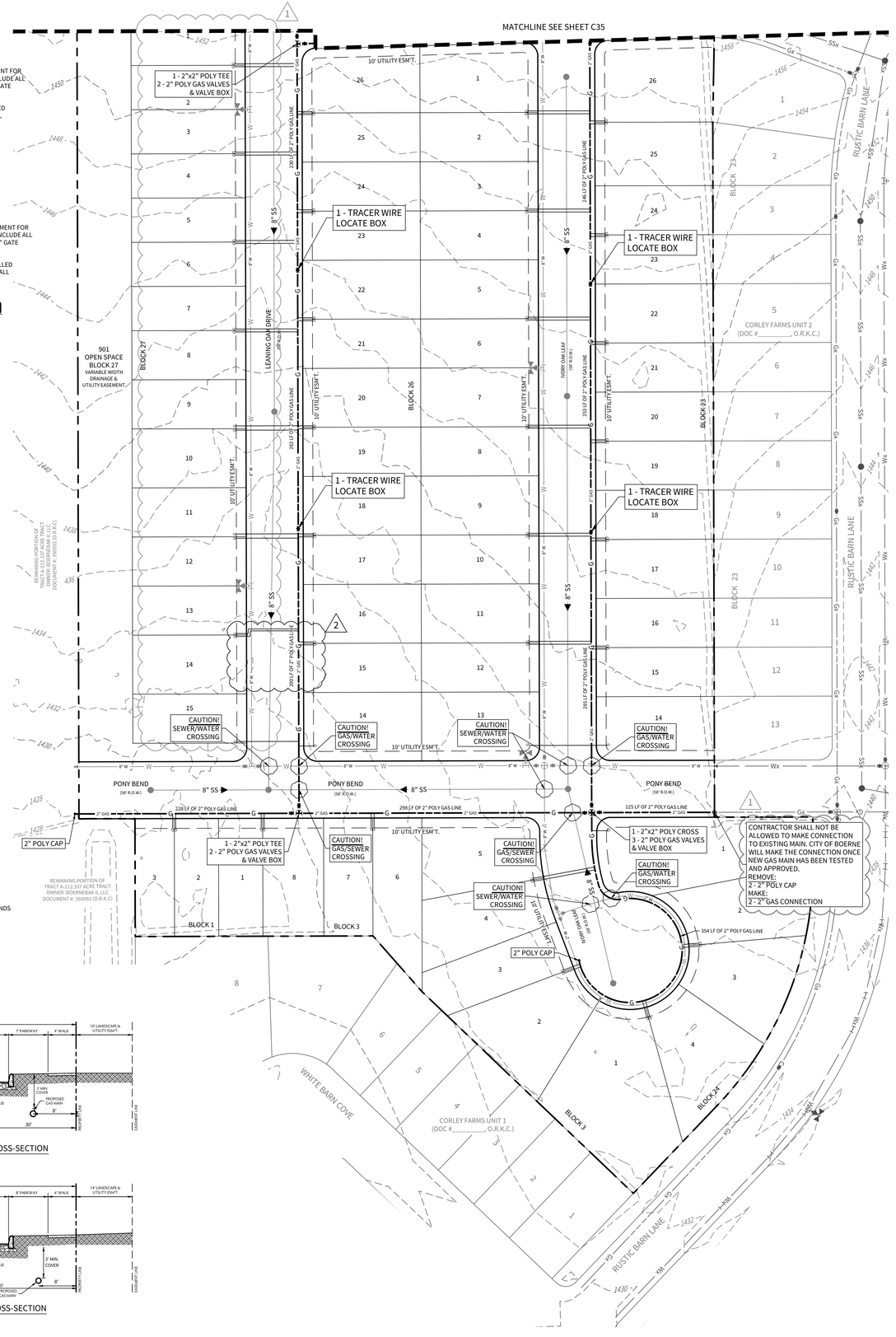
8" WATER / 6" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)



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



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





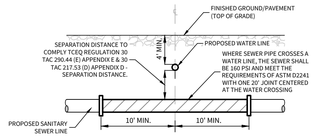
SCALE: 1"=50'
50 25 0 50

LEGEND

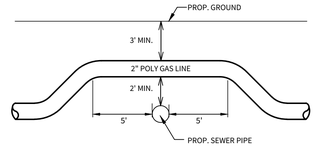
- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.C.A. EASEMENT
- EXISTING WATER LINE — Wx
- EXISTING SEWER MAIN — SSx
- EXISTING GAS MAIN — Gx
- EXISTING SEWER MANHOLE
- PROPOSED SEWER MANHOLE
- PROPOSED WATER LINE — W
- PROPOSED SEWER MAIN — SS
- PROPOSED GAS MAIN — G
- PROPOSED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

KEYNOTES

1. 20' OVERHEAD ELECTRIC EASEMENT
2. 12' SANITARY SEWER EASEMENT
3. 16' SANITARY SEWER EASEMENT



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
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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4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

CORLEY FARMS UNIT 3

NATURAL GAS DISTRIBUTION PLAN

DATE
09/07/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

DATE	
1	2022-07-13 - CoB COMMENTS
2	2022-09-07 - CoB COMMENTS

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
09/09/2022

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

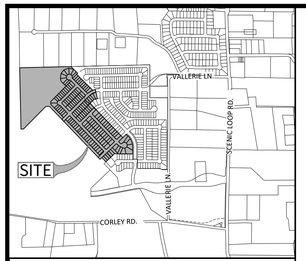
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LOCATION MAP
N.T.S.

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.

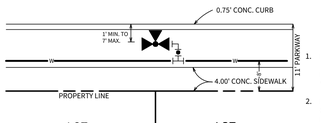
8. Backflow Prevention Devices:

- ☐ 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.

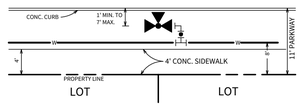
10. All meters shall be 5/8", unless otherwise noted.

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



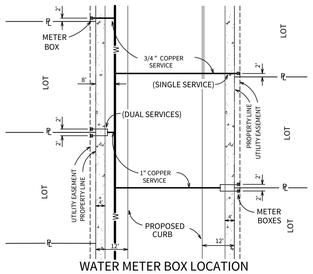
NOTE:
1. EXCLUSIVE OF THE TEE, PAYMENT FOR THE FIRE HYDRANT SHALL INCLUDE ALL FITTINGS, 6" D.I. PIPE AND 6" GATE VALVE & BOX.
2. FIRE HYDRANT TO BE INSTALLED OUTSIDE OF THE LIMITS OF ALL PROPOSED SIDEWALKS.

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

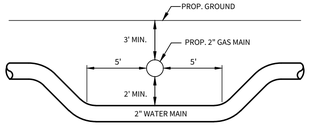


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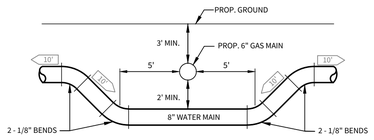
TYPICAL FIRE HYDRANT DETAIL (4' SIDEWALK / 58' ROW)
N.T.S.



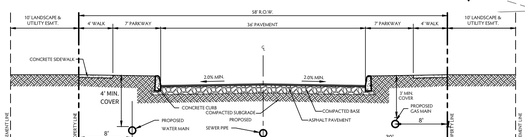
WATER METER BOX LOCATION
N.T.S.



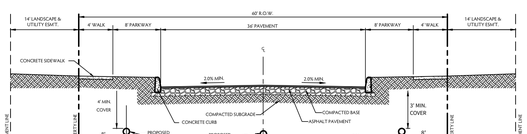
2" WATER / 2" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)



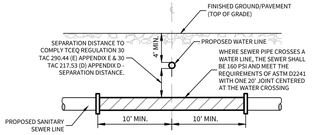
8" WATER / 6" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)



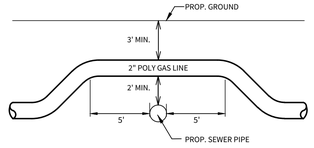
TYPICAL "NEIGHBORHOOD RESIDENTIAL" STREET CROSS-SECTION
N.T.S.



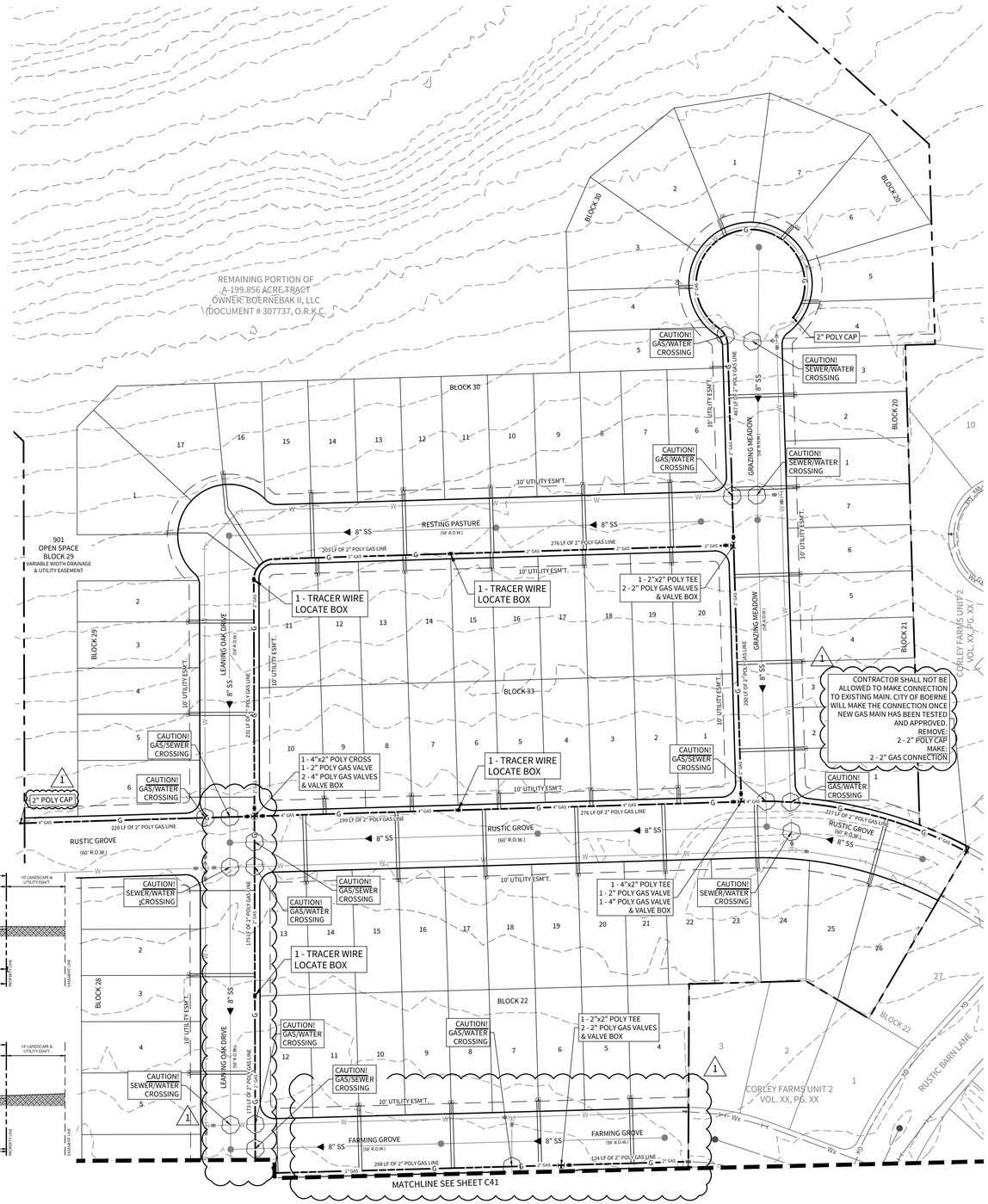
TYPICAL "NEIGHBORHOOD COLLECTOR" STREET CROSS-SECTION



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
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'





LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.C.A. EASEMENT
- EXISTING WATER LINE — Wx —
- EXISTING SEWER MAIN — SSx —
- EXISTING GAS MAIN — Gx —
- 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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EST. 1980

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2022-07-13	CUDE COMMENTS

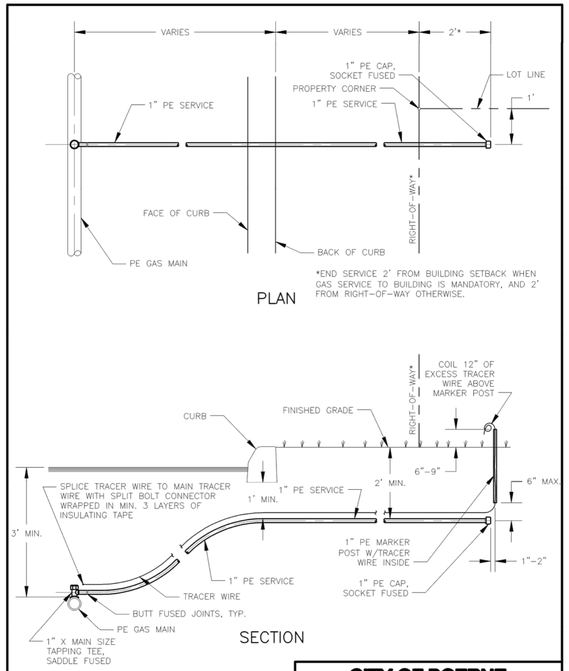
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JAVIER CASTELLO
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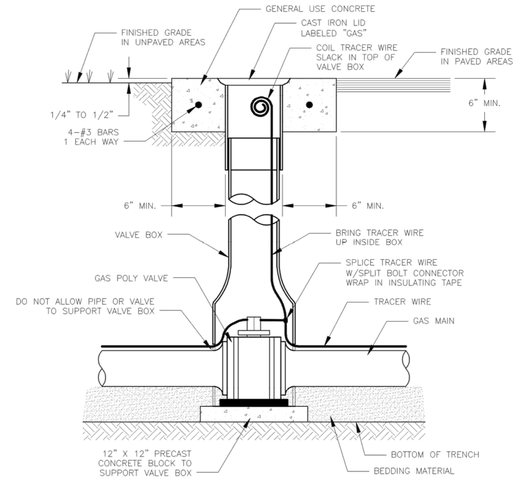
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CITY OF BOERNE

GAS SERVICE

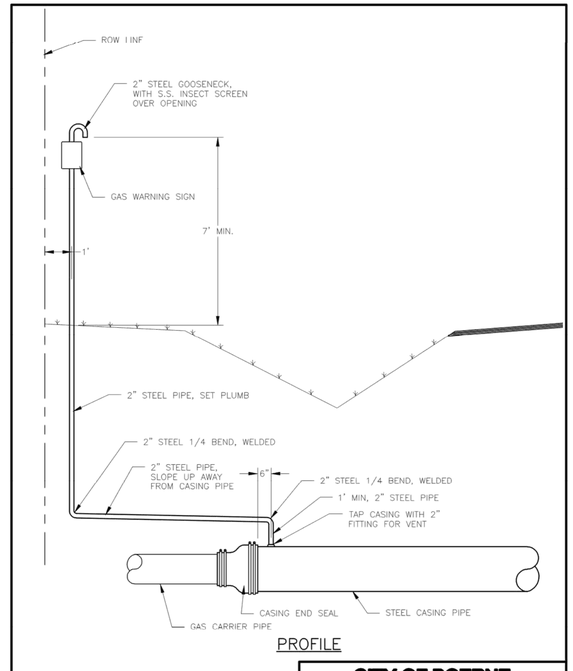
SCALE:	DRAWING No.	DATE:
N.T.S.	02560-1.3	JULY 2015



CITY OF BOERNE

GAS VALVE AND VALVE BOX

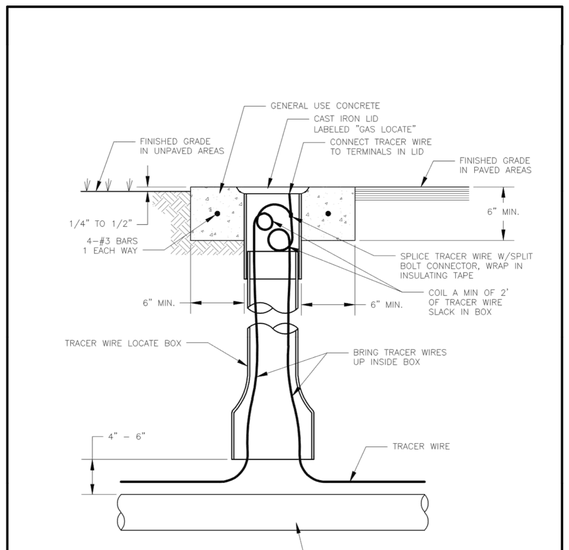
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N.T.S.	02560-1.0	JULY 2015



CITY OF BOERNE

CASING VENT FOR GAS MAIN UNDERCROSSING

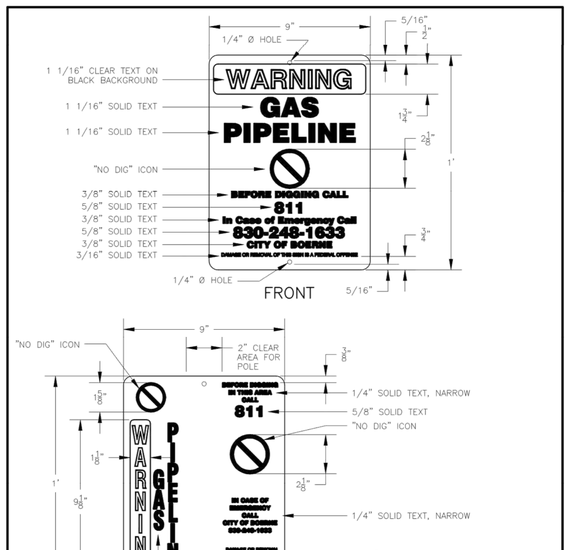
SCALE:	DRAWING No.	DATE:
N.T.S.	02224-1.1	JULY 2015



CITY OF BOERNE

TRACER WIRE LOCATE BOX

SCALE:	DRAWING No.	DATE:
N.T.S.	02560-1.2	JULY 2015



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

CITY OF BOERNE

GAS WARNING SIGN

SCALE:	DRAWING No.	DATE:
N.T.S.	02560-1.1	JULY 2015

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03/22/2022

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DRAWN BY
CA/CG/XV

CHECKED BY
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REVISIONS

DATE	1	2	3	4	5	6	7	8	9

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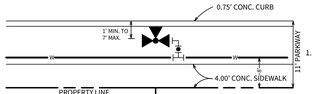
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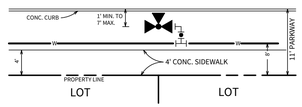


LOCATION MAP
N.T.S.



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 / 60' R.O.W.)
N.T.S.



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

BENCHMARK **BM-1**

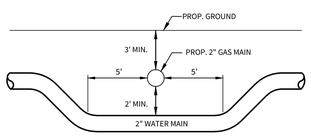
BENCHMARK TO BE SET BY ENGINEER PRIOR TO CONSTRUCTION.

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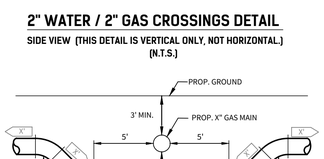
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TRENCH EXCAVATION PROTECTION
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION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

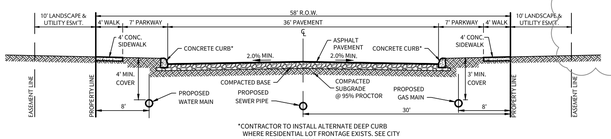


WATER METER BOX LOCATION
N.T.S.



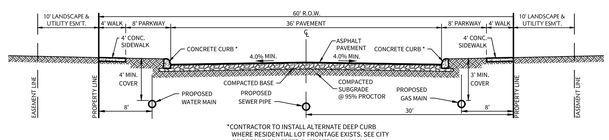
2" WATER / 2" GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)

WATER / GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
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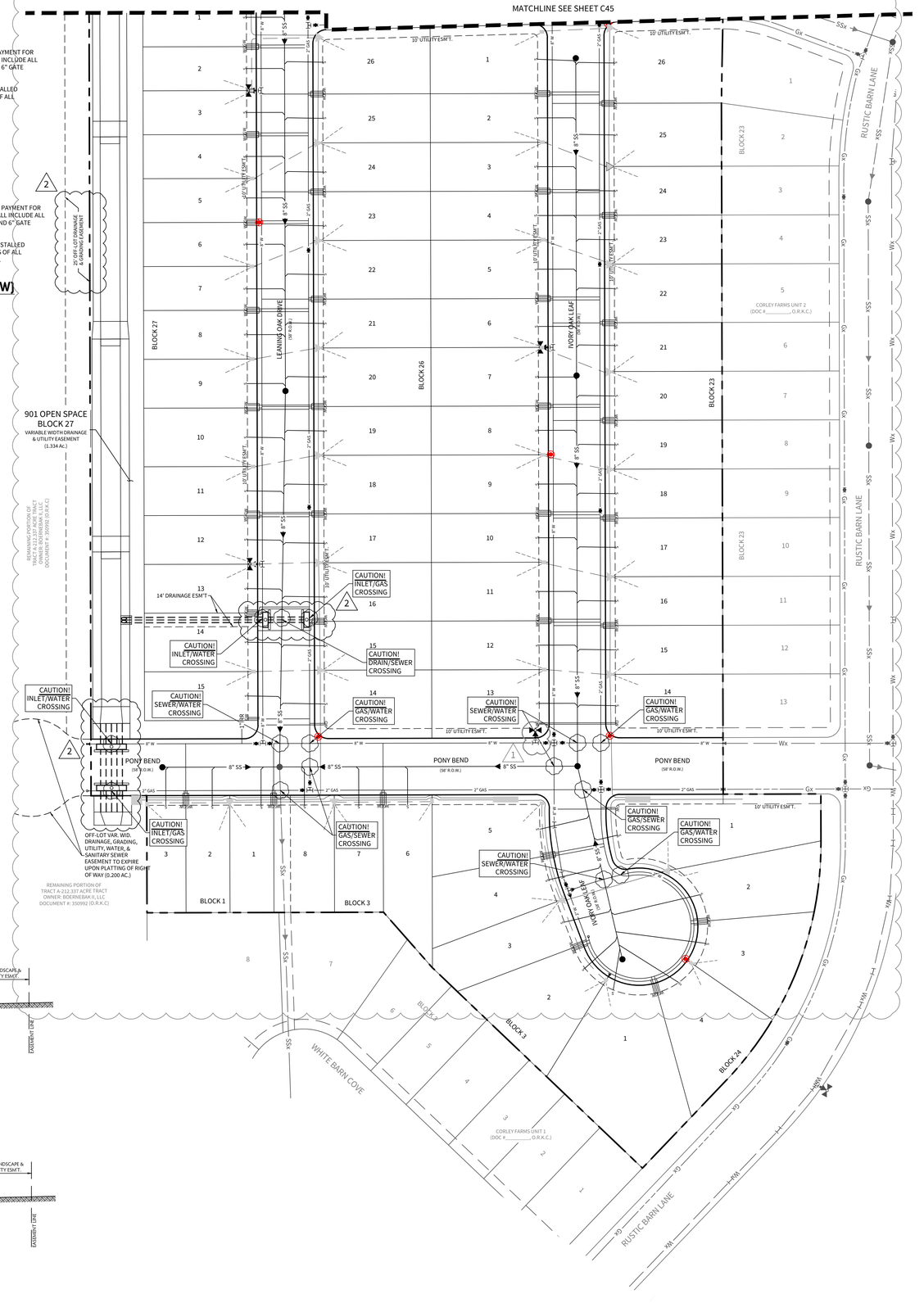
*CONTRACTOR TO INSTALL ALTERNATE DEEP CURB WHERE RESIDENTIAL LOT FRONTAGE EXISTS. SEE CITY OF BOERNE CONCRETE CURB DETAIL 02502-2.0

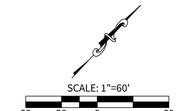
TYPICAL "RESIDENTIAL LOCAL" STREET CROSS SECTION
N.T.S.



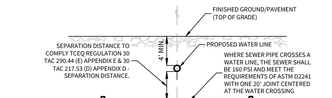
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TYPICAL "RESIDENTIAL COLLECTOR" STREET CROSS SECTION
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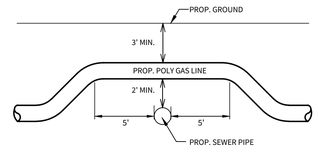




LEGEND
- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING WATER LINE — Wx
- EXISTING SEWER MAIN — SSx
- EXISTING GAS MAIN — Gx
- EXISTING SEWER MANHOLE
- EXISTING FIRE HYDRANT
- PROPOSED SEWER MANHOLE
- PROPOSED WATER LINE — W
- PROPOSED SEWER MAIN — SS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



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



SEWER / GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
(N.T.S.)
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CUDEENGINEERS.COM
CUDE ENGINEERS
4122 Pond Hill Road, Suite 101
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CORLEY FARMS UNIT 3

UTILITY LAYOUT PLAN

DATE
09/08/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

DATE	
2022-07-13	CUDE COMMENTS
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STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
09/09/2022
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

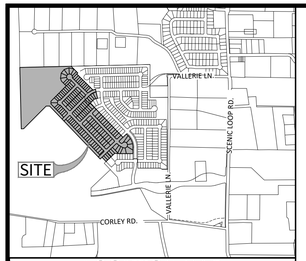
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P:\03481.007\2-Drawings\C44 UTILITY LAYOUT.dwg 2022/09/08 9:22:16am cjr@cude



LOCATION MAP
N.T.S.

BENCHMARK **BM-1**

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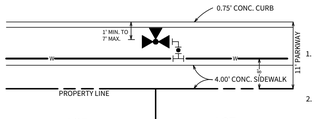
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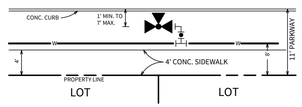
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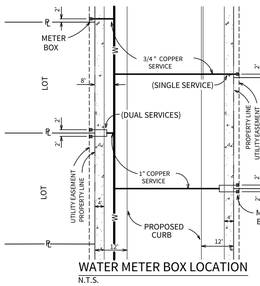
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N.T.S.

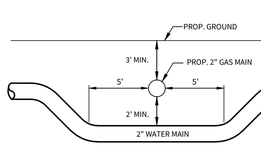


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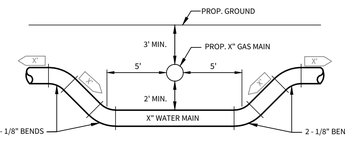
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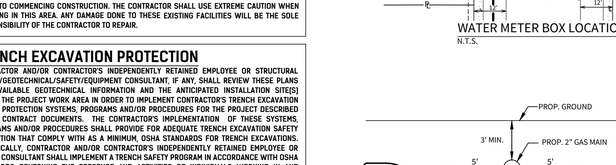
WATER METER BOX LOCATION
N.T.S.



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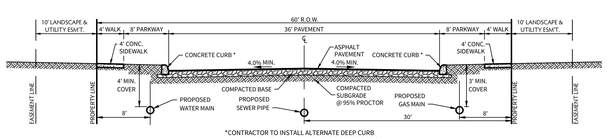


WATER / GAS CROSSINGS DETAIL
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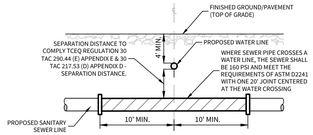
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TYPICAL "RESIDENTIAL LOCAL" STREET CROSS SECTION
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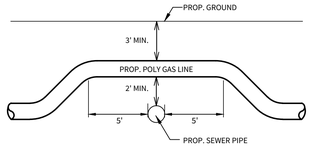


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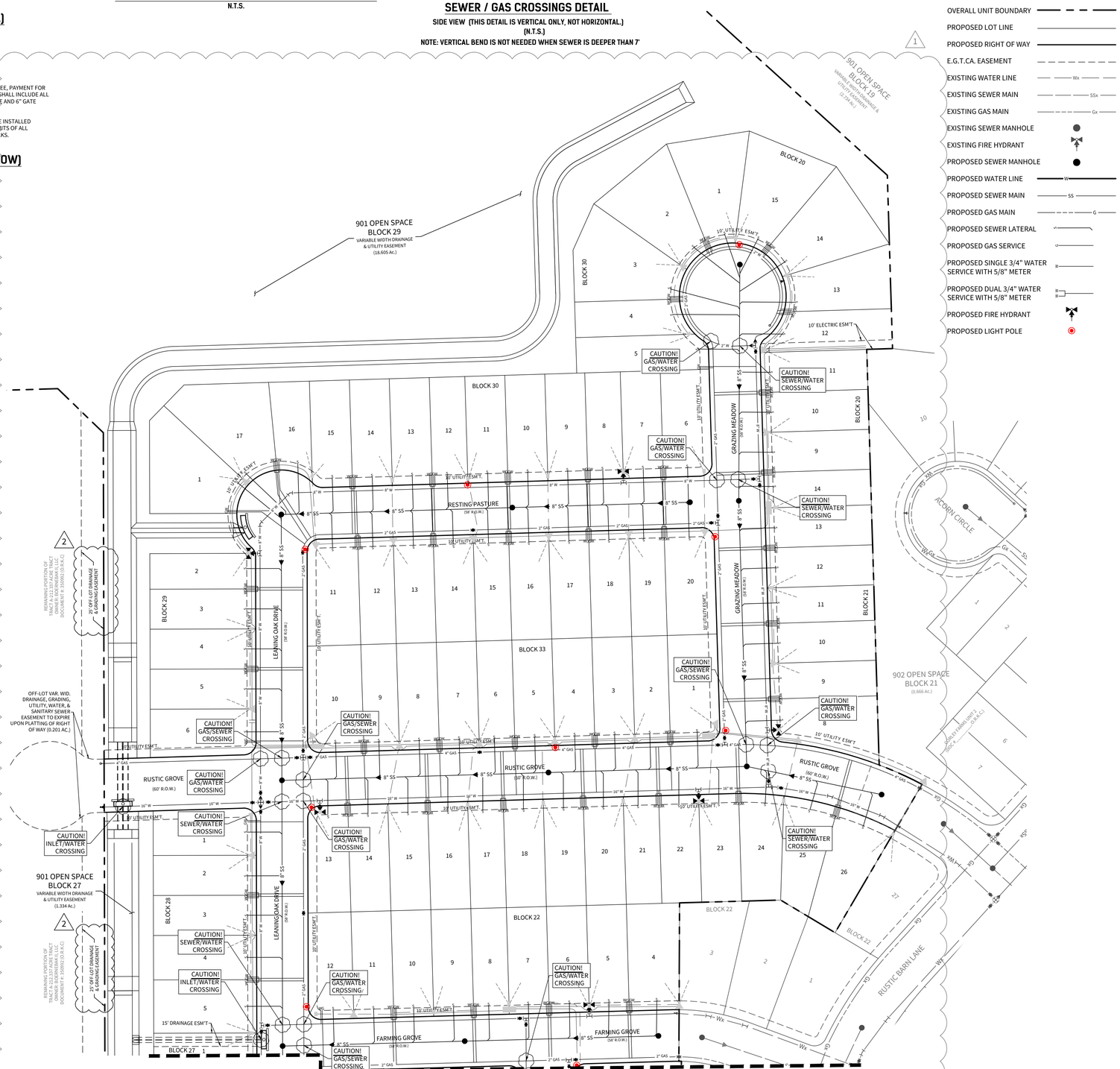
TYPICAL "RESIDENTIAL COLLECTOR" STREET CROSS SECTION
N.T.S.



TYPICAL SANITARY SEWER/ WATER CROSSING DETAIL
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SEWER / GAS CROSSINGS DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
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LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.C.A. EASEMENT
- EXISTING WATER LINE — Wx
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- EXISTING GAS MAIN — Gx
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- PROPOSED SEWER MANHOLE
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- PROPOSED SEWER LATERAL — ss
- PROPOSED GAS SERVICE — g
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- PROPOSED DUAL 3/4" WATER SERVICE WITH 5/8" METER — w w
- PROPOSED FIRE HYDRANT
- PROPOSED LIGHT POLE

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CUDE ENGINEERS

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

CORLEY FARMS UNIT 3

UTILITY LAYOUT PLAN

DATE
09/08/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

DATE	REVISIONS
2022-07-13	CUDE COMMENTS
2022-09-07	CUDE COMMENTS

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
09/09/2022
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

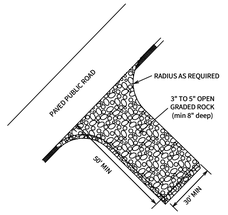
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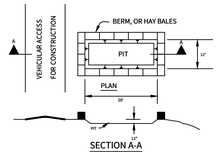
LOCATION MAP
N.T.S.



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.



GENERAL NOTES:

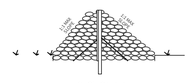
- Detail above illustrates minimum dimensions. Pit can be increased in size depending on expected frequency of use. construction traffic.
- If hay bales are used, they shall be placed in accordance with details shown on Exhibit for hay bales.

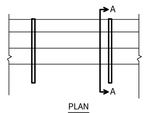
Washout pit shall be located in an area easily accessible to

Washout pit shall not be located in areas subject to inundation from storm water runoff.

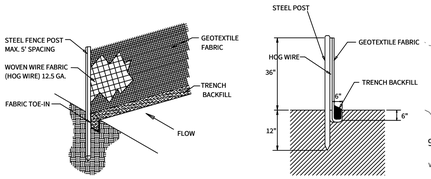
- Washout pit shall be lined with a 10-mil thick polyethylene sheeting free of holes, tears and other defects.

3 CONCRETE TRUCK WASHOUT PIT
N.T.S.





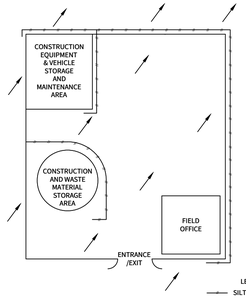
5 ROCK BERM W/ SILT FENCE DETAIL
N.T.S.



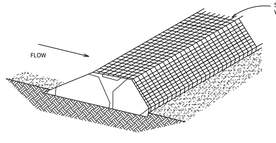
SILT FENCE DETAIL

SECTION DETAIL

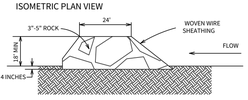
2 STANDARD SILT FENCE
N.T.S.



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

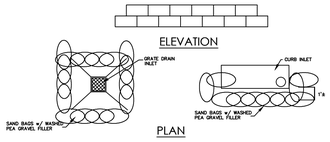


ISOMETRIC PLAN VIEW



SECTION DETAIL

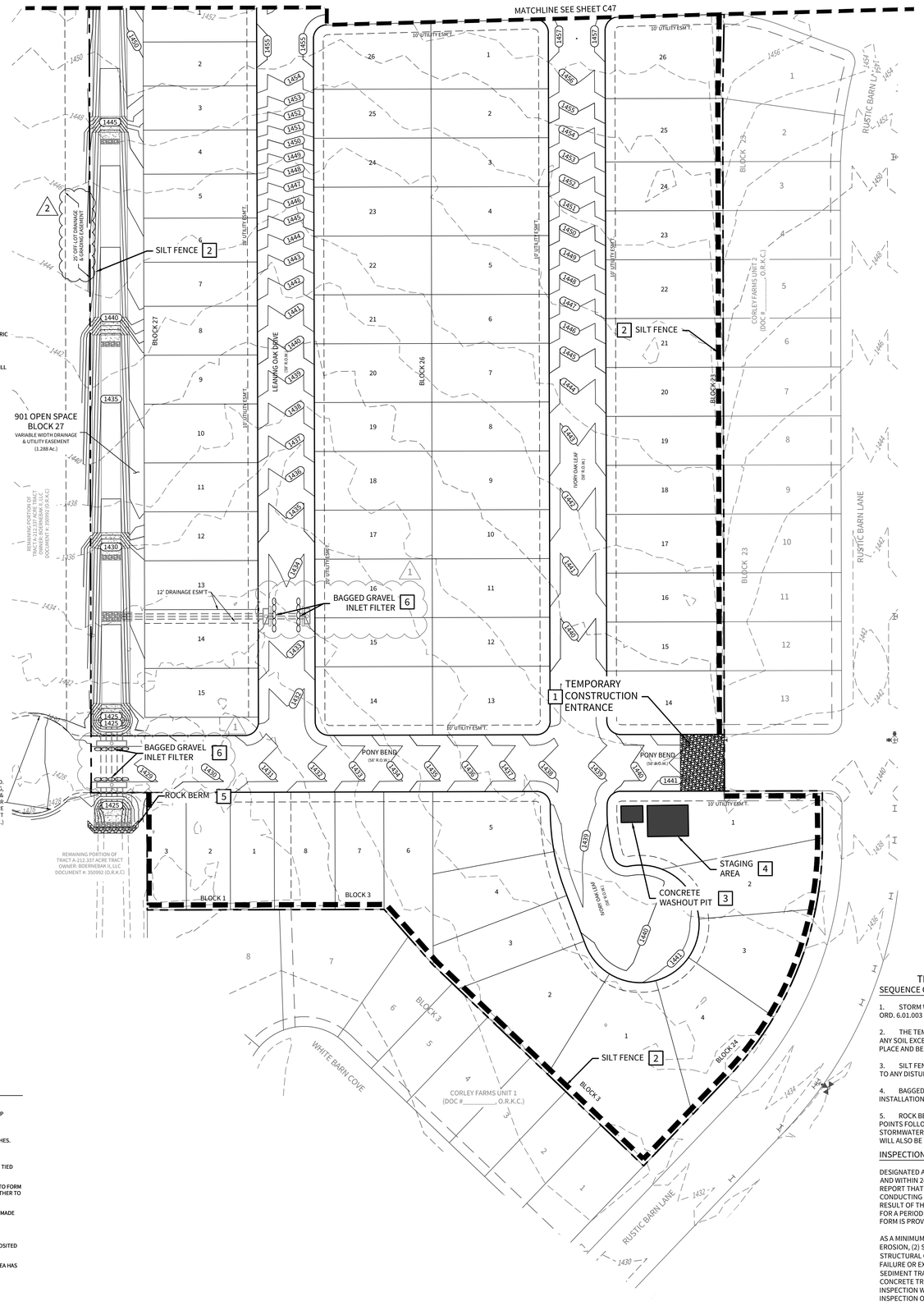
ROCK BERM
N.T.S.



BAGGED GRAVEL INLET FILTER NOTES

1. THE GRAVEL BAG MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, POLYAMIDE OR COTTON BURLAP WOVEN FABRIC, MINIMUM UNIT WEIGHT 4 OZ/YD 2 , MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT.
2. THE BAG LENGTH SHOULD BE 24 INCHES, WIDTH SHOULD BE 18 INCHES AND THICKNESS SHOULD BE 6 INCHES.
3. THE GRAVEL BAGS SHOULD BE FILLED WITH ¾" GRAVEL .
4. WHEN A GRAVEL BAG IS FILLED WITH GRAVEL, THE OPEN END OF THE GRAVEL BAG SHOULD BE STAPLED OR TIED WITH NYLON OR POLY CORD.
5. THE GRAVEL BAGS SHOULD BE PLACED AS SHOWN ON THE DETAIL. THE GRAVEL BAGS SHALL BE STACKED TO FORM A CONTINUOUS BARRIER AROUND THE INLETS. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.
6. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
7. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.
8. REMOVE SEDIMENT WHEN BUILDUP REACHES A DEPTH OF 3 INCHES. REMOVED SEDIMENT SHOULD BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
9. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

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



SCALE: 1"=60'
60 30 0 60

LEGEND

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

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:

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2. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION
3. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.
4. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.
5. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE, ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

INSPECTIONS:

DESIGNATED AND QUALIFIED PERSON(S) SHALL INSPECT POLLUTION CONTROL MEASURES EVERY SEVEN DAYS AND WITHIN 24 HOURS AFTER A STORM EVENT GREATER THAN 0.5 INCHES OF RAINFALL, AN INSPECTION REPORT THAT SUMMARIZES THE SCOPE OF THE INSPECTION, NAMES AND QUALIFICATIONS OF PERSONNEL CONDUCTING THE INSPECTION, DATE OF THE INSPECTION, MAJOR OBSERVATIONS, AND ACTIONS TAKEN AS A RESULT OF THE INSPECTION SHALL BE RECORDED AND MAINTAINED AS PART OF STORM WATER TPDES DATA FOR A PERIOD OF THREE YEARS AFTER THE DATE OF THE INSPECTION. COPY OF THE INSPECTION REPORT FORM IS PROVIDED IN THIS STORM WATER POLLUTION PREVENTION PLAN.

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CORLEY FARMS UNIT 3

STORM WATER POLLUTION PREVENTION PLAN

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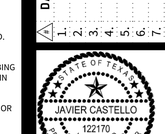
PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

REVISIONS

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B	2022-09-07 - CoB COMMENTS



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TBPE No. 455
TBPLS No. 10048500

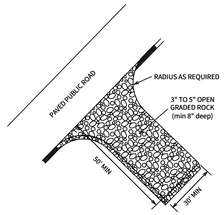
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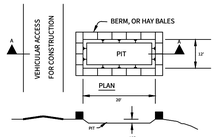
LOCATION MAP
N.T.S.



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.



GENERAL NOTES:

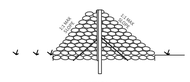
- Detail above illustrates minimum dimensions. Pit can be increased in size depending on expected frequency of use, construction traffic,
- If hay bales are used, they shall be placed in accordance with details shown on Exhibit for hay bales.

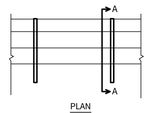
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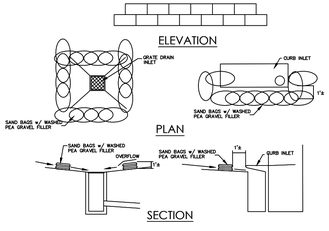
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3 CONCRETE TRUCK WASHOUT PIT
N.T.S.





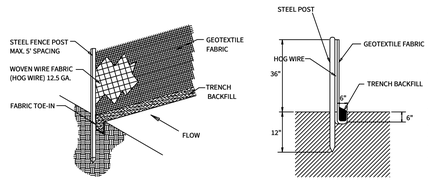
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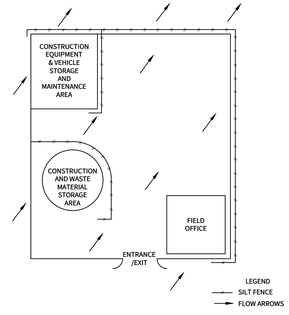
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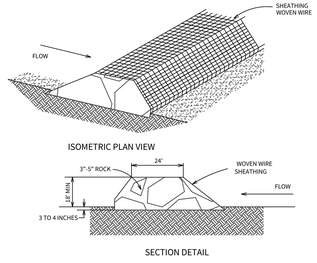
6 BAGGED GRAVEL INLET FILTER NOTES
N.T.S.



2 STANDARD SILT FENCE
N.T.S.



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



ROCK BERM
N.T.S.

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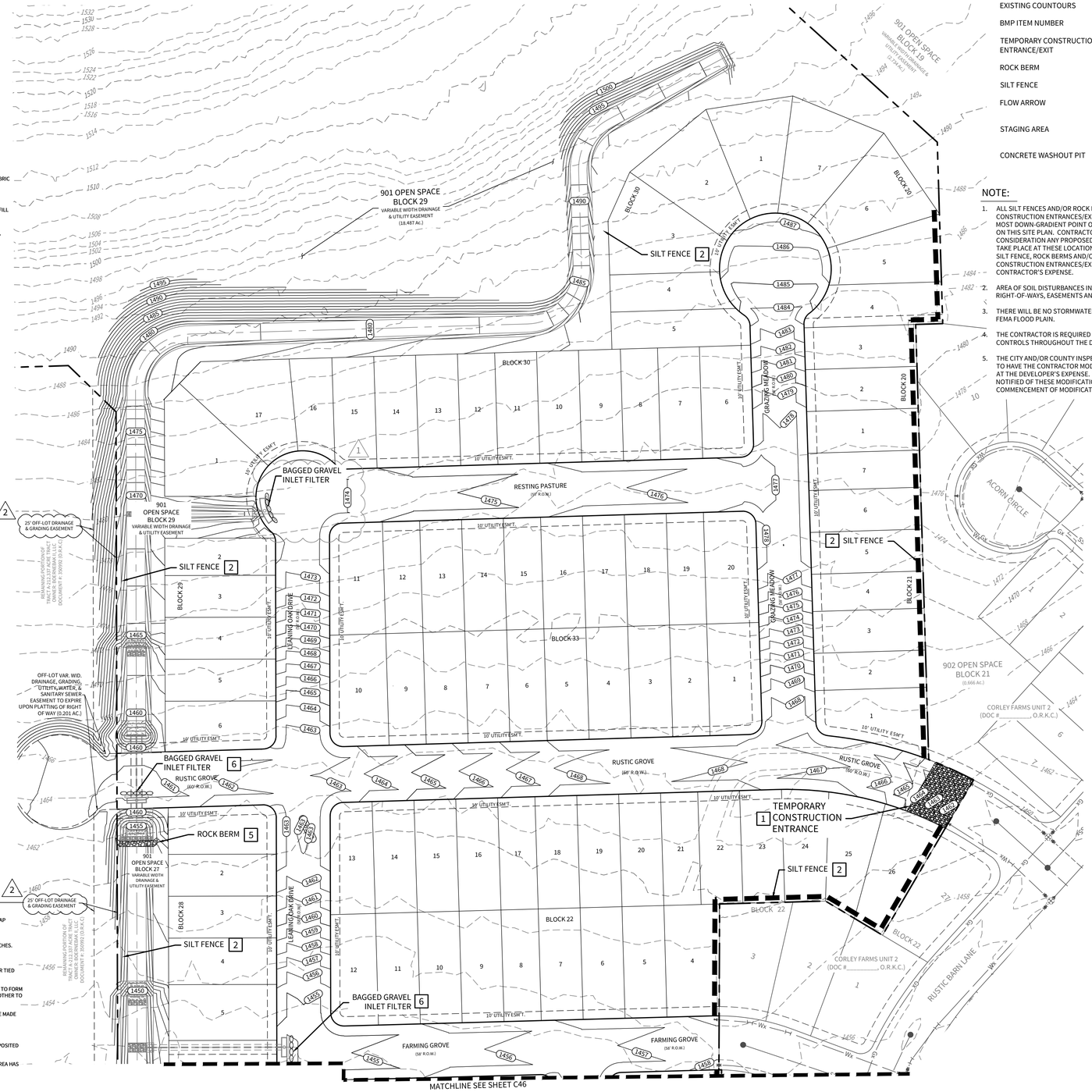
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SCALE: 1"=60'
60 30 0 60

LEGEND

- OVERALL UNIT BOUNDARY
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- ROCK BERM
- SILT FENCE
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CORLEY FARMS UNIT 3

STORM WATER POLLUTION PREVENTION PLAN

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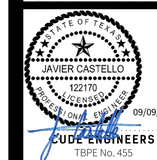
PROJECT NO.
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DRAWN BY
CA/CG/XV

CHECKED BY
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REVISIONS

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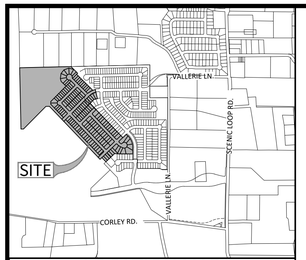
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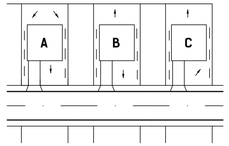
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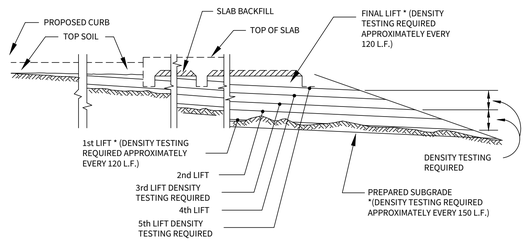
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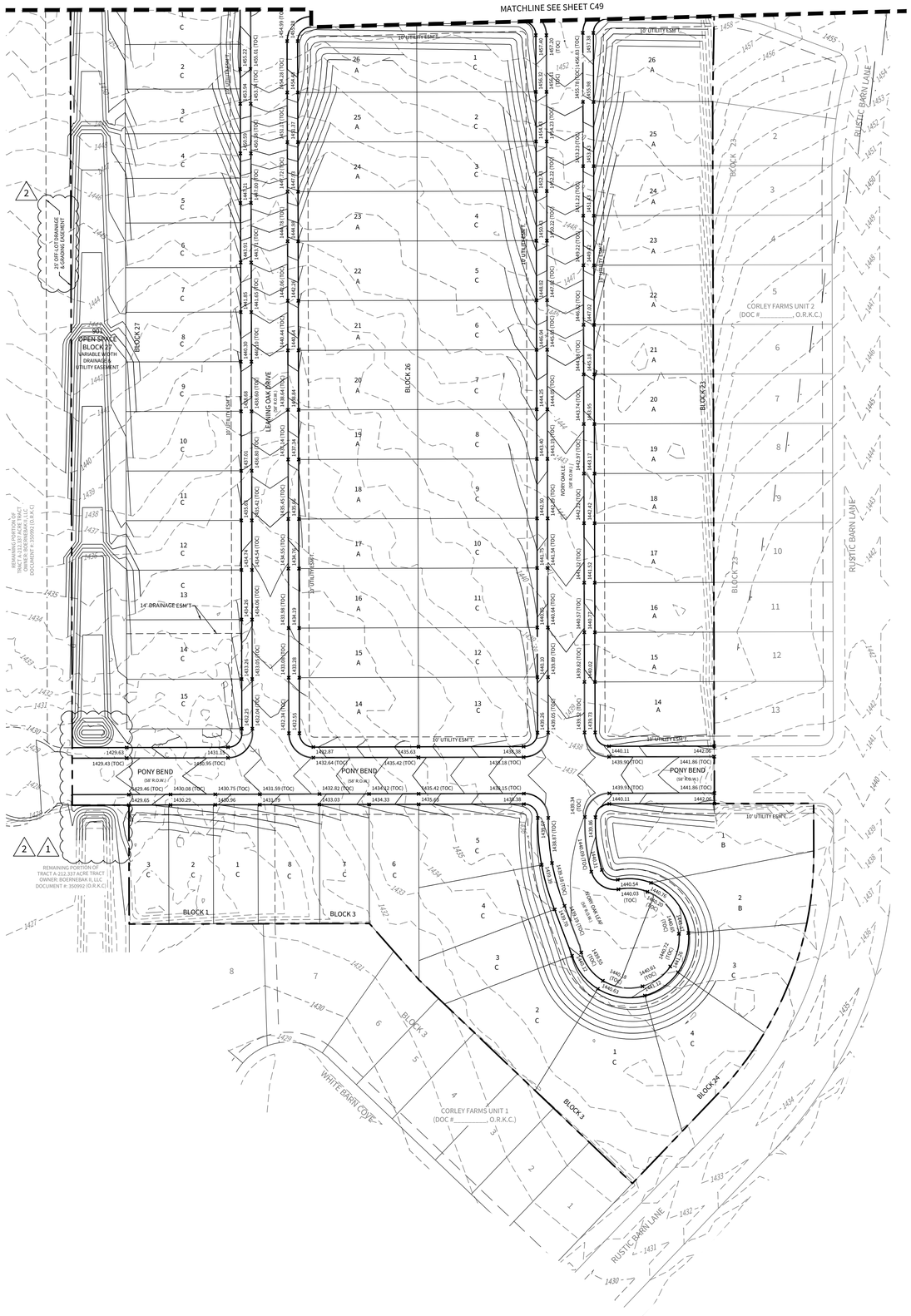
LOCATION MAP
N.T.S.



TYPICAL LOT SITE PLAN
N.T.S.



DENSITY TEST FREQUENCY
NOT TO SCALE

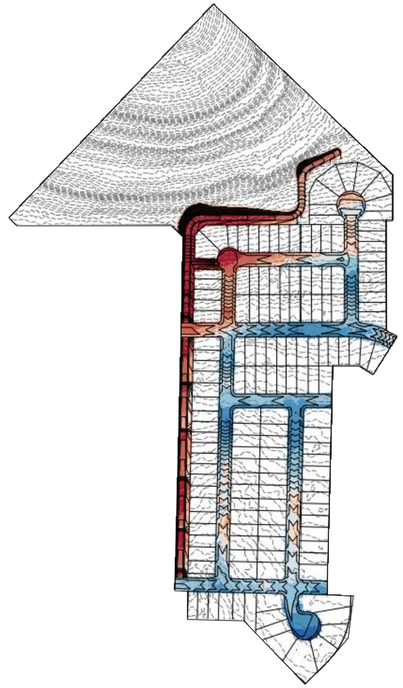


SCALE: 1"=60'
60 30 0 60

LEGEND

- OVERALL UNIT BOUNDARY
- 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 (65'-74')
- BUILDING PAD (75'-79')
- BUILDING PAD (LESS THAN 65')

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	



CUT & FILL HEAT MAP

N.T.S.

Cut Fill Table			
Unit 3	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
STREETS	5,906.74	20,825.92	14,919.18(FILL)
DRAINS	25,083.75	19.69	25,064.06 (CUT)
Total	30,990.49	20,845.61	10,144.88 (CUT)

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).

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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.

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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.

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C. Fills shall be tested a maximum of each eighteen inches (18") of fill.
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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:

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3. MINIMUM SLAB EXPOSURE IS 1.0'.
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CORLEY FARMS UNIT 3

PUBLIC GRADING PLAN

DATE
09/07/2022

PROJECT NO.
03481.007

DRAWN BY
CA/CG/XV

CHECKED BY
XV/JC/AL

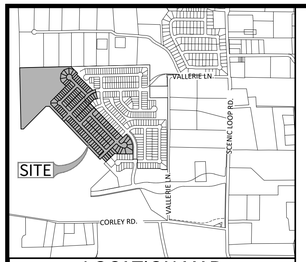
REVISIONS

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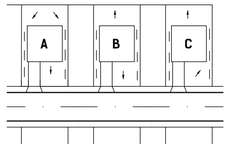
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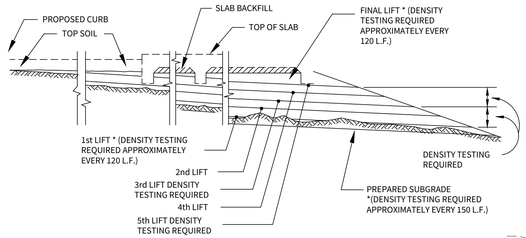
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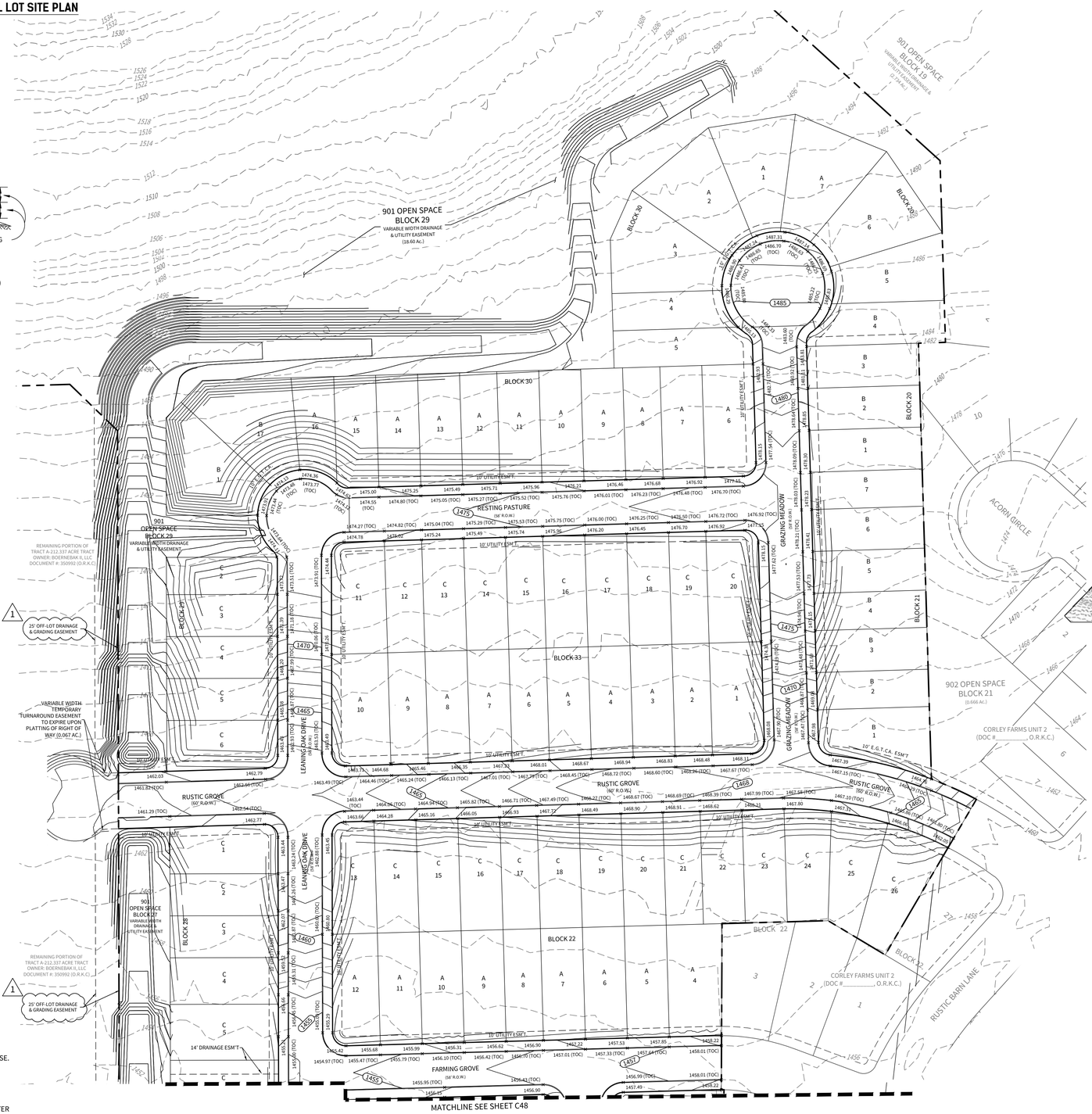
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N.T.S.



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DENSITY TEST FREQUENCY
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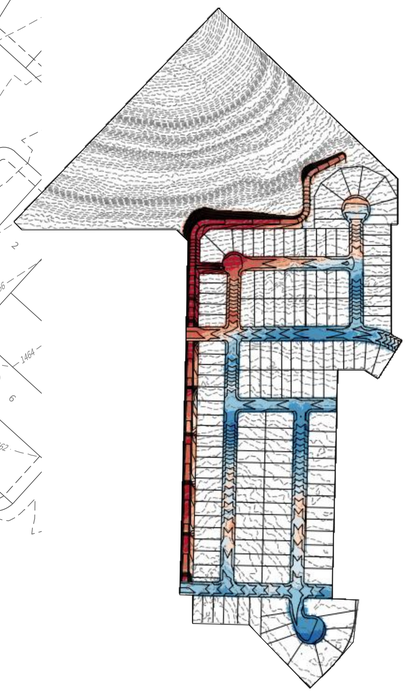
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SCALE: 1"=60'
60 30 0 60

LEGEND
- OVERALL UNIT BOUNDARY
- 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
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- BUILDING PAD (75'-79')
- BUILDING PAD (LESS THAN 65')

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



CUT & FILL HEAT MAP
N.T.S.

Cut Fill Table			
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STREETS	5,906.74	20,825.92	14,919.18(FILL)
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REVISIONS
DATE
A 2022-09-07 - CoA COMMENTS
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C49

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