STREET AND DRAINAGE CONSTRUCTION PLANS

- C0 - OVERALL COVER SHEET
- C1 - ULTIMATE MASTER DRAINAGE PLAN
- C2 - ULTIMATE MASTER DRAINAGE PLAN
- C3 - STREET PLAN & PROFILE - PIAZZA BLVD
- C4 - STREET PLAN & PROFILE - PIAZZA BLVD
- C5 - STREET PLAN & PROFILE - PIAZZA BLVD
- C6 - STREET PLAN & PROFILE - PIAZZA BLVD
- C7 - STREET PLAN & PROFILE - VERONA BLVD
- C8 - STREET PLAN & PROFILE - VERONA BLVD
- C9 - STREET PLAN & PROFILE - VERONA BLVD
- C10 - STREET PLAN & PROFILE - VIA SICILIA
- C11 - STREET PLAN & PROFILE - TORINO WAY
- C12 - STEET PLAN & PROFILE - VIA LUCCA
- C13 - MONTANIO DR ABANDONMENT PLAN
- C14 - TRAFFIC SIGNAGE PLAN
- C15 - TRAFFIC SIGNAGE PLAN
- C16 - STANDARD STREET DETAILS
- C17 - TXDOT DETAILS - PEDESTRIAN FACILITIES
- C18 - TXDOT DETAILS - SIGN MOUNTING DETAILS
- C19 - TXDOT DETAILS - PAVEMENT MARKINGS & GUARD RAILS
- C20 - DRAIN PLAN & PROFILE - DRAIN 'A'
- C21 - DRAIN PLAN & PROFILE - DRAIN 'A'
- C22 - DRAIN PLAN & PROFILE - DRAIN 'B'
- C23 - DRAIN PLAN & PROFILE - DRAIN 'C'
- C24 - DRAIN PLAN & PROFILE - DRAIN 'C'
- C25 - DRAIN PLAN & PROFILE - DRAIN 'C'
- C26 - DRAIN PLAN & PROFILE - DRAIN 'D'
- C27 - DRAIN PLAN & PROFILE - DRAIN 'D'
- C28 - DRAIN PLAN & PROFILE - DRAIN 'E'
- C29 - DRAIN PLAN & PROFILE - DRAIN 'E'
- C30 - DRAIN PLAN & PROFILE - DRAIN 'E'
- C31 - DRAIN PLAN & PROFILE - DRAIN 'F'
- C32 - DRAIN PLAN & PROFILE - DRAIN 'G'
- C33 - DRAIN PLAN & PROFILE - DRAIN 'G'
- C34 - DRAIN PLAN & PROFILE - DRAIN 'G'
- C35 - DRAIN PLAN & PROFILE - DRAIN 'G'
- C36 - DRAIN PLAN & PROFILE - DRAIN 'G'
- C37 - DRAIN PLAN & PROFILE - DRAIN 'G'
- C38 - DRAIN PLAN & PROFILE - DRAIN 'G'
- C39 - DRAIN PLAN & PROFILE - DRAIN 'H'
- C40 - DRAIN PLAN & PROFILE - DRAIN 'J'
- C41 - DRAIN PLAN & PROFILE - DRAIN 'K'
- C42 - DETENTION POND '1' PLAN
- C43 - DETENTION POND '2' PLAN
- C44 - DETENTION POND '2' PLAN
- C45 - DETENTION POND '3' PLAN
- C46 - DETENTION POND '3' PLAN
- C47 - DETENTION POND '4' PLAN
- C48 - DETENTION POND '4' PLAN
- C49 - DETENTION POND DETAILS
- C50 - CURB INLET DETAILS
- C51 - DRAINAGE DETAILS
- C52 - DRAINAGE DETAILS
- C53 - DRAINAGE DETAILS
- C54 - DRAINAGE DETAILS

WATER DISTRIBUTION CONSTRUCTION PLANS

- C55 - ONSITE WATER DISTRIBUTION PLAN
- C56 - ONSITE WATER DISTRIBUTION PLAN
- C57 - WATER DISTRIBUTION STANDARD DETAILS

MISCELLANEOUS CONSTRUCTION PLANS

- C58 - UTILITY LAYOUT PLAN
- C59 - UTILITY LAYOUT PLAN
- C60 - ONSITE STORM WATER POLLUTION PREVENTION PLAN
- C61 - ONSITE STORM WATER POLLUTION PREVENTION PLAN
- C62 - ONSITE STORM WATER POLLUTION PREVENTION PLAN
- C63 - ONSITE STORM WATER POLLUTION PREVENTION PLAN
- C64 - ONSITE STORM WATER POLLUTION PREVENTION PLAN
- C65 - ONSITE STORM WATER POLLUTION PREVENTION PLAN
- C66 - ONSITE STORM WATER POLLUTION PREVENTION DETAILS

OFFSITE WATER DISTRIBUTION CONSTRUCTION PLANS

- C67 - OFFSITE WATER DISTRIBUTION - PHASE I
- C68 - OFFSITE WATER DISTRIBUTION - PHASE I
- C69 - OFFSITE WATER DISTRIBUTION - PHASE I
- C70 - OFFSITE WATER DISTRIBUTION STANDARD DETAILS

OFFSITE MISCELLANEOUS CONSTRUCTION PLANS

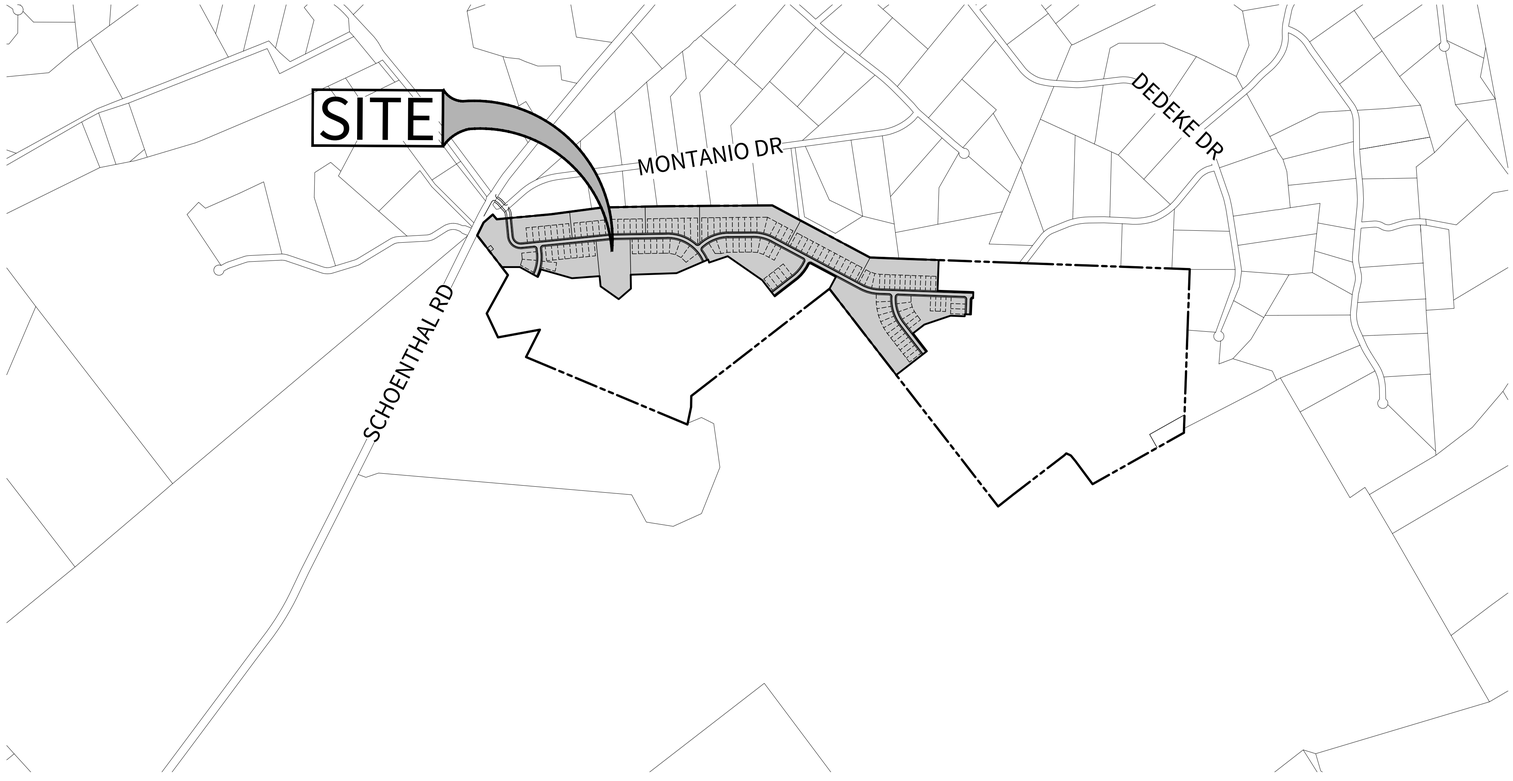
- C71 - OFFSITE STORM WATER POLLUTION PREVENTION PLAN
- C72 - OFFSITE STORM WATER POLLUTION PREVENTION PLAN
- C73 - OFFSITE STORM WATER POLLUTION PREVENTION PLAN

COMAL COUNTY SCHOENTHAL MUNICIPAL UTILITY DISTRICT

CIVIL CONSTRUCTION DOCUMENTS

CONTESSA UNIT 1

DISTRICT:	DEVELOPER:	DESIGN ENGINEER:	SURVEYOR:	DISTRICT ENGINEER:
COMAL COUNTY SCHOENTHAL MUNICIPAL UTILITY DISTRICT CONTACT PERSON: JULIANNE KUGLE 1330 POST OAK BOULEVARD, SUITE 2650 HOUSTON, TX 77056 PH: (713) 850-9000	MERITAGE HOMES OF TEXAS, L.L.C. CONTACT PERSON: TONDA ALEXANDER 2722 W. BITTERS ROAD, SUITE 200 SAN ANTONIO, TX 78231 PH: (210) 298-4294	CUDE ENGINEERS CONTACT PERSON: JAVIER CASTELLO 4122 POND HILL ROAD, SUITE 101 SAN ANTONIO, TEXAS 78231 PHONE :(210) 681-2951	CUDE ENGINEERS CONTACT PERSON: CHRIS WALTERSCHEIDT 4122 POND HILL ROAD, SUITE 101 SAN ANTONIO, TEXAS 78231 PHONE :(210) 681-2951	CUDE ENGINEERS CONTACT PERSON: JEFFREY MCKINNEY 4122 POND HILL ROAD, SUITE 101 SAN ANTONIO, TEXAS 78231 PHONE :(210) 681-2951



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

LOCATION MAP
N.T.S.

CONTESSA UNIT 1
CONSTRUCTION PLANS

DISTRICT ENGINEER'S APPROVAL

THESE PLANS HAVE BEEN REVIEW AND APPROVED BY_____ ON _____

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

_____
DISTRICT ENGINEER

LEGAL DESCRIPTION:

CONTESSA, UNIT 1

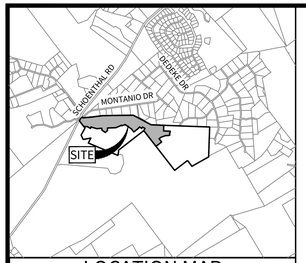
BEING 68.94 OF LAND LOCATED IN THE C. ARTIZ SURVEY NO. 318, A-10 W. TONNE SURVEY NO. 613, A-623, J. THOMPSON SURVEY NO. 755, A-611 AND THE S.A. & M.G.R.R. CO.. SURVEY 497 1/2, A-578, COMAL COUNTY, TEXAS AND BEING OUT OF A CALLED 249.7 ACRES OF LAND AS DESCRIBED IN DOCUMENT 201706004645, OFFICIAL PUBLIC RECORDS OF COMAL COUNTY, TEXAS

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

DRAWN BY	DATE
CG/JG/LJ/TCD	06/19/2025
CHECKED BY	**PROJECT NO.**
XV/AL	04343.002

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500



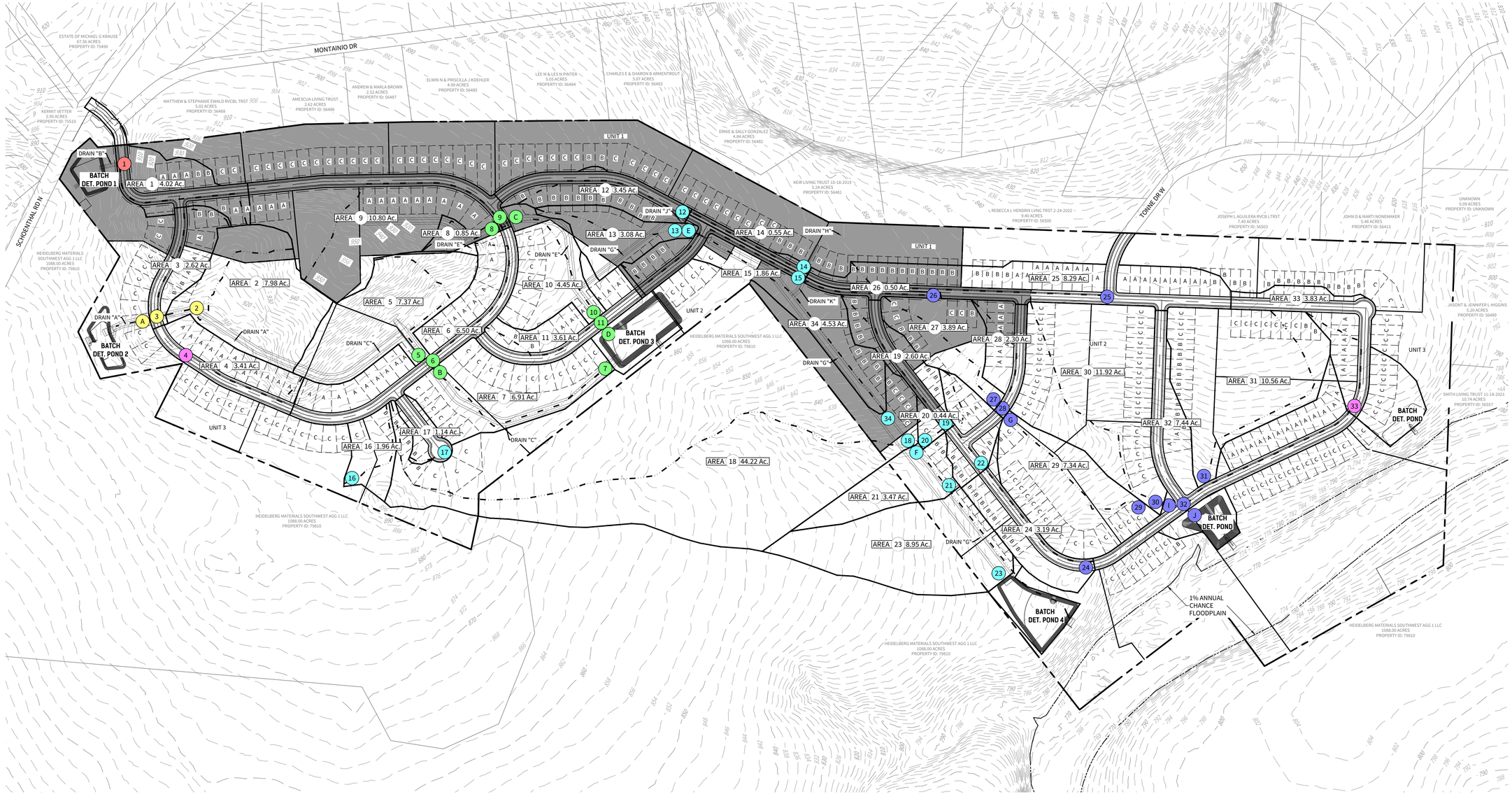
LOCATION MAP
N.T.S.

LEGEND

- SUBDIVISION BOUNDARY
- UNIT BOUNDARY
- DRAINAGE AREA
- Tc FLOW PATH
- ACCUMULATION POINT (XX)
- 1% ANNUAL CHANCE FLOODPLAIN
- LOT LINE
- CONDO LINE

N
W E
S

SCALE: 1"=250'
250 125 0 250



© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE INFRINGING PARTY'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE SUBJECT AGAINST ANY AND ALL STATUTES TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

ULTIMATE MASTER DRAINAGE PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C1

CUDEENGINEERS.COM

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

P:\04343\002\2-DWG\4-PlansCU\LT\MAST_MASTER_DRAINAGE_PLAN.dwg, 6/20/2025 9:23:51 AM, jgarcia

Project Name: Contessa Tract Subdivision

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 Computations			Overall	INTENSITY						Q FLOW						
Drainage Shed	Shed Area (Ac.)	Total Shed Area (Ac.)	AREA OF ACCUMULATION	C	*Length - 100'*	Paved (Y or N)	Upstream Elev.	Downstream Elev	Slope	Time of Concentration	*Length*	Paved (Y or N)	Downstream Elev	Slope	Time of Concentration	*Length*	Velocity (fps)	Time of Concentration	Time of Concentration (min)	I2	I5	I10	I25	I50	I100	Q2	Q5	Q10	Q25	Q50	Q100	Drainage Shed
1	4.02	4.02	= 1	0.69	*100.00*	N	938.00	933.37	4.63%	11.00	*64.50*	N	930.57	4.34%	0.32	*724.50*	6	2.01	13.33	4.49	5.64	6.59	7.93	9.00	10.06	12.45	15.64	18.28	22.00	24.96	27.90	1
2	7.98	7.98	= 2	0.69	*100.00*	N	947.26	938.48	8.78%	10.00	*593.00*	N	906.95	5.32%	2.65	*200.00*	6	0.56	13.20	4.51	5.67	6.62	7.97	9.04	10.11	24.83	31.22	36.45	43.88	49.78	55.67	2
3	2.62	2.62	= 3	0.69	*100.00*	N	936.64	931.21	5.43%	10.57	*164.00*	N	924.09	4.34%	0.81	*572.50*	6	1.59	12.97	4.54	5.72	6.68	8.04	9.12	10.20	8.21	10.34	12.08	14.53	16.49	18.44	3
A	-	10.60	= 2+3	0.69	*100.00*	N	947.26	938.48	8.78%	10.00	*593.00*	N	906.95	5.32%	2.65	*454.00*	6	1.26	13.91	4.40	5.53	6.45	7.76	8.80	9.84	32.18	40.45	47.18	56.76	64.36	71.97	A
4	3.43	3.43	= 4	0.69	*100.00*	N	908.37	904.34	4.03%	11.00	*61.30*	N	901.58	4.50%	0.30	*540.00*	6	1.50	12.80	4.57	5.75	6.72	8.09	9.18	10.27	10.82	13.61	15.90	19.15	21.73	24.31	4
5	7.37	7.37	= 5	0.69	*100.00*	N	950.85	943.57	7.28%	10.00	*380.00*	N	900.63	11.30%	1.17	*433.00*	6	1.20	12.37	4.64	5.84	6.82	8.23	9.33	10.44	23.60	29.70	34.68	41.85	47.45	53.09	5
6	4.88	4.88	= 6	0.69	*100.00*	N	908.52	904.22	4.30%	11.00	*66.40*	N	901.25	4.47%	0.32	*761.70*	6	2.12	13.44	4.47	5.62	6.56	7.90	8.96	10.02	15.05	18.92	22.09	26.60	30.17	33.74	6
B	-	12.25	= 5+6	0.69	*100.00*	N	908.52	904.22	4.30%	11.00	*66.40*	N	901.25	4.47%	0.32	*761.00*	6	2.11	13.44	4.47	5.62	6.56	7.90	8.96	10.02	37.78	47.50	55.45	66.77	75.73	84.69	B
7	6.91	19.16	= 5+6+7	0.69	*100.00*	N	908.52	904.22	4.30%	11.00	*66.40*	N	901.25	4.47%	0.32	*1872.90*	6	5.20	16.53	4.04	5.06	5.89	7.06	8.00	8.94	53.41	66.90	77.87	93.34	105.76	118.19	7
8	0.85	0.85	= 8	0.69	*100.00*	N	930.80	923.04	7.76%	10.00	*107.80*	N	912.56	9.72%	0.36	*291.00*	6	0.81	11.16	4.84	6.10	7.13	8.61	9.76	10.93	2.84	3.58	4.18	5.05	5.72	6.41	8
9	10.80	10.80	= 9	0.69	*100.00*	N	950.30	945.07	5.23%	10.77	*480.00*	N	914.50	6.37%	1.95	*787.10*	6	2.19	14.91	4.25	5.34	6.22	7.47	8.47	9.46	31.67	39.79	46.35	55.67	63.12	70.50	9
C	-	11.65	= 8+9	0.69	*100.00*	N	950.30	945.07	5.23%	10.77	*480.00*	N	914.50	6.37%	1.95	*787.10*	6	2.19	14.91	4.25	5.34	6.22	7.47	8.47	9.46	34.16	42.93	50.00	60.05	68.09	76.04	C
10	4.45	16.10	= 8+9+10	0.69	*100.00*	N	950.30	945.07	5.23%	10.77	*480.00*	N	914.50	6.37%	1.95	*1560.50*	6	4.33	17.06	3.97	4.97	5.79	6.94	7.87	8.78	44.10	55.21	64.32	77.10	87.43	97.54	10
11	3.66	3.66	= 11	0.69	*100.00*	N	897.19	891.45	5.74%	10.26	*169.40*	N	883.09	4.94%	0.78	*413.15*	6	1.15	12.19	4.67	5.88	6.86	8.28	9.39	10.51	11.79	14.85	17.32	20.91	23.71	26.54	11
D	-	19.76	= 8+9+10+11	0.69	*100.00*	N	950.30	945.07	5.23%	10.77	*480.00*	N	914.50	6.37%	1.95	*1560.50*	6	4.33	17.06	3.97	4.97	5.79	6.94	7.87	8.78	54.13	67.76	78.94	94.62	107.30	119.71	D
12	3.45	3.45	= 12	0.69	*100.00*	N	901.50	897.18	4.32%	11.00	*157.60*	N	890.35	4.33%	0.78	*667.00*	6	1.85	13.63	4.45	5.58	6.52	7.84	8.90	9.95	10.59	13.28	15.52	18.66	21.19	23.69	12
13	3.03	3.03	= 13	0.69	*100.00*	N	899.34	894.38	4.96%	11.00	*524.10*	N	874.69	3.76%	2.78	*208.00*	6	0.58	14.36	4.34	5.44	6.35	7.63	8.65	9.67	9.07	11.37	13.28	15.95	18.08	20.22	13
E	-	6.48	= 12+13	0.69	*100.00*	N	899.34	894.38	4.96%	11.00	*524.10*	N	874.69	3.76%	2.78	*208.00*	6	0.58	14.36	4.34	5.44	6.35	7.63	8.65	9.67	19.41	24.32	28.39	34.12	38.68	43.24	E
14	0.55	0.55	= 14	0.69	*21.00*	N	871.75	871.08	3.19%	11.81						*647.80*	6	1.80	13.61	4.45	5.59	6.52	7.85	8.90	9.96	1.69	2.12	2.47	2.98	3.38	3.78	14
15	1.85	1.85	= 15	0.69	*100.00*	N	879.52	877.88	1.64%	13.72	*61.00*	N	876.78	1.80%	0.47	*966.70*	6	2.69	16.87	4.00	5.00	5.82	6.98	7.91	8.84	5.11	6.38	7.43	8.91	10.10	11.28	15
16	1.96	1.96	= 16	0.69	*100.00*	N	896.78	893.78	3.00%	12.00	*198.00*	N	887.21	3.32%	1.12	*252.60*	6	0.70	13.82	4.42	5.55	6.47	7.78	8.83	9.88	5.98	7.51	8.75	10.52	11.94	13.36	16
17	1.14	1.14	= 17	0.69	*100.00*	N	887.58	885.07	2.51%	12.00	*34.80*	N	884.16	2.61%	0.22	*77.60*	6	0.22	12.44	4.63	5.83	6.80	8.20	9.31	10.41	3.64	4.59	5.35	6.45	7.32	8.19	17
18	44.22	77.98	= 8+9+10+11+12+13+15+17+18+34	0.69	*100.00*	N	896.48	894.16	2.32%	12.36	*1486.29*	N	857.16	2.49%	9.73	*1530.00*	6	4.25	26.34	3.20	3.99	4.64	5.56	6.27	7.00	172.18	214.69	249.66	299.16	337.36	376.64	18
19	2.60	2.60	= 19	0.69	*100.00*	N	853.61	851.69	1.92%	13.16	*135.40*	N	847.97	2.75%	0.84	*611.40*	6	1.70	15.70	4.14	5.19	6.05	7.26	8.23	9.20	7.43	9.31	10.85	13.02	14.76	16.50	19
20	0.44	3.04	= 19+20	0.69	*100.00*	N	853.61	851.69	1.92%	13.16	*135.40*	N	847.97	2.75%	0.84	*766.40*	6	2.13	16.13	4.08	5.12	5.97	7.15	8.11	9.06	8.56	10.74	12.52	15.00	17.01	19.00	20
F	-	81.02	= 8+9+10+11+12+13+15+17+18+19+20+34	0.69	*100.00*	N	896.48	894.16	2.32%	12.36	*1486.29*	N	857.16	2.49%	9.73	*1530.00*	6	4.25	26.34	3.20	3.99	4.64	5.56	6.27	7.00	178.89	223.06	259.39	310.83	350.52	391.33	F
21	3.47	81.02	= 8+9+10+11+12+13+15+17+18+19+20+34	0.69	*100.00*	N	896.48	894.16	2.32%	12.36	*1486.29*	N	857.16	2.49%	9.73	*1800.00*	6	5.00	27.09	3.15	3.93	4.57	5.48	6.17	6.90	176.10	219.70	255.48	306.35	344.93	385.74	21
22	2.44	2.44	= 22	0.69	*100.00*	N	838.79	837.26	1.53%	13.94	*255.80*	N	820.55	6.53%	1.02	*225.20*	6	0.63	15.59	4.16	5.21	6.08	7.29	8.26	9.24	7.00	8.77	10.24	12.27	13.91	15.56	22
G	-	86.93	= 8+9+10+11+12+13+15+17+18+19+20+21+22+34	0.69	*100.00*	N	896.48	894.16	2.32%	12.36	*1486.29*	N	857.16	2.49%	9.73	*1800.00*	6	5.00	27.09	3.15	3.93	4.57	5.48	6.17	6.90	188.94	235.73	274.12	328.70	370.09	413.87	G
23	8.95	95.88	= 8+9+10+11+12+13+15+17+18+19+20+21+22+23+34	0.69	*100.00*	N	896.48	894.16	2.32%	12.36	*1486.29*	N	857.16	2.49%	9.73	*2307.50*	6	6.41	28.50	3.08	3.84	4.46	5.34	6.02	6.72	203.76	254.04	295.06	353.28	398.27	444.58	23
24	3.19	3.19	= 24	0.69	*100.00*	N	818.77	816.12	2.65%	12.00	*67.20*	N	814.51	2.40%	0.45	*640.00*	6	1.78	14.23	4.36	5.47	6.38	7.66	8.69	9.72	9.60	12.04	14.04	16.86	19.13	21.39	24
25	8.30	8.30	= 25	0.69	*100.00*	N	853.66	852.62	1.04%	14.92	*64.80*	N	851.08	2.38%	0.43	*1182.20*	6	3.28	18.64	3.80	4.76	5.53	6.63	7.50	8.38	21.76	27.26	31.67	37.97	42.95	47.99	25
26	0.50	0.50	= 26	0.69	*22.20*	N	856.46	855.93	2.39%	12.23						*673.40*	6	1.87	14.10	4.38	5.49	6.41	7.70	8.74	9.77	1.51	1.89	2.21	2.66	3.02	3.37	26
27	3.89	4.39	= 26+27	0.69	*100.00*	N	850.47	848.20	2.27%	12.46	*503.70*	N	834.00	2.82%	3.10	*237.30*	6	0.66	16.22	4.07	5.10	5.95	7.13	8.08	9.03	12.33	15.45	18.02	21.60	24.48	27.35	27
28	2.30	2.30	= 28	0.69	*100.00*	N	843.94	840.86	3.08%	11.92	*230.70*	N	831.64	4.00%	1.19	*336.40*	6	0.93	14.05	4.38	5.50	6.42	7.72	8.75	9.79	6.95	8.73	10.19	12.25	13.89	15.54	28
H	-	6.69	= 26+27+28	0.69	*100.00*	N	850.47	848.20	2.27%	12.46	*503.70*	N	834.00	2.82%	3.10	*1215.00*	6	3.38	18.94	3.77	4.72	5.48	6.57	7.43	8.30	17.40	21.79	25.30	30.33	34.30	38.31	H
29	7.34	14.03	= 26+27+28+29	0.69	*100.00*	N	850.47	848.20	2.27%	12.46	*503.70*	N	834.00	2.82%	3.10	*1215.00*	6	3.38	18.94	3.77	4.72	5.48	6.57	7.43	8.30	36.50	45.69	53.05	63.60	71.93	80.35	29
30	11.92	20.22	= 25+30	0.69	*100.00*	N	839.48	836.24	3.24%	11.76	*480.90*	N	808.55	5.76%	2.06	*733.90*	6	2.04	15.86	4.12	5.17	6.02	7.22	8.18	9.15	57.48	72.13	83.99	100.73	114.13	127.66	30
I	-	34.25	= 25+26+27+28+29+30	0.69	*100.00*	N	831.43	827.40	4.03%	11.00	*226.70*	N	819.12	3.65%	1.22	*1315.20*	6	3.65	15.87	4.12	5.16	6.02	7.21	8.18	9.14	97.37	121.94	142.27	170.39	193.31	216.00	I
31	10.56	10.56	= 31	0.69	*100.00*	N	837.53	832.27	5.26%	10.74	*391.40*	N	817.31	3.82%	2.06	*738.70*	6	2.05	14.85	4.26	5.35	6.23	7.48	8.49	9.49	31.04	38.98	45.39	54.50	61.86	69.15	31
32	7.44	7.44	= 32	0.69	*100.00*	N	822.42	819.10	3.32%	11.68	*228.80*	N	812.34	2.95%	1.38	*918.20*	6	2.55	15.61	4.15	5.21	6.07	7.28	8.26	9.23	21.30	26.75	31.16	37.37	42.40	47.38	32
J	-	52.25	= 25+26+27+28+29+30+31+32	0.69	*100.00*	N	831.43	827.40	4.03%	11.00	*226.70*	N	819.12	3.65%	1.22	*1315.20*	6	3.65	15.87	4.12	5.16	6.02	7.21	8.18	9.14	148.54	186.03	217.04	259.94	294.91	329.52	J
33	3.83	3.83	= 33	0.69	*100.00*	N	831.43	827.40	4.03%	11.00	*226.70*	N	819.12	3.65%	1.22	*325.80*	6	0.91	13.12	4.52	5.69	6.64	7.99	9.07	10.14	11.95	15.04	17.55	21.12	23.97	26.80	33
34	4.53	12.86	= 12+13+15+34	0.69	*100.00*	N	899.34	894.38	4.96%	11.00	*524.10*	N	874.69	3.76%	2.78	*1525.60*	6	4.24	18.02	3.86	4.84	5.63	6.75	7.64	8.53	34.25	42.95	49.96	59.90	67.79	75.69	34

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. AN UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF SAID DOCUMENT WILL BE AT THE REPRODUCER'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC AND WILL SUBJECT TO ALL LEGAL REMEDIES TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

ULTIMATE MASTER DRAINAGE PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C2

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.

C:\04343\002\2.0\MVLX Files\C2 ULTIMATE MASTER DRAINAGE PLAN.mvp 2025/06/19 2:51pm jgarcia

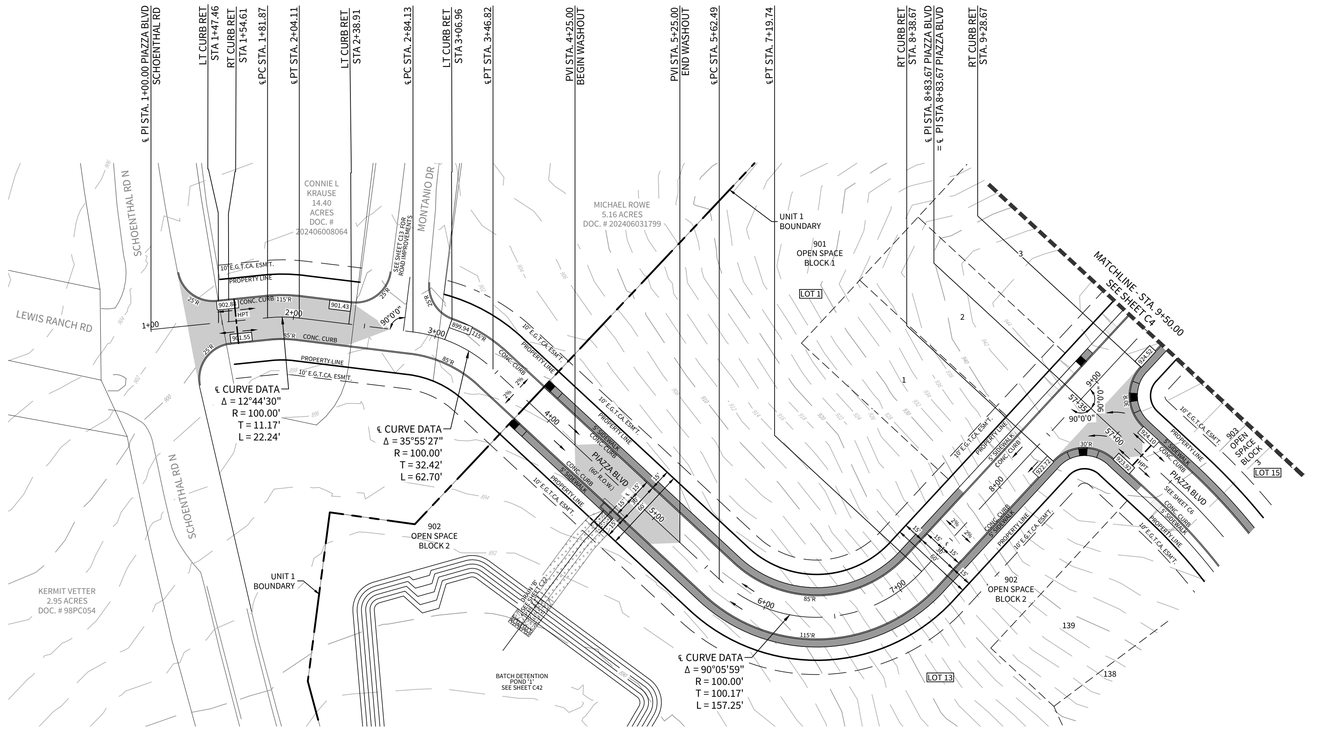
© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT SHALL NOT BE USED BY ANY PERSON OR ENTITY FOR ANY PURPOSE OTHER THAN AS AUTHORIZED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE WRONGFUL PARTY'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE GROUNDS FOR DAMAGES AND LEGAL ACTION.

LEGEND

- PAVEMENT GUTTER LINE
- CONDO LINE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- STREET WASHOUT – SEE DETAIL SHEET C16
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C17

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

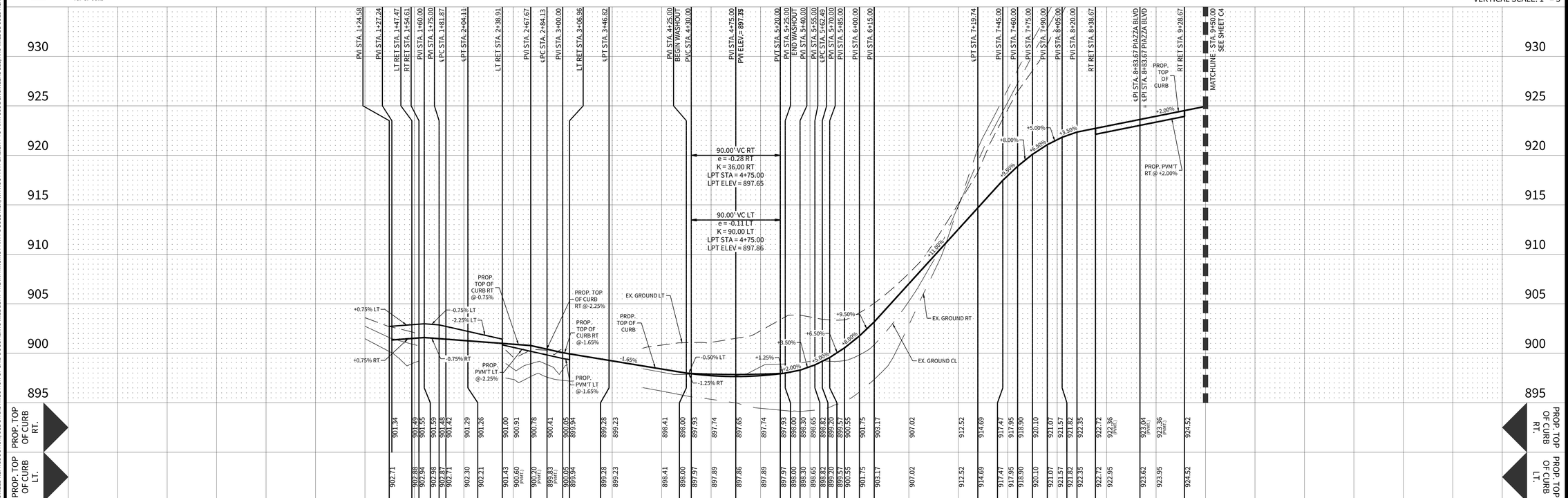
XXX.XX CURB RETURN ELEVATION TOP OF CURB



PIAZZA BLVD

STA. 1+00.00 TO STA. 9+50.00

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



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.

CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

CONTESSA SUBDIVISION UNIT 1

STREET PLAN & PROFILE - PIAZZA BLVD

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	1	2	3	4	5	6	7	8	9

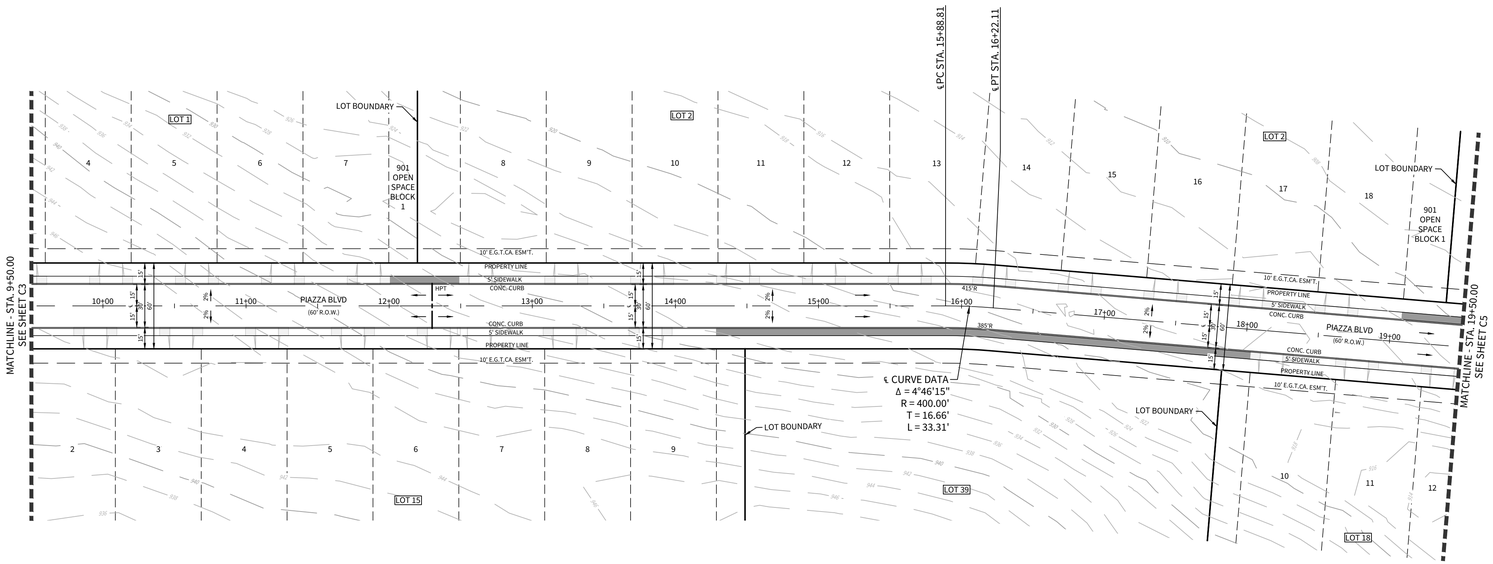
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
06/19/2025

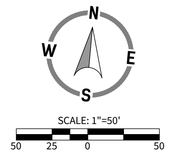
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C3

P:\04343\002\3-SHEETS\Sheets\C3 STREET PLAN & PROFILE - PIAZZA BLVD.dwg 2025/06/19 2:57pm jgarcia

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE OTHER THAN THE ORIGINAL CLIENT FOR WHOM IT WAS PREPARED BY M.W. CUDE ENGINEERS LLC AND FOR ANY PURPOSE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED WITHOUT THE EXPRESS WRITTEN CONSENT OF M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION OR USE OF THIS DOCUMENT WILL BE STRICTLY ENFORCED AND PURSUED TO THE FULLEST EXTENT PERMITTED BY LAW.





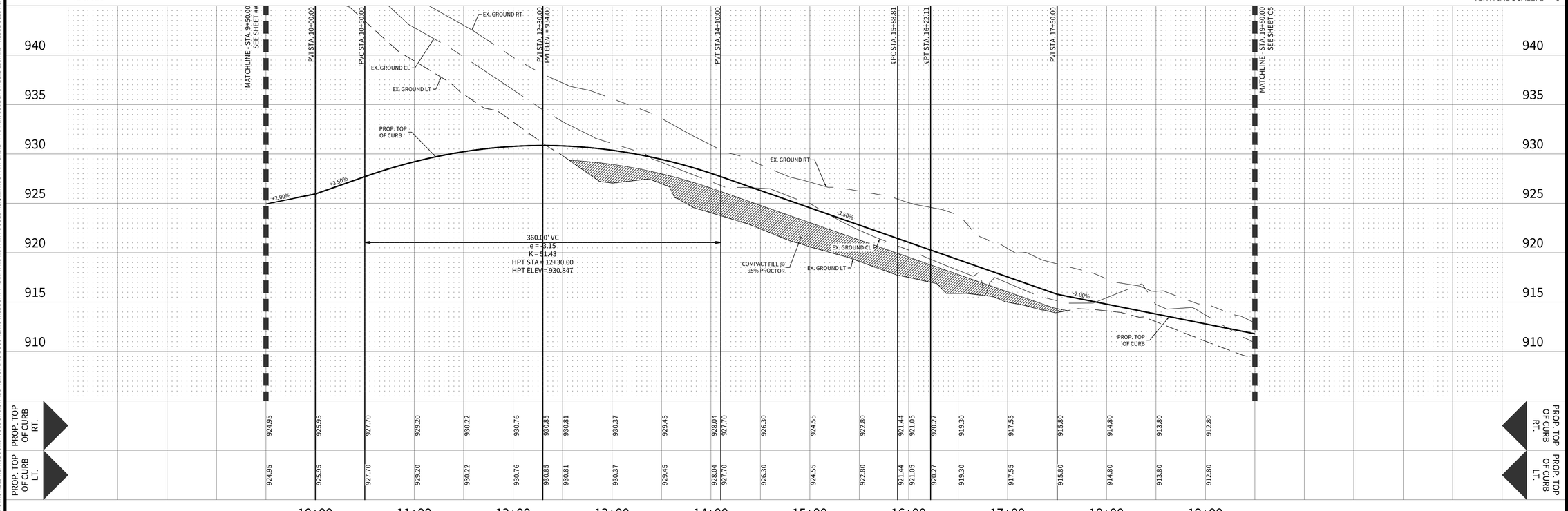
LEGEND

- PAVEMENT GUTTER LINE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- STREET WASHOUT – SEE DETAIL SHEET C16
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C17
- ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE
- XXX.XX CURB RETURN ELEVATION / TOP OF CURB
- CONDO LINE
- LOT LINE

PIAZZA BLVD

STA. 9+50.00 TO STA. 19+50.00

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

CONTESSA SUBDIVISION UNIT 1

STREET PLAN & PROFILE - PIAZZA BLVD

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

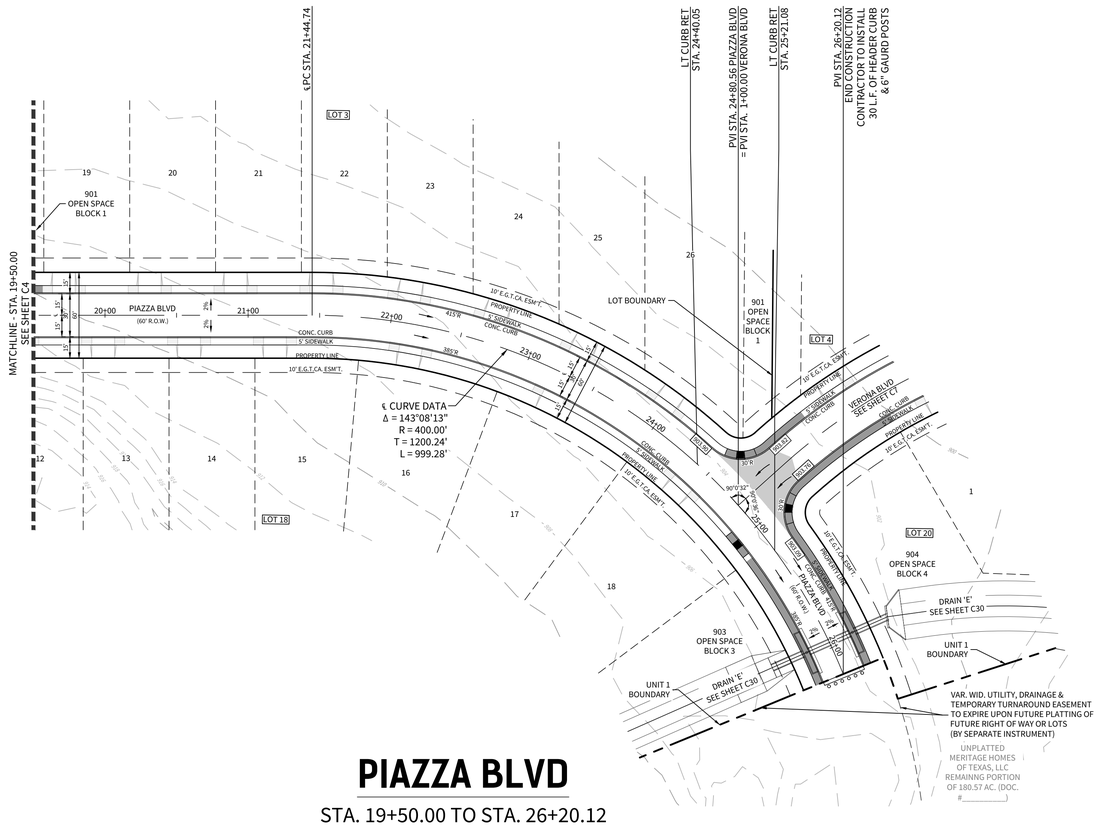
C4

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.

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED USE, DISTRIBUTION, OR REPRODUCTION OF THIS DOCUMENT SHALL BE AT THE PERSON/ENTITY'S SOLE RISK AND SHALL HOLD M.W. CUDE ENGINEERS LLC AND ITS SUBCONSULTANTS HARMLESS FROM ALL LIABILITY AND LEGAL EXPENSES. ANY UNAUTHORIZED REPRODUCTION, USE, OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE PERSON/ENTITY'S SOLE RISK AND SHALL HOLD M.W. CUDE ENGINEERS LLC AND ITS SUBCONSULTANTS HARMLESS FROM ALL LIABILITY AND LEGAL EXPENSES.

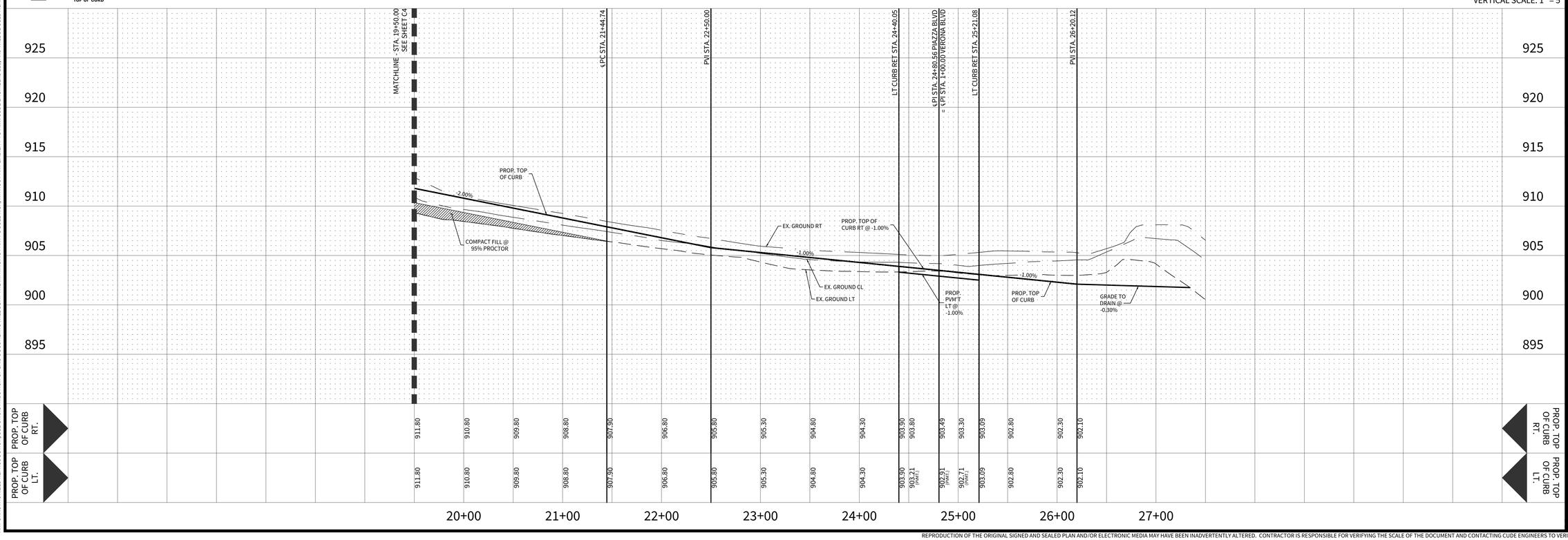
LEGEND

- PAVEMENT GUTTER LINE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- STREET WASHOUT – SEE DETAIL SHEET C16
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C17
- ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE
- XXX.XX CURB RETURN ELEVATION / TOP OF CURB
- CONDO LINE
- LOT LINE



PIAZZA BLVD

STA. 19+50.00 TO STA. 26+20.12



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

SCALE: 1"=50'
50 25 0 50

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

STREET PLAN & PROFILE - PIAZZA BLVD

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C5

CUDEENGINEERS.COM

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

P:\04343\002\2-ENG\14-Revit\CS STREET PLAN & PROFILE - PIAZZA BLVD.rvt Aug 2025\06\19 2:52pm jgarcia

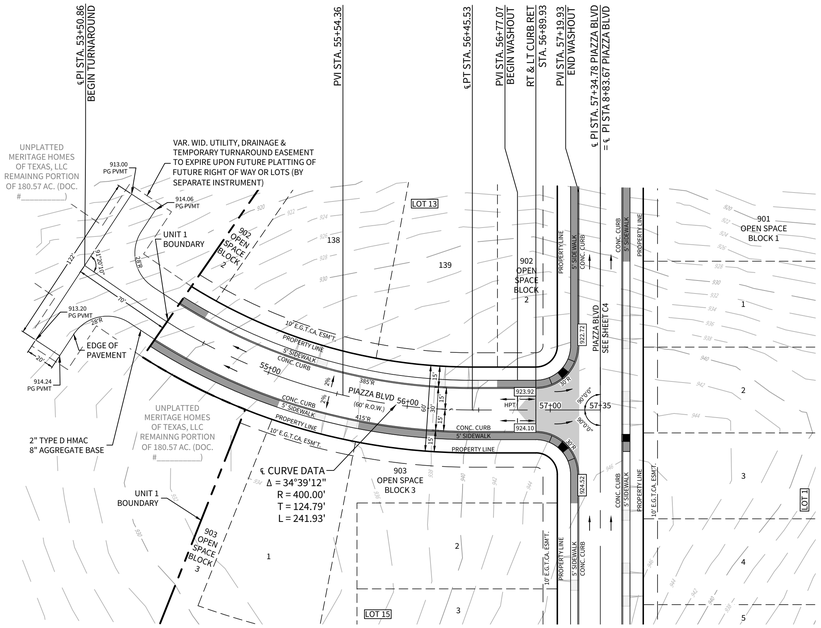
© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REUSE, REDISTRIBUTION OF, OR MODIFICATION TO THIS DOCUMENT WILL BE AT THE SOLE RISK OF THE PERSON OR ENTITY USING SUCH DOCUMENT WITHOUT AN AWARD BUT TO M.W. CUDE ENGINEERS LLC AND ITS OFFICERS AND EMPLOYEES. ALL RIGHTS TO THE USE OF THIS DOCUMENT ARE RESERVED TO M.W. CUDE ENGINEERS LLC AND ITS OFFICERS AND EMPLOYEES. ALL UNAUTHORIZED USES ARE EXPRESSLY PROHIBITED.

LEGEND

- PAVEMENT GUTTER LINE
- CONDO LINE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- STREET WASHOUT – SEE DETAIL SHEET C16
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C17

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

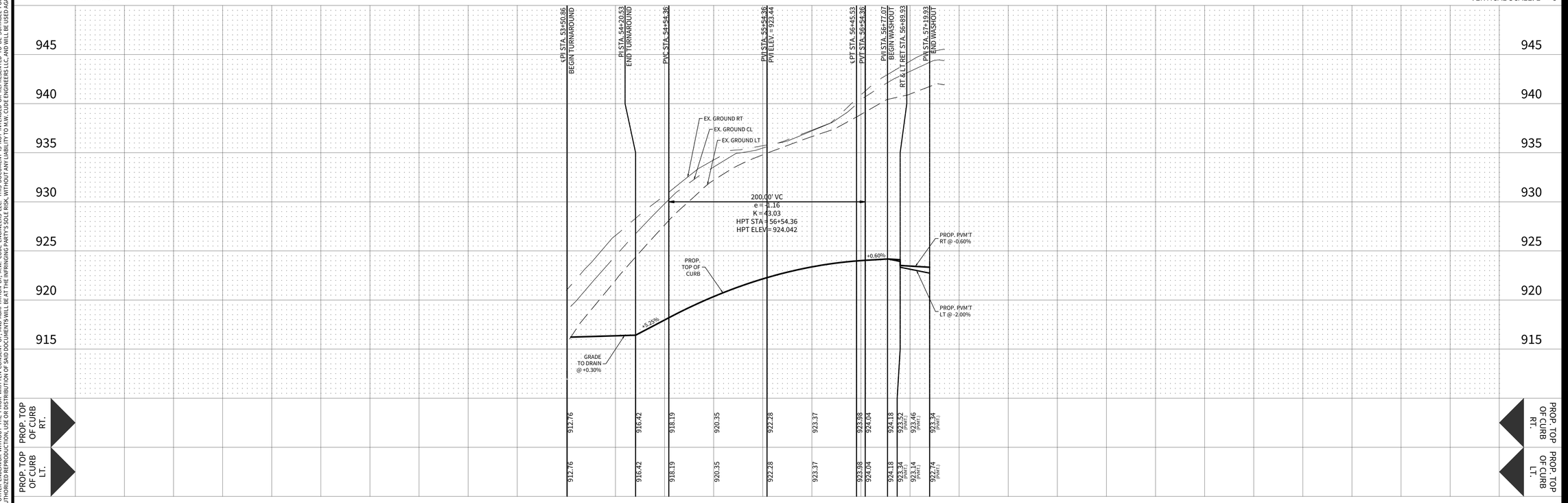
XXX.XX CURB RETURN ELEVATION / TOP OF CURB



PIAZZA BLVD

STA. 53+50.86 TO END

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



CUDEENGINEERS.COM

CUDE ENGINEERS

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

SCALE: 1"=50'
50 25 0 50

CONTESSA SUBDIVISION UNIT 1

STREET PLAN & PROFILE - PIAZZA BLVD

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

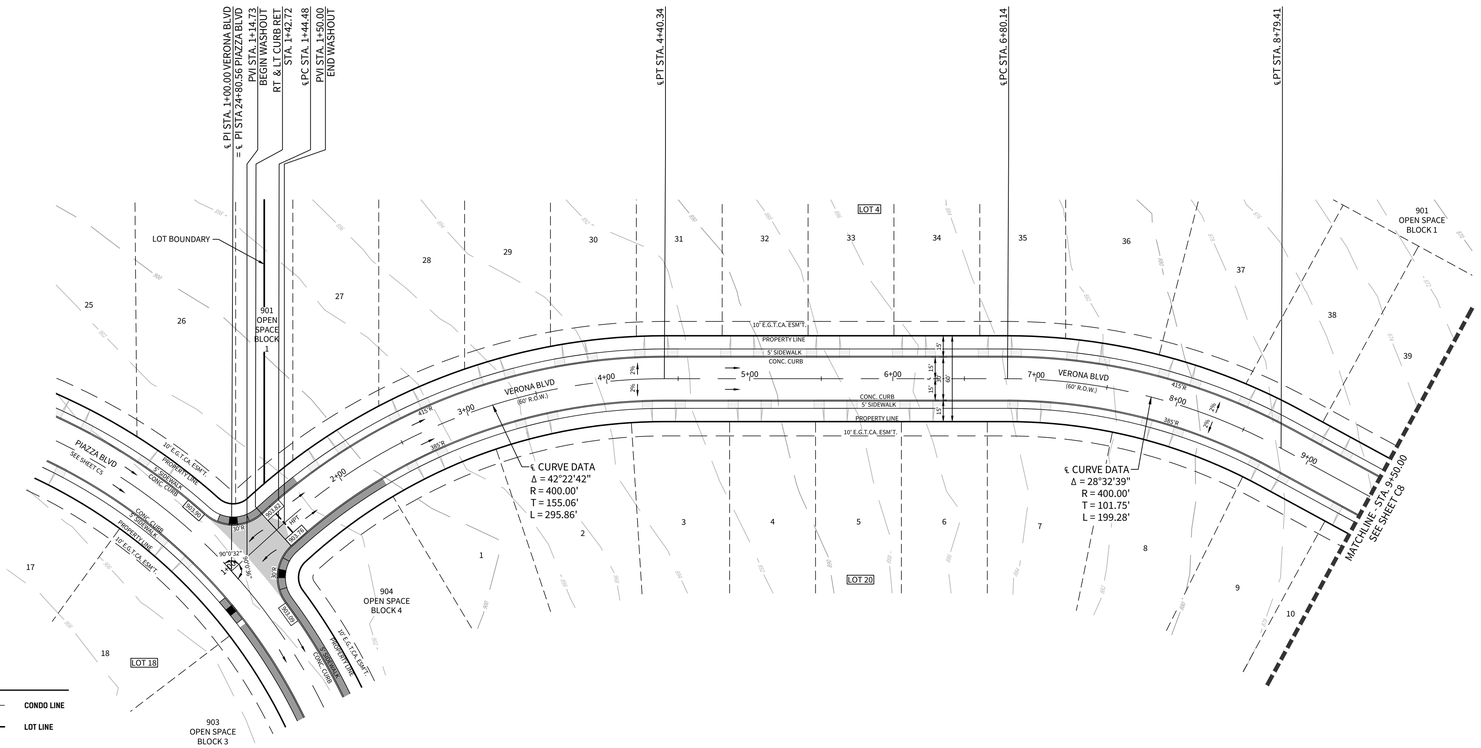
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

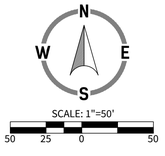
C6

CUDEENGINEERS.COM

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

C:\04343\002\DWG\Plan\SUS STREET PLAN & PROFILE - PIAZZA BLVD.dwg 6/19/2025 9:23:52am jgarcia





LEGEND

- PAVEMENT GUTTER LINE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- STREET WASHOUT – SEE DETAIL SHEET C16
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C17
- CONDO LINE
- LOT LINE

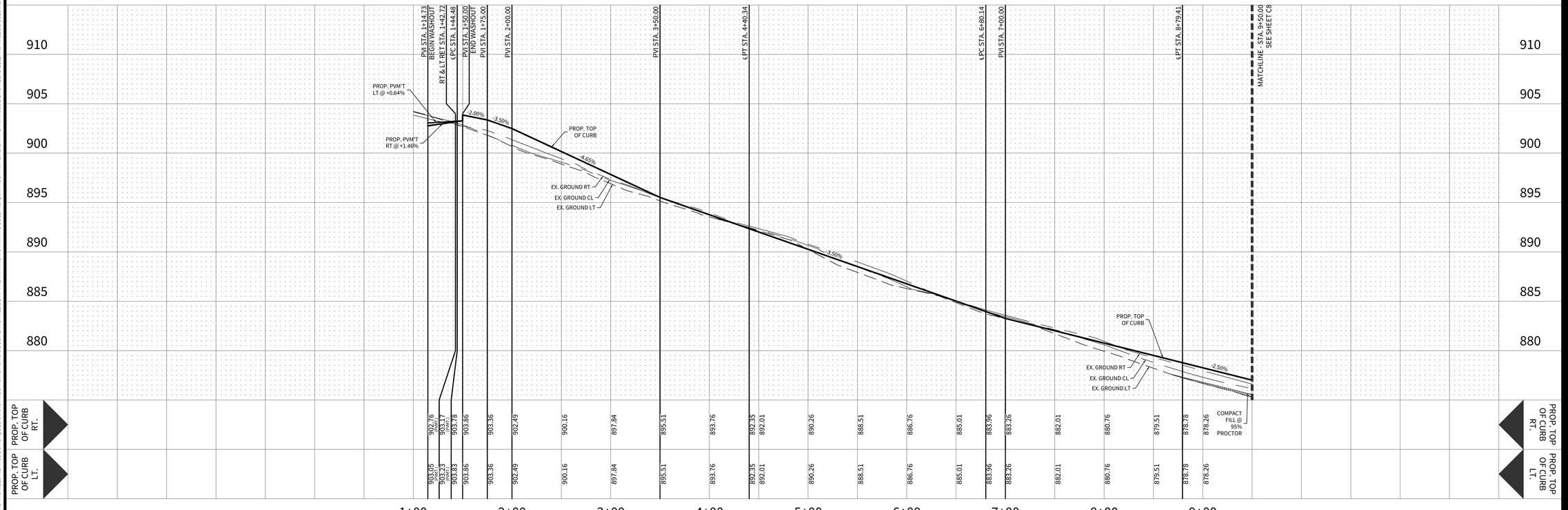
ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

XXX.XX CURB RETURN ELEVATION
TOP OF CURB

VERONA BLVD

STA. 1+00.00 TO STA. 9+50.00

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



© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. AND IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION OR USE OF THIS DOCUMENT SHALL BE AT THE USERS SOLE RISK AND WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC. AND WILL BE LIABLE FOR DAMAGES AND ALL COSTS TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

STREET PLAN & PROFILE - VERONA BLVD

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

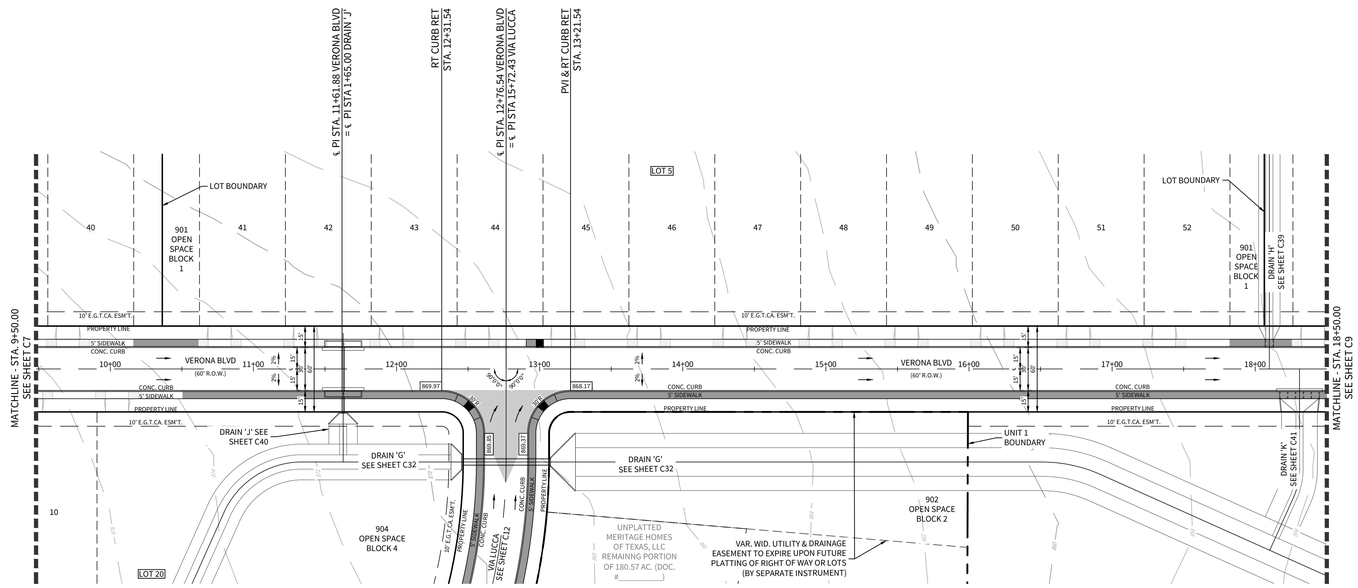
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

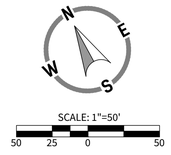
C7

CUDEENGINEERS.COM

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

C:\04343.002\2-DWGS\Plans\C5 STREET PLAN & PROFILE - VERONA BLVD.dwg 2025/06/19 2:52pm jgarcia





LEGEND

- PAVEMENT GUTTER LINE
- CONDO LINE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- LOT LINE
- STREET WASHOUT – SEE DETAIL SHEET C16
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C17

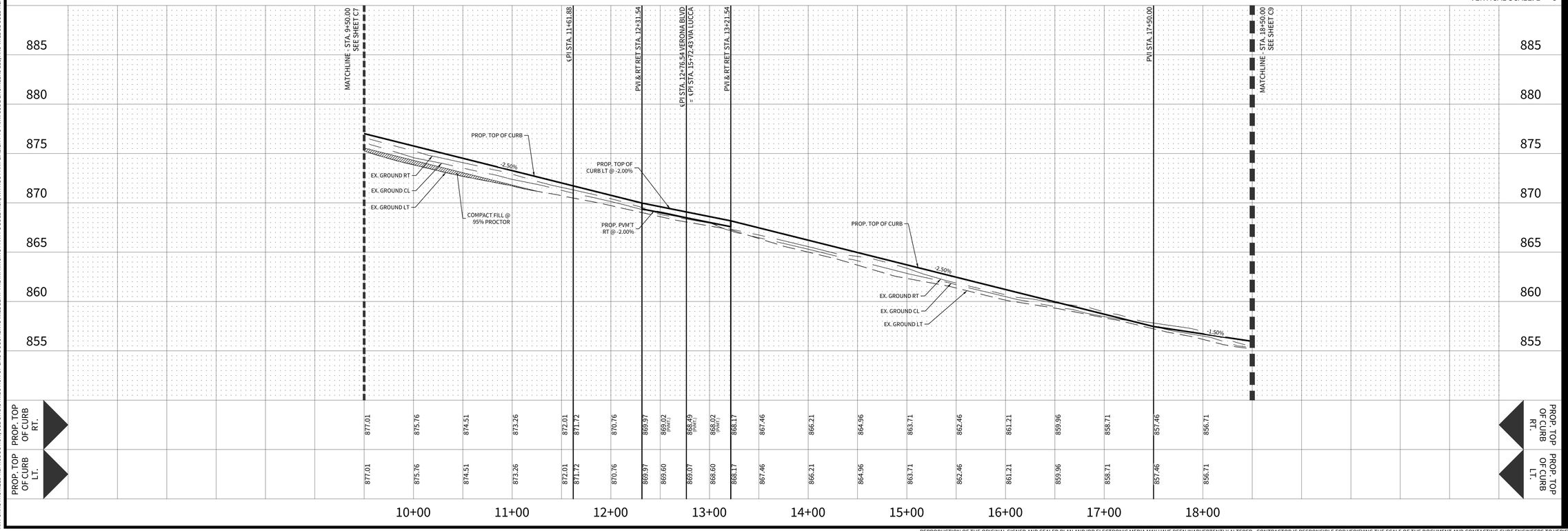
ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE

XXX.XX CURB RETURN ELEVATION
TOP OF CURB

VERONA BLVD

STA. 9+50.00 TO STA. 18+50.00

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



© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY AN UNAUTHORIZED REPRODUCTION OR USE PROHIBITED HEREIN OF THIS DOCUMENTS WILL BE AT THE SOLE RISK OF THE REPRODUCER AND WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC. ANY BLUELINES OR SHEETS AND ALL SHEETS TO BE PLOTTED IN COLOR.

CUDEENGINEERS.COM

CUDE ENGINEERS
EST. 1980

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

CONTESSA SUBDIVISION
UNIT 1

STREET PLAN & PROFILE - VERONA BLVD

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

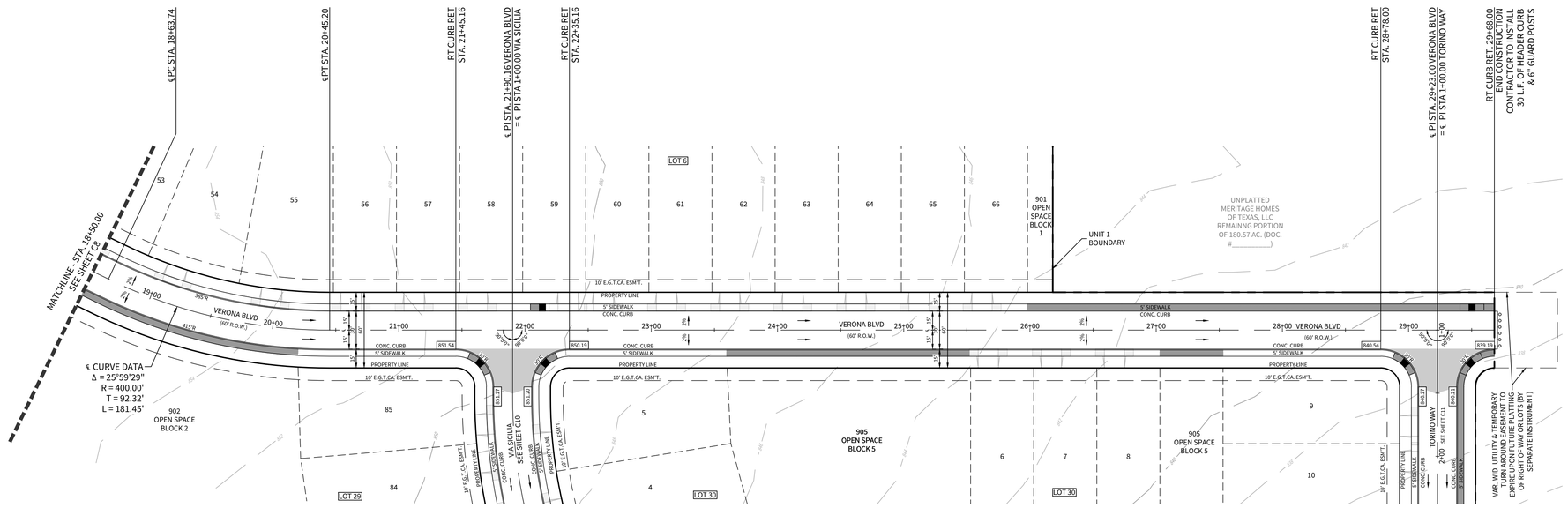
C8

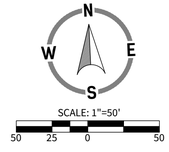
CUDEENGINEERS.COM

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

C:\04343.002\2-DWG\C8 Plan&CS STREET PLAN & PROFILE - VERONA BLVD.dwg 2025/06/19 2:52pm jgarcia

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE, OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE SOLE RISK OF THE PARTY REPRODUCING, USING, OR DISTRIBUTING THE DOCUMENT, AND M.W. CUDE ENGINEERS LLC SHALL BE INDEMNIFIED AND HELD HARMLESS BY SUCH PARTY FOR ANY AND ALL LIABILITIES, LOSSES, AND ATTORNEY'S FEES ARISING FROM SUCH UNAUTHORIZED USE.





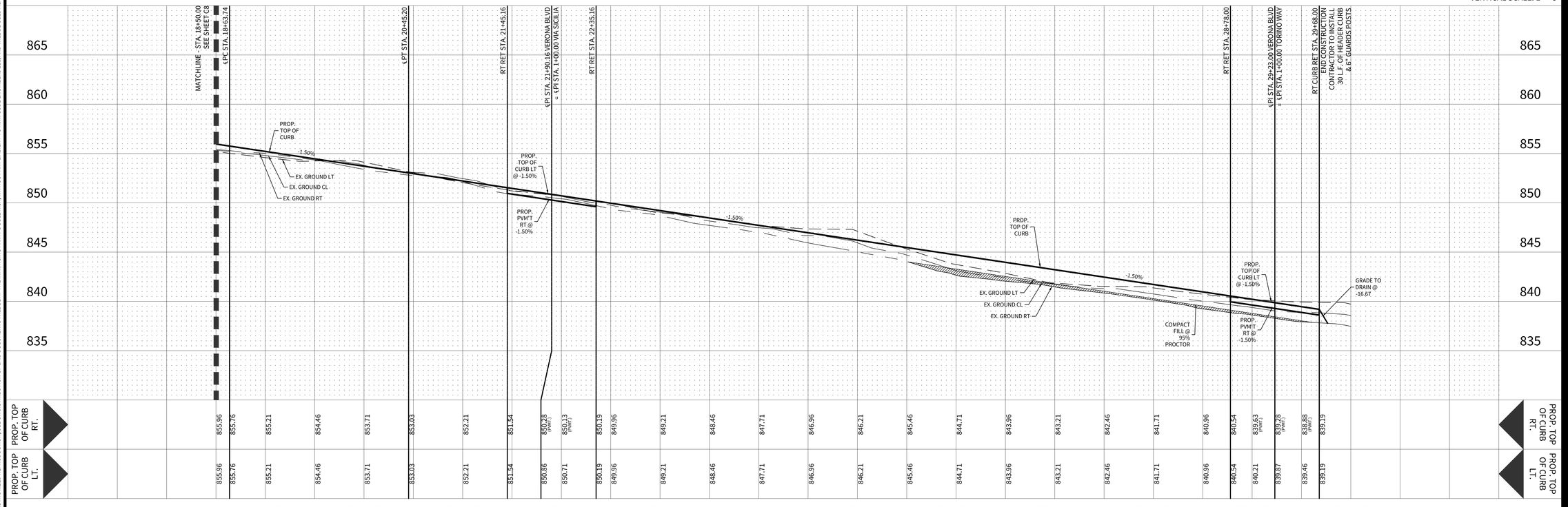
LEGEND

- PAVEMENT GUTTER LINE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- STREET WASHOUT – SEE DETAIL SHEET C16
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C17
- ONLY ADA RAMPS WITH A 900 SERIES OPEN SPACE WILL BE BUILT WITH INFRASTRUCTURE
- XXX.XX CURB RETURN ELEVATION TOP OF CURB
- CONDO LINE
- LOT LINE

VERONA BLVD

STA. 18+50.00 TO STA. 29+68.00

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



CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

STREET PLAN & PROFILE - VERONA BLVD

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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



C9

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.

G:\04343\002\CIVIL\Plans\03 STREET PLAN & PROFILE - VERONA BLVD.dwg 2025/06/19 2:55pm jgarcia

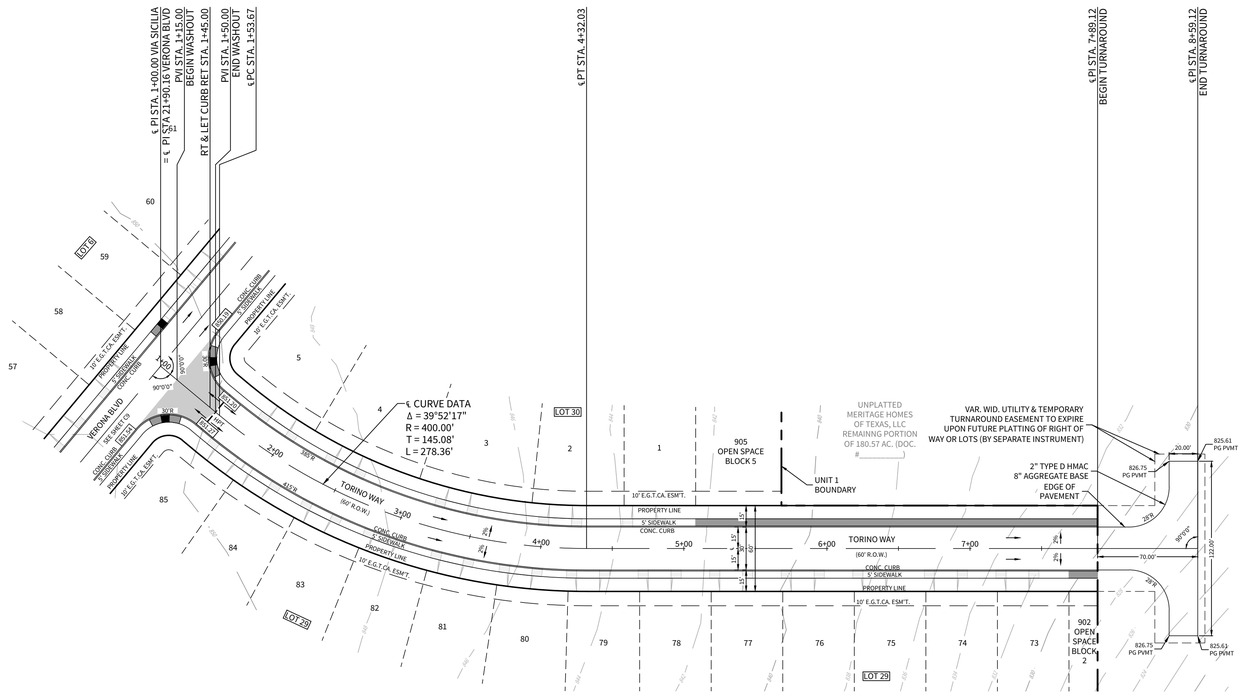
© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC AND ANY UNAUTHORIZED REPRODUCTION, USE OR REDISTRIBUTION OF THIS DOCUMENT IS STRICTLY PROHIBITED. ALL ELECTRONIC COPIES OF THIS DOCUMENT SHALL BE DESTROYED AND REMOVED FROM ALL COMPUTERS AND OTHER STORAGE DEVICES, INCLUDING BUT NOT LIMITED TO THE M.W. CUDE ENGINEERS LLC CAD FILES, WITHOUT ANY ALTERATIONS TO THE CONTENTS OF THIS DOCUMENT.

LEGEND

- PAVEMENT GUTTER LINE
- CONDO LINE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- STREET WASHOUT – SEE DETAIL SHEET C16
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C17

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

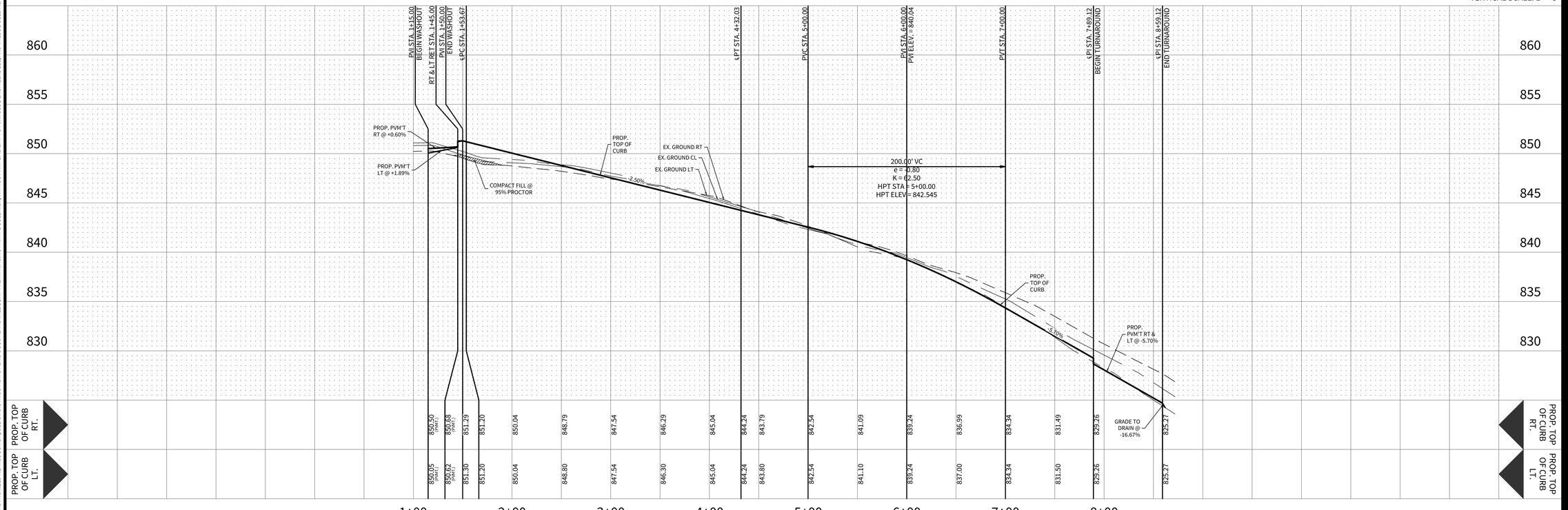
XXX.XX CURB RETURN ELEVATION / TOP OF CURB



VIA SICILIA

STA. 1+00.00 TO STA. 8+59.12

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



CUDEENGINEERS.COM

CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

STREET PLAN & PROFILE - VIA SICILIA

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
103170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C10

CUDEENGINEERS.COM

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

C:\04343.002\2-DWGS\Plan\SUB\STREET PLAN & PROFILE - VIA SICILIA.dwg 2025/06/19 2:57pm jgarcia

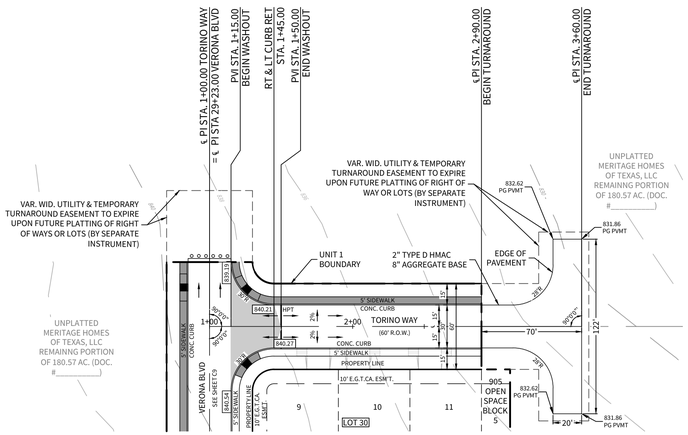
© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REUSE OR MODIFICATION TO THIS DOCUMENT WILL BE AT THE REQUESTOR'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND FULL LEGAL CONSEQUENCES AND ALL RIGHTS TO THE USE OF THE DOCUMENT WILL BE STRICTLY PROHIBITED BY M.W.

LEGEND

- PAVEMENT GUTTER LINE
- CONDO LINE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- STREET WASHOUT – SEE DETAIL SHEET C16
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C17

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

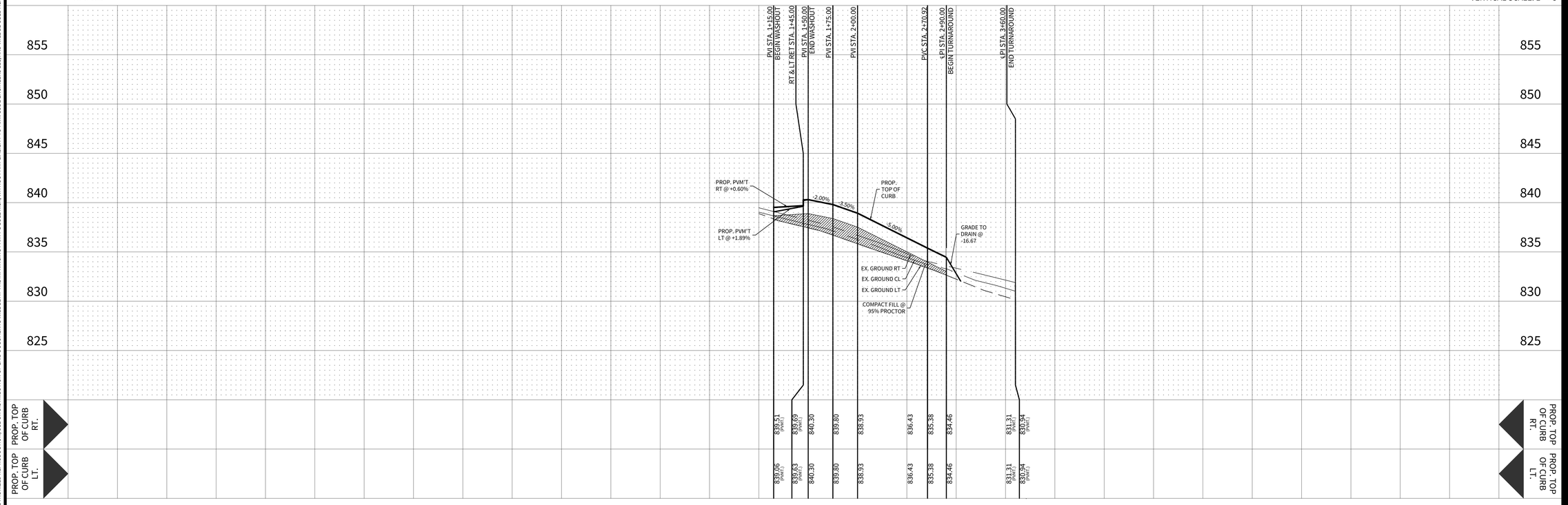
XXX.XX CURB RETURN ELEVATION TOP OF CURB



TORINO WAY

STA. 1+00.00 TO STA. 3+60.00

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

CONTESSA SUBDIVISION UNIT 1

STREET PLAN & PROFILE - TORINO WAY

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C11

CUDEENGINEERS.COM

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

C:\04343.002\2.0\WCAD Files\04343.002 PLAN & PROFILE - TORINO.dwg, 6/19/2025 3:23:25 PM, jgarcia

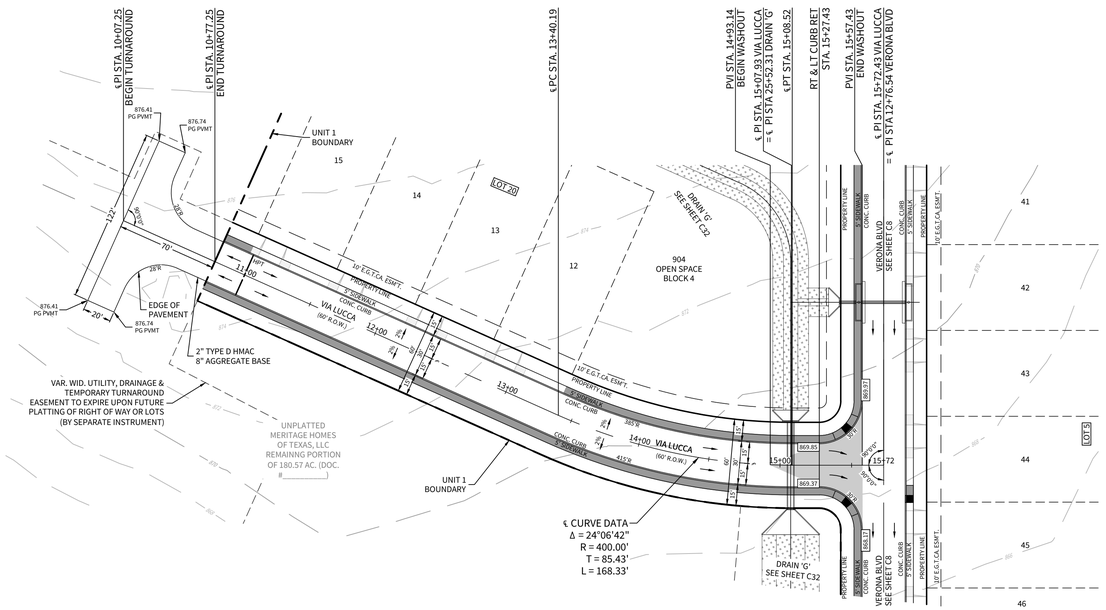
© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED. REPRODUCTION OR MODIFICATION OF THIS DOCUMENT FOR USE ON ANY OTHER PROJECT, OR ADAPTATION OF THIS DOCUMENT BY OTHERS, WITHOUT FULL COMPLETION BY M.W. CUDE ENGINEERS LLC, SHALL BE UNDERSTOOD TO BE CONTRARY TO LAW. M.W. CUDE ENGINEERS LLC SHALL BE INDEMNIFIED AND HELD HARMLESS BY ANY AND ALL PARTIES WHO MODIFY OR REUSE THESE INSTRUMENTS OF SERVICE FOR ANY OTHER PROJECT OR EXTENSIONS TO THIS PROJECT, OR ON ANY OTHER SITE, WITHOUT FULL COMPLETION BY M.W. CUDE ENGINEERS LLC, AND WITHOUT LIMITING OTHER REMEDIES AVAILABLE TO M.W. CUDE ENGINEERS LLC, SHALL REQUIRE SUCH PARTIES TO FULLY INDEMNIFY M.W. CUDE ENGINEERS LLC AGAINST INJURY, LOSS, AND EXPENSE ARISING FROM SUCH UNAUTHORIZED REUSE OR MODIFICATION.

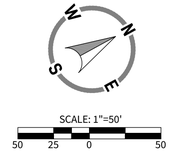
LEGEND

- PAVEMENT GUTTER LINE
- CONDO LINE
- DRIVEWAY TO BE BUILT WITH HOMEBUILDING
- STREET WASHOUT – SEE DETAIL SHEET C16
- SIDEWALK TO BE CONSTRUCTED WITH INFRASTRUCTURE
- ADA SIDEWALK CURB RAMP – SEE DETAIL SHEET C17

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

XXX.XX CURB RETURN ELEVATION TOP OF CURB

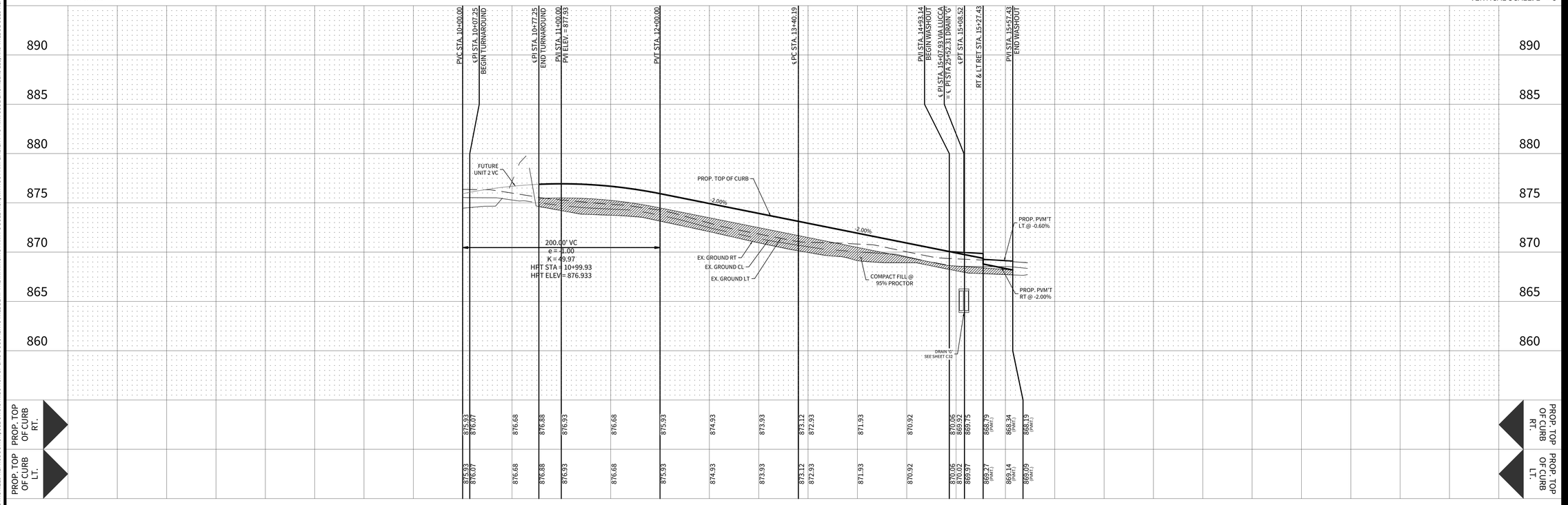




VIA LUCCA

STA. 10+07.25 TO 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

CONTESSA SUBDIVISION UNIT 1

STEET PLAN & PROFILE - VIA LUCCA

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

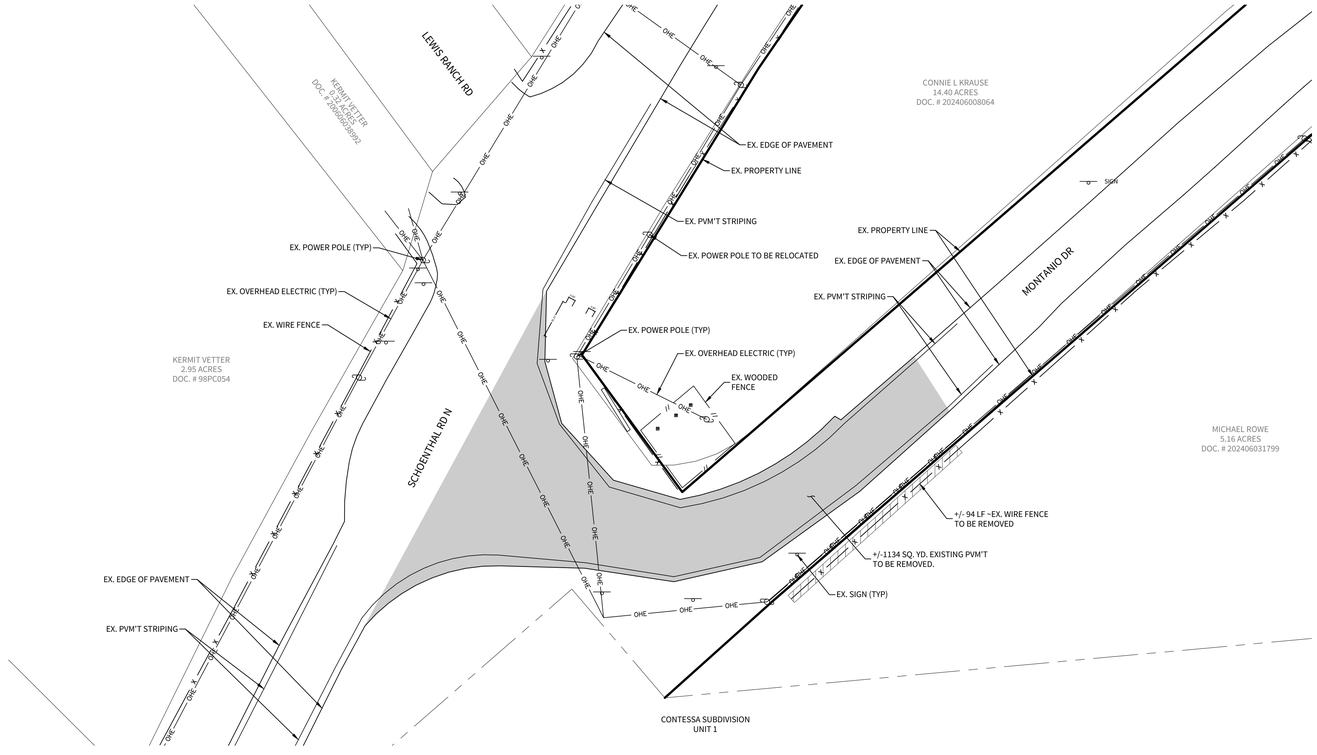
C12

CUDEENGINEERS.COM

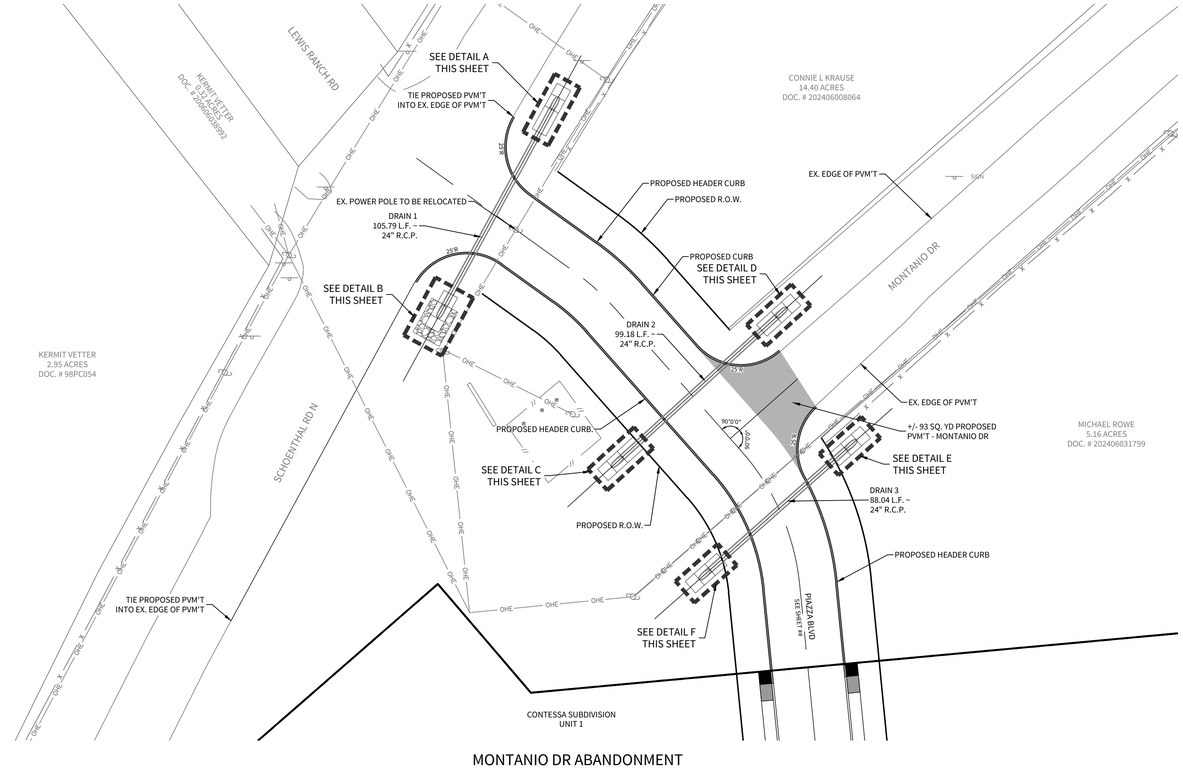
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

G:\04343\002\CIVIL\Plans\C12 STEET PLAN & PROFILE - VIA LUCCA.dwg, 6/19/2025 2:57:57 PM, jgarcia

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE OTHER THAN THE ORIGINAL CLIENT FOR WHOM IT WAS PREPARED BY M.W. CUDE ENGINEERS LLC, WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE ON ANY OTHER EXTENSION OR ADDITION TO THE PROJECT OR ON ANY OTHER PROJECT. ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE INTERNAL ENTITY'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE USED AGAINST ANY AND ALL PARTIES TO THE FULLEST EXTENT PERMITTED BY LAW.

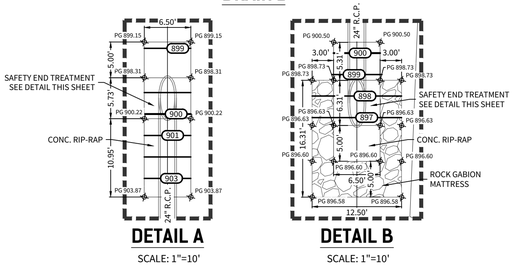


MONTANIO DR DEMOLITION PLAN



MONTANIO DR ABANDONMENT
PROPOSED CONDITIONS

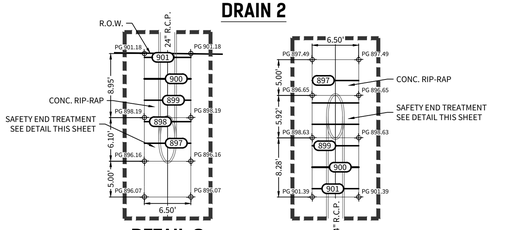
DRAIN 1



DETAIL A
SCALE: 1"=10'

DETAIL B
SCALE: 1"=10'

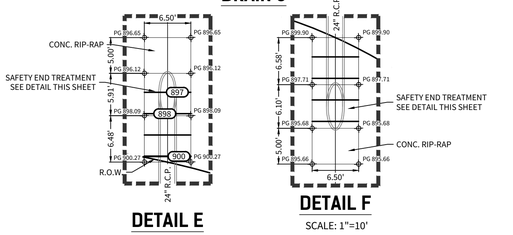
DRAIN 2



DETAIL C
SCALE: 1"=10'

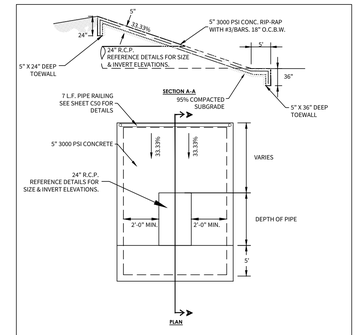
DETAIL D
SCALE: 1"=10'

DRAIN 3



DETAIL E
SCALE: 1"=10'

DETAIL F
SCALE: 1"=10'



1 — **SAFETY END TREATMENT DETAIL**
SCALE: NONE

LEGEND

- PROPERTY LINE
- EXISTING LOT LINE
- EXISTING EDGE OF PVM'T
- EXISTING OVERHEAD ELEC.
- EXISTING WIRE FENCE
- EXISTING SIGN
- EXISTING POWER POLE
- EXISTING PVM'T TO BE ABANDONED

N W E S

SCALE: 1"=30'
30 15 0 30

LEGEND

- PROPERTY LINE
- EXISTING LOT LINE
- EXISTING EDGE OF PVM'T
- EXISTING OVERHEAD ELEC.
- EXISTING WIRE FENCE
- EXISTING SIGN
- EXISTING POWER POLE
- PROPOSED R.O.W.
- PROPOSED CURB & SIDEWALK
- PROPOSED EDGE OF PVM'T
- PROPOSED PEDESTRIAN RAMP

CUDEENGINEERS.COM
EST. 1980 CUDE ENGINEERS
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

CONTESSA SUBDIVISION UNIT 1

MONTANIO DR ABANDONMENT PLAN

DATE
06/19/2025
PROJECT NO.
04343.002
DRAWN BY
CG/JG/LJ/TCD
CHECKED BY
XV/AL

REVISIONS

NO.	DATE
1	
2	
3	
4	
5	
6	
7	
8	
9	

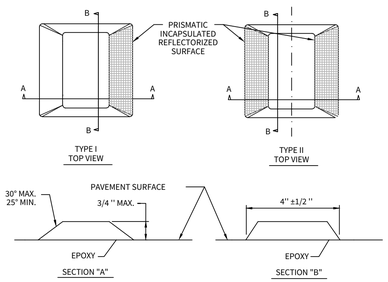
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

P:\04343\002\2 ENG\04 Plans\C13 MONTANIO DR ABANDONMENT PLAN.dwg 2025/06/19 5:04pm lbautro

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.

CUDEENGINEERS.COM



PAVEMENT REFLECTORS DETAIL

N.T.S.

1) REFLECTORIZED BLUE - FIRE HYDRANT

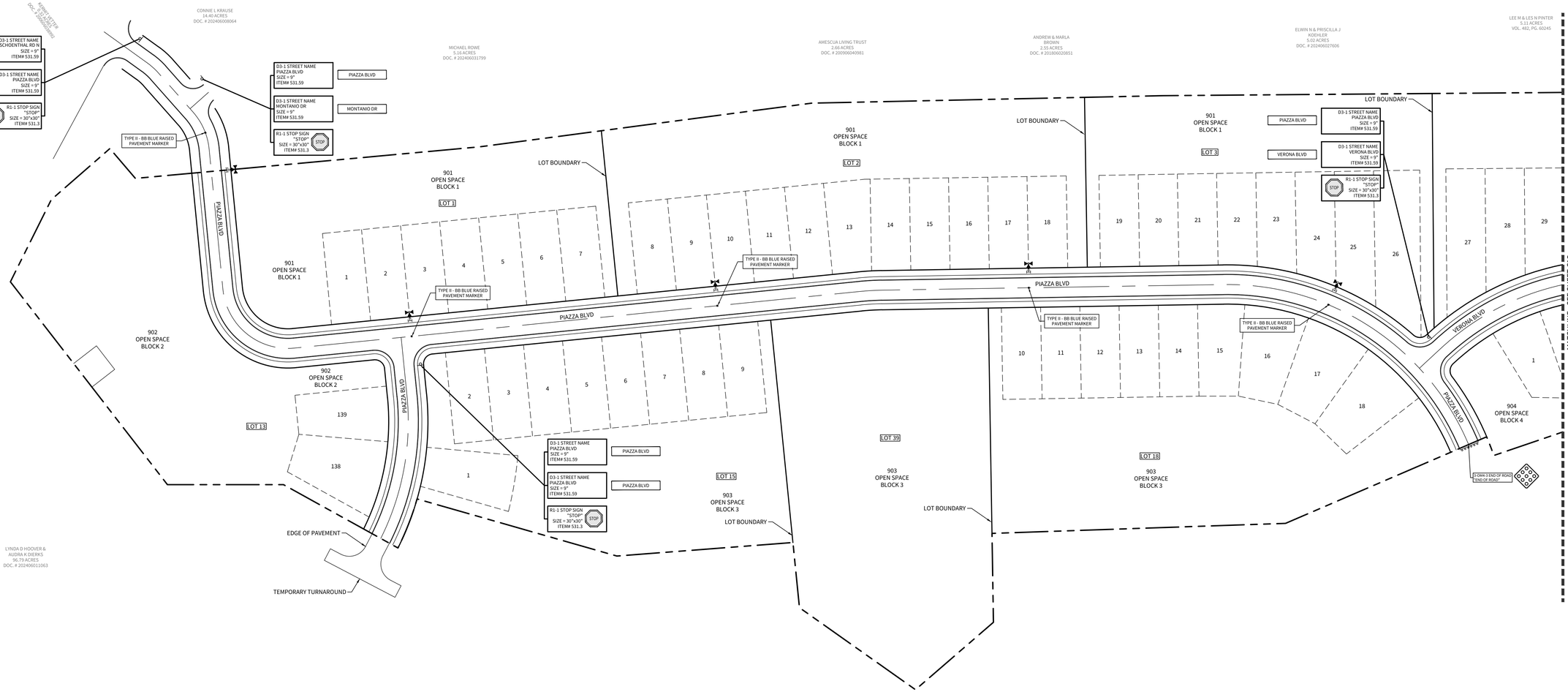
2) ADHENSIVE SHALL BE APPLIED IN SUFFICIENT TO ENSURE THE FOLLOWING:
   a) 100 PERCENT OF THE BONDING AREA OF RAISED PAVEMENT MARKERS SHALL BE IN CONTACT WITH THE ADHESIVE.
   b) RAISED PAVEMENT MARKERS SHALL NOT BE IN CONTACT WITH THE PAVEMENT SURFACE, BUT SHALL BE SEATED ON A CONTINUOUS LAYER OF ADHESIVE.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

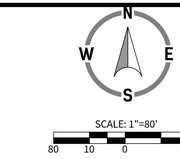
3) RAISED PAVEMENT MARKERS SHALL BE FREE OF RUST, SCALE, DIRT, OIL, GREASE, MOISTURE, OR CONTAMINATES WHICH MIGHT ADVERSELY AFFECT THE ADHESIVE BOND. ADHESIVE OR ANY OTHER MATERIAL THAT IMPAIRS THE FUNCTIONAL REFLECTIVITY WILL NOT BE ACCEPTABLE.

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

SIGNING AND PAVEMENT MARKING PLAN NOTES:

1. COMAL COUNTY WILL INSTALL COUNTY ROAD SIGNS AND INVOICE THE OWNER. THE CONTRACTOR IS TO INSTALL ALL TxDOT SIGNS AND PAVEMENT MARKINGS. ALL ROAD SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED ENGINEERING PLANS. THE COUNTY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.
2. THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CONTRACTOR SHALL NOTIFY THE COUNTY AT LEAST 24 HOURS PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE COUNTY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.





CONTESSA UNIT 1
SIGN AND PAVEMENT MARKING QUANTITIES

ITEM	DESCRIPTION	UNIT	QUANTITY
1	INSTALL SIGN POLE WITH STREET NAMES, BLOCK NUMBERS, AND STOP SIGN	EA.	7
2	RAISED PAVEMENT MARKER, TYPE II A-A (BLUE)	EA.	13
3	INSTALL SIGN POLE WITH "END OF ROAD" 3-OM4-3	EA.	2

CUDEENGINEERS.COM

CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

TRAFFIC SIGNAGE PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	A	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C14

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN A FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REUSE OF THIS DOCUMENT SHALL BE AT THE WORKING PARTY'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC AND WILL ESTABLISH AGAINST ANY SUCH PARTY ANY AND ALL CLAIMS RELATED TO THE FULLEST EXTENT PERMITTED BY LAW.

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.

© 2025 M.W. CUDE ENGINEERS LLC · THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE OTHER THAN THE ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTION BY, M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REUSE OR MODIFICATION OF THIS DOCUMENT SHALL BE AT THE RECIPIENT'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND SHALL BE LEGALLY ENFORCED AND ALL DAMAGES SUFFERED SHALL BE RECOVERED.

MATCHLINE - SEE SHEET C14

901 OPEN SPACE BLOCK 1

LOT 4

LOT BOUNDARY

ERNIE & SALLY GONZALES
4.94 ACRES
DOC. # 2007060248861

KEIR LIVING TRUST
5.24 ACRES
DOC. # 202106061904

REBECCA L HENDRIX
LIVING TRUST
9.35 ACRES
DOC. # 202206009084

HEIDELBERG MATERIALS
SOUTHWEST AGG 1 LLC
1088.00 ACRES
DOC. # 202306039361

VERONA BLVD

VIA LUCCA

VIA SICILIA

TORINO WAY

LOT 5

LOT 6

LOT 20

LOT 29

LOT 30

904 OPEN SPACE BLOCK 4

902 OPEN SPACE BLOCK 2

905 OPEN SPACE BLOCK 5

TYPE II - BB BLUE RAISED PAVEMENT MARKER

TYPE II - BB BLUE RAISED PAVEMENT MARKER

TYPE II - BB BLUE RAISED PAVEMENT MARKER

TYPE II - BB BLUE RAISED PAVEMENT MARKER

TYPE II - BB BLUE RAISED PAVEMENT MARKER

TYPE II - BB BLUE RAISED PAVEMENT MARKER

D3-1 STREET NAME
VERONA BLVD
SIZE = 9"
ITEM# 531.59

D3-1 STREET NAME
VIA LUCCA
SIZE = 9"
ITEM# 531.59

R1-1 STOP SIGN
"STOP"
SIZE = 30"x30"
ITEM# 531.3

D3-1 STREET NAME
VERONA BLVD
SIZE = 9"
ITEM# 531.59

D3-1 STREET NAME
VIA SICILIA
SIZE = 9"
ITEM# 531.59

R1-1 STOP SIGN
"STOP"
SIZE = 30"x30"
ITEM# 531.3

D3-1 STREET NAME
VERONA BLVD
SIZE = 9"
ITEM# 531.59

D3-1 STREET NAME
TORINO WAY
SIZE = 9"
ITEM# 531.59

R1-1 STOP SIGN
"STOP"
SIZE = 30"x30"
ITEM# 531.3

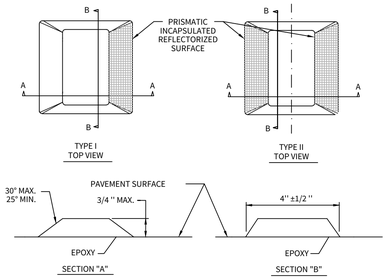
3-OM4-3 END OF ROAD
"END OF ROAD"

EDGE OF PAVEMENT

TEMPORARY TURNAROUND

SIGNING AND PAVEMENT MARKING PLAN NOTES:

1. COMAL COUNTY WILL INSTALL COUNTY ROAD SIGNS AND INVOICE THE OWNER. THE CONTRACTOR IS TO INSTALL ALL TxDOT SIGNS AND PAVEMENT MARKINGS. ALL ROAD SIGNS AND PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED ENGINEERING PLANS. THE COUNTY WILL INSPECT ALL SIGNS AT FINAL INSPECTION.
2. THE CONTRACTOR SHALL INSTALL ALL PAVEMENT MARKINGS IN ACCORDANCE WITH APPROVED ENGINEERING PLANS. THE CONTRACTOR SHALL NOTIFY THE COUNTY AT LEAST 24 HOURS PRIOR TO THE INSTALLATION OF ALL SEALER AND FINAL MARKINGS. THE COUNTY WILL INSPECT ALL MARKINGS AT FINAL APPLICATION.



PAVEMENT REFLECTORS DETAIL

N.T.S.

1) REFLECTORIZED BLUE - FIRE HYDRANT

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

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

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

N
W E
S

SCALE: 1"=80'
80 10 0 80

CONTESSA UNIT 1
SIGN AND PAVEMENT MARKING QUANTITIES

ITEM	DESCRIPTION	UNIT	QUANTITY
1	INSTALL SIGN POLE WITH STREET NAMES, BLOCK NUMBERS, AND STOP SIGN	EA.	7
2	RAISED PAVEMENT MARKER, TYPE II A-A (BLUE)	EA.	13
3	INSTALL SIGN POLE WITH "END OF ROAD" 3-OM4-3	EA.	2

CUDEENGINEERS.COM

CUDE ENGINEERS
EST. 1980

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

CONTESSA SUBDIVISION UNIT 1

TRAFFIC SIGNAGE PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	A	1	2	3	4	5	6	7	8	9

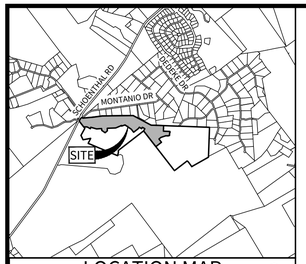
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

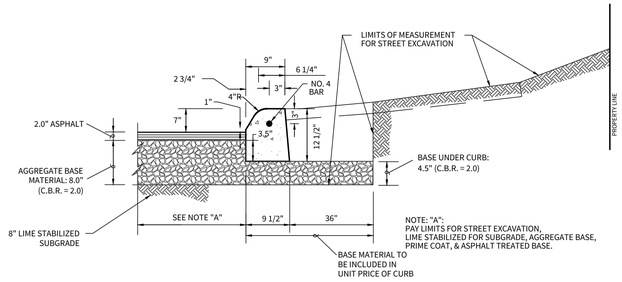
C15

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

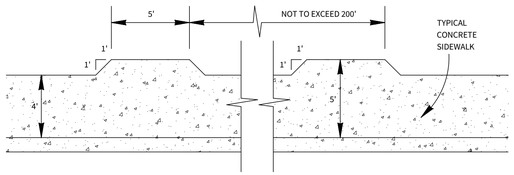
P:\04343.002\2-SUBDIV\4-Plans\C15 TRAFFIC SIGNAGE PLAN.dwg 6/20/2025 12:24pm jgalindo



LOCATION MAP
N.T.S.

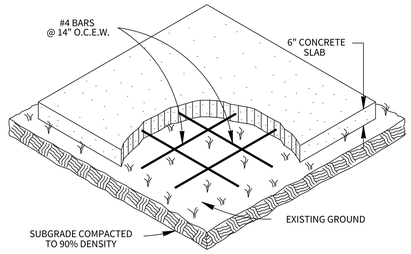


CURB SECTIONS
N.T.S.



SIDEWALK PASSING SPACE

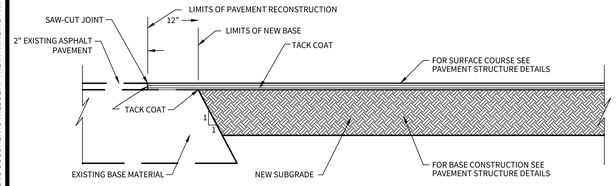
1. FOR LOCAL TYPE "A" STREETS, SIDEWALKS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF 4' AND IF SEPARATED FROM THE CURB, THE SIDEWALK SHALL BE LOCATED A MINIMUM OF 3' FROM THE BACK OF CURB.
2. SIDEWALKS LESS THAN 5 FEET IN WIDTH SHALL BE PROVIDED WITH A PASSING SPACE AT A MAXIMUM SPACING OF 200 FEET.



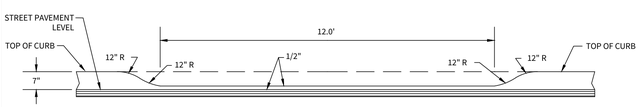
MAIL BOX PAD NOTE:

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

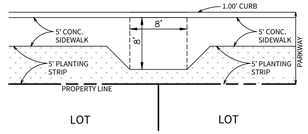
COMMUNITY MAIL BOX SLAB



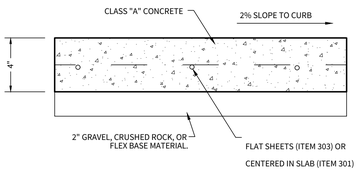
PAVEMENT JUNCTION DETAILS
N.T.S.



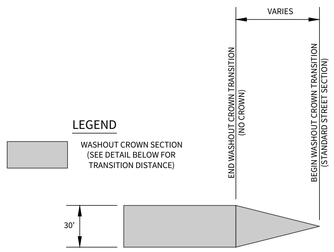
TYPICAL DRIVEWAY CUT SECTION



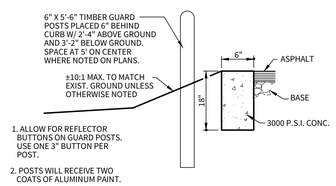
MAILBOX PAD DETAIL
N.T.S.



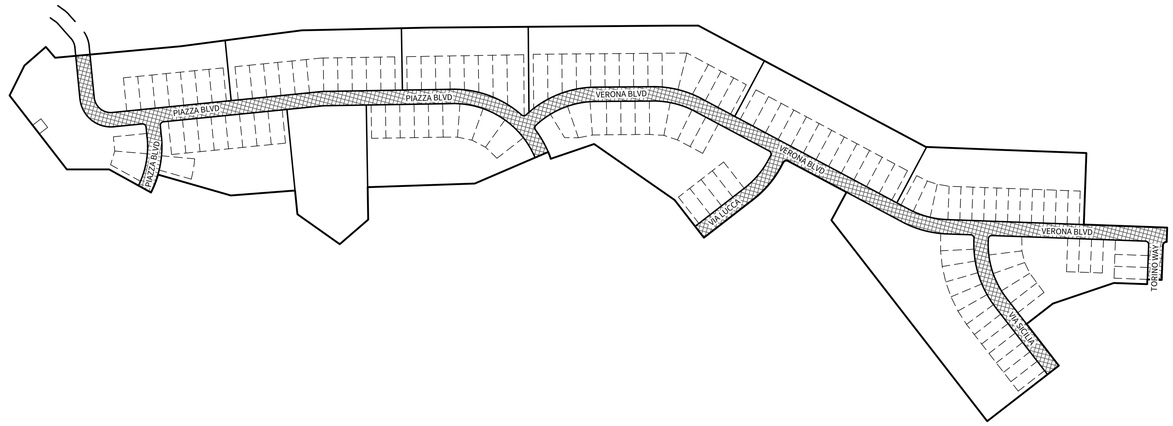
CONCRETE SIDEWALK



WASHOUT CROWN TRANSITION DETAIL



HEADER CURB & BOLLARD 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 TERRADYNE, PROJECT NO. A241121-R1, DATED 08/14/24)
2. ANY AREAS OF CLAY ENCOUNTERED DURING CONSTRUCTION SHALL BE REMOVED DOWN TO THE WEATHERED/FRIABLE MARLSTONE/LIMESTONE AND PROPERLY BACKFILLED WITH MARLSTONE/LIMESTONE MILLINGS HAVING A CBR VALUE DETERMINED BY THE GEOTECHNICAL ENGINEER.
3. A GEOTECHNICAL ENGINEERING REPRESENTATIVE SHALL BE RETAINED TO: (1) OBSERVE THE SITE PREPARATION AND SUBGRADE OPERATIONS. (2) EVALUATE THE ACTUAL SUBGRADE MATERIAL CLASSIFICATION; AND (3) VERIFY THAT RECOMMENDATIONS ARE FOLLOWED. THE ACTUAL SUBGRADE CONDITION AT A PARTICULAR LOCATION WILL NEED TO BE EVALUATED DURING CONSTRUCTION ONCE THE SUBGRADE IS CUT/FILLED TO THE PROPER GRADE.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING MATERIAL TESTING. TESTING TO BE PAID BY OWNER.
5. CONTRACTOR MAY LEAVE VERTICAL CUT BANKS AT R.O.W. LINE AND MEDIANS PROVIDED PROJECT GEOTECHNICAL ENGINEER DETERMINES ROCK IS COMPETENT TO STAND ON ITS OWN.
6. IF ALTERNATE PAVEMENT SECTION CHOSEN, COMAL COUNTY SHALL BE PROVIDED WITH REVISED CONSTRUCTION PLANS INDICATING SELECTED PAVEMENT DESIGN PRIOR TO CONSTRUCTION.
7. PAVEMENT SECTIONS ARE SUBJECT TO CHANGE DUE TO RETESTING OF SOIL AFTER STREET EXCAVATION HAS BEEN DONE TO TOP OF CURB.
8. CONTRACTOR SHALL CONTACT ENGINEER 48 HRS IN ADVANCE FOR FIELD OBSERVATION DURING STREET CONSTRUCTION. CONTRACTOR WILL BE REQUIRED TO CONTACT ENGINEER FOR INSPECTION OF THE SUBGRADE, BASE, ASPHALT, AND CURB.
9. GENERAL FILL MATERIALS SHOULD CONSIST OF ONSITE SOILS OR CLEAN IMPORTED FILL SOILS WITH EQUAL OR BETTER CBR CHARACTERISTICS TO THE ONSITE SOILS. GENERAL FILL MATERIAL SHOULD BE CLEAN AND FREE OF ANY VEGETATION ROOTS, ORGANIC MATERIALS, TRASH OR GARBAGE, CONSTRUCTION DEBRIS, OR OTHER DELETERIOUS MATERIALS AND SHOULD CONTAIN NO LARGER THAT THREE (3) INCHES IN MAXIMUM DIMENSION.

PAVEMENT DESIGN SCHEMATIC

NOTE:
1. REFERENCE GEOTECHNICAL REPORT (A241121-R1) FOR BORING INFORMATION AND CBR LOCATIONS

LEGEND:
TYPICAL "RESIDENTIAL LOCAL 'A' STREET"

STREET TYPE	HMAC TYPE "D"	AGGREGATE BASE	LIME TREATED SUBGRADE (35 LB/SY)	BASE UNDER CURB	STRUCTURAL NUMBER
RESIDENTIAL LOCAL 'A' STREET	2.0"	8.0"	8.0"	6.0"	2.64

STREET PAVEMENT DESIGN OPTIONS

1. SUBGRADE - GEOTECH ENGINEER WILL BE PRESENT TO DETERMINE IF NATIVE MARL/ROCK SUBGRADE IS SUFFICIENT FOR PAVEMENT SECTION LISTED ABOVE.
2. CONTRACTOR SHALL APPLY CLAY SUBGRADE PAVEMENT SECTION (SEE GEOTECH REPORT BY TERRADYNE PROJECT NO. A241121-R1, DATED 08/14/24) IF GEOTECH ENGINEER DETERMINES NATIVE MARL/ROCK IS NOT SUFFICIENT. IF LIME TREATMENT IS REPLACED BY NATIVE MARL/ROCK, COMAL COUNTY 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.

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC AND ADAPTATION OR USE OF THIS DOCUMENT BY ANY PARTY OTHER THAN M.W. CUDE ENGINEERS LLC AND ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE ENTIRE RISK OF THE USER AND THE USER AGREES TO INDEMNIFY AND HOLD M.W. CUDE ENGINEERS LLC, AND ITS SUBSIDIARIES AND AFFILIATES, HARMLESS FROM AND AGAINST ANY AND ALL CLAIMS, COSTS, DAMAGES, AND LIABILITIES ARISING FROM OR RELATED TO SUCH UNAUTHORIZED USE.

CUDEENGINEERS.COM
EST. 1980 CUDE ENGINEERS
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

CONTESSA SUBDIVISION UNIT 1

STANDARD STREET DETAILS

DATE
06/19/2025
PROJECT NO.
04343.002
DRAWN BY
CG/JG/LJ/TCD
CHECKED BY
XV/AL

REVISIONS

DATE	NO.
	1.
	2.
	3.
	4.
	5.
	6.
	7.
	8.
	9.

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C16

CUDEENGINEERS.COM

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

DETAILS ON THIS DRAWING ARE NOT TO SCALE

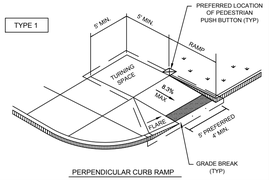
C:\04343.002\2-DWGs\4 Plan\SUB\S STANDARD STREET DETAILS.dwg, 6/19/2025 2:50pm, tgarcia

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE OTHER THAN THE ORIGINAL PURCHASER WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED USE, ADAPTATION, OR MODIFICATION OF THIS DOCUMENT BY ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF M.W. CUDE ENGINEERS LLC, SHALL BE AT THE PERSONNEL'S SOLE RISK AND WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE LEGALLY ADJUSTED ON A CASE-BY-CASE BASIS TO THE FULLEST EXTENT PERMITTED BY LAW.

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

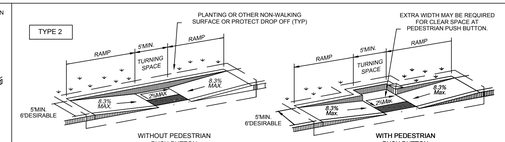
DATE:
FILE:

TYPE 1



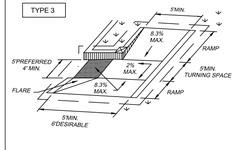
PERPENDICULAR CURB RAMP

TYPE 2

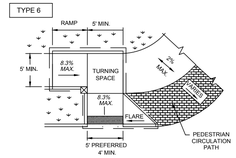


PARALLEL CURB RAMP

TYPE 3

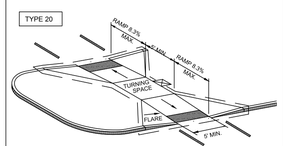


TYPE 6



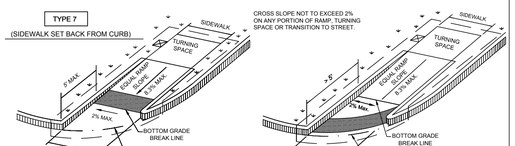
COMBINATION CURB RAMPS

TYPE 20

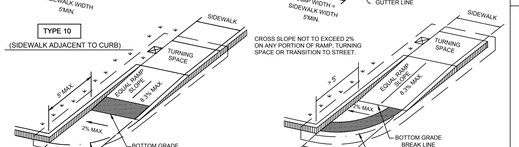


CURB RAMPS AT MEDIAN ISLANDS

TYPE 7
(SIDEWALK SET BACK FROM CURB)

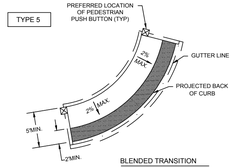


TYPE 10
(SIDEWALK ADJACENT TO CURB)



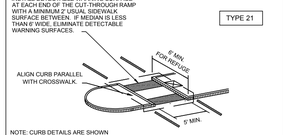
DIRECTIONAL RAMPS WITHIN RADIUS

TYPE 5

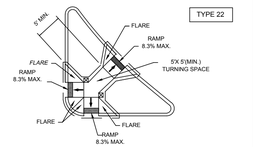


BLENDED TRANSITION
(FLUSH LANDING)

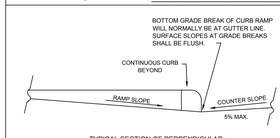
TYPE 21



TYPE 22



COMBINATION ISLAND RAMPS



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

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

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

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS
PED-18

FILE: ped18	DN: TxDOT	CK: VP	CK: KM	CK: PK & JG
©TxDOT MARCH 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS: 09-2010, 02-2012, 02-2020, 07-2018	DIST	COUNTY		SHEET NO.

DATE:
FILE:

GENERAL NOTES

CURB RAMPS

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

DETECTABLE WARNING MATERIAL

19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 6 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

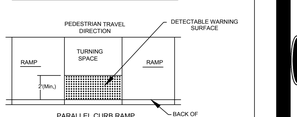
DETECTABLE WARNING PAVERS (IF USED)

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

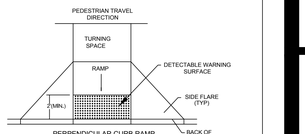
SIDEWALKS

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

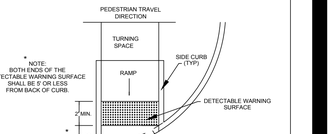
DETECTABLE WARNING SURFACE DETAILS



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

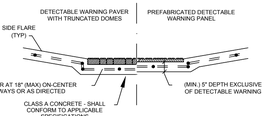


PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



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

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



SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

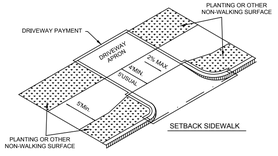
SHEET 2 OF 4

Texas Department of Transportation — Design Division Standard

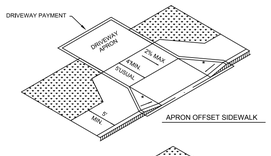
PEDESTRIAN FACILITIES
CURB RAMPS
PED-18

FILE: ped18	DN: TxDOT	CK: VP	CK: KM	CK: PK & JG
©TxDOT MARCH 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS: 09-2010, 02-2012, 02-2020, 07-2018	DIST	COUNTY		SHEET NO.

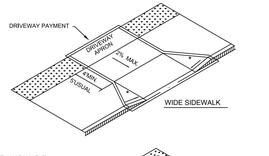
SIDEWALK TREATMENT AT DRIVEWAYS



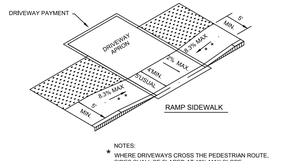
SETBACK SIDEWALK



APRON OFFSET SIDEWALK

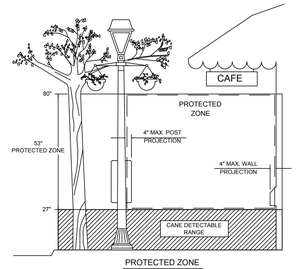


WIDE SIDEWALK



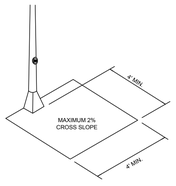
RAMP SIDEWALK

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

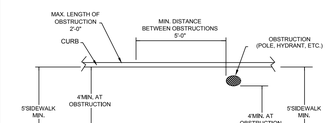


PROTECTED ZONE

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

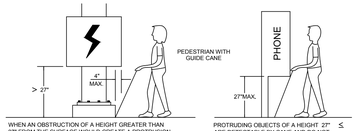


CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



PLAN VIEW
PLACEMENT OF STREET FIXTURES

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



DETECTION BARRIER FOR VERTICAL CLEARANCE ≤80"

SHEET 3 OF 4

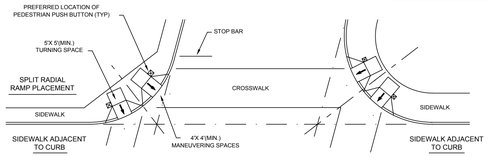
Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS
PED-18

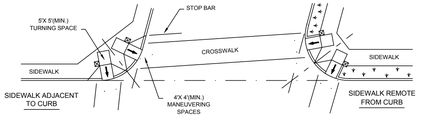
FILE: ped18	DN: TxDOT	CK: VP	CK: KM	CK: PK & JG
©TxDOT MARCH 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS: 09-2010, 02-2012, 02-2020, 07-2018	DIST	COUNTY		SHEET NO.

DATE:
FILE:

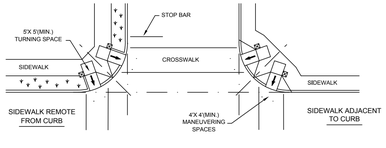
TYPICAL CROSSING LAYOUTS
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



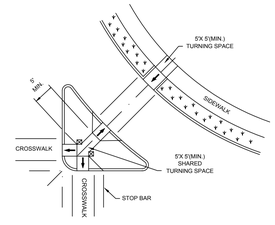
SKEWED INTERSECTION WITH "LARGE" RADIUS



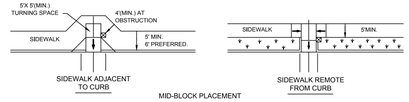
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE.

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

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

SHEET 4 OF 4

Texas Department of Transportation — Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS
PED-18

FILE: ped18	DN: TxDOT	CK: VP	CK: KM	CK: PK & JG
©TxDOT MARCH 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS: 09-2010, 02-2012, 02-2020, 07-2018	DIST	COUNTY		SHEET NO.

CUDEENGINEERS.COM
EST. 1980 CUDE ENGINEERS
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

CONTESSA SUBDIVISION UNIT 1

TXDOT DETAILS - PEDESTRIAN FACILITIES

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C17

CUDEENGINEERS.COM

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

E:\04343\002\2-ENG\Cad Files\C17 TXDOT DETAILS - PEDESTRIAN FACILITIES.dwg 2025/06/19 2:53pm garcia

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED USE, DISTRIBUTION, OR MODIFICATION OF THIS DOCUMENT WITHOUT THE PRIOR WRITTEN CONSENT OF M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED USE, DISTRIBUTION, OR MODIFICATION OF THIS DOCUMENT SHALL BE AT THE UNDERSIGNED'S SOLE RISK AND WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC. © M.W. CUDE ENGINEERS LLC. ALL RIGHTS RESERVED. UNAUTHORIZED REPRODUCTION, USE, OR DISTRIBUTION OF THIS DOCUMENT IS STRICTLY PROHIBITED BY LAW.

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)X(X)-X(XXX)

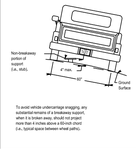
Post Type
- FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
- TWT = Thin-Walled Tubing (see SMD(TWT))
- 10BWG = 10 BWG Tubing (see SMD(SLIP-1) or (SLIP-3))
- SCH = Schedule 80 Pipe (see SMD(SLIP-1) or (SLIP-3))

Number of Posts (1 or 2)

Anchor Type
- UA = Universal Anchor - Connected (see SMD(FRP) and (TWT))
- UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
- RS = Wedge Anchor Steel, c (see SMD(TWT))
- WP = Wedge Anchor Plastic (see SMD(TWT))
- SI = Slipbase - Installed Universal (see SMD(SLIP-1) or (SLIP-3))
- SW = Slipbase - Bolted Down (see SMD(SLIP-1) or (SLIP-3))

Sign Mounting Designation
- P = Prefab, "Plain" (see SMD(SLIP-1) or (SLIP-3), (FRP), (TWT))
- T = Prefab, "T" shape (see SMD(SLIP-1) or (SLIP-3), (TWT))
- L = Prefab, "L" shape (see SMD(SLIP-1) or (SLIP-3))
- F REQUIRED
- TEXT or (EXT) = Number of Extensions (see SMD(SLIP-1) or (SLIP-3), (TWT))
- MB = Extruded Wide Beam (see SMD(SLIP-1) or (SLIP-3))
- EXW = Extruded Wideboard (see SMD(SLIP-1) or (SLIP-3))
- EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

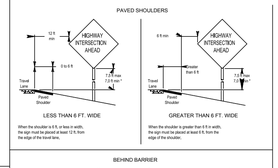
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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

SIGN LOCATION

PAVED SHOULDERS



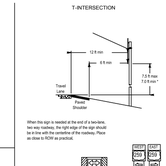
LESS THAN 6 FT. WIDE

When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.

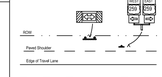
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

T-INTERSECTION



When this sign is needed at the end of a two-lane, two-way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER

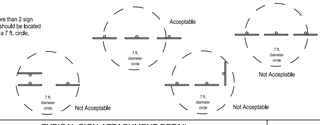


BEHIND GUARDRAIL

BEHIND CONCRETE BARRIER

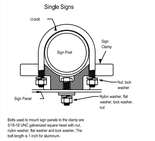
*Sign distance based on distance required for proper guard rail or concrete barrier performance.

No more than 2 sign posts should be located within a 7 ft. circle.

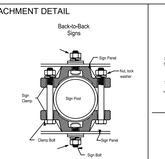


TYPICAL SIGN ATTACHMENT DETAIL

Single Signs



Back-to-Back Signs



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

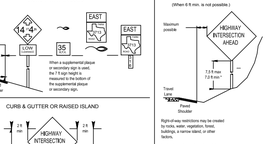
When two sign panels are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head bolt, nut, nylon washer, flat washer and lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

Approximate Bolt Length

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

SIGNS WITH PLAQUES

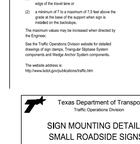


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY (When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal distance from the edge of the travelway, signs should be placed as far from the travel lane as practical.

** First mile the shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

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

(1) a minimum of 5 ft above the edge of the travel lane or

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

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

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

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

Texas Department of Transportation
Traffic Operations Division

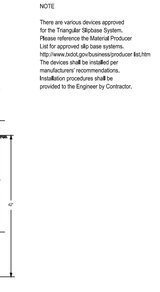
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
GENERAL NOTES & DETAILS

SMD(GEN)-08

FILE	DATE	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	7/97	CONT	SHEET	JOB	HIGHWAY
	REVISIONS	2014			

264

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer-list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

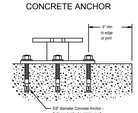
1. Slip base shall be permanently marked to indicate manufacturer, Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Tubular steel sign supports and slip bases shall conform to the following specifications:
   - 10 BWG Tubing (.135" outside diameter)
     - 0.134" nominal wall thickness
     - Steel shall be ASTM A500 Grade B welded steel tubing or pipe
     - Steel shall be HSLAS Gr 50 per ASTM A1011 or ASTM A1008
     - Other steels may be used if they meet the following:
       - 50,000 PSI minimum yield strength
       - 70,000 PSI minimum tensile strength
       - 18% minimum elongation in 2"
     - Wall thickness (uncoated) shall be within the range of 0.122" to 0.126"
     - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
     - Galvanization per ASTM A123 or ASTM A653 G210, For prevalent steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   - Schedule 80 Pipe (2.875" outside diameter)
     - 0.276" nominal wall thickness
     - Steel tubing per ASTM A500 Gr 0
     - Steel pipe with continuous resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
       - 46,000 PSI minimum yield strength
       - 62,000 PSI minimum tensile strength
       - 21% minimum elongation in 2"
     - Wall thickness (uncoated) shall be within the range of 0.345" to 0.354"
     - Outside diameter (uncoated) shall be within the range of 2.830" to 2.906"
     - Galvanization per ASTM A123
   - Triangular Slipbase System website for detailed drawings of sign clamps and Texas Triangular Slipbase System components. The website address is http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12inch diameter by 42inch deep hole, If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. Place the concrete in the foundation hole to within 4 inches of the top of the hole using a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Insert the base post in foundation hole to depths shown and fill hole with concrete. Vibrate concrete as it is placed to ensure a dense mix around the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub, Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the slowest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above the slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown, When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2)-14 for clearances based on sign types.

CONCRETE ANCHOR



Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563, and hardened washer per ASTM F436, The stud bolt shall have a minimum yield and ultimate tensile strength of 55 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when embedded, shall have a minimum allowable tension and shear of 2400 and 1520 pcs, respectively. Adhesive type anchors shall have stud bolts installed with Type W epoxy per DMS-6100, "Epoxies and Adhesives," Adhesive anchors may be bonded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of nut when embedded, shall have a minimum allowable tension and shear of 2400 and 1520 pcs, respectively, when installed in 4000 psi normal weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3600 and 3150 pcs, respectively.

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563, and hardened washer per ASTM F436, The stud bolt shall have a minimum yield and ultimate tensile strengths of 55 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when embedded, shall have a minimum allowable tension and shear of 2400 and 1520 pcs, respectively, when installed in 4000 psi normal weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3600 and 3150 pcs, respectively.

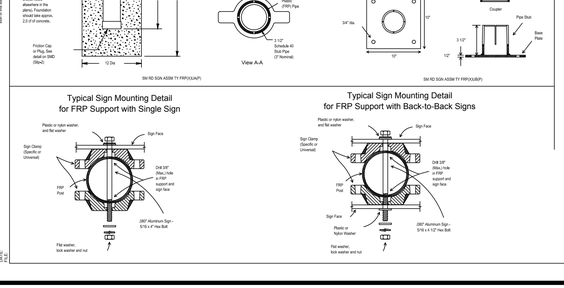
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

FILE	DATE	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	JUL 2002	CONT	SHEET	JOB	HIGHWAY
	REVISIONS	2014			

268


ONE-WAY Street Name Sign (If required)
Gap between clamps shall be 4 1/2"
STOP (R1-1)
YIELD (R1-2)
Aluminum Sign Panel
Nylon washer, 5/16" x 1 3/4" hex bolt with nut, lock washer and flat washer per ASTM A307 galvanized per Item 445, "Galvanizing."
Wing Channel
Top View
Detail A
Detail B
Exclude Alum. Windboard (See SMD(2-T))
PLACE 4 + L variable length STOP X 2 - 32 inch pieces OR 2 - 48 inch pieces 8 - 1 inch plate
See Detail D
SM RD SGN ASSM TY XXXXX(1)X(P)
SM RD SGN ASSM TY XXXXX(1)X(UNP)
SM RD SGN ASSM TY XXXXX(1)X(UNP)
Wshape/HPT
1 1/2 #8 Wing Channel
See Detail A
See Detail B
See Detail C
SM RD SGN ASSM TY XXXXX(1)X(G)
SM RD SGN ASSM TY XXXXX(1)X(G)
SM RD SGN ASSM TY XXXXX(1)X(G)-HC
(See Note 11)
Aluminum Sign Panel
Nylon washer, 5/16" x 1 3/4" hex bolt with nut, lock washer, and flat washer per ASTM A307 galvanized per Item 445, "Galvanizing."
Wing Channel
Side View
SIDE VIEW
Detail C
Drill 7/16" hole (through) after assembly and install bolt, nut, 2 flat washers and lock washer.
3/8" x 3 1/2" heavy hex bolt with nut, lock washer and 2 flat washers per ASTM A307 galvanized per Item 445, "Galvanizing."
Extender
T-Bracket
Detail F
Splices shall only be allowed behind the sign substrates.
"U" Extender
See Detail F
11PT BPL (max)
SM RD SGN ASSM TY S80(1)X(G)-1EXT)
SM RD SGN ASSM TY S80(1)X(G)-2EXT)
Wshape/HPT
See Detail E
See Detail D
SM RD SGN ASSM TY XXXXX(2)X(AP)
SM RD SGN ASSM TY XXXXX(3)X(AP)
TBJ Bracket
1/2" x 4" heavy hex bolt, nut, 2 flat washers per ASTM A307 galvanized per Item 445, "Galvanizing."
Post
Detail E
3/8" x 3 1/2" square head bolt, nut, flat washer and lock washer per ASTM A307 galvanized per Item 445, "Galvanizing."
TOP VIEW
Extruded Aluminum Windboard (see SMD(2-T))
Sign Clamp (Specific or Universal)
Post
Detail D
FRICTION CAP DETAIL
Rolled Crimp to engage plate O.D.
Pipe O.D. +.025"/-.125"
Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.
The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive engagement and prevent accidental loss. Any shall be free of sharp crosses or indentations and show no evidence of metal fracture.
Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/Zn 5.
Wshape/HPT
0.25 H
W
0.250
0.250
0.250
All dimensions are in english unless detailed otherwise.
SM RD SGN ASSM TY XXXXX(1)X(T)
(* See Note 12)
Post
Pipe O.D. +.025"/-.125"
.125" Skin Variation Depth
1.50" min. 1.75" max

REQUIRED SUPPORT	
SIGN DESCRIPTION	SUPPORT
48inch STOP sign (R1-1)	TY 10BWG(1)X(AP) TY 10BWG(1)X(UNP)
60inch YIELD sign (R1-2)	TY 10BWG(1)X(P) TY 10BWG(1)X(UNP)
48x18inch ONE-WAY sign (R6-1)	TY 10BWG(1)X(P) TY 10BWG(1)X(UNP)
30x48, 48x36, and 48x48-inch signs	TY 10BWG(1)X(T)
48x60-inch signs	TY S80(1)X(T)
48x48-inch signs (diamond or square)	TY 10BWG(1)X(T)
48x96inch signs	TY S80(1)X(T)
48-inch Advisory Speed X-ing sign (S1-1)	TY 10BWG(1)X(T)
48-inch School X-ing sign (S2-1)	TY 10BWG(1)X(T)
Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)X(T)

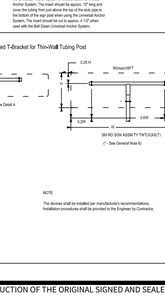
Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

FILE	DATE	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	JUL 2002	CONT	SHEET	JOB	HIGHWAY
	REVISIONS	2014			

269C



GENERAL NOTES:

1.

SIGN SUPPORT # OF POSTS		MAX. SIGN AREA
10 BWG	1	12 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign clamps shall be of the type accepted where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specification DMS-8300, "Signs," and have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons other than those shown in the plans shall be listed as "REQUIRED SUPPORT" table on the sheet.
6. For horizontal rectangular signs fabricated from flat sheet aluminum, the maximum width of sign panel or less in height, U-brackets are used for signs of greater height.
7. Wshape or rectangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel, so that they may function independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be furnished with ASTM A123.
9. Extruded pipe, wing channel, or windboard shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating damaged by cutting per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT	
SIGN DESCRIPTION	SUPPORT
48inch STOP sign (R1-1)	TY 10BWG(1)X(AP) TY 10BWG(1)X(UNP)
60inch YIELD sign (R1-2)	TY 10BWG(1)X(P) TY 10BWG(1)X(UNP)
48x18inch ONE-WAY sign (R6-1)	TY 10BWG(1)X(T)
30x48, 48x36, and 48x48-inch signs	TY 10BWG(1)X(T)
48x60-inch signs	TY S80(1)X(T)
48x48inch signs (diamond or square)	TY 10BWG(1)X(T)
48x96inch signs	TY S80(1)X(T)
48-inch Advisory Speed X-ing sign (S1-1)	TY 10BWG(1)X(T)
48-inch School X-ing sign (S2-1)	TY 10BWG(1)X(T)
Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)X(T)

Texas Department of Transportation
Traffic Operations Division

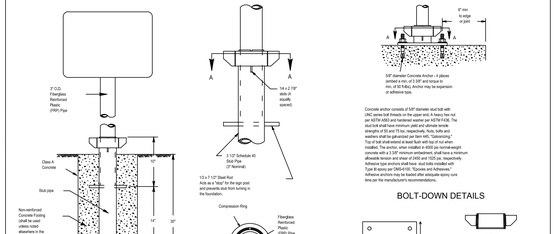
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

FILE	DATE	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	JUL 2002	CONT	SHEET	JOB	HIGHWAY
	REVISIONS	2014			

269D

Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post



GENERAL NOTES

1. FRP sign supports for a single type sign support may be used for signs up to 12 square feet of sign area. Sign installation may be used for signs up to and including 30 square feet.
2. All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
3. See the Traffic Operations Division website for detailed drawings of sign clamps. The website address is: http://www.txdot.gov/publications/traffic.htm

FRP POST REQUIREMENTS

1. Materials shall conform to the requirements of Departmental Material Specification DMS-7220, "Fiberglass" and be furnished in a yellow or gray color as specified elsewhere in the plans.
2. Thickness of FRP sign support is 0.125" + 0.031", - 0.0".
3. FRP post shall be manufactured by the Traffic Operations Division, Pultrusion process are obtained by writing:
   Texas Department of Transportation
   Traffic Operations Division
   125 East 11th Street
   Austin, Texas 78701-2483

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be extended in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30", If solid rock is encountered, the solid rock may be reduced in length as required to a minimum length of 18", Any material removed from the socketed rock shall be from the bottom and the clearance requirements given on SMD(SIGN) must be followed. The inner surfaces of the socketed/auto road remain free of concrete or other debris.
2. The Engineer may permit backfills of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Insert base post in foundation hole to depths shown and fill hole with concrete. Vibrate concrete as it is placed to ensure a dense mix around the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer.
5. Bottom of base post slots shall be above the concrete footing.
6. Check sign to ensure there is no twist, If loose, increase the tightening of coupler.

BOLT DOWN SIGN SUPPORT

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

Typical Sign Mounting Detail for FRP Support with Single Sign

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

Texas Department of Transportation
Traffic Operations Division

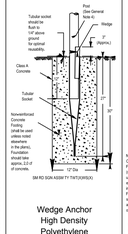
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
UNIVERSAL ANCHOR SYSTEM
WITH FRP POST

SMD(FRP)-08

FILE	DATE	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	JUL 2002	CONT	SHEET	JOB	HIGHWAY
	REVISIONS	2014			

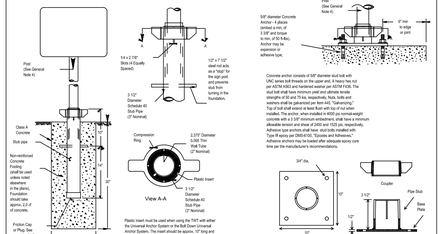
269F

Wedge Anchor Steel System

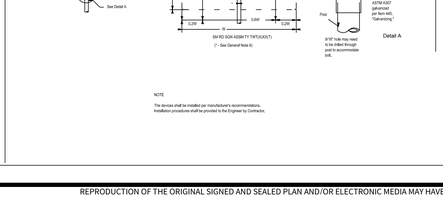


Wedge Anchor High Density Polyethylene (HDPE) System

Universal Anchor System with Thin-Walled Tubing Post



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



NOTE

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

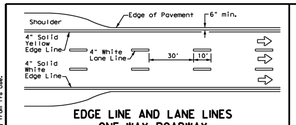
GENERAL NOTES

1. The Wedge Anchor System and the Universal Anchor System with thin-wall tubing post may be used to support up to 15 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer, Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be aluminum alloy conforming to the requirements of those obtained from the Material Producer List web page, The website address is: http://www.txdot.gov/business/producer-list.htm
4. Material used on post with this system shall conform to the following specifications:
   - 13 BWG Tubing (2.375" outside diameter) (TWT)
     - 0.095" nominal wall thickness
     - Seamless or electricresistance welded steel tubing
     - Steel shall be HSLAS Gr 50 per ASTM A1011 or ASTM A1008
     - Other steels may be used if they meet the following:
       - 50,000 PSI minimum yield strength
       - 70,000 PSI minimum tensile strength
       - 18% minimum elongation in 2"
     - Wall thickness (uncoated) shall be within the range of .083" to .095"
     - Outside diameter (uncoated) shall be within the range of 2.368" to 2.391"
     - Galvanization per ASTM 123 or ASTM A653 G210, For prevalent steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Universal Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

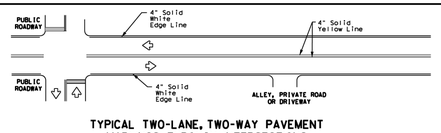
WEDGE ANCHOR SYS

DISCLAIMER:
In no case shall TxDOT be liable for any loss or damage resulting from its use.
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the compilation of this standard into any other standard or for any modifications made to this standard.

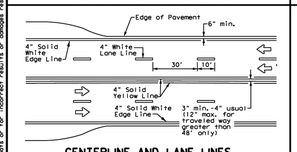
EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



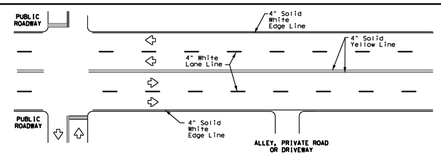
TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



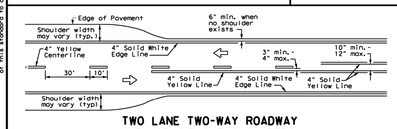
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



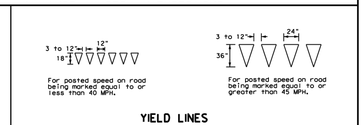
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



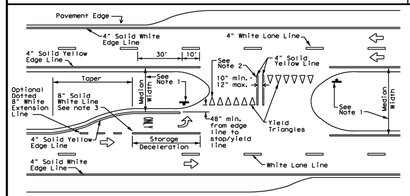
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS



NOTES

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

GENERAL NOTES

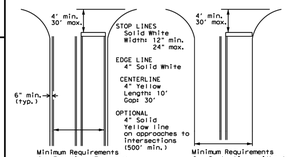
1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should not be placed less less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.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

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

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

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways



Texas Department of Transportation — Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

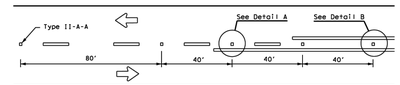
PM(1)-20

FILE:	pm1-20.dgn	DN:	CK:	DW:	CK:
©TxDOT	November 1978	CONT	SECT	JOB	HIGHWAY
8-95	3-03 REVISIONS				
5-00	2-12	DIST	COUNTY		SHEET NO.
8-00	6-20				

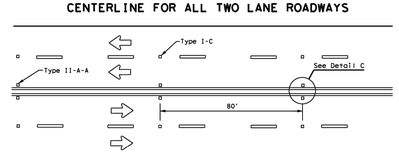
223

REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

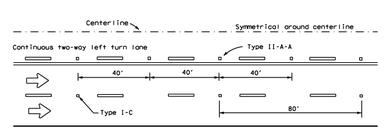
CENTERLINE FOR ALL TWO LANE ROADWAYS



CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS

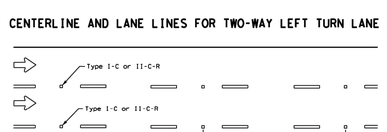


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE

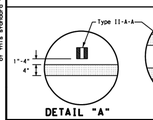


LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

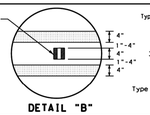
Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.



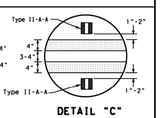
DETAIL "A"



DETAIL "B"

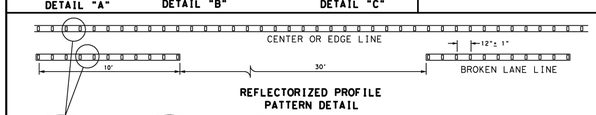


DETAIL "C"



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS



4" EDGE LINE, CENTER LINE OR LANE LINE

OPTIONAL 6" EDGE LINE, CENTER LINE OR LANE LINE

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

NOTE

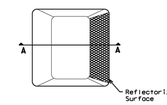
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

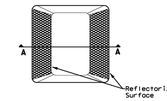
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

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

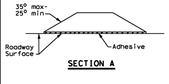
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation — Traffic Safety Division Standard

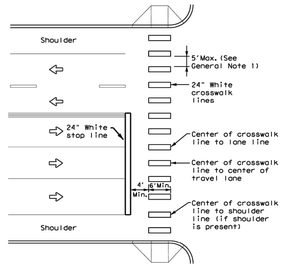
POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS

PM(2)-20

FILE:	pm2-20.dgn	DN:	CK:	DW:	CK:
©TxDOT	April 1977	CONT	SECT	JOB	HIGHWAY
4-92	2-10 REVISIONS				
5-00	2-12	DIST	COUNTY		SHEET NO.
8-00	6-20				

228

HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH



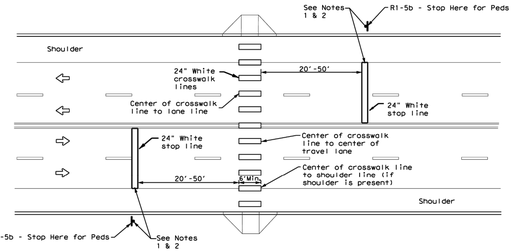
GENERAL NOTES

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

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

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

UNSIGNALIZED MID BLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK



NOTES:

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

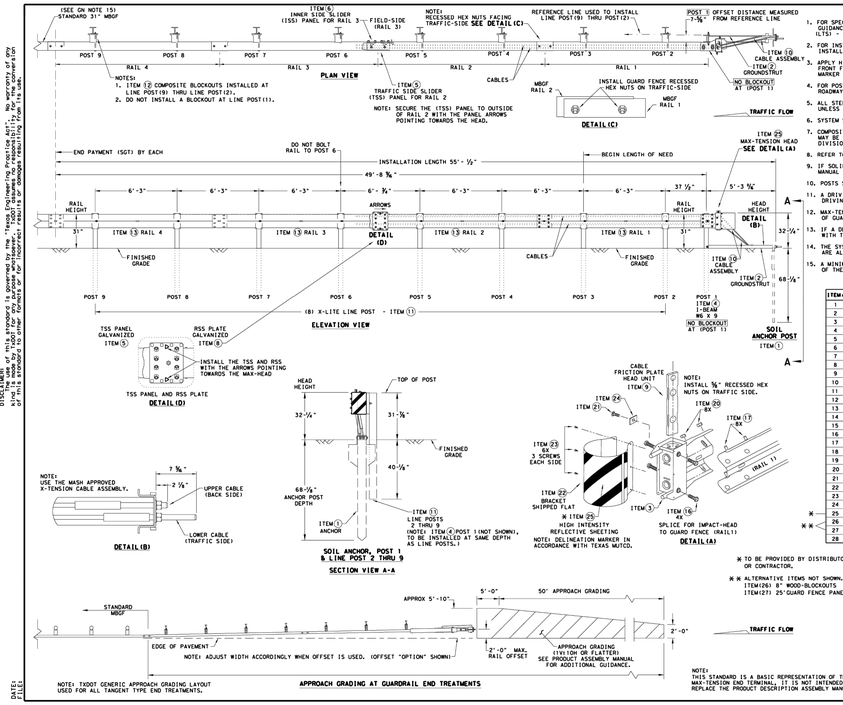
Texas Department of Transportation — Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22

FILE:	pm4-22.dgn	DN:	CK:	DW:	CK:
©TxDOT	June 2020	CONT	SECT	JOB	HIGHWAY
3-22	REVISIONS				
		DIST	COUNTY		SHEET NO.

222



GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACTS: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800
2. FOR INSTALLATION, REPAIR, & MAINTENANCE REFER TO THEL MAX-TENSION INSTALLATION INSTRUCTION MANUAL. P/N MANMAX REV D (EDN 35161).
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MAN STRIP STANDARD.
5. ALL STEEL COMPONENTS ARE GALVANIZED PER ASTM A123 OR EQUIVALENT UNLESS OTHERWISE STATED.
6. SYSTEM SHOWN USING STEEL WIDE FLANGE POST WITH COMPOSITE BLOCKOUTS.
7. COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LISTIMPLYFOR CERTIFIED PRODUCERS.
8. REFER TO INSTALLATION MANUAL FOR SPECIFIC PANEL LAPPING GUIDANCE.
9. IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL FOR INSTALLATION GUIDANCE.
10. POSTS SHALL NOT BE SET IN CONCRETE.
11. A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POST TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST.
12. MAX-TENSION SYSTEM SHALL NEVER BE INSTALLED WITHIN A CURVED SECTION OF GUARDRAIL.
13. IF A DELINEATION MARKER IS REQUIRED, MARKER SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
14. THE SYSTEM IS SHOWN WITH 12'-6" MBGF PANELS, 25'-0" MBGF PANELS ARE ALSO ALLOWED.
15. A MINIMUM OF 12'-6" OF 12GA. MBGF IS REQUIRED IMMEDIATELY DOWNSTREAM OF THE MAX-TENSION SYSTEM.

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	851-161006O-00	SOIL ANCHOR - GALVANIZED	1
2	851-161006I-00	GROUND STRUT - GALVANIZED	1
3	851-161006Z-00	MAX-TENSION IMPACT HEAD	1
4	851-161006S-00	W6x9 I-BEAM POST 6FT,-GALVANIZED	1
5	851-161006H-00	TSS PANEL - TRAFFIC SIDE SLIDER	1
6	851-161006S-00	ISS PANEL - INNER SIDE SLIDER	1
7	851-161006G-00	TOOTH - GEOMET	1
8	851-161006T-00	RSS PLATE - REAR SIDE SLIDER	1
9	8061058	CABLE FRICTION PLATE - HEAD UNIT	1
10	851-161006Y-00	CABLE ASSEMBLY - MASH X-TENSION	2
11	851-101207B-00	X-LITE LINE POST-GALVANIZED	8
12	8090534	8" W-BEAM COMPOSITE-BLOCKOUT XT110	8
13	851-4004386	12'-6" W-BEAM GUARD FENCE PANELS 12GA.	4
14	851-110207T-00	X-LITE SQUARE WASHER	1
15	851-2001886	5/8" X 7" THREAD BOLT HH (GR.5)GEOMET	1
16	851-2001885	3/4" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET	4
17	4001115	5/8" X 1 1/4" GUARD FENCE BOLTS (GR.2)MGAL	48
18	2001840	5/8" X 10" GUARD FENCE BOLTS MGAL	8
19	2001636	5/8" WASHER F436 STRUCTURAL MGAL	2
20	4001116	5/8" RECESSED GUARD FENCE NUT (GR.2)MGAL	59
21	851-2001888	5/8" X 2" ALL THREAD BOLT (GR.5)GEOMET	1
22	851-1701063-00	DELINEATION MOUNTING (BRACKET)	1
23	851-2001887	1/4" X 3/4" SCREW SD HH 410SS	7
24	4002051	GUARDRAIL WASHER RECT AASHTO FW103	1
25	SEE NOTE BELOW	HIGH INTENSITY REFLECTIVE SHEETING	1
26	4002337	8" W-BEAM TIMBER-BLOCKOUT, P080108	8
27	851-4004431	25' W-BEAM GUARDRAIL PANEL,8-SPACE,12GA.	2
28	MANMAX Rev-(D)	MAX-TENSION INSTALLATION INSTRUCTIONS	1

* TO BE PROVIDED BY DISTRIBUTOR OR CONTRACTOR.
** ALTERNATIVE ITEMS NOT SHOWN. ITEM(25) 8" WOOD-BLOCKOUTS ITEM(27) 25'GUARD FENCE PANELS

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

Texas Department of Transportation — Design Division Standard

MAX-TENSION END TERMINAL MASH - TL-3

SGT(11S)31-18

FILE:	sgt11s31fb.dgn	DN: TxDOT	CK: KM	DW: TxDOT	CK: CL
©TxDOT	FEBRUARY 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY MODIFICATION BY ANY PARTY FOR ANY USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC, OR ANY REUSE OF THE DOCUMENT FOR EXTENSIONS OF THE ORIGINAL PROJECT SHALL BE AT THE INFORMED AND SOLE RISK OF THE PARTY MODIFYING OR REUSING THE DOCUMENT, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND YOU SHALL INDEMNIFY AND HOLD HARMLESS M.W. CUDE ENGINEERS LLC AND ITS OFFICERS, EMPLOYEES AND SUBCONSULTANTS AGAINST ANY AND ALL LIABILITY, LOSS, OR COSTS ARISING FROM SUCH UNAUTHORIZED REUSE OR MODIFICATION. USE OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE INFORMED AND SOLE RISK OF THE PARTY MODIFYING OR REUSING THE DOCUMENT, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND YOU SHALL INDEMNIFY AND HOLD HARMLESS M.W. CUDE ENGINEERS LLC AND ITS OFFICERS, EMPLOYEES AND SUBCONSULTANTS AGAINST ANY AND ALL LIABILITY, LOSS, OR COSTS ARISING FROM SUCH UNAUTHORIZED REUSE OR MODIFICATION.

CUDEENGINEERS.COM
EST. 1980 CUDE ENGINEERS
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

CONTESSA SUBDIVISION UNIT 1

TXDOT DETAILS - PAVEMENT MARKINGS & GUARD RAILS

DATE: 06/19/2025

PROJECT NO. 04343.002

DRAWN BY: CG/JG/LJ/TCD

CHECKED BY: XV/AL

REVISIONS

DATE	1	2	3	4	5	6	7	8	9
A									

STATE OF TEXAS — JAVIER CASTELLO — 122170 — LICENSED PROFESSIONAL ENGINEER — 06/19/2025

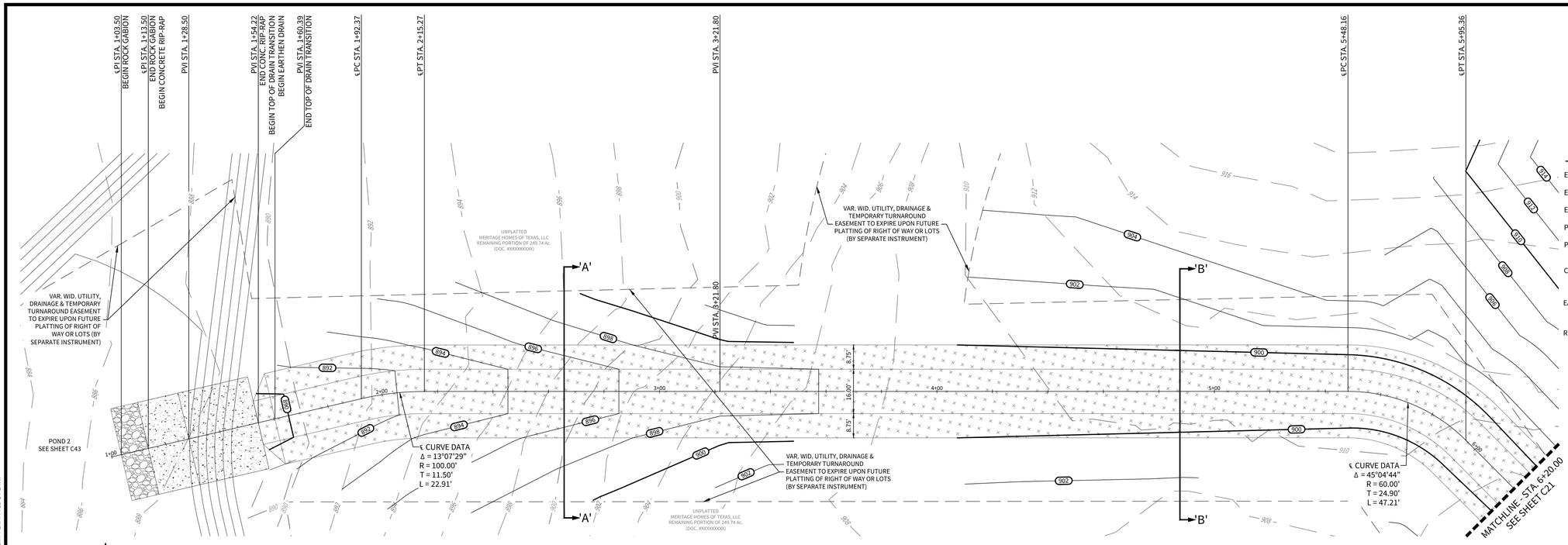
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C19

CUDEENGINEERS.COM

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

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF AND ADAPTATION BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE ON ANY ADDITIONAL PROJECT EXTENSIONS OR OTHER PROJECTS. USE OF THIS DOCUMENT ON ANY ADDITIONAL PROJECTS OR EXTENSIONS TO THE PROJECT FOR WHICH IT WAS INTENDED WITHOUT THE EXPRESS WRITTEN ADAPTATION BY M.W. CUDE ENGINEERS LLC SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE, AND DISTRIBUTION OF THIS DOCUMENTS SHALL BE AT THE WRONGDOER'S SOLE RISK AND WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC. AND WILL BE SUBJECT TO ALL COSTS PERMITTED BY LAW.

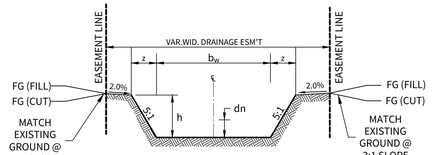


LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR (498)
- EXISTING 10' CONTOUR (500)
- PROPOSED 2' CONTOUR (498)
- PROPOSED 10' CONTOUR (500)
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL
- ROCK GABION

NOTES

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



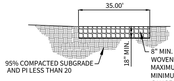
DRAIN 'A' EARTHEN CHANNEL
(N.T.S.)

	'A-A'	'B-B'
Q_{25} (cfs)	56.76	56.76
b_w (ft)	16.00'	16.00'
z (ft)	8.75'	8.75'
n	0.035	0.035
h (ft)	1.75'	1.75'
S (%)	5.00%	0.50%
d_n (ft)	0.53'	1.02'
V (fps)	5.71	2.63

'A-A' STA. 1+60.39 TO STA. 3+21.80
'B-B' STA. 3+21.80 TO STA. 6+20.00

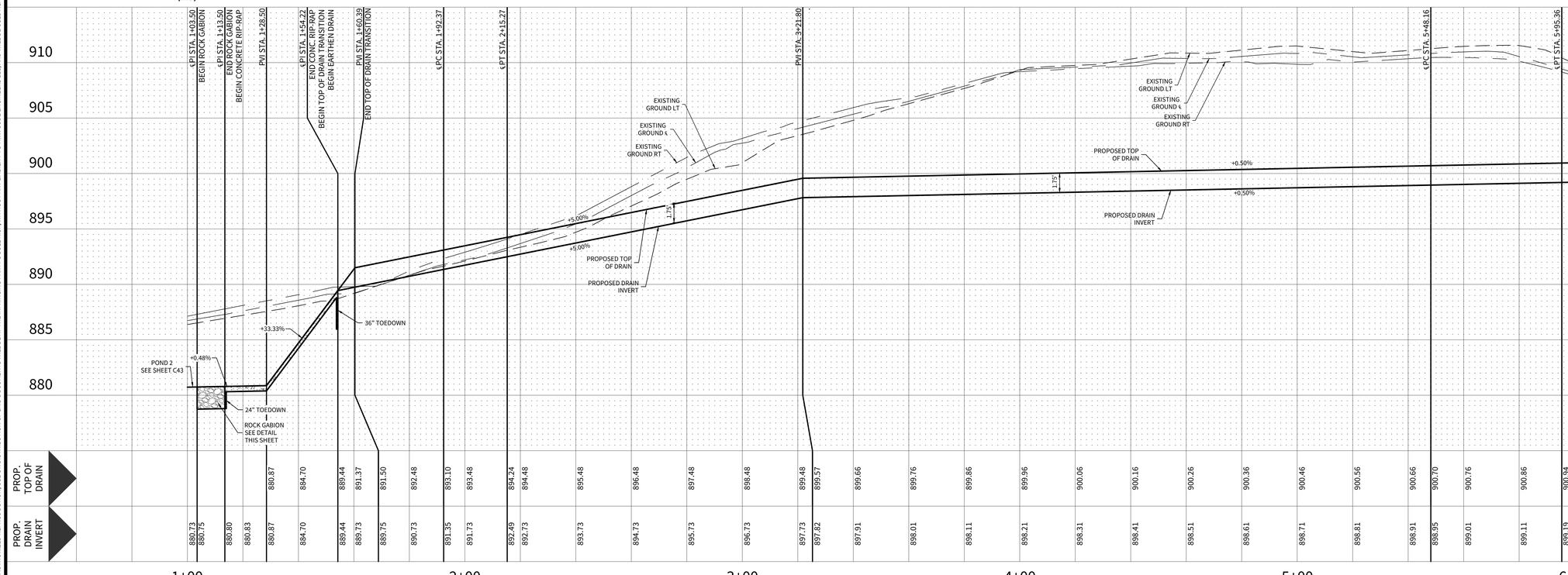
DRAIN 'A'

STA. 1+00.00 TO STA. 6+20.00

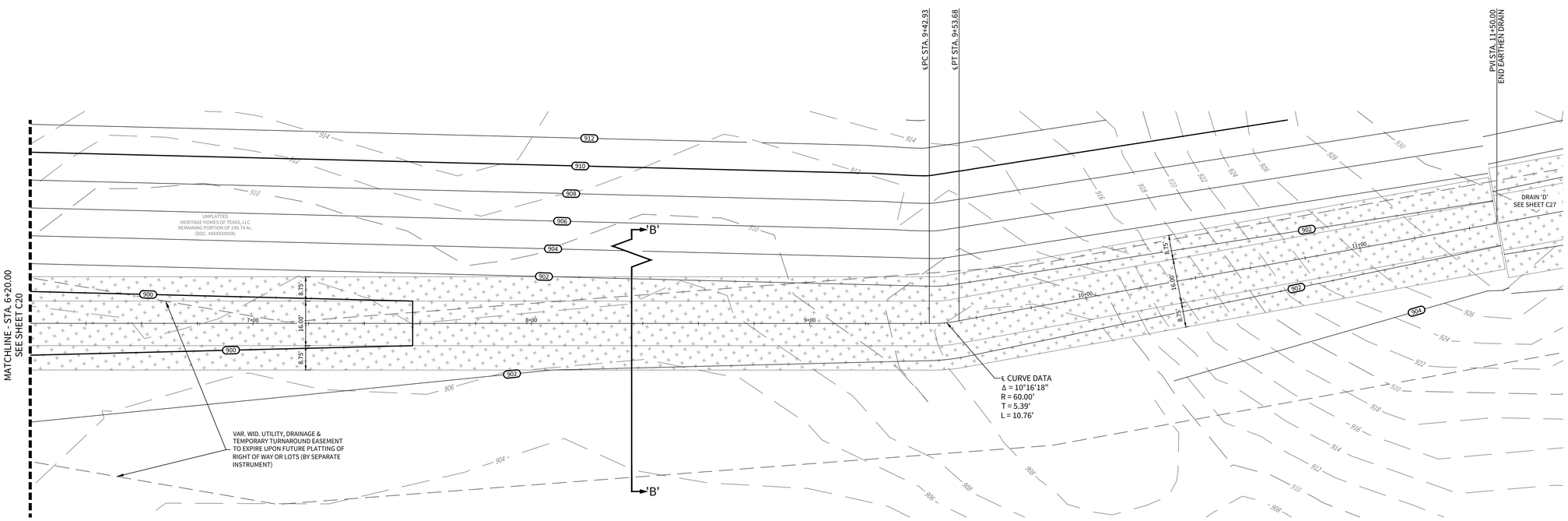


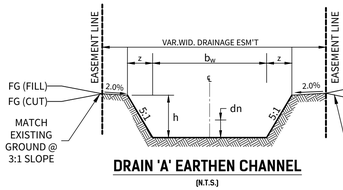
GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL
NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)

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



	1+03.50	1+13.50	1+28.50	1+54.22	1+60.39	1+92.37	2+15.27	3+21.80	5+48.16	5+95.36	6+20.00
PROP. TOP OF DRAIN			880.87	884.70	889.44	891.37	891.50	893.10	893.48	894.24	894.48	895.48	896.48	897.48	898.48	899.48	899.57	899.66	899.76	899.86	899.96	900.06	900.16	900.26	900.36	900.46	900.56	900.66	900.70	900.76	900.86	900.94	900.96	901.06
PROP. DRAIN INVERT	880.73	880.75	880.80	880.83	880.87	884.70	889.44	889.73	889.75	890.73	891.35	891.73	892.49	892.73	893.73	894.73	895.73	896.73	897.73	897.82	897.91	898.01	898.11	898.21	898.31	898.41	898.51	898.61	898.71	898.81	898.91	898.95	899.01	899.11	899.19	899.21	899.31		





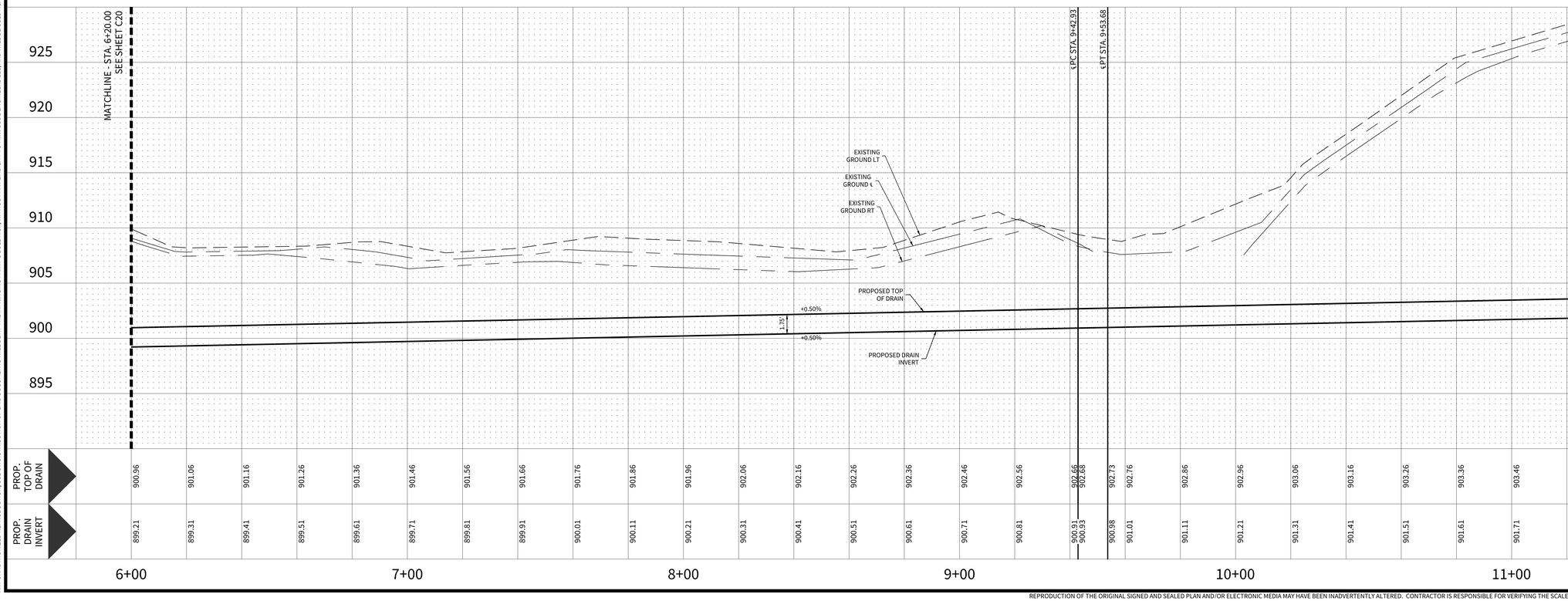
DRAIN 'A' EARTHEN CHANNEL
(N.T.S.)

	'B-B'
Q_{25} (cfs)	56.76
b_w (ft)	16.00'
z (ft)	8.75'
n	0.035
h (ft)	1.75'
S (%)	0.50%
d_n (ft)	1.02'
V (fps)	2.63

'B-B' STA. 6+20.00 TO STA. 11+50.00

DRAIN 'A'

STA. 6+20.00 TO END





SCALE: 1"=20'
20 10 0 20

LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR — 498
- EXISTING 10' CONTOUR — 500
- PROPOSED 2' CONTOUR — 498
- PROPOSED 10' CONTOUR — 500
- EARTHEN DRAINAGE CHANNEL

NOTES

1. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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

CUDEENGINEERS.COM

CUDE ENGINEERS
EST. 1980

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'A'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

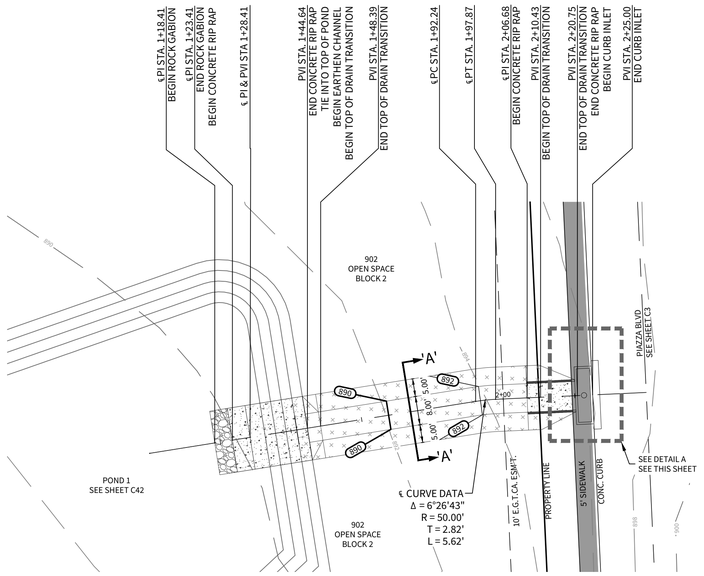
	DATE
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	

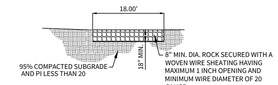
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C21

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED USE, DISTRIBUTION OF OUR DOCUMENTS SHALL BE AT THE PERSON/ENTITY'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE SUBJECT TO LEGAL ACTION.

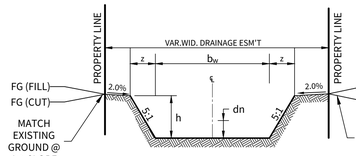
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.





GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

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



DRAIN 'B' EARTHEN CHANNEL

(N.T.S.)

'A-A' STA. 1+48.39 TO STA. 2+06.68

	'A-A'
Q_{25} (cfs)	22.00
b_w (ft)	8.00'
z (ft)	5.00'
n	0.035
h (ft)	1.00'
S (%)	6.68%
d_n (ft)	0.41'
V (fps)	5.34

DRAIN 'B'

STA. 1+00.00 TO STA. END

CURB INLET OPENING

Q_{25} = 22.00 c.f.s. / 2.06 = 10.66' REQ.

USED 15' INLET

A = 8.00 s.f. (1 - 8' x 1')

V = 2.75 f.p.s.

Hv = 0.12'

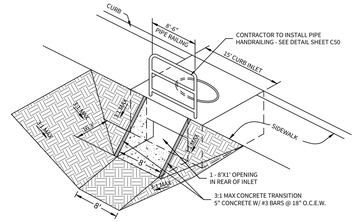
1.5Hv = 0.18'

Hw = z + y + 1.5Hv

Hw = 894.09' + 1.0' + 0.18'

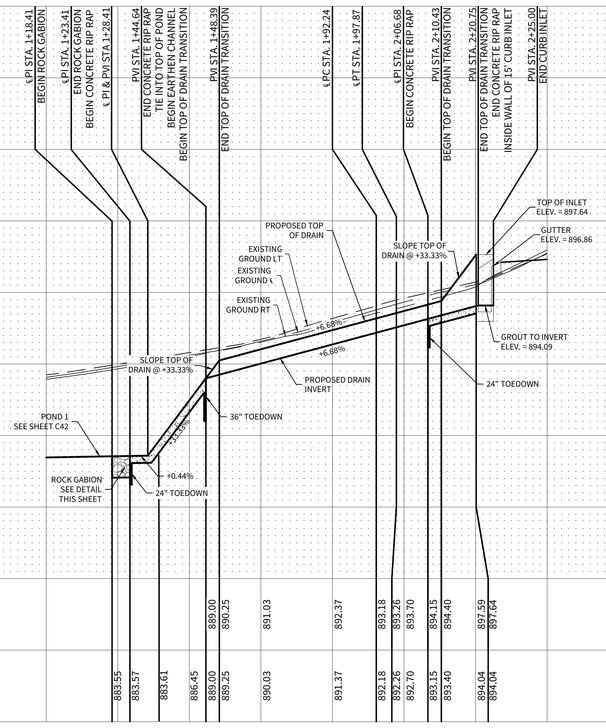
Hw = 895.27

GUTTER = 896.86



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

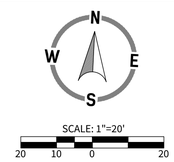
NOTE: CONTRACTOR TO DOWEL CONC. TRANSITION TO REAR OF INLET WITH #4 DOWELS @ 12" O.C.



NOTES

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

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



LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR — 498
- EXISTING 10' CONTOUR — 500
- PROPOSED 2' CONTOUR — 498
- PROPOSED 10' CONTOUR — 500
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL
- ROCK GABION

CUDEENGINEERS.COM

CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'B'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

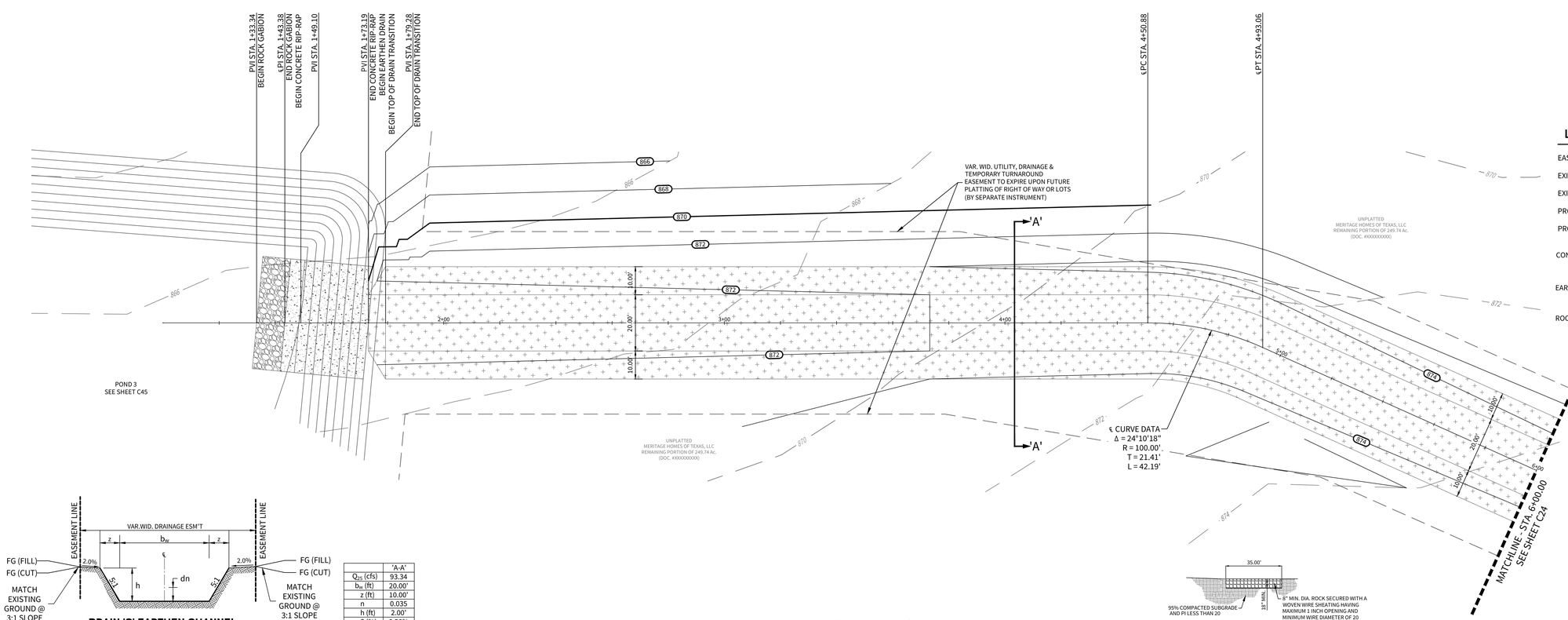
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

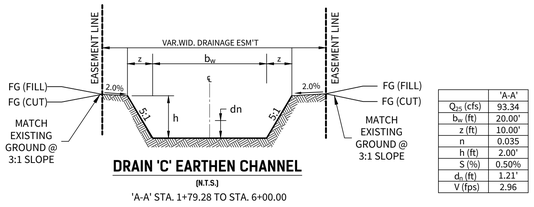
C22

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REUSE OR MODIFICATION OF THIS DOCUMENT WILL BE AT THE WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC AND WILL BE LIABLE AGAINST ANY AND ALL CLAIMS RESULTING THEREFROM.

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.

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY USE OF THIS DOCUMENT FOR ANY OTHER PURPOSE IS AT THE USER'S SOLE RISK AND WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC. AND AN UNAUTHORIZED REPRODUCTION, USE, AND DISTRIBUTION OF OUR DOCUMENTS SHALL BE AT THE PERSONAL RISK OF THE PARTIES DOING SO, AND YOU MAY BE HELD LIABLE TO M.W. CUDE ENGINEERS LLC. AND WILL BE SUED AGAINST IN A COURT OF LAW.





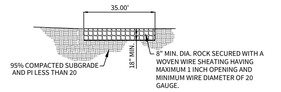
DRAIN 'C' EARTHEN CHANNEL
(N.T.S.)

'A-A' STA. 1+79.28 TO STA. 6+00.00

	'A-A'
Q_{25} (cfs)	93.34
b_w (ft)	20.00'
z (ft)	10.00'
n	0.035
h (ft)	2.00'
S (%)	0.50%
d_n (ft)	1.21'
V (fps)	2.96

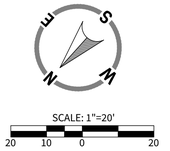
DRAIN 'C'

STA. 1+79.28 TO STA. 6+00.00



GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

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



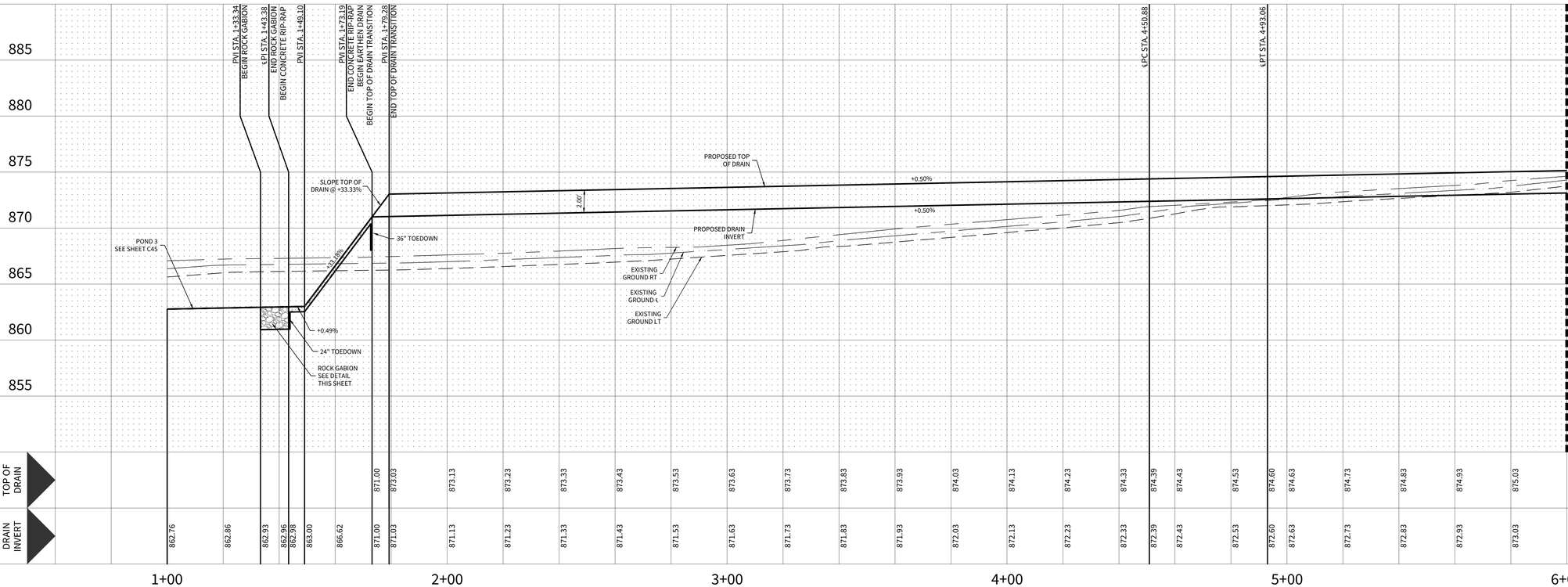
LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR — 498
- EXISTING 10' CONTOUR — 500
- PROPOSED 2' CONTOUR — 498
- PROPOSED 10' CONTOUR — 500
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL
- ROCK GABION

NOTES

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

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



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.

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'C'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

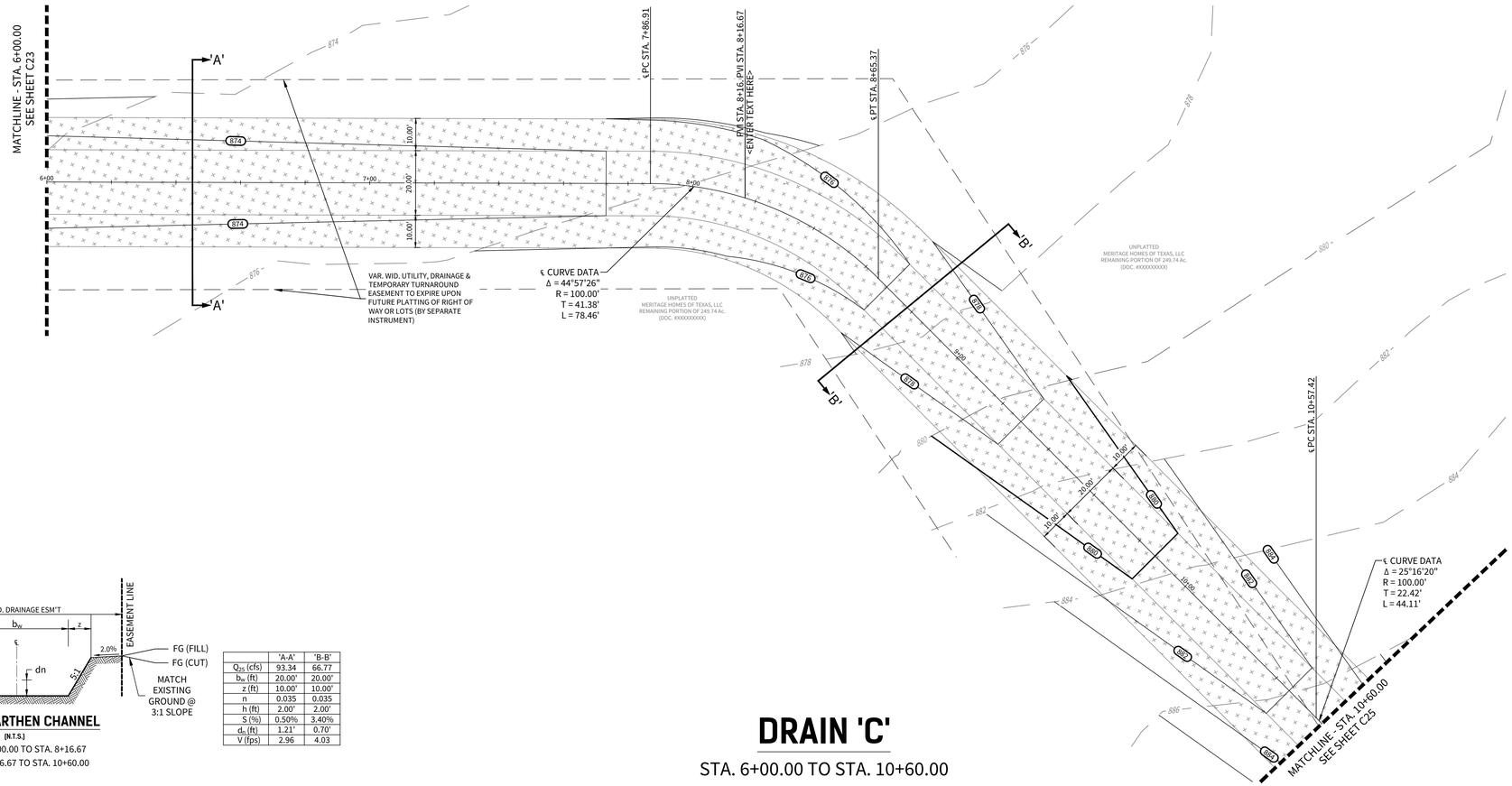
	DATE
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	

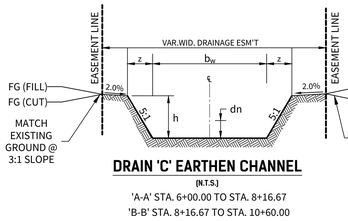
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C23

P:\04343\002\ENG\4 Plans\23 DRAIN PLAN & PROFILE - DRAIN C.dwg 2025/06/19 3:50pm jgarcia

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC AND ANY UNAUTHORIZED REUSE OR MODIFICATION OF THIS DOCUMENT SHALL BE AT THE PERSON/ENTITY'S SOLE RISK AND WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC. YOU WILL BE LIABLE AGAINST ALL SUITS TO THE FULLEST EXTENT PERMITTED BY LAW.





DRAIN 'C' EARTHEN CHANNEL

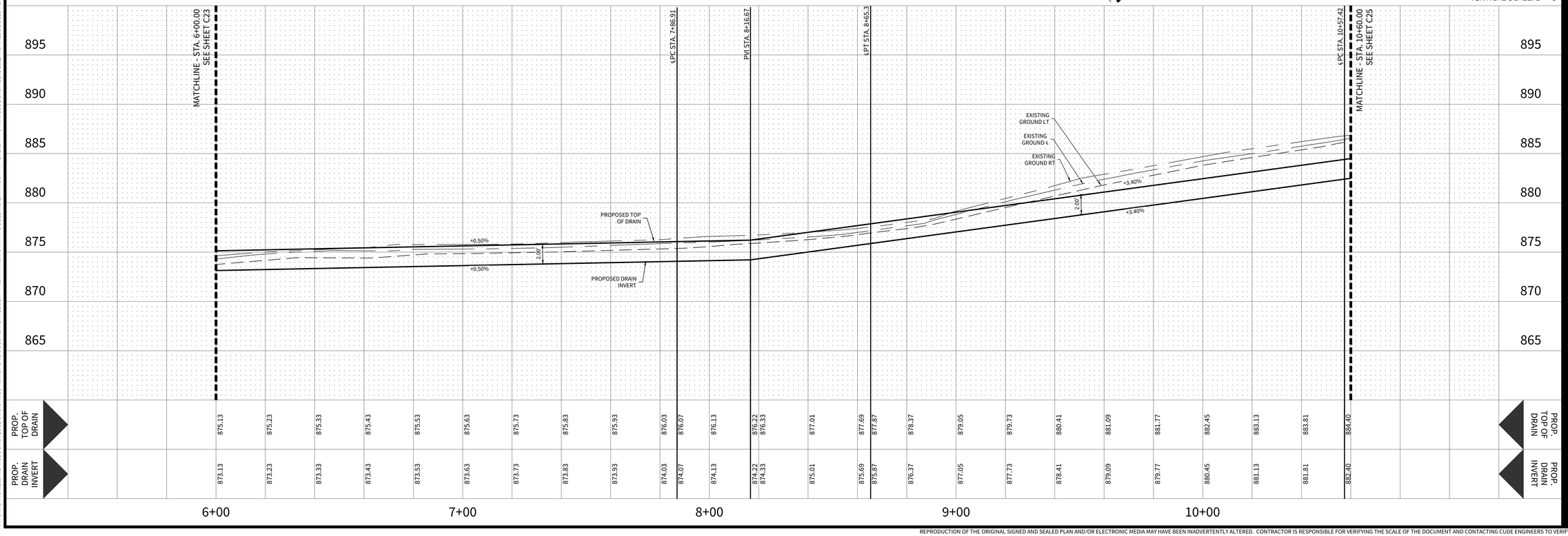
(N.T.S.)

'A-A' STA. 6+00.00 TO STA. 8+16.67
'B-B' STA. 8+16.67 TO STA. 10+60.00

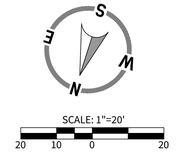
	'A-A'	'B-B'
Q_{25} (cfs)	93.34	66.77
b_w (ft)	20.00'	20.00'
z (ft)	10.00'	10.00'
n	0.035	0.035
h (ft)	2.00'	2.00'
S (%)	0.50%	3.40%
d_n (ft)	1.21'	0.70'
V (fps)	2.96	4.03

DRAIN 'C'

STA. 6+00.00 TO STA. 10+60.00



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



LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR — 498
- EXISTING 10' CONTOUR — 500
- PROPOSED 2' CONTOUR — 498
- PROPOSED 10' CONTOUR — 500
- EARTHEN DRAINAGE CHANNEL

NOTES

1. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'C'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

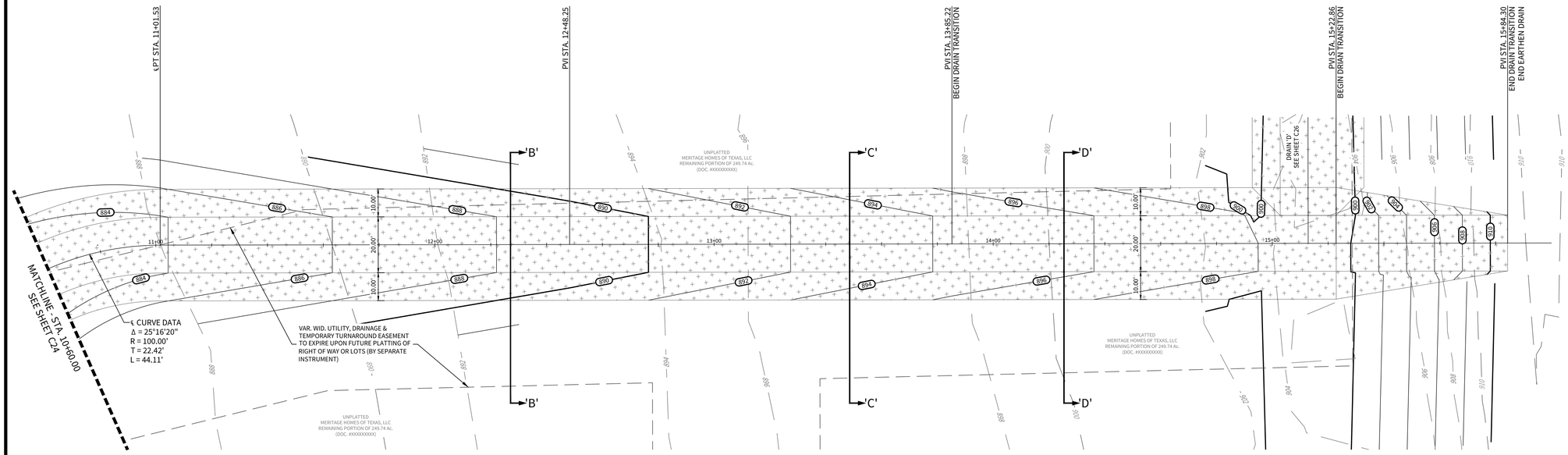
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

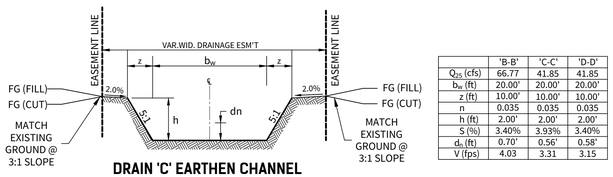
C24

CUDEENGINEERS.COM

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

P:\04343\002\ENG\04 Plan\C24 DRAIN PLAN & PROFILE - DRAIN C.dwg 2025/06/19 9:50pm jgarcia





DRAIN 'C' EARTHEN CHANNEL

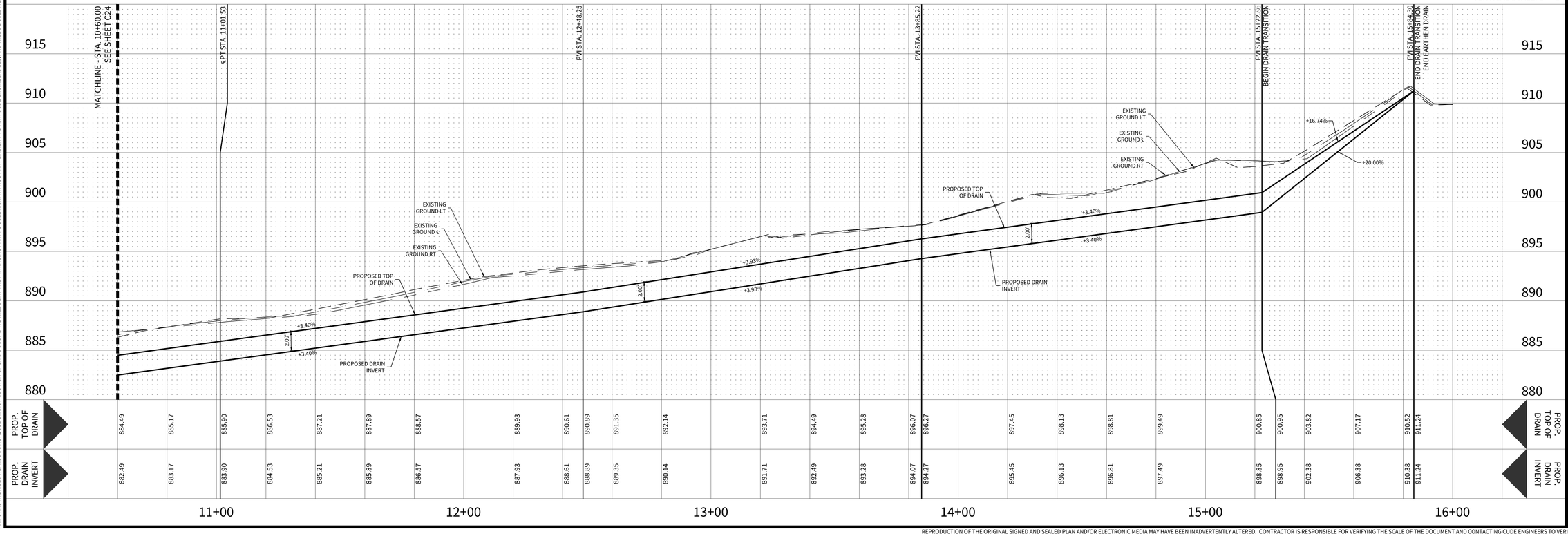
(N.T.S.)

'B-B' STA. 10+60.00 TO STA. 12+48.25
'C-C' STA. 12+48.25 TO STA. 13+85.22
'D-D' STA. 13+85.22 TO STA. 15+22.86

	'B-B'	'C-C'	'D-D'
Q_{25} (cfs)	66.77	41.85	41.85
b_w (ft)	20.00'	20.00'	20.00'
z (ft)	10.00'	10.00'	10.00'
n	0.035	0.035	0.035
h (ft)	2.00'	2.00'	2.00'
S (%)	3.40%	3.93%	3.40%
d_n (ft)	0.70'	0.56'	0.58'
V (fps)	4.03	3.31	3.15

DRAIN 'C'

STA. 10+60.00 TO END



LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED 10' CONTOUR
- EARTHEN DRAINAGE CHANNEL

SCALE: 1"=20'
20 10 0 20

NOTES

1. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'C'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

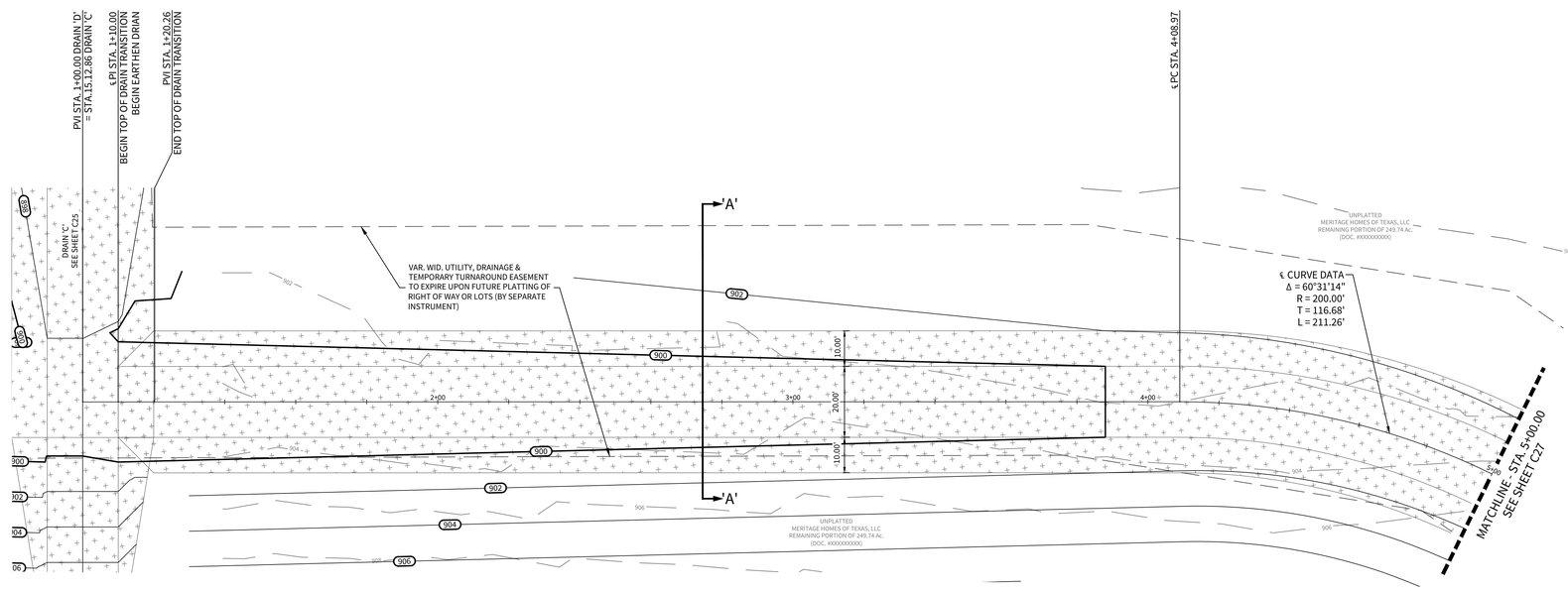
C25

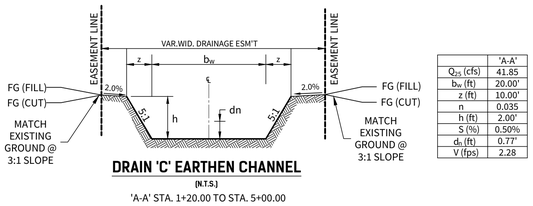
CUDEENGINEERS.COM

P:\04343.002\2 DWG\4 Sheets\C25 DRAIN PLAN & PROFILE - DRAIN C.dwg 2025/06/19 9:50am jgarcia

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC AND/OR ANY ADAPTATION BY ANYONE OTHER THAN M.W. CUDE ENGINEERS LLC SHALL BE AT THE USER'S SOLE RISK AND WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC. AND WILL BE USED AS-IS AND AS-AVAILABLE BASIS TO THE FULLEST EXTENT PERMITTED BY LAW.

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.





DRAIN 'C' EARTHEN CHANNEL

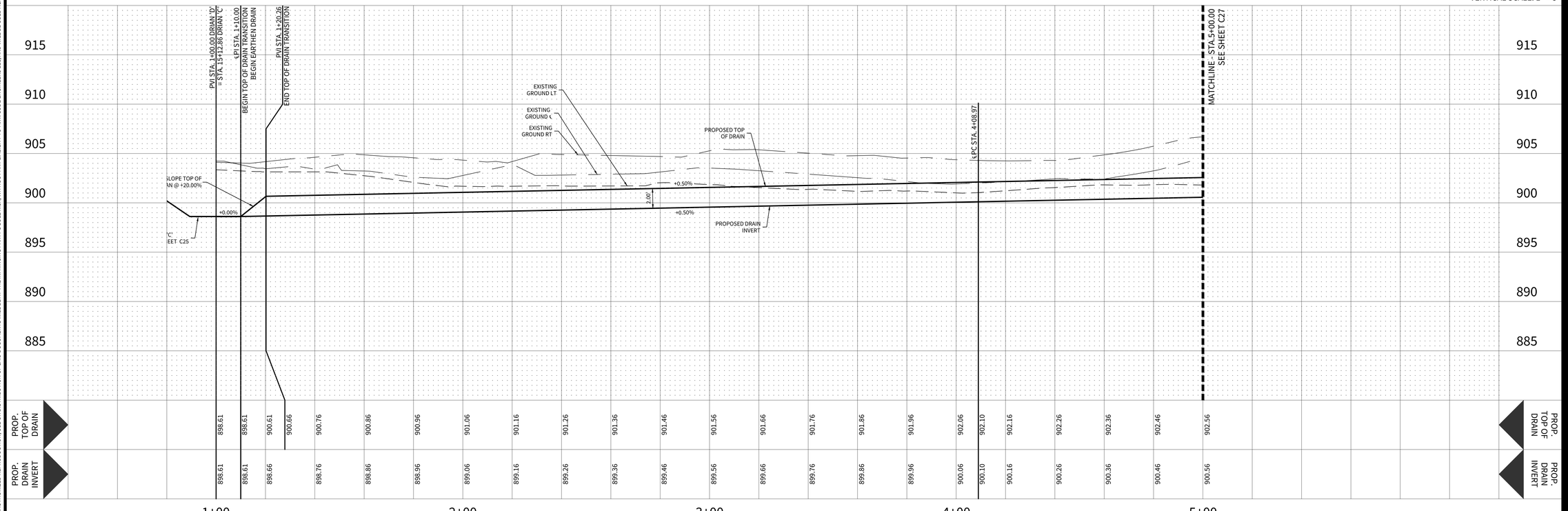
(N.T.S.)

'A-A' STA. 1+20.00 TO STA. 5+00.00

	'A-A'
Q_{25} (cfs)	41.85
b_w (ft)	20.00'
z (ft)	10.00'
n	0.035
h (ft)	2.00'
S (%)	0.50%
d_n (ft)	0.77'
V (fps)	2.28

DRAIN 'D'

STA. 1+00.00 TO STA. 5+00.00



LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR (498)
- EXISTING 10' CONTOUR (500)
- PROPOSED 2' CONTOUR (498)
- PROPOSED 10' CONTOUR (500)
- EARTHEN DRAINAGE CHANNEL

SCALE: 1"=20'

20 10 0 20

NOTES

1. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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

CUDEENGINEERS.COM

CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'D'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	A	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

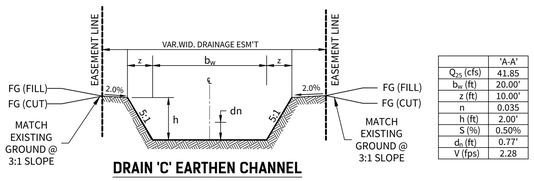
C26

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC AND WILL NOT BE LIABLE TO M.W. CUDE ENGINEERS LLC FOR ANY USE, MODIFICATION OR ADAPTATION OF SAID DOCUMENTS WILL BE AT THE INTERMEDIARY PARTY'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE USED AS-IS AND AS-AVAILABLE.

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

P:\04343\002\2-DWG\Plans\CIVIL\DRAIN\PLAN & PROFILE - DRAIN 'D'.dwg, 6/25/2025 9:13:53 AM, gjarvis

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT WILL BE AT THE EXPRESSED RISK OF THE PERSON(S) OR ENTITY(S) DOING SUCH, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE LISTED AGAINST ITS OWNER AS A VIOLATOR.

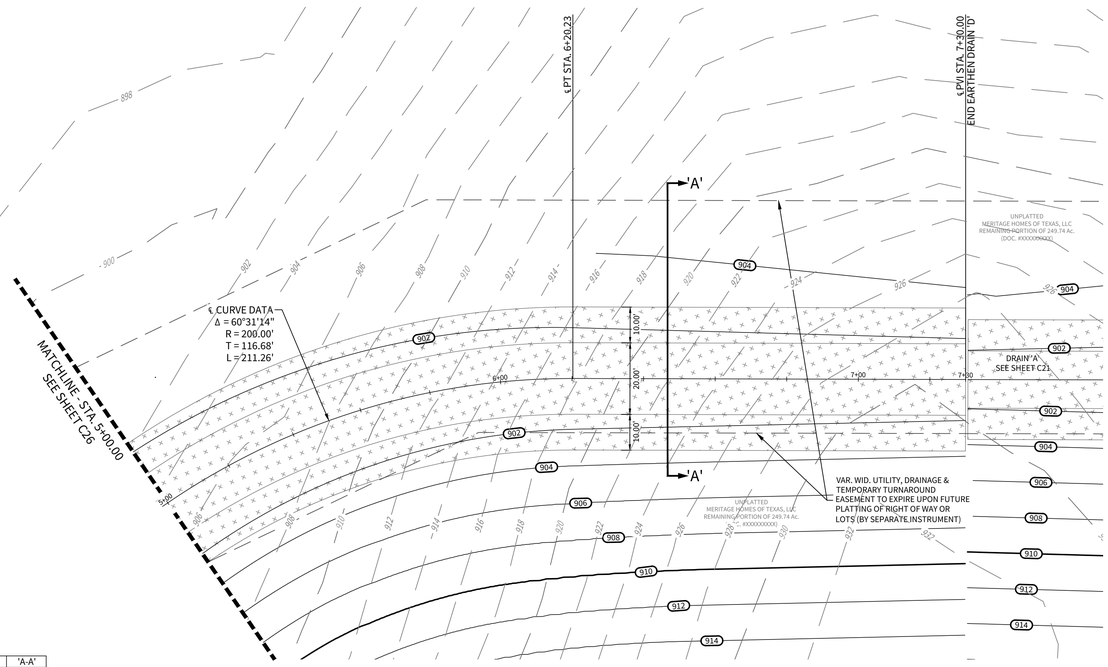


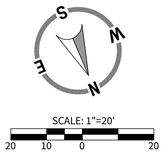
DRAIN 'C' EARTHEN CHANNEL

(N.T.S.)

'A-A' STA. 5+00.00 TO STA. 7+30.00

	'A-A'
Q_{25} (cfs)	41.85
b_w (ft)	20.00'
z (ft)	10.00'
n	0.035
h (ft)	2.00'
S (%)	0.50%
d_n (ft)	0.77'
V (fps)	2.28





LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR (498)
- EXISTING 10' CONTOUR (500)
- PROPOSED 2' CONTOUR (498)
- PROPOSED 10' CONTOUR (500)
- EARTHEN DRAINAGE CHANNEL

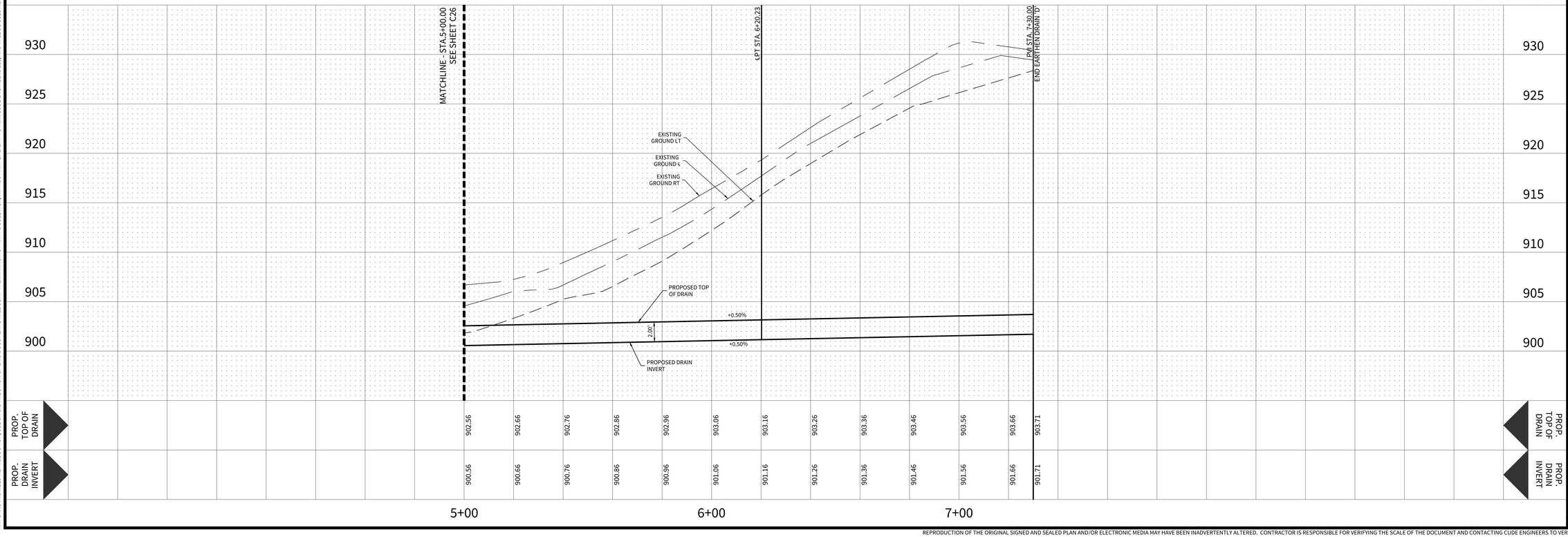
NOTES

1. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

DRAIN 'D'

STA. 5+00.00 TO END

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



CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'D'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	
	1
	2
	3
	4
	5
	6
	7
	8
	9

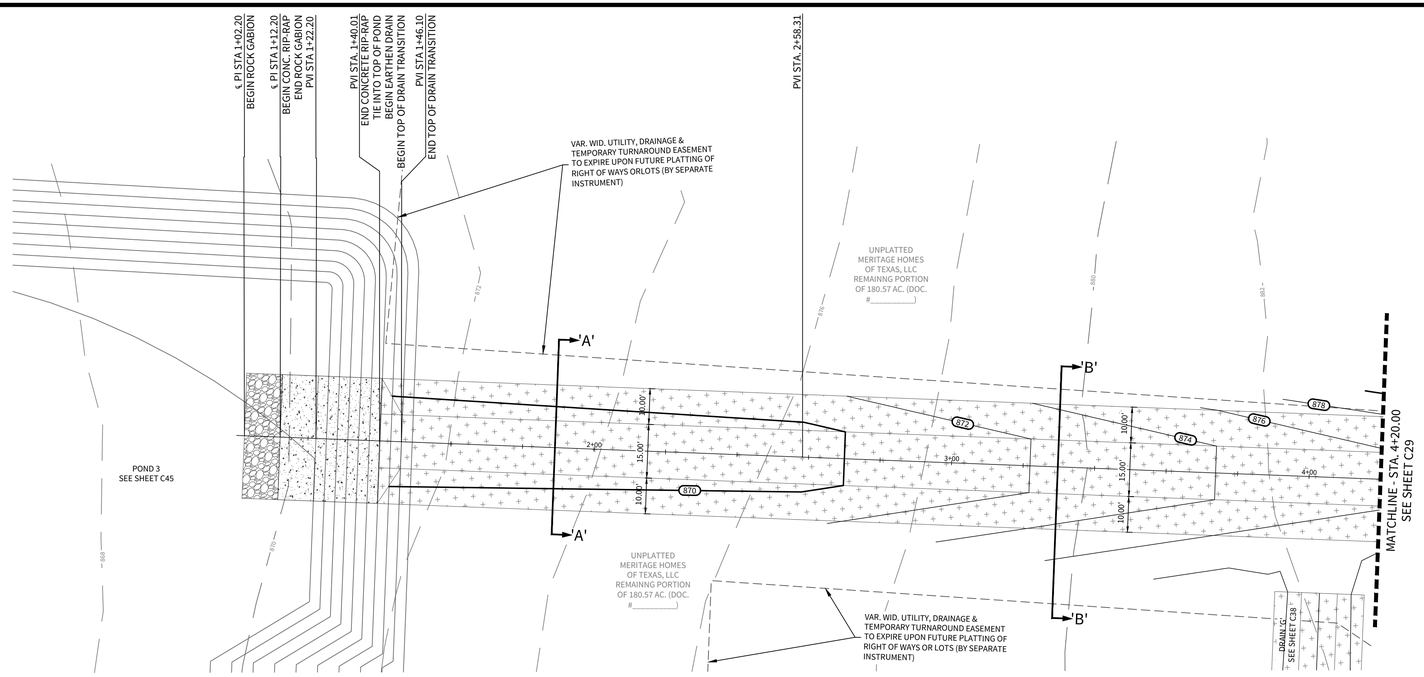
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER

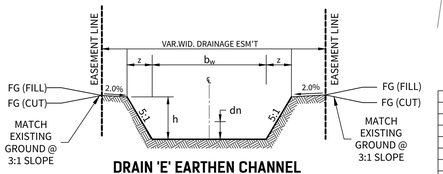
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C27

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

P:\04343\002\2-ENG\4-Plans\Civil 3D\04343 PLANS & PROFILE - DRAIN 'D'.dwg 2025/06/13 9:59pm jjarvis





DRAIN 'E' EARTHEN CHANNEL

(N.T.S.)

'A-A' STA. 1+46.10 TO STA. 2+58.31
'B-B' STA. 2+58.31 TO STA. 4+20.00

	'A-A'	'B-B'
Q_{25} (cfs)	94.62	77.10
b_w (ft)	15.00'	15.00'
z (ft)	10.00'	10.00'
n	0.035	0.035
h (ft)	2.00'	2.00'
S (%)	0.50%	3.85%
d_n (ft)	1.39'	0.71'
V (fps)	3.10	5.88

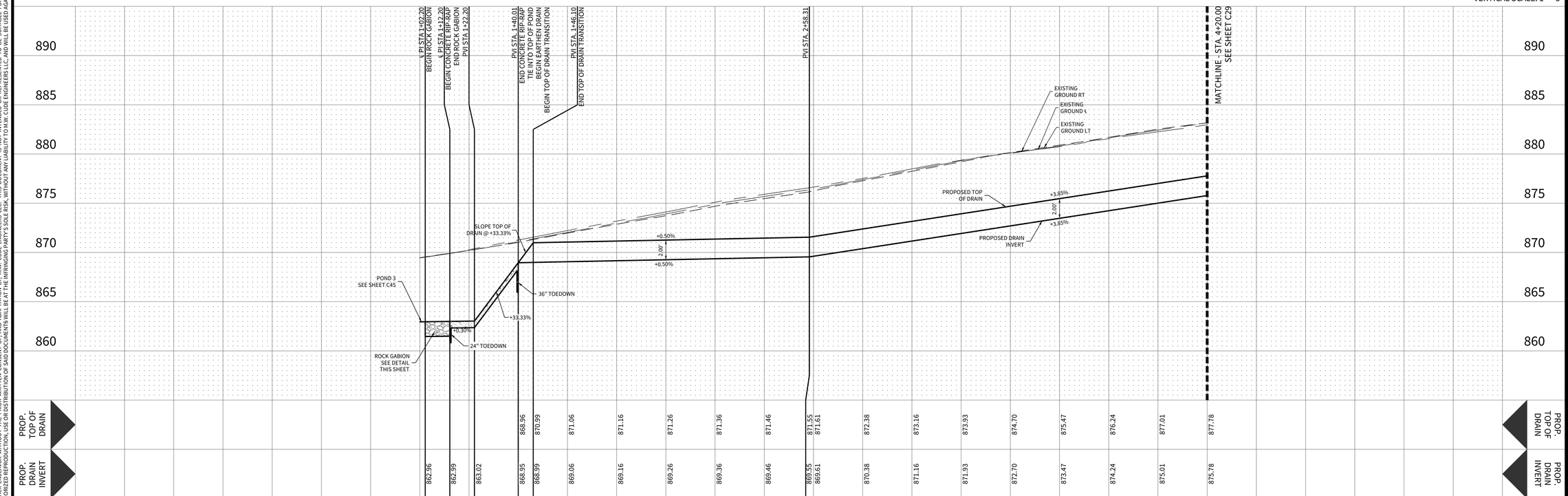
DRAIN 'E'

STA. 1+00.00 TO STA. 4+20.00



GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL

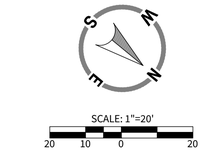
NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)



NOTES

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

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



LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED 10' CONTOUR
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL
- ROCK GABION

CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'E'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	#
	1
	2
	3
	4
	5
	6
	7
	8
	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
06/19/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C28

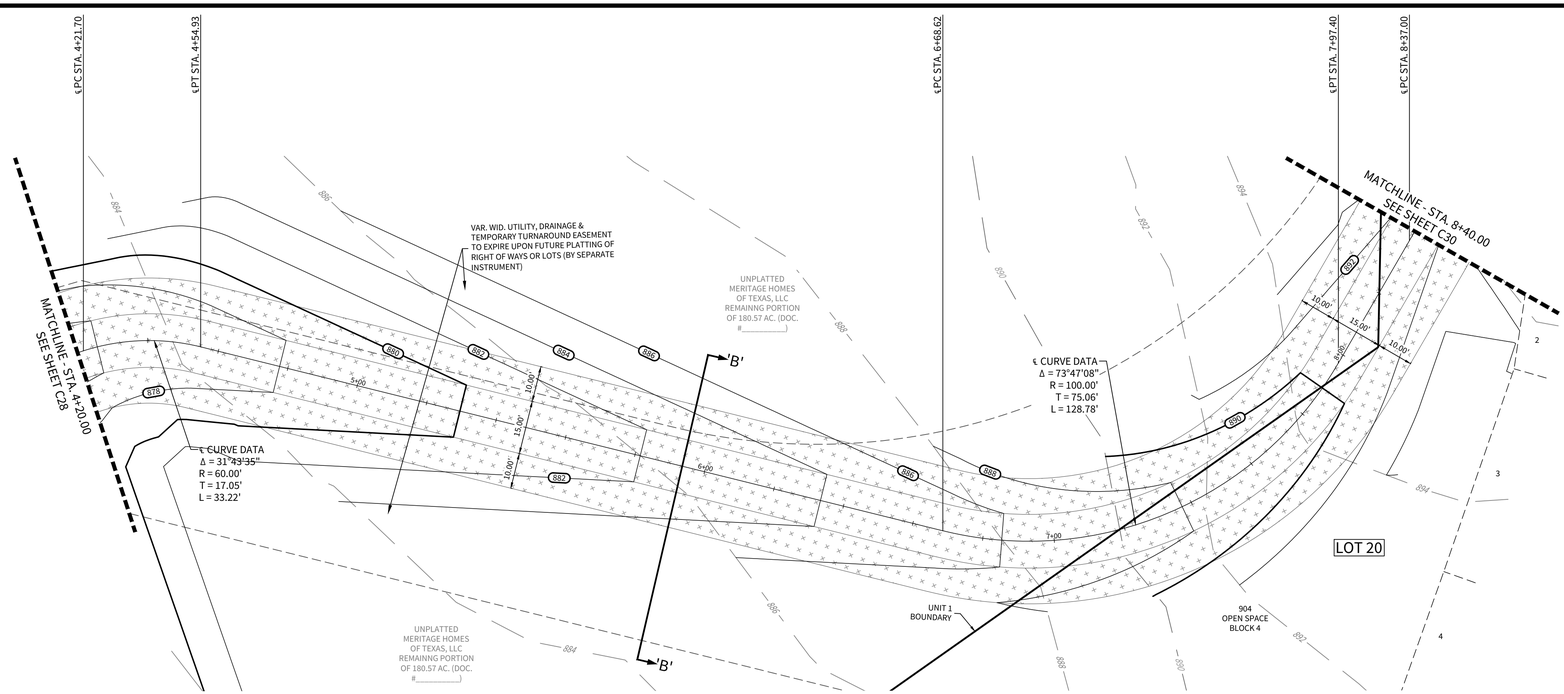
CUDEENGINEERS.COM

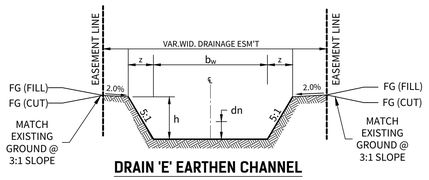
© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC, THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC AND ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE UNAUTHORIZED PARTY'S SOLE RISK, WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE SUBJECT TO ALL AVAILABLE REMEDIES.

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

P:\04343.002\2-Design\Plans\C28\DRAIN E\DRAIN E PROFILE - DRAIN 'E'.dwg 2025/06/19 3:53pm jgarcia

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC AND ANY UNAUTHORIZED REPRODUCTION, USE OR PUBLISHING OF THIS DOCUMENT SHALL BE AT THE WRONGDOER'S SOLE RISK, WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE USED AGAINST ANY AND ALL ENTITIES TO THE FULLEST EXTENT PERMITTED BY LAW.





DRAIN 'E' EARTHEN CHANNEL
(N.T.S.)

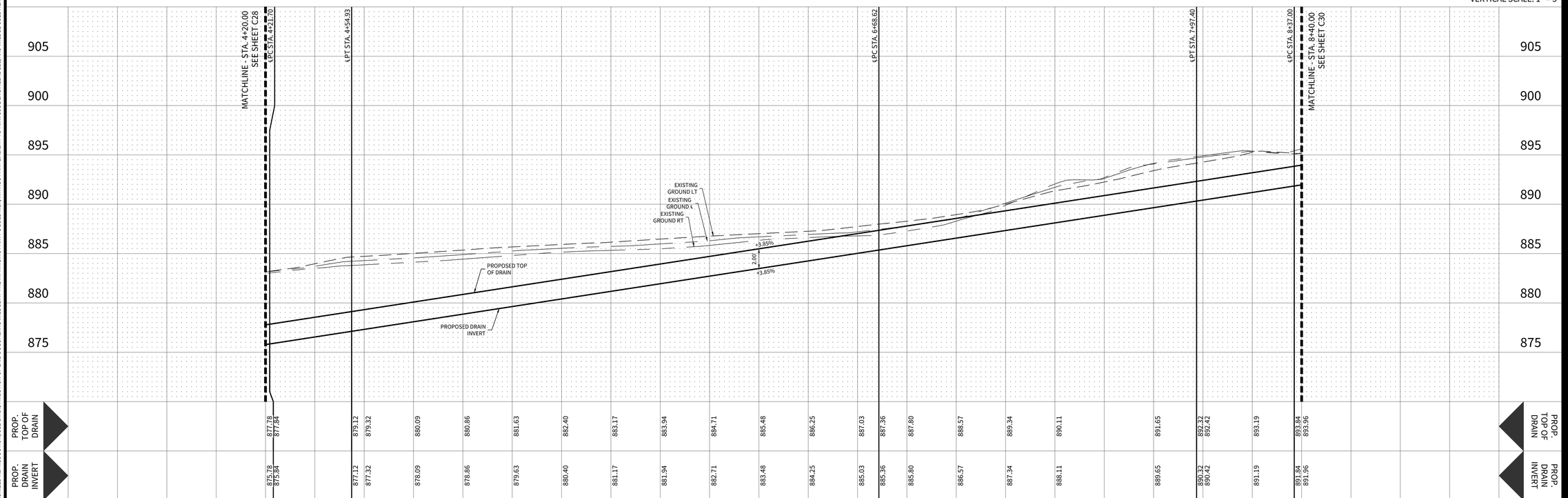
'B-B' STA. 4+20.00 TO STA. 8+40.00

	'B-B'
Q_{25} (cfs)	77.10
b_w (ft)	15.00'
z (ft)	10.00'
n	0.035
h (ft)	2.00'
S (%)	3.85%
d_n (ft)	0.71'
V (fps)	5.88

DRAIN 'E'

STA. 4+20.00 TO STA. 8+40.00

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





LEGEND

- PROPERTY LINE
- EASEMENT LINE
- EXISTING 2' CONTOUR — 498
- EXISTING 10' CONTOUR — 500
- PROPOSED 2' CONTOUR — 498
- PROPOSED 10' CONTOUR — 500
- EARTHEN DRAINAGE CHANNEL

NOTES

1. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'E'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

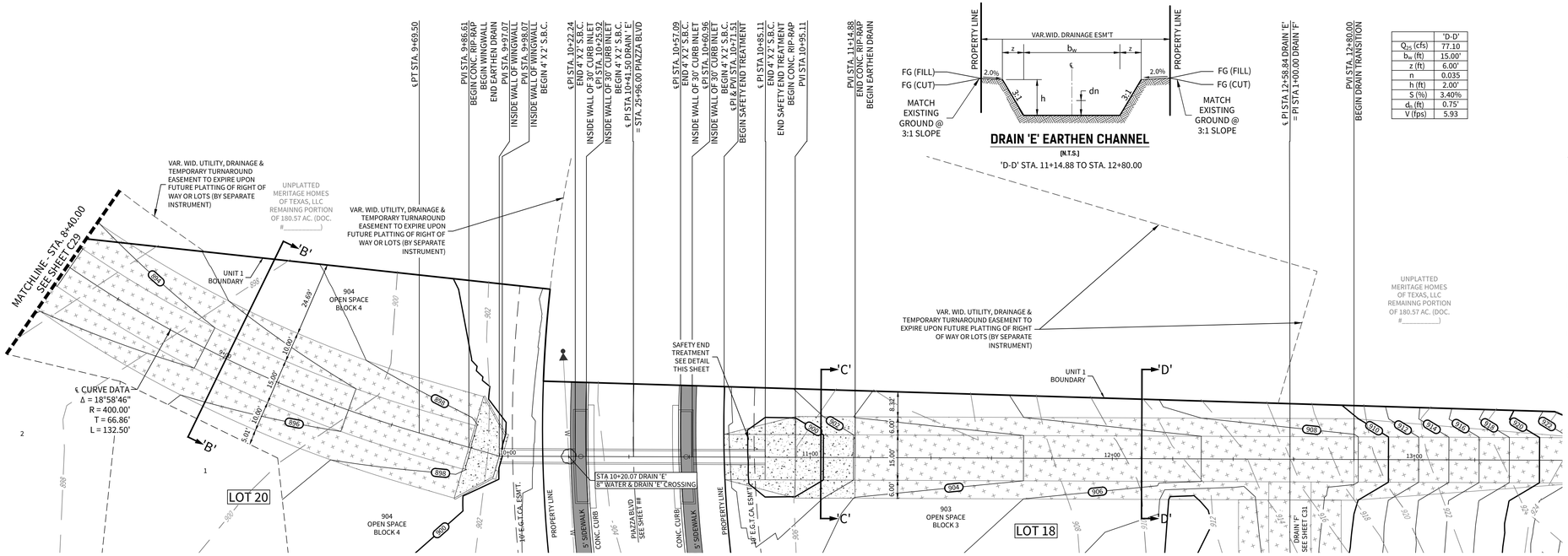
DATE	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C29

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.

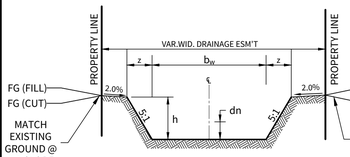
© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE ON ANY ADJACENT PROJECT OR EXTENSION TO THIS PROJECT WITHOUT PRIOR WRITTEN VERIFICATION BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT WILL BE AT THE WRONGFUL OWNER'S SOLE RISK, WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC, AND SHALL BE SUBJECT TO LEGAL ACTION.



DRAIN 'E' EARTHEN CHANNEL

[N.T.S.]

'B-B' STA. 8+40.00 TO STA. 9+86.61

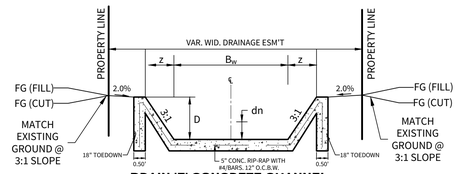


	'B-B'
Q_{25} (cfs)	77.10
b_w (ft)	15.00'
z (ft)	10.00'
n	0.035
h (ft)	2.00'
S (%)	3.85%
d_n (ft)	0.71'
V (fps)	5.88

DRAIN 'E' CONCRETE CHANNEL

[N.T.S.]

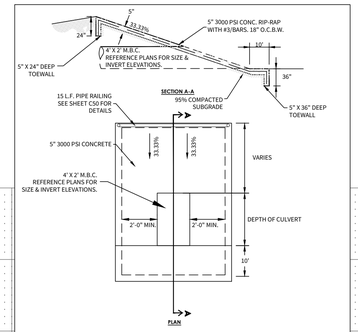
'C-C' STA. 10+85.11 TO STA. 11+14.88



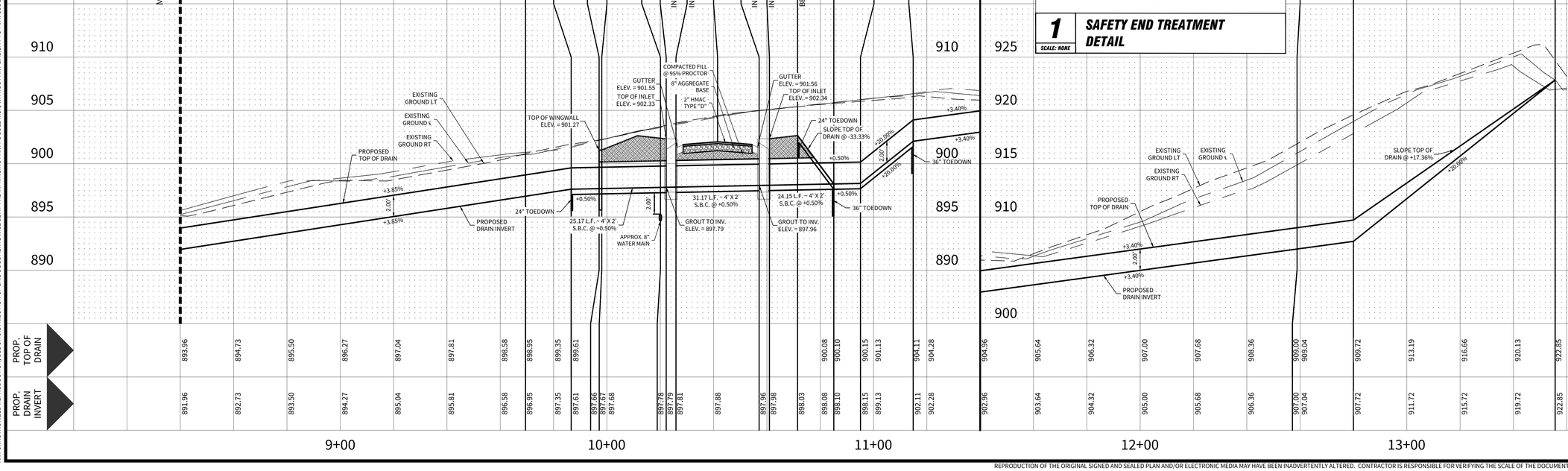
	'C-C'
Q_{25} (cfs)	77.10
b_w (ft)	15.00'
z (ft)	6.00'
n	0.013
h (ft)	2.00'
S (%)	20.00%
d_n (ft)	0.25'
V (fps)	19.63

DRAIN 'E'

STA. 8+40.00 TO END



1 **SAFETY END TREATMENT DETAIL**
SCALE: NONE



	9+00		10+00						11+00						12+00						13+00
PROP. TOP OF DRAIN	893.96	894.73	895.50	896.27	897.04	897.81	898.58	898.95	899.35	899.61	900.08	900.10	900.15	901.13	904.11	904.28	904.96	905.64	906.32	907.00	907.68	908.36	909.00	909.04	909.72	913.19	916.66	920.13	922.85
PROP. DRAIN INVERT	891.96	892.73	893.50	894.27	895.04	895.81	896.58	896.95	897.35	897.61	897.66	897.67	897.68	897.88	897.96	897.98	898.03	898.08	898.10	898.15	899.13	902.11	902.28	902.96	903.64	904.32	905.00	905.68	906.36	907.00	907.04	907.72	911.72	915.72	919.72	922.85

NOTES

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

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

SCALE: 1"=20'
20 10 0 20

LEGEND

- PROPERTY BOUNDARY
- PROPOSED CONDO LOT
- PROPOSED RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING 2' CONTOUR — 498
- EXISTING 10' CONTOUR — 500
- PROPOSED 2' CONTOUR — 498
- PROPOSED 10' CONTOUR — 500
- EARTHEN DRAINAGE CHANNEL
- CONCRETE RIP-RAP

CUDEENGINEERS.COM
EST. 1980 CUDE ENGINEERS
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'E'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

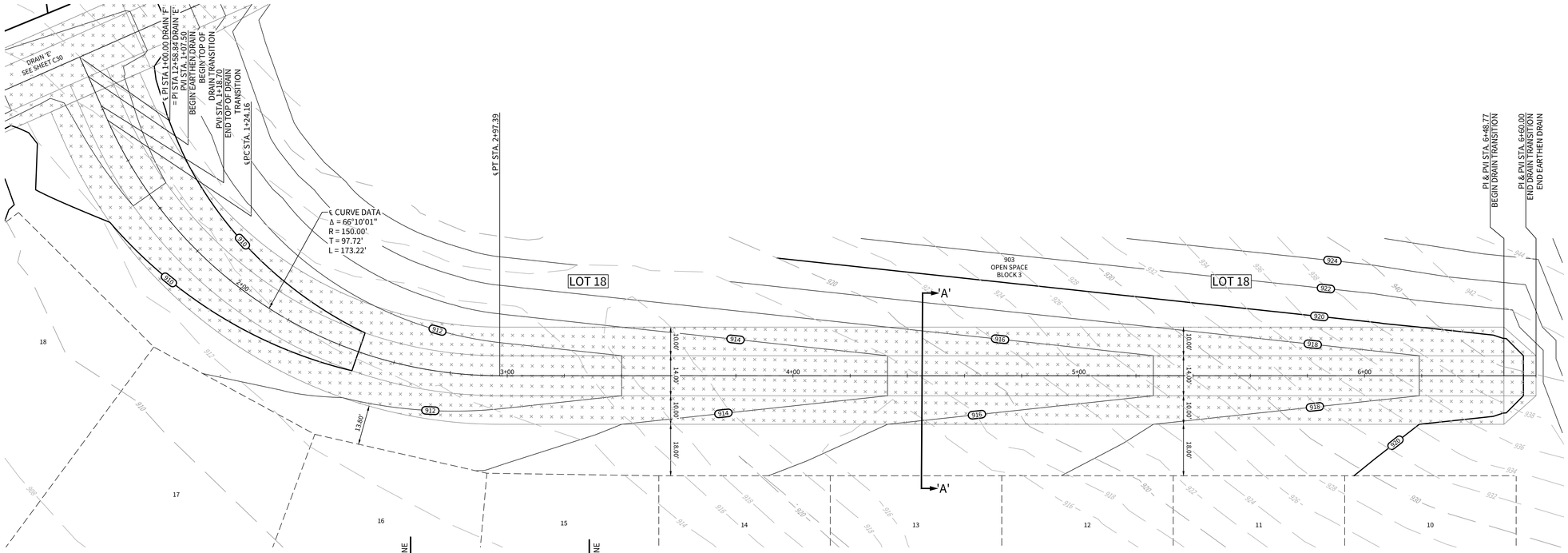
REVISIONS

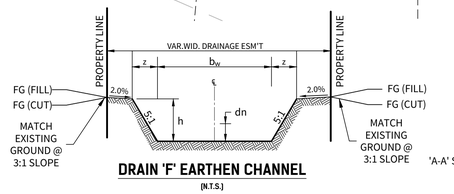
NO.	DATE
1	2/5/2025
2	3/5/2025
3	4/4/2025
4	5/5/2025
5	6/5/2025
6	7/5/2025
7	8/5/2025
8	9/5/2025
9	10/5/2025

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C30

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.


DRAIN 'E' SEE SHEET C30
℄ PI STA 1+00.00 DRAIN 'F'
= PI STA 12+58.84 DRAIN 'E'
PVI STA. 1+07.50
BEGIN EARTHEN DRAIN
BEGIN TOP OF DRAIN TRANSITION
PVI STA. 1+18.70
END TOP OF DRAIN TRANSITION
℄PC STA. 1+24.16
℄ CURVE DATA
Δ = 66°10'01"
R = 150.00'
T = 97.72'
L = 173.22'
℄PT STA. 2+97.39
PI & PVI STA. 6+48.77
BEGIN DRAIN TRANSITION
PI & PVI STA. 6+60.00
END DRAIN TRANSITION
END EARTHEN DRAIN
LOT 18
903
OPEN SPACE
BLOCK 3
LOT 18
'A'
'A'
13.89'
10.00'
14.00'
10.00'
18.00'
18
17
16
15
14
13
12
11
10



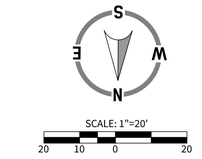
DRAIN 'F' EARTHEN CHANNEL
(N.T.S.)

	'A-A'
Q_{25} (cfs)	60.05
b_w (ft)	14.00'
z (ft)	10.00'
n	0.035
h (ft)	2.00'
S (%)	2.15%
d_h (ft)	0.75'
V (fps)	4.51

'A-A' STA. 1+18.70 TO STA. 6+48.77

DRAIN 'F'

STA. 1+00.00 TO END



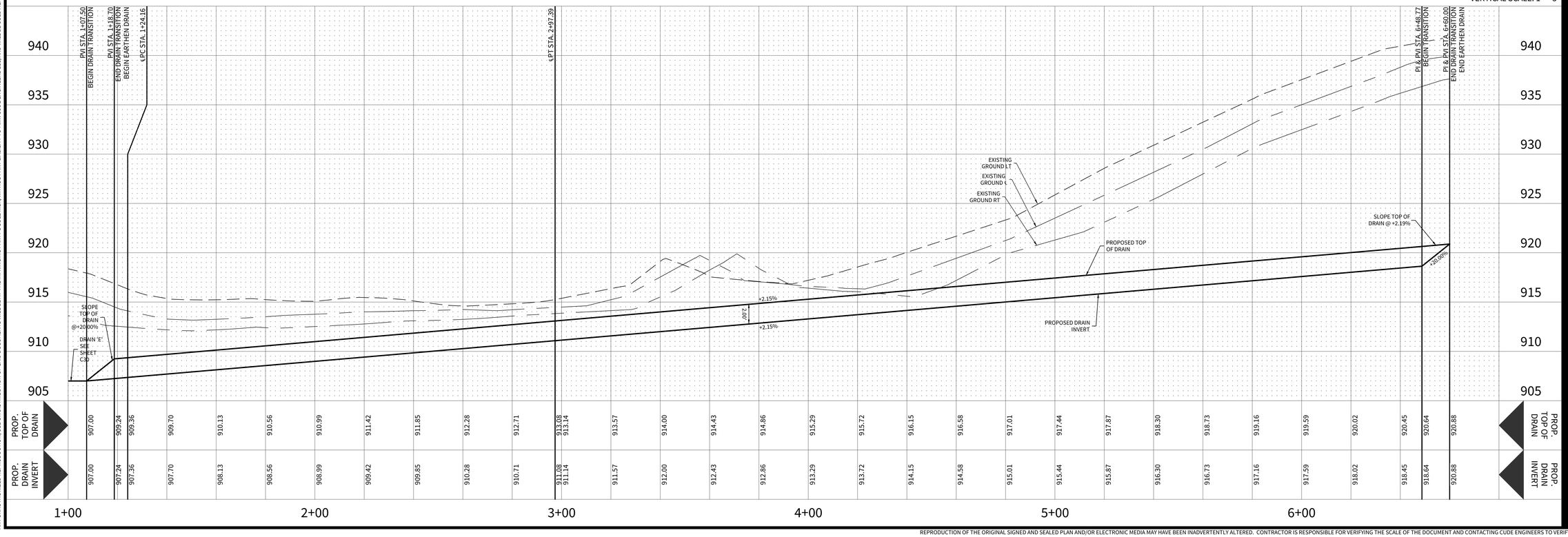
LEGEND

- EXISTING 2' CONTOUR — 498
- EXISTING 10' CONTOUR — 500
- PROPOSED 2' CONTOUR — 498
- PROPOSED 10' CONTOUR — 500
- EARTHEN DRAINAGE CHANNEL

NOTES

1. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REUSE OF THIS DOCUMENT SHALL BE AT THE WRITER/USER'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE SUBJECT TO LEGAL ACTIONS AND/OR CLAIMS FOR DAMAGES AND ANY AND ALL COSTS TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM

CUDE ENGINEERS
EST. 1980

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'F'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

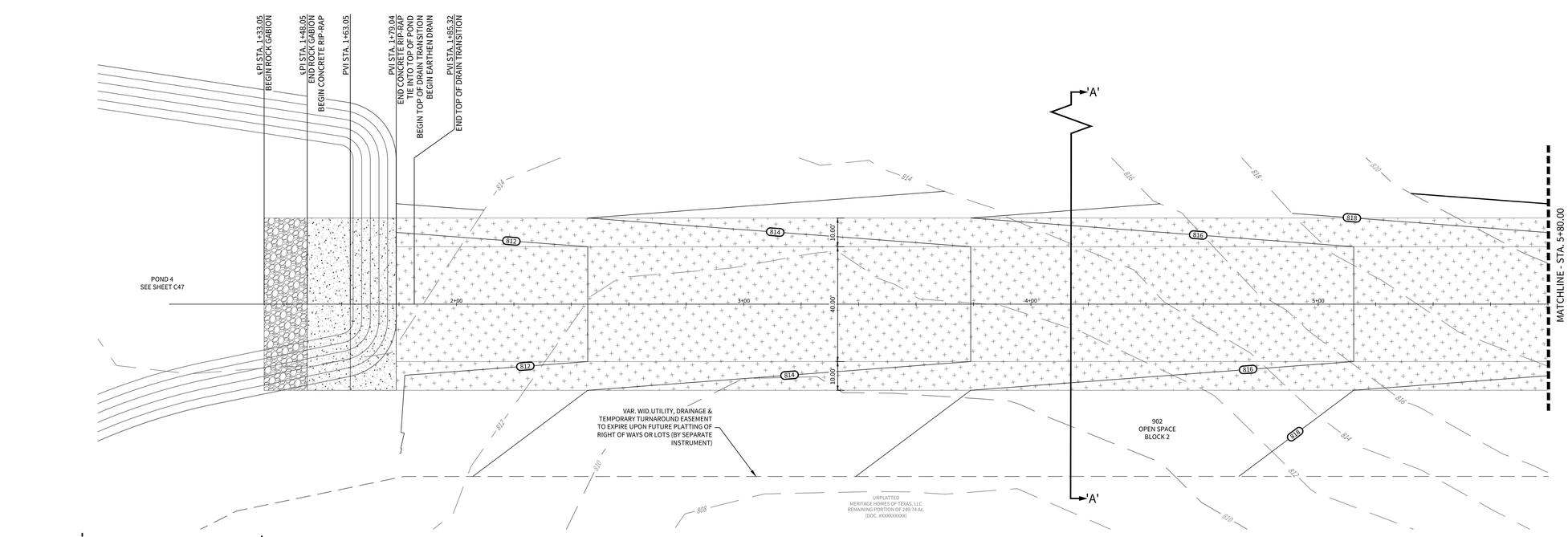
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

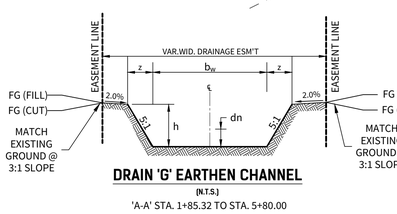
C31

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

P:\04343\002\2-DWG\4-Plans\C31 DRAIN PLAN & PROFILE - DRAIN 'F'.dwg, 6/19/2025 03:13:24pm, jgarcia

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE ON ANY ADDITIONAL PROJECTS, EXTENSIONS TO THE PROJECT, OR ANY OTHER PROJECT. ANY REUSE WITHOUT PRIOR WRITTEN VERIFICATION BY M.W. CUDE ENGINEERS LLC FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC AND YOU SHALL INDEMNIFY AND HOLD HARMLESS M.W. CUDE ENGINEERS LLC AND ITS OFFICERS, EMPLOYEES AND AGENTS FROM ANY AND ALL CLAIMS, LIABILITIES, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.



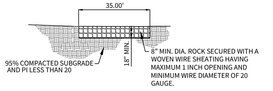


DRAIN 'G' EARTHEN CHANNEL
(N.T.S.)
'A-A' STA. 1+85.32 TO STA. 5+80.00

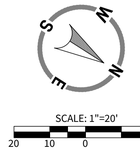
	'A-A'
Q_{25} (cfs)	353.28
b_w (ft)	40.00'
z (ft)	10.00'
n	0.035
h (ft)	2.00'
S (%)	1.50%
d_n (ft)	1.32'
V (fps)	5.73

DRAIN 'G'

STA. 1+85.32 TO STA. 5+80.00



GABION STYLE ROCK EROSION CONTROL MATTRESS DETAIL
NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING.
(N.T.S.)



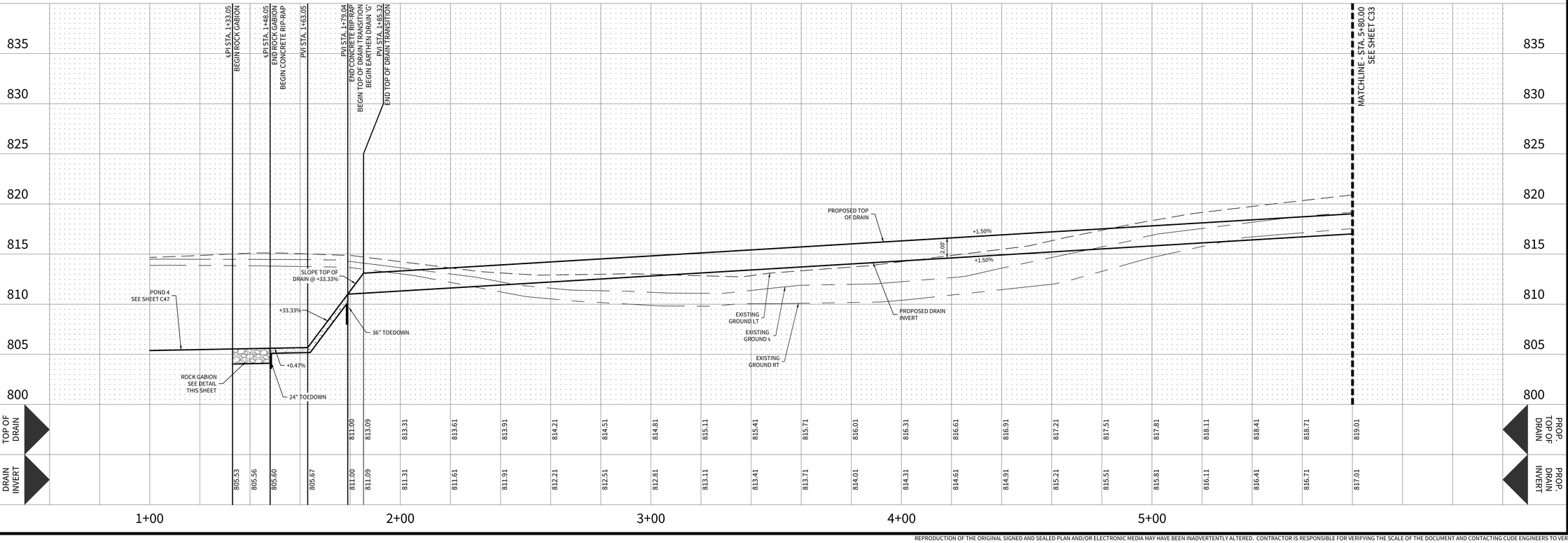
LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR — 498
- EXISTING 10' CONTOUR — 500
- PROPOSED 2' CONTOUR — 498
- PROPOSED 10' CONTOUR — 500
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL
- ROCK GABION

NOTES

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

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



CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'G'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

	DATE
1	
2	
3	
4	
5	
6	
7	
8	
9	

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER

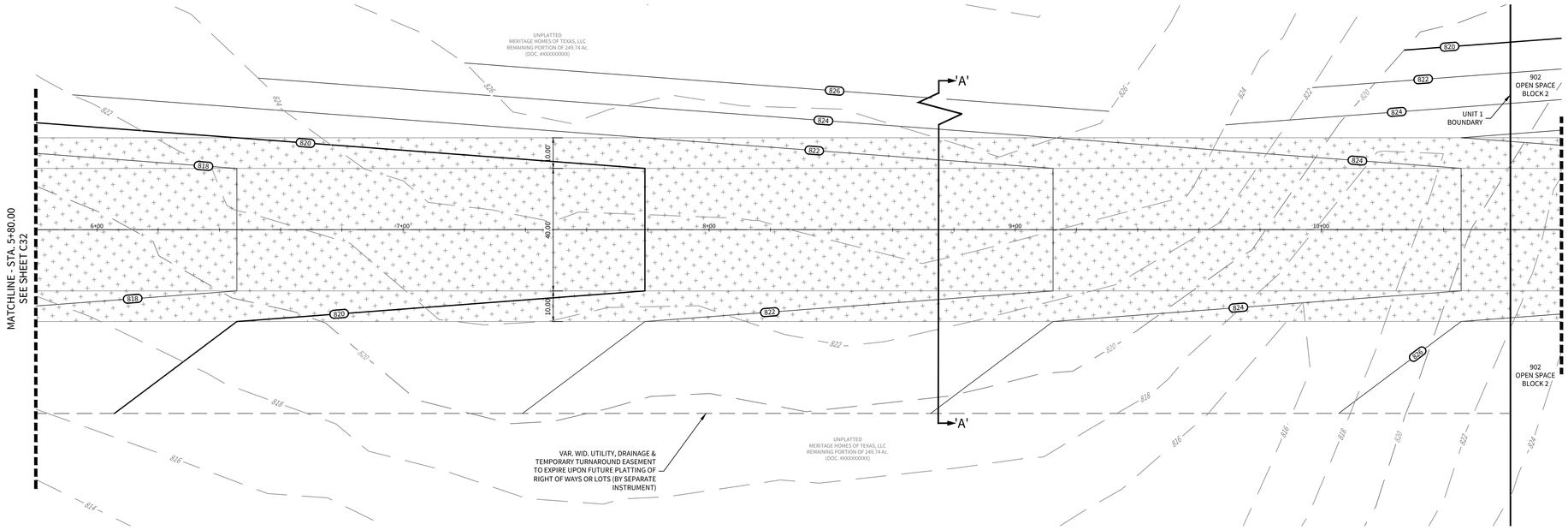
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

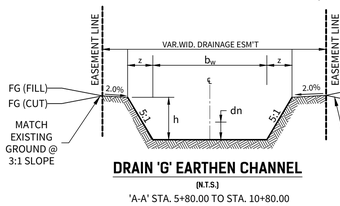
C32

CUDEENGINEERS.COM

P:\04343.002\2-ENG\2-Plans\C32 DRAIN PLAN & PROFILE - DRAIN 'G'.dwg 2025/06/13 3:45pm jgarcia

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.





DRAIN 'G' EARTHEN CHANNEL
(N.T.S.)
'A-A' STA. 5+80.00 TO STA. 10+80.00

	'A-A'
Q_{25} (cfs)	353.28
b_w (ft)	40.00'
z (ft)	10.00'
n	0.035
h (ft)	2.00'
S (%)	1.50%
d_n (ft)	1.32
V (fps)	5.73

DRAIN 'G'

STA. 5+80.00 TO STA. 10+80.00

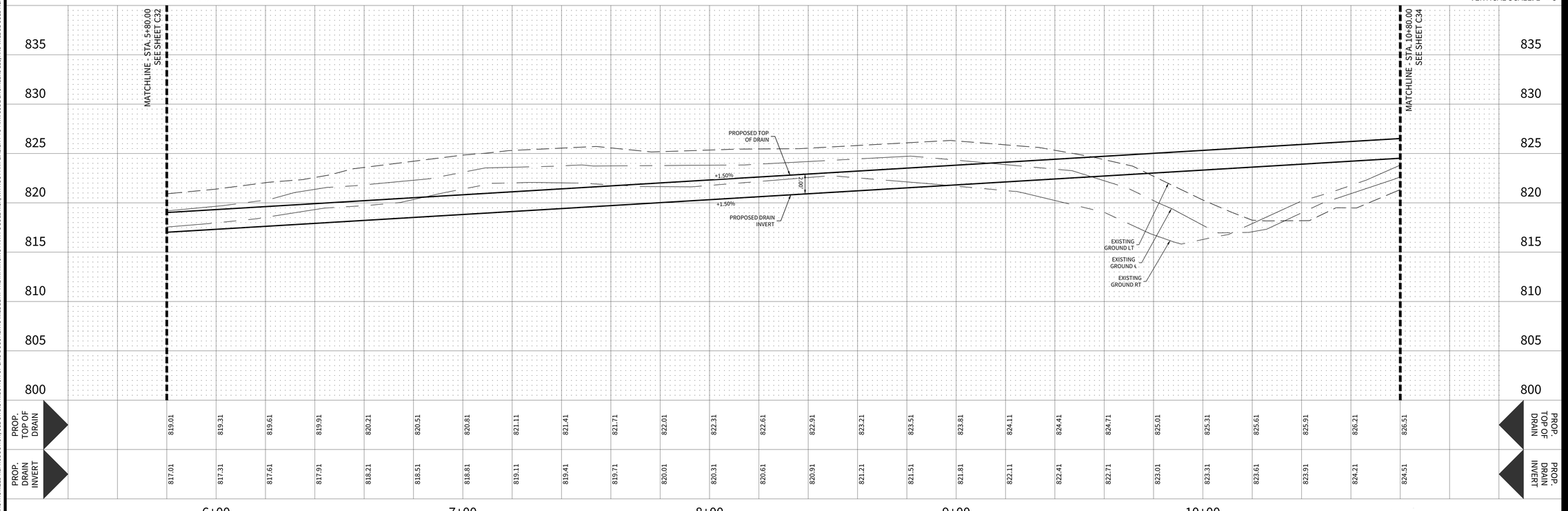
LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR — 498
- EXISTING 10' CONTOUR — 500
- PROPOSED 2' CONTOUR — 498
- PROPOSED 10' CONTOUR — 500
- EARTHEN DRAINAGE CHANNEL

NOTES

1. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC AND ANY USE OF THIS DOCUMENT FOR ANY PURPOSE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC SHALL BE AT THE USER'S SOLE RISK AND WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC. ANY USE OF THIS DOCUMENT FOR ANY PURPOSE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC AND ANY ADAPTATION OF THIS DOCUMENT BY ANY PARTY OTHER THAN M.W. CUDE ENGINEERS LLC SHALL BE AT THE USER'S SOLE RISK AND WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC. ANY USE OF THIS DOCUMENT FOR ANY PURPOSE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC AND ANY ADAPTATION OF THIS DOCUMENT BY ANY PARTY OTHER THAN M.W. CUDE ENGINEERS LLC SHALL BE STRICTLY PROHIBITED BY LAW.

CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'G'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

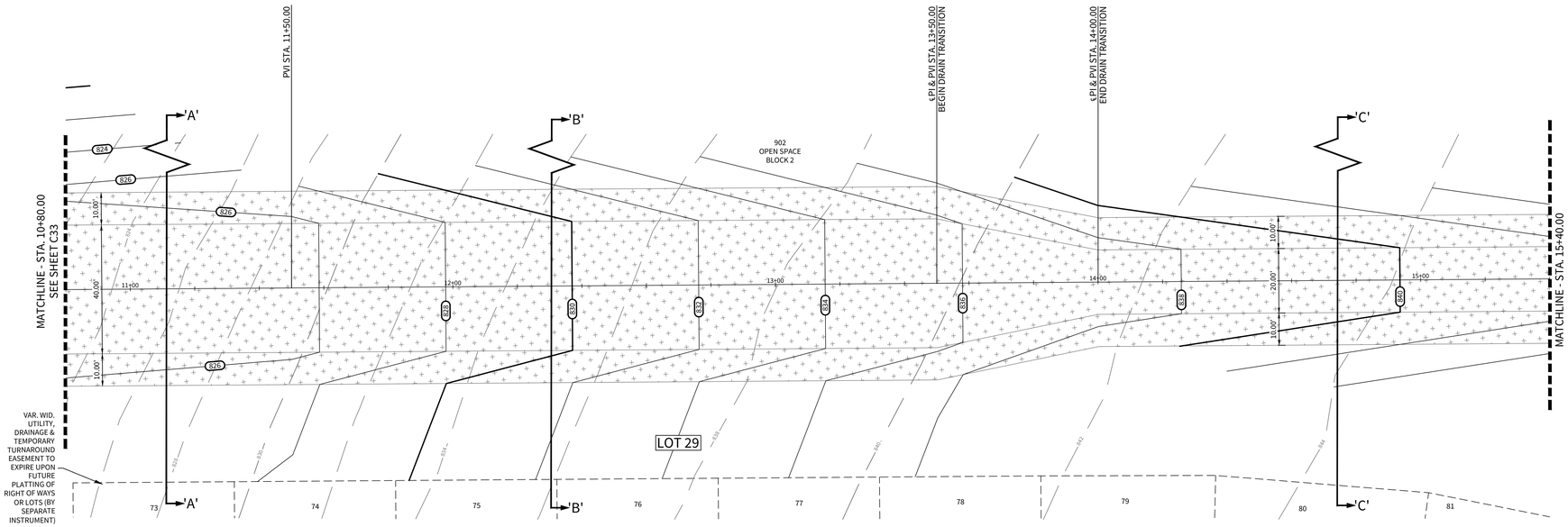
DATE	
	1.
	2.
	3.
	4.
	5.
	6.
	7.
	8.
	9.

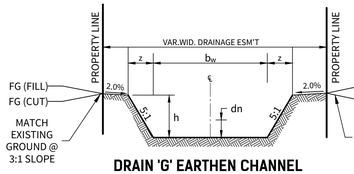
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C33

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.





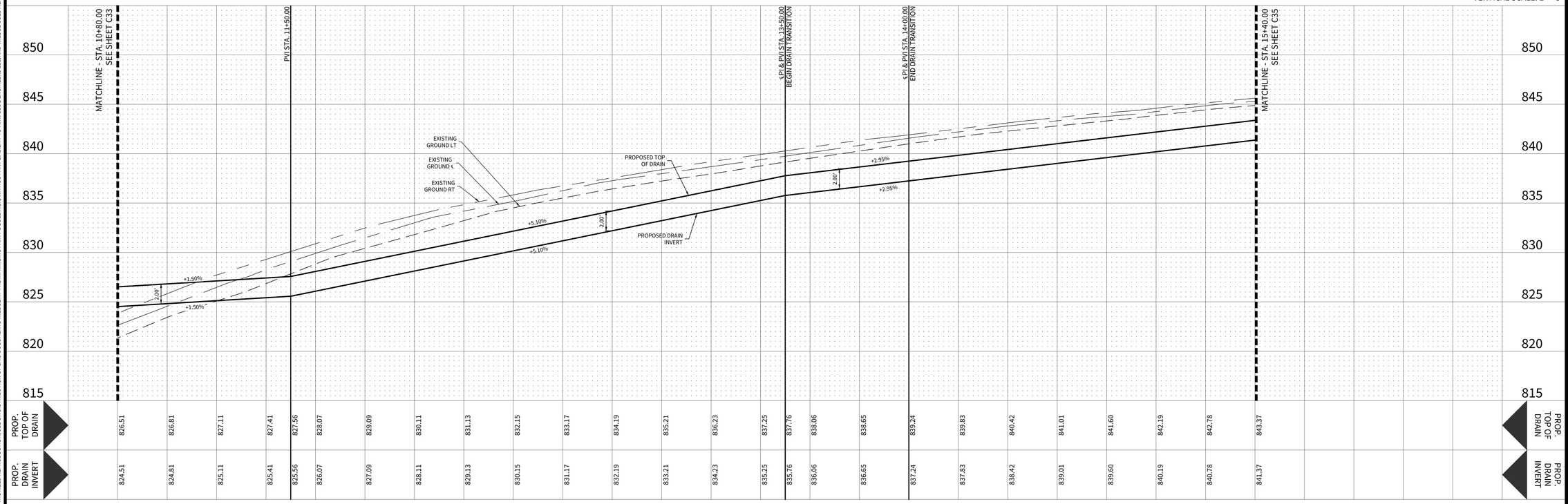
DRAIN 'G' EARTHEN CHANNEL
(N.T.S.)

'A-A' STA. 10+80.00 TO STA. 11+50.00
'B-B' STA. 11+50.00 TO STA. 13+50.00
'C-C' STA. 14+00.00 TO STA. 15+40.00

	'A-A'	'B-B'	'C-C'
Q_{50} (cfs)	353.28	59.90	59.90
b_w (ft)	40.00'	20.00'	20.00'
z (ft)	10.00'	10.00'	10.00'
n	0.035	0.035	0.035
h (ft)	2.00'	2.00'	2.00'
S (%)	1.50%	5.10%	2.95%
d_n (ft)	1.32'	0.33'	0.57'
V (fps)	5.73	4.43	4.62

DRAIN 'G'

STA. 10+80.00 TO STA. 15+40.00



LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR (498)
- EXISTING 10' CONTOUR (500)
- PROPOSED 2' CONTOUR 498
- PROPOSED 10' CONTOUR 500
- EARTHEN DRAINAGE CHANNEL

NOTES

1. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

SCALE: 1"=20'
20 10 0 20

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

CUDEENGINEERS.COM

CUDE ENGINEERS
EST. 1980

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'G'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	1	2	3	4	5	6	7	8	9
A									

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

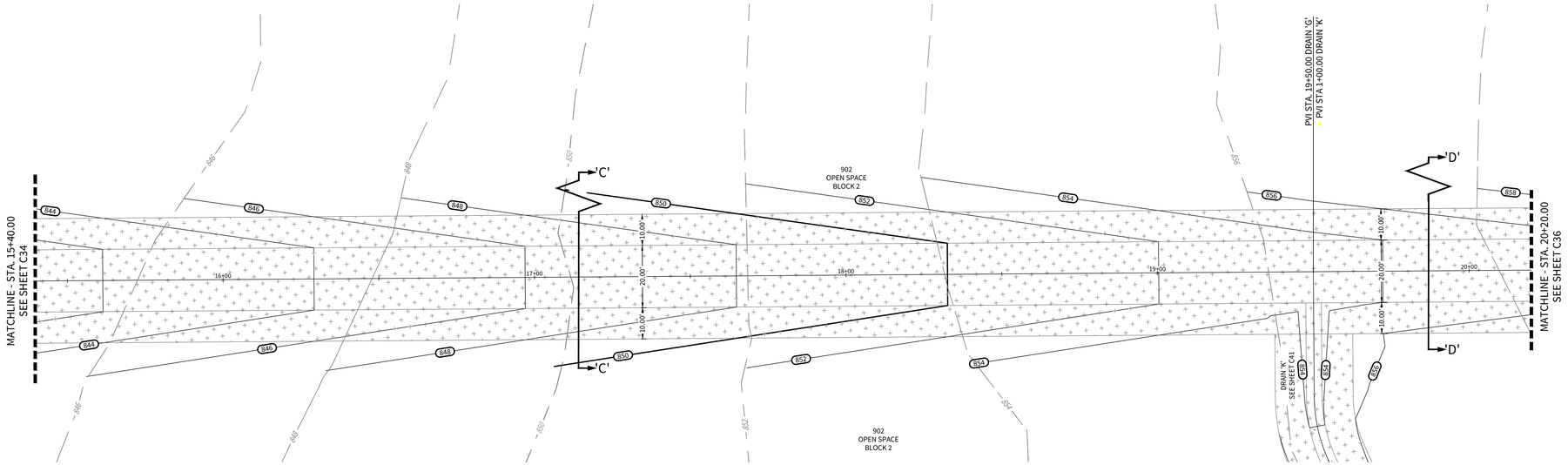
C34

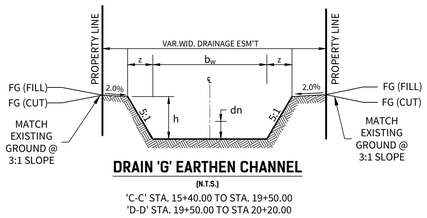
CUDEENGINEERS.COM

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC, OR MODIFICATION OF THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF M.W. CUDE ENGINEERS LLC, SHALL BE AT THE USER'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE CLEBY AGREED TO INDEMNIFY AND HOLD HARMLESS M.W. CUDE ENGINEERS LLC FROM ALL CLAIMS, DAMAGES AND LOSSES ARISING OUT OF OR RESULTING THEREFROM.

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

P:\04343\002\2-DWG\Final\C34DRAIN PLAN & PROFILE - DRAIN 'G'.dwg 6/25/2025 3:27:01 PM jgarcia





DRAIN 'G' EARTHEN CHANNEL

(N.T.S.)

'C-C' STA. 15+40.00 TO STA. 19+50.00
'D-D' STA. 19+50.00 TO STA 20+20.00

	'C-C'	'D-D'
Q_{25} (cfs)	59.90	59.90
b_w (ft)	20.00'	20.00'
z (ft)	10.00'	10.00'
n	0.035	0.035
h (ft)	2.00'	2.00'
S (%)	2.95%	2.40%
d_n (ft)	0.57'	0.60'
V (fps)	4.62	4.32

DRAIN 'G'

STA. 15+40.00 TO STA. 20+20.00

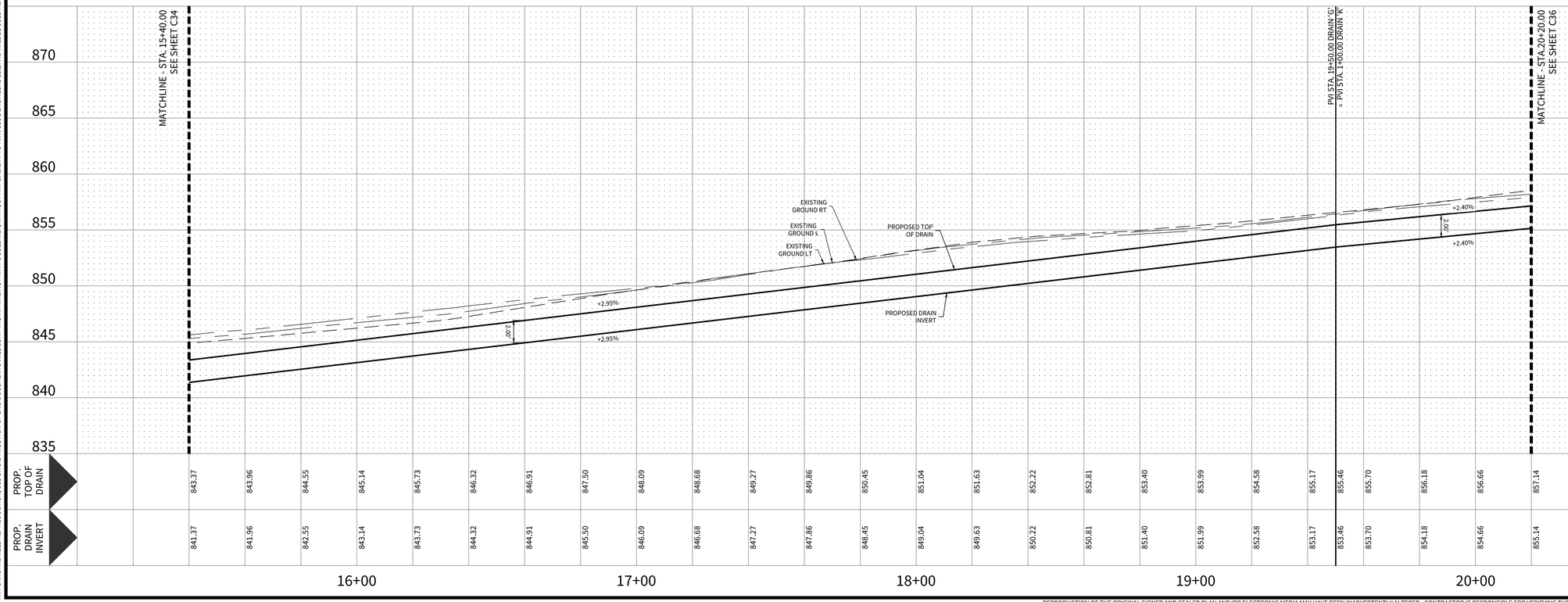
LEGEND

- EXISTING 2' CONTOUR — 498
- EXISTING 10' CONTOUR — 500
- PROPOSED 2' CONTOUR — 498
- PROPOSED 10' CONTOUR — 500
- EARTHEN DRAINAGE CHANNEL

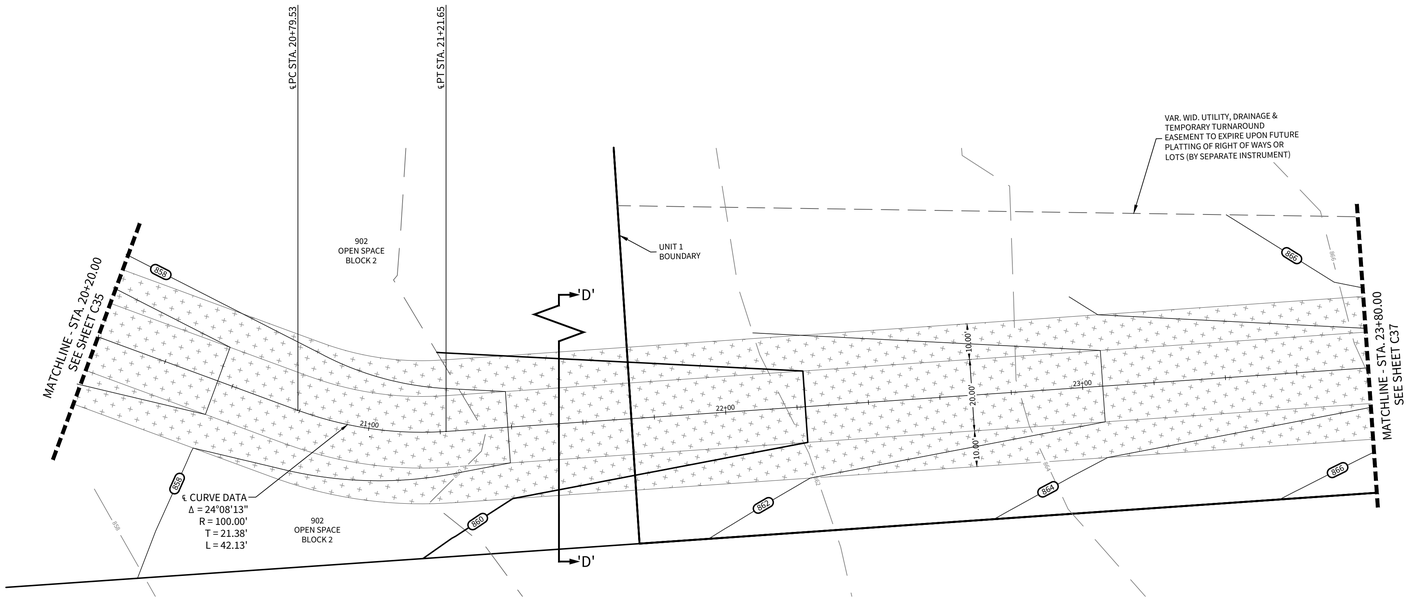
NOTES

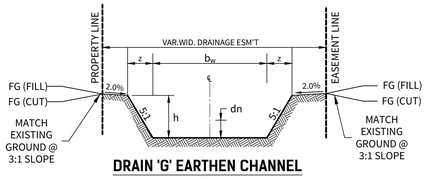
1. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



| | | |





DRAIN 'G' EARTHEN CHANNEL

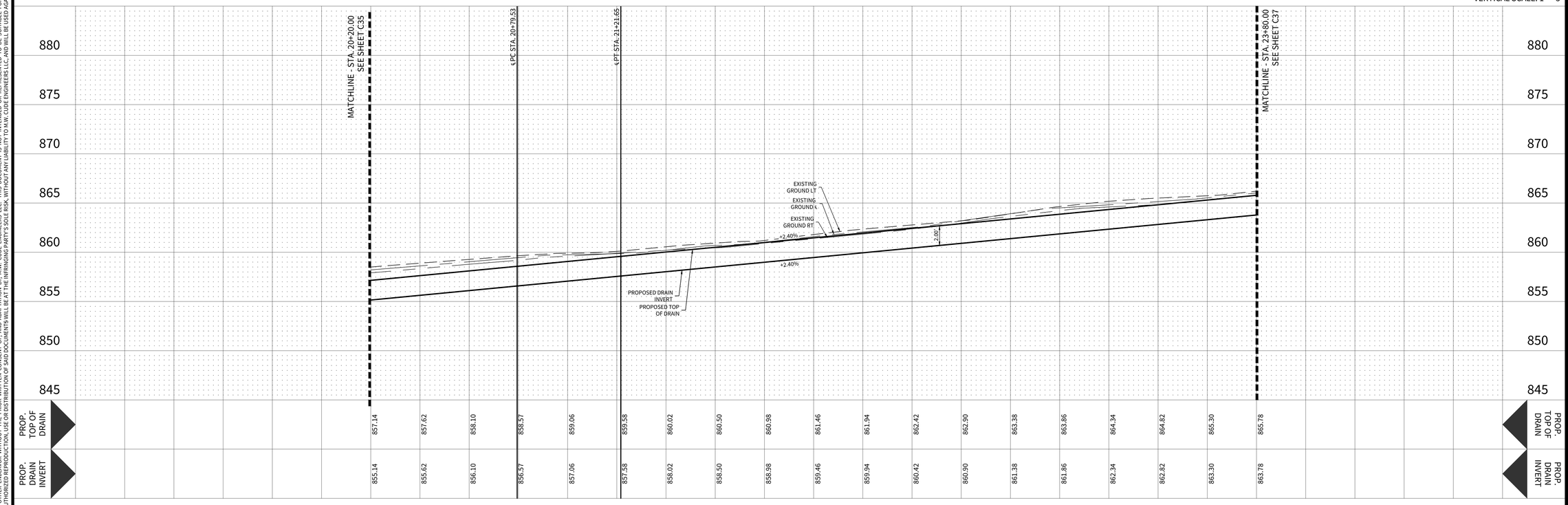
(N.T.S.)

'D-D' STA. 20+20.00 TO STA. 23+80.00

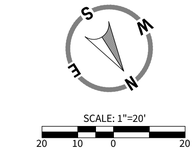
	'D-D'
Q_{25} (cfs)	59.90
b_w (ft)	20.00'
z (ft)	10.00'
n	0.035
h (ft)	2.00'
S (%)	2.40%
d_n (ft)	0.60'
V (fps)	4.32

DRAIN 'G'

STA. 20+20.00 TO STA. 23+80.00



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



LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR (489)
- EXISTING 10' CONTOUR (500)
- PROPOSED 2' CONTOUR (498)
- PROPOSED 10' CONTOUR (500)
- EARTHEN DRAINAGE CHANNEL

NOTES

1. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'G'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

	DATE
1	
2	
3	
4	
5	
6	
7	
8	
9	

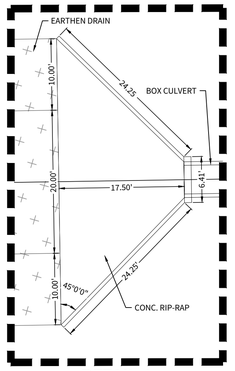


C36

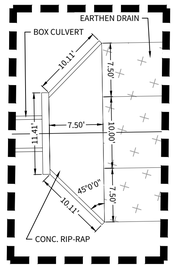
© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC AND WILL BE AT THE USER'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC AND WILL BE AT THE USER'S SOLE RISK AND SHALL INDEMNIFY AND HOLD M.W. CUDE ENGINEERS LLC HARMLESS FROM AND AGAINST ALL DAMAGES AND ANY AND ALL RISKS TO THE FULLEST EXTENT PERMITTED BY LAW.

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

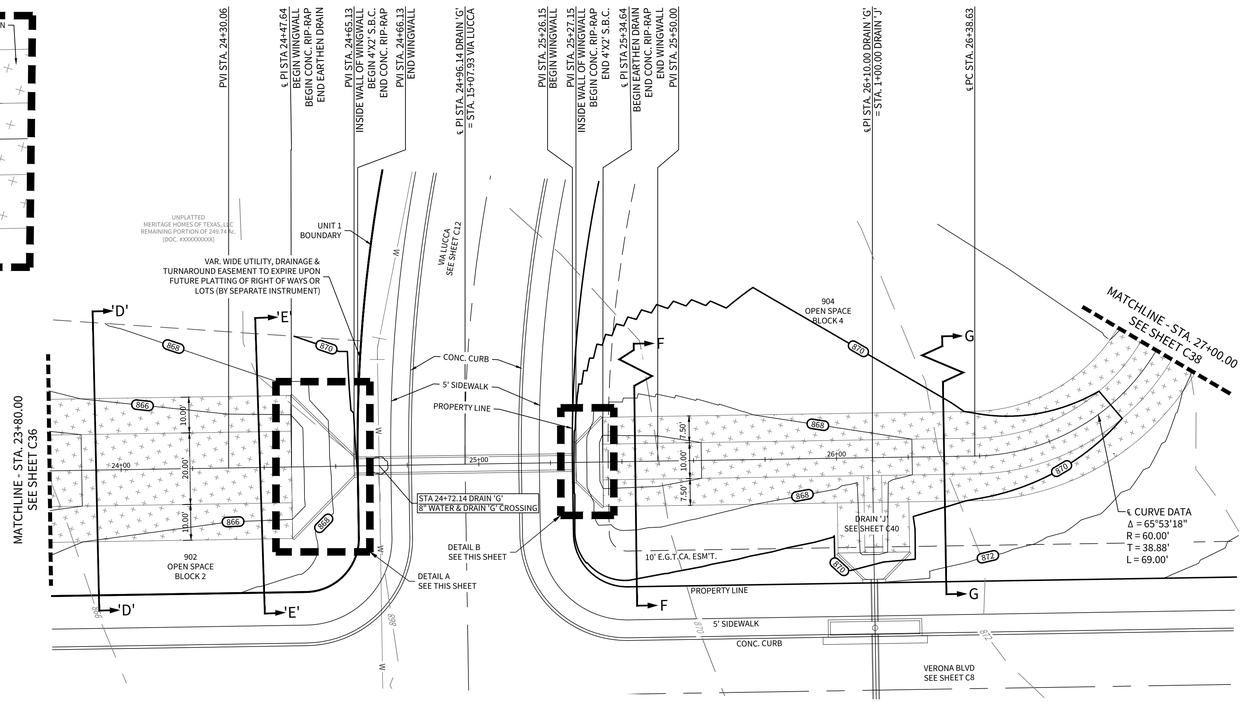
P:\04343.002\2-SWG\4-Plans\C36-DRAIN PLAN & PROF G - DRAIN 'G'.dwg 2025/06/13 3:03pm jgarcia

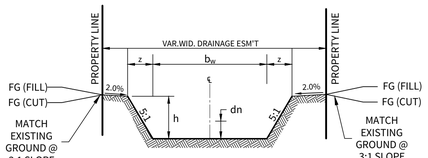


DETAIL A
SCALE: 1" = 10'



DETAIL B
SCALE: 1" = 10'





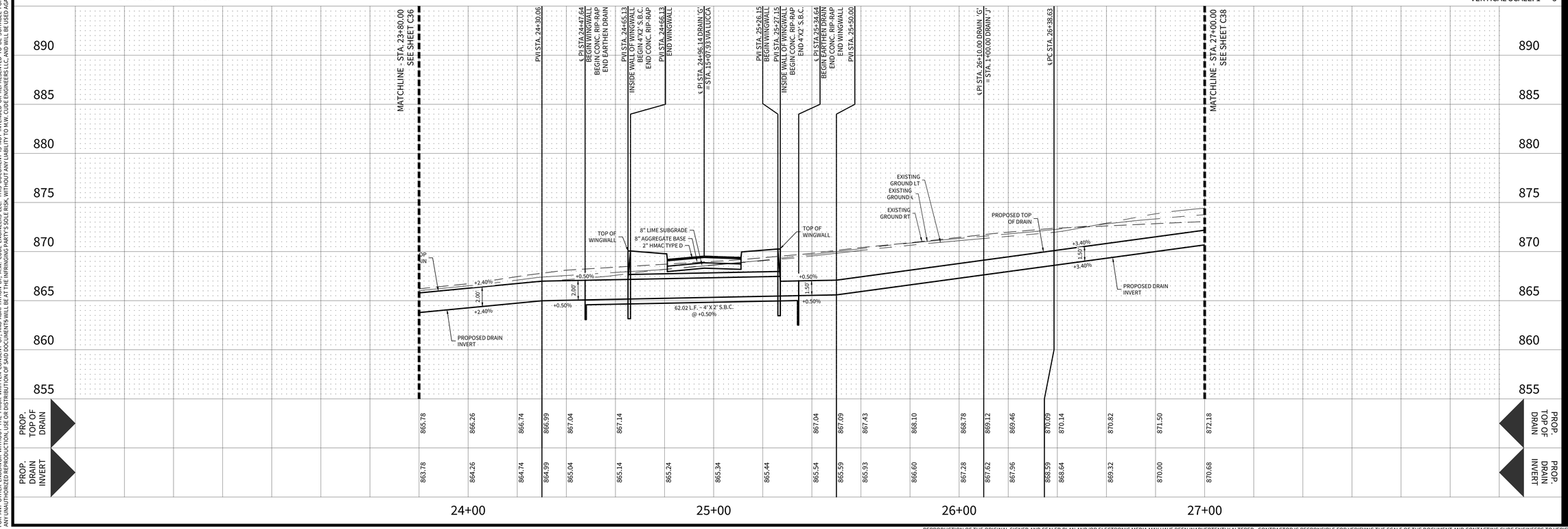
DRAIN 'G' EARTHEN CHANNEL
(N.T.S.)

'D-D' STA. 23+80.00 TO STA. 24+30.06
'E-E' STA. 24+30.06 TO STA. 24+47.64
'F-F' STA. 25+34.64 TO STA. 25+50.00
'G-G' STA. 25+50.00 TO STA. 27+00.00

	'D-D'	'E-E'	'F-F'	'G-G'
Q_{25} (cfs)	310.83	34.12	34.12	34.12
b_w (ft)	20.00'	10.00	10.00'	10.00'
z (ft)	10.00'	7.50'	7.50'	7.50'
n	0.035	0.035	0.035	0.035
h (ft)	2.00'	1.50'	1.50'	1.50'
S (%)	2.40%	0.50%	3.40%	3.40%
d_n (ft)	0.60'	0.94'	0.86'	0.86'
V (fps)	4.32	2.57	2.78	2.78

DRAIN 'G'

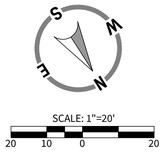
STA. 23+80.00 TO STA. 27+00.00



NOTES

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

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



LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR (498)
- EXISTING 10' CONTOUR (500)
- PROPOSED 2' CONTOUR (498)
- PROPOSED 10' CONTOUR (500)
- CONCRETE RIP RAP
- EARTHEN DRAINAGE CHANNEL

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'G'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	
1	
2	
3	
4	
5	
6	
7	
8	
9	

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C37

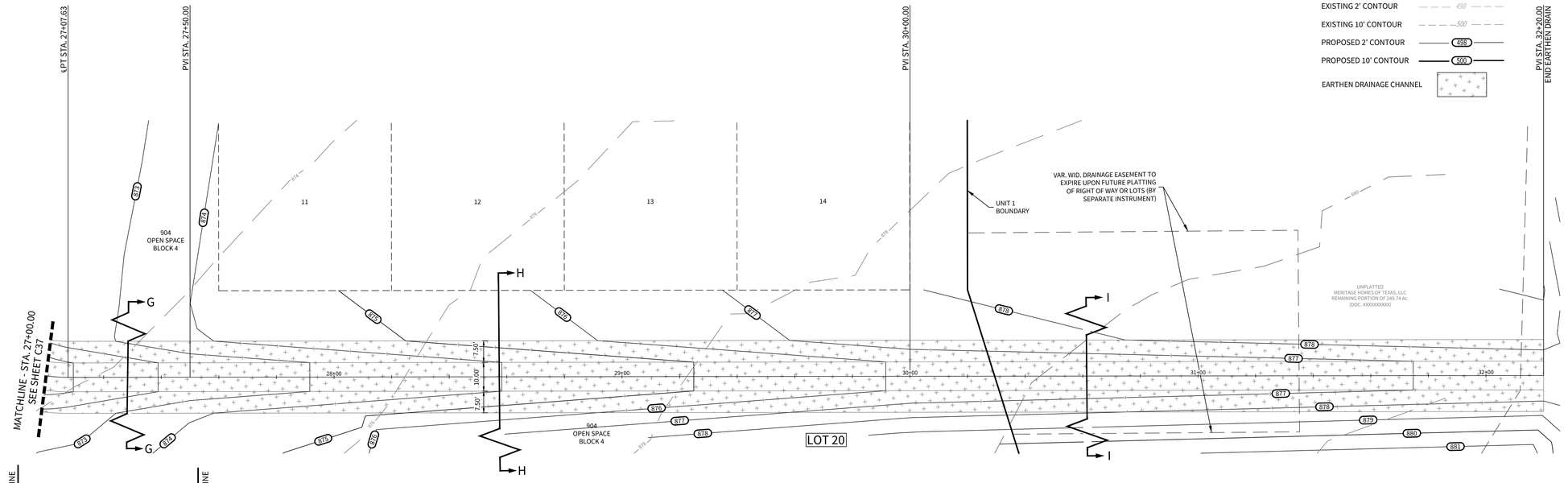
CUDEENGINEERS.COM

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED USE, REPRODUCTION, OR DISTRIBUTION OF THIS DOCUMENT IS STRICTLY PROHIBITED. ALL CLAIMS ARISING FROM THE UNAUTHORIZED REPRODUCTION, USE, OR DISTRIBUTION OF THIS DOCUMENT WILL BE AT THE WRONGDOER'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE SUBJECT TO LEGAL ACTION.

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

P:\04343.002\2-SWG\4-Plans\C37 DRAIN PLAN & PROFILE - DRAIN 'G'.dwg, 6/19/2025 10:13:23 PM, jgarcia

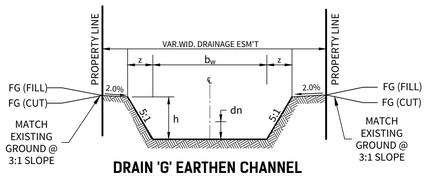
© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REUSE, REPRODUCTION, USE, OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE WRONGDOER'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE SUBJECT TO LEGAL SANCTIONS AND ANNUAL FINES OF $1,000.00 PER DAY.



LEGEND

- EASEMENT LINE
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED 10' CONTOUR
- EARTHEN DRAINAGE CHANNEL

SCALE: 1"=20'



DRAIN 'G' EARTHEN CHANNEL

(N.T.S.)

'G-G' STA. 27+00.00 TO STA. 27+50.00
'H-H' STA. 27+50.00 TO STA. 30+00.00
'I-I' STA. 30+00.00 TO STA. 32+20.00

	'G-G'	'H-H'	'I-I'
Q_{25} (cfs)	34.12	34.12	34.12
b_w (ft)	10.00'	10.00'	10.00'
z (ft)	7.50'	7.50'	7.50'
n	0.035	0.035	0.035
h (ft)	1.50'	1.50'	1.50'
S (%)	3.40%	1.50%	0.50%
d_n (ft)	0.57'	0.71'	0.96'
V (fps)	4.69	3.54	2.41

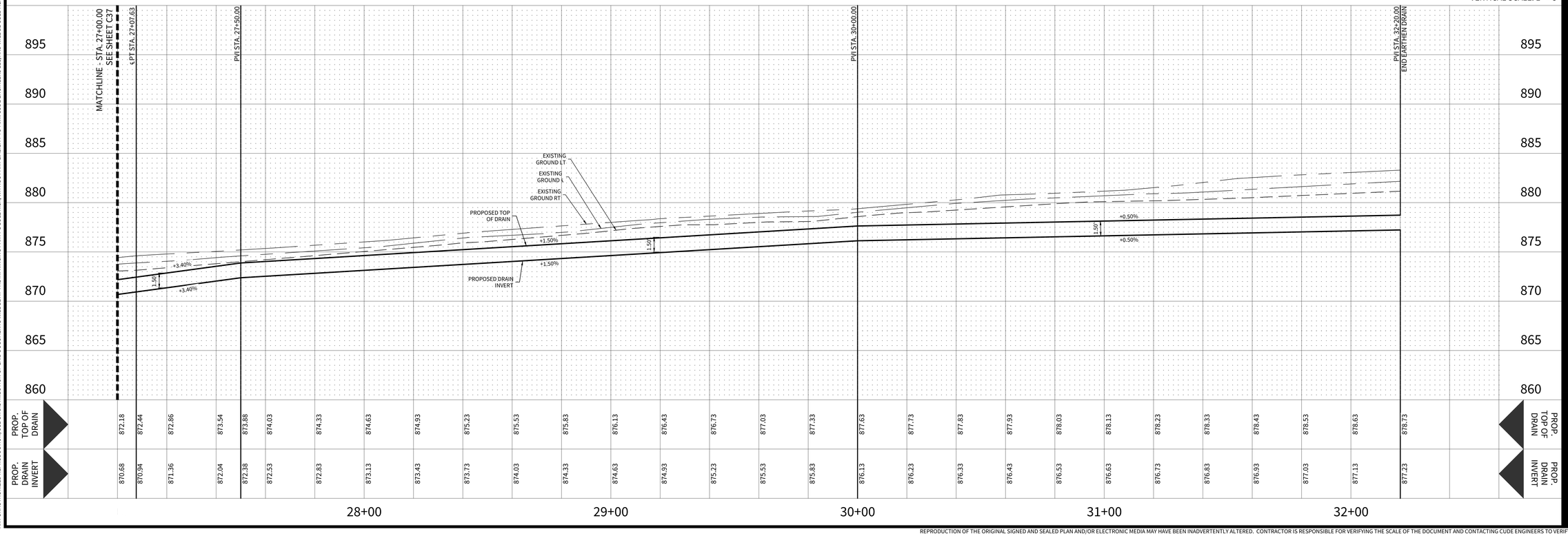
DRAIN 'G'

STA. 27+00.00 TO END

NOTES

1. IMPROVED EARTHEN CHANNELS AND DETENTION PONDS WILL BE VEGETATE BY SEEDING OR SODDING. EIGHT-FIVE PERCENT (85%) OF THE CHANNEL SURFACE AREA MUST HAVE ESTABLISHED VEGETATION BEFORE THE DISTRICT WILL ACCEPT THE CHANNEL FOR MAINTENANCE

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



CUDEENGINEERS.COM

CUDE ENGINEERS
EST. 1980

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

CONTESSA SUBDIVISION
UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'G'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

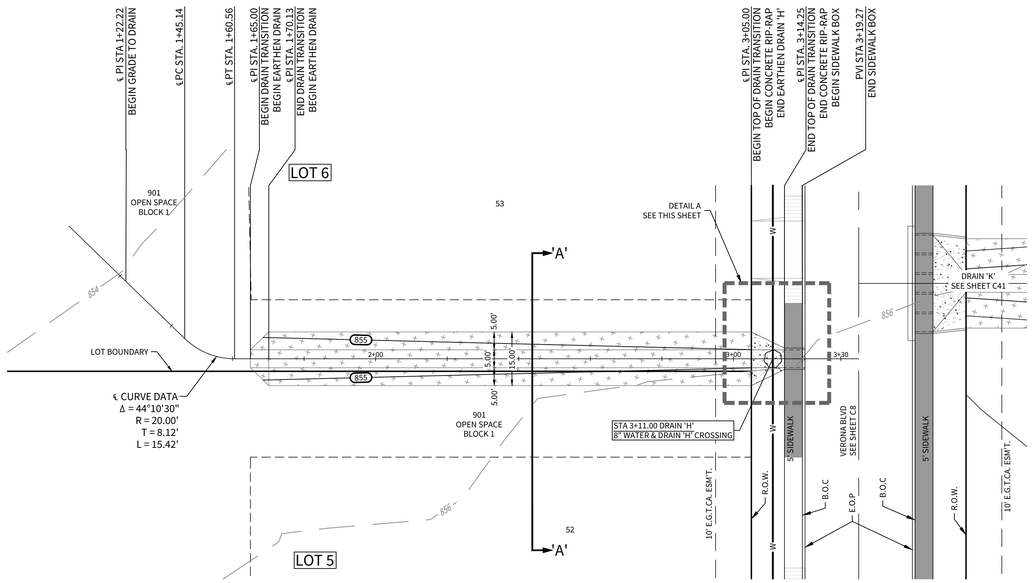
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER

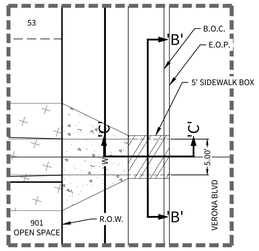
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C38

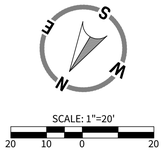
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF AND ADAPTATION BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY USE OF THIS DOCUMENT FOR OTHER PURPOSES OR ANY MODIFICATIONS MADE TO THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION BY M.W. CUDE ENGINEERS LLC SHALL BE AT THE PERSON(S) OR ENTITY'S SOLE RISK AND SHALL BE WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC. YOU WILL BE HELD HARMLESS AND INDEMNIFIED FOR ANY UNAUTHORIZED REPRODUCTION, USE, AND DISTRIBUTION OF OUR DOCUMENTS SHALL BE AT THE PERSON(S) OR ENTITY'S SOLE RISK AND SHALL BE WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC. YOU WILL BE HELD HARMLESS AND INDEMNIFIED



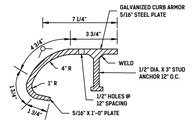


DETAIL A
(SCALE 1" = 10')

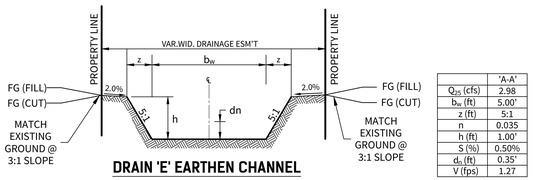


LEGEND

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



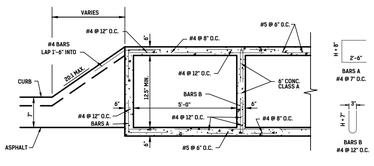
CURB ARMOR DETAIL
(N.T.S)



DRAIN 'E' EARTHEN CHANNEL
(N.T.S.)

	'A-A'
Q_{25} (cfs)	2.98
b_w (ft)	5.00'
z (ft)	5:1
n	0.035
h (ft)	1.00'
S (%)	0.50%
d_n (ft)	0.35'
V (fps)	1.27

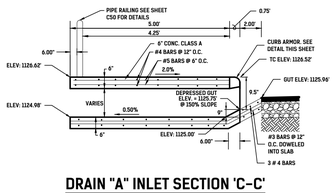
'A-A' STA. 1+65.00 TO STA. 3+05.00



TYPICAL SIDEWALK BOX DRAIN SECTION 'B–B'
(N.T.S)

DRAIN 'H'

STA. 1+22.22 TO END



DRAIN "A" INLET SECTION 'C–C'
(N.T.S)

SIDEWALK BOX OPENING

WEIR EQUATION

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

$Q_{25} = 2.98$ C.F.S.

C = 3.087

H = 0.79'

$L = \frac{2.98 \text{ C.F.S}}{(3.087)(0.79)^{3/2}}$

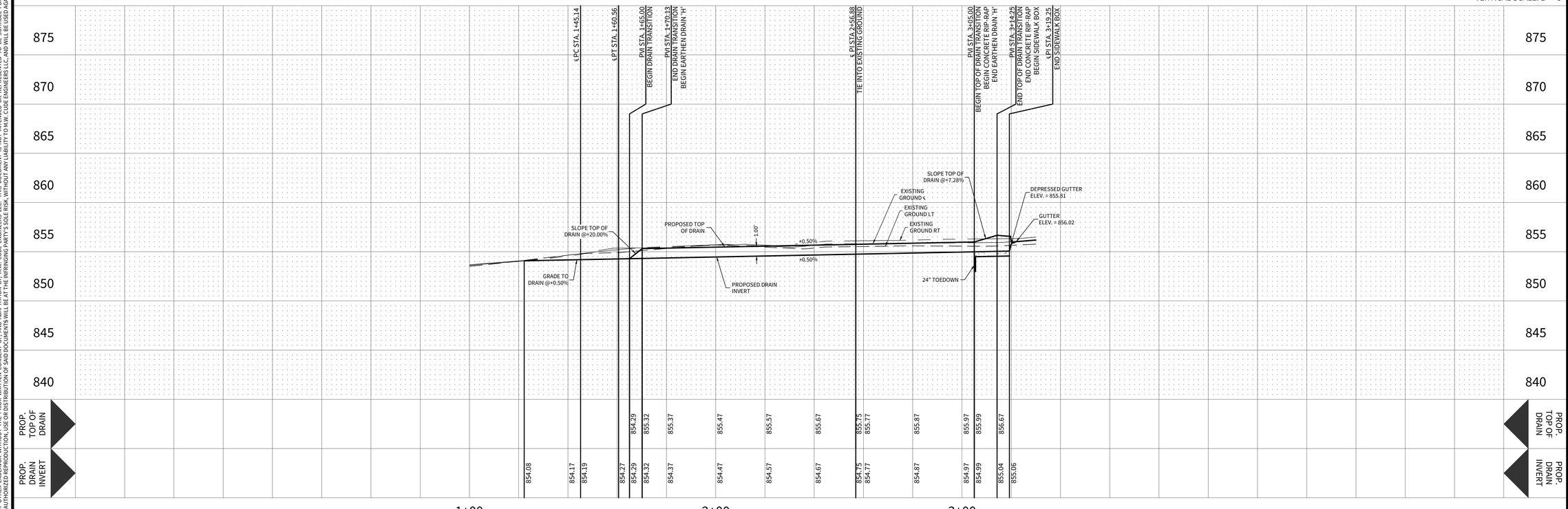
L = 1.37'

USE 1 ~ 5 FT SIDEWALK BOXES

NOTES

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

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



CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'H'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

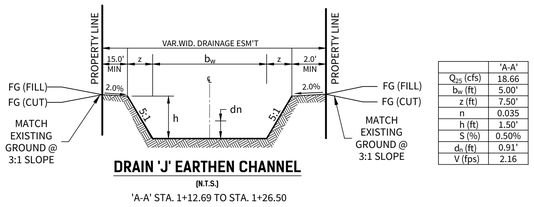
DATE	
	1.
	2.
	3.
	4.
	5.
	6.
	7.
	8.
	9.

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C39

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.

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED USE, ADAPTATION, OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE WITHHOLDING PARTY'S SOLE RISK, WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE USED AGAINST ANY AND ALL PARTIES TO THE FULLEST EXTENT PERMITTED BY LAW.

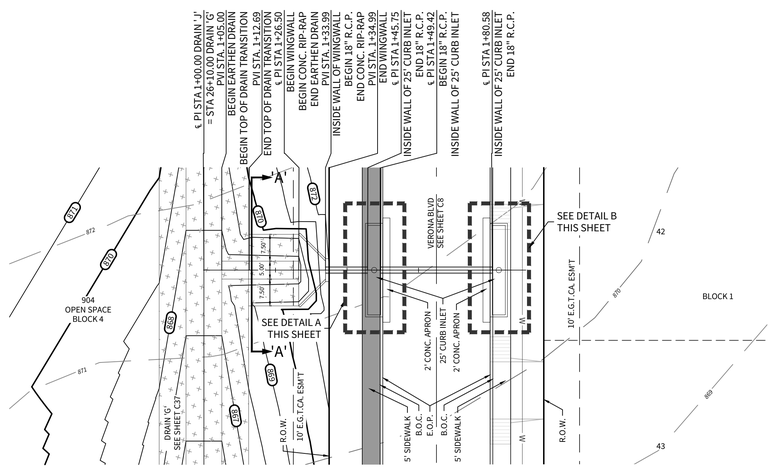


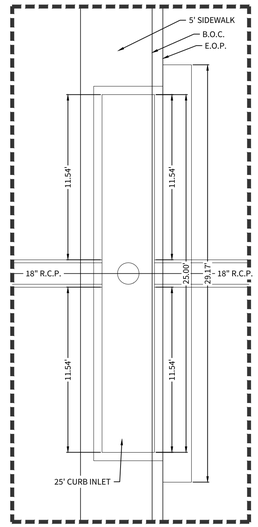
DRAIN 'J' EARTHEN CHANNEL

(N.T.S.)

'A-A' STA. 1+12.69 TO STA. 1+26.50

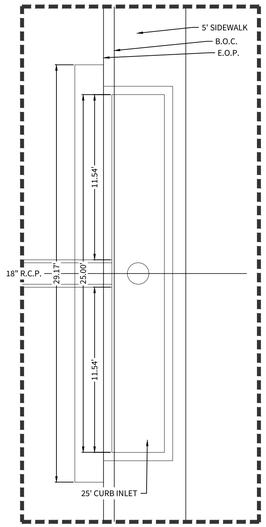
	'A-A'
Q_{25} (cfs)	18.66
b_w (ft)	5.00'
z (ft)	7.50'
n	0.035
h (ft)	1.50'
S (%)	0.50%
d_n (ft)	0.91'
V (fps)	2.16





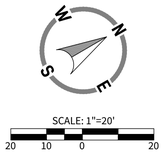
DETAIL A

SCALE: 1"=5'



DETAIL B

SCALE: 1"=5'



LEGEND

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

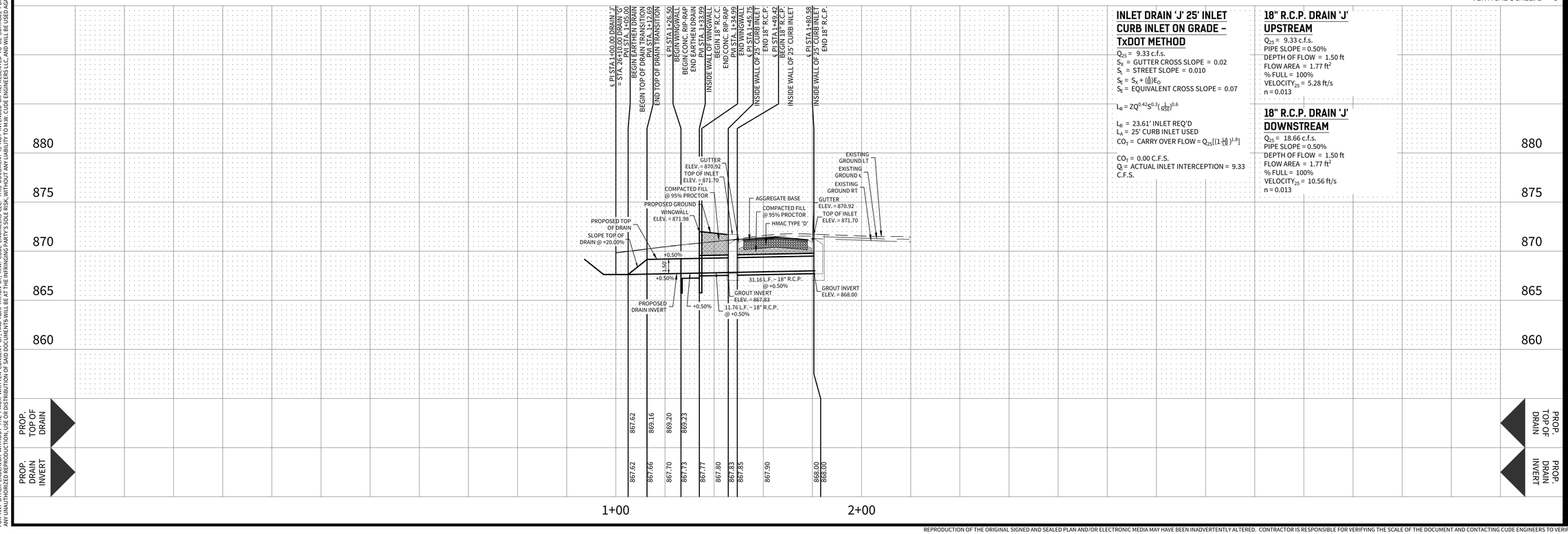
NOTES

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

DRAIN 'J'

STA. 1+00.00 TO STA. END

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



INLET DRAIN 'J' 25' INLET CURB INLET ON GRADE - TxDOT METHOD

Q_{25} = 9.33 c.f.s.
S_x = GUTTER CROSS SLOPE = 0.02
S_s = STREET SLOPE = 0.010
$S_E = S_x + (\frac{W}{a})E_O$
S_E = EQUIVALENT CROSS SLOPE = 0.07

$L_R = ZQ^{0.42}S^{0.3}(\frac{1}{nSE})^{0.6}$

L_R = 23.61' INLET REQ'D
L_A = 25' CURB INLET USED
CO_T = CARRY OVER FLOW = $Q_{25}[(1-\frac{L_A}{L_R})^{1.8}]$

CO_T = 0.00 C.F.S.
Q_i = ACTUAL INLET INTERCEPTION = 9.33 C.F.S.

18" R.C.P. DRAIN 'J' UPSTREAM

Q_{25} = 9.33 c.f.s.
PIPE SLOPE = 0.50%
DEPTH OF FLOW = 1.50 ft
FLOW AREA = 1.77 ft²
% FULL = 100%
$VELOCITY_{25}$ = 5.28 ft/s
n = 0.013

18" R.C.P. DRAIN 'J' DOWNSTREAM

Q_{25} = 18.66 c.f.s.
PIPE SLOPE = 0.50%
DEPTH OF FLOW = 1.50 ft
FLOW AREA = 1.77 ft²
% FULL = 100%
$VELOCITY_{25}$ = 10.56 ft/s
n = 0.013

CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'J'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

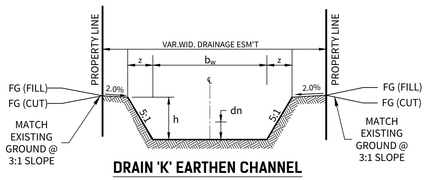


C40

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

P:\04343\002\2060\Plans\CAD\DRAIN PLAN & PROFILE - DRAIN J.dwg 6/19/2025 5:19:53pm jgarcia

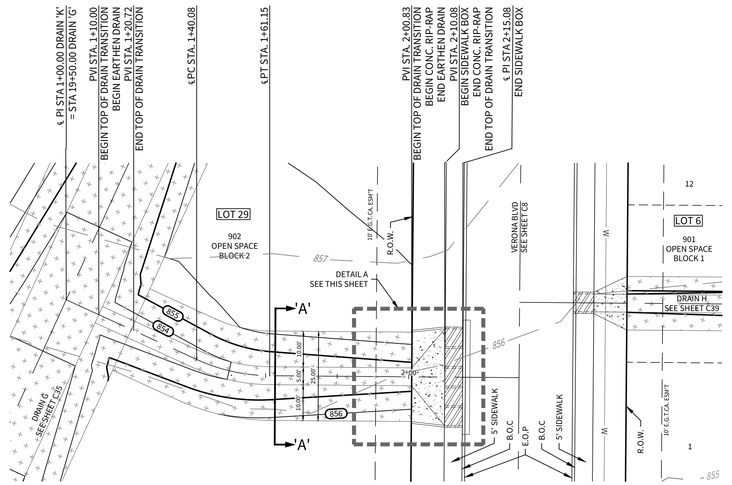
© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED USE, MODIFICATION, OR ALTERATION OF THIS DOCUMENT WITHOUT THE EXPRESS WRITTEN CONSENT OF M.W. CUDE ENGINEERS LLC, SHALL BE UNDERTAKEN AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC, AND THE USER SHALL INDEMNIFY AND HOLD M.W. CUDE ENGINEERS LLC HARMLESS FROM ALL CLAIMS, DAMAGES, LOSSES, AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM. ANY UNAUTHORIZED REPRODUCTION OR USE OF THIS DOCUMENT MAY RESULT IN CIVIL AND CRIMINAL PENALTIES AND WILL BE PROSECUTED TO THE FULLEST EXTENT PERMITTED BY LAW.

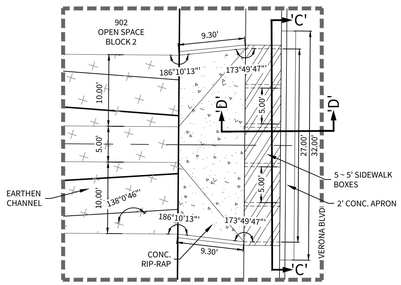


DRAIN 'K' EARTHEN CHANNEL
(N.T.S.)

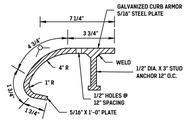
'A-A' STA. 1+20.72 TO STA. 2+00.83

	'A-A'
Q_{25} (cfs)	8.91
b_w (ft)	5.00'
z (ft)	10.00'
n	0.035
h (ft)	2.00'
S (%)	1.35%
d_n (ft)	0.48'
V (fps)	2.50

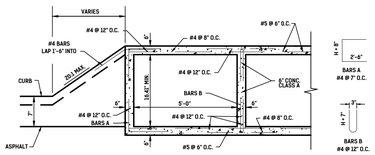




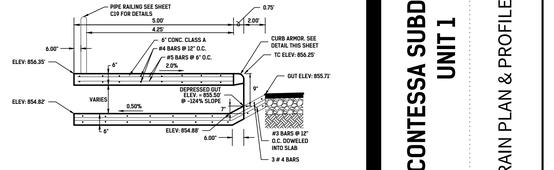
DETAIL A
(SCALE 1" = 10')



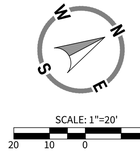
CURB ARMOR DETAIL
(N.T.S)



TYPICAL SIDEWALK BOX DRAIN SECTION 'C–C'
(N.T.S)



DRAIN "K" INLET SECTION 'D–D'
(N.T.S)



LEGEND

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

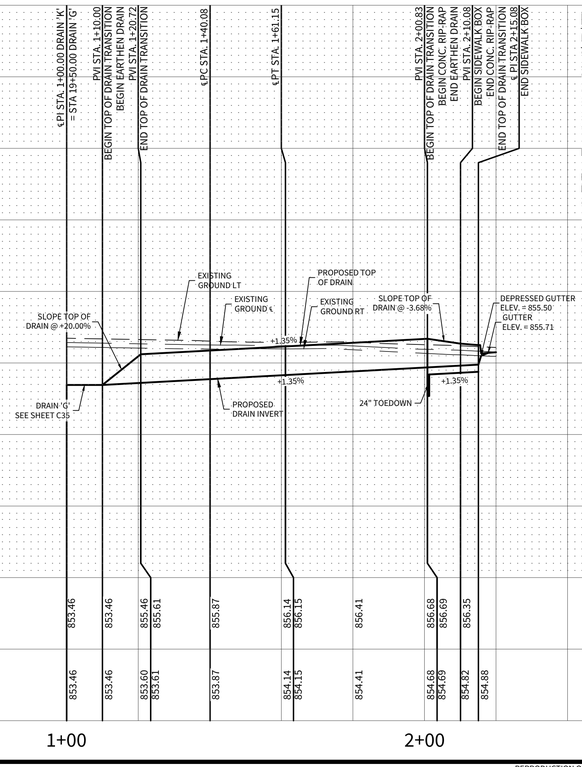
NOTES

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

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

DRAIN 'K'

STA. 1+00.00 TO END



INLET DRAIN 'K' 25' INLET CURB INLET ON GRADE – TxDOT METHOD

Q_{25} = 8.91 c.f.s.
S_X = GUTTER CROSS SLOPE = 0.02
S_L = STREET SLOPE = 0.010
$S_E = S_x + (\frac{a}{W})E_o$
S_E = EQUIVALENT CROSS SLOPE = 0.07

$L_R = ZQ^{0.42}S^{0.3}(\frac{1}{nS_E})^{0.6}$

L_R = 23.00' INLET REQ'D
L_A = 25' CURB INLET USED
CO_T = CARRY OVER FLOW = $Q_{25}[(1-\frac{L_A}{L_R})^{1.8}]$

CO_T = 0.00 C.F.S.
Q = ACTUAL INLET INTERCEPTION = 8.91 C.F.S.

CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

DRAIN PLAN & PROFILE - DRAIN 'K'

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C41

CUDEENGINEERS.COM

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

C:\04343\002\DWGS\Plans\C41 DRAIN K DRAIN PROFILE - DRAIN 'K'.dwg 2025/06/23 3:59pm jgarcia

LEGEND

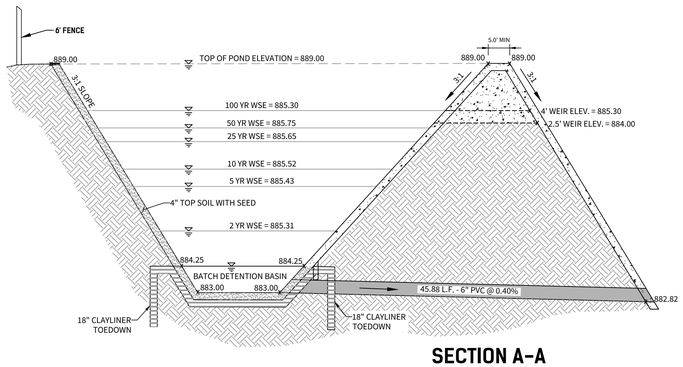
- CONC. RIP RAP
- GABION MATTRESS
- EARTHEN VEGETATION
- 892 PROPOSED CONTOUR
- 890 EXISTING CONTOUR
- 3:1 PROPOSED SLOPE
- DRAINAGE FLOW LINE
- 1% ANNUAL CHANCE FLOODPLAIN
- CLAY LINER
- CONCRETE DRIVEWAY POND ACCESS

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

1. TSS REMOVAL REQUIRED BY APPLICABLE ORDINANCE & RG 348 FOR THIS SITE LOCATION: = 80% = 1,822 LBS
2. PROVIDED WATER QUALITY CAPTURE VOLUME = 28,809 CUBIC FEET
3. TSS REMOVAL PROVIDED BY THIS POND = 2,172 LBS
4. RAINFALL DEPTH WATER QUALITY TREATMENT PROVIDED = 1.60 INCHES
5. WATER QUALITY DRAWDOWN TIME:
   a. 6" CAPACITY AT 0.40% SLOPED OUTFALL = 0.55 CFS
   b. DRAWDOWN TIME = 28,809 CF / 0.55 CFS = 14.52 HOURS

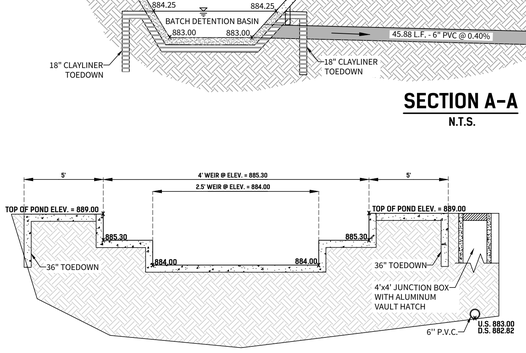
SEQUENCE OF OPERATION

1. UPON ACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO STRT DETENTION TIMER #1.
2. DETENTION TIMER #1 TO BE MANUALLY SET TO 12 HOURS AND TO BE USER ADJUSTABLE VALUE.
3. WHEN DETENTION TIMER #1 HAS ELAPSED, A 6" BUTTERFLY VALVE IS TO OPEN AND RELEASE DETAINED WATER BASIN.
4. UPON DEACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO START DETENTION TIMER #2.
5. DETENTION TIMER #2 TO BE MANUALLY SET TO 24 HOURS AND TO BE USER ADJUSTABLE.
6. WHEN DETENTION TIMER #2 HAS ELAPSED, THE 6"BUTTERFLY VALVE IS TO CLOSE.
7. VALVE TO BE ACTIVATED PERIODICALLY TO SHOW ACTIVE REGARDLESS OF FLOAT SWITCH OPERATION.



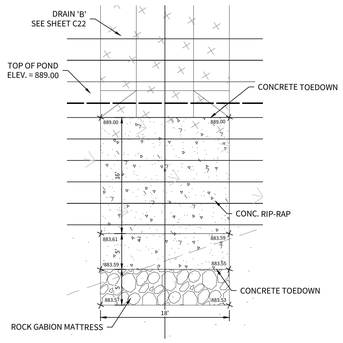
SECTION A-A

N.T.S.



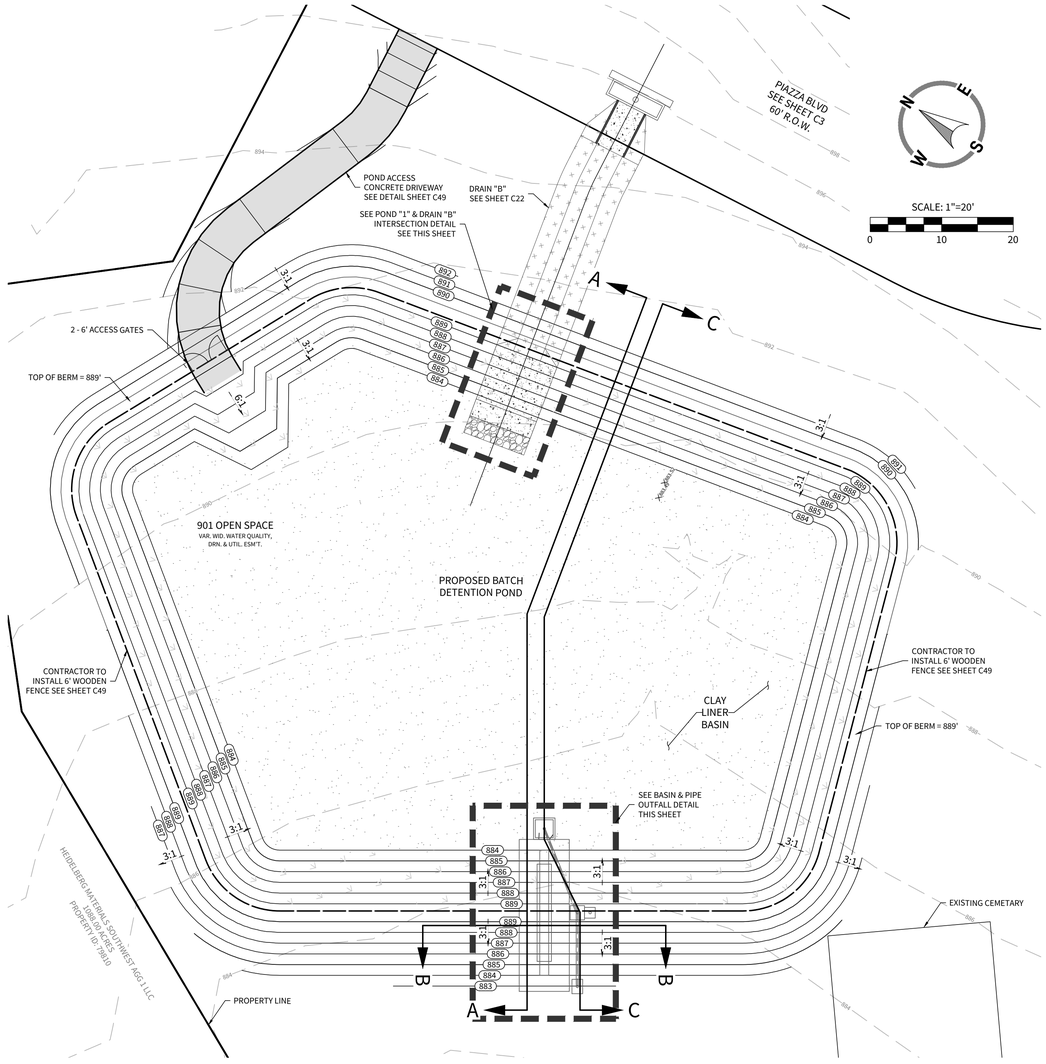
SECTION B-B

N.T.S.



POND "1" & DRAIN "B" INTERSECTION DETAIL

SCALE: 1" = 10'

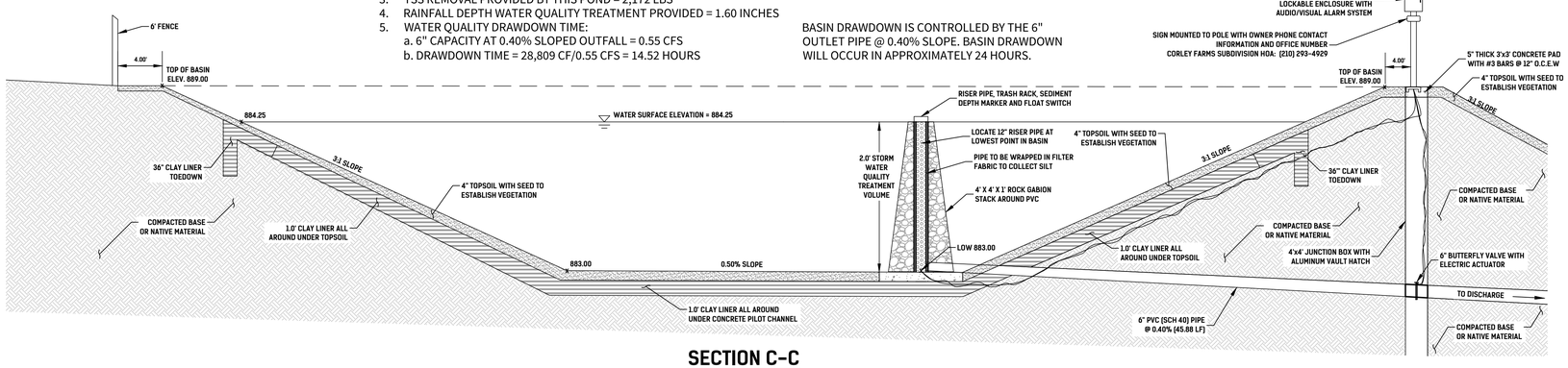


BASIN DESIGN DATA

BASIN WATERSHED: 4.02 Ac. (175,213 SF)
DESIGN WATER SURFACE ELEV. = 884.75'
TOP OF CLAY LINER ELEVATION = 883.00'
WATER QUALITY STORAGE DEPTH = 1.75 FEET

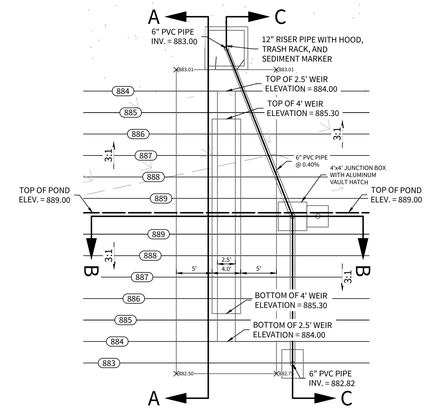
1. TSS REMOVAL REQUIRED BY APPLICABLE ORDINANCE & RG 348 FOR THIS SITE LOCATION: = 80% = 1,822 LBS
2. PROVIDED WATER QUALITY CAPTURE VOLUME = 28,809 CUBIC FEET
3. TSS REMOVAL PROVIDED BY THIS POND = 2,172 LBS
4. RAINFALL DEPTH WATER QUALITY TREATMENT PROVIDED = 1.60 INCHES
5. WATER QUALITY DRAWDOWN TIME:
   a. 6" CAPACITY AT 0.40% SLOPED OUTFALL = 0.55 CFS
   b. DRAWDOWN TIME = 28,809 CF/0.55 CFS = 14.52 HOURS

BASIN DRAWDOWN IS CONTROLLED BY THE 6" OUTLET PIPE @ 0.40% SLOPE. BASIN DRAWDOWN WILL OCCUR IN APPROXIMATELY 24 HOURS.



SECTION C-C

N.T.S.



BASIN & PIPE OUTFALL DETAIL

SCALE: 1" = 10'

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC AND ANY UNAUTHORIZED REUSE OR DISTRIBUTION OF THIS DOCUMENT WITHOUT WRITTEN AUTHORIZATION AND ADAPTATION BY M.W. CUDE ENGINEERS LLC SHALL BE AT THE USER'S SOLE RISK AND WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC AND ITS CONSULTANTS. ANY AND ALL RIGHTS TO THE USE OF THIS DOCUMENT ARE RESERVED.

CUDEENGINEERS.COM

CUDE ENGINEERS EST. 1980

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

CONTESSA SUBDIVISION UNIT 1

DETENTION POND '1' PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C42

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.

LEGEND

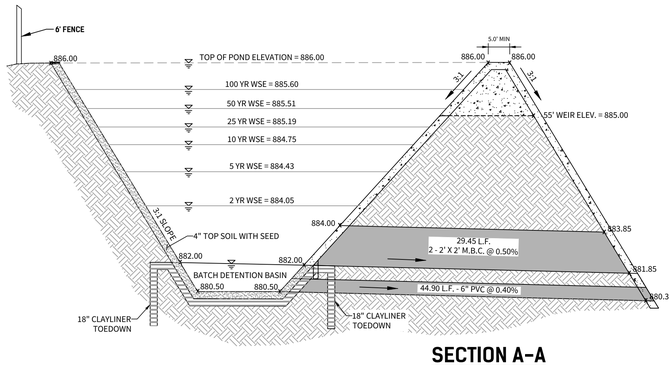
- CONC. RIP RAP
- GABION MATTRESS
- EARTHEN VEGETATION
- 892 — PROPOSED CONTOUR
- 890 — EXISTING CONTOUR
- 3:1 — PROPOSED SLOPE
- DRAINAGE FLOW LINE
- 1% ANNUAL CHANCE FLOODPLAIN
- CLAY LINER
- CONCRETE DRIVEWAY POND ACCESS
- GRAVEL DRIVEWAY POND ACCESS

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

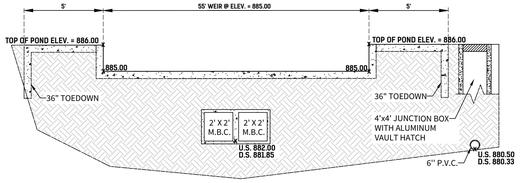
1. TSS REMOVAL REQUIRED BY APPLICABLE ORDINANCE & RG 348 FOR THIS SITE LOCATION: = 80% = 1,472 LBS
2. PROVIDED WATER QUALITY CAPTURE VOLUME = 16,589 CUBIC FEET
3. TSS REMOVAL PROVIDED BY THIS POND = 1,743 LBS
4. RAINFALL DEPTH WATER QUALITY TREATMENT PROVIDED = 1.60 INCHES
5. WATER QUALITY DRAWDOWN TIME:
   a. 6" CAPACITY AT 0.40% SLOPED OUTFALL = 0.55 CFS
   b. DRAWDOWN TIME = 16,589 CF / 0.55 CFS = 8.36 HOURS

SEQUENCE OF OPERATION

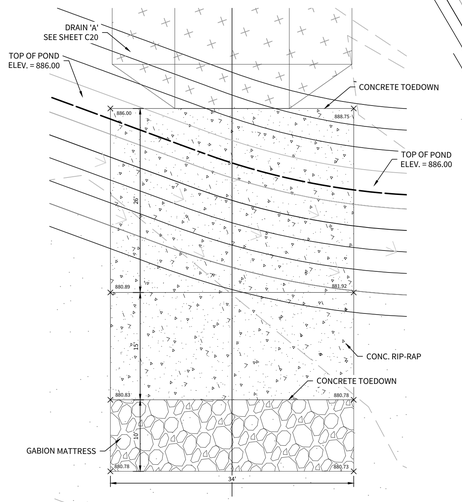
1. UPON ACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO STRT DETENTION TIMER #1.
2. DETENTION TIMER #1 TO BE MANUALLY SET TO 12 HOURS AND TO BE USER ADJUSTABLE VALUE.
3. WHEN DETENTION TIMER #1 HAS ELAPSED, A 6" BUTTERFLY VALVE IS TO OPEN AND RELEASE DETAINED WATER BASIN.
4. UPON DEACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO START DETENTION TIMER #2.
5. DETENTION TIMER #2 TO BE MANUALLY SET TO 24 HOURS AND TO BE USER ADJUSTABLE.
6. WHEN DETENTION TIMER #2 HAS ELAPSED, THE 6"BUTTERFLY VALVE IS TO CLOSE.
7. VALVE TO BE ACTIVATED PERIODICALLY TO SHOW ACTIVE REGARDLESS OF FLOAT SWITCH OPERATION.



SECTION A-A
N.T.S.



SECTION B-B
N.T.S.



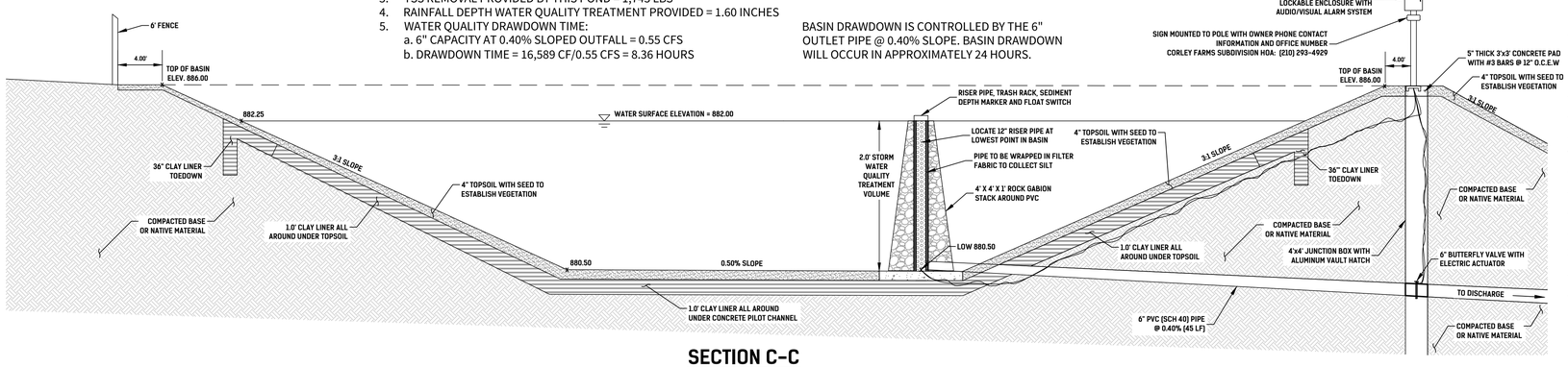
POND "2" & DRAIN "A" INTERSECTION DETAIL
SCALE: 1" = 10'

BASIN DESIGN DATA

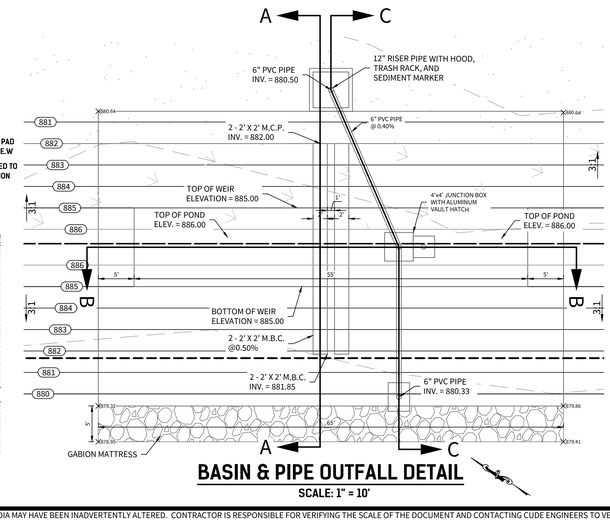
BASIN WATERSHED: 10.60 Ac. (462,026 SF)
DESIGN WATER SURFACE ELEV. = 882.25'
TOP OF CLAY LINER ELEVATION = 880.50'
WATER QUALITY STORAGE DEPTH = 1.75 FEET

1. TSS REMOVAL REQUIRED BY APPLICABLE ORDINANCE & RG 348 FOR THIS SITE LOCATION: = 80% = 1,472 LBS
2. PROVIDED WATER QUALITY CAPTURE VOLUME = 16,589 CUBIC FEET
3. TSS REMOVAL PROVIDED BY THIS POND = 1,743 LBS
4. RAINFALL DEPTH WATER QUALITY TREATMENT PROVIDED = 1.60 INCHES
5. WATER QUALITY DRAWDOWN TIME:
   a. 6" CAPACITY AT 0.40% SLOPED OUTFALL = 0.55 CFS
   b. DRAWDOWN TIME = 16,589 CF/0.55 CFS = 8.36 HOURS

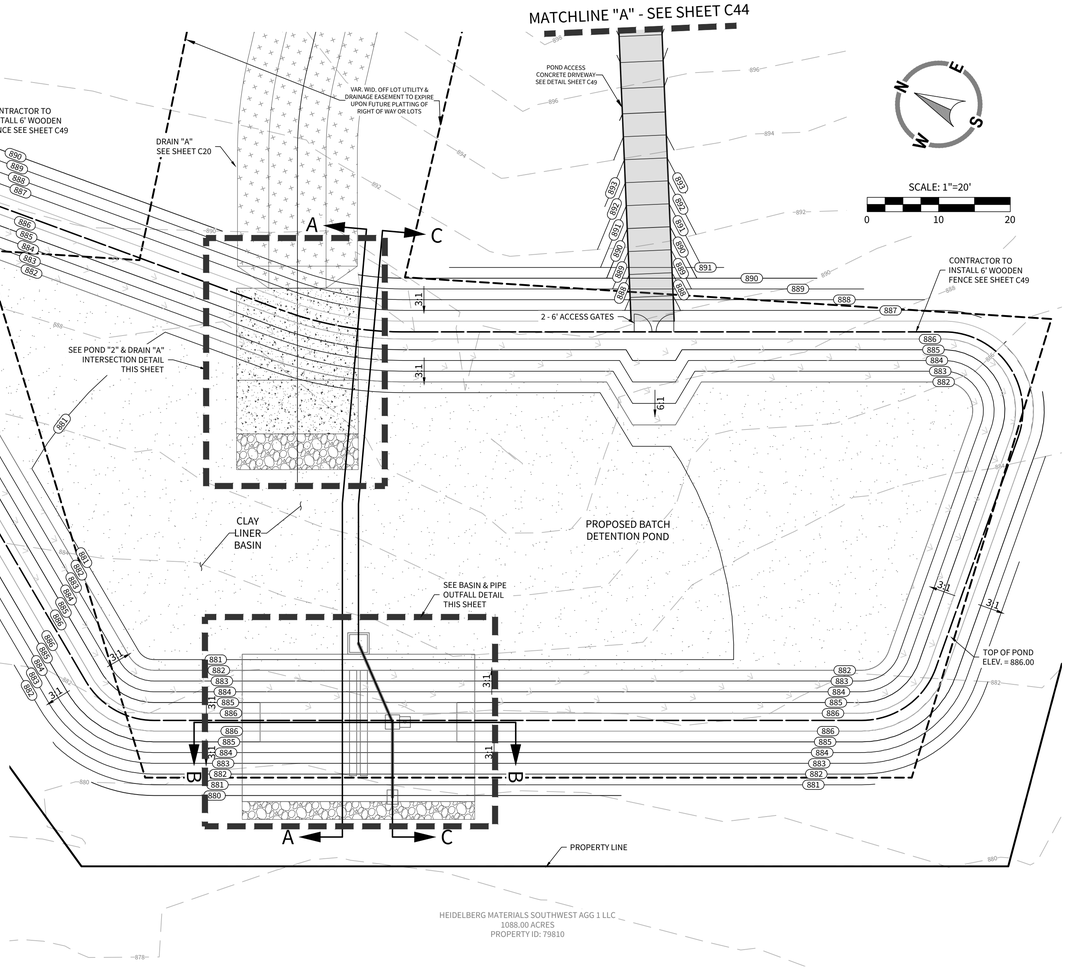
BASIN DRAWDOWN IS CONTROLLED BY THE 6" OUTLET PIPE @ 0.40% SLOPE. BASIN DRAWDOWN WILL OCCUR IN APPROXIMATELY 24 HOURS.



SECTION C-C
N.T.S.



BASIN & PIPE OUTFALL DETAIL
SCALE: 1" = 10'



© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC AND ADAPTATION BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE WRONGFUL PARTY'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC AND WILL BE USED AGAINST ANYONE AS ANY ACTUAL DAMAGES TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM
EST. 1980 CUDE ENGINEERS
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

CONTESSA SUBDIVISION UNIT 1

DETENTION POND '2' PLAN

DATE
06/19/2025
PROJECT NO.
04343.002
DRAWN BY
CG/JG/LJ/TCD
CHECKED BY
XV/AL

REVISIONS
DATE
1 2 3 4 5 6 7 8 9

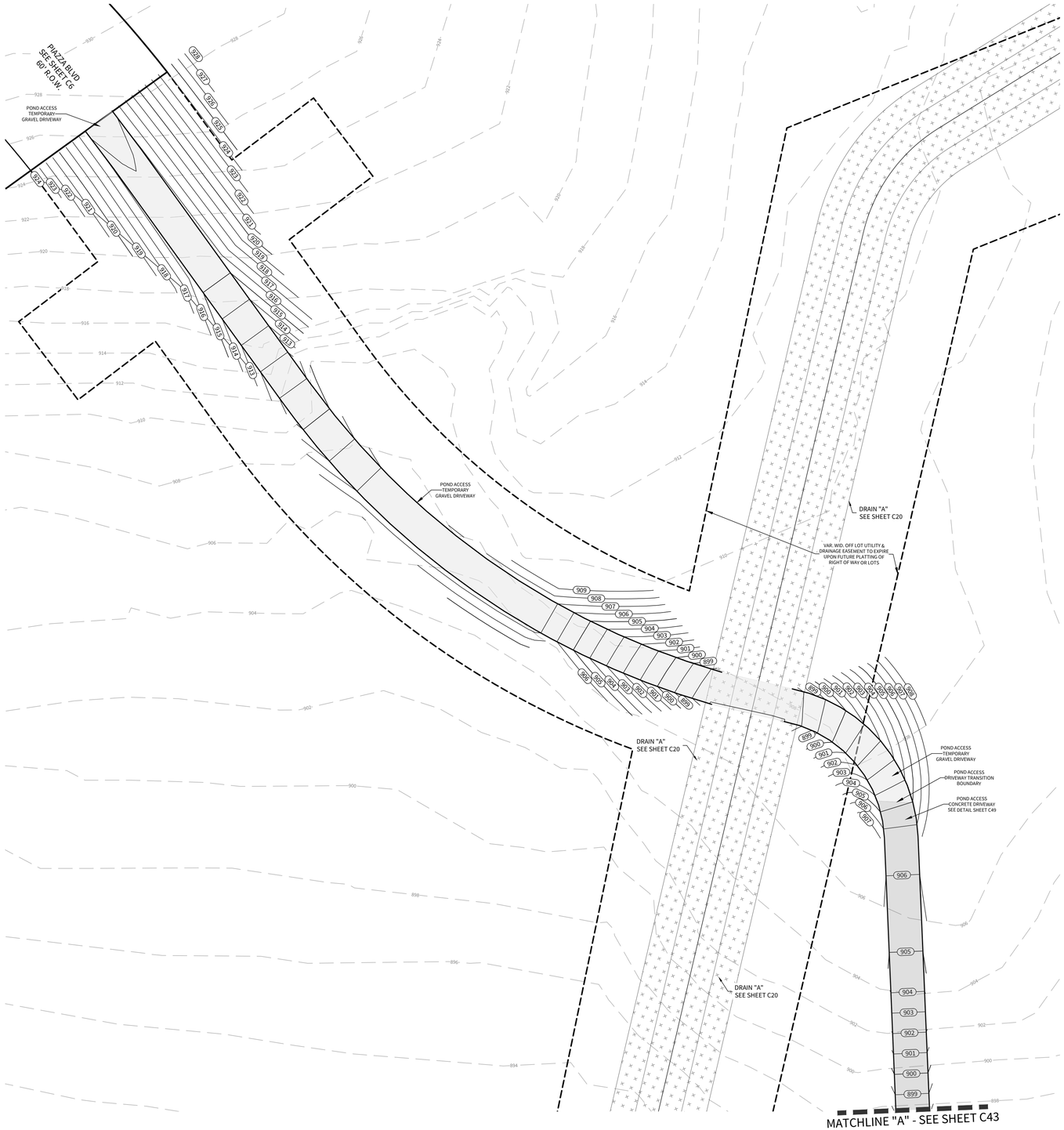
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
06/19/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C43

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.

LEGEND

- CONC. RIP RAP
- GABION MATTRESS
- EARTHEN VEGETATION
- PROPOSED CONTOUR (892)
- EXISTING CONTOUR (890)
- PROPOSED SLOPE (3:1)
- DRAINAGE FLOW LINE
- 1% ANNUAL CHANCE FLOODPLAIN
- CLAY LINER
- CONCRETE DRIVEWAY POND ACCESS
- GRAVEL DRIVEWAY POND ACCESS



SCALE: 1"=20'
0 10 20

CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

DETENTION POND '2' PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	A	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C44

P:\04343\002\2-DWG\Plans\CASSETTE\CON\HYDRO 2 PLAN.dwg, 2025/06/19 8:53:pm, jgarcia

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY MODIFICATION OF THIS DOCUMENT WITHOUT THE WRITTEN APPROVAL OF M.W. CUDE ENGINEERS LLC SHALL BE AT THE WORKING PARTY'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC AND WILL INDEMNIFY AND HOLD M.W. CUDE ENGINEERS LLC HARMLESS TO THE FULLEST EXTENT PERMITTED BY LAW.

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.

LEGEND

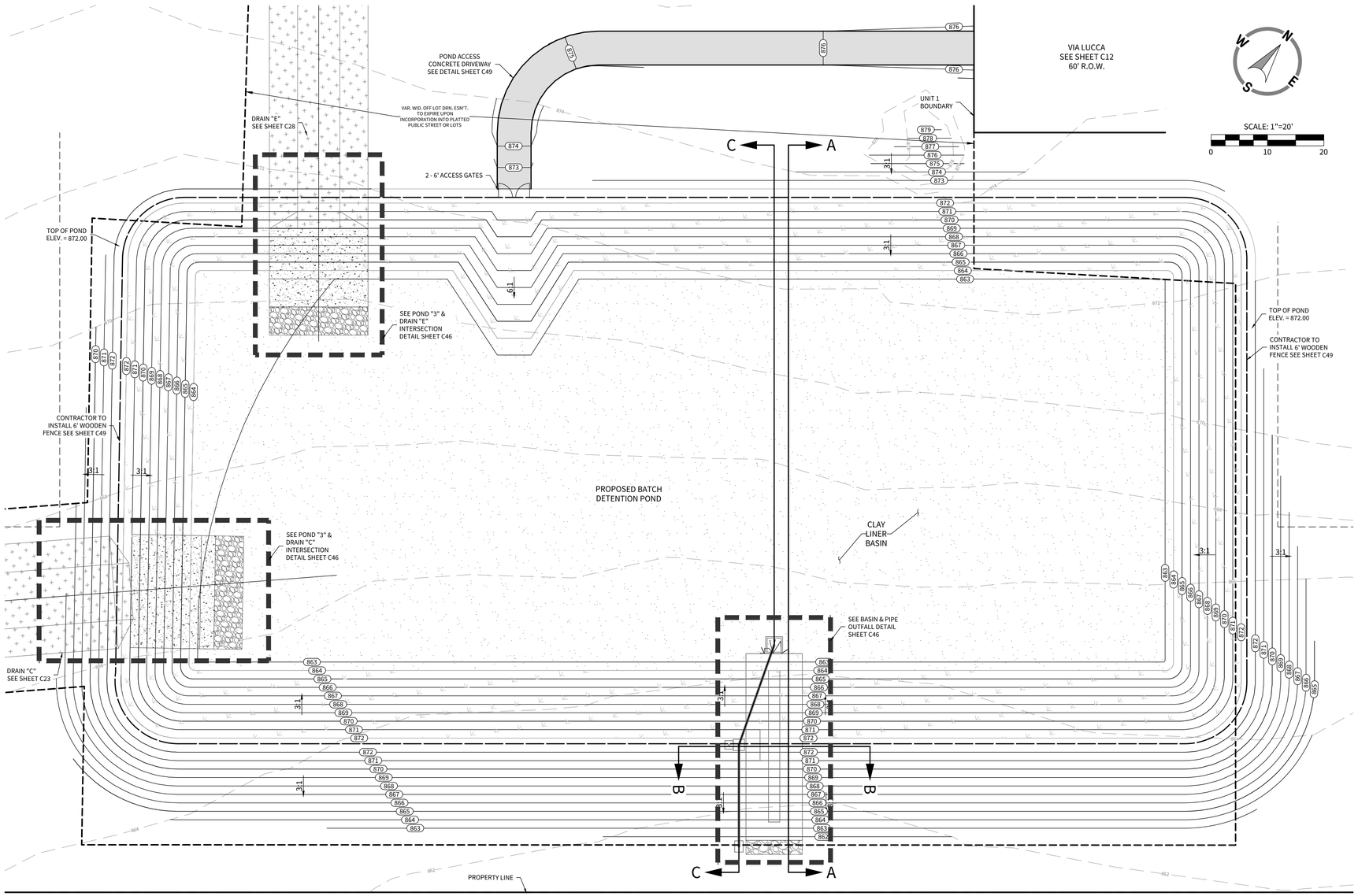
- CONC. RIP RAP
- GABION MATTRESS
- EARTHEN VEGETATION
- 892 — PROPOSED CONTOUR
- 890 — EXISTING CONTOUR
- 3:1 — PROPOSED SLOPE
- DRAINAGE FLOW LINE
- 1% ANNUAL CHANCE FLOODPLAIN
- CLAY LINER
- CONCRETE DRIVEWAY POND ACCESS
- GRAVEL DRIVEWAY POND ACCESS

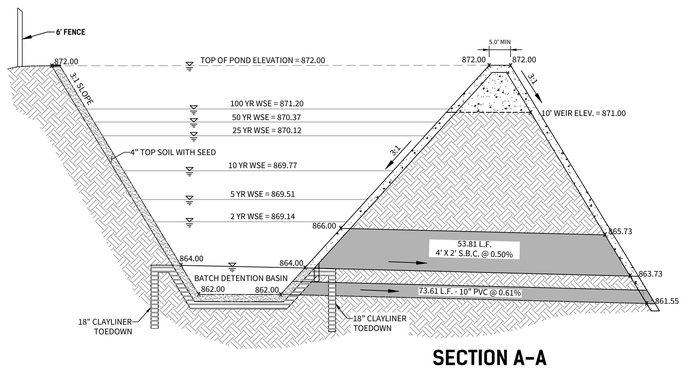
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

1. TSS REMOVAL REQUIRED BY APPLICABLE ORDINANCE & RG 348 FOR THIS SITE LOCATION: = 80% = 12,710 LBS
2. PROVIDED WATER QUALITY CAPTURE VOLUME = 186,191 CUBIC FEET
3. TSS REMOVAL PROVIDED BY THIS POND = 15,095 LBS
4. RAINFALL DEPTH WATER QUALITY TREATMENT PROVIDED = 1.60 INCHES
5. WATER QUALITY DRAWDOWN TIME:
   a. 10" CAPACITY AT 0.61% SLOPED OUTFALL = 2.63 CFS
   b. DRAWDOWN TIME = 186,191 CF / 2.63 CFS = 19.67 HOURS

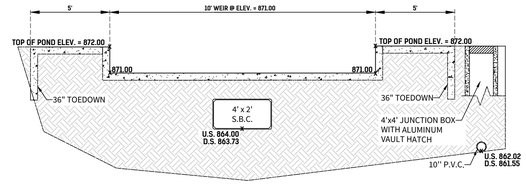
SEQUENCE OF OPERATION

1. UPON ACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO STRT DETENTION TIMER #1.
2. DETENTION TIMER #1 TO BE MANUALLY SET TO 12 HOURS AND TO BE USER ADJUSTABLE VALUE.
3. WHEN DETENTION TIMER #1 HAS ELAPSED, A 10" BUTTERFLY VALVE IS TO OPEN AND RELEASE DETAINED WATER BASIN.
4. UPON DEACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO START DETENTION TIMER #2.
5. DETENTION TIMER #2 TO BE MANUALLY SET TO 24 HOURS AND TO BE USER ADJUSTABLE.
6. WHEN DETENTION TIMER #2 HAS ELAPSED, THE 10"BUTTERFLY VALVE IS TO CLOSE.
7. VALVE TO BE ACTIVATED PERIODICALLY TO SHOW ACTIVE REGARDLESS OF FLOAT SWITCH OPERATION.





SECTION A-A
N.T.S.



SECTION B-B
N.T.S.

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER END-AVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT WILL BE AT THE PERSON'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE SUBJECT TO ALL APPLICABLE CIVIL AND CRIMINAL LAWS AND ANY AND ALL RIGHTS TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM

CUDE ENGINEERS — EST. 1980

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

CONTESSA SUBDIVISION UNIT 1

DETENTION POND '3' PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS — JAVIER CASTELLO — 122170 — LICENSED PROFESSIONAL ENGINEER — 06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C45

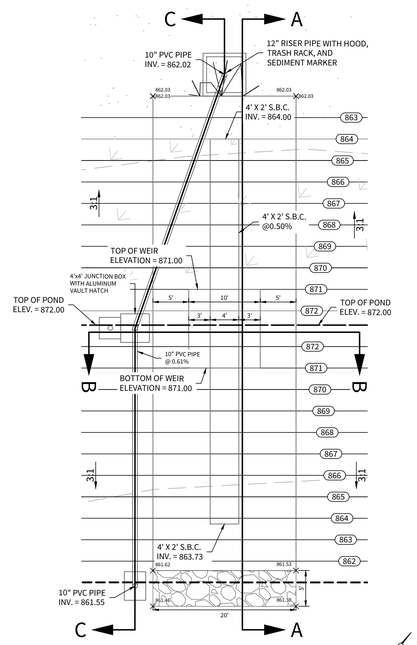
CUDEENGINEERS.COM

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

P:\04343\002\2 DWGS\Exhibits\CAD FILES\DWG\POND 3" PLAN.dwg 2025-06-19 8:52pm jgarcia

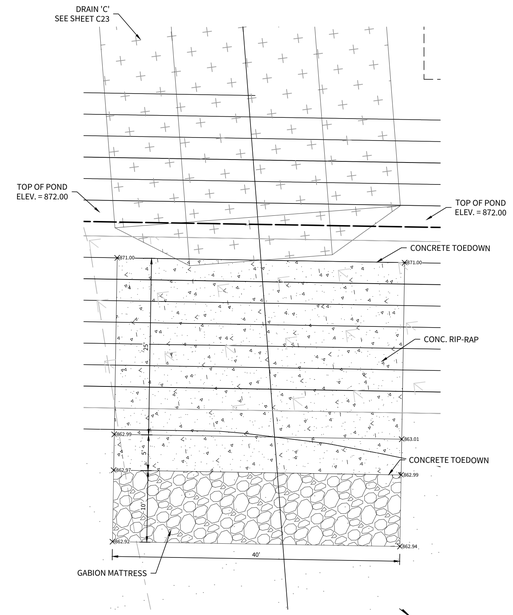
LEGEND

- CONC. RIP RAP
- GABION MATTRESS
- EARTHEN VEGETATION
- 892 PROPOSED CONTOUR
- 890 EXISTING CONTOUR
- 3:1 PROPOSED SLOPE
- DRAINAGE FLOW LINE
- 1% ANNUAL CHANCE FLOODPLAIN
- CLAY LINER
- CONCRETE DRIVEWAY POND ACCESS
- GRAVEL DRIVEWAY POND ACCESS



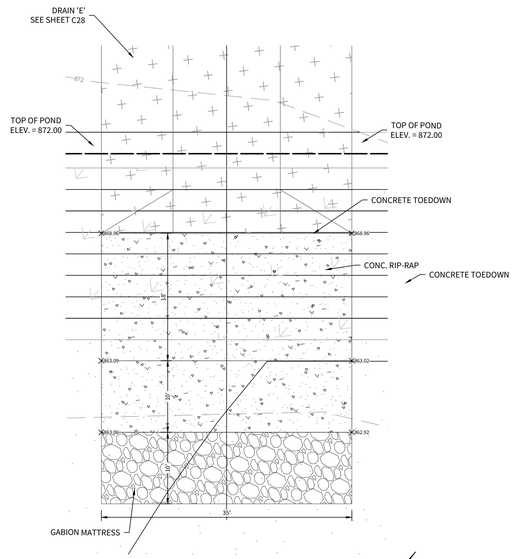
BASIN & PIPE OUTFALL DETAIL

SCALE: 1" = 10'



POND "3" & DRAIN "C" INTERSECTION DETAIL

SCALE: 1" = 10'



POND "3" & DRAIN "E" INTERSECTION DETAIL

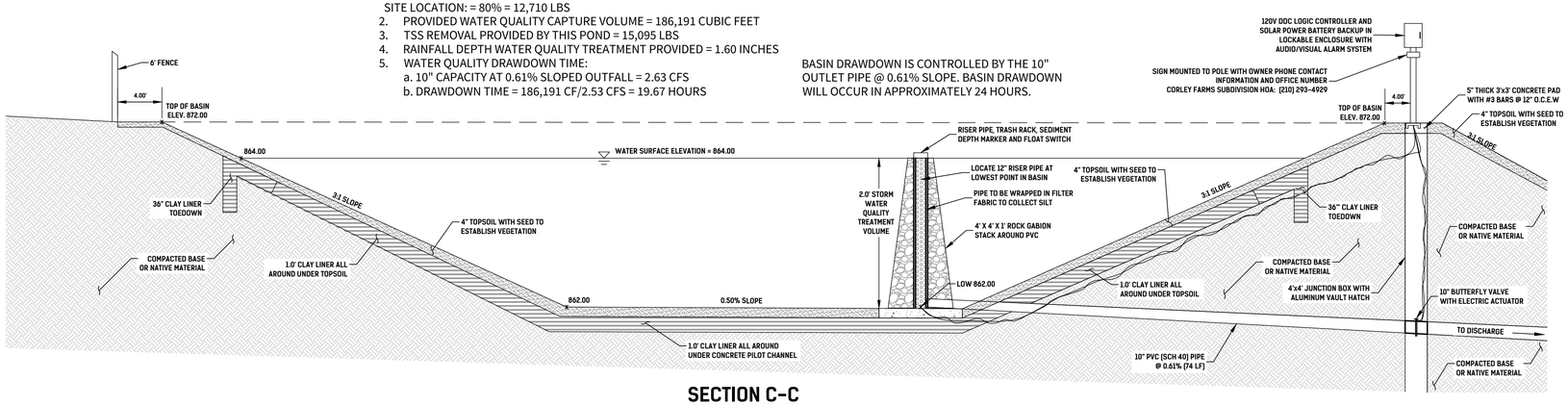
SCALE: 1" = 10'

BASIN DESIGN DATA

BASIN WATERSHED: 40.53 Ac. (1,765,395 SF)
DESIGN WATER SURFACE ELEV. = 867.50'
TOP OF CLAY LINER ELEVATION = 862.00'
WATER QUALITY STORAGE DEPTH = 5.50 FEET

1. TSS REMOVAL REQUIRED BY APPLICABLE ORDINANCE & RG 348 FOR THIS SITE LOCATION: = 80% = 12,710 LBS
2. PROVIDED WATER QUALITY CAPTURE VOLUME = 186,191 CUBIC FEET
3. TSS REMOVAL PROVIDED BY THIS POND = 15,095 LBS
4. RAINFALL DEPTH WATER QUALITY TREATMENT PROVIDED = 1.60 INCHES
5. WATER QUALITY DRAWDOWN TIME:
   a. 10" CAPACITY AT 0.61% SLOPED OUTFALL = 2.63 CFS
   b. DRAWDOWN TIME = 186,191 CF/2.53 CFS = 19.67 HOURS

BASIN DRAWDOWN IS CONTROLLED BY THE 10" OUTLET PIPE @ 0.61% SLOPE. BASIN DRAWDOWN WILL OCCUR IN APPROXIMATELY 24 HOURS.



SECTION C-C

N.T.S.

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC AND ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF OUR DOCUMENTS SHALL BE AT THE INFRINGING PARTY'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE USED AGAINST AND ALL COSTS TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

DETENTION POND '3' PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C46

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.

LEGEND

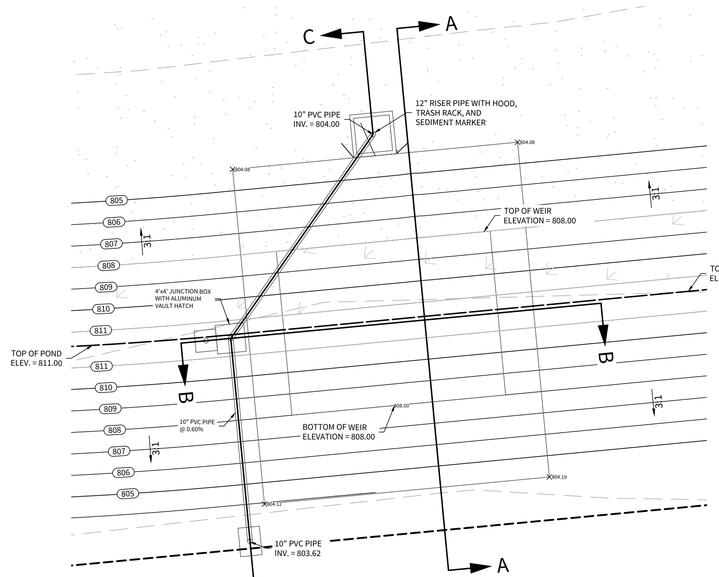
- CONC. RIP RAP
- GABION MATTRESS
- EARTHEN VEGETATION
- 892 PROPOSED CONTOUR
- 890 EXISTING CONTOUR
- 3:1 PROPOSED SLOPE
- DRAINAGE FLOW LINE
- 1% ANNUAL CHANCE FLOODPLAIN
- CLAY LINER
- CONCRETE DRIVEWAY POND ACCESS
- GRAVEL DRIVEWAY POND ACCESS

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

1. TSS REMOVAL REQUIRED BY APPLICABLE ORDINANCE & RG 348 FOR THIS SITE LOCATION: = 80% = 10,942 LBS
2. PROVIDED WATER QUALITY CAPTURE VOLUME = 215,220 CUBIC FEET
3. TSS REMOVAL PROVIDED BY THIS POND = 13,720 LBS
4. RAINFALL DEPTH WATER QUALITY TREATMENT PROVIDED = 1.60 INCHES
5. WATER QUALITY DRAWDOWN TIME:
   a. 10" CAPACITY AT 0.60% SLOPED OUTFALL = 2.56 CFS
   b. DRAWDOWN TIME = 215,220 CF / 2.56 CFS = 23.34 HOURS

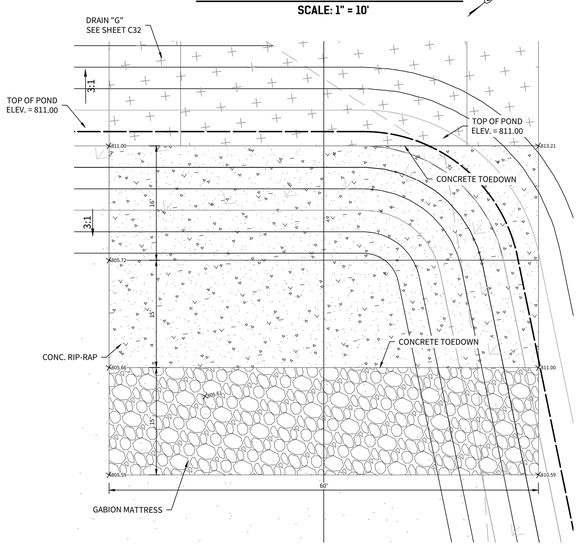
SEQUENCE OF OPERATION

1. UPON ACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO STRT DETENTION TIMER #1.
2. DETENTION TIMER #1 TO BE MANUALLY SET TO 12 HOURS AND TO BE USER ADJUSTABLE VALUE.
3. WHEN DETENTION TIMER #1 HAS ELAPSED, A 10" BUTTERFLY VALVE IS TO OPEN AND RELEASE DETAINED WATER BASIN.
4. UPON DEACTIVATION OF FLOAT SWITCH, DDC CONTROLLER TO START DETENTION TIMER #2.
5. DETENTION TIMER #2 TO BE MANUALLY SET TO 24 HOURS AND TO BE USER ADJUSTABLE.
6. WHEN DETENTION TIMER #2 HAS ELAPSED, THE 10"BUTTERFLY VALVE IS TO CLOSE.
7. VALVE TO BE ACTIVATED PERIODICALLY TO SHOW ACTIVE REGARDLESS OF FLOAT SWITCH OPERATION.



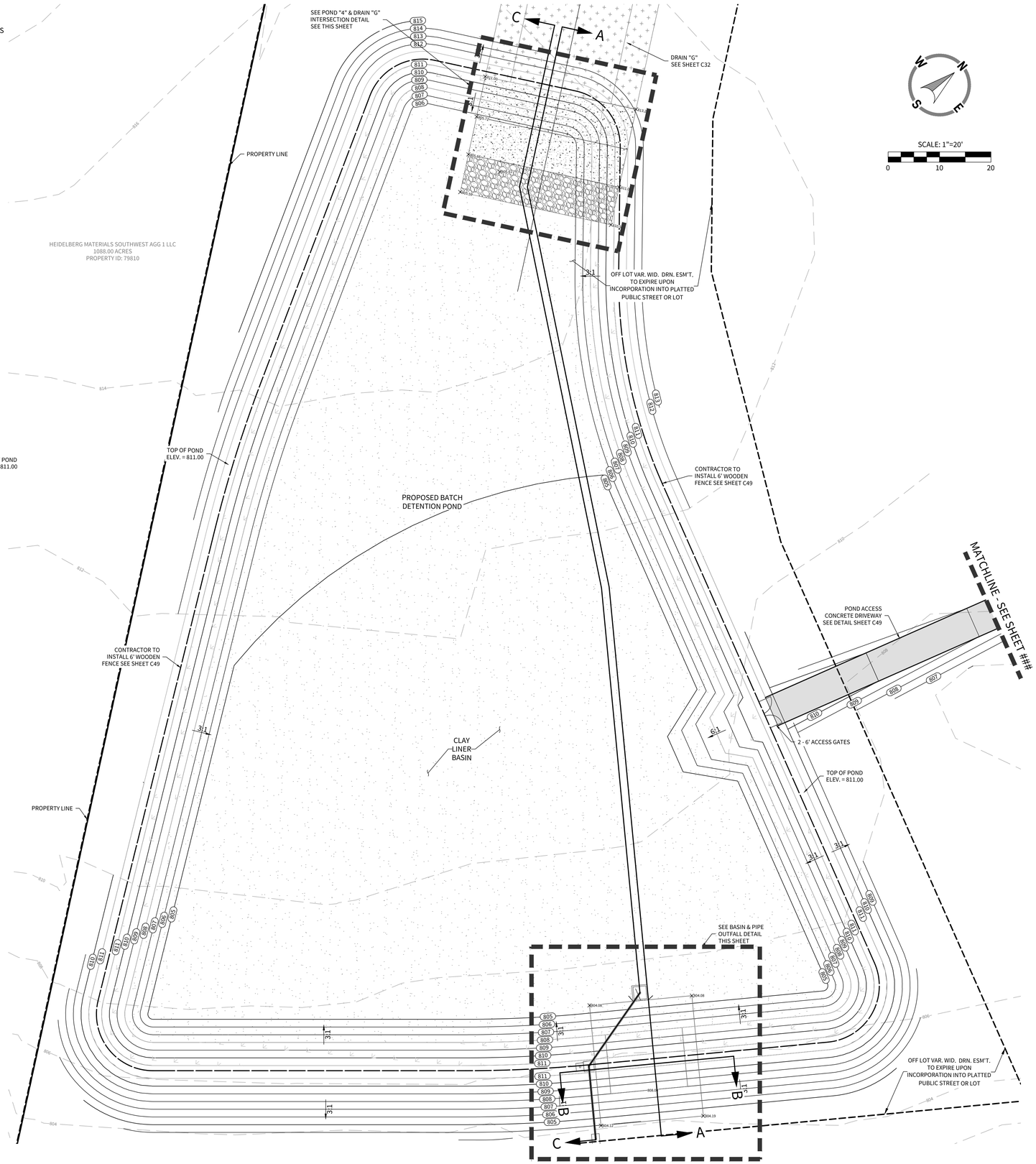
BASIN & PIPE OUTFALL DETAIL

SCALE: 1" = 10'



POND "4" & DRAIN "G" INTERSECTION DETAIL

SCALE: 1" = 10'



SCALE: 1"=20'

0 10 20

CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

DETENTION POND '4' PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	A	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

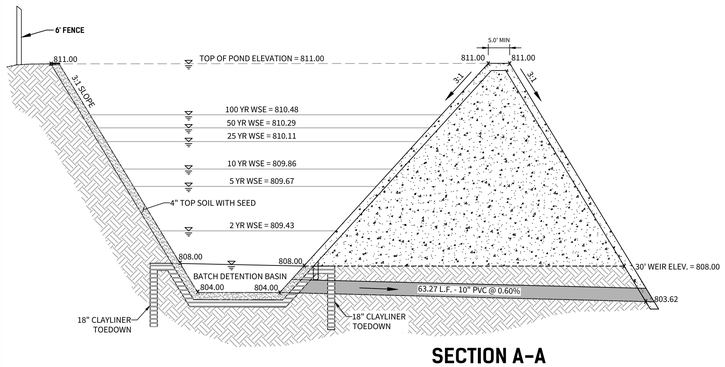
C47

CUDEENGINEERS.COM

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE WRONGFUL CAUSER'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE SUBJECT TO ANY AND ALL REMEDIES TO THE FULLEST EXTENT PERMITTED BY LAW.

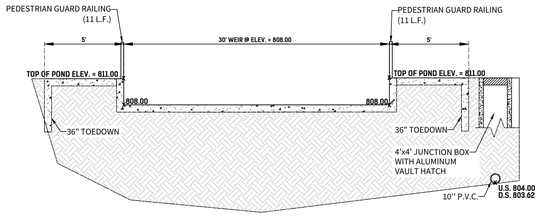
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

P:\04343.002\2-Drawings\Plans\C47-DETENTION POND 4' PLAN.dwg, 6/19/2025 8:53:59 AM, jgarcia



SECTION A-A

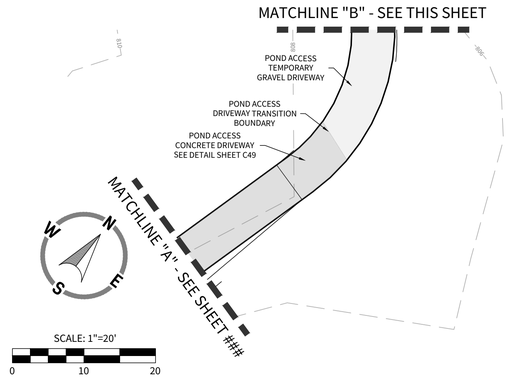
N.T.S.



SECTION B-B

N.T.S.

MATCHLINE "B" - SEE THIS SHEET

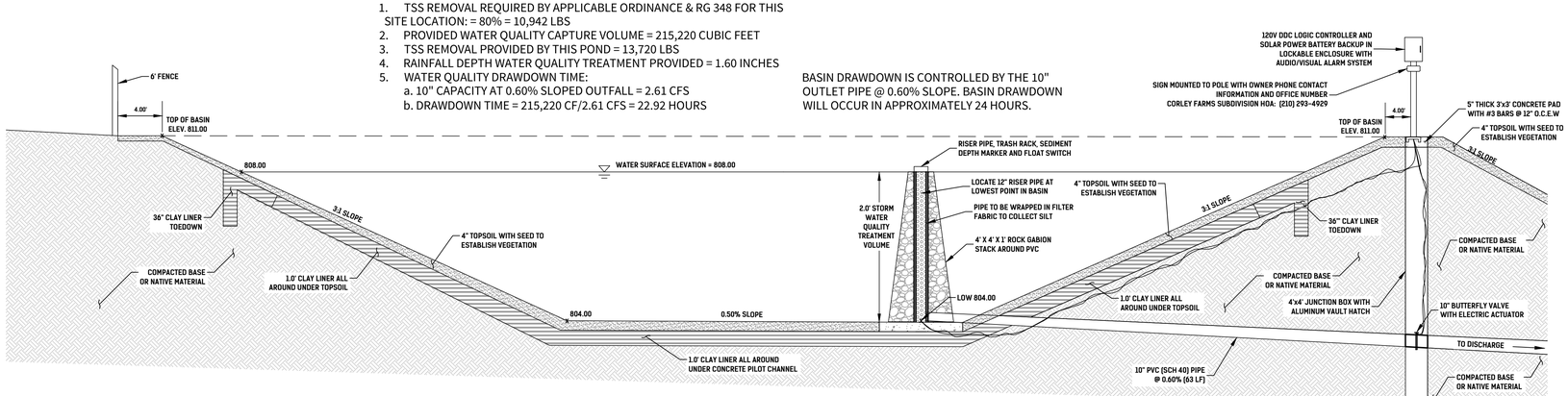


BASIN DESIGN DATA

BASIN WATERSHED: 80.07 Ac. (3,487,843 SF)
DESIGN WATER SURFACE ELEV. = 808.00'
TOP OF CLAY LINER ELEVATION = 804.00'
WATER QUALITY STORAGE DEPTH = 4.00 FEET

1. TSS REMOVAL REQUIRED BY APPLICABLE ORDINANCE & RG 348 FOR THIS SITE LOCATION: = 80% = 10,942 LBS
2. PROVIDED WATER QUALITY CAPTURE VOLUME = 215,220 CUBIC FEET
3. TSS REMOVAL PROVIDED BY THIS POND = 13,720 LBS
4. RAINFALL DEPTH WATER QUALITY TREATMENT PROVIDED = 1.60 INCHES
5. WATER QUALITY DRAWDOWN TIME:
   a. 10" CAPACITY AT 0.60% SLOPED OUTFALL = 2.61 CFS
   b. DRAWDOWN TIME = 215,220 CF/2.61 CFS = 22.92 HOURS

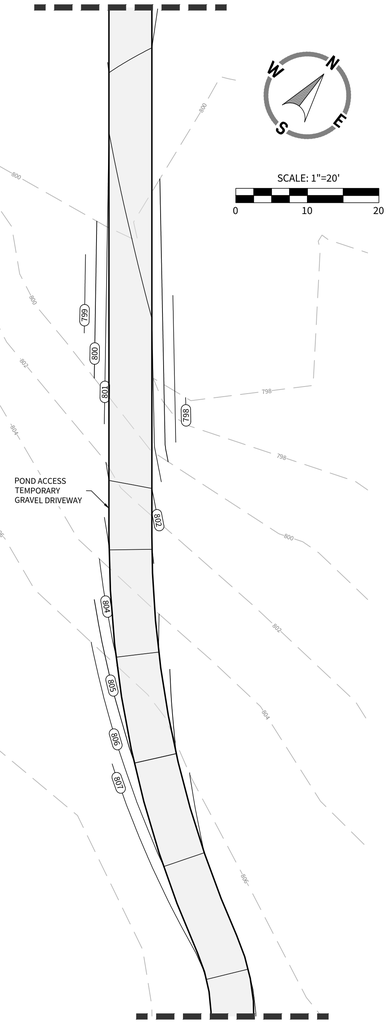
BASIN DRAWDOWN IS CONTROLLED BY THE 10" OUTLET PIPE @ 0.60% SLOPE. BASIN DRAWDOWN WILL OCCUR IN APPROXIMATELY 24 HOURS.



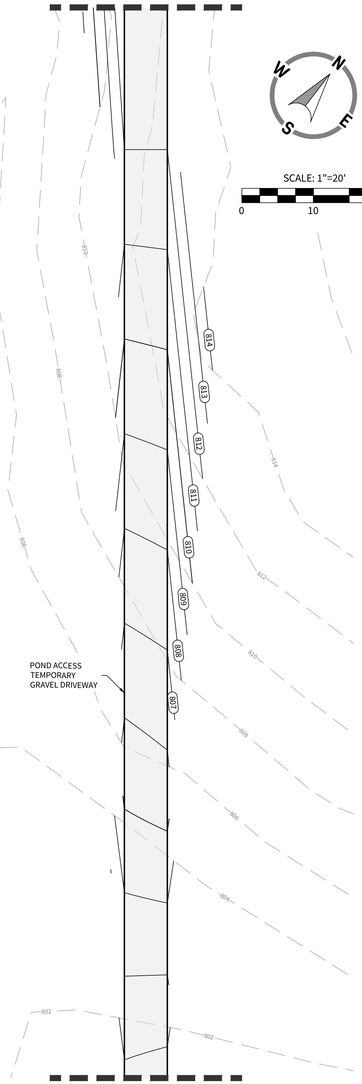
SECTION C-C

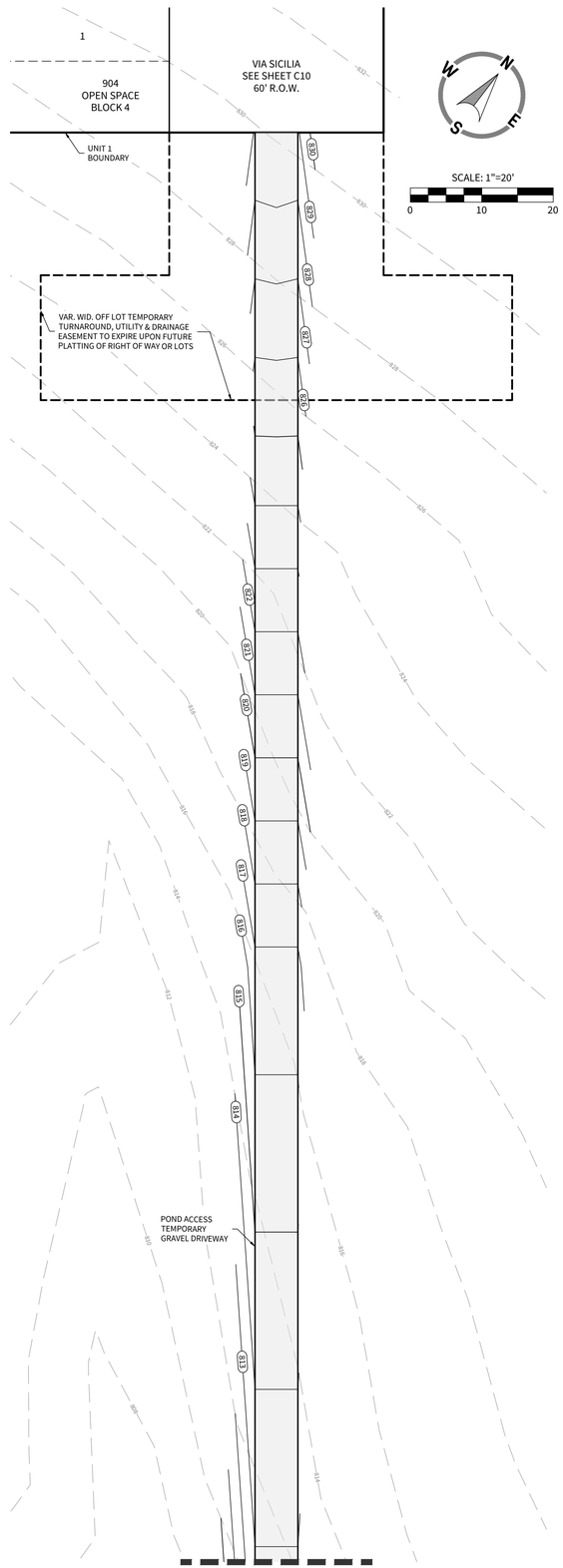
N.T.S.

MATCHLINE "C" - SEE THIS SHEET



MATCHLINE "D" - SEE THIS SHEET





© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY MODIFICATION TO THIS DOCUMENT BY ANY PARTY OTHER THAN M.W. CUDE ENGINEERS LLC, AND WITHOUT ADAPTATION BY M.W. CUDE ENGINEERS LLC, AND WITHOUT LIMITATION TO THE FOREGOING, SHALL BE AT THE PARTY'S SOLE RISK, WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE CONSTRUED AS A MATERIAL ALTERATION OF THE DOCUMENT AND ALL STATUTES TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM

CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

DETENTION POND '4' PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C48

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.

GENERAL NOTES:

1. THE DETENTION POND FACILITY SHALL ALSO BE USED AS A TEMPORARY SEDIMENT TRAP FOR THE PURPOSES OF THE TEXAS POLLUTION DISCHARGE ELIMINATION SYSTEM CONSTRUCTION PERMIT FOR THIS SITE. THE CONTRACTOR SHALL CLEAN ALL SEDIMENT OUT OF THE DETENTION FACILITY UPON FINAL STABILIZATION OF THE SITE.
2. CONTRACTOR TO HYDROMULCH ENTIRE DISTURBED LIMITS OF EARTHEN PORTION OF POND. 85% OF POND SURFACE MUST HAVE ESTABLISHED VEGETATION PRIOR TO ACCEPTANCE OF THE CHANNEL BY THE CITY OF COMAL COUNTY.
3. ALL AREAS DISTURBED AS PART OF CONSTRUCTION OF BASIN SHALL BE REVEGETATED PRIOR TO COMPLETION.
4. UPON COMPLETION OF CONSTRUCTION, AND IN ACCORDANCE WITH TCEQ REGULATIONS, ALL PERMANENT BMP'S (FILTER STRIPS AND BASIN) MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.
5. THE CONTRACTOR SHALL NOTIFY A UTILITY LOCATOR AT LEAST 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION ACTIVITY ADJACENT TO THE CONSTRUCTION OF ANY ON-SITE DRAINAGE FACILITIES TO PROTECT ANY UNIDENTIFIED EXISTING UNDERGROUND UTILITY FACILITY FROM DAMAGE OR HARM. THE CONTRACTOR SHALL HAVE THE SOLE RESPONSIBILITY FOR ANY DAMAGES TO UTILITIES AS A RESULT OF NOT LOCATING UNDERGROUND UTILITY RESOURCES.
6. THE CONTRACTOR SHALL ALERT ENGINEER FOR FIELD OBSERVATION A MIN. OF 24 HOURS PRIOR TO EACH OF THE FOLLOWING EVENTS; DRAIN PIPE INSTALLATION COMPLETION, AND ANY CONCRETE POURS. THE CONTRACTOR SHALL ALSO PROVIDE A MATERIAL SUBMITTAL TO THE ENGINEER FOR REVIEW ON THE FOLLOWING MATERIALS; PERMEABLE GEOTEXTILE FABRIC, CLAY LINER.
7. ANY AREAS EXPOSED TO HIGH VELOCITY FLOWS SHALL EITHER HAVE A 6" THICK ROCK GABION MATTRESS INSTALLED OR THE INSTALLATION OF APPROPRIATE GEOTECHNICAL LINER AS DIRECTED BY THE CONSTRUCTION ENGINEER IN CHARGE.
8. ALL CONCRETE SHALL BE A MINIMUM OF 3500 PSI @ 28 DAYS COMPRESSIVE STRENGTH UNLESS OTHERWISE SPECIFIED HEREIN ON THESE DOCUMENTS.
9. ALL REBAR SPLICES AND LAPS SHALL BE A MINIMUM OF 40 BAR DIAMETERS UNLESS OTHERWISE SPECIFIED.
10. A 6 FOOT HIGH FENCE (WOOD, CHAINLINK, OR OTHER DECORATIVE FENCE AS SPECIFIED BY THE OWNER OR BY RESTRICTIVE COVENANT) SHALL BE INSTALLED AT THE TOP OF THE WATER QUALITY BASIN ALONG ALL SIDES. AT THE LOCATION OF THE 12' WIDE (MIN) MAINTENANCE RAMP, A 12 FOOT WIDE GATE (EITHER BEING A SINGLE GATE OR TWO 6' WIDE GATES) WITH LOCK SHALL BE PROVIDED TO ALLOW ACCESS TO THE WATER QUALITY POND.
11. BASIN DRAWDOWN IS CONTROLLED BY THE PVC PIPE (6" FOR PONDS 1 & 2, AND 10" FOR PONDS 3 & 4). BASIN DRAWDOWN WILL OCCUR IN APPROXIMATELY 24 HOURS.
12. CONTRACTOR TO SET THE VALVE POSITION TO FULLY OPEN.
13. CLAY SUBGRADE CONDITIONS ONSITE TODAY. DURING CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO COORDINATE WITH THE GEOTECH ENGINEER OF RECORD AND CIVIL ENGINEER TO DETERMINE IF EXISTING CLAY SUBGRADE IS SUITABLE IN LIEU OF NEW CLAY PLACEMENT.
14. CONTRACTOR IS REQUIRED ELECTRICAL PLANS/SPECIFICATIONS FOR REVIEW BY CIVIL ENGINEER PRIOR TO THE START OF CONSTRUCTION.
15. REFER TO STORMWATER MANAGEMENT PLAN INFORMATION REGARDING DETENTION STAGE AND MITIGATION OF 5 YEAR, 25 YEAR AND 100 YEAR PEAK STORM EVENTS. UPPER LEVEL WEIRS (ABOVE THE DESIGN WATER SURFACE ELEVATION) FOR MITIGATION OF THESE STORM EVENT WILL BE FINALIZED WITH THE CIVIL PLANS.

NOTES TO CONTRACTOR

(EACH PHASE OF BASIN CONSTRUCTION)

1. CONTRACTOR SHALL NOTIFY CERTIFYING ENGINEER WHEN BASIN CONSTRUCTION HAS PROGRESSED TO THE FOLLOWING MILESTONES:

   - REINFORCING STEEL FOR BASIN OVERFLOW WALL HAS BEEN SET, CONCRETE HAS NOT BEEN PLACED AND DRAIN PIPE AND RISER PIPE IS IN PLACE. CONTRACTOR SHALL PROVIDE ENGINEER WITH SURVEY DATA WHICH DEMONSTRATES THE RISER PIPE HAS BEEN SET AT PROPER ELEVATION AND GRADE.

   - BASIN HAS BEEN COMPLETELY FINISHED INCLUDING SOD OR SEED PLACEMENT ON SIDE SLOPES (WHERE APPLICABLE)

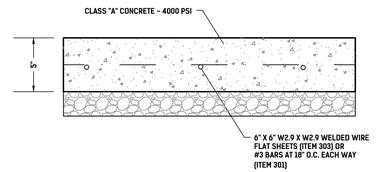
2. CONTRACTOR IS ADVISED THAT TCEQ DOES NOT ALLOW CHANGES TO PERMANENT POLLUTION ABATEMENT MEASURES WITHOUT THEIR APPROVAL.
3. UPON SUBSTANTIAL COMPLETION, OR AS REQUIRED BY ENGINEER, CONTRACTOR TO PROVIDE CERTIFYING ENGINEER WITH FIELDS SHOTS VERIFYING ELEVATIONS OF THE FOLLOWING:

   - TOP OF BANK/WALL AT EACH CORNER OF BASIN
   - TOE OF SLOPE AT EACH CORNER OF BASIN (INSIDE BASIN TOE)
   - OVERFLOW WEIRS

4. WORK SHALL NOT CONTINUE ON THE BASIN UNTIL THE ENGINEER HAS HAD AN OPPORTUNITY TO OBSERVE THE STATUS OF CONSTRUCTION AT EACH STAGE. CONTRACTOR SHALL PROVIDE ENGINEER A MINIMUM OF 24 HOURS ADVANCE NOTICE PRIOR TO TIME THE BASIN WILL BE AT THE REQUIRED STAGE.
5. THE MINIMUM DRAIN TIME FOR A FULL BASIN IS 24 HOURS. CONTRACTOR TO SET BUTTERFLY VALVE TO FULLY OPEN TO BE CONTROLLED DDC CONTROLLER.
6. BEFORE FINAL ACCEPTANCE OF CONSTRUCTION BY THE OWNER, THE CONTRACTOR WILL REMOVE ALL TRASH, DEBRIS AND ACCUMULATED SILT FROM THE BASINS AND REESTABLISH THEM TO THE PROPER OPERATING CONDITION.

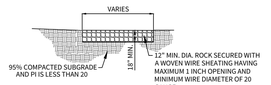
CLAY LINER SPECIFICATIONS

PROPERTY	TEST METHOD	NOTES
PERMEABILITY	ASTM D-2434	0.000001 CM/SEC
PLASTICITY INDEX	ASTM D-423 & D424	NOT LESS THAN 15%
LIQUID LIMIT OF CLAY	ASTM D-2216	NOT LESS THAN 30%
CLAY PARTICLE PASSING	ASTM D-422	NOT LESS THAN 30%
CLAY COMPACTION	ASTM D-2216	95% OF STANDARD PROCTOR DENSITY



CONCRETE RIP-RAP DETAIL

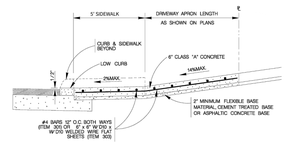
N.T.S.



GABION STYLE ROCK EROSION CONTROL MATRESS DETAIL

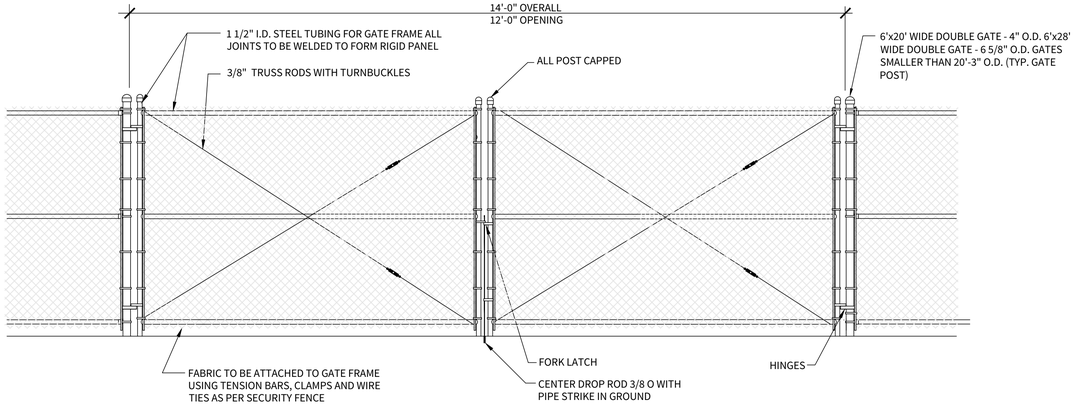
NOTE: GABION MATTRESS TO BE FREE OF GEO-TEXTILE FABRIC LINING AT DETENTION POND OUTFALL.

(N.T.S.)



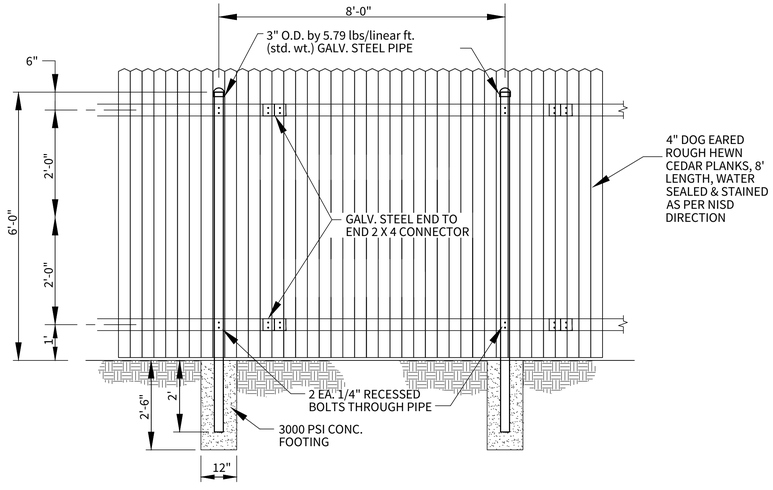
CONCRETE DRIVEWAY DETAIL

N.T.S.



CHAIN LINK FENCE GATE DETAIL

NTS



WOODEN PRIVACY FENCE DETAIL

N.T.S.

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

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY REUSE OF THIS DOCUMENT WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY M.W. CUDE ENGINEERS LLC. SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC. AND THE USER SHALL INDEMNIFY AND HOLD HARMLESS M.W. CUDE ENGINEERS LLC. AND ITS OFFICERS AND EMPLOYEES FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM. ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT IN WHOLE OR IN PART, INCLUDING BUT NOT LIMITED TO SCANNING AND DIGITAL DISTRIBUTION, IS STRICTLY PROHIBITED.

CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

DETENTION POND DETAILS

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

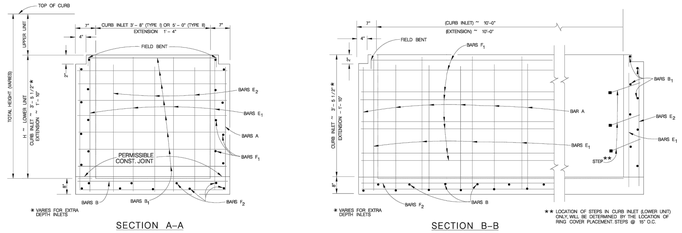
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C49

CUDEENGINEERS.COM

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



SECTION A–A

SECTION B–B

REINFORCING STEEL

LOWER UNIT 10' X 3' – 8" (TYPE I)

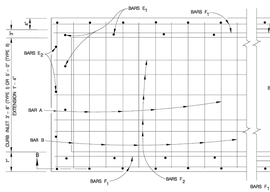
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	4'-8"
B_1	VARIES	#4	12"	4'-8"
E_1	20	#4	18" ±	VARIES
E_2	6	#4	18" ±	VARIES
F_1	VARIES	#4	12" ±	10'-10"
F_2	9	#4	——	10'-10"

LOWER UNIT 10' X 5' – 0" (TYPE II)

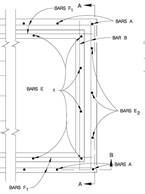
BAR	NO.	SIZE	SPAC.	LENGTH
A	12	#4	12"	VARIES
B	11	#4	12"	6'-10"
B_1	VARIES	#4	12"	6'-10"
E_1	22	#4	18" ±	VARIES
E_2	6	#4	18" ±	VARIES
F_1	VARIES	#4	12" ±	10'-10"
F_2	11	#4	——	10'-10"

GENERAL NOTES

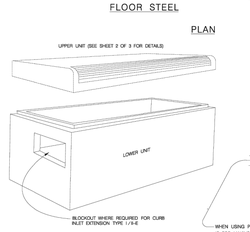
1. 5' INLETS AND 5' EXTENSIONS MUST BE IN ACCORDANCE WITH THE LATEST TXDOT CURB INLET TYPE "C" AND EXTENSION TYPE E (L=5).
2. TYPE C-II INLET TO BE USED ONLY WHEN STORM DRAIN PIPE IS IN-LINE WITH CURB INLET AND APPROVED BY THE ENGINEER.
3. QUANTITIES SHOWN ARE FOR CONTRACTORS INFORMATION ONLY.
4. CONCRETE FOR STRUCTURES SHALL BE CLASS "A", 3000 PSI IN 28 DAYS
5. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
6. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 1 1/2".
7. ALL REINFORCING STEEL SHALL CONFORM TO A.S.T.M. A-615, GRADE 60 REQUIREMENTS.
8. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3 /4".
9. DEPRESSION SLAB SHALL RECEIVE A WOOD FLOAT FINISH.
10. FACE OF INLET TO CONFORM TO FACE OF CURB LINE.
11. ALL BARS INTERCEPTING MANHOLE RING & COVER SHALL BE CUT OR BENT.
12. PAYMENT FOR ALL EXCAVATION, BACK-FILLING, CONCRETE, REINFORCING STEEL, RING AND COVER, CURB ARMOR AND STIPS 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 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".



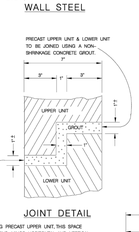
FLOOR STEEL



WALL STEEL

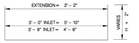


PLAN

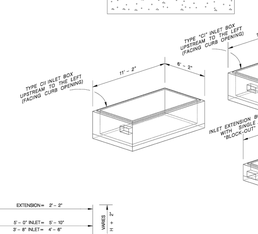


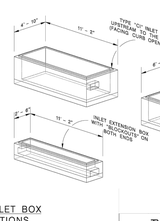
JOINT DETAIL

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.



BARS A
(LOWER UNIT)



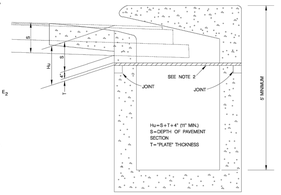


CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)

PHASE CONSTRUCTION

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

1. THE CURB INLET AND EXTENSION SHALL BE CONSTRUCTED TO A DEPTH "Hu" BELOW THE INLET AND EXTENSION GUTTER LINE ELEVATION.
2. CAP THE CURB INLET AND EXTENSION WITH A STEEL PLATE DESIGNED 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.

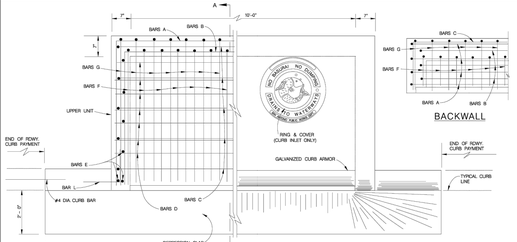




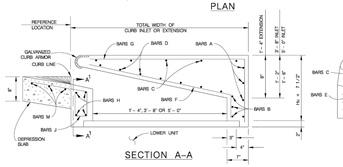
CONCRETE INLET BOX CONFIGURATIONS (LOWER UNITS)

TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS

SHEET 1 OF 3

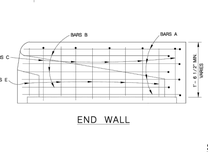


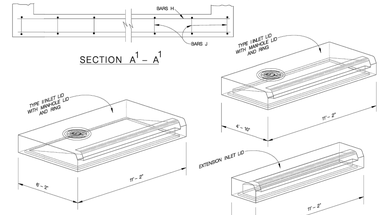
PLAN



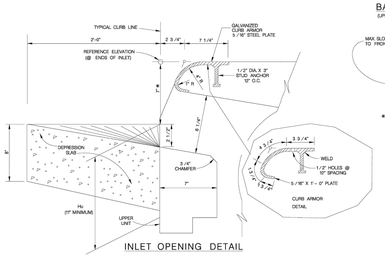
SECTION A–A

SECTION $A^1 - A^1$

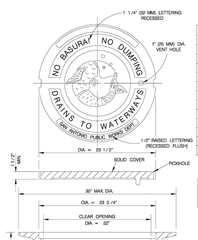




CONCRETE INLET LID CONFIGURATIONS (UPPER UNITS)



INLET OPENING DETAIL



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 360 LBS.

SEE SHEET 1 OF 3 FOR GENERAL NOTES.

REINFORCING STEEL (FOR Hu = 11")

UPPER UNIT 10' X 3'-8" (TYPE I)

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	——	10'-10"	53
B	3	#4	——	18'-10"	38
C	5	#4	11"	13'-2"	44
D	7	#4	6"	10'-10"	51
E	12	#4	11"	1'-2"	9
F	21	#6	6"	4'-8"	147
G	22	#5	6"	5'-8"	187
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		609 LBS.

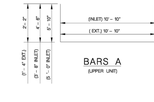
UPPER UNIT 10' X 5'(TYPE II)

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
A	4	#4	——	22'-6"	60
B	3	#4	——	21'-6"	43
C	7	#4	11"	13'-2"	62
D	11	#4	6"	10'-10"	80
E	16	#4	11"	1'-2"	13
F	21	#6	6"	5'-8"	179
G	22	#5	6"	7'-0"	231
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.

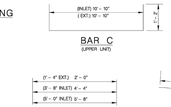
CLASS "A" CONCRETE QUANTITIES (FOR Hu = 11")

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



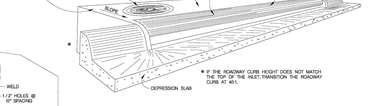






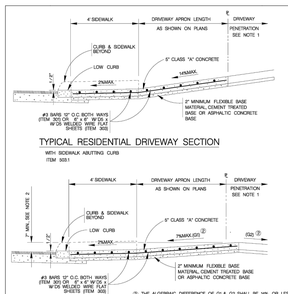






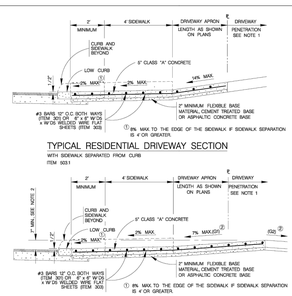
TYPE "C" INLET (TYPE I & II) & INLET EXTENSION STANDARDS

SHEET 2 OF 3



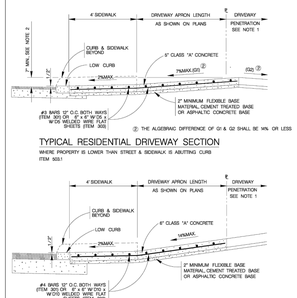
TYPICAL RESIDENTIAL DRIVEWAY SECTION

WITH SIDEWALK ABUTTING CURB
ITEM 503.1



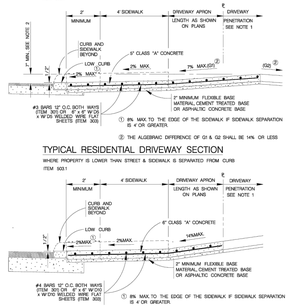
TYPICAL RESIDENTIAL DRIVEWAY SECTION

WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.1



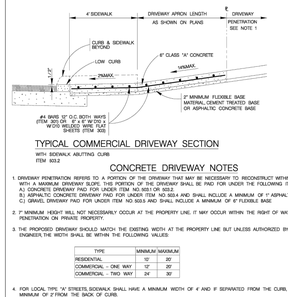
TYPICAL RESIDENTIAL DRIVEWAY SECTION

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



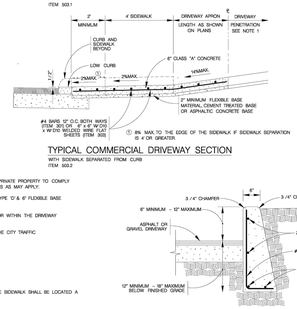
TYPICAL RESIDENTIAL DRIVEWAY SECTION

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



TYPICAL COMMERCIAL DRIVEWAY SECTION

WITH SIDEWALK ABUTTING CURB
ITEM 503.2



TYPICAL COMMERCIAL DRIVEWAY SECTION

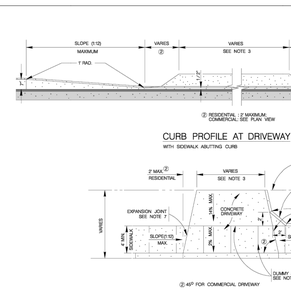
WITH SIDEWALK SEPARATED FROM CURB
ITEM 503.2

CONCRETE DRIVEWAY NOTES

1. DRIVEWAY PENETRATION REFERS TO A PORTION OF THE DRIVEWAY THAT MAY BE NECESSARY TO RECONSTRUCT WITHIN PRIVATE PROPERTY TO COMPLY WITH A MAXIMUM DRIVEWAY SLOPE. THIS PORTION OF THE DRIVEWAY SHALL BE PAID FOR UNDER THE FOLLOWING ITEMS AS MAY APPLY:
   A.) CONCRETE DRIVEWAY PAD FOR UNDER ITEM NO. 503.1 OR 503.2.
   B.) ASPHALTIC CONCRETE DRIVEWAY PAD FOR UNDER ITEM NO 503.4 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. 2" 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:

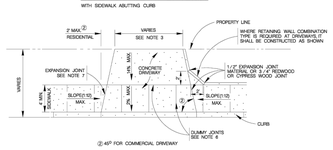
TYPE	MINIMUM	MAXIMUM
RESIDENTIAL	10'	30'
COMMERCIAL – ONE WAY	12'	20'
COMMERCIAL – TWO WAY	24'	30'

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 3/4" 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.



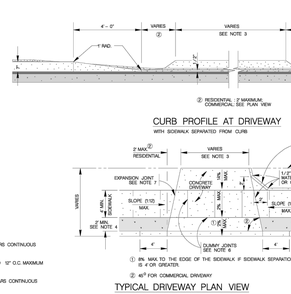
CURB PROFILE AT DRIVEWAY

WITH SIDEWALK ABUTTING CURB



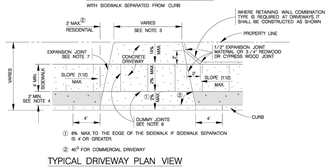
TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK ABUTTING CURB



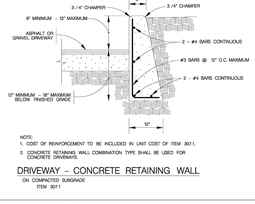
CURB PROFILE AT DRIVEWAY

WITH SIDEWALK SEPARATED FROM CURB



TYPICAL DRIVEWAY PLAN VIEW

WITH SIDEWALK SEPARATED FROM CURB

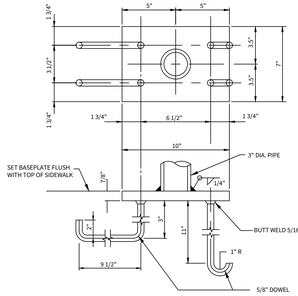


NOTE:
1. COST OF REINFORCEMENT TO BE INCLUDED IN UNIT COST OF ITEM 307.1.
2. CONCRETE RETAINING WALL COMBINATION TYPE SHALL BE USED FOR CONCRETE DRIVEWAYS.

DRIVEWAY – CONCRETE RETAINING WALL

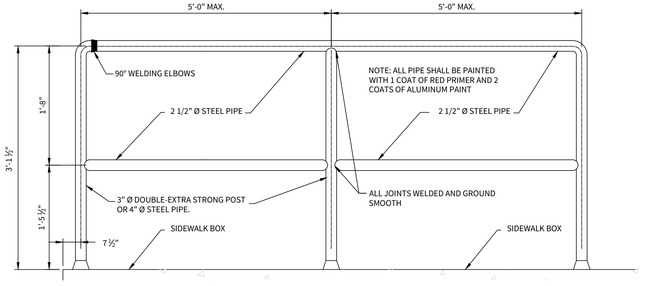
ON COMPACTED SUBGRADE
ITEM 307.1

CONCRETE DRIVEWAY STANDARDS

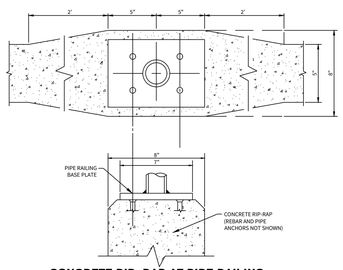


PIPE ANCHORAGE DETAILS

N.T.S.



PIPE RAILING DETAIL

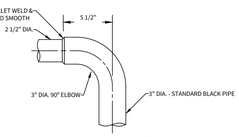


CONCRETE RIP-RAP AT PIPE RAILING BASE PLATE DETAIL

NOTES:

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

N.T.S.



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"

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REUSE OF THIS DOCUMENT SHALL BE AT THE RESPONSIBILITY OF SUCH REUSE, WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC. AND M.W. CUDE ENGINEERS LLC. SHALL BE INDEMNIFIED AND HELD HARMLESS BY THE USER AGAINST ANY AND ALL COSTS TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

CURB INLET DETAILS

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

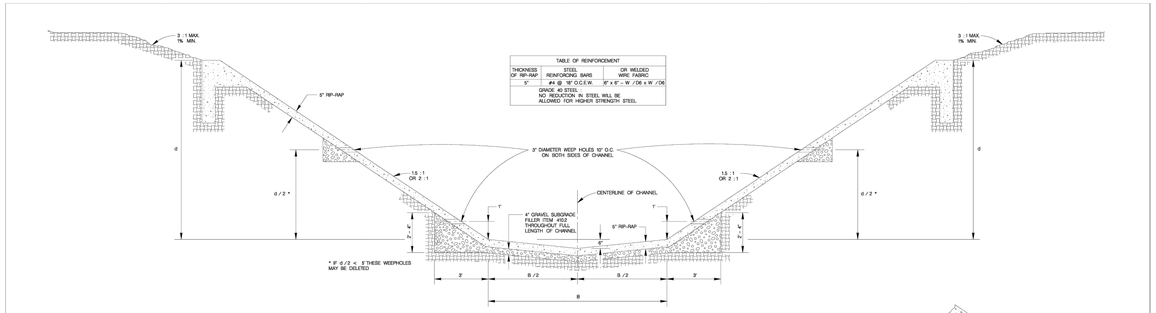
DATE	A	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

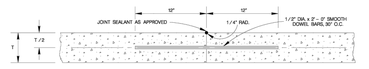
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C50

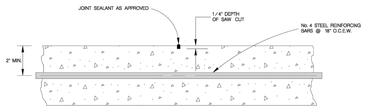
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



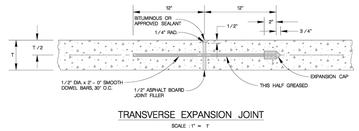
TYPICAL CHANNEL SECTION
LOOKING DOWNSTREAM
SCALE : 1" = 4'



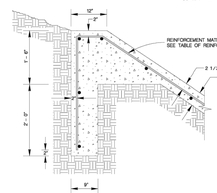
CONVERSE CONTRACTION
OR CONSTRUCTION JOINT
SCALE : 1" = 1'



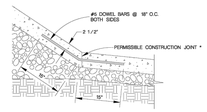
"SAW CUT" CONTRACTION JOINT
SCALE : 1" = 6"



TRANSVERSE EXPANSION JOINT
SCALE : 1" = 1'

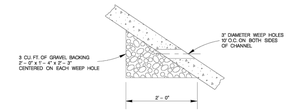


REINFORCEMENT DETAIL
TOE-DOWN
SCALE : 1" = 2'



ALL SECTIONS
SCALE : 1" = 2'

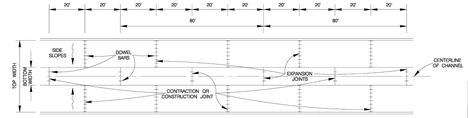
* THIS JOINT MUST BE A VERTICAL
JOINT AS SHOWN



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

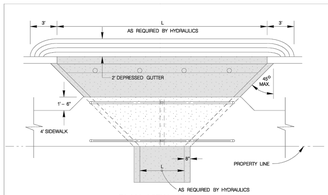
GENERAL NOTES

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

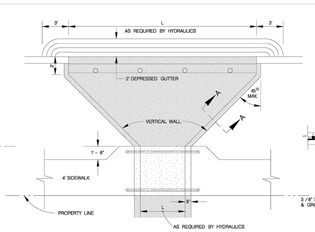


EXPANSION AND CONTRACTION JOINTS
FOR CONCRETE CHANNEL LINING
SCALE : 1" = 40'

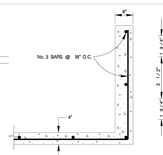
TYPICAL CONCRETE CHANNEL
RIP-RAP STANDARDS



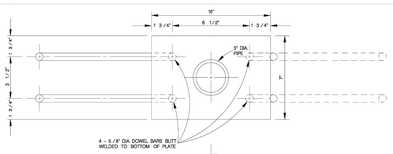
PLAN VIEW "A"
SCALE : 1" = 8'

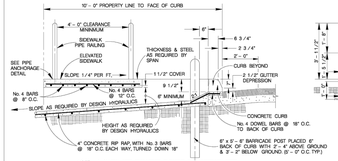


PLAN VIEW "B"
SCALE : 1" = 8'

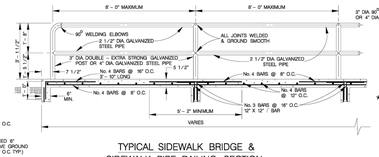


SECTION A–A
SCALE : 1" = 2'

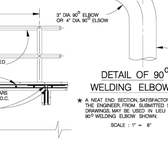




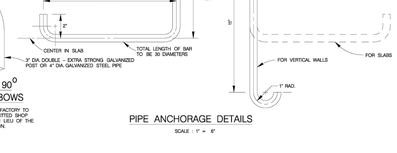
ELEVATED SIDEWALK & DROP CURB
DETAILS FOR DRAINAGE CHANNELS
SCALE : 1" = 4'



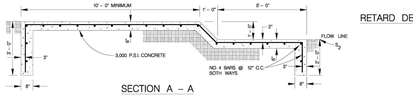
TYPICAL SIDEWALK BRIDGE &
SIDEWALK PIPE RAILING SECTION
SCALE : 1" = 4'



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"

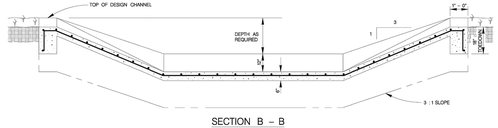


PIPE ANCHORAGE DETAILS
SCALE : 1" = 4'

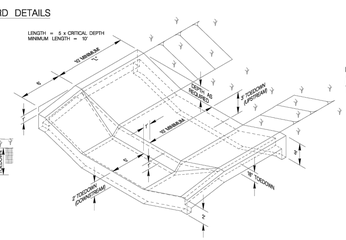


SECTION A – A
SCALE : 1" = 4'
NOTE : RETARD TO BE CARRIED TO THE
TOP OF DESIGN CHANNEL SECTION

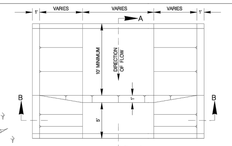
RETARD DETAILS



SECTION B – B
SCALE : 1" = 4'



ISOMETRIC VIEW
SCALE : 1" = 10'



PLAN VIEW
SCALE : 1" = 10'

ELEVATED SIDEWALK & RETARD
STANDARDS

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE, OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE WITNESSING PARTY'S SOLE RISK, WITHOUT LIMITATION TO M.W. CUDE ENGINEERS LLC, AND WILL BE ENFORCEABLE AGAINST ANY AND ALL PARTIES TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

DRAINAGE DETAILS

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	A	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C51

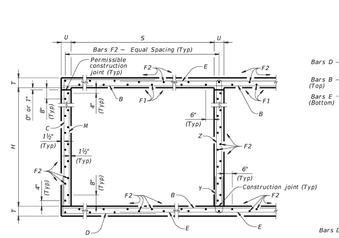
CUDEENGINEERS.COM

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

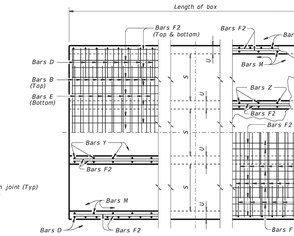
C:\04343\002\LDP\04343-002-Plan-C51-DRAINAGE DETAILS.dwg 2025/06/19 3:50pm jgarcia

DISCLAIMER:
TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

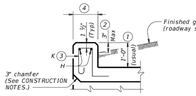
DATE:
FILE:



TYPICAL SECTION

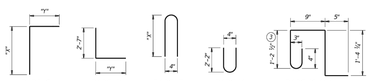


BOTTOM SLAB PART PLANS TOP SLAB



SECTION THRU CURB

TABLE OF BAR DIMENSIONS		
H	"K"	"H"
2'-0"	2'-6 ½"	3'-8 ½"
3'-0"	3'-6 ½"	3'-8 ½"
4'-0"	4'-6 ½"	3'-8 ½"
5'-0"	5'-6 ½"	3'-8 ½"



BARS C BARS D BARS Z BARS Y BARS K (#4) (Spa = 1'-0" Max) (Length = 4'-2")

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

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

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

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

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

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

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. (Required lap length for the provided D30.6 wire is 2'-0", the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

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

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

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

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

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
Use the Multiple Box Culverts Cast-In-Place Miscellaneous Detail (MC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation | Bridge Division Standard

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

File: CD-MC520-20.dgn	dn: TxDOT	ck: TxDOT	dw: TxDOT	ck: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

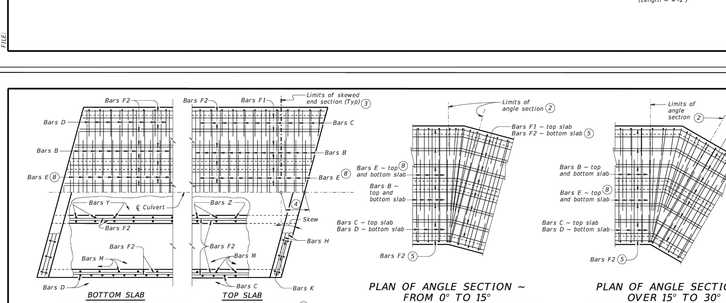
DISCLAIMER:
TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

NUMBER OF SPANS	SECTION DIMENSIONS				BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																												QUANTITIES					
					Bars B				Bars C & D				Bars E				Bars F1 ~ #4				Bars F2 ~ #4				Bars M ~ #4				Bars Y & Z ~ #4						Bars H #4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total	
	S	H	T	U	No.	Size	Spa	Length	Wt	No.	Size	Spa	Length	Wt	Size	Spa	Length	Wt	No.	Size	Spa	Length	Wt	No.	Size	Spa	Length	Wt	No.	Size	Spa	Bars Y Length	Bars Y Wt	Bars Z Length	Bars Z Wt	Length	Wt	No.	Wt	Conc (CY)	Reinf (LB)	Conc (CY)	Reinf (LB)	Conc (CY)	Reinf (LB)
2	5'-0"	2'-0"	8"	7"	108	#5	9"	11'-6"	1,295	108	#5	9"	6'-3"	704	6'-4"	713	108	#5	9"	8'-8"	976	8	18"	39'-9"	212	38	18"	39'-9"	1,009	108	9"	2'-0"	144	54	9"	4'-7"	165	5'-3"	189	13'-6"	31	26	72	0.710	135.2	0.9	103	29.3	5,510
3	5'-0"	2'-0"	8"	7"	108	#5	9"	17'-1"	1,924	108	#5	9"	6'-3"	704	6'-4"	713	108	#5	9"	14'-3"	1,605	12	18"	39'-9"	319	54	18"	39'-9"	1,434	108	9"	2'-0"	144	108	9"	4'-7"	331	5'-3"	379	17'-1"	46	38	106	1.029	188.8	1.3	152	42.4	7,705
4	5'-0"	2'-0"	8"	7"	108	#5	9"	22'-8"	2,553	108	#5	9"	6'-3"	704	6'-4"	713	108	#5	9"	19'-10½"	2,234	16	18"	39'-9"	425	70	18"	39'-9"	1,859	108	9"	2'-0"	144	162	9"	4'-7"	496	5'-3"	568	22'-8"	61	48	134	1.348	242.4	1.7	195	55.6	9,891
5	5'-0"	2'-0"	8"	7"	108	#5	9"	28'-3"	3,182	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	25'-5"	2,863	20	18"	39'-9"	531	86	18"	39'-9"	2,284	108	9"	2'-0"	144	216	9"	4'-7"	661	5'-3"	758	28'-3"	75	60	167	1.667	296.0	2.1	242	68.8	12,082
6	5'-0"	2'-0"	8"	7"	108	#5	9"	33'-10"	3,811	108	#5	9"	6'-3"	704	6'-4"	713	108	#5	9"	31'-0"	3,492	24	18"	39'-9"	637	102	18"	39'-9"	2,708	108	9"	2'-0"	144	270	9"	4'-7"	827	5'-3"	947	33'-10"	90	70	195	1.986	349.6	2.5	285	82.0	14,268
2	5'-0"	3'-0"	8"	7"	108	#6	9"	11'-6"	1,865	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	8'-8"	976	8	18"	39'-9"	212	44	18"	39'-9"	1,168	108	9"	3'-0"	216	54	9"	4'-7"	165	5'-3"	262	11'-6"	31	26	72	0.775	159.9	0.9	103	31.9	6,497
3	5'-0"	3'-0"	8"	7"	108	#6	9"	17'-1"	2,771	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	14'-3"	1,605	12	18"	39'-9"	319	62	18"	39'-9"	1,646	108	9"	3'-0"	216	108	9"	4'-7"	331	5'-3"	523	17'-1"	46	38	106	1.115	223.5	1.3	152	45.9	9,093
4	5'-0"	3'-0"	8"	7"	108	#6	9"	22'-8"	3,677	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	19'-10½"	2,234	16	18"	39'-9"	425	80	18"	39'-9"	2,124	108	9"	3'-0"	216	162	9"	4'-7"	496	5'-3"	785	22'-8"	61	48	134	1.456	287.2	1.7	195	59.9	11,682
5	5'-0"	3'-0"	8"	7"	108	#6	9"	28'-3"	4,583	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	25'-5"	2,863	20	18"	39'-9"	531	98	18"	39'-9"	2,602	108	9"	3'-0"	216	216	9"	4'-7"	661	5'-3"	1,046	28'-3"	75	60	167	1.796	350.8	2.1	242	73.9	14,274
6	5'-0"	3'-0"	8"	7"	108	#6	9"	33'-10"	5,488	108	#5	9"	7'-3"	817	6'-4"	713	108	#5	9"	31'-0"	3,492	24	18"	39'-9"	637	116	18"	39'-9"	3,080	108	9"	3'-0"	216	270	9"	4'-7"	827	5'-3"	1,308	33'-10"	90	70	195	2.137	414.5	2.5	285	88.0	16,863
2	5'-0"	4'-0"	8"	7"	108	#6	9"	11'-6"	1,865	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	8'-8"	976	8	18"	39'-9"	212	44	18"	39'-9"	1,168	108	9"	4'-0"	289	54	9"	4'-7"	165	5'-3"	334	11'-6"	31	26	72	0.840	168.3	0.9	103	34.5	6,734
3	5'-0"	4'-0"	8"	7"	108	#6	9"	17'-1"	2,771	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	14'-3"	1,605	12	18"	39'-9"	319	62	18"	39'-9"	1,646	108	9"	4'-0"	289	108	9"	4'-7"	331	5'-3"	667	17'-1"	46	38	106	1.202	231.8	1.3	152	49.4	9,422
4	5'-0"	4'-0"	8"	7"	108	#6	9"	22'-8"	3,677	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	19'-10½"	2,234	16	18"	39'-9"	425	80	18"	39'-9"	2,124	108	9"	4'-0"	289	162	9"	4'-7"	496	5'-3"	1,001	22'-8"	61	48	134	1.564	297.2	1.7	195	64.3	12,083
5	5'-0"	4'-0"	8"	7"	108	#6	9"	28'-3"	4,583	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	25'-5"	2,863	20	18"	39'-9"	531	98	18"	39'-9"	2,602	108	9"	4'-0"	289	216	9"	4'-7"	661	5'-3"	1,335	28'-3"	75	60	167	1.926	362.7	2.1	242	79.1	14,748
6	5'-0"	4'-0"	8"	7"	108	#6	9"	33'-10"	5,488	108	#5	9"	8'-3"	929	6'-4"	713	108	#5	9"	31'-0"	3,492	24	18"	39'-9"	637	116	18"	39'-9"	3,080	108	9"	4'-0"	289	270	9"	4'-7"	827	5'-3"	1,668	33'-10"	90	70	195	2.288	428.1	2.5	285	94.0	17,408
2	5'-0"	5'-0"	8"	7"	108	#6	9"	11'-6"	1,865	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	8'-8"	976	8	18"	39'-9"	212	50	18"	39'-9"	1,328	108	9"	5'-0"	361	54	9"	4'-7"	165	11'-3"	406	11'-6"	31	26	72	0.904	176.7	0.9	103	37.0	7,171
3	5'-0"	5'-0"	8"	7"	108	#6	9"	17'-1"	2,771	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	14'-3"	1,605	12	18"	39'-9"	319	70	18"	39'-9"	1,859	108	9"	5'-0"	361	108	9"	4'-7"	331	11'-3"	812	17'-1"	46	38	106	1.288	245.3	1.3	152	52.8	9,965
4	5'-0"	5'-0"	8"	7"	108	#6	9"	22'-8"	3,677	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	19'-10½"	2,234	16	18"	39'-9"	425	90	18"	39'-9"	2,390	108	9"	5'-0"	361	162	9"	4'-7"	496	11'-3"	1,217	22'-8"	61	48	134	1.672	313.9	1.7	195	68.6	12,750
5	5'-0"	5'-0"	8"	7"	108	#6	9"	28'-3"	4,583	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	25'-5"	2,863	20	18"	39'-9"	531	110	18"	39'-9"	2,921	108	9"	5'-0"	361	216	9"	4'-7"	661	11'-3"	1,623	28'-3"	75	60	167	2.056	382.5	2.1	242	84.3	15,540
6	5'-0"	5'-0"	8"	7"	108	#6	9"	33'-10"	5,488	108	#5	9"	9'-3"	1,042	6'-4"	713	108	#5	9"	31'-0"	3,492	24	18"	39'-9"	637	130	18"	39'-9"	3,452	108	9"	5'-0"	361	270	9"	4'-7"	827	11'-3"	2,029	33'-10"	90	70	195	2.439	451.0	2.5	285	100.1	18,326

DISCLAIMER:
TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

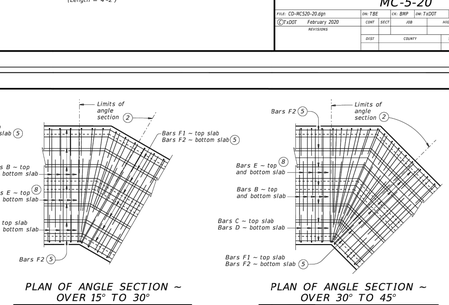
DATE:
FILE:



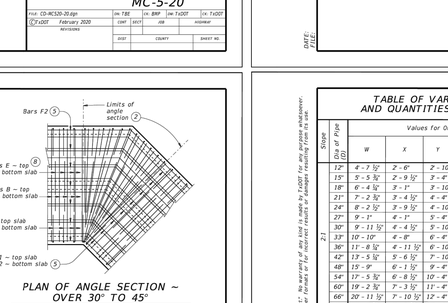
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° ⑦

BOTTOM SLAB TOP SLAB

PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



PLAN OF ANGLE SECTION ~ OVER 30° TO 45°

① For skewed box culverts with less than 2'-0" of fill, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension.
For non-skewed box culverts with less than 2'-0" of fill and for skewed or non-skewed culverts with a fill depth of 2'-0" or greater, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is non-skewed, embed #6 anchor bars with a Type III, Class C, D, E, or F anchor adhesive into the existing walls, top and bottom slab at 6" center-to-center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, N_{ba}, of 26.4 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing." Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.
② When the spacing between Bars B or Bars E becomes less than half of the normal spacing, cut bars to avoid conflict.
③ The length of Bars B and Bars E will vary in the skewed end sections.
④ {One half of overall width} x {tangent of the skew angle}

⑤ Place Bars F1 and F2 continuously through the angle section. Bend Bars F1 and F2 to remain parallel to the walls of the box culvert.
⑥ When necessary to avoid conflict in acute corners, shorten the skin extension leg of Bars C and Bars D to a minimum of 1'-6" for skews of 30° thru 45°.
⑦ At the Contractor's option, for skews of 15° or less, place Bars B, C, D, and E parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B and Bars E shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets to accommodate the skew.
⑧ Extend Bars E as shown on the MC standard sheet for direct traffic culverts.

CONSTRUCTION NOTES:
Do not use permanent forms.
When required, lap Bars H 1'-8" for uncoated or galvanized bars.
Provide a minimum of 1 ½" clear cover.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of culverts with the top slab as the final riding surface.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to Multiple Box Culverts Cast-in-Place (MC) standard sheets for details of straight sections of culvert.
For skewed sections and angle sections, refer to Multiple Box Culverts Cast-in-Place (MC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.
For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets by the cosine of the skew angle.

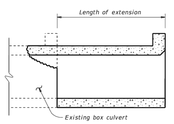
Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

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

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



LENGTHENING DETAIL ①

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED USE OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE WORKMAN'S SPOT'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE SUBJECT AGAINST ANY AND ALL LAWFUL REMEDIES TO THE FULLEST EXTENT PERMITTED BY LAW.

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

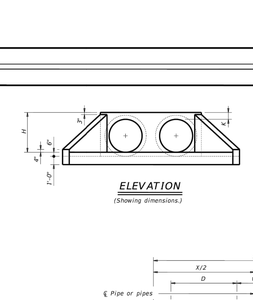
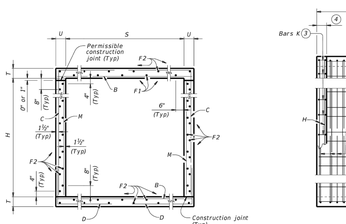
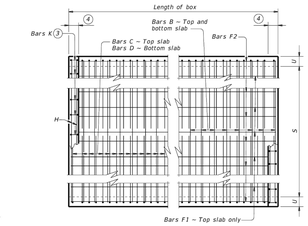


TABLE OF ⑤ REINFORCING STEEL		
Bar	Size	Spa	No.
A	#4	1'-0"	~
B	#3

DISCLAIMER:
This standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



TYPICAL SECTION



PLAN OF REINF STEEL

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

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

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

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

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

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

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

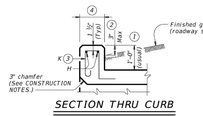
CONSTRUCTION NOTES:
Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised. Bars C and D may be reversed.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

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

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

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



SECTION THRU CURB



BARS C BARS D BARS K (#4) (Sum = 1'-0" Max) (Length = 4'-2")

DATE:
FILE:

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation | Bridge Division Standard

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

SCC-5 & 6

Prid: CD-SCC56-21.dgn	dn: TBE	ck: BMP	dw: TxDOT	ck: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
04/2021 Updated X values.	DIST	COUNTY		SHEET NO.

DISCLAIMER:
This standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

SECTION DIMENSIONS

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

QUANTITIES

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

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

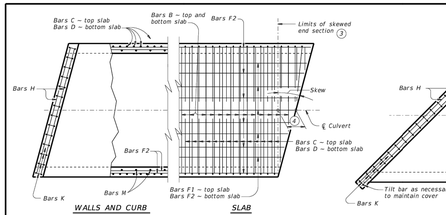
HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation | Bridge Division Standard

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

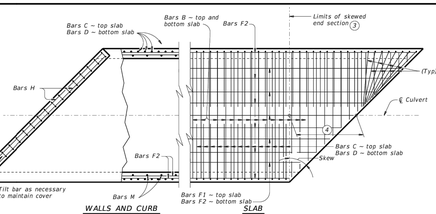
SCC-5 & 6

Prid: CD-SCC56-21.dgn	dn: TBE	ck: BMP	dw: TxDOT	ck: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
04/2021 Updated X values.	DIST	COUNTY		SHEET NO.



WALLS AND CURB SLAB

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



WALLS AND CURB SLAB

PLAN OF SKEWED ENDS ~ OVER 30° TO 45°

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

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

Break back wings and apron as necessary to install the reinforcing. Do not damage the existing concrete wall, apron reinforcing into the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, form horizontal and vertical transitions as directed by the Engineer. Match bottom slabs to maintain an uninterrupted flow line. Field bend existing and new reinforcing into transitions and maintain specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, adjust the "H" dimension to provide a smooth riding surface.

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

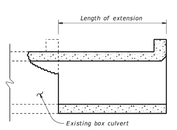
(3) The length of Bars B vary in the skewed end sections.

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

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

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

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



LENGTHENING DETAIL (1)

CONSTRUCTION NOTES:
Do not use permanent forms.
When required, lap Bars H 1'-8" for uncoated or galvanized bars.
Provide a minimum of 1 ½" clear cover.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel, if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to Single Box Culverts Cast-in-Place (SCC) standard sheets for details of straight sections of culvert.
For skewed sections and angle sections, refer to Single Box Culverts Cast-in-Place (SCC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.
For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the culvert Single Box Culverts Cast-In-Place (SCC) standard sheets by the cosine of the skew angle.

Cover dimensions are clear dimensions, unless noted otherwise.

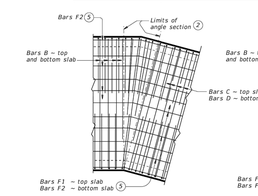
HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

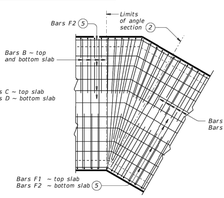
SINGLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS

SCC-MD

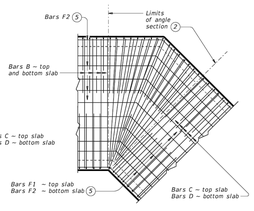
Prid: CD-SCC-MD-20.dgn	dn: TxDOT	ck: TxDOT	dw: TxDOT	ck: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.



PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



PLAN OF ANGLE SECTION ~ OVER 15° TO 30°

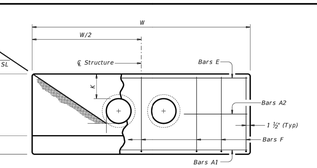


PLAN OF ANGLE SECTION ~ OVER 30° TO 45°

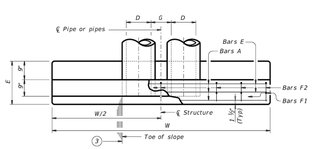
DATE:
FILE:

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

Slope	Dia. of Pipe	Values for One Pipe W	Values for One Pipe Reinf (LBS) (1)	Values for One Pipe Conc (CY) (2)	Values To Be Added for Each Addt'l Pipe W	Values To Be Added for Each Addt'l Pipe Reinf (LBS) (1)	Values To Be Added for Each Addt'l Pipe Conc (CY) (2)
2:1	12"	9'-0"	122	1.1	1'-9"	15	0.2
	15"	10'-3"	136	1.3	2'-2"	16	0.2
	18"	11'-6"	163	1.5	2'-8"	19	0.3
	21"	12'-9"	200	1.8	3'-1"	31	0.4
	24"	14'-0"	217	2.1	3'-7"	34	0.4
	27"	15'-3"	254	2.4	3'-11"	37	0.5
	30"	16'-6"	272	2.7	4'-4"	40	0.6
	33"	17'-9"	314	3.1	4'-8"	43	0.6
	36"	19'-0"	371	3.9	5'-1"	46	0.8
	42"	21'-6"	442	4.9	5'-10"	52	1.0
	48"	25'-0"	569	6.4	6'-7"	59	1.3
	54"	27'-6"	701	7.5	7'-6"	82	1.6
	60"	30'-0"	794	8.8	8'-3"	90	1.8
	66"	32'-6"	894	10.2	8'-9"	96	2.0
	72"	35'-0"	1,055	11.7	9'-4"	103	2.3
3:1	12"	13'-0"	175	1.6	1'-9"	14	0.2
	15"	14'-9"	193	1.9	2'-2"	17	0.2
	18"	16'-6"	228	2.2	2'-8"	19	0.3
	21"	18'-3"	299	2.6	3'-1"	31	0.4
	24"	20'-0"	323	3.0	3'-7"	33	0.4
	27"	21'-9"	371	3.5	3'-11"	37	0.5
	30"	23'-6"	415	4.0	4'-4"	40	0.5
	33"	25'-3"	469	4.6	4'-8"	43	0.6
	36"	27'-0"	556	5.7	5'-1"	46	0.8
	42"	30'-6"	675	7.1	5'-10"	52	1.0
	48"	35'-6"	837	9.2	6'-7"	59	1.3
	54"	39'-0"	1,015	11.0	7'-6"	84	1.6
	60"	42'-6"	1,171	12.9	8'-3"	91	1.8
	66"	46'-0"	1,298	14.9	8'-9"	98	2.0
	72"	49'-6"	1,561	17.1	9'-4"	103	2.3
4:1	12"	17'-0"	229	2.0	1'-9"	15	0.2
	15"	19'-3"	266	2.4	2'-2"	17	0.2
	18"	21'-6"	308	2.9	2'-8"	19	0.3
	21"	23'-9"	382	3.5	3'-1"	31	0.3
	24"	26'-0"	430	3.9	3'-7"	34	0.4
	27"	28'-3"	486	4.7	3'-11"	37	0.5
	30"	30'-6"	539	5.2	4'-4"	40	0.6
	33"	32'-9"	603	6.0	4'-8"	42	0.6
	36"	35'-0"	738	7.5	5'-1"	47	0.8
	42"	39'-6"	881	9.3	5'-10"	52	1.0
	48"	46'-0"	1,102	12.1	6'-7"	61	1.3
	54"	50'-6"	1,364	14.4	7'-6"	84	1.6
	60"	55'-0"	1,543	16.9	8'-3"	91	1.8
	66"	59'-6"	1,741	19.5	8'-9"	98	2.0
	72"	64'-0"	2,077	22.4	9'-4"	102	2.3
6:1	12"	25'-0"	336	3.0	1'-9"	14	0.2
	15"	28'-3"	384	3.6	2'-2"	17	0.2
	18"	31'-6"	452	4.2	2'-8"	19	0.3
	21"	34'-9"	581	5.1	3'-1"	31	0.4
	24"	38'-0"	644	5.8	3'-7"	34	0.4
	27"	41'-3"	737	6.9	3'-11"	37	0.5
	30"	44'-6"	807	7.7	4'-4"	39	0.6
	33"	47'-9"	912	8.9	4'-8"	44	0.6
	36"	51'-0"	1,108	11.0	5'-1"	48	0.8
	42"	57'-6"	1,318	13.7	5'-10"	54	1.0
	48"	67'-0"	1,682	17.9	6'-7"	59	1.3
	54"	73'-6"	2,072	21.3	7'-6"	83	1.6
	60"	80'-0"	2,351	24.9	8'-3"	89	1.8
	66"	86'-6"	2,643	28.9	8'-9"	96	2.0
	72"	93'-0"	3,121	33.1	9'-4"	101	2.3



ELEVATION



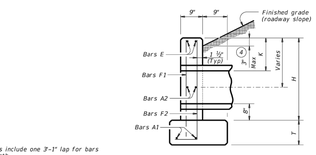
PLAN OF NON-SKEWED PIPES

TABLE OF CONSTANT DIMENSIONS

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

TABLE OF REINFORCING STEEL (6)

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

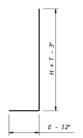


SECTION AT CENTER OF PIPE

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'_c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not need bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

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



BARS F2

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

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

(3) Indicated slope is perpendicular to centerline pipe or pipes.

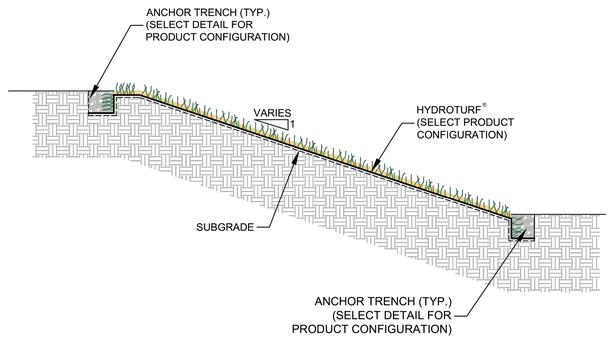
(4) For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(5) Dimensions shown are usual and maximum.

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

Texas Department of Transportation | Bridge Division Standard

CONCRETE HEADWALLS WITH PARALLEL WINGS FOR NON-SKEWED P



DISCLAIMER:

HYDROTURF® (or CLOSURETURF® or VERSACAP®) is a U.S. registered trademark which designates a product from Watershed Geosynthetics LLC. This product is the subject of issued U.S. and foreign patents and/or pending U.S. and foreign patent applications. All information, recommendations and suggestions appearing in this literature concerning the use of our products are based upon test and data believed to be reliable; however, this information should not be used or relied upon for any specific application without independent professional examination and verification of accuracy, suitability and applicability. Since the actual use by others is beyond our control, no guarantee or warranty of any kind, expressed or implied, is made by Watershed Geosynthetics, LLC as to the effect of such use or the results to be obtained, nor does Watershed Geosynthetics, LLC assume any liability in connection herewith. Any statements made herein may not be absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations. Nothing herein is to be construed as permission or as a recommendation to infringe any patent.

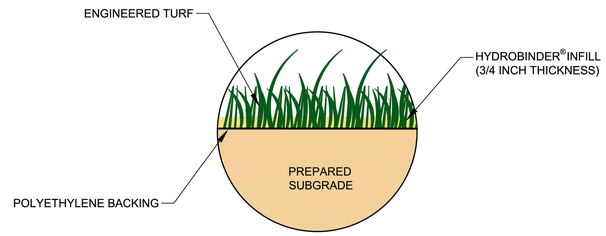
WG Watershed Geo® Unearthing Solutions

PRODUCT HydroTurf®

TITLE
HYDROTURF® SLOPE PROTECTION SECTION

File #	HTSL-01-R00	
Rev #	Scale	Date
0	NTS	2/8/2017

FIGURE 1



DISCLAIMER:

HYDROTURF® (or CLOSURETURF® or VERSACAP®) is a U.S. registered trademark which designates a product from Watershed Geosynthetics LLC. This product is the subject of issued U.S. and foreign patents and/or pending U.S. and foreign patent applications. All information, recommendations and suggestions appearing in this literature concerning the use of our products are based upon test and data believed to be reliable; however, this information should not be used or relied upon for any specific application without independent professional examination and verification of accuracy, suitability and applicability. Since the actual use by others is beyond our control, no guarantee or warranty of any kind, expressed or implied, is made by Watershed Geosynthetics, LLC as to the effect of such use or the results to be obtained, nor does Watershed Geosynthetics, LLC assume any liability in connection herewith. Any statements made herein may not be absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations. Nothing herein is to be construed as permission or as a recommendation to infringe any patent.

WG Watershed Geo® Unearthing Solutions

PRODUCT HydroTurf®

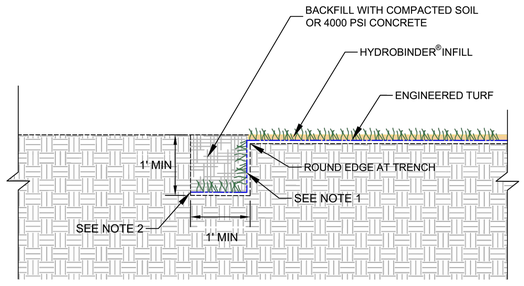
TITLE
HYDROTURF® Z TYPICAL SECTION

File #	HTZ_105r1_17039	
Rev #	Scale	Date
0	NTS	2/8/2017

FIGURE 1

Notes:

1. The engineered turf component of HydroTurf®Z shall be in intimate contact with the anchor trench inside wall and bottom. Wrinkles, ripples, fish mouths, and/or bunching shall be removed and properly patched. During filling of the anchor trench with the compacted soil or concrete backfill, the contractor shall maintain that the engineered turf is in intimate contact with the trench wall and bottom. Concrete backfill shall be vibrated in place in accordance with standard industry techniques.
2. The engineered turf shall not extend up the outside wall of the anchor trench. It shall be trimmed short of the outside wall and shall extend a minimum of ¾ of the width of the anchor trench.



DISCLAIMER:

HYDROTURF® (or CLOSURETURF® or VERSACAP®) is a U.S. registered trademark which designates a product from Watershed Geosynthetics LLC. This product is the subject of issued U.S. and foreign patents and/or pending U.S. and foreign patent applications. All information, recommendations and suggestions appearing in this literature concerning the use of our products are based upon test and data believed to be reliable; however, this information should not be used or relied upon for any specific application without independent professional examination and verification of accuracy, suitability and applicability. Since the actual use by others is beyond our control, no guarantee or warranty of any kind, expressed or implied, is made by Watershed Geosynthetics, LLC as to the effect of such use or the results to be obtained, nor does Watershed Geosynthetics, LLC assume any liability in connection herewith. Any statements made herein may not be absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations. Nothing herein is to be construed as permission or as a recommendation to infringe any patent.

WG Watershed Geo® Unearthing Solutions

PRODUCT HydroTurf®

TITLE
HYDROTURF® Z TYPICAL ANCHOR TRENCH TERMINATION

File #	HTTR-09-R00	
Rev #	Scale	Date
0	NTS	2/8/2017

FIGURE 1

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE OTHER THAN THE ORIGINAL RECIPIENT WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REUSE, MODIFICATION, OR ALTERATION HEREOF OR HEREON, INCLUDING AMENDING OR REMOVING ANY OR ALL PROFESSIONAL SEALS, WITHOUT ANY AND ALL WRITTEN AND/OR VERBAL CONSENTS AND RELEASES OF M.W. CUDE ENGINEERS LLC, SHALL BE UNDERTAKEN AT THE SOLE RISK AND LIABILITY OF THE PARTIES INVOLVED. ANY AND ALL PARTIES TO THE FULLEST EXTENT PERMITTED BY LAW, AGREE TO INDEMNIFY, DEFEND, AND HOLD HARMLESS M.W. CUDE ENGINEERS LLC, AND ITS OFFICERS, EMPLOYEES, AND AGENTS, FROM AND AGAINST ALL CLAIMS, DAMAGES, LOSSES, AND EXPENSES, INCLUDING ATTORNEY'S FEES AND COURT COSTS, ARISING OUT OF OR RESULTING FROM ANY UNAUTHORIZED REPRODUCTION, USE, OR DISTRIBUTION OF THIS DOCUMENT.

CUDEENGINEERS.COM

CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

DRAINAGE DETAILS

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

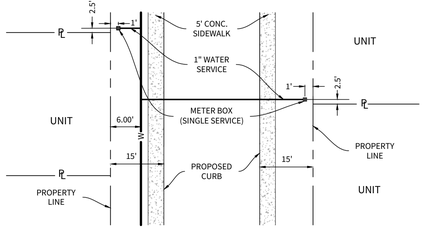
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C54

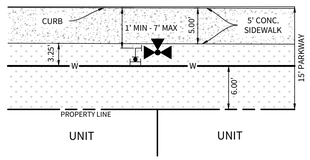
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

I:\04343.002\Civil\Plans\C54 DRAINAGE DETAILS.dwg 2025/06/19 3:50pm jgarcia



WATER METER BOX LOCATION (60' R.O.W.)

N.T.S.

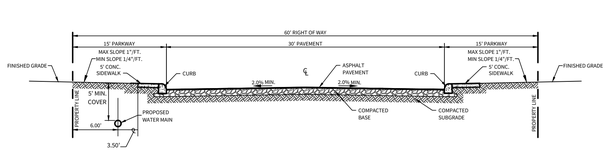


NOTE:

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.

LOCAL RESIDENTIAL FIRE HYDRANT DETAIL (5' SIDEWALK)

N.T.S.



LOCAL "A" STREET CROSS-SECTION

N.T.S.

PRESSURE ZONE 1125 HGL

Developer's Name	MERITAGE HOMES OF TEXAS, L.L.C.		
Developer's Address	2722 WEST BITTERS ROAD, SUITE 200		
City	SAN ANTONIO	State TEXAS	Zip 78231
Phone #	(210) 298-4294	Fax #	
SAWS Block Map #	N/A	Total EDU's 130	Total Acreage 68.94
Total Linear Footage of Pipe	8" W -2,019 L.F. 12" W - 5,194 L.F.		Plat No. -
Number of Lots	124	SAWS Job No.	-

CONTESSA UNIT 1 - WATER DEVELOPMENT

ONSITE ESTIMATED QUANTITY TAKE-OFF

(CONTRACTOR RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES REQUIRED)

Item No.	Description	Quantity	Units
1	8" PVC C-909 PC 235	2,019	LF
2	12" PVC C-909 PC 235	5,195	LF
3	8" GATE VALVES	4	EA
4	12" GATE VALVES	6	EA
5	FIRE HYDRANTS	13	EA
6	PIPE FITTINGS, ALL SIZES AND TYPES	5	TON
7	2" BLOWOFF, TEMPORARY	6	EA
8	3/4" LONG SERVICE (5/8" METER)	43	EA
9	3/4" SHORT SERVICE (5/8" METER)	81	EA
10	1" IRRIGATION (5/8" METER)	5	EA
11	1" LONG SERVICE (1" METER) - LOT 39	1	EA
12	TRENCH EXCAVATION SAFETY PROTECTION	7,214	LF
13	HYDROSTATIC TESTING	1	EA
14	METER BOX (NON-STANDARD METER BOX)	130	EA
15	24" STEEL CASING	30	LF
16	36" STEEL CASING	15	LF

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 Comal 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 940 feet where the static pressure will normally exceed 80 PSI. At all such locations where the ground level is below 940 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.

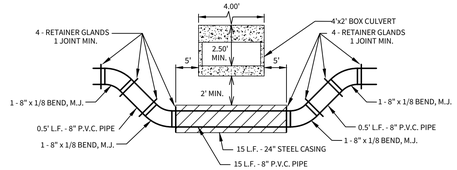
8. Backflow Prevention Devices:

- ☐ 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.



ALL RETAINDER GLANDS TO BE "MEGA-LUG" TYPE.

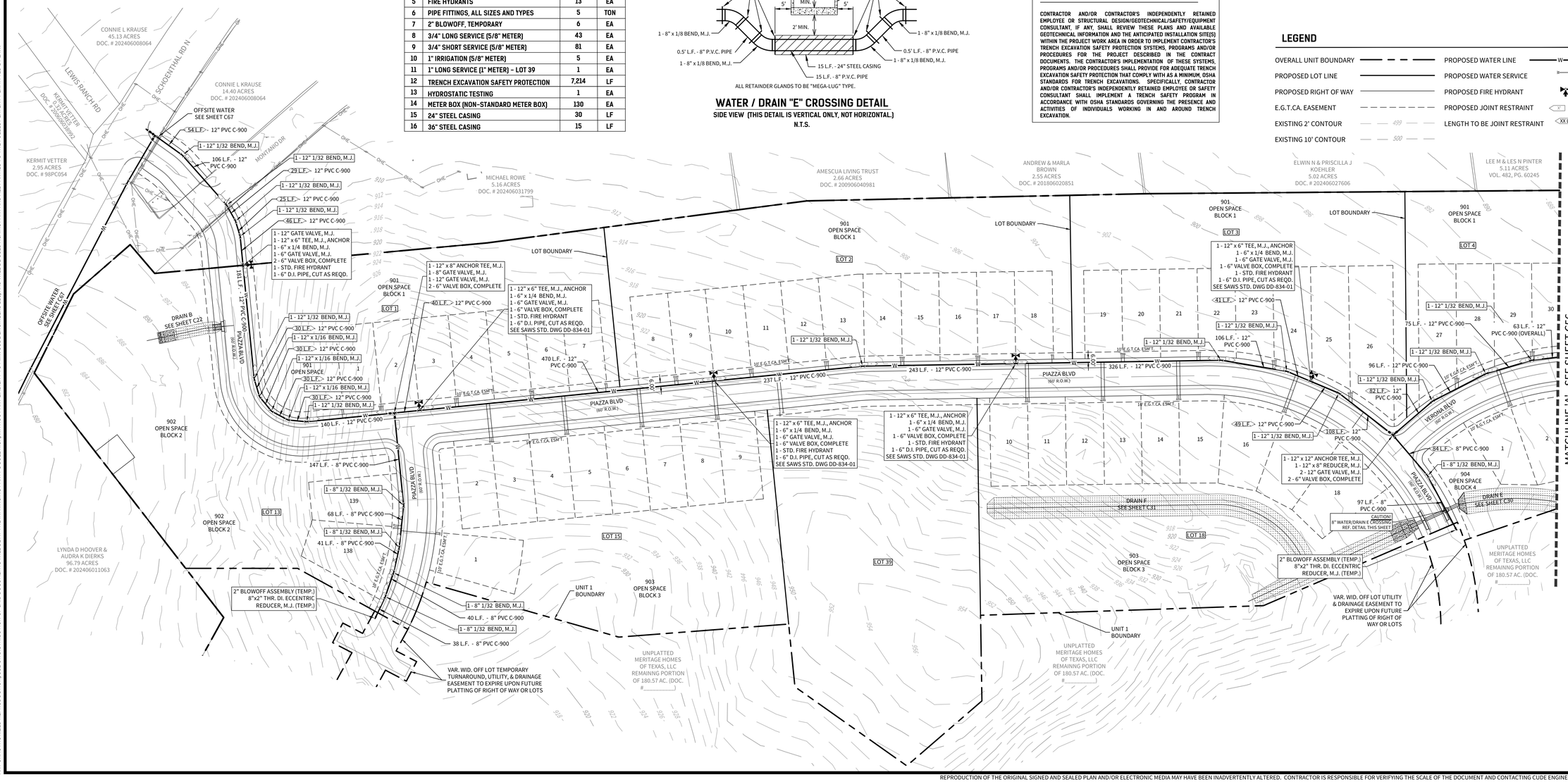
WATER / DRAIN "E" CROSSING DETAIL

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

N.T.S.

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.



LEGEND

OVERALL UNIT BOUNDARY		PROPOSED WATER LINE	W
PROPOSED LOT LINE		PROPOSED WATER SERVICE	
PROPOSED RIGHT OF WAY		PROPOSED FIRE HYDRANT	
E.G.T.CA. EASEMENT		PROPOSED JOINT RESTRAINT	X X
EXISTING 2' CONTOUR	499	LENGTH TO BE JOINT RESTRAINT	XX L.F.
EXISTING 10' CONTOUR	500		



SCALE: 1"=80'

80 10 0 80

NOTES:

1. ALL 8" & 12" PVC SHALL BE C-900 CLASS 235 DR 18.
2. SAWS SHALL MACHINE CHLORINATE ALL NEW WATER MAINS.
3. CONTRACTOR SHALL NOTIFY ENGINEER AND COMAL COUNTY TREE INSPECTIONS DEPARTMENT PRIOR TO THE REMOVAL OF ANY TREES. DAMAGE TO ANY PROTECTED TREES WILL BE MITIGATED AT THE CONTRACTOR'S EXPENSE.
4. CONTRACTOR SHALL MAINTAIN A MINIMUM DEPTH OF 5 FEET ON ALL 12" & 8" MAINS
5. CONTRACTOR SHALL REFERENCE GRADING PLAN FOR FUTURE GRADES OF STREETS FOR CORRECT DEPTH INSTALLATION OF THE OFFSITE WATER MAINS.
6. ALL WATER SERVICES SHALL BE 3/4" COPPER SERVICE WITH 5/8" METER UNLESS OTHER WISE NOTED.

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE OTHER THAN THE ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED AND ANY OTHER DISPERSION WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED FOR USE BY ANYONE WITH WHOM M.W. CUDE ENGINEERS LLC HAS NOT ENTERED INTO A WRITTEN AGREEMENT. ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF SUCH DOCUMENTS SHALL BE AT THE INTERMEDIARY PARTY'S SOLE RISK, WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL SUBJECT SUCH PARTY TO THE FULL EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

ONSITE WATER DISTRIBUTION PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
06/19/2025

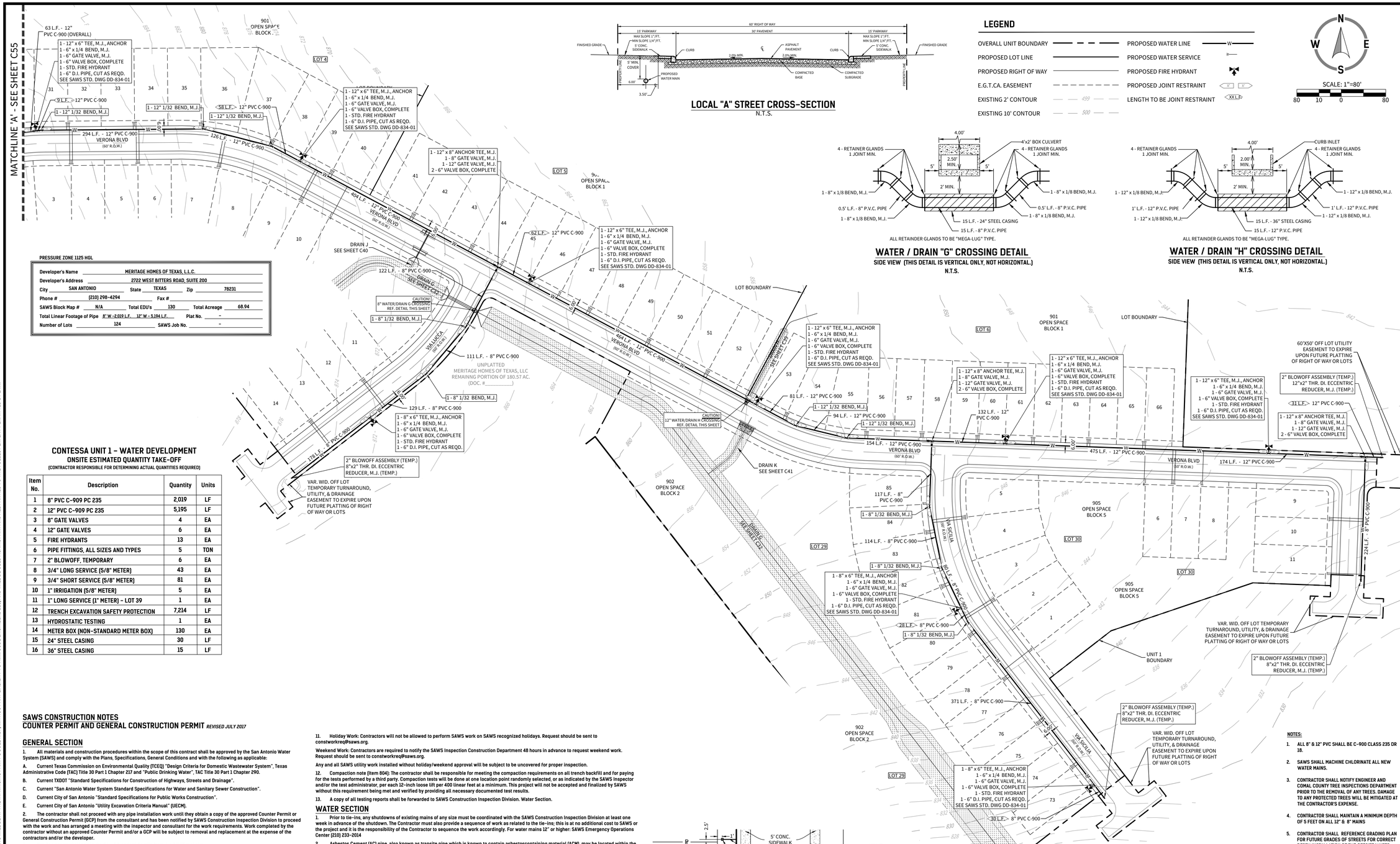
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C55

CUDEENGINEERS.COM

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

P:\04343\002\2 ENGR\4 Plans\CS\ONSITE WATER DISTRIBUTION PLAN.dwg 2025/06/19 3:54pm jgarcia



LOCAL "A" STREET CROSS-SECTION
N.T.S.

LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED WATER LINE
- PROPOSED WATER SERVICE
- PROPOSED FIRE HYDRANT
- PROPOSED JOINT RESTRAINT
- LENGTH TO BE JOINT RESTRAINT

SCALE: 1"=80'
80 10 0 80

ALL RETAINDER GLANDS TO BE "MEGA-LUG" TYPE.

WATER / DRAIN "G" CROSSING DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
N.T.S.

ALL RETAINDER GLANDS TO BE "MEGA-LUG" TYPE.

WATER / DRAIN "H" CROSSING DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
N.T.S.

CONTESSA UNIT 1 – WATER DEVELOPMENT
ONSITE ESTIMATED QUANTITY TAKE-OFF
(CONTRACTOR RESPONSIBLE FOR DETERMINING ACTUAL QUANTITIES REQUIRED)

Item No.	Description	Quantity	Units
1	8" PVC C-909 PC 235	2,019	LF
2	12" PVC C-909 PC 235	5,195	LF
3	8" GATE VALVES	4	EA
4	12" GATE VALVES	6	EA
5	FIRE HYDRANTS	13	EA
6	PIPE FITTINGS, ALL SIZES AND TYPES	5	TON
7	2" BLOWOFF, TEMPORARY	6	EA
8	3/4" LONG SERVICE (5/8" METER)	43	EA
9	3/4" SHORT SERVICE (5/8" METER)	81	EA
10	1" IRRIGATION (5/8" METER)	5	EA
11	1" LONG SERVICE (1" METER) – LOT 39	1	EA
12	TRENCH EXCAVATION SAFETY PROTECTION	7,214	LF
13	HYDROSTATIC TESTING	1	EA
14	METER BOX (NON-STANDARD METER BOX)	130	EA
15	24" STEEL CASING	30	LF
16	36" STEEL CASING	15	LF

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 Comal 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 occure. 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 940 feet where the static pressure will normally exceed 80 PSI. At all such locations where the ground level is below 940 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.

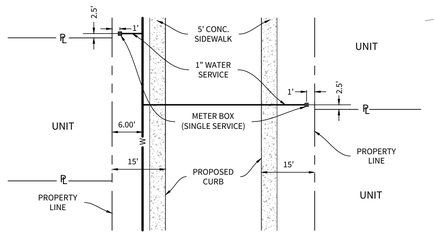
8. Backflow Prevention Devices:

- ☐ 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.

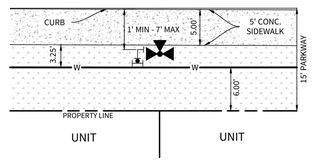
9. Final connection to the existing water main shall not be made until the water main has been pressure tested, chlorinated, and SAWS has released the main for tie-in and use.

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

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



WATER METER BOX LOCATION (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.

LOCAL RESIDENTIAL FIRE HYDRANT DETAIL (5' SIDEWALK)
N.T.S.

TRENCH EXCAVATION PROTECTION

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

NOTES:

1. ALL 8" & 12" PVC SHALL BE C-900 CLASS 235 DR 18.
2. SAWS SHALL MACHINE CHLORINATE ALL NEW WATER MAINS.
3. CONTRACTOR SHALL NOTIFY ENGINEER AND COMAL COUNTY TREE INSPECTIONS DEPARTMENT PRIOR TO THE REMOVAL OF ANY TREES. DAMAGE TO ANY PROTECTED TREES WILL BE MITIGATED AT THE CONTRACTOR'S EXPENSE.
4. CONTRACTOR SHALL MAINTAIN A MINIMUM DEPTH OF 5 FEET ON ALL 12" & 8" MAINS
5. CONTRACTOR SHALL REFERENCE GRADING PLAN FOR FUTURE GRADES OF STREETS FOR CORRECT DEPTH INSTALLATION OF THE OFFSITE WATER MAINS.
6. ALL WATER SERVICES SHALL BE ¾" COPPER SERVICE WITH ¾" METER UNLESS OTHER WISE NOTED.

© 2025 M.W. CUDE ENGINEERS LLC | THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED USE, ADAPTATION, OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE USER'S SOLE RISK AND WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND SHALL BE INDEMNIFIED AGAINST ANY AND ALL CLAIMS TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM
EST. 1980 CUDE ENGINEERS
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

CONTESSA SUBDIVISION UNIT 1

ONSITE WATER DISTRIBUTION PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

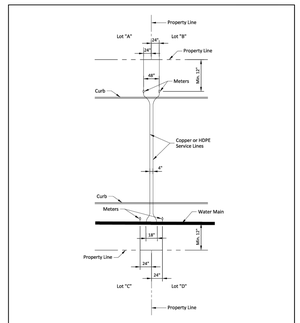
DATE	1	2	3	4	5	6	7	8	9
A									

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C56

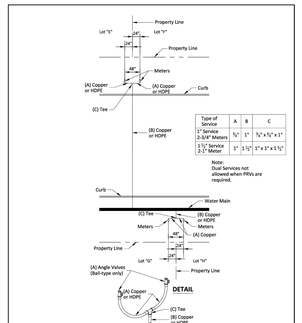
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

C:\04343\2025\DWG\PLANS\SS\ONSITE WATER DISTRIBUTION PLAN.dwg, 6/20/2025 8:53:50 AM, jgarcia



SINGLE SERVICE LINE - SINGLE METER

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	TYPICAL NEW DEVELOPMENT SERVICE ARRANGEMENT	March 2008	December 2018
		DD-824-05	SHEET 1 OF 3

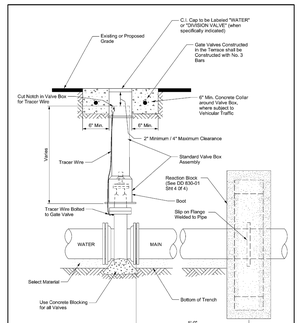


Type of Service	A	B	C
1" Service 2-3/4" Meters	¾"	1"	¾" x ¾" x 1"
1-½" Service 2-7" Meter	1"	1½"	1" x 1" x 1½"

Note:
Dual Services not allowed when PRVs are required.

SINGLE SERVICE LINE - DUAL METER

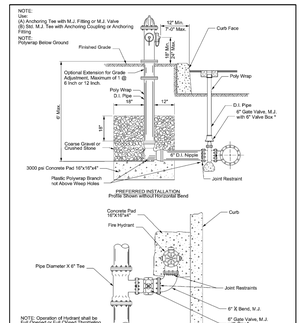
PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	TYPICAL SERVICE ARRANGEMENT	March 2008	December 2018
		DD-824-05	SHEET 2 OF 3



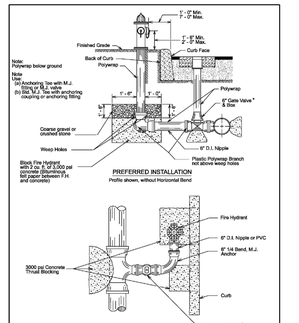
NOTE: Tracer Wire for PVC (Typ. for PVC & HDPE)
NOTE: All Concrete to be 3,000 psi

Note: For all work associated with Recycled Water Valves, refer to DD 116-10, Sht. 1 of 1

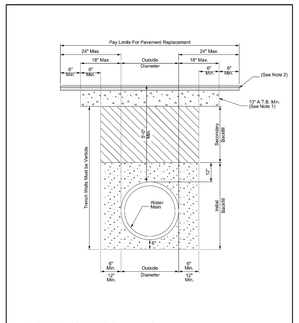
PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	INSTALLATION OF NON-GEARED GATE VALVE WITH VALVE BOX AND EXTENSION	MARCH 2008	AUG 2019
		DD 828-01	SHEET 1 OF 1



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



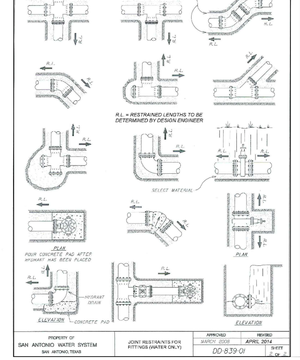
PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	FIRE HYDRANT INSTALLATION	MARCH 2008	APRIL 2014
		DD-834-01	SHEET 1 OF 3



1. Asphalt Treated Base - As Specified COSA ROW - 10" Min. or Greater.
2 Replacement of Surface Layer Shall be of the Type and Thickness Base On Functional Classification:
a. Min. 2" HMAC Type "C" for Trench Repair in Local / Residential Streets.
b. Min. 3" HMAC Type "C" for Trench Repair in Collector / Arterial Streets.

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

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	POTABLE AND RECYCLED WATER MAIN DETAIL	MARCH 2008	AUG 2019
		DD-812-01	SHEET 2 OF 3



PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	THRUST BLOCKS FOR FITTINGS (WATER ONLY)	March 2008	AUG 2019
		DD-839-01	SHEET 1 OF 2

RESTRAINED LENGTH FOR TEES

PIPE SIZE (inch)	BRANCH PIPE SIZE (inch)	LENGTH OF RUN (ft.)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
12	4	0	42	31
12	4	5	7	1
12	6	0	59	44
12	6	5	35	20
12	6	10	11	1
12	8	0	42	31
12	8	5	7	1
12	8	10	59	44
12	8	15	28	13
12	12	0	1	1
12	12	5	77	58
12	12	10	63	35
12	12	15	50	11
8	4	0	42	31
8	4	5	7	1
8	6	0	59	44
8	6	5	35	20
8	6	10	11	1
8	8	0	42	31
8	8	5	7	1
8	8	10	59	44
8	8	15	9	1

RESTRAINED LENGTH DESIGN

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

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

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

RESTRAINED LENGTH FOR TEES (Cont'd)

PIPE SIZE (inch)	BRANCH PIPE SIZE (inch)	LENGTH OF RUN (ft.)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
12	4	0	42	31
12	4	5	7	1
12	6	0	59	44
12	6	5	35	20
12	6	10	11	1
12	8	0	77	58
12	8	5	42	25
12	8	10	7	1
12	8	15	28	13
12	12	0	109	82
12	12	5	86	59
12	12	10	63	35
12	12	15	39	12

RESTRAINED LENGTH DESIGN

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

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

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

RESTRAINED LENGTH DESIGN

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

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

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

PIPE SIZE (inch)	BEND ANGLE (deg.)	LOW SIDE DEPTH	UPPER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE 200 psi	LOWER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE 200 psi	UPPER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE 150 psi	LOWER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE 150 psi
6	45	5	14	4	10	3
6	22.5	5	12	4	9	3
6	11.25	5	8	2	6	1
6	45	10	24	5	18	4
6	22.5	10	22	5	16	3
6	11.25	10	11	2	8	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	30	10	23	7
8	22.5	10	15	3	11	2
8	11.25	10	8	2	6	1
12	45	5	45	16	34	12
12	22.5	5	22	7	16	6
12	11.25	5	12	4	9	3
12	45	10	45	10	34	7
12	22.5	10	22	5	16	3
12	11.25	10	11	2	8	2

RESTRAINED LENGTH DESIGN

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

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

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

PIPE SIZE (inch)	SMALL PIPE SIZE (inch)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
8	4	55	43
8	6	32	24
12	4	95	77
12	6	80	63
12	8	58	43

RESTRAINED LENGTH DESIGN

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

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

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

PIPE SIZE (inch)	BEND ANGLE (deg.)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	90	28	7
6	45	14	4
6	22.5	5	3
6	11.25	3	2
8	90	50	22
8	45	25	6
8	22.5	6	4
8	11.25	3	2
12	90	43	32
12	45	18	13
12	22.5	8	5
12	11.25	4	3

RESTRAINED LENGTH DESIGN

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

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

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

* Cut as required to extend beyond excavation

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

* Cut as required to extend beyond excavation.

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

* Length Varies

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	2" PERMANENT BLOW-OFF ASSEMBLY ON 12" & 16" MAINS	MARCH 2008	AUG 2019
		DD-844-02	SHEET 4 OF 5

* Cut to fit in meter box.

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	2" PERMANENT BLOW-OFF ASSEMBLY ON 6" & 8" MAINS	MARCH 2008	AUG 2019
		DD-844-02	SHEET 3 OF 5

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

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

PROPERTY OF		APPROVED	REVISED
SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	JOINT RESTRAINTS FOR FITTINGS (WATER ONLY)	MARCH 2008	APRIL 2014
		DD-839-09	SHEET 1 OF 1

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT, OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS, LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY MODIFICATION TO THIS DOCUMENT OR ANY ASSOCIATED COPYRIGHTS SHALL BE AT THE APPROVED CRAFT'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS, LLC, AND WILL BE JUST ADJUSTMENT ON ANY AND ALL APPROVED CONTRACTS.

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

WATER DISTRIBUTION STANDARD DETAILS

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	
A	1 2 3 4 5 6 7 8 9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

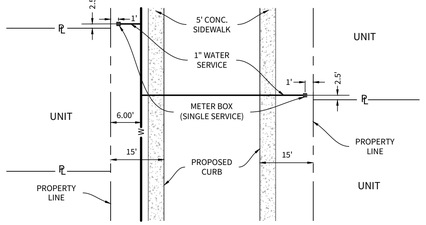
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C57

CUDEENGINEERS.COM

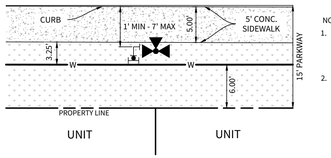
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.

P:\04343\002-SWGX Phase\CAD Files\DETAILS\DETAILS.dwg 2025/06/19 3:54pm jgarcia



WATER METER BOX LOCATION (60' R.O.W.)

N.T.S.

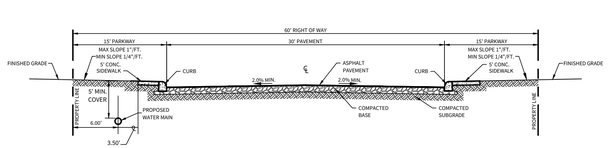


NOTE:

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.

LOCAL RESIDENTIAL FIRE HYDRANT DETAIL (5' SIDEWALK)

N.T.S.



LOCAL "A" STREET CROSS-SECTION

N.T.S.

PRESSURE ZONE 1125 HGL

Developer's Name	MERITAGE HOMES OF TEXAS, L.L.C.		
Developer's Address	2722 WEST BITTERS ROAD, SUITE 200		
City	SAN ANTONIO	State TEXAS	Zip 78231
Phone #	(210) 298-4294	Fax #	
SAWS Block Map #	N/A	Total EDU's 130	Total Acreage 68.94
Total Linear Footage of Pipe	8" W -2,019 L.F. 12" W - 5,104 L.F.		Plat No. -
Number of Lots	124	SAWS Job No.	-

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 Comal 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. (NSPJ)**

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 1125 feet where the static pressure will normally exceed 80 PSI. At all such locations where the ground level is below 1125 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.**

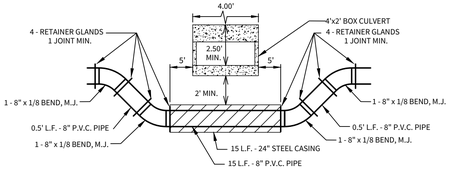
8. **Backflow Prevention Devices:**

- ☐ **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.**



ALL RETAINDER GLANDS TO BE "MEGA-LUG" TYPE.

WATER / DRAIN "E" CROSSING DETAIL

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

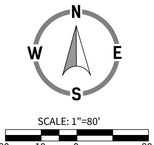
N.T.S.

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.

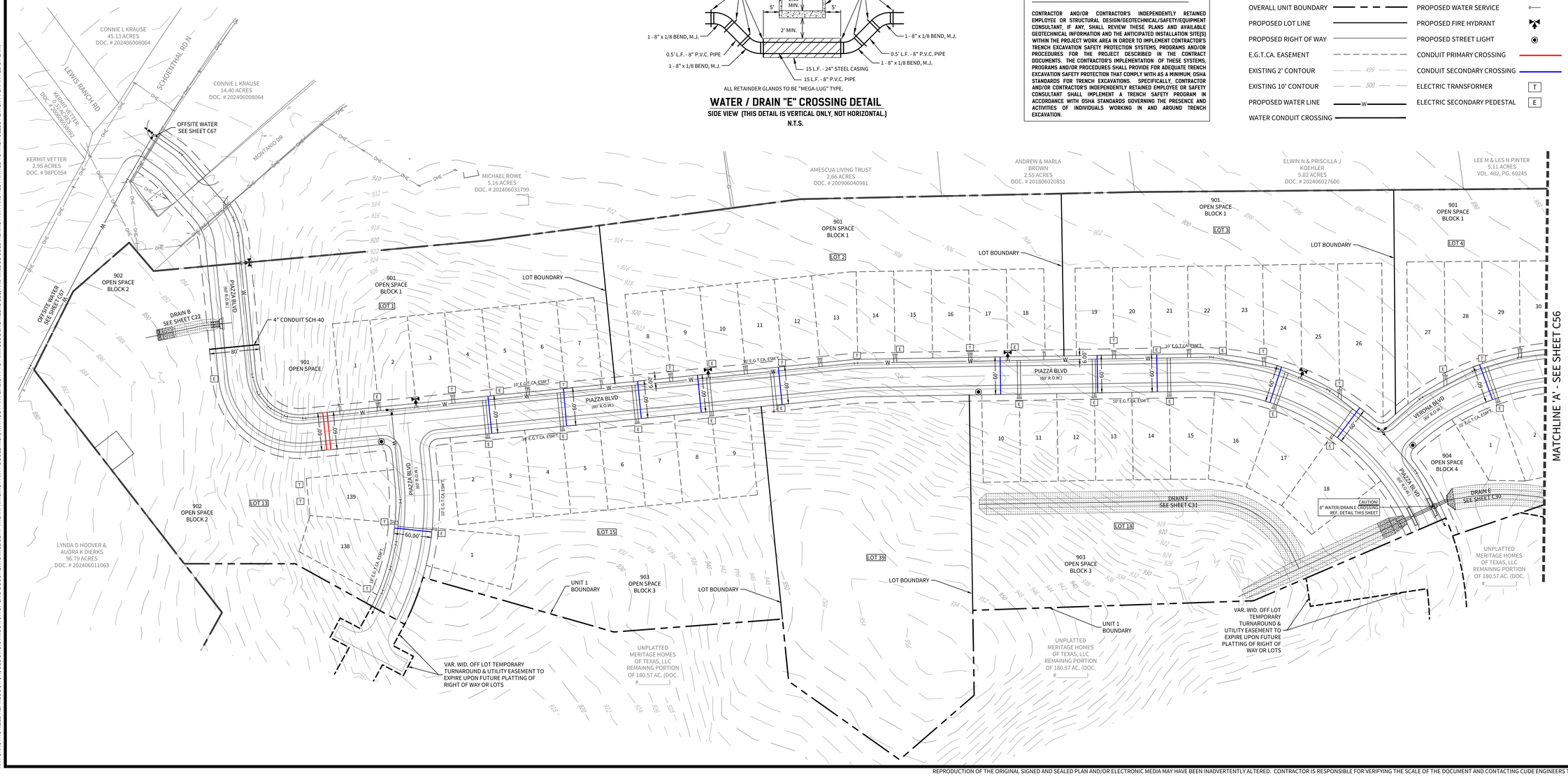
LEGEND

OVERALL UNIT BOUNDARY	PROPOSED WATER SERVICE
PROPOSED LOT LINE	PROPOSED FIRE HYDRANT
PROPOSED RIGHT OF WAY	PROPOSED STREET LIGHT
E.G.T.CA. EASEMENT	CONDUIT PRIMARY CROSSING
EXISTING 2' CONTOUR 499	CONDUIT SECONDARY CROSSING
EXISTING 10' CONTOUR 500	ELECTRIC TRANSFORMER T
PROPOSED WATER LINE W	ELECTRIC SECONDARY PEDESTAL E
WATER CONDUIT CROSSING	



NOTES:

1. **ALL 8" & 12" PVC SHALL BE C-900 CLASS 235 DR 18.**
2. **SAWS SHALL MACHINE CHLORINATE ALL NEW WATER MAINS.**
3. **CONTRACTOR SHALL NOTIFY ENGINEER AND COMAL COUNTY TREE INSPECTIONS DEPARTMENT PRIOR TO THE REMOVAL OF ANY TREES. DAMAGE TO ANY PROTECTED TREES WILL BE MITIGATED AT THE CONTRACTOR'S EXPENSE.**
4. **CONTRACTOR SHALL MAINTAIN A MINIMUM DEPTH OF 5 FEET ON ALL 12" & 8" MAINS**
5. **CONTRACTOR SHALL REFERENCE GRADING PLAN FOR FUTURE GRADES OF STREETS FOR CORRECT DEPTH INSTALLATION OF THE OFFSITE WATER MAINS.**
6. **ALL WATER SERVICES SHALL BE 3/4" COPPER SERVICE WITH 5/8" METER UNLESS OTHER WISE NOTED.**



© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE WRONGFUL CHAPTER'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE SUBJECT AMONG OTHER REMEDIES TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

UTILITY LAYOUT PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	1	2	3	4	5	6	7	8	9



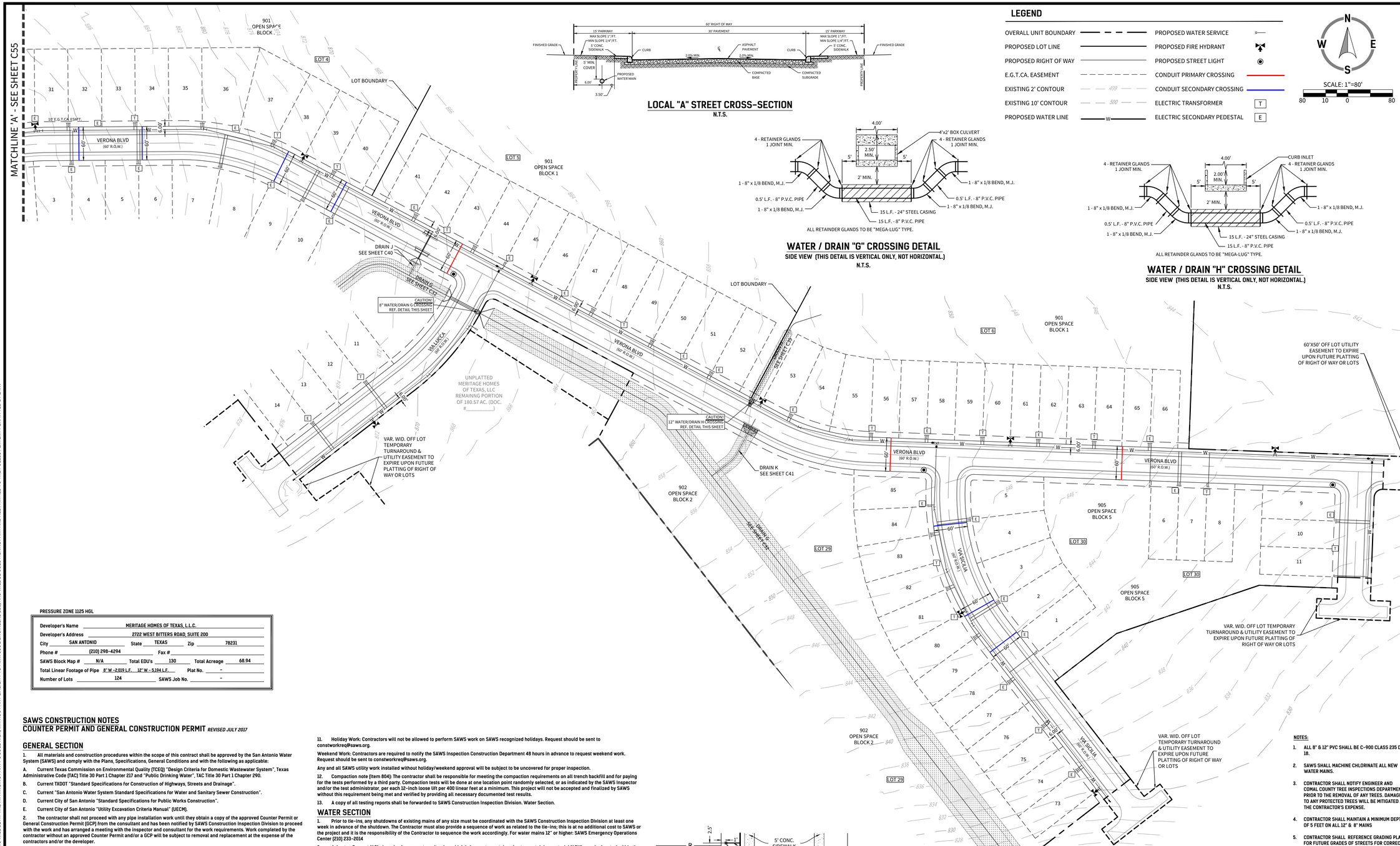
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C58

CUDEENGINEERS.COM

P:\04343.002\2-SHWG\4 Plans\Civil\UTILITY LAYOUT PLAN.dwg 2025/06/19 8:53am jgarcia

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.



LOCAL "A" STREET CROSS-SECTION
N.T.S.

WATER / DRAIN "G" CROSSING DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
N.T.S.

ALL RETAINDER GLANDS TO BE "MEGA-LUG" TYPE.

WATER / DRAIN "H" CROSSING DETAIL
SIDE VIEW (THIS DETAIL IS VERTICAL ONLY, NOT HORIZONTAL.)
N.T.S.

ALL RETAINDER GLANDS TO BE "MEGA-LUG" TYPE.

LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- PROPOSED RIGHT OF WAY
- E.G.T.CA. EASEMENT
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED WATER LINE
- PROPOSED WATER SERVICE
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- CONDUIT PRIMARY CROSSING
- CONDUIT SECONDARY CROSSING
- ELECTRIC TRANSFORMER (T)
- ELECTRIC SECONDARY PEDESTAL (E)

N W E S

SCALE: 1"=80'
80 10 0 80

PRESSURE ZONE 1125 HGL

Developer's Name	MERITAGE HOMES OF TEXAS, L.L.C.				
Developer's Address	2722 WEST BITTERS ROAD, SUITE 200				
City	SAN ANTONIO	State	TEXAS	Zip	78231
Phone #	(210) 298-4294	Fax #			
SAWS Block Map #	N/A	Total EDU's	130	Total Acreage	68.94
Total Linear Footage of Pipe	8" W - 2,019 L.F. 12" W - 5,194 L.F.			Plat No.	–
Number of Lots	124	SAWS Job No.		–	

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 Comal 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. (HSPD)

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 1125 feet where the static pressure will normally exceed 80 PSI. At all such locations where the ground level is below 1125 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.

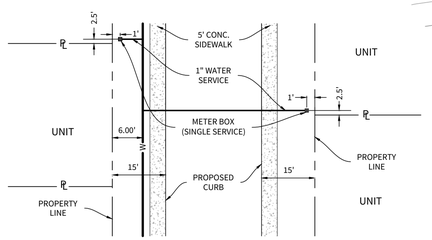
8. Backflow Prevention Devices:

- ☐ 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.

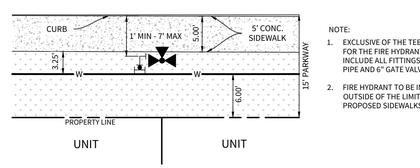
9. Final connection to the existing water main shall not be made until the water main has been pressure tested, chlorinated, and SAWS has released the main for tie–in and use.

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

11. All pipes shall be C–900 Class 235 DR 18, unless otherwise noted.



WATER METER BOX LOCATION (60' R.O.W.)
N.T.S.



LOCAL RESIDENTIAL FIRE HYDRANT DETAIL (5' SIDEWALK)
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.

TRENCH EXCAVATION PROTECTION

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

NOTES:
1. ALL 8" & 12" PVC SHALL BE C–900 CLASS 235 DR 18.
2. SAWS SHALL MACHINE CHLORINATE ALL NEW WATER MAINS.
3. CONTRACTOR SHALL NOTIFY ENGINEER AND COMAL COUNTY TREE INSPECTIONS DEPARTMENT PRIOR TO THE REMOVAL OF ANY TREES. DAMAGE TO ANY PROTECTED TREES WILL BE MITIGATED AT THE CONTRACTOR'S EXPENSE.
4. CONTRACTOR SHALL MAINTAIN A MINIMUM DEPTH OF 5 FEET ON ALL 12" & 8" MAINS
5. CONTRACTOR SHALL REFERENCE GRADING PLAN FOR FUTURE GRADES OF STREETS FOR CORRECT DEPTH INSTALLATION OF THE OFFSITE WATER MAINS.
6. ALL WATER SERVICES SHALL BE ¾" COPPER SERVICE WITH ¾" METER UNLESS OTHER WISE NOTED.

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT TO BE USED FOR ANY PURPOSE OR ON ANY PROJECT OTHER THAN SPECIFICALLY STATED AND DESCRIBED HEREIN WITHOUT THE EXPRESS AND WRITTEN CONSENT OF M.W. CUDE ENGINEERS LLC. ANY USE BEYOND AUTHORIZED PURPOSES AND/OR MODIFICATIONS TO THE PLANS SHALL BE AT THE UNDERSIGNED PARTY'S SOLE RISK WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE USED AGAINST ANY AND ALL PARTIES TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM
EST. 1980 CUDE ENGINEERS
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

CONTESSA SUBDIVISION UNIT 1

UTILITY LAYOUT PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS
DATE
1 2 3 4 5 6 7 8 9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
06/19/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C59

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

P:\04343\002\3-SWG\4-Plans\C55 UTILITY LAYOUT PLAN.dwg 2025/06/19 8:53am jgarcia

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

1. STORM WATER MANAGEMENT FACILITIES MUST BE INSTALLED PRIOR TO SITE CONSTRUCTION. SUBD. ORD. 6.01.003

2. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION

3. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.

4. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.

5. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE, ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

INSPECTIONS:

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

AS A MINIMUM, THE INSPECTOR SHALL OBSERVE: (1) SIGNIFICANT DISTURBED AREAS FOR EVIDENCE OF EROSION, (2) STORAGE AREAS FOR EVIDENCE OF LEAKAGE FROM THE EXPOSED STORED MATERIALS, (3) STRUCTURAL CONTROLS (ROCK BERM OUTLETS. SILT FENCES, DRAINAGE SWALES, ETC.) FOR EVIDENCE OF FAILURE OR EXCESS SILTATION (OVER 6 INCHES DEEP), (4) VEHICLE EXIT POINT FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING, (5) VEHICLE STORAGE AREAS FOR SIGNS OF LEAKING EQUIPMENT OR SPILLS, AND (6) CONCRETE TRUCK RINSE-OUT PIT FOR SIGNS OF POTENTIAL FAILURE. DEFICIENCIES NOTED DURING THE INSPECTION WILL BE CORRECTED AND DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION OR BEFORE THE NEXT ANTICIPATED STORM EVENT IF PRACTICABLE.

NOTES

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, EASEMENTS AND LOTS.
3. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
4. THE CITY AND/OR COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

SEE SHEET C66 FOR STORM WATER POLLUTION PREVENTION DETAILS

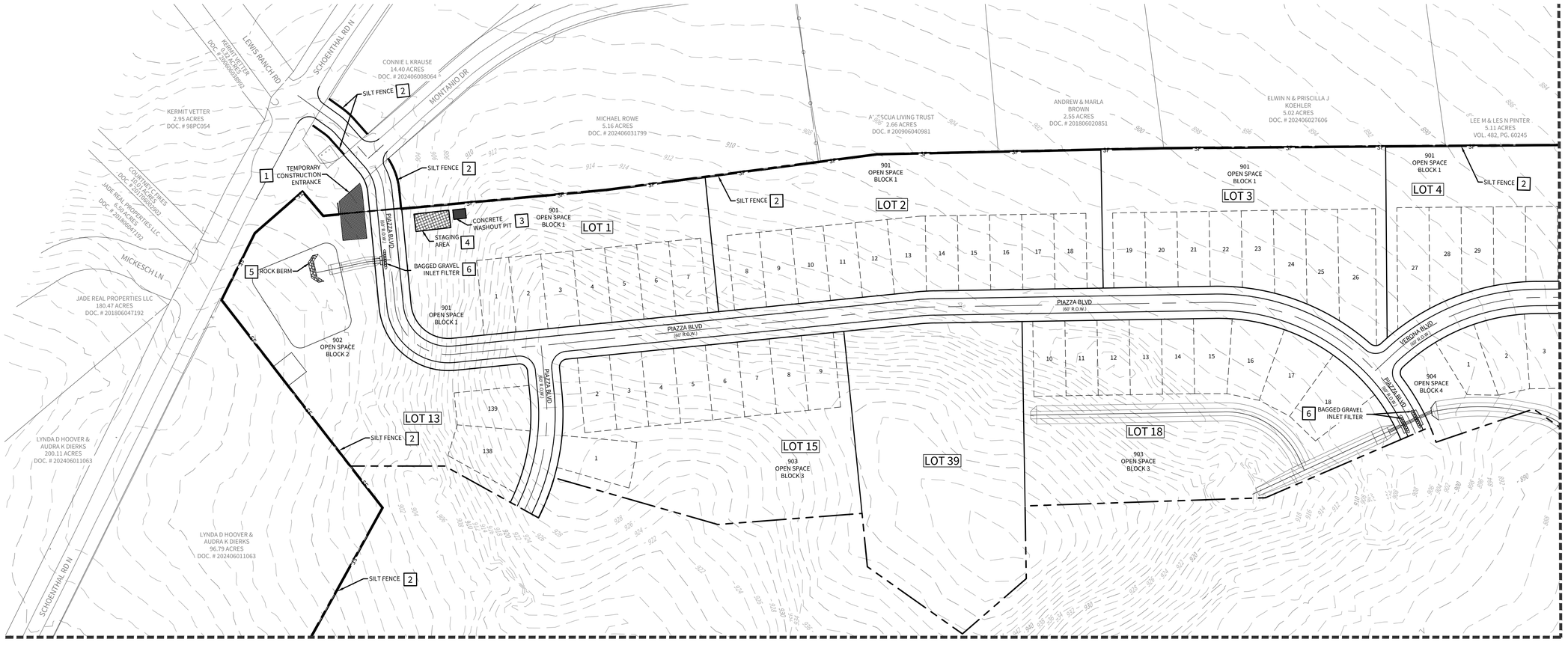
LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- EXISTING RIGHT OF WAY
- EXISTING 2' CONTOUR (499)
- EXISTING 10' CONTOUR (500)
- PROPOSED TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- PROPOSED ROCK BERM
- PROPOSED SILT FENCE (SF)
- STAGING AREA
- CONCRETE WASHOUT PIT
- BAGGED GRAVEL INLET FILTER

N W E S

SCALE: 1"=100'

100 50 0 100



© 2025 M.W. CUDE ENGINEERS LLC | THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE OTHER THAN THE ORIGINAL CLIENT FOR WHOM IT WAS PREPARED BY M.W. CUDE ENGINEERS LLC, AND FOR ANY PURPOSE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REUSE, REPRODUCTION, OR ADAPTATION OF THIS DOCUMENT SHALL BE AT THE EXPRESS CLIENT'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND SHALL BE UNDERSTOOD AND ANY ALL SUITS TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM

EST. 1980 CUDE ENGINEERS

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

CONTESSA SUBDIVISION UNIT 1

ONSITE STORM WATER POLLUTION PREVENTION PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C60

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.

C:\04343\02-DWG\4 Plans\GEO\ONSITE STORM WATER POLLUTION PREVENTION PLAN.dwg 2025/06/19 3:56pm jgarcia

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

1. STORM WATER MANAGEMENT FACILITIES MUST BE INSTALLED PRIOR TO SITE CONSTRUCTION. SUBD. ORD. 6.01.003

2. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION

3. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.

4. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.

5. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE, ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

INSPECTIONS:

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

AS A MINIMUM, THE INSPECTOR SHALL OBSERVE: (1) SIGNIFICANT DISTURBED AREAS FOR EVIDENCE OF EROSION, (2) STORAGE AREAS FOR EVIDENCE OF LEAKAGE FROM THE EXPOSED STORED MATERIALS, (3) STRUCTURAL CONTROLS (ROCK BERM OUTLETS. SILT FENCES, DRAINAGE SWALES, ETC.) FOR EVIDENCE OF FAILURE OR EXCESS SILTATION (OVER 6 INCHES DEEP). (4) VEHICLE EXIT POINT FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING, (5) VEHICLE STORAGE AREAS FOR SIGNS OF LEAKING EQUIPMENT OR SPILLS, AND (6) CONCRETE TRUCK RINSE-OUT PIT FOR SIGNS OF POTENTIAL FAILURE. DEFICIENCIES NOTED DURING THE INSPECTION WILL BE CORRECTED AND DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION OR BEFORE THE NEXT ANTICIPATED STORM EVENT IF PRACTICABLE.

NOTES

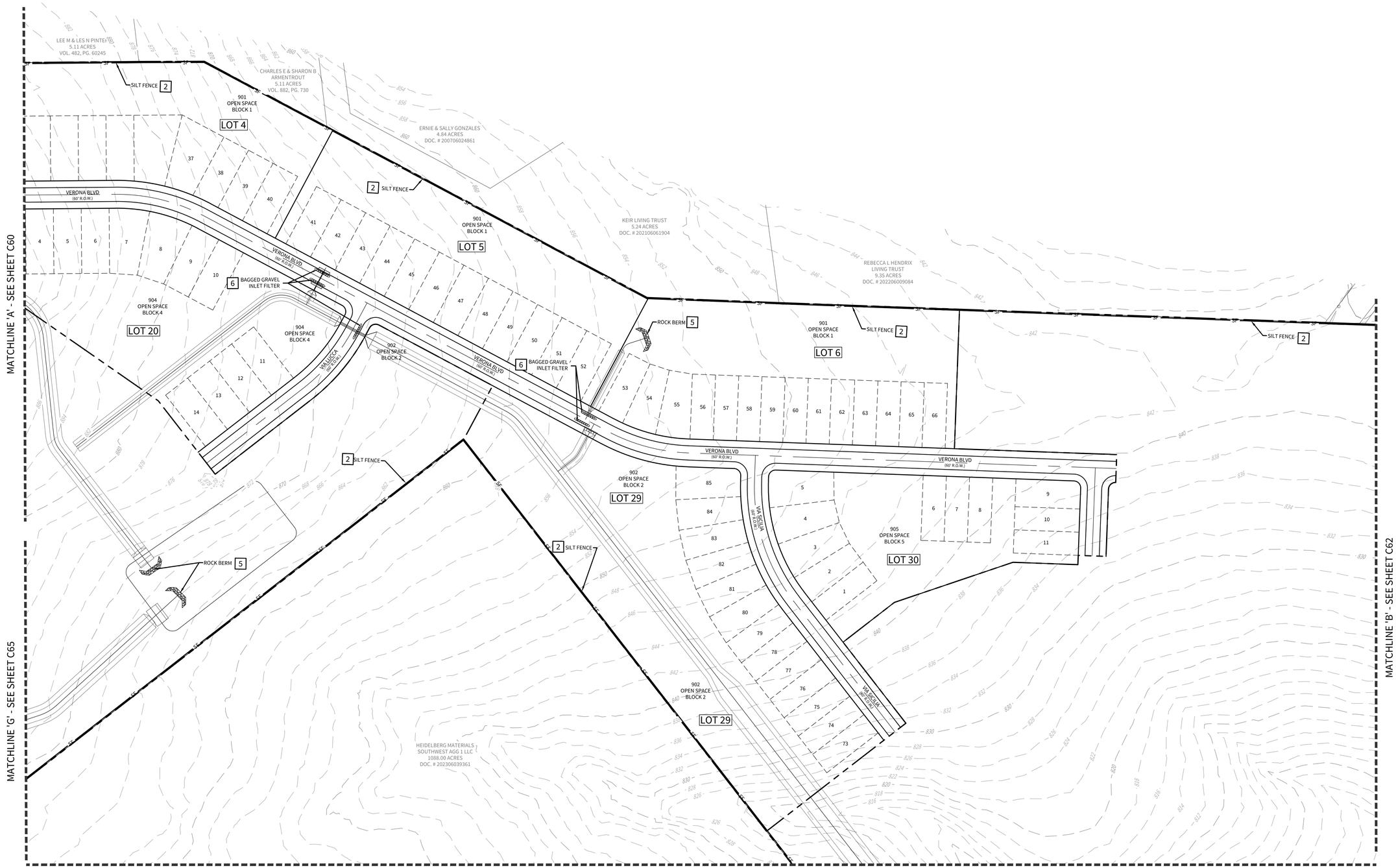
1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, EASEMENTS AND LOTS.
3. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
4. THE CITY AND/OR COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

SEE SHEET C66 FOR STORM WATER POLLUTION PREVENTION DETAILS

LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- EXISTING RIGHT OF WAY
- EXISTING 2' CONTOUR (499)
- EXISTING 10' CONTOUR (500)
- PROPOSED TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- PROPOSED ROCK BERM
- PROPOSED SILT FENCE (SF)
- STAGING AREA
- CONCRETE WASHOUT PIT
- BAGGED GRAVEL INLET FILTER

SCALE: 1"=100'
100 50 0 100



CUDEENGINEERS.COM
EST. 1980 CUDE ENGINEERS
4122 Pond Hill Road, Suite 101
San Antonio, Texas 78231
P:(210) 681.2951 F: (210) 523.7112

CONTESSA SUBDIVISION UNIT 1

ONSITE STORM WATER POLLUTION PREVENTION PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

	DATE
1	
2	
3	
4	
5	
6	
7	
8	
9	

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
06/19/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C61

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED USE, REPRODUCTION, OR DISTRIBUTION OF THIS DOCUMENT IS STRICTLY PROHIBITED AND WILL BE AT THE EXPRESS RISK OF THE PARTY MAKING SUCH USE. CUDE ENGINEERS LLC SHALL NOT BE LIABLE FOR, AND WILL BE HELD HARMLESS TO THE FULLEST EXTENT PERMITTED BY LAW, AGAINST ANY AND ALL CLAIMS, SUITS, OR ACTIONS ARISING FROM ANY UNAUTHORIZED REPRODUCTION, USE, OR DISTRIBUTION OF THIS DOCUMENT.

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

P:\04343.002\2-ENG\4-PLANS\SDP\C61_STORM WATER POLLUTION PREVENTION PLAN.dwg, 2025/06/19 5:58pm, jgarcia

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

1. STORM WATER MANAGEMENT FACILITIES MUST BE INSTALLED PRIOR TO SITE CONSTRUCTION. SUBD. ORD. 6.01.003

2. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION

3. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.

4. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.

5. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE, ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

INSPECTIONS:

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

AS A MINIMUM, THE INSPECTOR SHALL OBSERVE: (1) SIGNIFICANT DISTURBED AREAS FOR EVIDENCE OF EROSION, (2) STORAGE AREAS FOR EVIDENCE OF LEAKAGE FROM THE EXPOSED STORED MATERIALS, (3) STRUCTURAL CONTROLS (ROCK BERM OUTLETS. SILT FENCES, DRAINAGE SWALES, ETC.) FOR EVIDENCE OF FAILURE OR EXCESS SILTATION (OVER 6 INCHES DEEP). (4) VEHICLE EXIT POINT FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING, (5) VEHICLE STORAGE AREAS FOR SIGNS OF LEAKING EQUIPMENT OR SPILLS, AND (6) CONCRETE TRUCK RINSE-OUT PIT FOR SIGNS OF POTENTIAL FAILURE. DEFICIENCIES NOTED DURING THE INSPECTION WILL BE CORRECTED AND DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION OR BEFORE THE NEXT ANTICIPATED STORM EVENT IF PRACTICABLE.

NOTES

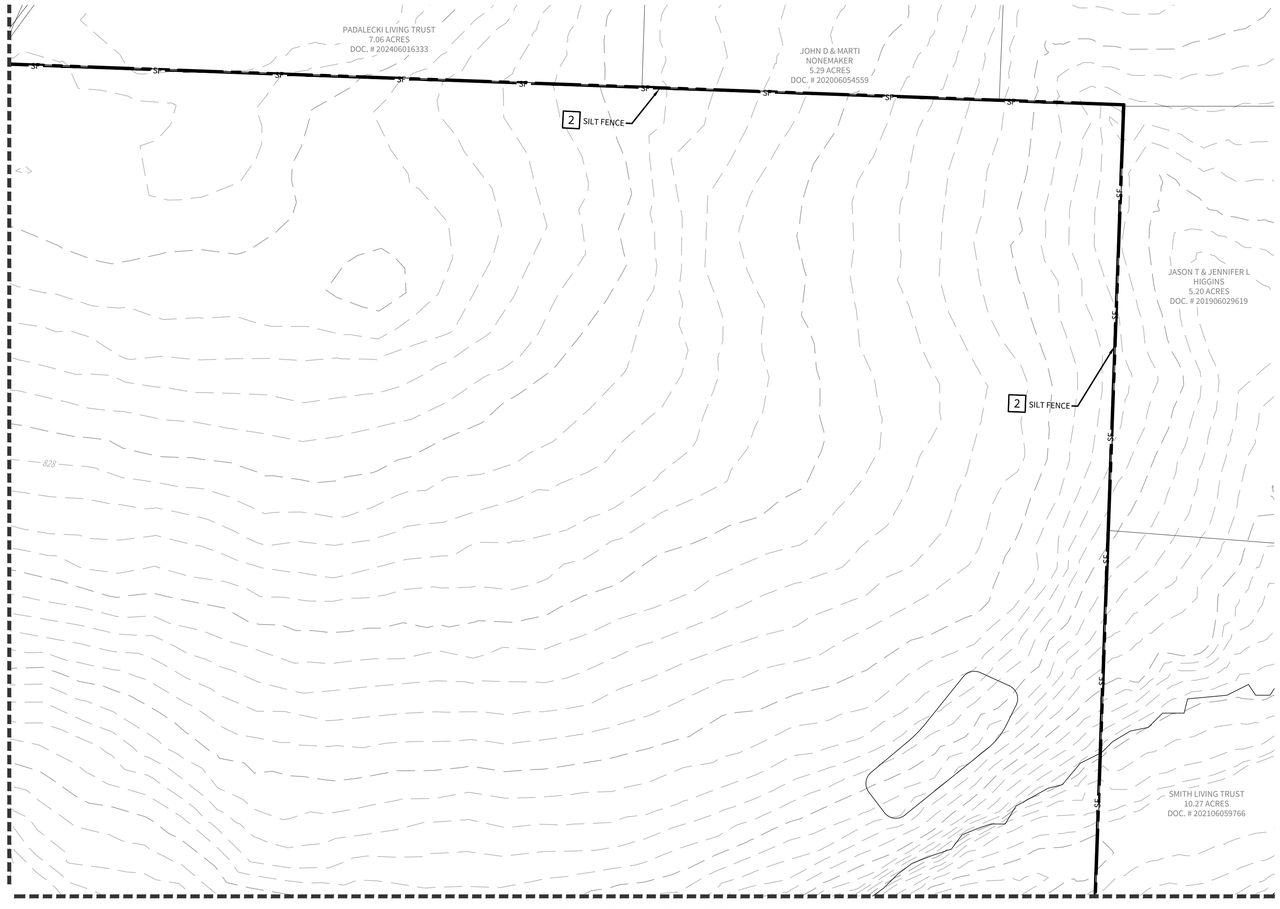
1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, EASEMENTS AND LOTS.
3. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
4. THE CITY AND/OR COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

SEE SHEET C66 FOR STORM WATER POLLUTION PREVENTION DETAILS

LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- EXISTING RIGHT OF WAY
- EXISTING 2' CONTOUR (499)
- EXISTING 10' CONTOUR (500)
- PROPOSED TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- PROPOSED ROCK BERM
- PROPOSED SILT FENCE (SF)
- STAGING AREA
- CONCRETE WASHOUT PIT
- BAGGED GRAVEL INLET FILTER

SCALE: 1"=100'
100 50 0 100



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

CONTESSA SUBDIVISION UNIT 1

ONSITE STORM WATER POLLUTION PREVENTION PLAN

DATE
06/19/2025
PROJECT NO.
04343.002
DRAWN BY
CG/JG/LJ/TCD
CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C62

CUDEENGINEERS.COM

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS, LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE, DISTRIBUTION, OR ADAPTATION SHALL BE AT THE PERSON'S OR ENTITY'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE LEGALLY PURSUED TO THE FULLEST EXTENT PERMITTED BY LAW.

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.

C:\04343.002\2 DWGS & Plans\GD\CDSITE STORM WATER POLLUTION PREVENTION PLAN.dwg, 2025/06/19 5:54pm, jgarcia

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

1. STORM WATER MANAGEMENT FACILITIES MUST BE INSTALLED PRIOR TO SITE CONSTRUCTION. SUBD. ORD. 6.01.003

2. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION

3. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.

4. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.

5. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE, ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

INSPECTIONS:

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

AS A MINIMUM, THE INSPECTOR SHALL OBSERVE: (1) SIGNIFICANT DISTURBED AREAS FOR EVIDENCE OF EROSION, (2) STORAGE AREAS FOR EVIDENCE OF LEAKAGE FROM THE EXPOSED STORED MATERIALS, (3) STRUCTURAL CONTROLS (ROCK BERM OUTLETS. SILT FENCES, DRAINAGE SWALES, ETC.) FOR EVIDENCE OF FAILURE OR EXCESS SILTATION (OVER 6 INCHES DEEP). (4) VEHICLE EXIT POINT FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING, (5) VEHICLE STORAGE AREAS FOR SIGNS OF LEAKING EQUIPMENT OR SPILLS, AND (6) CONCRETE TRUCK RINSE-OUT PIT FOR SIGNS OF POTENTIAL FAILURE. DEFICIENCIES NOTED DURING THE INSPECTION WILL BE CORRECTED AND DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION OR BEFORE THE NEXT ANTICIPATED STORM EVENT IF PRACTICABLE.

NOTES

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, EASEMENTS AND LOTS.
3. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
4. THE CITY AND/OR COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

SEE SHEET C66 FOR STORM WATER POLLUTION PREVENTION DETAILS

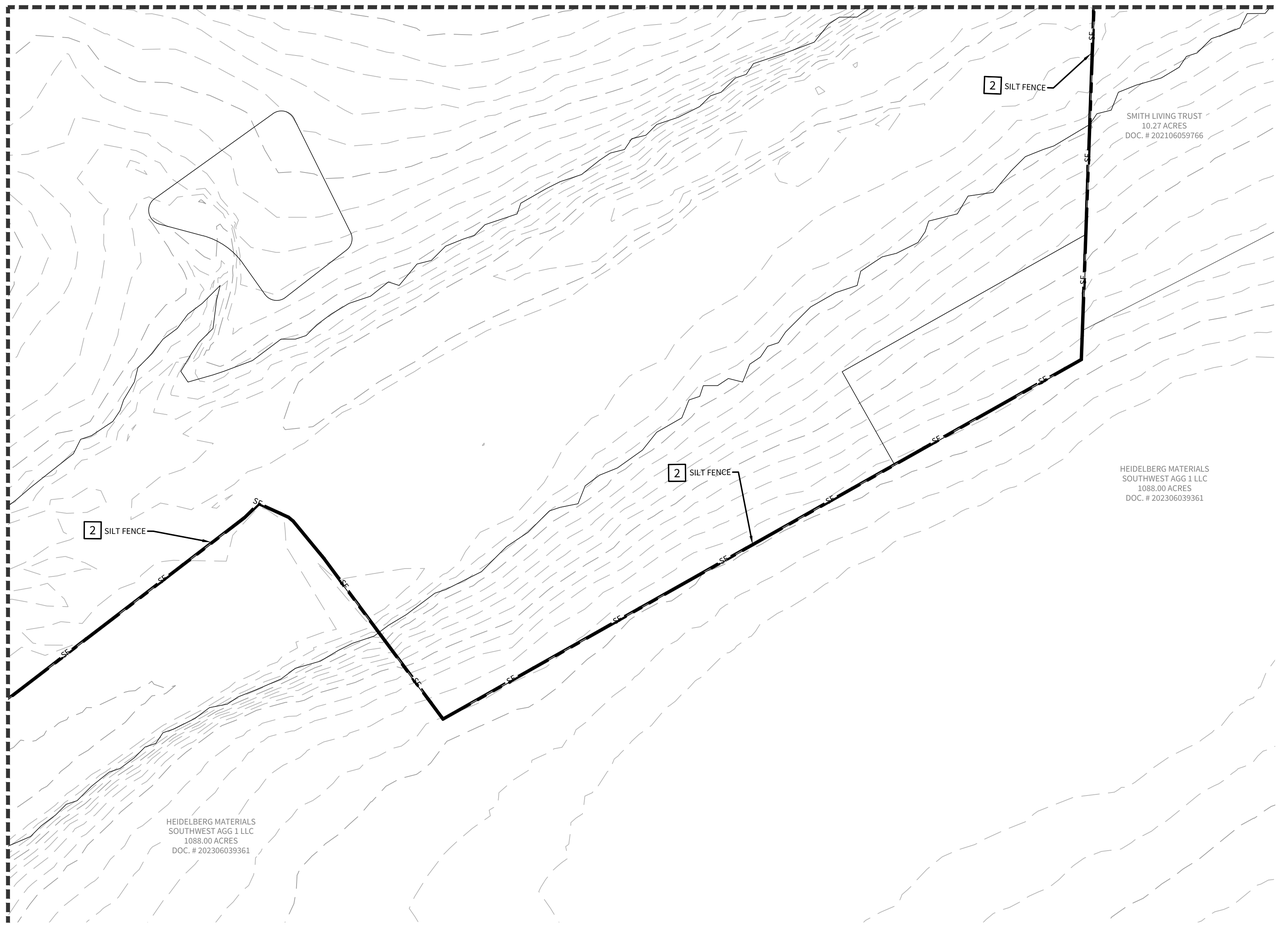
LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- EXISTING RIGHT OF WAY
- EXISTING 2' CONTOUR (499)
- EXISTING 10' CONTOUR (500)
- PROPOSED TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- PROPOSED ROCK BERM
- PROPOSED SILT FENCE (SF)
- STAGING AREA
- CONCRETE WASHOUT PIT
- BAGGED GRAVEL INLET FILTER

N E S W

SCALE: 1"=100'

100 50 0 100



CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

ONSITE STORM WATER POLLUTION PREVENTION PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C63

CUDEENGINEERS.COM

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC, WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE, DISTRIBUTION, OR ADAPTATION OF THIS DOCUMENT SHALL BE AT THE PERSON'S OR ENTITY'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND BE SUBJECT TO LEGAL ACTION AGAINST ANY AND ALL PARTIES TO THE FULLEST EXTENT PERMITTED BY LAW.

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.

G:\04343.002\2-DWG\LP Plans\SDD\CNSTR_STORM WATER POLLUTION PREVENTION PLAN.dwg 2025/06/19 5:54pm jgarcia

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

1. STORM WATER MANAGEMENT FACILITIES MUST BE INSTALLED PRIOR TO SITE CONSTRUCTION. SUBD. ORD. 6.01.003

2. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION

3. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.

4. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.

5. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE, ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

INSPECTIONS:

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

AS A MINIMUM, THE INSPECTOR SHALL OBSERVE: (1) SIGNIFICANT DISTURBED AREAS FOR EVIDENCE OF EROSION, (2) STORAGE AREAS FOR EVIDENCE OF LEAKAGE FROM THE EXPOSED STORED MATERIALS, (3) STRUCTURAL CONTROLS (ROCK BERM OUTLETS. SILT FENCES, DRAINAGE SWALES, ETC.) FOR EVIDENCE OF FAILURE OR EXCESS SILTATION (OVER 6 INCHES DEEP). (4) VEHICLE EXIT POINT FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING, (5) VEHICLE STORAGE AREAS FOR SIGNS OF LEAKING EQUIPMENT OR SPILLS, AND (6) CONCRETE TRUCK RINSE-OUT PIT FOR SIGNS OF POTENTIAL FAILURE. DEFICIENCIES NOTED DURING THE INSPECTION WILL BE CORRECTED AND DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION OR BEFORE THE NEXT ANTICIPATED STORM EVENT IF PRACTICABLE.

NOTES

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, EASEMENTS AND LOTS.
3. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
4. THE CITY AND/OR COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

SEE SHEET C66 FOR STORM WATER POLLUTION PREVENTION DETAILS

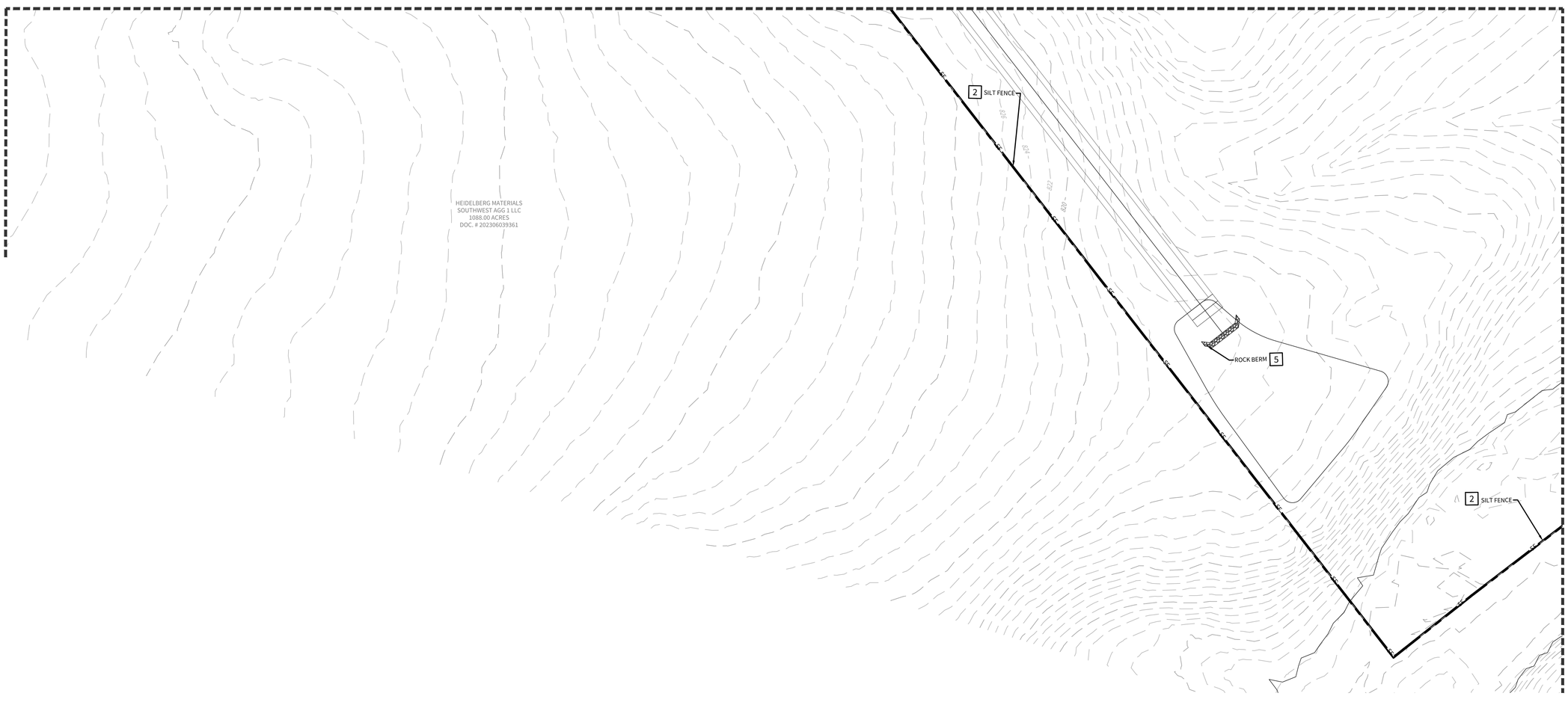
LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- EXISTING RIGHT OF WAY
- EXISTING 2' CONTOUR (499)
- EXISTING 10' CONTOUR (500)
- PROPOSED TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- PROPOSED ROCK BERM
- PROPOSED SILT FENCE (SF)
- STAGING AREA
- CONCRETE WASHOUT PIT
- BAGGED GRAVEL INLET FILTER

N W E S

SCALE: 1"=100'

100 50 0 100



CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

ONSITE STORM WATER POLLUTION PREVENTION PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C64

CUDEENGINEERS.COM

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE OTHER THAN THE ORIGINAL RECIPIENT WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REUSE OR MODIFICATION OF THIS DOCUMENT SHALL BE AT THE RECIPIENT'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND SHALL BE SUBJECT TO INDEMNIFICATION BY THE RECIPIENT FOR ANY AND ALL CLAIMS TO THE FULLEST EXTENT PERMITTED BY LAW.

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

P:\04343.002\2-ENG\4-Plans\05-ONSITE STORM WATER POLLUT\PDF\PRESENTATION\PRESENTATION PLAN.dwg, 2025/06/19 5:54pm, jgarcia

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

1. STORM WATER MANAGEMENT FACILITIES MUST BE INSTALLED PRIOR TO SITE CONSTRUCTION. SUBD. ORD. 6.01.003

2. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION

3. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.

4. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.

5. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE, ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

INSPECTIONS:

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

AS A MINIMUM, THE INSPECTOR SHALL OBSERVE: (1) SIGNIFICANT DISTURBED AREAS FOR EVIDENCE OF EROSION, (2) STORAGE AREAS FOR EVIDENCE OF LEAKAGE FROM THE EXPOSED STORED MATERIALS, (3) STRUCTURAL CONTROLS (ROCK BERM OUTLETS. SILT FENCES, DRAINAGE SWALES, ETC.) FOR EVIDENCE OF FAILURE OR EXCESS SILTATION (OVER 6 INCHES DEEP). (4) VEHICLE EXIT POINT FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING, (5) VEHICLE STORAGE AREAS FOR SIGNS OF LEAKING EQUIPMENT OR SPILLS, AND (6) CONCRETE TRUCK RINSE-OUT PIT FOR SIGNS OF POTENTIAL FAILURE. DEFICIENCIES NOTED DURING THE INSPECTION WILL BE CORRECTED AND DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION OR BEFORE THE NEXT ANTICIPATED STORM EVENT IF PRACTICABLE.

NOTES

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, EASEMENTS AND LOTS.
3. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
4. THE CITY AND/OR COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

SEE SHEET C66 FOR STORM WATER POLLUTION PREVENTION DETAILS

LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- EXISTING RIGHT OF WAY
- EXISTING 2' CONTOUR (499)
- EXISTING 10' CONTOUR (500)
- PROPOSED TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- PROPOSED ROCK BERM
- PROPOSED SILT FENCE (SF)
- STAGING AREA
- CONCRETE WASHOUT PIT
- BAGGED GRAVEL INLET FILTER

SCALE: 1"=100'
100 50 0 100



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

CONTESSA SUBDIVISION UNIT 1

ONSITE STORM WATER POLLUTION PREVENTION PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	A	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

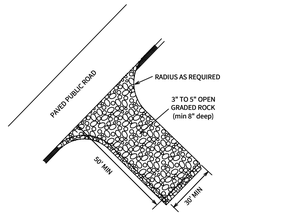
C65

CUDEENGINEERS.COM

P:\04343\002\2 DWG\4 Plans\C65 ONSITE STORM WATER POLLUTION PREVENTION PLAN.dwg 2025/06/19 5:54pm jgarcia

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY USE OR ADAPTATION OF THIS DOCUMENT BY ANY PARTY FOR ANY PURPOSE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC SHALL BE AT THE PARTY'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE CONSIDERED AN INFRINGEMENT AGAINST M.W. CUDE ENGINEERS LLC'S COPYRIGHTS. ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE WRONGFUL PARTY'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND WILL BE CONSIDERED AN INFRINGEMENT AGAINST M.W. CUDE ENGINEERS LLC'S COPYRIGHTS. ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT SHALL BE SUBJECT TO ALL COSTS PERMITTED BY LAW.

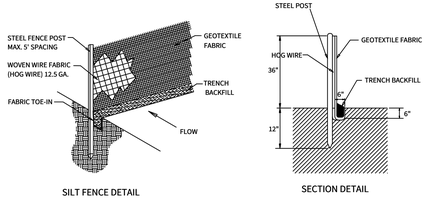
REPRODUCTION OF THE ORIGINAL SIGNED AND SEALED PLAN AND/OR ELECTRONIC MEDIA MAY HAVE BEEN INADVERTENTLY ALTERED. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SCALE OF THE DOCUMENT AND CONTACTING CUDE ENGINEERS TO VERIFY DISCREPANCIES PRIOR TO CONSTRUCTION.



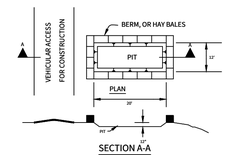
STABILIZED CONSTRUCTION EXIT NOTES:

1. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ON PUBLIC ROADWAY.
2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS MUST BE REMOVED IMMEDIATELY.

1 TEMPORARY CONSTRUCTION ENTRANCE/EXIT
N.T.S.



2 STANDARD SILT FENCE
N.T.S.



GENERAL NOTES:

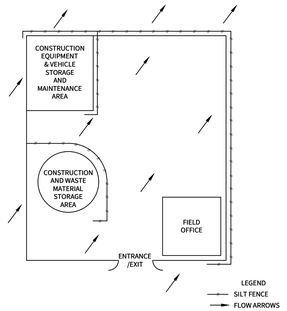
- Detail above illustrates minimum dimensions. Pit can be increased in size depending on expected frequency of use. construction traffic.
- If hay bales are used, they shall be placed in accordance with details shown on Exhibit for hay bales.

Washout pit shall be located in an area easily accessible to

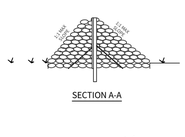
Washout pit shall not be located in areas subject to inundation from storm water runoff.

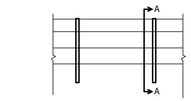
- Washout pit shall be lined with a 10-mil thick polyethylene sheeting free of holes, tears and other defects.

3 CONCRETE TRUCK WASHOUT PIT
N.T.S.

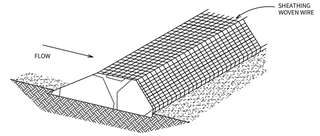


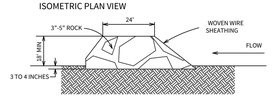
4 TYP. CONSTRUCTION STAGING AREA
N.T.S.



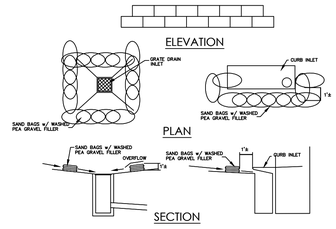


5 ROCK BERM W/ SILT FENCE DETAIL
N.T.S.





ROCK BERM
N.T.S.



BAGGED GRAVEL INLET FILTER NOTES

1. THE GRAVEL BAG MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, POLYAMIDE OR COTTON BURLAP WOVEN FABRIC, MINIMUM UNIT WEIGHT 4 OZ/YD 2 , MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRAVIOLET STABILITY EXCEEDING 70 PERCENT.
2. THE BAG LENGTH SHOULD BE 24 INCHES, WIDTH SHOULD BE 18 INCHES AND THICKNESS SHOULD BE 6 INCHES.
3. THE GRAVEL BAGS SHOULD BE FILLED WITH ½" 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.

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

1. STORM WATER MANAGEMENT FACILITIES MUST BE INSTALLED PRIOR TO SITE CONSTRUCTION. SUBD. ORD. 6.01.003

2. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION

3. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.

4. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.

5. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE, ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

INSPECTIONS:

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

AS A MINIMUM, THE INSPECTOR SHALL OBSERVE: (1) SIGNIFICANT DISTURBED AREAS FOR EVIDENCE OF EROSION, (2) STORAGE AREAS FOR EVIDENCE OF LEAKAGE FROM THE EXPOSED STORED MATERIALS, (3) STRUCTURAL CONTROLS (ROCK BERM OUTLETS. SILT FENCES, DRAINAGE SWALES, ETC.) FOR EVIDENCE OF FAILURE OR EXCESS SILTATION (OVER 6 INCHES DEEP). (4) VEHICLE EXIT POINT FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING, (5) VEHICLE STORAGE AREAS FOR SIGNS OF LEAKING EQUIPMENT OR SPILLS, AND (6) CONCRETE TRUCK RINSE-OUT PIT FOR SIGNS OF POTENTIAL FAILURE. DEFICIENCIES NOTED DURING THE INSPECTION WILL BE CORRECTED AND DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION OR BEFORE THE NEXT ANTICIPATED STORM EVENT IF PRACTICABLE.

NOTES

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, EASEMENTS AND LOTS.
3. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
4. THE CITY AND/OR COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE OTHER THAN THE ORIGINAL INTENDED BY M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC, AND ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE ON ANY OTHER PROJECT OR EXTENSION TO THIS PROJECT WITHOUT AGREEMENT BY M.W. CUDE ENGINEERS LLC AND WITHOUT ADAPTATION BY M.W. CUDE ENGINEERS LLC, AND M.W. CUDE ENGINEERS LLC SHALL BE HELD HARMLESS AND HELD TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

ONSITE STORM WATER POLLUTION PREVENTION DETAILS

DATE
06/19/2025

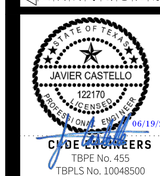
PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

NO.	DATE
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	



C66

CUDEENGINEERS.COM

P:\04343\002\2 ENGR\Plans\CAD\CIVIL\ESC\04343 WATER POLLUTION PREVENTION DETAILS.dwg 2025/06/19 5:54pm jgarcia

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.

NOTES:
1. MOISTURE DENSITY COMPACTION TESTING FREQUENCY- WATER MAIN TRENCHES REQUIRED EVERY 300 LF FOR EACH VERTICAL FOOT OF COMPACTED BACKFILL. SERVICES RANDOMLY SELECTED AS REQUIRED BY SAWS INSPECTOR.

2. ALL 12" PVC SHALL BE C-900 CLASS 235 DR 18.

3. ALL DUCTILE IRON PIPE TO BE AMERICAN, ZINC COATED, AWWA/ANSI C-151.

4. CONTRACTOR SHALL MAINTAIN A MINIMUM DEPTH OF 5 FEET ON ALL 12" MAINS.

4. FIRE HYDRANTS SHALL BE MUELLER OR EJ TYPE AND SHALL BE 1' MINIMUM AND 7' MAXIMUM FROM THE BACK OF CURB.

5. DISINFECTION SHALL BE BY MACHINE CHLORINATION.

6. ALL TESTING AND TEST REPORTS SHALL BE COORDINATED WITH SAWS INSPECTOR BY CONTRACTOR.

NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE 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.

TRENCH EXCAVATION PROTECTION

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

CAUTION!!

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

CAUTION!!

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

FLOODPLAIN NOTICE:

PORTIONS OF THE PROPOSED CONSTRUCTION LIE WITHIN THE FEMA 100-YEAR FLOODPLAIN. CONTRACTOR SHALL REVIEW FLOODPLAIN LIMITS SHOWN ON THE PLANS AND COORDINATE ALL ACTIVITIES ACCORDINGLY. NO MATERIALS, EQUIPMENT, OR FILL SHALL BE PLACED IN THE FLOODPLAIN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ANY REQUIRED FLOODPLAIN DEVELOPMENT PERMIT FROM COMAL COUNTY.

LEGEND

- OVERALL UNIT BOUNDARY
- EXISTING LOT LINE
- EXISTING RIGHT OF WAY
- EXISTING 2' CONTOUR (499)
- EXISTING 10' CONTOUR (500)
- EXISTING WATER LINE (Wx)
- PROPOSED WATER LINE (W)
- PROPOSED FIRE HYDRANT
- JOINT RESTRAINT (X")
- JOINT RESTRAINT ENTIRE LENGTH (X')

SCALE: 1"=50'
50 25 0 50

SEE SHEET C70 FOR SAWS CONSTRUCTION & GENERAL NOTES

CONNIE L KRAUSE
14.40 ACRES
DOC. # 202406008064

PROPOSED ONSITE WATER LINE
SEE SHEET C55

MONTANIO DR

PIAZZA BLVD
(90' R.O.W.)

1 - 12" x 12" ANCHOR TEE, M.J.
1 - 12" x 8" REDUCER, M.J.
1 - 12" GATE VALVE, M.J.
1 - 8" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE
1 - 2" BLOWOFF ASSEMBLY (PERM.)
1 - 8"X2" THR. DI. ECCENTRIC REDUCER, M.J. (PERM.)

EX. OHE POWER POLE TO BE RELOCATED

EX. OHE POWER POLE

1 - 12" 1/32 BEND, M.J.

CONTRACTOR TO OPEN CUT 100 L.F. & REPLACE TO EXISTING CONDITIONS

86 L.F. - 12" PVC C-900

EX. STREET SIGN TO REMAIN

336 L.F. - 12" PVC C-900

CONTESSA SUBDIVISION
UNIT 1

PROPERTY LINE

1 - 12" 1/32 BEND, M.J.

141 L.F. - 12" PVC C-900

1 - 12" GATE VALVE, M.J.
1 - 12" x 6" TEE, M.J., ANCHOR
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE
1 - STD. FIRE HYDRANT
1 - 6" D.I. PIPE, CUT AS REQD.

LYNDA D HOOVER &
AUDRA K DIERKS
96.79 ACRES
DOC. # 202406011063

CAUTION
CONTRACTOR TO USE CAUTION & PROTECT
EX. CULVERT W/ SAFETY END TREATMENT

PROPERTY LINE

957 L.F. - 12" PVC C-900 (OVERALL)

PROPERTY LINE

SCHOENTHAL RD N

SCHOENTHAL RD N

CONNIE L KRAUSE
45.13 ACRES
DOC. # 202406008064

LEWIS RANCH RD

KERMIT VETTER
2.95 ACRES
DOC. # 98PC054

KERMIT VETTER
2.95 ACRES
DOC. # 98PC054

COURTNEY C FIRES
1.01 ACRES
DOC. # 201706002802

JADE REAL PROPERTIES LLC
180.47 ACRES
DOC. # 201806047192

MICKESCH LN

JADE REAL PROPERTIES LLC
180.47 ACRES
DOC. # 201806047192

LYNDA D HOOVER &
AUDRA K DIERKS
200.11 ACRES
DOC. # 202406011063

MATCHLINE 'A' - THIS SHEET

MATCHLINE 'A' - THIS SHEET

957 L.F. - 12" PVC C-900 (OVERALL)

CAUTION
CONTRACTOR TO USE CAUTION & PROTECT
EX. CULVERT W/ SAFETY END TREATMENT

STREET SIGN TO REMAIN

PROPERTY LINE

1 - 12" GATE VALVE, M.J.
1 - 12" x 6" TEE, M.J., ANCHOR
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE
1 - STD. FIRE HYDRANT
1 - 6" D.I. PIPE, CUT AS REQD.

969 L.F. - 12" PVC C-900

PROPERTY LINE

1 - 12" GATE VALVE, M.J.
1 - 12" x 6" TEE, M.J., ANCHOR
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE
1 - STD. FIRE HYDRANT
1 - 6" D.I. PIPE, CUT AS REQD.

EX. GRAVEL DRIVEWAY

996 L.F. - 12" PVC C-900 (OVERALL)

SCHOENTHAL RD N

SCHOENTHAL RD N

LYNDA D HOOVER &
AUDRA K DIERKS
96.79 ACRES
DOC. # 202406011063

LYNDA D HOOVER &
AUDRA K DIERKS
200.11 ACRES
DOC. # 202406011063

MATCHLINE 'B' - THIS SHEET

MATCHLINE 'B' - THIS SHEET

CONTRACTOR SHALL SAW-CUT AND REMOVE EXISTING CONCRETE SLOPE AS REQUIRED TO INSTALL THE 12" WATER MAIN. (+/- 85.74 LF) TRENCH SHALL BE EXCAVATED WITH APPROPRIATE TRENCH SAFETY MEASURES PER OSHA REGULATIONS. WATER MAIN SHALL BE INSTALLED WITH PROPER BEDDING AND BACKFILL IN ACCORDANCE WITH SAWS SPECIFICATIONS.

FOLLOWING BACKFILL AND COMPACTION, THE CONCRETE SLOPE SHALL BE RESTORED TO MATCH EXISTING THICKNESS, REINFORCEMENT, FINISH, AND SLOPE GRADE, OR BETTER. CONTRACTOR SHALL INSTALL #5 EPOXY-COATED REBAR DOWELS, MINIMUM 8 INCHES EMBEDMENT, INTO EXISTING CONCRETE SLOPE AT 24-INCH INTERVALS ALONG BOTH SIDES OF THE REMOVED SECTION. DOWELS SHALL BE SECURED AND SHALL EXTEND A MINIMUM OF 18 INCHES INTO THE NEW CONCRETE POUR.

ALL RESTORATION SHALL CONFORM TO CURRENT CITY OF SAN ANTONIO, COMAL COUNTY, AND SAWS STANDARDS. CONTRACTOR SHALL VERIFY EXISTING CONCRETE SECTION THICKNESS AND REINFORCEMENT PRIOR TO DEMOLITION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

LYNDA D HOOVER &
AUDRA K DIERKS
96.79 ACRES
DOC. # 202406011063

PROPERTY LINE

CAUTION
CONTRACTOR TO USE CAUTION & PROTECT
EX. CULVERT W/ SAFETY END
TREATMENT AND CATTLE CROSSING

EX. MAILBOX TO REMAIN

CONTRACTOR TO OPEN CUT EXISTING DRIVEWAY & RESTORE TO EXISTING OR BETTER CONDITIONS

EX. GRAVEL DRIVEWAY

REMOVE AND REPAIR FENCE TO EXISTING OR BETTER CONDITIONS

STREET SIGN TO REMAIN

REMOVE AND REPAIR FENCE TO EXISTING OR BETTER CONDITIONS

STREET SIGN TO REMAIN

PROPERTY LINE

996 L.F. - 12" PVC C-900 (OVERALL)

SCHOENTHAL RD N

1 - 12" GATE VALVE, M.J.
1 - 12" x 6" TEE, M.J., ANCHOR
1 - 6" x 1/4 BEND, M.J.
1 - 6" GATE VALVE, M.J.
2 - 6" VALVE BOX, COMPLETE
1 - STD. FIRE HYDRANT
1 - 6" D.I. PIPE, CUT AS REQD.
1 - 12" x 1/32 BEND, M.J.

HEIDELBERG MATERIALS
SOUTHWEST AGG 1 LLC
1088.00 ACRES
DOC. # 202306039361

CONTRACTOR SHALL SAW-CUT AND REMOVE EXISTING CONCRETE SLOPE AS REQUIRED TO INSTALL THE 12" WATER MAIN. (+/- 85.74 LF) TRENCH SHALL BE EXCAVATED WITH APPROPRIATE TRENCH SAFETY MEASURES PER OSHA REGULATIONS. WATER MAIN SHALL BE INSTALLED WITH PROPER BEDDING AND BACKFILL IN ACCORDANCE WITH SAWS SPECIFICATIONS.

FOLLOWING BACKFILL AND COMPACTION, THE CONCRETE SLOPE SHALL BE RESTORED TO MATCH EXISTING THICKNESS, REINFORCEMENT, FINISH, AND SLOPE GRADE, OR BETTER. CONTRACTOR SHALL INSTALL #5 EPOXY-COATED REBAR DOWELS, MINIMUM 8 INCHES EMBEDMENT, INTO EXISTING CONCRETE SLOPE AT 24-INCH INTERVALS ALONG BOTH SIDES OF THE REMOVED SECTION. DOWELS SHALL BE SECURED AND SHALL EXTEND A MINIMUM OF 18 INCHES INTO THE NEW CONCRETE POUR.

ALL RESTORATION SHALL CONFORM TO CURRENT CITY OF SAN ANTONIO, COMAL COUNTY, AND SAWS STANDARDS. CONTRACTOR SHALL VERIFY EXISTING CONCRETE SECTION THICKNESS AND REINFORCEMENT PRIOR TO DEMOLITION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

LIMITS OF FEMA 100 YR FLOODPLAIN

EX. EDGE OF ASPHALT SHOULDER

CAUTION
CONTRACTOR TO USE CAUTION & PROTECT
MULTIPLE OVERSIZE CONCRETE
CULVERTS WITH CATTLE CROSSING

PROPERTY LINE

1000 L.F. - 12" PVC C-900 (OVERALL)

SCHOENTHAL RD N

EX. CONC. STRUCTURE TO REMAIN

EX. GUARDRAIL TO REMAIN

EX. GUARDRAIL TO REMAIN

LIMITS OF FEMA 100 YR FLOODPLAIN

LYNDA D HOOVER &
AUDRA K DIERKS
200.11 ACRES
DOC. # 202406011063

MATCHLINE 'C' - SEE SHEET C68

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY MODIFICATION OF THIS DOCUMENT WITHOUT THE WRITTEN APPROVAL OF M.W. CUDE ENGINEERS LLC SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE OR DISTRIBUTION OF THIS DOCUMENT WILL BE STRICTLY ENFORCED AND PROSECUTED TO THE FULLEST EXTENT PERMITTED BY LAW.

CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

OFFSITE WATER DISTRIBUTION - PHASE I

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	
1	
2	
3	
4	
5	
6	
7	
8	
9	

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C67

CUDEENGINEERS.COM

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

P:\04343.002\2-SHEETS PlansCAST DISTRIBUTION - PHASE I.dwg 2025/06/19 5:05pm jgarcia

NOTES:
1. MOISTURE DENSITY COMPACTION TESTING FREQUENCY- WATER MAIN TRENCHES REQUIRED EVERY 300 LF FOR EACH VERTICAL FOOT OF COMPACTED BACKFILL. SERVICES RANDOMLY SELECTED AS REQUIRED BY SAWS INSPECTOR.

2. ALL 12" PVC SHALL BE C-900 CLASS 235 DR 18.

3. ALL DUCTILE IRON PIPE TO BE AMERICAN, ZINC COATED, AWWA/ANSI C-151.

4. CONTRACTOR SHALL MAINTAIN A MINIMUM DEPTH OF 5 FEET ON ALL 12" MAINS.

4. FIRE HYDRANTS SHALL BE MUELLER OR EJ TYPE AND SHALL BE 1' MINIMUM AND 7' MAXIMUM FROM THE BACK OF CURB.

5. DISINFECTION SHALL BE BY MACHINE CHLORINATION.

6. ALL TESTING AND TEST REPORTS SHALL BE COORDINATED WITH SAWS INSPECTOR BY CONTRACTOR.

NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE 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.

TRENCH EXCAVATION PROTECTION

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

CAUTION!!

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

CAUTION!!

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

FLOODPLAIN NOTICE:

PORTIONS OF THE PROPOSED CONSTRUCTION LIE WITHIN THE FEMA 100-YEAR FLOODPLAIN. CONTRACTOR SHALL REVIEW FLOODPLAIN LIMITS SHOWN ON THE PLANS AND COORDINATE ALL ACTIVITIES ACCORDINGLY. NO MATERIALS, EQUIPMENT, OR FILL SHALL BE PLACED IN THE FLOODPLAIN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ANY REQUIRED FLOODPLAIN DEVELOPMENT PERMIT FROM COMAL COUNTY.

LEGEND

- OVERALL UNIT BOUNDARY
- EXISTING LOT LINE
- EXISTING RIGHT OF WAY
- EXISTING 2' CONTOUR (409)
- EXISTING 10' CONTOUR (500)
- EXISTING WATER LINE (Wx)
- PROPOSED WATER LINE (W)
- PROPOSED FIRE HYDRANT
- JOINT RESTRAINT (X')
- JOINT RESTRAINT ENTIRE LENGTH (X)

SCALE: 1"=50'
50 25 0 50

SEE SHEET C70 FOR SAWS CONSTRUCTION & GENERAL NOTES

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND APPROPRIATE RELEASE FROM M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY REUSE OF THIS DOCUMENT FOR ANY OTHER PURPOSE OR ON ANY OTHER PROJECT SHALL BE AT THE USER'S SOLE RISK AND WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC AND THE USER SHALL INDEMNIFY AND HOLD M.W. CUDE ENGINEERS LLC HARMLESS AGAINST ANY AND ALL CLAIMS, DAMAGES, LOSS AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.

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.

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

CONTESSA SUBDIVISION UNIT 1

OFFSITE WATER DISTRIBUTION - PHASE I

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

NO.	DATE
1	
2	
3	
4	
5	
6	
7	
8	
9	

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C68

CUDEENGINEERS.COM

P:\04343\002\SHEETS\PLANS\C68 OFFSITE WATER DISTRIBUTION - PHASE I.dwg 2025/06/19 5:56pm jgarcia

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 Kendall 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. 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.

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

NOTES:

1. MOISTURE DENSITY COMPACTION TESTING FREQUENCY- WATER MAIN TRENCHES REQUIRED EVERY 300 LF FOR EACH VERTICAL FOOT OF COMPACTED BACKFILL. SERVICES RANDOMLY SELECTED AS REQUIRED BY SAWS INSPECTOR.

2. ALL 12" PVC SHALL BE C-900 CLASS 235 DR 18.

3. ALL DUCTILE IRON PIPE TO BE AMERICAN, ZINC COATED, AWWA/ANSI C-151.

4. CONTRACTOR SHALL MAINTAIN A MINIMUM DEPTH OF 5 FEET ON ALL 12" MAINS.

4. FIRE HYDRANTS SHALL BE MUELLER OR EJ TYPE AND SHALL BE 1' MINIMUM AND 7' MAXIMUM FROM THE BACK OF CURB.

5. DISINFECTION SHALL BE BY MACHINE CHLORINATION.

6. ALL TESTING AND TEST REPORTS SHALL BE COORDINATED WITH SAWS INSPECTOR BY CONTRACTOR.

SEE SHEET C70 FOR SAWS CONSTRUCTION & GENERAL NOTES

NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING 98% COMPACTION ON ALL TRENCH BACKFILL AND PAYING FOR THE TESTS TO BE PERFORMED BY A THIRD PARTY. COMPACTION TEST WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED OR AS INDICATED BY THE 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.

TRENCH NOTE

CONTRACTOR TO FOLLOW TRENCH EXCAVATION DETAIL PER JURISDICTION.

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.

CAUTION!!

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

CAUTION!!

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

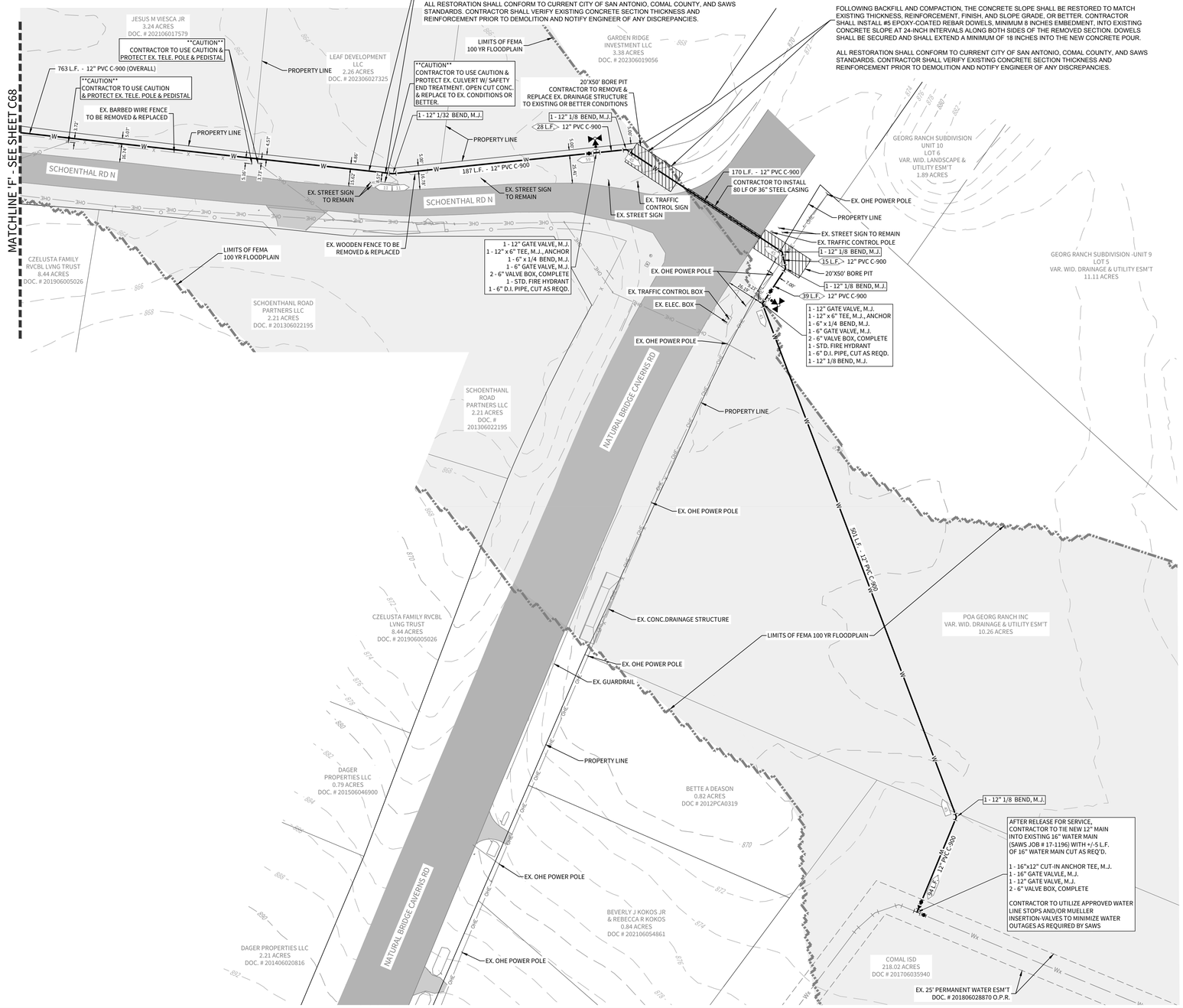
FLOODPLAIN NOTICE:

PORTIONS OF THE PROPOSED CONSTRUCTION LIE WITHIN THE FEMA 100-YEAR FLOODPLAIN. CONTRACTOR SHALL REVIEW FLOODPLAIN LIMITS SHOWN ON THE PLANS AND COORDINATE ALL ACTIVITIES ACCORDINGLY. NO MATERIALS, EQUIPMENT, OR FILL SHALL BE PLACED IN THE FLOODPLAIN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ANY REQUIRED FLOODPLAIN DEVELOPMENT PERMIT FROM COMAL COUNTY.

CONTRACTOR SHALL SAW-CUT AND REMOVE EXISTING CONCRETE STRUCTURE AS REQUIRED TO INSTALL THE 12" WATER MAIN. (+/- 15.20 LF) TRENCH SHALL BE EXCAVATED WITH APPROPRIATE TRENCH SAFETY MEASURES PER OSHA REGULATIONS. WATER MAIN SHALL BE INSTALLED WITH PROPER BEDDING AND BACKFILL IN ACCORDANCE WITH SAWS SPECIFICATIONS.

FOLLOWING BACKFILL AND COMPACTION, THE CONCRETE SLOPE SHALL BE RESTORED TO MATCH EXISTING THICKNESS, REINFORCEMENT, FINISH, AND SLOPE GRADE, OR BETTER. CONTRACTOR SHALL INSTALL #5 EPOXY-COATED REBAR DOWELS, MINIMUM 8 INCHES EMBEDMENT, INTO EXISTING CONCRETE SLOPE AT 24-INCH INTERVALS ALONG BOTH SIDES OF THE REMOVED SECTION. DOWELS SHALL BE SECURED AND SHALL EXTEND A MINIMUM OF 18 INCHES INTO THE NEW CONCRETE POUR.

ALL RESTORATION SHALL CONFORM TO CURRENT CITY OF SAN ANTONIO, COMAL COUNTY, AND SAWS STANDARDS. CONTRACTOR SHALL VERIFY EXISTING CONCRETE SECTION THICKNESS AND REINFORCEMENT PRIOR TO DEMOLITION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.



CONTRACTOR SHALL SAW-CUT AND REMOVE EXISTING CONCRETE STRUCTURE AS REQUIRED TO INSTALL THE 12" WATER MAIN. (+/- 35.69 SY) TRENCH SHALL BE EXCAVATED WITH APPROPRIATE TRENCH SAFETY MEASURES PER OSHA REGULATIONS. WATER MAIN SHALL BE INSTALLED WITH PROPER BEDDING AND BACKFILL IN ACCORDANCE WITH SAWS SPECIFICATIONS.

FOLLOWING BACKFILL AND COMPACTION, THE CONCRETE SLOPE SHALL BE RESTORED TO MATCH EXISTING THICKNESS, REINFORCEMENT, FINISH, AND SLOPE GRADE, OR BETTER. CONTRACTOR SHALL INSTALL #5 EPOXY-COATED REBAR DOWELS, MINIMUM 8 INCHES EMBEDMENT, INTO EXISTING CONCRETE SLOPE AT 24-INCH INTERVALS ALONG BOTH SIDES OF THE REMOVED SECTION. DOWELS SHALL BE SECURED AND SHALL EXTEND A MINIMUM OF 18 INCHES INTO THE NEW CONCRETE POUR.

ALL RESTORATION SHALL CONFORM TO CURRENT CITY OF SAN ANTONIO, COMAL COUNTY, AND SAWS STANDARDS. CONTRACTOR SHALL VERIFY EXISTING CONCRETE SECTION THICKNESS AND REINFORCEMENT PRIOR TO DEMOLITION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.

LEGEND

- OVERALL UNIT BOUNDARY
- EXISTING LOT LINE
- EXISTING RIGHT OF WAY
- EXISTING 2' CONTOUR (499)
- EXISTING 10' CONTOUR (500)
- EXISTING WATER LINE (Wx)
- PROPOSED WATER LINE (W)
- PROPOSED FIRE HYDRANT
- JOINT RESTRAINT (X')
- JOINT RESTRAINT ENTIRE LENGTH (X)

SCALE: 1"=50'
50 25 0 50

© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED USE, CHANGE OR MODIFICATION OF THIS DOCUMENT OR ANY ASSOCIATED COPYRIGHTS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO M.W. CUDE ENGINEERS LLC. ANY UNAUTHORIZED REPRODUCTION, USE, OR DISTRIBUTION OF THIS DOCUMENT SHALL BE AT THE PERSON'S OR ENTITY'S SOLE RISK AND SHALL LIABILITY TO M.W. CUDE ENGINEERS LLC. M.W. CUDE ENGINEERS LLC AND ALL AUTHORS OF THIS DOCUMENT SHALL BE HELD HARMLESS FROM ANY DAMAGES RESULTING FROM UNAUTHORIZED USE, CHANGE OR MODIFICATION OF THIS DOCUMENT.

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

CONTESSA SUBDIVISION UNIT 1

OFFSITE WATER DISTRIBUTION - PHASE I

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

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

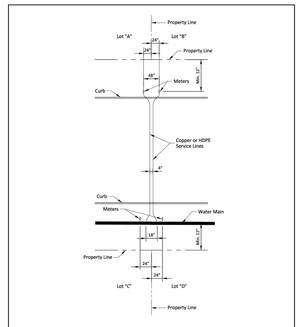
STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025

CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C69

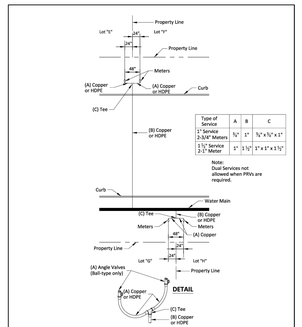
P:\04343\2025\ENGR\4 PSet\SHT\OFFSITE WATER DISTRIBUTION - PHASE I.dwg 2025/06/19 5:57pm jgarcia

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.



SINGLE SERVICE LINE - SINGLE METER

PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	TYPICAL NEW DEVELOPMENT SERVICE ARRANGEMENT	APPROVED March 2008	REVISED December 2018
		DD-824-05	SHEET 1 OF 3

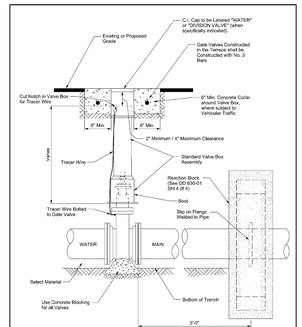


Type of Service	A	B	C
1" Service 2-3/4" Meters	¾"	1"	¾" x ¾" x 1"
1-½" Service 2-7" Meter	1"	1-½"	1" x 1" x 1-½"

Note:
Dual Services not allowed when PRVs are required.

SINGLE SERVICE LINE - DUAL METER

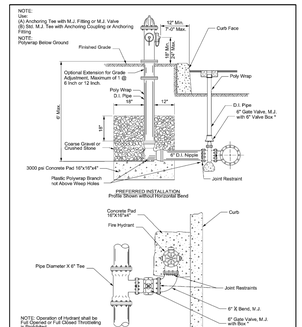
PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	TYPICAL SERVICE ARRANGEMENT	APPROVED March 2008	REVISED December 2018
		DD-824-05	SHEET 2 OF 3



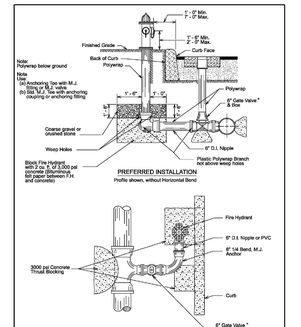
NOTE: Tracer Wire for PVC (Typ. for PVC & HDPE)
NOTE: All Concrete to be 3,000 psi

Note: For all work associated with Recycled Water Valves, refer to DD 116-10, Sht. 1 of 1.

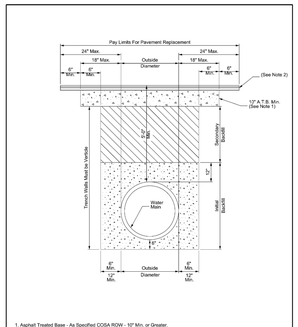
PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	INSTALLATION OF NON-GEARED GATE VALVE WITH VALVE BOX AND EXTENSION	APPROVED March 2008	REVISED AUG 2019
		DD 828-01	SHEET 1 OF 1



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



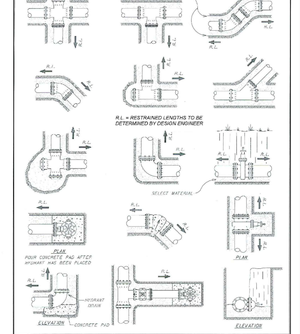
PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	FIRE HYDRANT INSTALLATION	APPROVED MARCH 2008	REVISED APRIL 2014
		DD-834-01	SHEET 1 OF 3



1. Asphalt Treated Base - As Specified COSA ROW - 10" Min. or Greater.
2 Replacement of Surface Layer Shall be of the Type and Thickness Base On Functional Classification:
a. Min. 2" HMAC Type "D" for Trench Repair in Local / Residential Streets.
b. Min. 3" HMAC Type "C" for Trench Repair in Collector / Arterial Streets.

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

PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	POTABLE AND RECYCLED WATER MAIN DETAIL	APPROVED MARCH 2008	REVISED AUG 2019
		DD-812-01	SHEET 2 OF 3



PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	THRUST BLOCKS FOR FITTINGS (WATER ONLY)	APPROVED March 2008	REVISED AUG 2019
		DD-839-01	SHEET 1 OF 2

RESTRAINED LENGTH FOR TEES

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

RESTRAINED LENGTH DESIGN

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

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

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

RESTRAINED LENGTH FOR TEES (Contd)

PIPE SIZE (inch)	BRANCH PIPE SIZE (inch)	LENGTH OF RUN (ft.)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
12	4	0	42	31
12	4	5	7	1
12	6	0	59	44
12	6	5	35	20
12	6	10	11	1
12	8	0	77	58
12	8	5	42	23
12	8	10	7	1
12	8	15	1	1
12	12	0	109	82
12	12	5	86	59
12	12	10	63	35
12	12	15	39	12

RESTRAINED LENGTH DESIGN

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

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

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

PIPE SIZE (inch)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	44	31
8	77	58
10	93	69
12	109	82

RESTRAINED LENGTH DESIGN

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

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

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

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

RESTRAINED LENGTH DESIGN

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

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

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

PIPE SIZE (inch)	SMALL PIPE SIZE (inch)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	4	55	43
8	6	32	24
12	4	95	71
12	6	80	60
12	8	58	43

RESTRAINED LENGTH DESIGN

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

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

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

BEND SIZE (inch)	BEND ANGLE (deg)	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 200 psi	RESTRAINED LENGTH IN FEET, WHEN TEST PRESSURE = 150 psi
6	45	24	17
6	22.5	5	3
6	11.25	2	2
8	90	50	22
8	45	10	7
8	22.5	5	4
8	11.25	3	2
12	90	43	32
12	45	18	13
12	22.5	8	5
12	11.25	4	3

RESTRAINED LENGTH DESIGN

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

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

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

* Cut as required to extend beyond excavation

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

* Cut as required to extend beyond excavation.

PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	2" TEMPORARY BLOW-OFF ASSEMBLY ON 12" & 16" MAINS	APPROVED March 2008	REVISED AUG 2015
		DD-844-01	SHEET 2 OF 4

* Length Varies

PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	2" PERMANENT BLOW-OFF ASSEMBLY ON 12" & 16" MAINS	APPROVED MARCH 2008	REVISED AUG 2019
		DD-844-02	SHEET 3 OF 5

* Cut to fit in meter box.

PROPERTY OF SAN ANTONIO WATER SYSTEM SAN ANTONIO, TEXAS	2" PERMANENT BLOW-OFF ASSEMBLY ON 6" & 8" MAINS	APPROVED MARCH 2008	REVISED AUG 2019
		DD-844-02	SHEET 3 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 AUG 2019
		DD-847-01	SHEET 1 OF 1

SIDE OF TRENCH
R.L.
R.L.
R.L.

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

1. STORM WATER MANAGEMENT FACILITIES MUST BE INSTALLED PRIOR TO SITE CONSTRUCTION. SUBD. ORD. 6.01.003

2. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION

3. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.

4. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.

5. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE, ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

INSPECTIONS:

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

AS A MINIMUM, THE INSPECTOR SHALL OBSERVE: (1) SIGNIFICANT DISTURBED AREAS FOR EVIDENCE OF EROSION, (2) STORAGE AREAS FOR EVIDENCE OF LEAKAGE FROM THE EXPOSED STORED MATERIALS, (3) STRUCTURAL CONTROLS (ROCK BERM OUTLETS. SILT FENCES, DRAINAGE SWALES, ETC.) FOR EVIDENCE OF FAILURE OR EXCESS SILTATION (OVER 6 INCHES DEEP). (4) VEHICLE EXIT POINT FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING, (5) VEHICLE STORAGE AREAS FOR SIGNS OF LEAKING EQUIPMENT OR SPILLS, AND (6) CONCRETE TRUCK RINSE-OUT PIT FOR SIGNS OF POTENTIAL FAILURE. DEFICIENCIES NOTED DURING THE INSPECTION WILL BE CORRECTED AND DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION OR BEFORE THE NEXT ANTICIPATED STORM EVENT IF PRACTICABLE.

NOTES

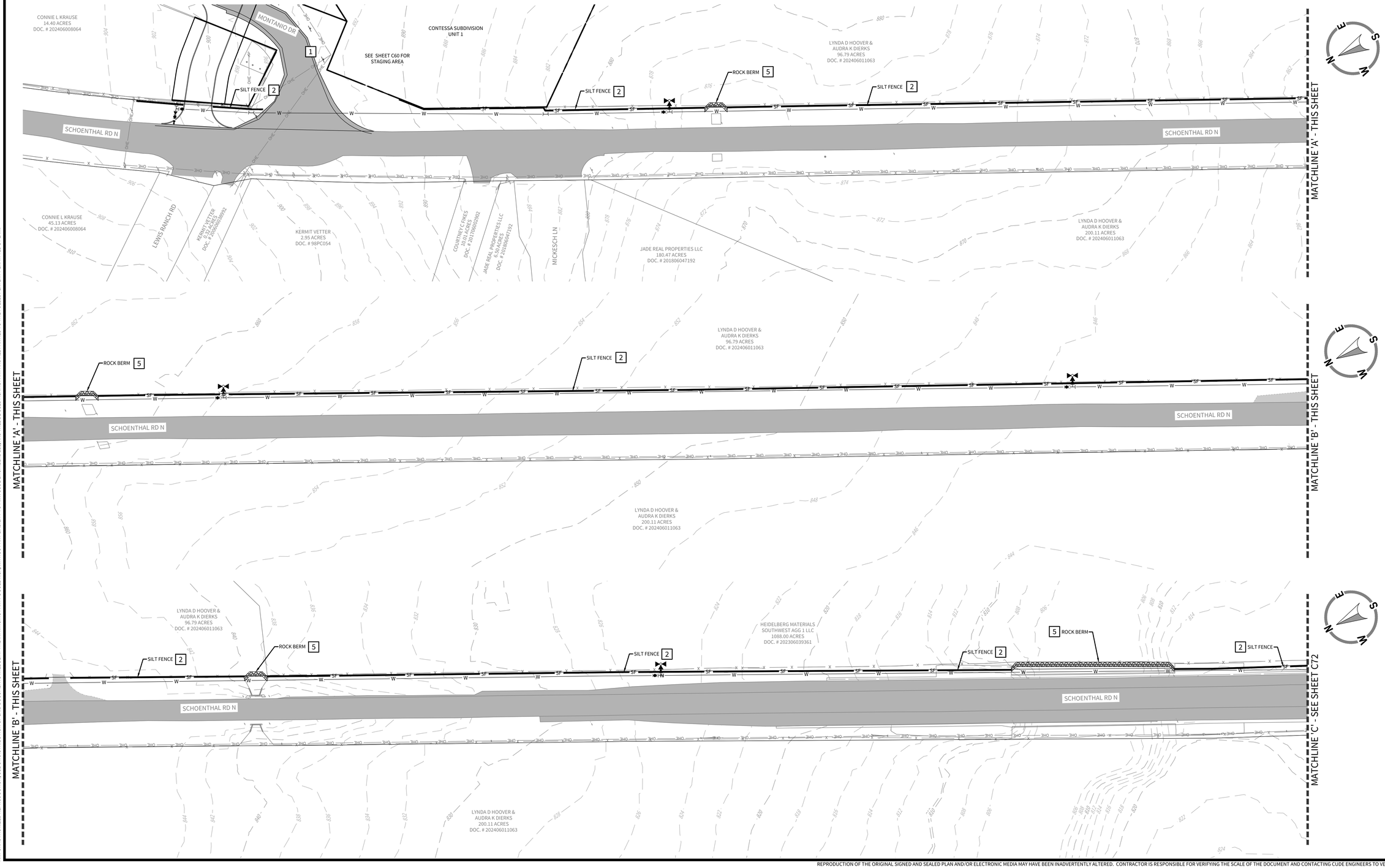
1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, EASEMENTS AND LOTS.
3. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
4. THE CITY AND/OR COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

SEE SHEET C66 FOR STORM WATER POLLUTION PREVENTION DETAILS

LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- EXISTING RIGHT OF WAY
- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- PROPOSED ROCK BERM
- PROPOSED SILT FENCE
- STAGING AREA
- CONCRETE WASHOUT PIT

SCALE: 1"=50'
50 25 0 50



© 2025 M.W. CUDE ENGINEERS LLC - THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY MODIFICATION TO THIS DOCUMENT WITHOUT THE WRITTEN AUTHORIZATION OF M.W. CUDE ENGINEERS LLC SHALL BE AT THE RECIPIENT'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND SHALL BE ASSUMED AND HELD HARMLESS BY RECIPIENT FOR ALL PURPOSES TO THE FULLEST EXTENT PERMITTED BY LAW.

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

CONTESSA SUBDIVISION UNIT 1

OFFSITE STORM WATER POLLUTION PREVENTION PLAN

DATE
06/19/2025
PROJECT NO.
04343.002
DRAWN BY
CG/JG/LJ/TCD
CHECKED BY
XV/AL

REVISIONS
DATE
1 2 3 4 5 6 7 8 9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C71

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

P:\04343.002\3-ENG\4-Plans\C1 OFFSITE STORM WATER POLLUTION PREVENTION PLAN.dwg 2025/06/19 5:53 pm jjaime

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

1. STORM WATER MANAGEMENT FACILITIES MUST BE INSTALLED PRIOR TO SITE CONSTRUCTION. SUBD. ORD. 6.01.003

2. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION

3. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.

4. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.

5. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE, ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

INSPECTIONS:

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

AS A MINIMUM, THE INSPECTOR SHALL OBSERVE: (1) SIGNIFICANT DISTURBED AREAS FOR EVIDENCE OF EROSION, (2) STORAGE AREAS FOR EVIDENCE OF LEAKAGE FROM THE EXPOSED STORED MATERIALS, (3) STRUCTURAL CONTROLS (ROCK BERM OUTLETS. SILT FENCES, DRAINAGE SWALES, ETC.) FOR EVIDENCE OF FAILURE OR EXCESS SILTATION (OVER 6 INCHES DEEP). (4) VEHICLE EXIT POINT FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING, (5) VEHICLE STORAGE AREAS FOR SIGNS OF LEAKING EQUIPMENT OR SPILLS, AND (6) CONCRETE TRUCK RINSE-OUT PIT FOR SIGNS OF POTENTIAL FAILURE. DEFICIENCIES NOTED DURING THE INSPECTION WILL BE CORRECTED AND DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION OR BEFORE THE NEXT ANTICIPATED STORM EVENT IF PRACTICABLE.

NOTES

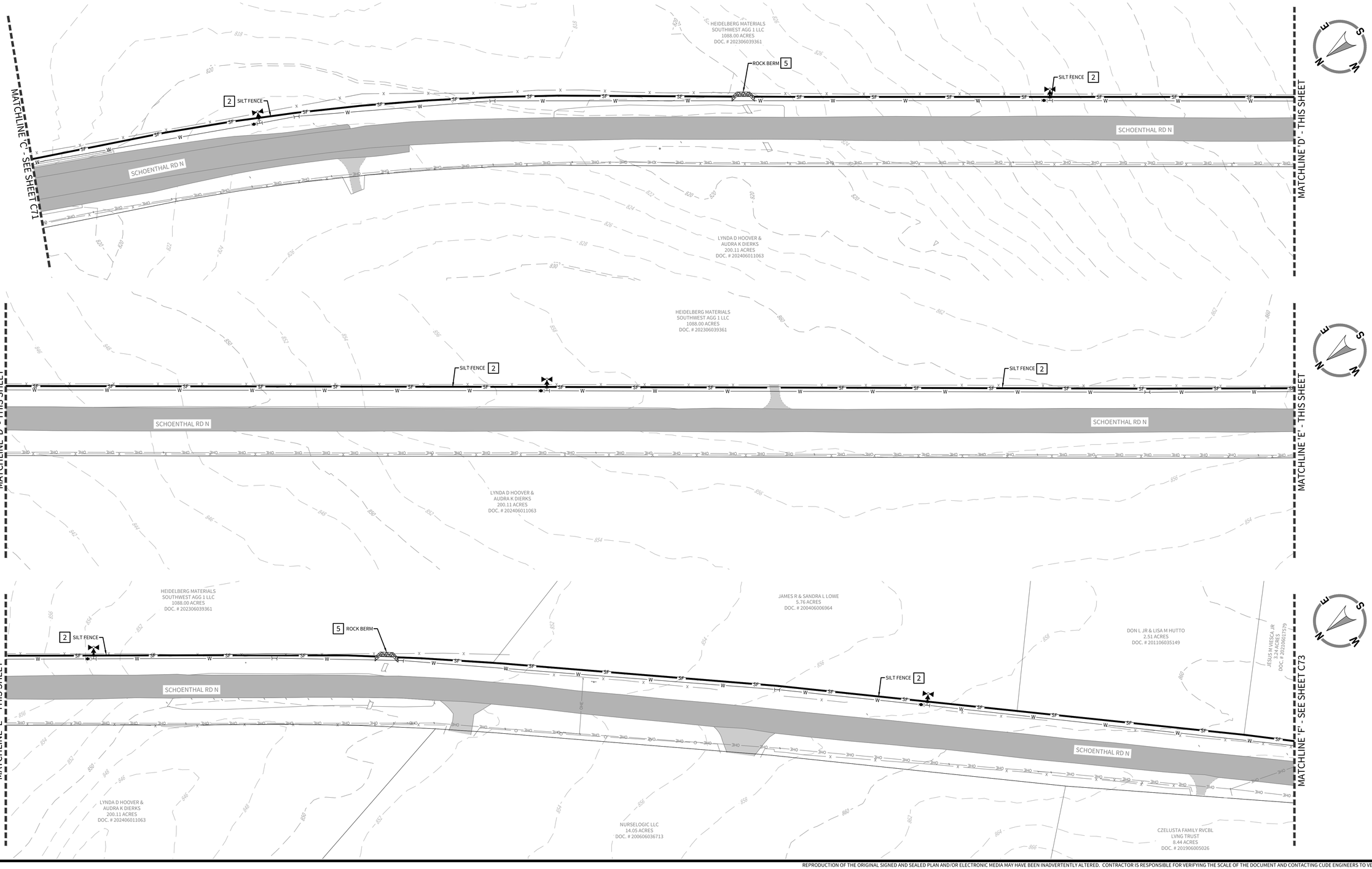
1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, EASEMENTS AND LOTS.
3. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
4. THE CITY AND/OR COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.

SEE SHEET C66 FOR STORM WATER POLLUTION PREVENTION DETAILS

LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- EXISTING RIGHT OF WAY
- EXISTING 2' CONTOUR (499)
- EXISTING 10' CONTOUR (500)
- PROPOSED TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- PROPOSED ROCK BERM
- PROPOSED SILT FENCE (SF)
- STAGING AREA
- CONCRETE WASHOUT PIT

SCALE: 1"=50'
50 25 0 50



CUDEENGINEERS.COM

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

CONTESSA SUBDIVISION UNIT 1

OFFSITE STORM WATER POLLUTION PREVENTION PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	A	1	2	3	4	5	6	7	8	9

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED PROFESSIONAL ENGINEER
06/19/2025

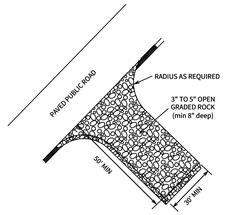
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C72

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT, AND ADAPTION BY, M.W. CUDE ENGINEERS, LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY REUSE OF THIS DOCUMENT BY THE OWNER OR ANY OTHER PARTY FOR ANY OTHER PURPOSE SHALL BE AT THE PERSON'S OR ENTITY'S SOLE RISK, WITHOUT ANY LIABILITY TO M.W. CUDE ENGINEERS LLC, AND THE USER AGREES TO INDEMNIFY AND HOLD HARMLESS M.W. CUDE ENGINEERS LLC FROM ALL ACTIONS AND ALL CLAIMS, DAMAGES, LOSSES, AND EXPENSES, INCLUDING ATTORNEY'S FEES AND COURT COSTS, ARISING OUT OF OR RESULTING THEREFROM.

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

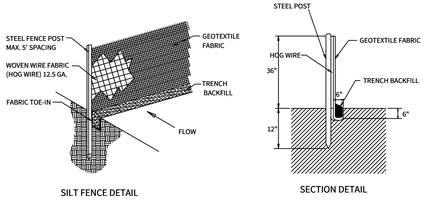
P:\04343\002\2-ENG\LP Plans\CT LOT SPLT\ STORM WATER POLLUTION PREVENTION PLAN.dwg 2025/06/19 3:53 PM jgarcia



STABILIZED CONSTRUCTION EXIT NOTES:

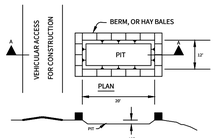
1. WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ON PUBLIC ROADWAY.
2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC ROADWAYS MUST BE REMOVED IMMEDIATELY.

1 TEMPORARY CONSTRUCTION ENTRANCE/EXIT
N.T.S.



SILT FENCE DETAIL | SECTION DETAIL

2 STANDARD SILT FENCE
N.T.S.



GENERAL NOTES:

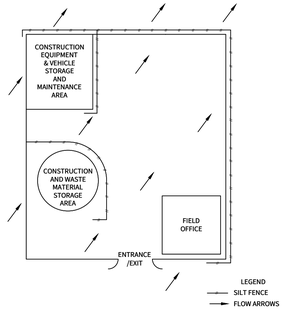
- Detail above illustrates minimum dimensions. Pit can be increased in size depending on expected frequency of use, construction traffic.
- If hay bales are used, they shall be placed in accordance with details shown on Exhibit for hay bales.

Washout pit shall be located in an area easily accessible to

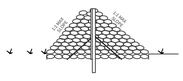
Washout pit shall not be located in areas subject to inundation from storm water runoff.

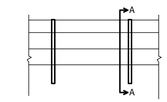
- Washout pit shall be lined with a 10-mil thick polyethylene sheeting free of holes, tears and other defects.

3 CONCRETE TRUCK WASHOUT PIT
N.T.S.

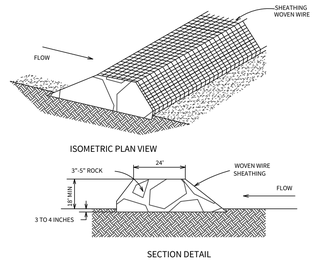


4 TYP. CONSTRUCTION STAGING AREA
N.T.S.

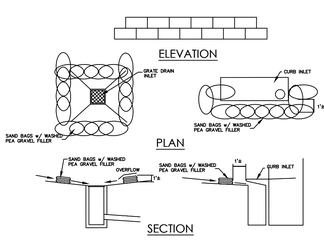




5 ROCK BERM W/ SILT FENCE DETAIL
N.T.S.



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 IN 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.

TEMPORARY BEST MANAGEMENT PRACTICES AND MEASURES

SEQUENCE OF INSTALLATION DURING CONSTRUCTION PROCESS:

1. STORM WATER MANAGEMENT FACILITIES MUST BE INSTALLED PRIOR TO SITE CONSTRUCTION. SUBD. ORD. 6.01.003

2. THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT (ITEM 2) SHALL BE INSTALLED PRIOR TO DISTURBING ANY SOIL EXCEPT AT THE LOCATION OF THE TEMPORARY CONSTRUCTION ENTRANCE/EXIT. IT SHALL STAY IN PLACE AND BE MAINTAINED UNTIL THE END OF THE INFRASTRUCTURE CONSTRUCTION

3. SILT FENCE (ITEM 4) SHALL BE INSTALLED ALONG THE DOWN-GRADIENT BOUNDARY OF THE SITE PRIOR TO ANY DISTURBANCE OF THE SITE AS SHOWN ON THE SITE PLAN.

4. BAGGED GRAVEL INLET FILTERS (ITEM 6) SHALL BE PLACED AROUND ALL INLETS FOLLOWING INSTALLATION.

5. ROCK BERMS (ITEM 5) SHALL BE INSTALLED AROUND THE PERIMETER OF THE PROJECT AT NATURAL LOW POINTS FOLLOWING ROUGH GRADING OF THE SITE AND SHALL BE REMOVED ONCE GRADING TO THE ON-SITE STORMWATER DRAINAGE SYSTEM WITH BAGGED GRAVEL INLET FILTERS IN SUMP IS COMPLETE, ROCK BERMS WILL ALSO BE UTILIZED AT THE OUTLET OF THE POND WHILE IT IS BEING CONSTRUCTED.

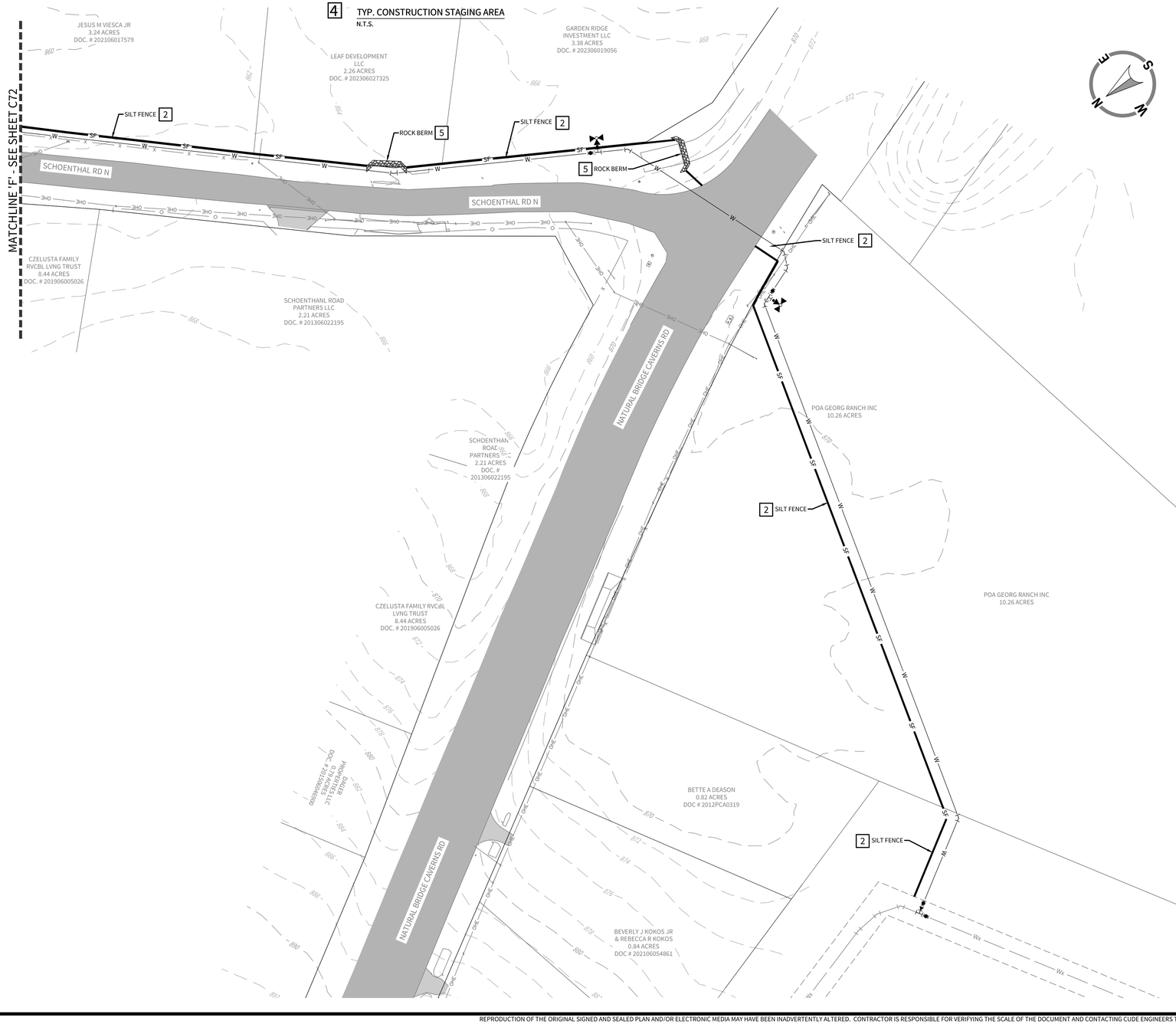
INSPECTIONS:

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

AS A MINIMUM, THE INSPECTOR SHALL OBSERVE: (1) SIGNIFICANT DISTURBED AREAS FOR EVIDENCE OF EROSION, (2) STORAGE AREAS FOR EVIDENCE OF LEAKAGE FROM THE EXPOSED STORED MATERIALS, (3) STRUCTURAL CONTROLS (ROCK BERM OUTLETS. SILT FENCES, DRAINAGE SWALES, ETC.) FOR EVIDENCE OF FAILURE OR EXCESS SILTATION (OVER 6 INCHES DEEP). (4) VEHICLE EXIT POINT FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING, (5) VEHICLE STORAGE AREAS FOR SIGNS OF LEAKING EQUIPMENT OR SPILLS, AND (6) CONCRETE TRUCK RINSE-OUT PIT FOR SIGNS OF POTENTIAL FAILURE. DEFICIENCIES NOTED DURING THE INSPECTION WILL BE CORRECTED AND DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS FOLLOWING THE INSPECTION OR BEFORE THE NEXT ANTICIPATED STORM EVENT IF PRACTICABLE.

NOTES

1. ALL SILT FENCES AND/OR ROCK BERMS AND TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE PLACED AT THE MOST DOWN-GRADIENT POINT OF CONSTRUCTION AS SHOWN ON THIS SITE PLAN. CONTRACTOR SHALL TAKE INTO CONSIDERATION ANY PROPOSED CONSTRUCTION THAT MAY TAKE PLACE AT THESE LOCATIONS. ANY RELOCATION OF THE SILT FENCE, ROCK BERMS AND/OR TEMPORARY CONSTRUCTION ENTRANCES/EXITS SHALL BE AT THE CONTRACTOR'S EXPENSE.
2. AREA OF SOIL DISTURBANCES INCLUDE STREET RIGHT-OF-WAYS, EASEMENTS AND LOTS.
3. THE CONTRACTOR IS REQUIRED TO MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
4. THE CITY AND/OR COUNTY INSPECTOR HAS THE AUTHORITY TO HAVE THE CONTRACTOR MODIFY THE EROSION CONTROLS AT THE DEVELOPER'S EXPENSE. THE DEVELOPER SHALL BE NOTIFIED OF THESE MODIFICATIONS PRIOR TO COMMENCEMENT OF MODIFICATIONS.



LEGEND

- OVERALL UNIT BOUNDARY
- PROPOSED LOT LINE
- EXISTING RIGHT OF WAY
- EXISTING 2' CONTOUR (499)
- EXISTING 10' CONTOUR (500)
- PROPOSED TEMPORARY CONSTRUCTION ENTRANCE/EXIT
- PROPOSED ROCK BERM
- PROPOSED SILT FENCE (SF)
- STAGING AREA
- CONCRETE WASHOUT PIT

SCALE: 1"=50'
50 25 0 50

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

CONTESSA SUBDIVISION UNIT 1

OFFSITE STORM WATER POLLUTION PREVENTION PLAN

DATE
06/19/2025

PROJECT NO.
04343.002

DRAWN BY
CG/JG/LJ/TCD

CHECKED BY
XV/AL

REVISIONS

DATE	1	2	3	4	5	6	7	8	9
A									

STATE OF TEXAS
JAVIER CASTELLO
122170
LICENSED
PROFESSIONAL ENGINEER
06/19/2025
CUDE ENGINEERS
TBPE No. 455
TBPLS No. 10048500

C73

CUDEENGINEERS.COM

© 2025 M.W. CUDE ENGINEERS LLC. THIS DOCUMENT, ANY PORTION THEREOF, AND ANY ASSOCIATED COPYRIGHTS SHALL REMAIN THE PROPERTY OF M.W. CUDE ENGINEERS LLC. THIS DOCUMENT MAY NOT BE REPRODUCED, USED, OR DISTRIBUTED IN ANY FORM OR BY ANY MEANS TO ANYONE FOR ANY OTHER ENDEAVOR WITHOUT THE PRIOR WRITTEN CONSENT OF, AND ADAPTATION BY, M.W. CUDE ENGINEERS LLC. THIS DOCUMENT IS NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR USE OTHER THAN AS ORIGINALLY INTENDED BY M.W. CUDE ENGINEERS LLC. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY M.W. CUDE ENGINEERS LLC FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO M.W. CUDE ENGINEERS LLC, AND THE USER SHALL INDEMNIFY AND HOLD HARMLESS M.W. CUDE ENGINEERS LLC FROM ALL CLAIMS, DAMAGES, LOSSES, AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM.

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

P:\04343.002\2-ENGR\4 Plans\SET 1 OFFSITE STORM WATER POLLUTION PREVENTION PLAN.dwg 2025/06/19 3:53 jmgarcia